

MASTER PLAN



**TOWNSHIP OF PLAINSBORO
MIDDLESEX COUNTY, NEW JERSEY**

**Adopted
January 20, 2009**

ACKNOWLEDGEMENTS

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Middlesex County, New Jersey

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I. INTRODUCTION

A. Master Planning

A Master Plan is one of the basic planning tools made available to Municipal Planning Boards by the New Jersey State Enabling Legislation.

A Master Plan deals primarily with the physical development of a municipality, taking into account a wide range of social and economic factors, as set forth in the Municipal Land Use Law (C.40:55D-27). A Master Plan generally comprises a report or statement and land use and development proposals, with maps, charts, diagrams, and text.

Essential to the preparation of a Master Plan are extensive studies of present conditions, development trends, regional factors, and prospects for future growth. These background studies form the basis for establishing a set of policies, standards, and objectives which guide the future physical development of the entire Township which, in turn, forms the basis for a general physical design of the community.

A Master Plan must be comprehensive, including proposals for all major physical elements affecting both public and private property. It must also be long-range, looking as far into the future as is practical and necessary. Because it is both comprehensive and long-range, it must also be general and flexible, and subject to periodic review and revision when warranted. A Master Plan should, therefore, be considered a process rather than a formal polished document.

The effectiveness of a Master Plan is largely dependent upon subsequent revision of the land development ordinance which fosters implementation of certain aspects of the Plan regarding land use, circulation, housing, etc. The adoption of an official map more specifically sets forth, in engineering terms, those facilities and utilities of a more specific and imminent nature. These two implementing documents are enacted by the Township Committee as compared to the Master Plan which is adopted by the Planning Board after formal public hearings.

B. General

Plainsboro Township lies in the southwest corner of Middlesex County. Its westerly boundary with Princeton Township and its southerly boundary with West Windsor and East Windsor Townships are formed by the Millstone River. The northerly boundary with South Brunswick Township from Carnegie Lake easterly to Schalks Crossing Road does not follow a natural or man-made feature, but runs through farmland, open space and developing properties. The balance of the northerly boundary follows local roads and the easterly boundary with South Brunswick and Cranbury Township follows roads and brooks.

The Township was incorporated in 1919 and has a land area of 11.8 square miles. Approximately 48% of Plainsboro Township is currently developed (see Table 1) with the remaining areas consisting of vacant land, wooded acreage, environmentally sensitive lands, open space, and agricultural land. Physically, Plainsboro Township is divided by Route One and the Amtrak (formerly Penn Central Transportation Co.) railroad right-of-way which generally runs north-south through the Township.

Table 1 Existing Land Uses

Existing Land Uses	Total Acres
Commercial	99.21
Industrial	272.57
Institutional	106.20
Mixed Use	298.79
Office	570.11
Other Farm Land – Tax Assessed	405.98
Preserved Farm Land	672.20
Private Open Space	945.94
Public Facilities	268.23
Public Park and Open Space	1636.83
Residential	1776.36
Undeveloped	15.45
Total	7067.85

Source: Township Engineer

The Township has historically been an agricultural community, even before its incorporation. Indeed, the community's economic and cultural roots were established by agricultural activity which, to a large measure, remains even more important today. The character of Plainsboro has changed with suburbanization and growth pressures. Major developers - Princeton University, the Linpro Company, and U.S. Homes - and most recently Merrill Lynch and Bristol-Myers Squibb acquired land holdings and completed extensive projects which significantly contributed to development market forces within Plainsboro.

While dramatic land use changes have occurred in recent years and continue to impact the community, Plainsboro recognizes both the inevitability of accommodating some new suburban growth and its responsibility to encourage conservation and permanent protection of its agricultural and open space heritage. Plainsboro's 1977 Master Plan recognized the agricultural setting of the present R-100/R-150 zones by placing them into a rural residential land use category. Since 1982, Plainsboro has sought to manage and control development through careful planning, providing opportunities for a variety of business and industrial uses and many different types and styles of residential uses and densities. Efforts to protect the agricultural segment of Plainsboro's economy also date back to the Planning Board's work in completing a Farmland Conservation Feasibility Study in the early 1980's and incorporation of transfer of development credits language into the Master Plan and land development ordinance. Over the years, Plainsboro's concern for protecting farmland with its attendant benefits for the farmer, the community and the region has intensified

and, as a result, has placed the Township on the cutting edge of farmland and open space preservation within the county, region, and state. Accordingly, the Planning Board embarked on a Master Plan program which, among other objectives, was to fully explore the feasibility and practicality of all available methods of agricultural land conservation which lead to the development -- with full citizen participation and with due regard for the community-wide effects of agricultural conservation -- of a specific mechanism that would help the community preserve its best farmland.

C. Report Planning Process

The planning process utilized in developing the Master Plan is divided into three (3) phases.

The first phase of the planning process consists of a statement of the principles, assumptions, policies, standards, and objectives developed to guide the preparation of the Master Plan, the land use plan itself, and an evaluation of its many impacts.

The second phase summarizes the existing conditions in the region of which Plainsboro is a part and those governmental land use policies in the region that affect the Township. It includes a review of relevant state, regional, and county plans, population and job projections, transportation policies, and agricultural policies; an analysis of existing land use patterns and trends; and a review of long range development objectives. The land use plans and policies of adjacent municipalities are also reviewed to identify any major existing or potential incompatibilities across municipal boundaries.

The third phase analyzes relevant factors within the Township. These include an evaluation of existing land use patterns and development potential under existing zoning; environmental factors; circulation; recreation and open space; housing; and the present and potential adequacy of public sewer and centralized water systems. The findings from these studies, with particular attention to the Township's agricultural base, lead to the identification of key planning issues. The techniques used in New Jersey and elsewhere to preserve agricultural lands are presented in some detail, given the importance to the Township of its best farmlands. The Master Plan identifies future problems and opportunities and ideas to address them in a comprehensive and thoughtful manner.

Throughout the planning process, open workshop sessions were held by the Planning Board to discuss the findings of completed studies and to formulate development policies. At all times, the public has been given full opportunity to comment about this Master Plan and its contents.

D. Accomplishments, Challenges and Opportunities

The Township of Plainsboro has much to be proud of over the past 25 years. Successful planning and implementation of many small and large plans has led to a variety of successful experiences in the way of physical development and environmental protection and expanding the opportunities for jobs growth, a variety of residential dwelling unit types for many age and income groups, and shaping and supporting the social and physical environment that has and continues to allow residents, employees and visitors to be engaged with one another in a community that is truly special in the State of New Jersey.

Just some of the major challenges that face the Township involve the continued support and expansion of the ratable base within the community, to provide opportunities for all income levels to live within the community, to adequately maintain all public recreational facilities, and to continue to preserve and enhance the natural environment.

The list of past and ongoing major accomplishments is long and significant and includes the following in no particular order of importance:

1. Land Use

- Received Initial State Plan Endorsement on January 18, 2006 from the State Planning Commission.
- Created the R-100 and R-150 zoning districts that resulted in the permanent preservation of significant amounts of active farmland and the clustering of housing. These two zoning districts received an award from the New Jersey Chapter of the Sierra Club as being innovative and creative.
- Adopted land use regulations in the R-85 zoning district to protect the character of existing residential neighborhoods.
- Amended the R-300 zoning district to permit the significant clustering of single-family detached housing – which has resulted in the permanent preservation of large amounts of open space.
- Implemented a village area plan that has resulted in the construction of village housing, a village mixed use center and senior housing located in a village style development.

2. Circulation

- Supported the construction of Scudders Mill Road as a functional by-pass of the village area.
- Worked with the County of Middlesex to reconstruct a number of existing intersections.

- Supported the construction of the existing Route 1 overpasses at Scudders Mill Road and College Road and the upgrade of the existing Sayre Drive intersection with Route 1.
- Have overseen the construction of many miles of new sidewalks and bicycle pathways in the Township in accordance with an overall master plan that seeks to interconnect all neighborhoods.
- Implemented traffic calming along Plainsboro Road and Schalks Crossing Road by way of landscaping, landscaped center medians, crosswalks, lighting and signalization.
- Required the construction of new roadways like Wyndhurst Blvd., Campus Road, the extension of Nursery Road into South Brunswick Township, and to interconnect new neighborhoods with existing roadways to further compliment and support the existing roadway network.
- Encouraged and supported the introduction of public bus service into the Township and the establishment of bus stops and shelters.
- Supported travel demand management and the introduction of bus rapid transit.
- Have carefully managed curb cut locations along the Route 1 corridor and along other roadway frontages within the Township.

3. Community Facilities

- Constructed a new municipal complex in the center of the community and preserved the existing historic Wicoff House.
- Constructed a new firehouse.
- Was involved with the West Windsor-Plainsboro Board of Education in the upgrading of the Wicoff School and the construction of two new elementary schools, a middle school and a high school.
- Established the “Preserve” and the Environmental Education Center with the County of Middlesex.
- Involved with the construction of a new municipal library located within the village center.
- Recently approved the construction of a new hospital to be located along the Route 1 corridor.
- Constructed a new public works facility.

4. Open Space and Recreation

- Supported the construction of a public golf course.
- Approved many residential developments that included recreational facilities for their future residents.
- Required the set aside and permanent protection of lands to be used for both active and passive forms of recreation that far exceeds minimum national standards.
- Approved the construction of a village square.
- Have and continue to support connections to the Delaware & Raritan Canal pathway system.

5. Conservation

- Mapped critical environmental features and protected those features to the maximum extent possible.
- Encourage developers to utilize sustainable design standards and philosophies.

6. Economics

- Supported the establishment and redevelopment of the Plainsboro Town Center and the Princeton Meadows Shopping Center.
- Approved the village center mixed use plan.
- Supported non-residential growth and development in the Enterprise Business Park, within the Princeton Forrestal Center and along the Route 1 corridor.

7. Historic Preservation

- Supported the compatible re-use of historic buildings and sites.
- Has sought to ensure the protection of historic buildings and sites when new development is placed nearby.

8. Utilities

- Supported the logical and timely extension of both public water and sewer service for both existing and future development.
- Properly managed stormwater impacts associated with new development activity.
- Developed a Township recycling facility.

- Adopted a wireless telecommunications ordinance that has been used to site new facilities.

9. Recycling

- Have sought to implement recycling that is consistent with State and County requirements.
- Adopted Township standards and regulations.

10. Affordable Housing

- Prepared and adopted a Housing and Fair Share Plan Element.
- Have supported the construction of low and moderate income housing at the local level throughout many years.

11. Other Jurisdictional Agencies

- The Master Plan is consistent with the State Plan and County planning.
- The Master Plan has explored and taken into account planning at the local level with regard to surrounding municipalities and remains consistent with those local planning efforts.

The “Action Plan” sections that appear at the end of each Master Plan Element identifies next steps that can be taken by the Planning Board and others to further promote Master Plan policies, standards, and objectives.

II. STATEMENT OF PRINCIPLES AND ASSUMPTIONS, A VISION STATEMENT AND POLICIES, STANDARDS, AND OBJECTIVES

A. Principles and Assumptions

As with any plan for future action various principles and assumptions must be made about future conditions within the future planning horizon. The underlying assumptions and principles within this Master Plan are as follows:

1. The region's economy will continue to expand.
2. The regulatory framework for land development at other jurisdictional levels will remain fairly constant.
3. There will be no catastrophic events to significantly alter the social or physical makeup of the Township.
4. The region, including the Township, will remain viable for housing, commerce, and transportation.

B. Vision Statement

Plainsboro Township has arrived at a time where most of its development activity has begun to moderate and shift focus. Where once it was a community where rapid growth occurred over a couple of decades, to now where infill and redevelopment is taking place. The vision of the Township is to strengthen its existing unique character and to support economic growth. Plainsboro is characterized by:

1. An identifiable village center area, traditional in form, surrounded by land where pastoral vistas are preserved to visually distinguish Plainsboro from neighboring cities and towns.
2. A strong local business community, marked by vital business districts, including, a new Village Center area, where a compatible mix of business, homes, institutions, and public spaces coexist along pedestrian oriented streets.
3. A range of housing choices offering traditional neighborhood, suburban, and rural living styles for every economic and age group.
4. Shopping, services, employment, and leisure activities.
5. Excellent schools and other community facilities.
6. An internal road network that efficiently delivers citizens to local facilities and to a regional network which supports both private and public modes of transportation.

7. A transportation system that utilizes innovative design practices for efficient and safe movement of traffic.
8. A range of recreational facilities serving a diverse population.
9. A commitment to protect our natural resources such as creeks, lakes, floodplains and wetlands, as well as trees, natural terrain, wildlife habitat and air quality.

C. Policies, Standards, and Objectives

There are several types of policies, standards, and objectives upon which the physical, economic, and social development of the Township are based. These can be identified as broad or all encompassing and those which relate to the various elements of this Master Plan.

1. Overview

The Master Plan provides for a balanced community affording an optimum living and working environment and opportunity for all ages and socio-economic groups.

The plan calls for an adequate infrastructure of roads, utilities, and facilities to properly serve the anticipated population and work force. It calls for preserving critical features such as wetlands, floodplains, scarce wooded areas, historic sites, and other natural features. Also, due to the great extent of prime agricultural land located in the Township, it calls for a maximum effort to permanently preserve to the greatest extent possible this vital and irreplaceable natural resource.

Since the Township is located in the headwaters of the Raritan River Basin and has extensive ground water aquifer areas, this plan also seeks to retain as much of the aquifer recharge surface as is possible and to retain as much storm water runoff as is feasible; the goal being to recharge ground water, maintain stream flow, and reduce or minimize downstream flooding impacts.

2. Land Use

- Provide for a balance in land uses with a Township-wide development pattern which promotes a distinctive identification and character.
- Prohibit premature or leap frog development patterns which can constitute an undue economic burden on the general public, requires the inappropriate extension of public facilities, and results in growth pressures in inappropriate areas.
- Foster a development pattern which is coordinated with available community facilities and public works, and which is compatible with the ability to provide essential services and facilities such as

schools, roads, stormwater management,, and recreational opportunities.

- Insure that the cost of providing adequate levels of required public facilities and services to newly developing areas will not become an unreasonable burden to existing property owners.
- Any new developments should be compatible with existing or proposed adjacent land use patterns and should not adversely impact upon existing residential neighborhoods.
- Encourage conceptual site plan and subdivision submissions to the Planning Board for all major developments.
- Ensure that new developments are visually and functionally compatible with the physical character and desired images of the Township.
- Preserve farmlands and encourage their continued use while recognizing that farming is an important component of the economy of the Township, the region, and the State, and that agricultural lands are irreplaceable natural resources.
- Coordinate local agricultural land use preservation guidelines with those of the State and the County and with those of adjoining municipalities.
- Protect large agricultural areas from the intrusion of residential and other uses.
- Encourage agricultural uses like "pick your own" operations, nurseries, horse farms, and sod farms.
- Continue implementation of the Township's right-to-farm ordinance with updates as necessary.
- Use innovative zoning tools to encourage mixed-use developments and buildings.
- Concentrate critical services near homes, jobs and transit.
- Provide opportunities for agribusiness to support local and, if appropriate, regional farming needs.
- Assure that agricultural areas will be clearly defined by natural boundaries and land uses that are compatible with farming.
- Discourage and/or limit water, sewer, and roadway improvements which would support undesirable growth pressures in agricultural areas.

- Preserve the existing housing stock and provide the opportunity for the development of a wide variety of housing types to meet the needs of varied income and age levels, family compositions, and life styles.
- Preserve the visual qualities of the Township by controlling building heights, screening the view of parking lots, and encouraging landscaping of public and private facilities.
- Improve the appearance of the community through the elimination of negative elements such as non-conforming signs and by encouraging aesthetically designed screening with adequate setbacks and landscaping.
- Protect the visual qualities along scenic and rural roadways by reviewing projects with respect to their visual impact on the public.

3. Housing

- Provide a range of housing types to meet varied resident population's needs as well as to preserve existing residential areas.
- Encourage single family detached housing to be clustered, thereby fostering other goals within the Master Plan.
- Broaden housing affordability to help the elderly, the retired, and persons of low and moderate income.
- Continue the Township's housing inspection program to assure the adequate maintenance and upgrading of all housing in the Township.
- Enable new housing development to be in proximity to emerging job centers within the Township so that it can take advantage of regional access roads, utility infrastructure, and mass transit service.
- Ensure a sense of privacy through the design of homes and yards.
- Provide persons with disabilities easy access to sidewalks, streets, parks, and other public and private services in conformance with the Americans with Disabilities Act.
- Connect walkways, parking lots, greenways and developments.
- Create opportunities for community interaction.
- Enact clear design guidelines so that streets, buildings, and public spaces work together to create a sense of place.

- Continue to address the desire on the part of many of Plainsboro's renters to own a single family house in the Township.
- Explore incentives for the production of more affordable housing particularly for young families and senior citizen households.
- Explore the use of the clustered development technique as it relates to single family detached housing zone districts in order to achieve site design flexibility, promote environmental protection of sensitive natural features, and to achieve meaningful open space preservation.
- Evaluate all methods by which the Township can achieve compliance with its fair share affordable housing obligation as outlined by the Council on Affordable Housing (COAH).
- Examine techniques that would encourage the incorporation worthwhile older buildings, farmsteads and existing single family homes within new development plans to recognize and permanently protect historic contributions.
- Facilitate programs to encourage home renovations and rehabilitation in existing neighborhoods.
- The Township will continue to support the State Council on Affordable Housing by preparing new and up-to-date housing plans to be submitted to the State for their review and approval.

4. Circulation

- Develop a coordinated circulation system which will support the safe and efficient movement of people and goods.
- Locate high traffic generators close to or next to existing major arterial streets with sufficient vehicle carrying capacity.
- Continue to protect Route 1 against the establishment of additional intersections and curb cuts and eliminate or consolidate existing curb cuts, if possible.
- Classify roads according to their traffic function and adjust the frontage and access regulations of abutting land uses to enhance the ability of each road to adequately fulfill its assigned function.
- Promote the construction of safe sidewalks, bike paths and jogging trails as part of the Township's overall circulation system.
- Beautify and maintain existing and future walkways.
- Identify economic opportunities that stimulate pedestrian and bicycle activity.

- Promote the more efficient use of existing transportation facilities including streets, highways, parking facilities and public transportation.
- Reduce traffic impacts within the Township and region by reducing both the number of vehicular trips and total vehicle miles travelled.
- Reduce vehicle emissions, energy usage, and ambient noise levels by reducing the number of vehicular trips, total vehicle miles travelled, and traffic congestion.
- Encourage the timely implementation of the State's Route 1 improvement program in and around Plainsboro.
- Continue to support and actively encourage the construction of State Route 92 within its presently preferred northerly alignment.
- Require reverse frontage lots along all existing and proposed roadways that carry substantial through traffic movements.
- Develop an improvement strategy for key roadway intersections that need improvement if they are currently operating at or near peak capacity and/or exhibit hazardous safety conditions.
- Encourage local bus service and ride-sharing, van-pooling, staggered work hours, and flex-time to reduce the dependence on the private automobile.
- Improve traffic flow on main roads and reduce through traffic in residential neighborhoods.
- Make public transportation more convenient and accessible.
- Require traffic-calming techniques where traffic speed through residential and mixed-use neighborhoods is excessive.
- Discourage developers from providing excessive parking in response to alleged market demand.
- Reduce peak hour traffic volumes generated by employees permanently working within the Township through the development and implementation of a traffic demand management program.
- Maximize the use of commute modes other than single-occupancy vehicles and minimize the percentage of employees traveling to and from work at the same time and during peak hour periods.
- Increase vehicle occupancy rates.

- Project future infrastructure needs and implement improvements in anticipation of those needs prior to an unacceptable deterioration in levels of service.
- Maintain acceptable levels of service on all roads and improve roads and intersections when they become inadequate and/or unsafe.
- Develop a capital improvement road program and official map.
- Support a Township-wide or area-wide bus and/or van shuttle services to transport people to residential centers, office centers, community centers, and area train stations.

5. Utility Services

- Ensure the provision of a range of utility services to adequately accommodate existing and future Township needs in a convenient and cost effective manner.
- Require, to the maximum extent possible, the underground installation of utility services for all new development and encourage the undergrounding or relocation of all existing overhead services in major business areas and along streets.
- Make provision for public sewer and centralized water facilities to serve areas designated for development.
- Provide quality water supplies to all homes, schools, and businesses within the Township.
- Ensure adequate fire protection at all times by maintaining good water pressure.
- Ensure sufficient quantities of water supplies.
- Extend the centralized water supply system to new developments and to areas relying upon on-site sewage disposal systems.
- Utilize modern storm water runoff control techniques to provide adequate storm water systems, detention basins, rooftop storage, dry wells or leaching basins, porous pavement and grass swales or any system of porous media.
- Encourage the use of low water or waterless systems for the treatment of human wastes.
- Require developers to install storm water facilities consistent with Township, County, State and the Delaware & Raritan Canal Commission regulations.

- Encourage combined drainage basin construction rather than basins for individual projects.
- Provide sanitary sewers to service areas identified in the Utility Service Plan Element.
- Ensure that the installation of sewers will be consistent with NJ DEP and County policies and will be fully coordinated with Township land use policies.
- Ensure that sewers will be extended to high priority areas, i.e. septic system problem areas.
- Establish a program to provide for the maintenance of existing on-site septic systems and other alternative waste water treatment systems.
- Ensure that solid wastes are managed in an economical and environmentally sensitive manner.
- Comply with all applicable solid waste collection, handling and disposal requirements of New Jersey and the County.
- Encourage the recovery of materials from solid wastes by promoting recycling through education and local enforcement.
- Establish a long-range capital improvement program for the provision, maintenance and expansion of municipal services, i.e. sewer, water and drainage facilities.

6. Community Facilities

- Ensure the provision of a range of community facilities to adequately accommodate existing and future Township needs in a convenient and cost effective manner.
- Work with the School District to determine the need for and location of additional school facilities, including building expansions.
- Continue to meet the increased service needs of citizens within the Township by expanding municipal space for the administration, court, police and public works.
- Provide for adequate police, fire, and rescue squad coverage.
- Expand Township library services and facilities to meet the needs of a growing population.
- Utilize existing and future public facilities, such as schools, for neighborhood recreation as much as possible.

- Maintain and upgrade existing public utility, fire, police, and all other public services as needed to adequately protect and serve existing and new developments.
- Insure that new development provides for its fair share of community facilities demanded by it.
- Adopt a “fix-it-first” policy that sets priorities for upgrading existing facilities.

7. Recreation

- Provide adequate amounts and kinds of park and recreation opportunities as one of the principal methods of upgrading and enhancing the physical environment of the Township.
- Enhance the interaction of Township residents with the environment by acquiring lands for public park use which also coincidentally preserves the most important natural resources of the Township.
- Provide ample outdoor recreation opportunities for all citizens in order to promote physical fitness and relieve the tensions and strains of everyday living.
- Accurately and promptly determine the desires and needs of various population groups in all areas of the Township and design and develop parks to reflect those expressed interests.
- Maintain, improve, and expand municipal park and recreation facilities in a comprehensive manner without exceeding the limits of the Township's financial capabilities.
- Provide recreation areas which are easily and readily accessible to all segments of the population, including the elderly.
- Improve the character of residential neighborhoods through park and recreational development and park maintenance and rehabilitation.
- Safety and security of all park facilities and at all recreational activities is a high priority.
- Development of park facilities should keep in mind reasonable flexibility of use, ease of maintenance, protection of natural features, and should minimize adverse effects on neighbors.
- Recreational programs and park facilities should be developed in a balanced manner providing programs and facilities for all age groups, and for many interests. All programs and facilities should

be accessible to handicapped residents. At least a portion of the programs and facilities should encourage family recreation and participation.

- Facility development and recreational programming should be done with maximum input from residents, with as much resident involvement in their development and operation as possible, and with as much information to the public on the availability of programs and facilities as is feasible.
- Recreational programs and park facilities should be used to unify the community, whenever possible.
- Park facilities should be designed as a system of parks and recreational open spaces, interconnected where possible, easily accessible to a broad spectrum of the community, and easily identified. Access to the park system by pedestrians and bicyclers should be encouraged, and to that end the Open Space and Recreation Plan element should be well coordinated with both the Circulation and Conservation Plan elements of this Master Plan.
- Ensure ready access to open space in compactly developed areas.
- Park facility improvements and recreational programs should be offered to users in a balanced geographical manner, recognizing that scarce resources will prevent the Township from providing all programs and facilities that may be desired by residents.
- Development and placement of park and recreation facilities should be sensitive to existing environmental features such as wetlands and wetland buffers, wildlife corridors, steep slopes, stream corridors and wooded areas.
- Plan for recreational facilities that operate all year round.
- Promote recreational programs and facilities which encourage new experiences, relaxation, escape and enjoyment.
- Be responsive to continually changing recreational trends.
- Develop a safe on and off-the-road bicycle and jogging network for exercising, transportation and sight-seeing.
- Encourage the location of new public facilities, such as parks, where they will be placed within effective service radii of the Plainsboro Village Area and other developing areas.
- Prepare and administer park and recreation surveys to determine actual needs and desires of Township residents and workers for recreational opportunity.

- Identify individual components of the Township's natural environment and discuss their importance to a comprehensive outdoor recreation system.
- Identify specific areas within the Township where land can be secured for recreational purposes and acquire or reserve park sites well in advance of actual park development.
- Promote a system of publicly owned interconnected recreational open space linkages or green belts which can help to unify the Township.
- Identify neighborhoods which have the most serious park deficiencies as those to receive highest priority for park land acquisition and development.
- Consider private parks and recreation facilities as being at least partially acceptable in meeting public neighborhood and community park needs and in satisfying recognized national and/or state outdoor recreation standards.
- Identify existing utility corridors and potential bikeway routes which can be used to meet limited recreation needs and form vital linkages between parks and other community facilities.
- Preserve existing and potential outdoor recreation areas and institutional land uses which serve a dual purpose of protecting the Township's natural features while providing pleasant surroundings for Township residents to enjoy in their leisure time.
- Coordinate park planning implementation with the Township recreation Department and Public Works Department, the School District and Township Committee.
- Actively strive to overcome the deficiencies of recreational areas and facility standards as identified by national, state, regional, county and local agencies and organizations.
- Encourage the practice of cluster subdivision, planned development and other land development practices which provides for park and recreation opportunities.
- Provide new recreation facilities concomitant with needs demonstrated by new development, population, and employment growth.
- Maintain flexibility to adapt to new circumstances and recreation interests.

- Explore the possibility of expanding the public use of school facilities for recreational and community activities on a year round basis.
- Evaluate the potential for adding more passive recreational uses to the existing Municipal Center Complex.
- Explore techniques that would protect and enhance existing tree-lined driveways and roadway frontages to create pleasant visual experiences.
- Extend park and recreation open space corridors to permanently protect significant portions of the Township's natural features.
- Require business uses to develop on-site recreational facilities for their employees.

8. Conservation

- Maintain and protect Plainsboro's rural heritage and open spaces.
- Permanently protect open spaces including critical areas such as open waters and stream corridors, hilltops, wetlands and associated buffers, the natural terrain including steep slopes, ponds, and wooded areas.
- Protect scenic vistas.
- Protect wildlife habitats and corridors, natural drainage lines, open spaces of high ecological value and other community assets.
- Maintain the highest levels of air quality which can reasonably be obtained.
- Promote the incorporation of energy conservation features into the design of new buildings and land development layouts to reduce energy consumption.
- Utilize the New Jersey State Planning Commission nitrate dilution model and NJ DEP target water quality standards as guidelines to construct septic systems and set appropriate minimum lot sizes in unsewered areas.
- Conserve wooded areas that border existing streams.
- Conserve and protect as many environmentally sensitive features as possible and to require new development to observe rigorous performance standards to minimize or eliminate any potential adverse environmental effects.

- Relate development standards and the permitted intensity of use to the carrying capacity of the soil and the objective of preserving natural features and habitats.
- Require developers to complete Environmental Impact Assessments if determined necessary by the Planning and Zoning Staff, the Development Review Committee or Environmental Advisory Committee.
- Encourage the formation of private land trusts to permanently protect sensitive features.
- Map areas of environmental concern.
- Recognize the Delaware & Raritan Canal Commission set of standards for aesthetic review and drainage requirements for all land within Zone A close to the Canal; and drainage review and approval for the Township.
- Reduce pavement widths, where appropriate, for internal residential streets.
- Use reverse frontage residential lots along major roadways with a permanent landscape buffer easement to include berming within the lot's rear yard area.
- Utilize "porous" pavement fire lane standards.
- Grade lots to secure proper drainage away from building.
- Exclude lands subject to periodic or occasional flooding (flood hazard areas) from residential occupancy or for any other purpose which might endanger life or property or aggravate the flood hazard.
- Promote drainage techniques which encourage evaporation and natural infiltration.
- Require natural features such as trees, hilltops and views, natural terrain and natural drainage lines to be preserved whenever possible in designing any development containing such features.
- Recognize open water as a community asset.
- Require a conscious effort be made to preserve all worthwhile trees and shrubs that exist on a site.
- Prohibit subdivisions, after adequate investigation, where there is a question of lot suitability. Factors such as poor drainage conditions or flood conditions where percolation tests or test borings show the ground conditions to be inadequate for proper sewage

disposal for on-lot sewage treatment or similar circumstances should be reviewed.

- Require developers to identify, protect, and/or submit, as part of their proposed development plans, information relative to the location and species of all existing trees or groups of trees having a caliper of six (6) inches or more; location of existing and anticipated high water table on the site; architectural or historic significance of any existing buildings to remain or to be removed; and earthwork balance (supply/shortage).
- Map soil types to identify the high water table and sites that may create problems for basement construction.
- Within all planned developments, give consideration to preservation and conservation of natural features, including large trees, groves, waterways, aquifer recharge areas, scenic or historic points, other community assets, and important habitats.
- Relate residential parking spaces to bedroom mix within a project in order to eliminate excessive site coverage due to excessive parking requirements.
- Require minimum common open space set aside standards in all residential and mixed use zones.
- Insure proper bulk and impervious coverage restrictions are created within all non-residential zones.
- Strictly enforce floodway and flood fringe regulations.
- Landscape center islands within cul-de-sacs.
- Plant trees throughout the community and require on-site tree protection during construction, reforestation, and the protection of wooded sites.
- Require landbanked portions of proposed parking and/or loading areas to remain unpaved but landscaped, where appropriate.
- Require smaller parking bays with reduced parking stall size, a requirement that a percentage of stalls be set aside for compact cars, and a requirement that landscaped islands be incorporated within all parking lots insure environmentally sound parking areas.
- Encourage the flexible arrangement of buildings, lots, yards and setback dimensions to permit development compatible with existing land uses and the surrounding environment.
- Utilize recently completed Township environmental mapping, i.e., soil types, flood hazard areas, major woodlands, wetlands and

topography, and continue to expand the mapping of environmental features if necessary.

- Permanently protect fresh water wetlands, wildlife habitats and corridors, and insure the protection of groundwater quality.
- Evaluate procedures that would maximize opportunities to achieve contiguous open space in all non-residential developments.
- Expand use of conservation easements as a method to permanently protect and enhance environmental features.
- Develop a strategy for establishing a public greenbelt system through use of ramble easements.
- Adopt program guidelines for the reforestation of lands within development projects where appropriate.
- Study the appropriateness of establishing rural residential design standards in very low density residential zoning districts, i.e., drainage swales, narrow road cartways, flag lots, no curbs and sidewalks, except at intersections, and longer cul-de-sac lengths with limitations as to the number of residential lots that would be served by such streets.

9. Economic Development

- Encourage the development of industrial, office, research, commercial, and service uses, selected and regulated so as to preclude land use incompatibilities and in an amount that would increase the tax base which supports the local government and the public school system without disturbing the fragile residential-agricultural-open space balance in the Township.
- Limit office, research and industrial uses to the areas already set aside for such uses by reason of accessibility to transportation.
- Utilize the leverage offered by Plainsboro's unique existing and prospective character to continue to attract office and research development of the highest quality.
- Encourage retail and service activities located in well-designed shopping areas with direct access from major roadways and in an amount not in excess of that needed to satisfy the commercial demands of local residents and businesses.
- Examine methods to promote adequacy, variety, and convenience of shopping for local residents, while at the same time discouraging strip commercial development along major roadways.

- Evaluate techniques that will preserve and improve existing commercial centers as well as maintain strict performance and design standards for development of industrial and commercial uses.
- Design employment centers and industrial areas to be harmonious with adjacent development.
- Develop a Township economic development brochure and Master Plan summary document, i.e. map brochure, possibly in conjunction with other municipalities in the region.
- Explore the balance between local job growth and housing construction.
- Encourage retention of farmland as an agricultural business.
- Evaluate alternate strategies for balancing non-residential development in relation to market demand.
- Support state legislation to more tightly limit and control access permits on state highways and the re-examination of "transportation development districts."
- Review and recognize surrounding municipal planning efforts by coordinating the Master Plan with the land uses of adjoining municipalities.
- Evaluate consistency with regional planning efforts, i.e., the State Plan, Lower Raritan/Middlesex County Water Quality Management Plan, Delaware & Raritan Canal Commission, and Middlesex County plans.
- Explore methods of reinforcing Township "identity" within the central New Jersey area as well as techniques to promote community pride and spirit.
- Support community-based organizations involved in revitalizing neighborhoods.

10. Historic Preservation

- Safeguard the heritage of the Township by preserving resources which reflect elements of its cultural, social, economic and architectural history.
- Stabilize and improve property values by preventing the unnecessary demolition of historic resources.
- Foster civic beauty in the built environment.

- Promote appreciation of historic sites for the education, pleasure and welfare of the citizens of the Township and its visitors.
- Maintain and develop an appropriate and harmonious setting for the historic and architecturally significant buildings, structures, sites, objects, or districts within the Township.
- Encourage the continued use of historic resources and facilitate their appropriate reuse.
- Spur beautification and private reinvestment.
- Manage change by preventing alteration or new construction not in keeping with an historic landmark or district.
- Encourage the proper maintenance and preservation of historic settings and landscapes.
- Encourage appropriate alterations of historic landmarks and buildings.
- Enhance the visual and aesthetic character, diversity, continuity and interest of the Township.

11. Recycling Element

- Promote recycling to be compatible with the state and county recycling program.
- Provide for the collection, disposition and recycling of recyclable materials designated in the Township recycling ordinance.
- Strive to recycle as much total municipal waste as possible.
- Require all residents and businesses to separate and recycle solid waste.

LAND USE PLAN



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III. LAND USE PLAN ELEMENT

A. Introduction

Plainsboro is a desirable community within which to live, work, and relax. The Township offers a blend of suburban and rural atmospheres influenced as much by its expansive farmland and open space as by its proximity to Princeton and its midway location between the City of Philadelphia and New York City. It is an hour's drive to the Atlantic Ocean and the rolling hills of New Jersey. The Township is 11.8 square miles with a population slightly over 21,000. Located in the southern section of Middlesex County, Plainsboro borders the Townships of Princeton, West Windsor and East Windsor in Mercer County and the Townships of Cranbury and South Brunswick in Middlesex County (**See Figure 1: Vicinity Map**). Plainsboro is noted as a premier location for major corporate, professional office, and research facilities.

Historians differ as to how Plainsboro acquired its name. The oldest section of the community is the intersection of Plainsboro and Dey Roads. A tavern, constructed in the early 1700's and still standing today, called "Plane Tavern" was at this location. Some historians argue that the old bottles found by local residents give evidence that the Township was first called "Planesborough" after the tavern. Other researchers maintain that the area was first called the "Borough of the Plains" or simply "The Plains". The first U.S. Post Office designated the area as "Plainsborough". A subsequent Presidential decree in 1894 shortened the name to "Plainsboro".



Historic Office Conversion

its innovative certified dairy farm. Designed to produce clean, high quality milk and milk formulas for infant feeding at a time before pasteurization was a common practice, the farm grew to become the largest certified dairy farm in the world. The farm's "Rotary Combine Milking System", also known as the

The Unami, a sub-tribe of the Lenni Lenape Native Americans, were the first inhabitants of the Plainsboro area. The Lenni Lenape were a part of the larger Delaware tribe. The Plainsboro area offered fertile soil and ample water to suit this peace-loving tribe's agricultural interests.

The Dutch, migrating from the original settlement of Peter Minuet in New Amsterdam during the mid 1600's, became the first European settlers. English settlers soon joined them. Given its climate, good soils, and available water, agriculture became the important economic focus. In 1897, the Walker-Gordon Laboratory Company selected Plainsboro as the site for

“Rotolactor”, a 50 stall merry-go-round milking facility, went into operation in 1930. The farm and its Rotolactor became a novel tourist attraction.

The Walker-Gordon dairy operation ceased in 1971, about the same time that the community transformed from a small rural farm community into a more modern and built up suburban area.

The First Presbyterian Church of Plainsboro was established in 1879. The current building was constructed in 1932 on the site of the original church.

During the 1970's, the community experienced unprecedented residential development led by the Linpro Company. During the 1970's and 80's, the community's largest property owner, Princeton University, began to market and develop its prestigious office park, the Princeton Forrestal Center. Today, the community is noted for its balance of commercial, office, and residential development and the preservation of open space and farmland. The end result is a quality suburban community that retains much of its agricultural and open space heritage within a high quality built environment.



Historic Wicoff House

From an almost exclusively rural, farming community, Plainsboro Township has evolved in about three (3) decades into a community exhibiting a wide variety of conditions, uses, and life styles. The Route 1 corridor contains major office, research, shopping, and medium density residential developments. On both sides of Plainsboro Road, between the Cranbury Brook and Dey Road, the Linpro Company, otherwise known as Lincoln Properties, completed its large mixed-use development which began in the 1970's. In contrast to this once rapidly developing area are the secluded woods near Devil's Brook, east of the railroad, and the still homogeneous rural areas south of the

Cranbury Brook extending to the Millstone River and the Cranbury Township border.

The major focal objective of Plainsboro's land use policies has been to concentrate development through the timely provision of supportive infrastructure facilities, such as roads, public sewers and centralized water systems, in the desired growth areas. As a result, the agricultural activities on those of the Township's prime farmlands that have not been set aside for more intensive development are still protected against the presence of incompatible land uses. This condition is delicate because Plainsboro is located in the New York-Philadelphia corridor and continues to be subjected to ever intensifying urbanizing pressures from both directions. In the past, as the lands which were zoned so as to permit the development of housing, offices, and industry became used up, the pressure for the opening up of all of the remaining buildable land become more and more intense. Today, most of these developable lands have

been occupied by buildings, parking lots, and other site improvements. Infill development will continue to occur east of the railroad tracks while larger contiguous parcels located west of the railroad tracks will be the subject of development applications like that of the Princeton Medical Center, Princeton University, and the Patrinely Group.

The Land Use Plan Element is based on an overall development strategy for Plainsboro Township designed to help it achieve its principles, assumptions, policies, standards, and objectives in the areas specified herein. The Land Use Plan is closely related to all Master Plan elements, but most specifically with the housing, circulation, utility, community facilities, and recreation plan elements in that all are designed to accommodate the level of growth allowed for within the Township. The Land Use Plan is also respectful of the natural environment and historic resources, while permitting continued growth and development. The Element supports policies, standards, and assumptions that protect and enhance existing topography, soil conditions, groundwater supply, natural drainage patterns, flood plains, wetlands, scenic vistas, and woodlands.

B. New Jersey State Development and Redevelopment Plan

The Township received Initial State Plan Endorsement on January 18, 2006 from the State Planning Commission. As part of this endorsement the Township has sought to have the State Planning Areas Map amended to reflect local land use realities. The map amendments are discussed below.

There is a growing consensus that smart growth encourages economic development that will create healthy, vital communities. Smart growth promotes more options in transportation, housing, and employment. It creates communities with a strong sense of place. The result of this healthier community environment is a better place to do business as well. Businesses throughout the country and state are finding that smart growth is good for their bottom line and they are choosing to work actively to promote smart growth in their communities. Business leaders and public officials have realized that they have a choice – they can help create the communities they would like to live and work in, or they can live with the consequences of inaction.

The reality is that the lack of coordinated smart growth planning has resulted in sprawling patterns of land use. Sprawl is inherently

inefficient; homes, jobs, shopping, recreation and schools are often separated by large distances. This creates a dependence on the automobile which in turn puts



Westin Hotel

an unrealistic demand on our roadway systems. Congestion on the roads reduces the productivity of freight transportation and the reliability of employees. In fact all infrastructure requires expansion if we have sprawl. Ultimately residents and businesses must pay for these costs, yet all the while the quality of life in the community is diminishing.

The Township has sought through its Master Plan and land use approvals to create a pattern of development that does not result in sprawl. The Township will continue to promote policies that support smart growth and compact development patterns.

According to the State Office of Smart Growth the State Plan “provides a balance between growth and conservation by designating areas that share common conditions with regard to development and environmental features”. The State Plan map for the Township reflects the following categories: Suburban Planning Area (PA2), Rural Planning Area (PA4), Environmentally Sensitive Planning Area (PA5), Municipal Parks (PA6), State Parks (PA8), and Critical Environmental Sites (CES). The bulk of the land area in the Township is covered by the PA2 designation which includes all developed or developing lands while the PA4 designation covers the Townships farmland preservation area located just south of the Cranbury Brook.

Sixty-seven percent (67%) or 5,185 acres of the Township is within Planning Area 2, nineteen percent (19%) or 1,451 acres is in Planning Area 4, and fourteen percent (14%) is in Planning Area 5.

The State Plan Delineation Criteria and Intent for both the PA2 and PA4 areas are noted below:

1. Planning Area 2 “Delineation Criteria”
 - a. Population density of less than 1,000 people per square mile.
 - b. Natural systems and infrastructure systems reasonably anticipated to be in place by 2020 that have the capacity to support development that meets the Policy Objectives of this Planning Area. These systems include public water supply, sewerage collection and treatment facilities, stormwater, transportation, public schools, and parks.
 - c. A land area contiguous to the Metropolitan Planning Area.
 - d. Land area greater than one square mile.
2. Planning Area 2 “Intent”
 - a. Provide for much of the State’s future development.
 - b. Promote growth in Centers and other compact forms.
 - c. Protect the character of existing stable communities.

- d. Protect natural resources.
- e. Redesign areas of sprawl.
- f. Reverse the current trend toward further sprawl.
- g. Revitalize cities and towns.

3. Planning Area 4 “Delineation Criteria”

- a. Population density of less than 1,000 people per square mile.
- b. Area greater than one square mile.
- c. Land currently in agricultural or natural production or having a strong potential for production.
- d. Undeveloped wooded tracts, vacant lands; large, contiguous tracts of agricultural lands; and other areas outside Centers predominantly served by two-lane rural roads and individual wells and septic systems, with some Centers served by sewers and public water.

4. Planning Area 4 “Intent”

- a. Maintain the Environs as large contiguous areas of farmland and other lands.
- b. Revitalize cities and towns.
- c. Accommodate growth in Centers.
- d. Promote a viable agricultural industry.
- e. Protect the character of existing stable communities.
- f. Confine programmed sewers and public water services to Centers.

As can be seen on **Figure 2: State Plan Policy Area Map**, all of the state planning areas have been shown including the Environmentally Sensitive Planning Area (PA5), the Municipal Parks (PA6), State Parks (PA8), and the Critical Environmental Sites. The PA5 areas located east of the railroad tracks are comprised of wooded areas, stream corridors, and wetlands, and some farmland. The PA6 areas include the 18-hole Middlesex County Golf Course as well as the large county park called “The Preserve”. In addition, the PA8 area is defined as the D&R Canal Park. Critical Environmental Sites in the Township are generally defined as stream corridors, wetlands and some wooded areas including permanently preserved open spaces.

During the Cross Acceptance and Plan Endorsement Process the Township informed the State that certain of their mapped Critical Environmental Sites should be fine tuned to reflect the realities of local development activity and proposed improvement projects. As such the Township requested the following: to remove the CES designation from the Barclay Square housing site, to remove the CES designation from the existing BMS Child Care and parking lot site and existing Campus Road, to acknowledge that the planned extension of Campus Road will have to cross over an existing CES area, and to change the shape of the CES area to reflect the realities of the Walker Gordon farms development site, facilities at the United Water-Princeton Meadows Sanitary Sewer Treatment Plant site, new Village Residential II housing, and the Villas and Highlands at Cranbury Brook housing development.

C. Rural Land Uses

Township efforts to preserve agricultural lands are likely to produce results only if three essential pre-conditions exist. The first is that the amount of contiguous agricultural land must be sufficient to permit the creation of an environment conducive to the continuation of farming and the provision of support facilities. The second is a clear separation of agricultural lands from other types of land uses, and



Farmland

especially from residential ones. The third is that the value of land in the agricultural area continues to reflect farming as a viable alternative to development. These three pre-conditions are believed to be operative, with farmland preservation as an important policy objective, the Township will continue to develop and enact effective preservation programs as outlined herein.

Since 1982, the Township has been successful in encouraging agricultural activities and in preserving farmland within its agricultural zones south of the Plainsboro Pond and Cranbury Brook. The only development "intrusions" into this 1,400 acre area has been 14 single-family detached homes on 1-acre lots at the corner of Nostrand Road and Cranbury Neck Road, which were approved prior to the adoption of the 1982 Master Plan, modest residential expansion of the Beechwood neighborhood, and some scattered housing on minimum 6 acre lots. In addition, the West Windsor-Plainsboro Regional School District has constructed a new Community Middle School on a 30.47-acre parcel along Grovers Mill Road just south of the Plainsboro Pond. The School District has also constructed the Millstone Elementary school on an adjacent 38.95-acre parcel and a new High School North on an 89.76-acre parcel.

The R-100 and R-150 rural residential areas, which comprise the Township's agricultural and farmland preservation zones, remain extremely viable for preserving farmland because of their predominant agricultural use. The R-100 zone contains 798.12 acres and the R-150 zone contains 661.87 acres. Over 70% of the area's total acreage continues to be farmed. The lack of adequate major road



Farmland bordered by trees

access coupled with little or no public sewer capacity has helped to preserve this area from intense development. Those municipalities which adjoin Plainsboro to the south and east (Cranbury and West Windsor Townships) have primarily agricultural and low density residential land uses which complement the agricultural districts in the Township. Both zones continue to exist in relative isolation, being well buffered from adjoining zones and not located in the direct path of major outside regional growth influences and pressures. There are no public sewer and centralized water lines within the area, except for those which have been designed with limited capacity solely to service the aforementioned public school sites and clustered housing developments. No major regional roadways provide access into and out of the area and none are planned.

The 1982 Township Master Plan recommended the permanent preservation of farmlands be attempted through use of the Transfer of Development Credits (TDC) technique, combined with an increase in the minimum lot area requirement in the agricultural "preservation" area from one (1) acre to six (6) or ten (10) acres. This transfer technique recommendation resulted from a detailed study of varied agricultural preservation programs and their applicability to the Township, undertaken by the Planning Board in the early 1980's.

To encourage landowners in the agricultural preservation area to participate in the preservation program, by placing the necessary deed restrictions on their land, it was recommended that they be awarded one (1) development credit for each acre of developable land. The R-300 zone was designated as the receiving area because it was capable of absorbing higher density development. The TDC classification in the R-300 zone would have permitted a single family detached house at an as-of-right base density of



Preserved Farmland Sign

one unit per acre. A Conditional Use zoning provision would permit lot area reductions below a one-acre lot size if either a public water or sewer system was available and if any increase in density in the area was accompanied by a significant preservation of land in the agricultural preservation area through the transfer mechanism. A detailed transfer of development credits mechanism was to have been developed as part of an ordinance following adoption of the 1982 Master Plan. To determine the number of credits to which he or she would have been entitled, a landowner in the agricultural preservation area would prepare a sketch plat meeting all basic requirements of the ordinance for a one-acre residential lot subdivision and submit it to the Planning Board for its review and approval. The number of credits available for sale and transfer into the receiving area would equal the number of one-acre minimum lots in the approved sketch plat.

Absent state enabling legislation, which would have clearly permitted implementation of transfer of development credits at the local level, the Township has sought since 1982 to foster agricultural activities and to encourage farming to continue by zoning for agricultural development with minimum 6-acre lots.

In order to encourage the retention of significant areas of contiguous acreage for use as farming and related agricultural activities, a variety of techniques must be utilized where feasible including TDC and variations on its premise, the use of agricultural clustering, permanent agricultural deed restrictions and acquisition of farmland easements which appear to be but a few of the techniques that continue to warrant further evaluation in order to provide a broad range of options from which a permanent preservation scheme can be derived.

This Rural Land Use section is consistent with all Township policies, standards, and assumptions. Specifically, the planning in this section implements the Circulation Plan Element by discouraging the widening of roadways beyond 2-lanes. The Utility Plan Element is supported because planned housing areas will only be serviced with community septic systems or public sewer in combination with centralized water. It is recommended that the approximately 1,400 acres of primarily Class I soils be designated on the Land Use Plan as an agricultural preservation area. As explained below, this area will always remain well insulated from any adjacent residential development both in Plainsboro and in adjoining municipalities.

1. Regional Guidelines

The above recommendations are in accordance with applicable regional guidelines. The State Plan Policy Area Map



Residential Farmland Housing Cluster

specifically designates this area for agriculture (PA4 Rural Planning Area formerly Tiers 6a and 6b) as does the Middlesex County Master Plan and the final Route One Regional Forum Plan.

2. Adjoining Municipalities

The proposed agricultural lands merge harmoniously with similar lands in Cranbury, which are also planned and zoned for agricultural preservation with a permitted residential density of one unit per six (6) acres in the A-100 Agricultural Preservation Zone. The adjacent lands in West Windsor Township, which are buffered from those in Plainsboro by the Millstone River, are mapped in a low-density residential zoning classification east of the railroad tracks and research and development west of the railroad tracks. To the north, across Cranbury Brook, lies existing multi-family housing development which is separated from the proposed agricultural area by the substantial setback and buffers provided by Cranbury Brook and associated wetlands and existing ramble easements. All of these land uses will prevent any future conflicts between residential and agricultural uses.

The R-100 and R-150 Rural Residential Zones correspond to the Rural Land Use classification and permit the following uses:

- Agriculture and farms
- Farm buildings
- Nurseries and greenhouses
- Riding academies, bridle paths and stables
- Detached single-family dwellings
- Parks and playgrounds
- Conservation and open space areas
- Rural residential planned village clusters
- Childcare centers
- Necessary public utilities and services, including schools and other public facilities
- Public schools
- Buildings and structures owned and operated by the Township

The minimum total area to be developed as a planned village cluster development is 150 acres in the R-100 zone and 150 acres in the R-150 zone. The maximum unit density must be calculated on the basis of 0.3 dwelling units per acre of developable land plus 0.166 dwelling units per acre of environmentally constrained land. A minimum of 75% of the site must be devoted to permanent open space or recreational areas. The minimum house lot size is 20,000 square feet with the average lot not less than 25,000 square feet and with a minimum lot frontage of 125 feet. The maximum building height is 35 feet. All clustered residential lots must also be serviced by a public centralized water system, community septic system or individual septic systems acceptable to the New Jersey Department of Environmental Protection and to the Township.

Conditional uses are permitted for the following:

- Farm stands, primarily for the sale of dairy and agricultural products grown on the farm
- Necessary public utilities and services
- Churches or other places of worship
- Family day care homes
- Camps for children
- Housing for transient or migratory farm workers
- Detached single-family clusters on minimum 150-acre tracts with homes on minimum one-acre lots

Conditional use detached single-family cluster development is permitted only if the maximum number of residential lots is no greater than the number arrived at by the applicant submitting a sketch plat showing a conventional 6-acre lot subdivision conforming to the permitted zoning bulk and area regulations of the land development ordinance.

To the maximum extent practicable, cluster developments must be located on land not well suited for agricultural purposes because of size, location, proximity to neighboring land uses, existing tree mass, access, shape, quality of soil and drainage. The design and location of rural village clusters must give priority to protecting the most suitable soils for subsurface septic disposal in unsewered areas only; to leaving prime agricultural soils for agricultural uses; to avoiding environmentally constrained areas; to locating dwellings along wooded areas to reduce impacts upon agriculture; to provide summer shade and shelter from winter wind and to enable new residential construction to be visually absorbed by natural landscape features; to not blocking or interrupting scenic vistas, as seen from the public roadways; and to locating dwelling units and other improvements on the lower-quality agricultural soils.

When the major purpose of a rural village cluster is to preserve open space for agricultural and farming purposes, all dwelling units must be located and constructed at such places on the tract and in such a manner that, to the greatest extent possible, they will not segment land of any one farm into awkward or odd-shaped parcel sizes difficult to support viable farming operations, nor interfere with the conduct of agriculture, on- or off-site, by limiting or interfering with the access to fields or the effectiveness and efficiency of the farmer and farm equipment, including crop-spraying aircraft.



Farm Vehicles

The minimum 6-acre lot size in both rural residential areas continues to be viable for new single-family residential construction. In fact, the Township has found that even a minimum 10-acre lot size would be reasonable within either zone given the large tract sizes and rural/agricultural characteristics of the area.

The Rural Land Use areas are compatible with planning and zoning in adjacent municipalities and other land uses within Plainsboro Township. To the north is Linpro's high density PCD zone, which has been effectively separated from rural areas by a wide band of environmentally sensitive areas. To the east is Cranbury Township's A-100 Agricultural Preservation Zone, which permits residential development on minimum 6-acre lots. To the south in West Windsor Township is the R-2 Low-Density Residential Zone. This area is both visually and physically separated from the R-100 and R-150 areas by the Millstone River. To the west is the existing R-85 Zone in Plainsboro Township, which permits single family residential development on minimum 15,000 square foot lots.

The Planning Board has broadened its efforts to protect agricultural lands and open space by establishing a program that redirects growth pressure away from these two sensitive zones. The Planning Board has chosen to continue to permit agricultural and residential development on minimum 6 acre lots, to permit the clustering of the base 6 acre residential yield on minimum 1 acre lots given a large minimum tract size, and to permanently preserve at least 75% of its rural land mass by permitting the clustering of a maximum 342 new homes within three (3) designated housing areas. Although the location of these housing areas is fixed, their general shapes can change as a result of Planning Board input and refinements at the time of actual site plan and subdivision review and approval. Two of the three areas in the R-100 Zone have been developed and the third area in the R-150 Zone is occupied by preserved and pending preserved farmland. The Rural Land Use areas naturally permit and even encourage agriculture and farms, farm buildings, nurseries and greenhouses, riding academies, bridle paths and stables, parks and playgrounds, and conservation and open space areas.

Homes located within clustered housing areas are permitted to locate on an average lot area of not less than 25,000 square feet and the minimum lot area would be 20,000 square feet. The Rural Land Use areas implement the following major Township land use objectives:

1. Protect environmentally sensitive lands, i.e., floodplains, wetlands and wooded areas.
2. Permanently protect large contiguous agricultural and open space parcels with desirable vistas and views from roadways.
3. Promote Township jobs/housing balance.
4. Minimize undesirable farmland/residential development conflicts.



Housing in Farmland Area

5. Provide for middle and upper income single-family detached housing.
6. Locate rural village clusters next to public schools, parks and utilities or along minor and/or scenic roadways with sufficient setbacks to promote open space views.

The three (3) clustered housing areas take full advantage of existing 12 and 16-inch New Jersey American Water lines, which have been reasonably extended to promote fire protection and a reliable and safe source of drinking water with the additional benefit of not having to impact upon the Township's valuable ground water resources. A maximum 342 dwelling unit yield within these housing areas also permits the Township to not only meet but exceed the NJ DEP nitrate dilution model target water quality standard of 5 milligrams per liter based upon a 1.6 to 2 acre minimum lot size for this watershed, because cluster development within the Rural Land Use areas is dependent upon either individual or community septic systems in the absence of public sewer. In addition, the maximum development density permits the Township's rural areas to maintain their existing 2-lane rural roadway network with minimal shoulder and intersection improvements while also maintaining a Level of Service "C" to accommodate existing traffic, site traffic and other regional growth.



Farm Stand

Today, the Grovers Mill residential development has taken place in the R-100 zone which has resulted in the permanent preservation of hundreds of acres of farmland and has created meaningful open spaces within the development. The Grovers Mill residential development was built in two cluster locations in accordance with the Master Plan recommendations noted above and being consistent with the ordinance requirements that permitted clusters in exchange for permanent farmland preservation. In addition, the Grovers Mill residential development also resulted in the preservation of lands located in the R-350 zone, which are now part of the Plainsboro Preserve, by transferring residential units into this rural village cluster development.

One aspect of land development within these zones that should be explored in some depth by the Township is "Agritourism". Agritourism promotes the use of agricultural amenities and resources, such as open fields, farm houses, livestock, and other scenic components of the farm for the purpose of offering fee-based recreational opportunities. Agritourism can benefit the Township by attracting tourists to the area who not only spend time at participating farms, but spend money in other local businesses. Farmers benefit by supplementing their income

from these added activities.

There are many potential agritourism opportunities for farmers. Farm related activities include roadside stands, farm market, Christmas tree farm/cut your own, gift shop/agricultural crafts, winery, picnic areas, petting zoos, agricultural fair/show/festivals, serving food and drinks, wagon/sleigh rides, corn maze, hay rides, farm tours, and pick-your-own fruits and vegetables. Non-farm activities may include hunting, fishing, bed and breakfast, camping, horseback riding, hiking, and cross country skiing.

Other agritourism activities may include school tours, farm-related museum, garden/nursery tours, agricultural exhibits/tours, and crop identification programs.

Take note the Land Use Map shows all of the present land use/zoning categories as discussed in this Element as well as the location of all other major land use categories. The land use categories on this map identifies zones in which agriculture is a permitted use. The following is a listing of these zones and uses:

1. R-100 Zone	Agriculture and farms, farm buildings, nurseries and greenhouses, riding academies, bridle paths and stables, farm stands, housing facilities for transient or migratory farm workers.
2, R-150 Zone	Agriculture and farms, farm buildings, nurseries and greenhouses, riding academies, bridle paths and stables, farm stands, housing facilities for transient or migratory farm workers.
3. R-200 Zone	All farm and agriculture activities, including nurseries, small animal and livestock raising; the sale of farm or dairy produce.
4. R-300 Zone	Conservation and open space areas, e.g. wilderness areas, forest, scenic areas, and woodlot management; agriculture.
5. R-350 Zone	Agriculture.
6. GB Zone	All farm and agricultural uses.
7. OB-1 Zone	All farm and agricultural activities, including nurseries an small animals and livestock.
8. I-100 Zone	Agricultural activities.
9. PCD Zone	Agricultural activities.
10. PMUD Zone	Agricultural activities.
11. R-95 Zone	Farm and agricultural activities.
12. VC Zone	Farm market.

D. Residential Land Uses

The Land Use Plan makes provision for eight (8) residential land use categories which range from the traditional single-family homes on 3-acre lots to village residential areas to multi-family housing at up to twelve (12) units per gross acre.

The residential component of the Land Use Plan is generally consistent with the Utility Service Element since those areas located outside of sewer service areas

are classified as low density, which can be serviced by on-site wastewater disposal systems. Similarly, the low density residential areas correspond to environmentally sensitive areas, thereby being consistent with the Conservation Plan Element. The Planned Medium-High Density and Medium Density residential areas are consistent with the Housing and Fair Share Element because they provide opportunities for low and moderate income housing construction and a variety of housing styles and types. The medium and high density residential areas are also located adjacent to major collector and arterial roadways and are serviced by public sewer and centralized water systems.

The following describes the several residential land use classifications proposed in this plan:

1. Low Density Residential Light Impact Zone (one du/3 acres, R-350)

In the R-350 low density residential zone, the following uses are permitted:

- Detached single-family dwellings
- Parks, playgrounds and golf courses
- Childcare centers
- Membership clubs for outdoor sports
- Necessary public utilities and services, including schools and other public facilities
- Buildings and structures owned and operated by the Township
- Home occupations and professional offices
- Planned residential clusters with no less than 50% of tract area devoted to common space

The minimum lot size is three (3) acres with a maximum unit density of one dwelling unit per lot. The minimum lot frontage is 250 feet and maximum building height is 35 feet.

Conditional uses are permitted for the following:

- Agricultural activities
- Institutions
- Camps for children
- Family day care homes

This low-density residential category is located adjacent to South Brunswick Township, to the north, bordered by Scotts Corner Road and Friendship Road to the



Environmental Education Center

east, the existing R-300 zone and a stream corridor to the south and the existing railroad tracks to the west. The existing R-350 zone also completely surrounds the new I-100 zone district, which has vehicular access from Schalks Crossing Road. Lands located in the R-350 zone are generally impacted by a lake, soils with seasonal high water table, wetlands, flood hazard areas and woodlands, which make them generally unsuitable for intense development. Only small islands of developable land exist within the zone. No public sewer or centralized water service exists within or in proximity to this zone. Because of the area's varied and important natural conditions, the planning is sufficiently flexible to allow development on suitable sites and to encourage the conservation of those areas that are environmentally sensitive.

The area placed in this residential classification includes most of the lands north of Shallow Brook, which were previously planned and zoned for heavy industrial development (formerly the I-200 Industrial zone district), totaling approximately 943.98 acres. The land use change from I-200 to R-350 was made to avoid obvious future incompatibility between residential and industrial uses, especially the possibility of heavy industrial and commuter traffic traveling by and through nearby residential areas. The existing IRL buildings with access from Schalks Crossing Road on 38.28 acres will continue to remain as a permitted activity within the I-100 Limited Industrial zone district.

The R-350 Low Density Residential Light Impact Zone has been found to specifically implement many of the goals and policies of this Master Plan. Specifically, it contributes to a better local balance between total jobs and housing units thereby moving the Township toward regional plan consistency, it provides for more single family detached housing units, permits clustering to preserve critical environmental and open space corridors, and reduces negative industrial traffic impacts, i.e. noise, congestion, and safety at intersections and on nearby bridges. The R-350 zone is compatible with planning and zoning in adjacent municipalities and other zones within Plainsboro Township. To the north and east in South Brunswick, the land is planned for open space, conservation, recreation and rural residential. South Brunswick zoning requires a minimum of 2 acres and 3 acres of land per dwelling unit and also permits clustering on minimum 1 acre lots. The minimum lot area for agricultural uses is 5 acres. An area located further to the east of the zone in nearby Cranbury Township is classified Light Impact Residential which also permits single family detached residential on minimum 4 acre lots. To the south in Plainsboro Township are the Shallow Brook and associated flood plains, wetlands and woodlands which function as a substantial natural buffer between the R-300 low density residential zone and the R-350 zone. Residential single-family detached development on minimum 1-acre lots is currently permitted in the R-300 zone.

This low density residential area contains a desirable natural setting for housing. Residential development is compatible with and preserves environmentally sensitive areas and enhances wildlife corridors.

Residential development within this zone should be aware of the need to accommodate the planned northerly alignment of State Route 92.

This low density residential area also permits single family detached dwellings clustered on minimum 1 acre lots, provided that the maximum number of clustered dwelling units cannot exceed the number arrived at by an applicant submitting a sketch plat showing a conventional 3 acre subdivision which meets all the Township's site plan and subdivision requirements.

In addition, the zone also permits a cluster bonus of one building lot for each upland acre (as defined in the land development ordinance) to be conveyed to the Township, provided that the developer permits direct vehicular access to the conveyed property and to the lake, that the property adjoins lands already dedicated or conveyed to the Township, and that the Township has already agreed to accept such a conveyance prior to the submission of a development application. Clustering in the zone also requires that no less than 50% of the tract be devoted to common open space and that recreational facilities be provided by the developer.

This zone is largely defined by preserved open space and the 1,000 acre Plainsboro Preserve and Environmental Education Center which has all but removed all development potential from this zone other than the recognition of existing houses located along roadway frontages.

2. Low Density Residential Zone (one du/acre, R-300)

In the R-300 low density residential zone, the following uses are permitted:

- Detached single-family dwellings
- Parks and playgrounds
- Conservation and open space areas
- Necessary public utilities and services, including schools and other public facilities
- Cemeteries
- Volunteer organizations
- Planned residential cluster Type I on minimum 100 acre tracts at a maximum residential density of .65 du's per gross acre
- Planned residential cluster Type II on minimum 50 acre tracts at a maximum residential density of .55 du's per gross acre



Single Family Detached House

- Planned residential cluster Type III on minimum 100 acre tracts at a maximum residential density of .34 du's per gross acre
- Childcare centers
- Home occupations and professional offices

The maximum dwelling unit density is one unit per lot. Minimum lot size is 43,560 square feet with a minimum frontage of 200 feet. The maximum building height is 35 feet.

Conditional uses are permitted for the following:

- Agricultural activities
- Institutions
- Camps for children
- Family day care homes

This land use classification is located east of the Amtrak railroad tracks along Dey Road. The northern boundary of this area consists of the Shallow Brook which, with its stream corridor and adjacent poor quality soils and mature tree masses, provides a permanent buffer and land use separation between any residential development within the zone and the existing R-350 zone to the north of the Shallow Brook. The R-350 zone allows for single-family detached residential development at one du/3 acres and clustering on minimum 1 acre lots and even smaller lots provided septic system suitability is proven by the developer.

The southern border of the R-300 area abuts the existing high density PCD zone. The PCD zone contains thousands of residential dwelling units developed by Linpro, an 18-hole Middlesex County Golf Course, the Enterprise Business Park, and the Princeton Meadows Neighborhood Shopping Center. The PCD zone also permits the development of low and moderate-income housing.

To the west, the R-300 zone is bordered by the VC Village Center Zone and the Amtrak railroad tracks. The Queenship of Mary Church is located opposite the Municipal Center within the R-300 zone along the western edge. To the east, the zone is bordered by South Brunswick Township and is also within proximity to Cranbury Township. The land in



Single Family Detached House

South Brunswick is planned for open space conservation, recreation, and rural residential development. South Brunswick requires a minimum of 2

acres and 3 acres of land per dwelling unit and also permits clustering on minimum 1 acre lots. The area in Cranbury is classified Light Impact Residential which permits single family detached residential on minimum 4 acre lots. Two (2) minimum 1-acre single-family residential development projects known as Harding Hills and Brentwood Estates are located within the eastern portion of the R-300 zone. The construction at both of these projects has been completed for a number of years.

The R-300 zone contains approximately 840.31 total acres. Dey Road, Scudders Mill Road, and Plainsboro Road are the three major roadways which service the zone. Middlesex County someday plans to widen Dey Road from 2 to 4 lanes and the Township has implemented a secondary parallel collector roadway network to interconnect various development parcels located north of Dey Road in the R-300 zone. The collector roadway is known as Woodside Drive. The zone contains many scattered single-family detached dwellings located along Dey Road, Scotts Corner Road and Eiker Road. A significant amount of residential development within the R-300 zone is serviced by public sewer and centralized water.

The R-300 zone permits single-family dwellings on minimum 1-acre lots as well as parks and playgrounds, conservation and open space areas, and planned residential clusters on minimum 100-acre tracts. The maximum residential density of a planned residential cluster is not permitted to exceed .65 dwelling units per gross acre. In addition, planned residential clusters must devote at least 45% of their land mass to conservation, open space, and/or recreational purposes and be serviced with a public sewer and centralized water system. Single-family homes in a planned residential cluster development would have to be located on minimum 20,000 square foot lots. The R-300 zone provides the Township with a low-density residential environment that promotes a desirable and necessary contrast from townhouse and garden apartment living in the nearby PCD zone and elsewhere.

Much of the new residential subdivision activity in the R-300 zone has been clustered to create significant amounts of common open space that has been permanently preserved as natural conservation areas, buffer areas, farm land or land used for a Township Community Park and the Township Public Works facility.

3. Low Density Residential Zone (one du/35,250 square feet, R-200)

In the R-200 low-density residential zone, the following uses are permitted:

- Detached single-family dwellings
- Agricultural activities, farms and nurseries
- Existing cluster development
- Parks and playgrounds
- Childcare centers

The maximum unit density shall be one dwelling unit per lot. Minimum lot size shall be 35,250 square feet with a minimum frontage of 200 feet. The minimum lot size for clusters planned before June 17, 1985 is 15,000 square feet with a minimum lot frontage of 100 feet. The maximum building height is 35 feet.

Conditional uses are permitted for the following:

- Home occupations and professional offices
- Institutions
- Necessary public utilities and services
- Cemeteries
- Camps for children
- Volunteer organizations
- Non-profit clubs for outdoor sports
- Housing for transient or migratory farm workers
- Family day care homes

This low-density residential land use zone has been developed to reflect a traditional single-family development pattern. The area contains 299.46 acres and is located in the northwest part of the Township, which includes the existing 420 unit Princeton Collection (U.S. Homes) housing development and other smaller residential subdivisions that have located along Perrine Road and Schalks Crossing Road, i.e. the completed Plainsboro Acres subdivision, the approved and under construction Levico development which includes a daycare center, and the ZAHAB residential development which is also under construction.

4. Planned Medium-High Density Residential Zone (3.1 du/acre, R-95)

In the R-95 zone, the following uses are permitted:

- Planned residential cluster developments
- Parks, playgrounds, and golf courses
- Farm and agricultural activities
- Necessary public utilities and services
- Buildings and structures owned and operated by the Township
- Childcare centers
- Home occupations and professional offices

The minimum area to be developed is 100 acres with a maximum unit density of 3.1 dwelling units per acre. A maximum of 40 moderate-income units is required. No less than 25% of the site will be devoted to common open space. The minimum frontage of a site is 1000 feet and the maximum building height is 35 feet.

Conditional uses are permitted for the following:

- Institutions
- Cemeteries
- Family day care homes

This 156.42 acre planned medium-high density residential category is adjacent to the existing R-85 medium density residential zone to the west and includes the Municipal Center, borders the existing R-300 low density residential zone and Dey Road to the north, and is next to



Town Center Elementary School

Linpro's PCD medium-high density zone to the east and south which includes the 18-hole Middlesex County Golf Course, condominiums, apartments and single family homes, the Enterprise Business Park, the Princeton Meadows Neighborhood Shopping Center and a professional office building complex. Lands within the planned medium-high density residential zone are characterized by flat and gentle slopes. Soils within the zone are predominantly Sassafras, which contain slight limitations for the construction of dwellings, picnic areas, paths and trails, and moderate limitations for the construction of streets and playgrounds. No flood plains or wetlands exist within the zone. The two (2) major treed areas located in the zone have been protected as much as possible through the development process and more trees have been added through reforestation efforts. Development is serviced by public sewer and centralized water service. The area placed in this residential classification includes lands between Plainsboro Road and Dey Road, which was previously planned and zoned for low density residential, and a portion of the PCD zone which had been designated a Mt. Laurel COAH housing site. The area zoned R-95 was originally zoned R-300 and PCD with a theoretical build-out of 558 dwelling units. The change to R-95 was proposed to implement the Township's Mt. Laurel II settlement agreement with the Greater Civic League of New Brunswick for the provision of moderate-income for-sale units and rental units equally divided between low and moderate income. As envisioned only 423 dwelling units have been constructed in the R-95 zone as follows: 162 single-family detached patio homes, 96 for-sale townhouses with garages, 40 moderate income for-sale Mt. Laurel condominium flat units, and 125 low and moderate income rental Mt. Laurel flats. Mt. Laurel buildings have the same exterior treatments as the market units and the 40 moderate-income for-sale units have been located in separate buildings mixed in with various market rate units.

The R-95 zone has been found to specifically implement many of the goals and policies of this Master Plan. Specifically, it has increased the amount of housing construction for middle and low income families,

provided affordable housing opportunities for young families and senior citizens, and clustered dwelling units to achieve over 70% common open space which included the public dedication of 34 acres located adjacent to the Municipal Center. Development within this zone has resulted in the construction of Wyndhurst Drive, a collector roadway, which connects Plainsboro Road and the signalized entrance to the Princeton Meadows Neighborhood Shopping Center with Dey Road. The Town Center Elementary School is also located within this zone.

The R-95 zone is compatible with planning and zoning in adjacent zones within Plainsboro Township. To the north the land is zoned R-300 and planned for single family detached construction on minimum 1 acre lots and located to the east is the PCD zone which has permitted single family detached, townhouse, and multi-family development. To the south is the existing Enterprise Business Park, a new senior citizen housing development and the Princeton Meadows Neighborhood Shopping Center which provides convenient employment and retail opportunities for new residents located within the zone. Governmental services are provided by the nearby Municipal Center, which includes the police department and rescue squad.

This zone reflects a desirable natural setting for housing. Residential development is compatible with adjacent land uses and the existing treed environment. Any residential development within this zone has been effectively screened from Dey Road and Plainsboro Road.

This zone permits agricultural uses, detached and attached residential dwelling units (i.e. patio homes, townhouses, and 2 or 3 story multi-family buildings), parks, playgrounds and golf courses and municipal uses, and permitted conditional uses such as home occupations, churches, nursery schools and child day-care centers.

5. Planned Medium Density Residential Zone (1.13 du/acre, R-90)

In the R-90 Planned Medium Density Zone, the following uses are permitted:

- Planned residential cluster developments
- Parks, playgrounds, and golf courses
- Necessary public utilities and services
- Childcare centers
- Buildings and structures owned and operated by the Township
- Home occupations and professional offices

Conditional uses are permitted for the following:

- Home occupations and professional offices
- Institutions
- Cemeteries
- Church day care centers

The planned medium density residential zone is located on the former Walker-Gordon farm site. The R-90 zone, containing 250.21 acres, is bounded by the Devil's Brook, Plainsboro Road, the Millstone River and the existing railroad tracks. The former farm site contains mature tree masses and other vegetation.

Southern portions of the site are heavily wooded on both sides of the Millstone River and Devil's Brook. Large Oak, Maple, and Sycamore trees line both sides of existing on-site driveways and Plainsboro Road. Many older



Plainsboro Road Pathway

buildings including barns and silos and

foundations were once located on the site. The site is relatively level, with the highest elevation occurring near Plainsboro Road at 86 feet, and dropping off to a flat 54 feet along the Millstone River. Water drains in two major directions from a ridge running from the northeast corner to the southwest corner of the site.

The Walker-Gordon site has been determined to be a desirable natural setting for single-family housing. The geology of the site includes the Stockton Formation, or Stockton Sandstone and the Magothy and Raritan Formations. The Stockton is composed of sandstone of Triassic age, which is locally important for water supply for both domestic and industrial uses. The Magothy and Raritan Formations is partially consolidated sandstone of Cretaceous age that is of great regional importance, providing water to large areas of the Coastal Plain. The site has a high aquifer recharge potential. Wetlands, floodplains, and the DRCC buffer are located on the site adjacent to the Walker-Gordon Pond, Devil's Brook, and the Millstone River. All water features are perennial and aesthetically significant.

Prior to its current residential land use classification, the site had been zoned I-100 which permitted general corporate, administrative and professional office, computer center, publishing houses and printing plants, research laboratories, limited manufacturing, and agricultural activities. The change from I-100 to R-90 was proposed to protect the existing 2-lane Plainsboro Road treed environment and adjacent single-family neighborhood from significant non-residential through traffic impacts and the widening of Plainsboro Road. Housing implementation on the site has protected existing internal tree-lined driveways and scenic views of the site, preserved wildlife corridors, wetlands, and flood hazard areas. Another significant positive by-product of the exclusive single-

family detached development has been usable open space located within and next to housing areas and a permanent open space corridor along Plainsboro Road.



The Planning Board granted conceptual approval for a 560-unit planned residential development consisting of 141 patio homes, 58 manor homes, 321 townhouses and 40 Mt. Laurel affordable condominium units in 1988 under the provisions of the new R-90 zone. Pursuant to N.J.S.A. 40:55D-10.1, this approval was non-binding on the Board and the developer. The developer (Linpro Princeton, Inc.) failed to submit preliminary and final subdivision plans for development of the concept plan for over 5 years. In 1993, the same developer

Township Community Garden

submitted a new concept plan to the Planning Board for a 515-unit residential development consisting of 86 single-family, 165 zero lot line, and 264 townhouses of which 40 were affordable units. The Board did not approve or reject the new concept plan but instead identified many areas of concern including vehicular traffic, signalization, off-tract improvements for streets and roads, pedestrian access, residential garages, construction phasing, environmental issues, the pond and dam, off-site sanitary sewers, recreation facilities, and sound attenuation along the Amtrak railroad tracks. The Board felt it necessary to re-do the R-90 zone by reducing its overall gross density, eliminating the requirement for townhouses and low- and moderate-income Mt. Laurel housing units, and increasing the common open space requirement.

A planned residential development is permitted on the site subject to specific design criteria to encourage creative use of the land area, protect environmentally sensitive areas and providing adequate noise buffers from the railroad. The minimum total area to be developed into a planned residential development is 50 acres. The maximum unit density is 1.13 dwelling units per gross acre. No more than 275 dwelling units are permitted within the entire zone. No less than 60% of the entire tract would be designated as common open space. A mix of two (2) housing types is required between single-family detached on minimum 10,000 square foot lots and single-family zero lot line dwellings on minimum 5,000 square foot lots. The maximum building height is 35 feet. The R-90 zone must be serviced by public sewer from the Stony Brook Sewerage Authority Treatment Plant and centralized water service.

The R-90 zone helps promote a better Township balance between single-family detached construction and the development of multi-family and townhouse units, permits the construction of affordable non-Mt. Laurel

housing for individuals and families who will be moving up the housing ladder, and provides yet another opportunity for many of Plainsboro's renters to own a single-family house. The existence of a variety of housing types increases consumer choice and in turn permits the filtering of sound housing units for all income sectors within the Township.

Residential development trends within the Township during the 1970's and into the early 80's resulted in the approval and construction of over 6,000 units of which over 80% were multi-family and only 17% were single-family detached and townhouses. Since the mid-80's the total number of new units had dropped by over 4,000 and the mix had changed to reflect over 56% single-family detached with only 20% multi-family. The desire on the part of the Township was to encourage the construction of more single-family detached homes to balance the large amount of multi-family development that occurred in the 1970's. The goals of the Master Plan are to provide affordable housing including Mt. Laurel units, to encourage the construction of more single-family detached dwellings, and to provide a better balance between the different housing types.

Housing implementation within the R-90 zone creates a better Township balance between total jobs and housing units, thereby moving toward better regional plan consistency; provides for more single-family detached housing units; permits clustering to preserve critical environmental and open space corridors; and eliminates negative traffic impacts, i.e. poor industrial access, widening of Plainsboro Road, and increased traffic volumes within the village area of the Township.

The Walker-Gordon site has been and continues to be predominantly surrounded by single-family detached residential development, open space, and environmentally sensitive areas.

Most of the existing and ongoing development activity adjacent to the site is residential single-family detached. Thirty-five (35) single-family homes are located in the Jeffers Road neighborhood and along Plainsboro Road, forty-nine (49) homes have been constructed in the Pond's End development across the railroad tracks and another 13 are located on the Jefflands II site located off of Grovers Mill Road. Firmenich office and warehouse construction is the only exception to residential development in the immediate area. Visual and aesthetic impacts associated with Firmenich construction have been dealt with through enhanced levels of landscaping, the upgrading the building facades, and appropriate site lighting.

The existing Walker Gordon Farm development is consistent with the Master Plan and current zoning in that conventional single-family detached units were built on minimum 9,500 square foot lots and patio homes were built on minimum 4,500 square foot lots. The site contains 121 conventional units and 234 patio units and related roads, utilities, recreation facilities and common open space. The project complies with the net residential densities for single-family and patio single-family

homes which are 2.75 dwelling units per acre and 5 dwelling units per acre, respectively. The project provides for 55.1% of the tract or 133.23 acres in common open space and active recreation. Total impervious site coverage is at 39% of the development tract.

Development of only single-family detached residential units on the Walker-Gordon site is in keeping and totally compatible with existing development adjacent to and surrounding the site.

The Devil's Brook and Walker-Gordon Pond provide satisfactory buffering between the R-90 zone and the I-100 and ROM-1 industrial zones, and afford visual and aesthetic protection to new R-90 dwelling units from existing industrial uses.

The entire zone has frontage on Plainsboro Road which is classified as a major collector. One of the original goals of rezoning the property from I-100 to R-90 was to protect the existing treed environment along Plainsboro Road and to maintain its existing 2-lane character. Residential development of the site has resulted in the following improvements to Plainsboro Road:

- 4-way intersection with Pasture Lane; the design consists of one (1) lane of travel in the eastbound and westbound approaches, an exclusive left-turn lane and a shared thru/right-turn lane on the westbound approach and two (2) exit lanes on the northbound approach.
- A one-way entrance driveway for vehicles traveling eastbound on Plainsboro Road and designed to also permit westbound emergency vehicles to use the entrance.



Millstone River

Only a few existing trees had to be removed as a result of making these intersection improvements because pavement widening and transition to existing pavement at the 4-way intersection were kept to a minimum and the development of the one-way entrance utilized mountable Belgium block curb, stabilized turf, and transitions into the existing Plainsboro Road edge of pavement.

Development on the Walker-Gordon site benefits from the installation of the traffic signal at the 4-way intersection with Pasture Lane.

The primary trade-off in signaling this intersection has been reduced delay for exiting traffic with the addition of a delay for Plainsboro Road traffic. To the extent that good levels of service and short delays are

encountered for Plainsboro Road traffic the signal does not pose a serious problem.

Secondary benefits to nearby driveways and intersections result from the stopping of Plainsboro Road traffic at the 4-way intersection. The signal tends to group or platoon Plainsboro Road traffic with corresponding larger gaps than would occur under a free flow, random arrival condition. Review of future traffic volumes and the impact of Route 1 and Scudders Mill Road improvements need to be completed to determine if this type of secondary benefit will occur or be measurable in terms of effects on other locations.

6. Medium Density Residential Zone (3 units/acre, R-85)

In the R-85 Residential Zone, the following uses are permitted:

- Detached single-family dwellings and accessory structures and uses
- Parks and playgrounds
- Garage facilities for only the motor vehicles owned by the occupant of any single dwelling to which such garage is accessory
- Family day care homes
- Childcare centers
- Home occupations and professional offices

The maximum unit density will be one unit per lot. Minimum lot size is 15,000 square feet with a minimum frontage of 85 feet. The maximum building height is 25 feet. The zone includes bulk provisions consistent with the Village Area Plan recommendations, (i.e., FAR and building coverage restrictions, reduced front building setbacks for front porches and covered front stoops, subdivision restrictions to prevent demolition of existing dwellings) and a maximum building lot coverage of 20% of the lot area.

Conditional uses are permitted for the following:

- Institutions, including charitable organizations, houses of worship, and parochial and private schools and nursery schools
- Necessary public utilities and services
- Cemeteries
- Volunteer organizations
- Family day care homes

The medium density residential land use classification comprises the Jeffers Road neighborhood, historic cemetery, Merrill Lynch open space west of the railroad tracks, and the old Village area, which is currently mapped in the R-85 zone, for a total of 346.32 acres. The Land Use Plan reflects its traditional boundaries as a predominant single-family residential neighborhood zone.

E. Commercial Land Uses

The Commercial Land Use Plan provides shopping and work opportunities for people who live in Plainsboro and surrounding municipalities and other areas.

1. NB Neighborhood Business Zone

In the NB zone, the following uses are permitted:

- Stores and shops
- Personal service establishments
- Small offices
- Repair and servicing establishments
- Buildings and uses owned or operated by the Township
- Newspaper offices
- Carpentry, electrical, masonry, plumbing and painting services
- Detached single-family dwellings
- Mixed use structures with no more than two (2) dwellings in conjunction with another permitted use

Conditional uses are permitted for the following:

- Public utility substation

The minimum lot size is 15,000 square feet with a minimum frontage of 100 feet. The maximum building coverage is 20% and the maximum lot coverage is 60%. The maximum building height is 35 feet. The total size of the NB zone is 1.69 acres.

Special design considerations for this zone include:

- All provisions and facilities for storage other than pickup of refuse must be contained within a principal building.
- No permitted use may use any noise making devices such as phonographs, loudspeakers, amplifiers, radios, television sets, machinery or similar devices so situated as to be heard outside



Neighborhood Cleaners

any building.

- The treatment of side and rear walls of any building in terms of building materials must be similar to the treatment of the front facade and adjacent residential buildings.
- Buffering must be located within minimum yard setbacks. Buffer areas must be located along the edge of parking lots and property lines that abut residentially zoned lots or uses to prevent any and all reflection of lights and to prevent windblown or other debris from being blown or transported to or be visible from the adjacent or neighboring residential premises.
- Buffering must consist of fencing, landscaped berms, evergreens, shrubs, bushes, deciduous trees, plants, or a combination thereof, and must be installed to have an immediate positive impact.
- Adequate lighting must be provided to ensure safe movement of persons and vehicles and for security purposes. Directional lights must be arranged and shielded in such a manner as not to create a hazard or nuisance to adjoining residential properties or the traveling public. Spotlight-type fixtures attached to buildings and visible to the public will not be permitted.

2. SR Service Residential Zone

In the SR zone, the following uses are permitted:

- All uses permitted in R-200 Low Density Residential Zone
- Motels or motor courts
- Multi-family dwellings or apartments
- Childcare centers

The maximum net unit density is 12 dwelling units per acre. The minimum area to be developed for multi-family dwellings is 10 acres, and the maximum building height is 38 feet.

This 28.78 acre area, located along Route 1 and Mapleton Road, consists of existing small-scale office development, the 120-unit Millstone Apartment complex, lands owned by the Delaware and Raritan Canal Commission, and wetlands.

3. GB General Business Zone

The 43.45 General Business area contains a U.S. Post Office; a 210,000 square foot shopping center, which includes a SuperFresh grocery store, ACE Hardware, a Peebles department store, and numerous smaller stores. The shopping center also includes a freestanding CVS pharmacy. The zone includes the existing freestanding PNC Bank which is not officially a part of the shopping center. The GB zone is bordered by the

Amtrak railroad lines, Plainsboro Road, Schalks Crossing Road, and Scudders Mill Road.

In the General Business zone, the following uses are permitted:

- Stores and shops for any retail business
- Personal service establishments
- General corporate and administrative offices
- Offices for professional service
- Small commercial and government offices
- Restaurant and neighborhood taverns, excluding drive-in and curb service
- Repair and servicing
- Funeral parlors
- Banks
- Attended laundry and retail dry cleaning
- Buildings and structures owned and operated by the Township
- Agricultural uses
- Carpentry, electrical, masonry, plumbing and painting services
- Copy centers and newspaper offices
- Childcare centers
- Common open space
- Parks and playgrounds
- Shopping centers
- Drive-through facility for shopping center pad site only

The minimum lot size is twenty-five (25) acres with a minimum frontage of 425 feet. The maximum improvement coverage is 65% and the maximum building height is 30 feet. For all business, commercial, and office uses in the General Business zone, the maximum permitted floor area ratio shall be .20, which would allow



Town Center Shopping Center

285,945 square feet of development on the shopping center lot in combination with development on the adjacent already developed lots.

Conditional uses are permitted for the following:

- Public utilities substation, and electric and gas facilities
- Facilities for the covering, altering, finishing or assembling of goods for sale

The entire General Business Zone has developed into a comprehensively planned mixed-use non-residential development, including the existing commercial and retail stores, office space, and open space areas.

The General Business Zone is intended to permit retail business, personal service establishments, general corporate and administrative offices and other non-residential uses within a shopping center-style environment. Development within the zone strives to promote the sharing of parking and storm water management facilities, have well-landscaped and adequate building setbacks from surrounding roads, provide off-street parking that is well screened from public view, control means of access and coordinate internal pedestrian and vehicular traffic flows relating to existing and proposed development, and insure design compatibility with existing development that considers building height, materials, colors, landscaping and signage.



ACE Hardware

Development within the General Business Zone must reflect a shopping center-style environment and design principles contained in the Township Master Plan's "Village Area Plan" adopted by the Planning Board as part of its Land Use Element, including to:

1. Encourage innovation in design and reflect changes in land development technology to enhance the existing village character.
2. Provide for necessary commercial facilities and services.
3. Encourage the highest quality design and architecture.
4. Encourage better movement and transportation of people.
5. Prevent strip commercial development by ensuring that new development reflects and respects the existing and evolving village area.
6. Provide a more defined "sense of place" along Schalks Crossing Road.
7. Preserve the residential integrity of adjacent areas.

8. Create a zone with enough flexibility that permits the land use variety of a village yet prohibits the chaotic character of an unplanned area.

Development on adjacent properties has been designed to "fit" with the existing shopping center, existing out-parcels (i.e., the firehouse, the bank, and post office) and residential land uses along Plainsboro Road.

Some of the most desirable site planning aspects that exist in the zone includes pedestrian and bikeway interconnection(s) to the shopping center, turning lanes along Plainsboro Road, common detention and shared parking with the shopping center, adequate, well-landscaped building setbacks from Plainsboro Road, off-street parking screened from public view, and architectural compatibility with the existing Town Center Shopping Center to include building height, materials, and colors.

Previously, the General Business Zone had permitted a maximum of 91,345 square feet (.18 FAR x 11.65 acres) on the vacant lot between Plainsboro Road and the shopping center. When the Town Center Shopping Center was being reviewed by the Planning Board in



Village Detached Housing

1984 and 1985, plans for 140,000 square feet of office development were proposed for the vacant GB site. In November 1988, a plan was submitted by the then current owner of the property for a total of 71,776 square feet. The new maximum overall .16 FAR permitted a 2,500 square foot CVS expansion and a 10,400 square foot SuperFresh expansion, as well as 22,400 square feet of new office space, 22,050 square feet of retail, and an 8,400 square foot freestanding restaurant. This total square footage (including the 210,000 square footage of the existing shopping center) of 275,750 square feet was far less than the 362,500 square feet which previous zoning and development plans reflected. A few years ago the vacant lot located along Plainsboro Road was rezoned to become a village residential zone that permitted a mix of 27 single-family detached and attached townhouse units instead of non-residential development.

Today, the Town Center Shopping Center has been built-out. Improvements are anticipated to the parking lot and to pedestrian and bicycle facilities, both on and off-site.

F. Village Area Plan

As part of the 1998 Master Plan Review, the Planning Board identified the need to evaluate the Township's Village Area in a comprehensive fashion. The general purpose of this review was to see that future plans for the Village Area would ensure that the existing character of the Village was protected and enhanced and that future development would evolve in a manner consistent with agreed upon Village Design Principles. The Village Area is identified



Village Outdoor Dining

as the central portion of the Township bounded by Scudders Mill Road to the north, the Amtrak railroad tracks to the west, the Cranbury Brook to the south and the Enterprise Business Center to the east. The results of this review are contained in the report prepared by special Township Consultants Killinger Alberto, entitled *Plainsboro Township Village Area Master Plan Review*. This report is included as an addendum to the Master Plan and serves as a supporting document. The plan recommendations that have been summarized and outlined in this section were a result of this planning process. The Village Area Plan seeks to provide an integrated plan for the Village Area that addresses land use, circulation, housing, and various other Master Plan elements and considerations.

1. Village Planning Process

Key to the success of the Village Area review and the formulation of the plans and policies contained herein is the nature and quality of the planning process. The Planning Board mandated and carefully planned a participatory process, which elicited public input throughout the process. The Planning Board sought to establish a partnership with the public in identifying study goals. Public input sessions were held with the consultant team to discuss village planning concepts and gain input and support from the public. Likewise, two public sessions were held to provide the public with an opportunity to comment on the recommendations of the Killinger Alberto study. These were key points of participation, though other input was gained through the process. The importance of this dialogue with the public cannot be understated. It was a key element in contributing to the Boards understanding of conditions in the Village, citizen concerns regarding future development and, in particular, in developing a consensus around the goals of the study.

2. Village Planning Goals

In March of 1998, the Board conducted a “Goal Setting Session”, with Planning Board and public participation, to outline goals for the Village Area. The goals of the Village Area, as defined by the Board and the public, were expressed as follows:

- a. Emphasize pedestrian mobility and provide opportunities for cyclists and transit in order to improve area-wide connectivity.
- b. Place a priority on aesthetic improvements and landscaping throughout the Village Area.
- c. Provide public spaces and green spaces.
- d. Respect existing uses within the Village Area and provide transition areas accordingly.
- e. Address unmet public facility and housing needs.
- f. Design pedestrian-friendly neighborhoods.
- g. Assess tax impacts.
- h. Provide recreational opportunities, especially for toddlers.
- i. Evaluate market for uses considered.

These goals guided the planning process and are represented in the various plans and recommendations outlined for the Village Area. Collectively they represented a vision for the Village Area that guided all planning matters for this area of the Township. The plan entitled: Master Plan Concept, shows village style development north of Plainsboro Road and Village enhancement south of Plainsboro Road.

3. Village Design Principles

Planning for the future development of the Village Area had to abide by appropriate village design principles. These general principles included the following:

a. Create a Sense of Place

Design decisions in the Village Area should seek to create places with a definable center and edges that provide a sense of closure and safety.

b. Pedestrian-Scaled Neighborhoods

In the Village Area, seek to maintain and create neighborhoods that provide opportunities for and encourage pedestrian activity. The residential area should be located in proximity to jobs, services and recreational opportunities. Neighborhoods should be

designed, with a priority placed on smaller “pedestrian-scaled” blocks.

c. Mix of Uses and Housing Types

The future development of the Village Area should encourage, to the extent appropriate, a mix of uses and housing types. It is through the mix of uses and housing types that Village character is established and a pedestrian-friendly environment evolves.

d. Pedestrian-Friendly Street Design

Future development and road improvements should include road design that, to the extent possible, provides pedestrian compatible environments and calms traffic speeds.

e. Provision of Green Spaces and Public Amenities

Future planning should seek to enhance existing, and provide for additional, public spaces and green spaces. The provision of these spaces adds to the aesthetic quality of the community and provides opportunities for community interaction.

Plainsboro Road serves as the spine road for the Village Area and generally serves as a dividing line between the established area of the Village to the south and the northern portion of the Village. The northern portion of the Village includes key undeveloped properties and the majority of the Village’s non-residential uses. The Village Area has many existing Village-defining features, such as a strong sense of edge and center, a



Historic Village House

network of streets and open space, a mix of uses and a pedestrian scale. In addition, the Village currently contains classic Village uses such as small-scale non-residential uses, the Municipal Complex, the Plainsboro Public Library, three churches, one elementary school and other essential service and retail uses.

The plan for the Village Area recognizes a distinction between the areas located north and south of Plainsboro Road. South of Plainsboro Road, the Village is, for the most part, developed and Master Plan proposals seek to enhance the existing Village qualities present. North of Plainsboro Road and Enterprise Drive, the Village has an open suburban quality where future village-style development should occur. This area

also suggests the need for future enhancements such as sidewalks, landscaping and other features to link the north and south sides of Plainsboro Road. New development and accompanying street design north of Plainsboro Road have followed the above-referenced Village design principles. Likewise, plans extend the pedestrian and bicycle-friendly environment throughout the entire Village Area.

The plan entitled: Village Area Master Plan Concept, shows how development in the village area should take place in the context of the existing older village area to include a new village residential area along Plainsboro Road between the existing firehouse and the PNC Bank; a proposed mixed-use village center concept located across from the existing Town Center Shopping Center and an age-restricted housing development planned for the remaining vacant lands of the Enterprise Business Park. Since the Village Area Master Plan concept map was created the PNC Bank has received final site plan approval to replace their existing building with a new building, both the village residential and village center developments are either complete or under construction, and Toll Brothers is completing construction at the senior development know as "Cranbury Brook".

4. Specific Plan Proposals

Recognizing the existing character of the Village as well as opportunities for extending the assets of the existing Village character to the remainder of the Village Area, the following programs and plans have guided development activities within the Village Area:

a. Street Tree and Landscape Program

The street system establishes the Village's structure and provides a well designed network of streets, which reflect and improve connectivity. A street tree program is recommended to compliment this street system and form a protective edge between pedestrians and automobiles. A consistent canopy of shade trees adds considerably to the Village character. Through a shade tree program, it is recommended that an inventory of street trees be conducted and that a program be put in place to supplement this considerable Village asset. The program could include the development of street tree standards to apply to existing as well as future development in and immediately adjacent to the Village.

Opportunities for additional tree planting and other landscaping enhancements exist in the public areas present in the Village. These areas include the Wicoff School area and the Municipal Center, and are focal points of community activity that could be considered for landscape upgrades.

A planting maintenance program should be in place to ensure an attractive and healthy look into the future.

The plan entitled: Street Tree and Landscape Program, shows village green opportunities, street trees, a waterfront promenade opportunity and open space/recreation.

b. Village Gateway Program

Gateways into Plainsboro will create a sense of entrance and place for the Village Area. A gateway could be anything from signage or lighting to an architectural feature. Such gateway treatments may help traffic calming as motorists enter the Village. When gateways are strategically placed, visitors and residents alike are provided with a feeling of arriving and departing a meaningful, identifiable local place. The Township should review recommended locations for possible gateway treatments and begin the process of design and implementation.

c. Sidewalk and Bikeway Connections

The presence of an extensive sidewalk and pathway network throughout the Village Area allows people to move freely within the Village without use of an automobile. These elements are fundamental to Village design. In 1997, the Planning Board adopted amendments to the Pathways Plan that



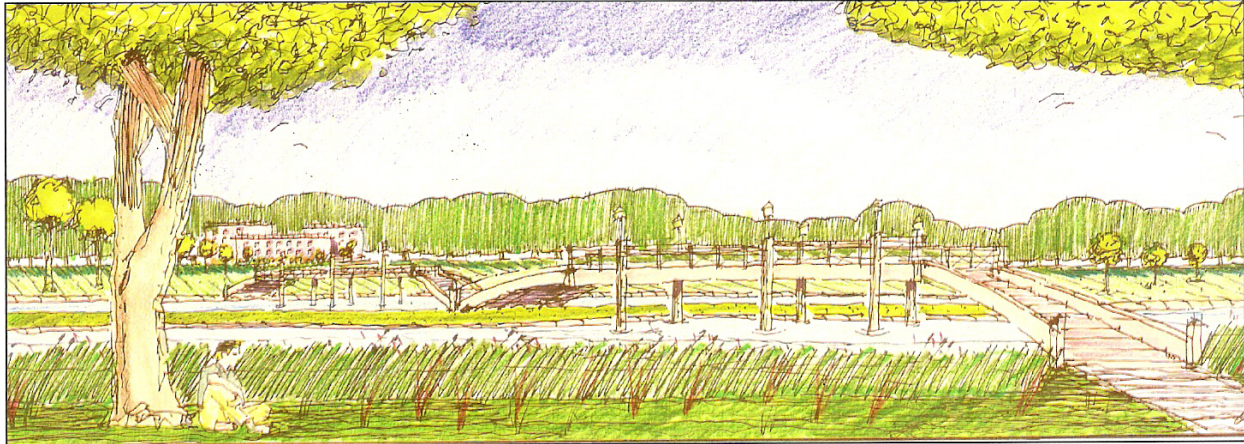
Village Walkways

identified missing links in the sidewalk network within the Village Area and other parts of the community. The construction of these missing links is an essential step in improving the connectivity of the Village Area. Likewise, ongoing reviews should be conducted to identify additional opportunities for improving sidewalk connectivity within the Village and connections into and out of the Village Area. In addition, the Township's bikeway planning should pay special attention to the Village Area in identifying opportunities for bike path connections.

d. Pedestrian/Bicycle Bridge and Greenway Connections

Currently, there is no direct and convenient connection between the Village and the public school campuses located on Grovers Mill Road. Connections between the Village Area and this part of the community are limited to the Maple Avenue dam area. It is recommended that a site be identified for the construction of a pedestrian/bicycle bridge over the Plainsboro Pond to connect the Village Area and the school campuses located in the R-100 zone.

This bridge would provide the Village with a safe connector, as well as an additional community amenity. This would provide residents the opportunity for an additional, non-automobile connection. A preliminary evaluation should be conducted to determine the cost of constructing this bridge and to determine the engineering and permitting hurdles that may be encountered. Likewise, great care needs to be given to the location of this bridge in order to enhance public safety and be sensitive to environmental constraints that are present along the stream corridor.



Village-School Pedestrian Bridge Connection.

e. Fox Run Pedestrian Greenway

Currently, the Fox Run apartment development separates the Village from the Plainsboro Pond area and the Lenape Trail. Future considerations should be given to evaluating the main drive and parking area of Fox Run as an opportunity for the development of a greenway connection for pedestrians and bicycles. Such a greenway connection could prove a significant amenity to the immediate community and provide access to Plainsboro Pond from Plainsboro Road and the Municipal Center.

5. Village Land Use Plan

a. Prior Zoning

A 12-acre parcel zoned GB was located adjacent to the Town Center Shopping Center to the north, Amtrak rail lines to the east and Plainsboro Road to the south. The GB Zone permits a variety of uses, which include stores and shops, personal service establishments, offices, restaurants, banks and child care facilities. The 1992 Township Master Plan called for the vacant portion of the GB Zone to be developed in a comprehensive way that extended the uses of the existing Town Center Shopping Center. The current GB zone would have permitted approximately

68,500 square feet of commercial development on the parcel. The Planning Board questioned the relationship this zoning would have on the adjacent homes and the traffic impacts on Plainsboro Road.



Village Center

The Cooper Tract was a 17-acre parcel that was located behind the historic, mixed-use village area. The Cooper Tract was located across from the Town Center Shopping Center to the west and adjacent to Schalks Crossing Road to the east, Scudders Mill Road to the north, and was located just off of Dey Road. The Cooper Tract was located in the R-300 Zone. The R-300 Zone provided for single-family detached dwelling units on one acre lots. It also provided for schools and other public facilities as permitted uses. Given the one-acre lot requirement for single-family units, it was assumed that between 12 and 14 single family detached units could potentially be developed. The development of low density housing on this site adjacent to an existing mixed-use area as well as along a major highway was questioned by the planning team and the Planning Board.

Lastly, the 35 plus acre Enterprise Business Tract was zoned non-residential PCD to accommodate approximately 400,000 square feet of office space. This non-residential development would be adjacent to compatible uses; however, the impact this amount of office development would have on the existing Village Area was also questioned.

b. Master Plan Concept



Planning the three parcels together and as part of an overall existing Village Area resulted in a number of proposed changes to the then current zoning. Like most village plans, the master planning for the three parcels began at the center of the

Village Square

existing Village, in this case, on the Cooper Tract. Because this parcel lies in the center of the Village and is adjacent to the existing mixed-use center, it was proposed that the Cooper Tract be developed as a mixed-use village center extension. The goal was to have a “seamless” extension of the existing village into a village-scale area.

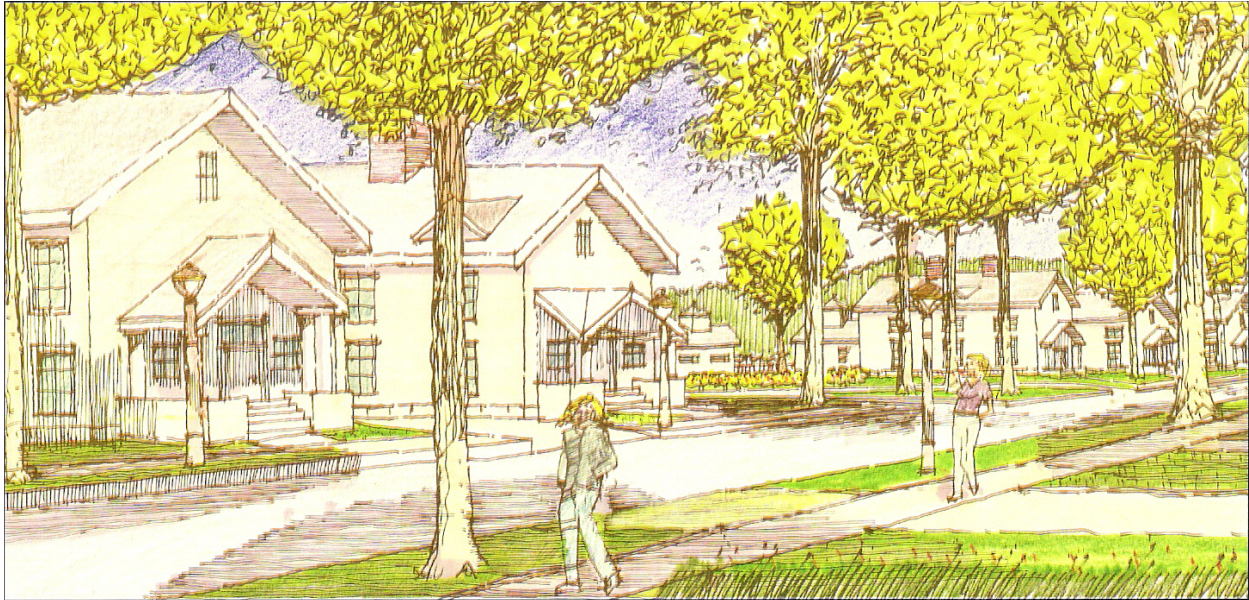
Table 2 Prior Zoning Versus New Village Master Plan/Zoning

AREA OF LAND	USE	PRIOR ZONING (1999)	VILLAGE MASTER PLAN/ZONING
GB TRACT	Non-Residential	68,00 sq. ft.	0
	Community	One Site	One site
	Residential	0	22 SF, 5 TH
ENTERPRISE BUSINESS TRACT	Non-Residential	400,000 sq. ft.	0
	Community	0	One site
	Residential	0	102 SF, 93 MF
COOPER TRACT	Non-Residential	0	110,000 sq. ft.
	Community	0	One Site
	Residential	14 SF	8 MF, 12 TH, 13 SF

The proposal for the GB tract was residential development, as an extension of the existing residential use across the street. The goal was to create a buffer and transition between the existing residences on the south side of Plainsboro Road with the Town Center Shopping Center north of Plainsboro Road. Similarly, complimentary housing along both sides of Plainsboro Road would be more reflective of the Village quality goals of the Master Plan process and this design would tend to calm traffic passing through the Village and the new residential use would reduce traffic volume over the development that was allowed at that time.

It was determined that 400,000 square feet of additional office development in the Village on the Enterprise Business Tract would have a negative impact on the character of and traffic in the Village area. The present owner of the tract expressed an interest in possibly building age-restricted housing on the site. The Township project team saw this interest as an opportunity to reduce the impact on the community, as well as an opportunity to satisfy one of the Master Plan goals of fulfilling unmet housing needs of the community. Conceptual sketch plans were prepared to illustrate the possible implementation of village design principles. It was noted that the sketch plans were not supposed to be treated as site plans and it was recognized that the

successful implementation of the design principles could result in other plans. Likewise, the preparation of pictorial renderings sought to illustrate in general terms the physical environment that the design principles wanted to create.



Concept view for new village homes along Plainsboro Road

c. Land Use Plan

As a result of this comprehensive Master Plan process it was recommended that the GB Tract be rezoned from General Business to a residential zone classification (Village Residential I zone). As the Master Plan Concept and GB Concept Diagram suggested, residential development on this tract would reflect the character of the existing residential homes along Plainsboro Road.

By responding to the character of homes on the south side of Plainsboro Road, on the north side, it created a symmetrical



Village Detached House

street facade, which was typical of a traditional village. This character has fostered a sense of safety and enclosure.

Lots of similar size to those on the south side of Plainsboro Road and residential architecture appropriate to a village setting were recommended for the new homes along Plainsboro Road. The development of residential homes on the GB Tract were to buffer



Multi-Family Senior Housing

and form a transition between the existing homes on the south side of Plainsboro Road and the Town Center Shopping Center. As part of the village-wide Master Plan recommendations, tree-lined streets and sidewalks were to be part of the design to promote pedestrian mobility, traffic calming and character.

The interior of the GB tract were required to have smaller village-scaled lots and a series of attached houses overlooking a green space. The number of attached homes was limited but it was recommended to provide a village-like mix of residential styles.

The green space would provide a focal point for this development.

The GB tract was rezoned Village Residential I and as such was developed by the Sharbell Corporation into a village residential neighborhood with 22 single family detached units on 7,584 to 13,244 square foot lots and 5 townhouses on 4,844 to 7,475 square foot lots with a 1.352 acre open space lot dedicated to the Township as a public neighborhood park. The park was developed and now includes a large open grassed play area bordered by street trees with a sidewalk and sitting wall.

It was recommended that the Enterprise Tract be rezoned from PCD to an age-restricted residential zone classification (Village Residential II zone). The design concept for this site was to create an auto and pedestrian-friendly road connection through the development. A "spine road" was to organize the development and connect the development to the Municipal Center area to the northwest and the existing shopping center and bank on the east. The Concept Diagram suggested that the development's community center and larger-scale apartment structures were to be located at the northwest entrance. These significant buildings would create an architectural "terminus" to Plainsboro Road and a gateway entrance into the age-restricted complex. Locating the structures here would also connect the development to the Municipal Center across Plainsboro Road.

The architectural design, character and building/lot placement of the age-restricted homes were critical to incorporating the design into the Plainsboro village. A majority of age-restricted detached residential units are smaller versions of single-family suburban models and are not appropriate for a Village. Garages on the front were be prohibited. Simple rectangular, cottage architectural precedents with decorative detailing were preferred to the typical massing and building frontage of suburban homes. The age-restricted residential development was allowed to have a mix of housing types, ranging from single-family detached and single family attached, to apartment units. Attached townhouse units had to be strategically dispersed throughout the development to terminate streets, accent the design and add variety to the residential neighborhood.

At one time Enterprise Drive terminated at the east end where non-residential development stopped. It was recommended that Enterprise Drive continue north and connects at the existing Center Drive traffic light. The Concept Diagram also suggested improvements at the intersection Plainsboro Road, Enterprise Drive and the entrance into the new development.

The Concept Plan suggested about 100 single-family detached and attached homes and about 120 apartment/condo units. Opportunities for the provision of low/moderate income housing were also carefully evaluated.



Village Center

The PCD Enterprise tract was rezoned Village Residential II and as such was approved for the construction of an age-restricted housing development by Toll Brothers who is currently completing the construction of 102 single family detached units (Villas at Cranbury Brook) located on 6,451 to 7,344 square foot lots, a 93 unit freestanding 3-story story condominium building (The Highlands at Cranbury Brook at 50,568 square feet) at 39 feet 2 inches tall, a freestanding 6,724 square foot recreation building which includes an outdoor swimming pool and 2 bocce courts.

A Mixed-Use Village center zoning (the existing Village Center zone) was recommended for the Cooper Tract. Several factors pointed toward this use on the Cooper Tract.

The Cooper Tract is in the physical east/west center of the existing Village and provides convenient pedestrian access from the east, west, and south.

The Cooper Tract lies behind the existing mixed-use Village area. The proposal was viewed as a logical extension of the existing center that could invigorate and increase business for the existing commercial uses.

The Cooper Tract lies adjacent to the existing (non-village-like) commercial center known as the Town Center Shopping Center. The Village Center zone connects and can be viewed as an extension and enhancement of this existing commercial area.

The Cooper Tract serves as a buffer and transition between the slow traffic paced Village Center area and the high-speed traffic corridor of Scudders Mill Road.

The location of the Cooper Tract between the slow traffic paced Village Center and the high-speed traffic of Scudders Mill Road helps solve the often-difficult dilemma of reducing village traffic, yet attracting users for commercial functions. Higher speed auto traffic will more conveniently access the Cooper Tract off of Schalks Crossing Road, while village residents can safely access the Center by foot, bicycle or car from the south and other directions.

A successful village design for the Cooper Tract has set an example for future mixed use and commercial improvements on adjacent commercial properties. For example, successful village architecture along Schalks Crossing Road will prompt similar traffic calming architecture across the road next to the Town Center Shopping Center. Similarly, a successful village design for the Cooper Tract will prompt more village-like improvements should the Town Center Shopping Center ever be retrofitted to be more village-like.

The development of the Cooper Tract has resulted in a building architecture that is reflected in the Looney Ricks Kiss (LRK) colored building elevations presented in this section of the Master Plan on the following page.

The Cooper Tract has become a mixed use area of residential, office, retail, and institutional or civic uses. The concept that has been illustrated and developed is now centered on a village-scaled green.

Street level shops with offices above and civic uses such as the Township Library surround the green. On-street parking and small, between-building parking lots are dispersed throughout the site. Entry is encouraged along Schalks Crossing Road and

entrances exist directly opposite the existing entrances into the Town Center Shopping Center.

A large buffer area has been proposed along Scudders Mill Road and a detention basin has been constructed. A wooded area is proposed, however, the importance of visual access that interested parties may require from Scudders Mill Road, will be kept in mind during implementation.



Concept for a Mixed Use Center on the Cooper Tract.

The R-300 zone was rezoned for the construction of a planned village center by the Sharbell Corporation. The approved plans for the Village Center, which is now under construction, includes 8 apartment/condominiums, 13 single family detached units on 5,286 to 11,896 square foot lots, 12 townhouses on 2,800 to 4,000 square foot lots plus 47,500 square foot of retail space, 62,500 square foot of office space, a 35,000 square foot Township Library, and a Township owned Village Green of 0.511 acres.

The Planning Board proposed a unique transition zone between the buildings along Plainsboro Road and the new development. The concept was to create a "seamless" flow from the existing mixed-use area along Plainsboro Road into the Cooper Tract. The concept proposed that residential development be permitted at the rear of the deep properties that exit along Plainsboro Road. This option, depending on the discretion and desire of each individual landowner, would simply create village housing that would face on a new village street on the Cooper Tract. This

solution has created a classic village relationship of (existing and new) private backyards facing each other, while the existing Plainsboro Road and new Cooper Tract Street have front yards facing onto them.

The Planning Board hopes and desires that, in the future, the successful village design of the Cooper Tract influences design decisions at the Town Center Shopping Center.



Village Center

The “Cooper Tract Diagram” identifies a buffer (transition) area between the Village Center area and Plainsboro Road. This area is currently zoned Village Center and contains existing single-family detached houses. Two (2) additional single-family detached houses are proposed to be constructed with direct front facade building orientation and driveway access onto McNamee Street at the back of infill Block 1404, Lot 26. The developer of these two (2) additional houses must, in addition to submitting detailed plans for the homes, also submit a comprehensive site plan for the upgrading of physical conditions on Lot 26 to address the Plainsboro Road frontage streetscape conditions (i.e., removal of

parking along the front of the non-conforming commercial/residential building), on-site parking, landscaping, pedestrian access, solid waste storage and removal, lighting, signage and building elevation upgrades. This must be done by the developer to integrate the entire site in the context of the Village Area Plan, including the existing house and the existing commercial/residential building and the proposed houses. These matters must be addressed at the time of consideration of any land use application for this property.

All planning and construction on Block 1404, Lot 26 must recognize the existing and emerging Village Center streetscape and that both new dwellings will in all ways be consistent and compatible with the existing Village Center development. The two (2) units must also be included in the existing residential homeowners association.

The Cooper Tract concept design originally called for 110,000 square feet of commercial use, a community use and 33 residential units. The Township project planners suggested that, by using traditional planning densities and principles, the site could comfortably accept this level of development and still maintain a pleasant and attractive village character.

The Plainsboro Village Center and Village Residential areas are visually represented in this Master Plan by the series of photographs on the following pages.

6. Schematic Design Guidelines

The following Schematic Design Guidelines were intended to provide general dimension to the planning principles that were utilized in the overall master plan and schematic designs for each Village parcel. The following schematic guidelines served as a basis for future master plan amendments, guidelines and/or implementation ordinances. The standards outlined below are illustrative of the manner in which village planning principles have been advanced in practice; while the actual implementing ordinances may vary. The specific design standards recommended for village developments are identified in Table 3.



Schalks Crossing Road: Concept for a pedestrian friendly street.

a. Plan Submission

It was recommended that the plan review and approval process be sensitive to the physical constraints of the land area involved, and when appropriate, consider flexibility as opposed to strict adherence to zoning if the intent of the zoning were respected. Plan submissions had to include and illustrate the relationship to the immediate context and the overall village.

b. Parcel Plan

This plan was to only detail the development parcel proposal. Among the requirements of the submission are that all plans include and illustrate sidewalks, street trees and landscaping, lighting standards, benches and other amenities, civic spaces (if appropriate) and pedestrian cross street materials.

c. Context Plan

The applicant had to include as part of the submission, his parcel specific plan within a detailed plan of the surrounding context. This plan would illustrate street, sidewalk, landscape and other connections to the surrounding community. The Township had to describe to the developer the parameters of the context drawing. The Township could require the developer to make off site connections and improvements as part of the context plan.

d. Village Plan

The developer had to provide a village-wide plan, which included the development proposal within the existing Village.

e. Village Residential Zone



Village Detached House

The GB and Enterprise concept plans suggested "residential uses" for each parcel. It was recommended that a Village Residential zoning designation be developed for development on both the GB and Enterprise sites. This zoning designation would permit flexibility in lot sizes and residential types, so that new village housing reflected the existing residential lot sizes, setbacks, etc. that surround new development. Likewise, flexibility would permit a mix of house and lot types to reflect the housing variety of existing Plainsboro village. The zone does not preclude limited non-

residential uses such as a corner store, recreation area, or professional office in a structure that reflects the surrounding architectural character. The goal was to create a zone with enough flexibility that permits the organic variety of a traditional village yet prohibits the chaotic character of an unplanned area.

f. Village Center Zone

This zoning classification permits and promotes a full mix of commercial, institutional and residential uses. The goal was to create a vibrant, pedestrian-friendly, mixed-use center with an emphasis on local serving retail, office and personal service uses. In the Plainsboro Village Center, this zoning classification was appropriate for the uses on the Cooper Tract and could be utilized in the future to guide growth in other areas to make Plainsboro Plaza more village-like.

g. Precedents

It was recommended that proposals be based on regional precedents. All proposal submissions had to include a minimum of three (3) photo examples of buildings that were similar to the proposal. Precedent examples from outside the region are permitted, but they needed to reflect a historic style (colonial, federal, Georgian, other) that related to the Plainsboro community.

h. Building Setbacks

Building setbacks and front yards must generally be small to create a village-like, pedestrian environment. Setbacks along a street should be consistent to create a street façade of buildings. Slight or local setback variations add to the imperfect character of village centers and should be permitted. Setback dimensions are from the property line, which is generally at the edge of the sidewalk. Setbacks must be measured from the property line to the main building façade. Awnings, porches, signs, overhangs and other projections may encroach into the setback line. Note that residential development in mixed-use areas may follow mixed use or residential setbacks.

i. Front Façade

The front of the house is dedicated to the public and should reflect a village character. Porches and decorative entries are encouraged. Garages on the front are prohibited.

Architectural Detail, Style, Color, Proportion and Massing should reflect regional precedents.

j. Materials

Natural materials such as wood and local stone are recommended. Stucco is discouraged.

Sidewalks on both sides of the street are required. A planted landscape strip is required between the sidewalk and street, where feasible.

Architectural paving such as brick, stone, cobbles and other pavers are encouraged for sidewalks and streets.

Landscape details such as gates, walls, and benches must be integrated into the design and illustrated as part of any development proposal.

Lighting will be the minimum required for safety and must be provided by the least intrusive facilities practical. Traditional light

standards are recommended along streets and within plazas and courtyards.

k. Streets

Streets must be narrow and tree-lined. Traffic calming devices (i.e., roadway surfaces, lane width, etc.) will be integral to the design to slow down traffic. Two lane or one-lane/one way streets are encouraged. Narrow village street width standards have been incorporated into the Township ordinances. Rear yard access alleys are encouraged, where appropriate.

l. Parking

On street parking is encouraged. Parking and building service locations must be hidden between buildings in parking courts. Landscaping in combination with low wall screening are recommended for exposed parking areas.



Parking Lot Screening

Table 3 Village Design Standards

Residential Setbacks:			
Single Family Detached:	Minimum/Maximum Front:	10'/25'	
	Side:	8'	
	Minimum Rear:	25'	
Attached Town Homes:	Minimum/Maximum Front:	10'/25'	
	Side - end Unit:	8'	
	Minimum Rear:	25'	
Multi-Family Senior Housing:	Flexible treatment based on design principles		
Mixed Use Area:	Minimum/Maximum Front:	0'/15'	
	Side:	0'	
	Minimum Rear:	0'	
Garage Rear & Side yard:	Minimum:	0'	
	Rear access alleys are encouraged		
Building Heights (all parcels). Traditional Buildings are 2.5 stories. Corner buildings, buildings that terminate an axis and buildings on significant sites are encouraged to be higher.			
Allowed:	3 stories (non-residential and mixed-use buildings)		
Recommended:	2.5 stories		
Permitted:	2.0 stories (infill or: 1.5 stories)		
Limited:	1-1.5 stories on accessory and age-restricted buildings at the Planning Board's discretion.		
Maximum:	3.5 Stories (limited to significant buildings)		
Lot Sizes:			
Residential Detached:	Minimum:	4,000 sf.	
	Typical:	5-7,000 sf.	
Residential Attached:	Typical:	1,300 - 2,000 sf.	
Attached Buildings:			
Commercial:	No more than four attached commercial buildings.		
Residential:	No more than six attached residential. Four attached units are recommended unless more are integral to the design.		
Roofs:	Pitched roofs (5:12 - 12:12) are recommended. Roof pitches should reflect regional precedents and be consistent throughout the project. Peaked roofs are encouraged. Mansard roofs are discouraged. Flat Roofs are permitted in mixed-use areas, but not recommended. Flat roof building proposals must have a traditional cornice and reflect a design that successfully screens rooftop mechanical equipment.		

7. Circulation Plan

Circulation is a critical element to the Village Area plan. Providing pedestrian-friendly streets, pedestrian circulation opportunities and traffic calming measures will continue to enhance the function of the Village Area and the quality of life for its residents, workers, and visitors.

Street design concepts for villages tend to be quite different than typical highway or subdivision street design. Village streets are generally narrow and tree lined which is intended to slow or “calm” vehicular traffic as it moves through neighborhoods.



Village Center

Unlike dead-end, cul-de-sac subdivision

streets, villages are characterized by a network of connecting streets. The street network serves to disperse traffic and provide traffic options as a measure to reduce traffic volume on individual streets. The street analysis of the village revealed that the village has both traditional village streets (Plainsboro Road, Dey Road) as well as typical subdivision streets in the Pondview and Country Village neighborhoods.

a. Circulation Connection

The Village Land Use Program outlined above results in a significant traffic reduction from previously planned development scenarios. Evaluations conducted by the Township Engineer and contained in the *Traffic Impact Report for the Proposed Village Area*, dated January 1999, noted the significant benefits that accrue to future traffic generations. In the AM peak period, the proposed village Land Use Program for the vacant properties would have generated 340 trips, while the previous land use plan would have generated 802 trips. Likewise, the PM peak period suggested a traffic yield from the new village Land Use Program of 597 trips, while the previous land use plan would have resulted in 897 trips. Therefore, it is clear that the land use plan prescribed meets the important goals of reducing congestion in the Village Area. Minimizing future traffic impact is also critical to providing the type of pedestrian-friendly environment essential to a healthy Village. In the traffic report, the Township Engineer noted that in general, a small portion of the traffic generated by retail, restaurant and service establishments tended to be pass-by traffic

that already existed on the adjacent roadway system. Likewise, the incorporation of age-restricted housing into the Village Area plan would lessen peak hour traffic generated by the development. Non-residential uses on the Cooper Tract would also help minimize local roadway impacts since larger traffic generators will be located closer to Scudders Mill Road.

b. Village Traffic Improvement Plan

It was noted in the 1996 Transportation Improvement Project Management Plan, prepared by the Township Engineer, and included as part of this Master Plan, that a comprehensive program of traffic and intersection improvements was necessary in the Village Area. These traffic needs were the result of overall community and regional growth experienced at that time. The Land Use Plan proposed reduced traffic impacts from future development within the Village and did not require significant augmentation of the existing improvement plan. However, the basic needs contained in the program remain. The success of this plan in creating the desired Village environment rests in great measure on the successful implementation of this improvement program. Likewise, future development proposals will require detailed traffic impact analysis to determine proportional impacts on various traffic and transportation "hot spots." The key Village Area traffic improvements, as identified in the 1996 Transportation Improvement Project Management Plan, include:

1) Intersection Improvements at Schalks Crossing Road and Scudders Mill Road

This intersection had been identified as operating at an unacceptable level of service during AM and PM peak periods. The Township entered into an agreement with Middlesex County for the improvement of this intersection. The engineering of this project design was completed. Improvements include the addition of lanes on all approaches and the construction of a jug handle in the northwest corner of the intersection, to allow westbound left turns from Scudders Mill Road to Schalks Crossing Road to be rerouted to southbound Schalks Crossing Road.

Improvements also included the implementation of a long-planned signalization of the main entrance to the Town Center Shopping Center on Schalks Crossing Road. This improvement has been critical in managing the safe access to both the shopping center and the Village Center development. Likewise, this has had a beneficial effect of calming traffic along Schalks Crossing Road, improving the pedestrian environment and providing an important pedestrian connection across Schalks Crossing Road,

between the Village Center zone and the Town Center Shopping Center.

2) Intersection Improvements at Dey Road and Scudders Mill Road

Improvements at this intersection are now underway and they include the construction of left turn lanes for Dey Road on both the eastbound and westbound approaches, the extension of the existing left turn lane on Scudders Mill Road on the eastbound approach and other signalization and geometric improvements. Pathways are being constructed as well as a sidewalk from this intersection to Schalks Crossing Road. A bus shelter will also be installed near the Schalks Crossing/Scudders Mill Road intersection.

3) Intersection Improvements at Plainsboro Road, Dey Road and Edgemere Avenue

The existing geometry of this stop sign-controlled intersection includes a single lane for all approaches. Evaluations and observations have noted that this intersection was in need of improvement. Its central location to the Village Area made the implementation of this improvement critical to the overall effectiveness of the Village Plan. The intersection was severely restricted by the close proximity of existing dwellings on three of the four corners of the intersection, which limited sight distance. Recommended improvements to this intersection included the installation of a traffic signal in order to improve traffic flow. This project has been completed.

4) Intersection Improvement at Maple Avenue and Edgemere Avenue

This stop sign-controlled intersection currently experiences delays with Edgemere Avenue traffic attempting to enter Maple Avenue. At the present time, the installation of a traffic signal at this intersection is recommended primarily due to the narrowness of the two intersecting streets and the traffic volumes experienced at peak periods.

5) Intersection Improvements at Plainsboro Road and Schalks Crossing Road

Under existing conditions, this intersection operates at unacceptable levels of service in the AM peak and in the PM peak.

Future traffic volumes will only serve to worsen an already poorly functioning intersection and will ultimately require improvement; however, physical constraints do exist at this intersection.

Future improvement plans should carefully balance the need to expand the intersection in order to improve levels of service, using village-planning principles that emphasize pedestrian-friendly design and traffic calming.

c. Schalks Crossing Road

Schalks Crossing Road is a critical element in the Village Plan. Currently, during peak periods, the road experiences significant traffic demands, requiring the full four-lane cross section of the existing roadway. However, the functional demands on this roadway compromise its ability to encourage pedestrian crossings, particularly in the off-peak period. The ability to calm traffic along Schalks Crossing Road and make it a more pedestrian-friendly environment has been critical to encourage pedestrians to cross between the Cooper Tract and the shopping center. This has been an essential element of the Village Plan. The construction of a traffic signal at the entrance to the shopping center has contributed to improving this condition. Also, it is anticipated that future development will be successfully accompanied by other existing improvements to Schalks Crossing Road that have improved its aesthetic quality and its pedestrian-friendly environment. These improvements include the construction of a landscaped median down the center of Schalks Crossing Road. This median not only has an aesthetic benefit, but also serves to calm traffic and improve the pedestrian scale of the roadway. The construction of this median has been carefully evaluated, designed and constructed to not compromise the access to and from both the Village Center and the existing Town Center Shopping Center.

d. Existing and Ongoing Development

1) Village Residential II (Enterprise Tract)

Important design concepts have been considered and traffic impacts evaluated as this zone has developed. The intersection of Plainsboro Road at Enterprise Drive now serves as the main entrance to an existing age-restricted development. Careful consideration has been given to the design of that intersection, with the goal of improving traffic flow. Likewise, secondary impacts at the nearby intersection of Scudders Mill Road and Plainsboro Road (the P Loop) have been successfully addressed. At the eastern end of the tract, connections to the existing Centers Drive have been carefully planned so as to

efficiently accommodate the additional access and anticipated traffic. As previously mentioned, interior street design sought to pursue Village design principles by creating smaller pedestrian-scale blocks and employing traffic calming measures to further encourage a pedestrian-friendly environment. This zone totals 41.09 acres.

The Village Residential II site is currently under construction. Toll Brothers is building single-family detached residential dwelling units in this village area. The developer has completed construction of a multi-level age-restricted condominium building on the site.

2) Village Residential I (GB Tract)

Development within this zone has considered the impacts on the intersection of Schalks Crossing Road and Plainsboro Road. A longstanding Master Plan goal called for the construction of a roadway to connect the Town Center Shopping Center to Plainsboro Road and this was also accomplished. Internal roadway design in the zone has taken place to emphasis calming traffic. This zone totals 13.99 acres.

The GB Tract has been developed into a residential area that conforms to the design and land use principles of the Village Center. Refer to the aerial view entitled: Plainsboro Township, Middlesex County, NJ 2008 Smart Growth Awards to see the location and layout of the existing village residential development in relationship to the entire Village area and surrounding environs.

3) Village Center Zoning (Cooper Tract)

Critical to the success of the development of this site has been the provision of a grid street system that serves to provide a pedestrian-scaled development which also encourages low speed traffic circulation. Previously outlined improvements to Schalks Crossing Road have been implemented in conjunction with the development of this site. Access onto Schalks Crossing Road now provides easy interconnections with access points to the Town Center Shopping Center. To the greatest extent possible, traffic is being encouraged to access this site from Schalks Crossing Road. Similarly, access onto Dey Road should be minimized to the greatest extent possible with a right-in and out intersection design. A single right-in and right-out driveway/roadway curb cut may be permitted onto Scudders Mill Road if and as determined necessary by the Planning Board. This zone totals 20.86 acres.

The Cooper Tract has been developed and is currently under construction to conform to the design and land use principles of the Village Center. Refer to the aerial view entitled: Plainsboro Township, Middlesex County, NJ 2008 Smart Growth Awards to see the location and layout of the existing mixed use village center development in relationship to the entire Village area and surrounding environs.

G. Office, Research and Industrial Uses

The Office Research and Industrial Land Use Plan are consistent with all Master Plan policies, standards, and assumptions. The plan promotes job growth within the Route 1 corridor and permits a level of development that is compatible with its immediate surroundings.

1. OB-1 Office Business Zone

In the OB-1 zone, the following uses are permitted:

- General corporate, administrative and professional offices
- Computer centers
- Training centers for business and professional office personnel
- All farm and agricultural activities
- Seminary uses
- Childcare centers



St. Joseph's Seminary

The minimum lot area is five (5) acres with a minimum frontage of 500 feet. The maximum building coverage is 25% and the maximum building height 35 feet.

Two sites are designated OB-1: the most northwesterly part of Plainsboro which contains an area presently occupied by St. Joseph's Seminary and New Jersey Police Barracks located along Route 1 which is zoned for office use. It is recommended that the existing office use classification and maximum floor area ratio of 0.38 be retained. This zone totals 65.51 acres.

2. I-100 Limited Industrial Zone

In the I-100 zone, the following uses are permitted:

- General corporate, administrative and professional offices
- Computer centers
- Training centers for business and professional office personnel
- Product development and research laboratories
- Limited manufacturing
- Childcare centers
- Agricultural activities
- Buildings, structures and uses owned and operated by the Township

The minimum lot size is five (5) acres with a minimum frontage of 500 feet. The maximum floor area ratio is 0.3, provided, however, that the maximum floor area ratio for lands in the I-100 Limited Industrial Zone east of the Amtrak railroad lines, as shown on the Land Use Plan map, is established at 0.07. The maximum building height is 60 feet and the maximum lot improvement coverage is 50%. This zone totals 253.75 acres.



Firmenich

Along that portion of Plainsboro Road that lies west of the railroad and adjacent to the PMUD zone is located the largest area of Plainsboro's second research and industrial development zone, which includes the unique and extensive research, industrial and office campus facilities of FMC and Firmenich. Because of their unusual blend of highly visible research and manufacturing activities with prestigious office buildings, this area excludes heavy manufacturing.

Warehouse and wholesale storage activities would only be permitted as accessory uses and subject to the following minimum design standards:

- a. Such facilities must be within completely enclosed buildings.
- b. No loading dock or service area may be on or visible from the lot line or any street frontage. Provisions for handling all freight must be on those sides of any buildings, which do not face on any street or proposed streets.
- c. No accessory use will be construed to permit open storage of materials or goods on the lot.

- d. Rear and side yards must be screened by a solid masonry wall and/or landscaped so as to provide an effective screen, at the time of planting, to obscure from view at ground level the permitted use from adjoining uses and streets.
- e. The exterior design of all permitted buildings on lots that abut a residential district or any street opposite land in a residential district must be in harmony with the general character of the residential neighborhood.

The smaller I-100 zone is located east of the Amtrak railroad lines on Block 6 Lot 6.01 and includes direct roadway access to Schalks Crossing Road. The IRL buildings on the lot constitute approximately 61,000 square feet of administrative, limited manufacturing and storage use, which has been present on the site since 1958. The facility is located along an access roadway approximately 1 mile off of Schalks Crossing Road. Under current use, approximately 25 full-time and 9 part-time employees are present at the site, which houses a modest pharmaceutical business.

There are no significant differences between the I-100 zone located west of the Amtrak lines including its uses and standards with the PMUD zone. However, the permitted maximum floor area ratio does take into consideration and, in fact, accommodates long range expansion plans of both FMC and Firmenich. Land areas adjacent to the Millstone River, Devil's Brook and the Walker-Gordon Pond are shown as open space conservation, which becomes an extension of the Princeton Forrestal private open space system.

The I-100 ordinance limits uses in a way that clearly states that no adverse effect to the normal use of any adjoining property can result from nuisances or hazards that may occur. It is clear from the location of the IRL site, far removed from roadway frontages and nearby residential uses, that it does not present an adverse impact on its neighbors. Bulk standards will limit the future development or expansion of this use.

H. FMC Redevelopment Plan

The Township Committee has adopted a Redevelopment Plan for the FMC site which is located in the I-100 Limited Industrial Zone. The extent of the redevelopment area is shown on the land use plan. As a result of Redevelopment Plan adoption it will not be necessary to change any of the zoning or land development codes to address this development plan.

The Redevelopment Area Land Use Plan is divided into five (5) major land use categories as described below and shown on the adopted Redevelopment Area Land Use Plan as Figure 6 on the following page.

The reflective design elements of the Redevelopment Plan are shown on the following Figure 10, 11, and 12 that are part of the adopted plan.

1. Hospital/Medical Office Complex (HMOC)

The area shown on the Redevelopment Area Land Use Plan as Hospital Medical Office Complex (HMOC) will permit the development of that portion of the Redevelopment Area as a Hospital/Medical Office complex. The HMOC will be developed as a single, integrated and comprehensively designed and planned hospital/medical office campus, designed to allow for safe and convenient access by all forms of transportation—vehicular and truck circulation, bus rapid transit, pedestrian and bike circulation—interspersed with gardens and landscaped areas and visually and functionally connected to the other components of the Redevelopment Area, including the Continuing Care Retirement Community (CCRC), the Skilled Nursing Facility (SNF) and a Public Park (PP). The hospital and medical offices will be developed with state of the art facilities, incorporating striking architectural features and sustainable building materials and design, and able to accommodate expansions and changes in health care technology and delivery well into the future.

a. Principal hospital and hospital-related uses include:

- Patient rooms, for both inpatient and outpatient treatment and care.
- Hospital support facilities, such as medical laboratories, medical clinics, surgical facilities, diagnostic testing, physical therapy and inpatient pharmaceutical facilities.
- Hospital operations, including but not limited to food service, laundry facilities, housekeeping, security facilities, and maintenance and storage facilities for medical supplies and equipment.
- Offices for hospital administration and hospital employees.
- Educational, training and conference facilities.

b. Medical offices, which may include diagnostic, treatment and medical procedure facilities for private physicians, other health care practitioners and their employees, whether or not having staff privileges at the hospital.

c. Accessory uses and facilities, as follows:

- Overnight accommodations and eating facilities for on-duty hospital employees and medical residents.
- Overnight accommodations within the hospital for patients' families.

- Accessory retail facilities serving hospital employees, patients and visitors, including but not limited to dry cleaning (drop-shop only), barber and beauty shops, massage therapy/health spa, pharmaceutical and medical supply sales, branch banks, gift shops, newsstands, and florists.
- Employee services, such as credit unions.
- Cafeterias for visitors and employees.
- Child care center, subject to the minimum standards of the Plainsboro Zoning Ordinance § 101-65F.
- Chapels and places of worship.
- Off-street parking and loading facilities, including both surface parking and multi-level parking garages.
- Transit facilities, including Bus Rapid Transit stops.
- Heliport or helipads meeting the applicable FAA requirements.
- Communication facilities, including radio communications and radio and satellite antennas.
- Outdoor and indoor gardens, open space and landscaped areas.
- Utility and heating, air conditioning and ventilating facilities.
- Other accessory uses customarily incidental to hospital facilities.

2. Skilled Nursing Facility (SNF)

The area shown on the Redevelopment Area Land Use Plan as the Skilled Nursing Facility (SNF) will permit the development of that portion of the Redevelopment Area as a skilled nursing facility, to provide a broad array of short-term and long-term medical and health care services to patients suffering from chronic illness and disabilities, or requiring long-term rehabilitation and care. The SNF will be designed as a single, self-supporting entity, but with functional and physical connections to other components of the Redevelopment Area, with particular orientation to and physical integration with the Public Park (PP).

a. Principal Uses, as follows:

- Patient rooms and treatment areas, for both inpatient and outpatient treatment and care.
- Support facilities, such as medical laboratories, medical clinics, diagnostic testing, physical therapy and pharmaceutical facilities.
- Facility operations, including but not limited to food service, laundry facilities, housekeeping and maintenance and storage facilities for medical supplies and equipment.
- Offices for facility administrators and employees.

b. Accessory Uses and Facilities, as follows:

- Overnight accommodations and eating facilities for on-duty facility employees.
- Cafeterias for visitors and employees.
- Off-street parking, limited to surface parking only, and loading facilities.
- Outdoor and indoor gardens, open spaces and landscaped areas.
- Utility and heating, air conditioning and ventilating facilities.
- Other accessory uses customarily incidental to skilled nursing/rehab facilities.
- Accessory retail facilities, such as barber shops and beauty parlors, and facilities for the sale of sundries such as newspapers, personal articles, gifts, flowers, food and similar convenience products for residents and their guests.

3. Continuing Care Retirement Community (CCRC)

The area of land shown on the Redevelopment Area Land Use Plan as the Continuing Care Retirement Community (CCRC) will permit that portion of the Redevelopment Area to be used as a Continuing Care Retirement Community. The CCRC will be age restricted as set forth in the definition of CCRC, and will include independent living units, assisted living units and nursing care units. The CCRC will also include facilities and arrangements for providing continuing care and meals for residents, with or without common dining facilities, and may include accessory services customarily incidental to a continuing care retirement community. The applicant for a CCRC must demonstrate that the continuing care

retirement community has received or will be eligible to receive a Certificate of Authority from the State of New Jersey, Department of Community Affairs, pursuant to the Continuing Care Retirement Community Regulation and Financial Disclosure Act (N.J.S.A. 52:27D-330, et seq.).

The CCRC must be designed to be a self-contained and self-sufficient residential and health care community, but also should have functional connections to other components of the Redevelopment Area, most especially the Hospital/Medical Office Complex (HMOC) and Skilled Nursing Facilities (NSF), as well as the Public Park (PP). The CCRC must provide all of the facilities necessary to deliver a coordinated set of services designed to address the comfort, health and wellbeing of the residents it serves, from those who are independent and in good health, to those requiring assisted living services, all the way through to those in need of 24-hour nursing care. The design and arrangement of buildings, grounds, parking and other accessory functions must be designed as a comprehensive single, harmonious, architecturally compatible and integrated community, with opportunities for a full spectrum of indoor and outdoor social and recreational activities, provided in an aesthetically pleasing environment, and at a pedestrian-friendly, human scale.

a. Principal Uses must include:

- Independent living units, in townhouses or apartments.
- Assisted living units, consistent with the definition in Section 101-37L(3) of the Plainsboro Zoning Regulations.
- Nursing care units, consistent with the definition in Section 101-037L(4) of the Plainsboro Zoning Regulations.

b. Accessory uses and facilities, limited to the use and benefit of the residents, staff and guests of the CCRC, which may include:

- Indoor and outdoor recreational facilities, gardens and open space.
- Physical therapy and nursing services.
- Food preparation facilities and dining facilities.
- Support services, including laundry services, housekeeping services, security facilities, storage and maintenance facilities.
- Administrative offices and staff facilities.
- Libraries and rooms for social activities, meetings and entertainment.

- Accessory retail facilities, such as barber shops and beauty parlors, and facilities for the sale of sundries such as newspapers, personal articles, gifts, flowers, food and similar convenience products for residents and their guests.
- Places of worship and meditation.
- Temporary guest lodging facilities.
- Off-street parking and loading facilities, which may include surface parking lots, enclosed garages for townhouses and below-grade or below-building enclosed parking garages for all other buildings, but not multi-level parking garages.
- Utilities and heating, air conditioning and ventilating facilities.

c. Maximum Number and Mix of Units

The total number of units and/or beds to be provided in the CCRC, including independent units, assisted living units and nursing care units or beds, cannot be greater than four hundred and forty-five (445). The combined number of assisted living units and nursing care units or beds cannot be less than twenty percent (20%) nor more than thirty-five percent (35%) of the total units in the CCRC.

4. General Office Research Complex (GORC)

The area shown on the Redevelopment Area Land Use Plan as General Office Research Complex (GORC) will permit the development of that portion of the Redevelopment Area for a General Office and Research Complex. The GORC may be designed and developed to be integrated with the other components of the Redevelopment Plan, or may be developed as an extension of the office and research complexes to the west of the Redevelopment Area along Plainsboro Road, or as an independent and self-contained development. However, in all cases, the vehicular, pedestrian and bike circulation system shall be integrated into that of the comprehensive circulation system for the Redevelopment Area, especially with regard to linkages to the Public Park (PP) component. Moreover, the design and construction of the GORC component must be of an equally high standard as the remainder of the Redevelopment Area, and must be similarly treated with respect to landscaping, signage, stormwater drainage and utilities, including the utilization of sustainable design and materials.

a. Principal permitted uses in the General Office Research Complex (GORC) include:

- General corporate, administrative and professional offices.

- Computer centers.
- Training centers for business and professional office personnel.
- Product development laboratories.
- Research laboratories engaged in scientific investigation, testing or the production of factual information for industrial, commercial or institutional clients or patrons where no tangible or physical product for general marketing is directly produced therein and where no danger, hazard or nuisance will extend beyond the borders of any lot which exceeds that created by such similar activities as are permitted as education-research uses in the PMUD Zone.

b. Accessory uses and facilities, as follows:

- Assembly halls for meetings incidental to the business of the principal use.
- In-service training schools for employees.
- Restaurants or cafeterias, primarily for supplying meals only to employees and guests of the principal use, and newsstands, post offices, branch banking facilities and similar conveniences serving primarily employees and guests of the principal use, provided that there will be no external evidence of such use.
- Indoor and outdoor recreation facilities, provided that all such accessory buildings and uses must be planned as an integral part of the principal use development.
- Custodial living quarters.
- Child care centers, subject to the minimum standards found in Ordinance § 101-65F.
- Other accessory uses, customarily incidental to the principal permitted uses in the GORC.

5. Public Park (PP)

The area shown on the Redevelopment Area Land Use Plan as the Public Park (PP) will permit development only of a Public Park. The public park must be developed as a publicly-accessible, passive open space facility. The park must be developed in a manner which preserves as much of the natural vegetation that exists on the property as possible, and with the demolition and removal of all present buildings, structures,

paving and other improvements (except for maintenance of one driveway access and off-street parking area for between 25 and 50 off-street spaces), and the remediation and replanting of such areas with lawn, shrubs, trees and other self-sustaining indigenous plant materials, to create a natural meadow on the upland portion, and preserved wetland and associated waterfront vegetation along the Millstone River. To the extent permitted, walkways must be provided down to the Millstone River waterfront, and benches and other sitting areas must be provided to afford visitors views of the water. Vehicular, pedestrian and bike access must be provided into the park and a small off-street parking area must be provided for vehicles and bikes. Paved walking trails, which can accommodate wheelchairs and strollers, and which provide a firm footing for walkers of all ages and conditions of health, must be provided. Cyclists must not be permitted to share the circular walkway with pedestrians. Small recreational structures aside from benches, such as gazebos, sheds, shelters, restrooms and other like structures will be the sole improvements permitted within the remainder of the park.

Permitted uses and structures in the public park must include:

- Passive recreational facilities, including meadows and lawn areas, paved walking paths, and where permitted, low-impact, handicapped-accessible walking trails to the banks of the Millstone River, benches, gazebos or shelters.
- Off-street vehicular and bike parking.
- Rest rooms and maintenance sheds.

I. Planned Development Areas

The Planned Development Areas are fully supported in the Master Plan. They encourage innovative land use planning while protecting the health, welfare, and general well being of resident, visitors and workers within both areas.

1. High Density (2.5 units per gross acre, PCD)

In the PCD zone, the following uses will be permitted:

- All uses permitted in R-200 Low-Density Zone
- Agricultural uses
- Recreational and cultural facilities
- Places of worship, facilities for social and civic clubs
- Public buildings
- Schools and other community facilities
- Retail commercial centers, limited to uses permitted in the Town Center Zone
- Office, research and light industrial uses permitted in the OB-1 Zone and the I-100 Zone
- Childcare centers
- Home occupations and professional offices

- Residential

The minimum land area for a PCD development must be 250 contiguous acres. A reasonable mix of units must be provided including single-family dwellings, patio homes, semi-detached and two-family dwellings, townhouses, and multi-family units. The minimum total area to be developed must be 50 contiguous acres with 25% devoted to common open space. The dwelling unit density is 2.5 dwelling units per acre. The minimum frontage is 300 feet and the maximum building height 35 feet. The maximum improvement coverage is 40%. This zone totals 950.15 acres.

Not more than five (5) percent of the land area within a PCD Zone can be devoted to retail commercial centers and not more than thirty (30) percent of the land area can be devoted to office, research, and light industrial uses. The zone includes the Princeton Meadows Neighborhood Shopping Center, an adjacent bank, and office and research uses. It is recommended that the shopping center be upgraded to reflect many of the design qualities that now exist in the Village Center, i.e. signage, landscaping, and building materials.

Millbrook Properties and Empire Development are proposing to upgrade the existing shopping center property at 660 Plainsboro Road. This will enhance the appearance of the shopping center and bring it in line more with other current buildings in the community.

This project will take place in two phases. Phase 1 involves rebuilding the building shell for fire damaged stores – Al Johns Pizza, Hot Breads, and Dr. Kadiyala Dental Office, reface and upgrade all remaining stores, and landscape. In Phase 2 the following will be accomplished:

- Install new store front windows and doors.
- Reface the front with hard coat stucco.
- Install Veneer stone.
- New columns.
- Install new vinyl soffits with upgraded lights.
- New signs and Goose neck lights.
- All new sidewalks will be repaired or replaced.
- New paint at rear of building.
- New Asphalt shingle roof.

The two artist renditions on the next page shows what the shopping center will look like after rehabilitation.

This zone has over the years received approval for thousands of dwelling units of all types, as well as a supporting commercial center and a substantial amount of office, research, and flex development space. The zone now contains garden apartments, townhouses, and single-family homes. The build out within this zone project, together with Princeton Forrestal Center development in the PMUD zone and residential development in the R-90 and R-95 zones, will meet foreseeable housing requirements of future households of all types and income levels that wish to live in the Township

2. High Density (8 units per gross acre, PMUD)

In the PMUD zone, the following uses will be permitted:

- Dwelling units in detached, semi-detached, attached, groups of attached or clustered structures, or any combination thereof
- Recreational and cultural facilities, including but not limited to, golf courses, clubhouses and swimming pools
- Planned Retirement Community
- Common open space
- Childcare centers
- Agricultural uses
- Public buildings, public schools and private schools
- Places of worship and other community facilities
- Office, research and industrial uses permitted in the I-100 zone
- General educational and research activities
- Business and commercial uses permitted in the GB and OB-1 zones
- An indoor motion picture theater and a hotel or motel and related facilities, including but not limited to a conference center auxiliary to the hotel or motel use.



Forrestal Village



Windrows

The minimum land area for a PMUD planned development is 500 contiguous acres. There must be an average of not more than eight (8) dwelling units per acre of land devoted to residential use. In

view of its unique nature, a Planned Retirement Community should not be deemed either a residential use or a nonresidential use for the purpose of this requirement. In a retirement community, only age-restricted units shall be deemed dwelling units. This zone totals 2,023.28 acres.

There must also be a set aside for common open space not less than one (1) acre of land for every eight (8) dwelling units and there must be set aside for common open space not less than 3 acres of land for every 10



Ruby Tuesday

acres of land devoted to office, research, industrial uses and/or educational-research uses, and/or business and commercial uses. The location of common open space should be consistent with its declared function. The height of any residential building cannot exceed 35 feet and the height of any other building cannot exceed 60 feet.

There should be set aside for common space not less than three (3) acres of land for every ten (10) acres of land devoted to independent living units, assisted living units and nursing care units

within a Retirement Community and not less than one (1) acre of land for every (8) age-restricted units.

In a Planned Retirement Community, a building containing nursing care units may have a height not exceeding 40 feet and a building containing assisted living units and/or independent living units may have a height not exceeding 60 feet.

In 1995, the Planning Board approved the Windrow at Princeton Forrestal full-service retirement community development consisting of a skilled nursing facility with 180 beds, 83 assisted-living units, 192 independent living units, 101 age-restricted villa units, a common building, a community medical center and related support facilities.

The Princeton Forrestal Center General Development Plan permitted the former Holiday Inn site together with Block 3 Lot 7 (approximately 3.7 acres in size) and part of Block 3 Lot 1.22 (approximately 4 acres in size) to be developed for a total of 300 hotel rooms in one or two lodging facilities, which could include restaurant and conference facilities, and a free-standing restaurant of not more than 10,000 square feet. In fact, this area has been developed into a 157-room Marriott Courtyard Hotel, a new 143-room Homewood Suites Hilton Hotel, and a Ruby Tuesday restaurant.

An existing 14 acre site has been added to the PMUD zone. It is known as Block 5.02, Lot 11Q and 59 and is located on the border of the

Township with South Brunswick Township. Vehicular access is and will be provided from Schalks Crossing Road and from within the Princeton Forrestal Center. A theoretical maximum of 150,000 square feet of new office and research use could develop on the property subject to Planning Board review and approval. The intent of this land use change was to make it more consistent



Homewood Suites

with the existing PMUD zoning of the Princeton Forrestal Center and the adjacent nonresidential office and research zoning in South Brunswick Township. The site will be fully integrated into the Princeton Forrestal Center with regard to all aspects of traffic and pedestrian circulation, utilities, building design and architecture and on-site amenities including landscaping and signage. In 2002, a developer known as CRA II secured Planning Board approval to construct 150,000 square feet of office/research consisting of one (1) single story building (75,000 square feet) and one (1) four story building (75,000 square feet).

The Princeton Nurseries site is located between Seminary Road and College Road and the South Brunswick Township border. Up to 2 million square feet of nonresidential uses may be built on the Nurseries site, of which not more than 100,000 square feet may be devoted to commercial uses, and up to 220 dwelling units could be built at the maximum gross density of 4 units per acre. The planned development housing area is comprised of a minimum 55 acres. Four types of single-family dwelling units are permitted: traditional single-family detached, single family detached cluster, single family semi-detached, and single family attached. At least two residential types have been provided for in the planning of this area. Lands west of Mapleton Road will be preserved as open space pursuant to approved build out of the Nurseries Site and the land being counted as a residential area for the purpose of residential density. In 2002, the Planning Board approved the construction of a multi-family residential development known as Barclay Square at Princeton Forrestal which resulted in the preservation of lands between the D & R Canal and Mapleton Road, the realignment of Mapleton Road with Seminary Road, and the construction of off-tract pathways to the Forrestal Village and the Canal.

On-going major issues in the PMUD Zone include the revitalization of the Forrestal Village Shopping Center by introducing a new mix of retail and commercial uses, replacing and improving signage, the construction of additional outdoor recreational facilities; the construction of earthen berms between Route 1 and Princeton Landing to mitigate the noise

effects of Route 1 improvements; the future planned construction of a Route 1 off-ramp through the State Police Barracks site, and Planning Board approval of a new Campus Road extension to the intersection of College Road East and Research Way. New land uses in the Village now include the Salt Creek Grille pad site restaurant, the recently approved Ruth Chris pad site restaurant which is under construction, the Cando Fitness and Koi Spa, and the relocation of the food court.



Forrester Village

The Campus Road project consists of the creation of the right-of-way for a road to access campus parcels from Scudders Mill Road. This road has been identified and included in this Master Plan. The southern portion of the road alignment was chosen so that the road would share an intersection with the proposed Connector Road from Plainsboro Road. To the north, the right-of-way follows the Bristol-Myers Squibb property line and an existing tree line at the northernmost end.

At its intersection with Scudders Mill Road, the access road has a 100' right-of-way, accommodating four travel lanes with a landscaped median and turning lanes. At approximately 500' north of this intersection with Scudders Mill Road, a four-way intersection is planned, allowing access to parcels both east and west of the roadway. After this point, the roadway begins to taper to a 40' cartway (66' right-of-way), which remains for the rest of its length. Traffic volumes indicate the need for only two travel lanes, with the additional right-of-way width to provide for turning movements. The 66' right-of-way would allow for expansion to four travel lanes if deemed necessary at some point in the future. The road specifications will meet the criteria for a public road in anticipation of possible dedication some time in the future.

Typical existing and ongoing development in this zone is accurately represented by the "Phase 3 Submission Existing Aerial View of Phase 1, 2A, 2B with Parking Expansions" at the Merrill Lynch complex located along Scudders Mill Road.

J. Population Density and Development Intensity

The Township has a total of 7,067 acres of which 1,467 acres have been planned for residential development. It is estimated that 9,333 dwelling units have already been constructed (as of 2005).

There is limited approach for significant future residential development in the Township. The ZAHAB and Levico developments are in the process of completing their small single-family detached subdivisions and a recent Planning Board approval along Dey Road will yield 2 additional homes. There are only a handful of isolated residentially zoned sites that may generate half dozen homes.

The only significant residential project planned at this time is the Continuing Care Retirement Center (CCRC) portion of the Redevelopment Plan for the FMC site to include up to 445 independent assisted living and nursing care units or beds. An increase in the number of these units would require amendments to the Redevelopment Plan.

The following two (2) tables present Middlesex County Population & Employment Projections for Plainsboro Township as presented in the Middlesex County Cross-Acceptance Report.

Table 4 Middlesex County Population Projections for Plainsboro Township								
1970	1980	1990	2000	2005	2010	2015	2020	Change 2000- 2020
census	census	census	census	estimate	estimate	estimate	estimate	estimate
1,658	5,605	14,213	20,215	21,987 21,900	24,361 22,750	27,660 22,780	30,386 22,820	10,174 2,605

Table 5 Middlesex County Employment Projections for Plainsboro Township						
1990	1995	2000	2005	2010	2015	2020
14,000	19,549 14,750	25,098 15,080	27,873 16,650	30,647 18,457	32,034 21,470	33,421 24,262

Township estimates are presented beneath the numbers that were developed by the County. They more accurately reflect the population and employment situation in Plainsboro now and into the future.

The Middlesex County Cross Acceptance Report reflects the level of population and employment to be absorbed by the county from state totals. According to the Middlesex County Planning Board, the state has not completely settled on its projections. The County has accepted the projections offered by the Township and has added a Year 2025 population projection figure for the Township of 22,850 and an employment projection figure of 25,314 which is consistent with the rate of population and employment growth recommended by the Township.

K. Land Use Plan

The major proposed land use categories are discussed below. The Land Use Plan map (**See Figure 3: Land Use Plan Map**) shows the major land use patterns and development proposals, but without the supportive features, such as local roads or recreation and other public facilities and Table 6 identifies the area associated with each zone.

Table 6 Land Use Map Categories

Land Use	Acres	Percentage
Commercial	99.21	1.4
Future Preserve Farmland	15.23	0.2
Future Private Open Space	18.30	0.3
Future Public Open Space	51.65	0.7
Industrial	168.32	2.4
Institutional	148.01	2.1
Mixed Uses	298.79	4.2
Office	741.73	10.5
Preserved Farm Land	672.20	9.5
Private Open Space	945.94	13.4
Public Facilities	268.23	3.8
Public Parks and Open Space	1636.83	23.2
Residential	1987.98	28.1
Undeveloped	15.45	0.2
Total	7067.85	100%

Source: Township Engineer. These area and acreage figures were generated with the use of GIS technology utilizing a digital parcel map for the Township of Plainsboro. These figures are based on the computer generated area of the digitized polygons and may not correlate to the acreage identified on the Township Tax Maps or on property surveys. These figures are presented for planning analysis only.

L. Action Plan

1. The Land Use Plan Element is based upon the principles and assumptions contained in the Master Plan Overview section. The Land Use Element should be read in conjunction with the Policies, Standards, and Objectives section which gives an overview of all the elements of the Master Plan. Taken together these elements provide a comprehensive plan for the development of Plainsboro.
2. The Land Use Plan Element spells out the existing and proposed location, extent, and intensity of development of land to be used in the future for residential, commercial, industrial, agricultural, educational, and other public and private purposes. The Master Plan is consistent with the existing zoning ordinance in all respects.
3. The population density and development intensity recommended for the Township are those specified above. The Master Plan recommends continuation of the existing zoning and the level of development permitted through and by it.
4. The Land Use Plan Element supports the redevelopment of properties in the public interest like the FMC site.
5. The Land Use Plan Element encourages the ongoing careful and comprehensive planning of individual development sites that may want or need to reinvent themselves by way of introducing pad sites, new and

different land uses, and physical site upgrades to become yet more attractive and smart growth oriented.

6. The Land Use Plan Element encourages the preparation of a comprehensive plan for the Princeton Forrestal Campus. This plan should, among other items, not only address parking but also vehicular circulation and site access, signage, landscaping, lighting, and an architectural theme or style. The Township envisions that this plan will be submitted for Planning Board review and comment and then be submitted along with any future development applications. The University and the Planning Board may also enlarge the study area boundary to include vacant areas south of the Campus.
7. Re-evaluate permitted and conditional uses in the R-100 and R-150 zones, in addition to other appropriate zone districts, to further promote and support agricultural and farming activities. Farm related activities include roadside stands, farm market, Christmas tree farm/cut your own, gift shop/agricultural crafts, winery, picnic areas, petting zoos, agricultural fair/show/festivals, serving food and drinks, wagon/sleigh rides, corn maze, hay rides, farm tours, and pick-your-own fruits and vegetables. Non-farm activities may include hunting, fishing, bed and breakfast, camping, horseback riding, hiking, and cross country skiing.
8. Support amendments to the existing approved Water Quality Management Plan (Lower Raritan-Middlesex County Wastewater Management Plan) for the Township, if proposed, that provides for consistency between the sewer service area and the policies and objectives of the State Plan and State Plan Policy Map with specific consideration given to areas with preserved farmland and public open space currently located in the sewer service area.
9. Continue to support local and state planning objective within PA 4: preserve high values agricultural soils and agrarian properties and cluster development within such areas.

CIRCULATION PLAN



Contents

- Introduction
- Vehicular Circulation
- Plainsboro Road Traffic Calming and Improvements
- Roadway Access and Curb Cuts
- Goods Movement
- Bus Service
- Travel Demand Management
- Pedestrian and Bicycle Management
- Rail Transportation
- Air Transportation
- Implementation of Improvements
- Action Plan

IV. CIRCULATION PLAN ELEMENT

A. Introduction

The Township's geographic location is one which has permitted controlled growth and development. Located in southern Middlesex County, in the center of the state, the Township's populace continues to have easy and direct access to New York, Newark, Philadelphia and the surrounding cities of Trenton, Princeton and New Brunswick. Existing transportation systems are being taxed and demand on the transportation system has become overloaded as more people are drawn to this desirable local area. Transportation is much more than a matter of convenience; it is an integral part of our growing community and as such it should be accessible, reliable, and available to all residents, workers, and visitors in the Township.

As with most suburban locales, Plainsboro's primary means of transportation is the private automobile via the area's roadway network. This plan element recognizes the local population's preference for auto transportation, while promoting alternate modes such as bicycle, pedestrian, public and private bus service, rail transportation by way of the New Jersey Transit's Princeton Junction Train Station and the potential for bus rapid transit.

The majority of residents in Plainsboro utilize the northeast corridor's major roadway system, including Route 1, Route 130 and the New Jersey Turnpike. These are major links to surrounding communities, and they provide access to residential, industrial, and commercial areas.

Three (3) principal arterial roads within the Township that convey traffic to and from neighboring communities are Plainsboro Road, Scudders Mill Road and Dey Road. These roads have the highest traffic volumes on a daily basis. The highest a.m. and p.m. peak hours usually fall within the 7:00 a.m. to 6:00 p.m. time frame. As Plainsboro reaches build out, the arterial roads have and will continue to become more congested. Congested roads lead to safety concerns, problem areas such as accident locations, a general deterioration of the entire physical roadway system, and short cutting through residential neighborhoods to save time.



Landscaped Roadway Center Median

Plainsboro's Circulation Plan Element provides for a network of local, inter-municipal, and regional roadways which meet the Township's transportation

needs, based on the Land Use Plan and known outside influences. Over the past three decades the Township has seen the completion of Scudders Mill Road, College Road East, the Route 1/College Road grade separation, the Route 1/Scudders Mill Road grade separation, the realignment of Seminary Drive with Mapleton Road, the construction of Campus Road, in addition to localized roadway widening projects, installation of traffic signals, and minor intersection improvements.

A 1986 traffic report prepared by RPPW, Inc., based upon then current land use policies, outlined the need for a series of roadway and intersection improvements. Then in 1990, an Orth-Rodgers traffic study was completed which analyzed the roadway network in and around the Princeton Forrestal Center. In June 1995 and December 1998, the Second and Third Updated "Princeton Forrestal Center and Kingston Area" Comprehensive Traffic Studies were prepared by the University. All of these studies were, by reference, made a part of the 1999 Princeton Forrestal "General Development Plan" application to the Planning Board. These traffic studies are an integral part of this Master Plan and the relevant roadway improvements identified in them are included herein. In addition, this Circulation Plan Element is guided by the 1996 Transportation Improvement Project Management Plan as prepared by the Township Engineer.

Most recently a Traffic Impact Study was prepared by TRC Engineers, Inc. for the Princeton Health Care System dated May 2008. This study provides valuable information concerning roadways and intersections associated with the FMC Redevelopment Plan Area and beyond. The Study identifies conditions at certain locations and recommends improvements.

A second fundamental component of circulation planning is Transportation Demand Management which focuses on making a more efficient use of the roadway infrastructure by increasing vehicle occupancy rates and reducing peak period traffic.

The Township's circulation planning in roadway infrastructure, demand management, pedestrian, bicycle and rail circulation and bus service including bus rapid transit is detailed herein. Nearby airports and helipads and heliports are also identified. Helipads in the Township are located at Firmenich, in the Princeton Forrestal Center, at Merrill Lynch, and one may be located at the new hospital site.

This Circulation Plan Element is continually being refined on an as needed basis through direct and active Township involvement with the Central Jersey Transportation Forum (CJTF) and the Middlesex County Transportation Coordinating Committee (TCC). The CJTF has been in operation since 1999. It was formed to "address concerns of municipalities in Mercer, Middlesex, Somerset, and Hunterdon counties focused on the US 1 corridor. The key issues are east-west access; improving coordination of transportation and land use in this high growth, congested area; and transit". The CJTF is supported through the Delaware Valley Regional Planning Commission, the North Jersey Transportation Planning Authority, and the New Jersey Department of Transportation. The TCC was established by the Middlesex County Freeholders in 1976. The TCC advises the freeholders on transportation issues. Membership

in the TCC includes representation from the Freeholders, the municipalities in the County, the County's Legislative delegation, transit providers, the education and business community, and the State, regional and County transportation agencies.

B. Vehicular Circulation

1. Introduction and Overview

The vehicular circulation plan for Plainsboro Township considers local and regional needs. Existing roadways are proposed to be widened and upgraded and new roadway linkages are shown to be achieved through the subdivision and site plan review process. It should be emphasized that the vehicular circulation plan is not intended to reflect exact roadway alignments, rather the principles to achieve the Township circulation network. During subsequent implementation, further detailed analysis will be necessary to select exact roadway alignments and engineer precise intersection improvements for various projects to be undertaken. The following are methods in which overall transportation goals and policies are to be achieved:

- a. Require reverse frontage lots for all proposed roadways that are to carry substantial through traffic movements.
- b. Improve key intersections which currently operate at or are projected to operate at "D" level of service and/or exhibit hazardous safety conditions which is consistent with the Township's 1996 Transportation Improvement Plan.
- c. Develop a mechanism to seek private cash or in-kind contributions for a pro-rata share of off-site traffic improvements.
- d. Expand local bus service and ride sharing, van-pooling, and staggered work hours to reduce dependence on the private automobile.
- e. Coordinate roadway improvements with bicycle and pedestrian routes which also complement private and public open space systems.
- f. Extend Campus Road to College Road East to better utilize existing roadway infrastructure and tie together existing and emerging development patterns both within and outside the Township.
- g. Establish park-and-ride lots in existing shopping centers or at other locations where parking lot spaces are currently underutilized and can be used for this appropriate and specific transportation purpose.

- h. Construct fully operational bus shelters throughout the Township to include handicapped accessibility, appropriate lighting and landscaping, pull-off lanes if necessary, and signage.
- i. Promote the introduction of bus rapid transit into the Township by locating a route in the Township that will interconnect with other surrounding communities and otherwise service dense and appropriate employment, housing, and mixed-use activity centers.

2. Functional Classification and Improvements

In a properly conceived circulation system, each roadway is designed in accordance with its function; that is, the service that it is or will be expected to perform. Generally, the road system in the Township can be classified into five (5) functional categories: principal arterials (expressway), minor arterials, major collectors, minor collectors, and local streets.



Village Intersection Improvement

In principle, the classification system is graded in the nature of its performance. The major road classification carries regional or through traffic to the next level roadway, distributing regional traffic to an arterial system, which in turn distributes traffic to the next level of roadway, the neighborhood collector system, which in turn distributes traffic to a local street giving individual property access. In practical application, it may not be possible in all instances to achieve such a circulation principle; however, a close approximation is possible in the Township.

The primary corridors expected to experience the highest traffic volumes and greatest number of problem movements are Route 1 and Scudders Mill Road. The widening of Route 1 to six lanes, provision of additional grade separations and other access restrictions has helped to maintain through traffic flows along Route 1. These actions are considered important not only to the Princeton Forrestal Center area but to the entire Route 1 corridor. Scudders Mill Road has a similar importance, although on a smaller scale. It serves as a major arterial for the Princeton Forrestal Center, and through its connections with Dey Road and Plainsboro Road, it provides access to the New Jersey Turnpike, Route 130 and to the southern Middlesex County area.

The guiding premise in developing the Township's improvement recommendations are to maximize future operating conditions at existing intersections wherever practical and permitted by adjoining land uses.

Supplementing these actions are suggestions to realign roadways and add new links or sever existing connections to provide traffic with more direct routes and thereby avoid sensitive areas where the present character of the roadway and adjacent development(s) merit preservation.

One of the significant improvements to the circulation system is the existing Campus Road connector road which parallels Route 1 between Plainsboro Road and College Road East. This connector road will someday be extended to the existing intersection



Signalized Intersection

of Research Way and Campus Road East in association with the possible realignment of Research Way to Perrine Road. This alignment will minimally impact the existing Princeton Forrestal Center open space network which includes existing tree stands and some wetlands. The complete campus roadway is desirable and necessary. All environmental impacts will be successfully mitigated. The Research Way alignment will provide direct access to the proposed Perrine Road/Route 92 interchange. However, as previously mentioned, this alignment would impact Forrestal Center's open space plan, impact wetlands, and bring a major roadway in proximity to the Princeton Plasma Physics Laboratories.

A secondary northbound connection (right-in and right-out) at Route 1 south of College Road and a fire lane connection to the Robert Wood Johnson Foundation site are also depicted on the Circulation Map. These roadway improvements compliment the overall Campus Road design.

The projected traffic flows along Scudders Mill Road suggest that it can continue to operate as a bypass to Plainsboro Road in the short term. However, to accommodate build-out traffic needs, Plainsboro Road needs to be considered an important alternate roadway link to the southern portions of the Township. This is in terms of traffic to and from Route 1, as well as traffic to and from the east. Coupled with this recognition of continued Plainsboro Road usage, additional improvements at the Schalks Crossing Road intersection have been accomplished. The need for improvements along Plainsboro Road is a result of development build-out and will require monitoring and further in-depth review since Scudders Mill Road can maintain acceptable operating conditions for the foreseeable future. Since Plainsboro Road is also utilized as a main access corridor or route to the Town Center Shopping Center, Municipal

Center, the mixed-use Village Center, and the older village, this plan continues to discourage through-traffic movements on local residential streets like Parkway Avenue and Prospect Street which tie directly into Plainsboro Road.

The suggestions for Mapleton Road represent an example of where little or no improvement of the existing roadway is a preferred action. In this corridor, a new connection to College Road West has been proposed and implemented for the northern portion, while the southern portion has been successfully isolated by the previous deletion of the Scudders Mill Road extension. The deletion of the Scudders Mill extension was part of NJ DOT's desire to reduce the cost and impact of the Scudders Mill Road grade separation at Route 1. The effect of deleting this extension has been a reassignment of traffic to College Road. These design solutions have reduced the traffic on Mapleton Road, Seminary Drive and the west approach (Mapleton Road) at the Plainsboro Road and Route 1 intersection, and have effectively converted them into local access streets.

In 2006 the Planning Board approved the construction of a 4-way intersection of College Road, Seminary Drive, College Road West and Nursery Road as part of a new connecting link on the west side of Route 1, extending from north of Ridge Road through the Princeton Nurseries site and into College Road West, that would not only serve as access to this area, but would also tie Independence Way and the Bellemead non-residential office park development into the area roadway system.

Plainsboro's Circulation Plan Element provides for a local and regional highway network which meets the Township's transportation needs based on the Land Use Plan. It is comprised of a variety of road types from arterials such as Route 1, to local streets such as Parker Road in the Princeton Collection housing development, to principal arterials such as Scudders Mill Road.

Described below are the various road improvement proposals illustrated on **Figure 4: Circulation Map**, listed according to their functional roadway classifications. They have been advanced in recognition of future traffic volumes from the various land use proposals contained in this Master Plan. Also noted are suggested ultimate rights-of-way for the roadways. Presented below is a summary of improvement recommendations, which lists the improvements suggested for each intersection or roadway segment within the Township. A schematic depiction of potential alignments for new roadway connections is presented on the Circulation Map. These improvement recommendations are intended to supplement existing roadways and intersections, and to provide alternate routes for local and regional traffic flows.

a. Principal Arterials

The principal arterial system consists of a network of routes with the following service characteristics:

- 1) Corridor movement with trip length and density suitable for substantial statewide or interstate travel.
- 2) Movements between all, or virtually all, urban areas with populations over 50,000 and a large majority of those with populations over 25,000.
- 3) Integrated movement without sub connections except where unusual geographic or traffic flow conditions dictate otherwise.

The principal arterial system is stratified into the following two design types: (1) freeways and (2) other principal arterials.

Proposed State Route 92 and existing Route 1 are in this category. Route 92 will be a limited access, 6-lane roadway with a 300 foot typical right-of-way which will ultimately extend from Route 1 in South Brunswick Township through a small section of northern Plainsboro Township to the Route 130/Route 32 intersection with direct access to Exit 8A of the New Jersey Turnpike just north of Cranbury Township.

The proposed Route 92 improvement project has a long history. In 1986, a draft Environmental Impact Statement (EIS) was prepared by NJDOT. Since 1986, the NJDOT had been revising the EIS to reflect the outcome of the public hearing process. Basically, a northerly rather than a southerly aligned Route 92 had been supported by both the NJDOT and the Township.

In the 1990's, the NJDOT was involved in preparing a final EIS. In addition, the NJDOT sought Federal Highway Administration concurrence to separate Route 92 into two design projects. One project consisted of improvements from Route 206 to Route 1 (not including the interchange). The other project consisted of the portion of Route 92 from the Route 1 interchange to Route 130. The Hightstown Bypass project had already been separated from the Route 92 project. The reason for the splitting of Route 92 into two projects was to allow the project schedule of Route 92 from Route 1 to Route 130 to proceed without being delayed by the anticipated environmental concerns associated with that portion of Route 92 from Route 206 to Route 1. There were ongoing discussions between the DOT and municipalities affected by the Route 92 alignment between Route 206 and Route 1 to evaluate alternative design strategies focusing on alignment, right-of-way, and number of travel lanes.

The final EIS was delayed until wetland determinations were made related to portions of Route 92 from Route 1 to Route 130. While the current proposed alignment could have been slightly altered by the wetlands determination, the NJDOT had no plans to

shift the design to the south. The NJDOT had stated that the precise location of the Perrine Road interchange would be finalized during the design phase of the project, which would not begin until the EIS was finalized.

The NJDOT never completed their final EIS document. Instead, the study of Route 92 was shifted to the New Jersey Turnpike Authority which conducted a wetland permit study and prepared a draft Environmental Impact Statement for the Route 92 project in 2004.

As a result of their work the Turnpike Authority proposed the construction of Route 92 in Middlesex County. The proposed roadway would consist of a total of six (6) access points including Route 1, Perrine Road, Route 130, Commerce Drive, Cranbury-South River Road, and the Turnpike at Interchange 8A. Proposed Route 92 would have two different roadway cross-sections. In the area between Route 1 and Route 130 the roadway cross-section would consist of two (2) lanes in each direction divided by a 36 foot wide grassed median and bordered by two twelve (12) foot wide outside shoulders. The roadway section between Route 130 and Interchange 8A of the New Jersey Turnpike would consist of three (3) lanes in each direction with a concrete median barrier and shoulders.

Route 1 is intended to handle the majority of regional traffic with limited access points. Recent improvements by the NJDOT have included establishing 6 moving lanes with a median traffic divider as well as grade separating or upgrading various intersections along Route 1 including the Scudders Mill Road overpass which was completed and placed into operation at the end of 1995. Route 1 experiences a traffic level of service "D" for short periods during the evening rush hours. With anticipated increases in volumes due to additional development which is now occurring along Route 1 between Trenton and New Brunswick, as well as the ever increasing volume of regional traffic, the capacity of Route 1 will have to be monitored and possibly adjusted to increase capacity or some alternative regional highway will need to be provided if the service provided by this key regional link is to remain acceptable.

This type of road also provides region-wide service by linking major arterials. Through their planning and design program, Plainsboro and NJDOT have protected the regional highway character of Route 1 by limiting intersections and curb cuts.

The typical right-of-way for Route 1 in Plainsboro is 150 feet, although the NJDOT is seeking up to 170 feet in certain instances on its future improvement plans for the roadway. Key principal arterial proposals for Route 1 are as follows: construct an off-ramp at or near the existing State Police Barracks location to improve

traffic movement into and out of the Princeton Forrestal Village development, re-design and upgrade Route 1 ramps at the Sayre Drive/Route 1 intersection, and study the feasibility of accommodating bus rapid transit.

While Route 1 contains six moving lanes with a median traffic divider there is a potential for a long-term future fourth travel lane in selected locations, pending completion of NJDOT design and environmental studies, which warrants continuing review of the Route 1 improvement program by the Township.

b. Minor Arterials

The minor arterial road system, in conjunction with the principal arterial system, forms a network with the following service characteristics:

- 1) Linkage of cities, larger towns, and other traffic generators are capable of attracting travel over similarly long distances.
- 2) Integrated interstate and intercounty service.
- 3) Internal spacing consistent with population density, so that all developed areas of the state are within reasonable distances of arterial highways.
- 4) Corridor movements consistent with those characteristics noted above and with trip lengths and travel densities greater than those predominantly served by collector or local systems.

Minor arterials therefore constitute routes, the design of which should be expected to provide for relatively high travel speeds and minimum interference to through movements.

Plainsboro's existing minor arterials are Scudders Mill Road, Dey Road, and Plainsboro Road between the Cedar Creek and Scudders Mill Road. These roads, with a minimum 100 foot right-of-way, will continue to serve as the major circulation spine receiving traffic from minor arterials and carrying it to and from Route 1.

They will generally have a total of four moving lanes with unpaved shoulders; a landscaped median divider is provided on Scudders Mill Road between Dey Road and Route 1; and storage for turning movements at key intersections is required. Proposed minor arterials in the Princeton Forrestal Center would all have 20 foot wide landscaped center medians. Key minor arterial proposals are as follows:

- 1) Scudders Mill Road Interchange with Route 1

Enhanced maintenance of landscaping, sidewalks, signage, and medians.
- 2) Scudders Mill Road and Campus Drive/Plainsboro Road "Link"

Address an intersection upgrade as a result of further development of the FMC properties, the Princeton Forrestal Center, and extension of Campus Road to the College Road East/Research Way intersection.

Mitigation includes the following proposed improvements: a northbound right turn lane from the Connector Road onto eastbound Scudders Mill Road, a north bound double left turn movement with split north/south phasing, a third eastbound dedicated through lane with associated far side receiving lane, and eastbound dedicated right turn lane and a dedicated westbound left turn lane with associated receiving lanes.
- 3) Scudders Mill Road and Merrill Lynch/BMS Drive #1

Construct new westbound right-turn deceleration lane and lengthen existing left-turn stacking lane; install traffic signal; and construct entrance drive into Merrill Lynch.
- 4) Scudders Mill Road and Merrill Lynch/BMS Drive #2

Consider new internal connections and diversions to other driveways to delay the need for signalization at this intersection and eliminate left-turn stacking lane by median and install traffic signal.
- 5) Scudders Mill Road and College Road East/Merrill Lynch Drive #4

The proposed mitigation at this intersection includes the following improvements: a third eastbound through lane, traffic signal operation modifications to provide an overlap green phasing on the southbound and westbound right turn lanes and a fourth westbound lane with a free flowing right turn ramp.
- 6) Dey Road

Widen Dey Road to four lanes between Scudders Mill Road and the Cranbury Township line.

Install traffic signal at Wyndhurst Drive intersection with Dey Road.

7) Scudders Mill and Schalks Crossing Road

The proposed mitigation at this intersection includes restriping to provide southbound and westbound right turn lanes and traffic signal operation modifications to provide an overlap green phasing on the southbound right turn lanes if deemed acceptable by the NJDOT, County of Middlesex and Township of Plainsboro; and the construction of a far-side eastbound jug handle if deemed necessary.

c. Collector Roadways

The collector routes generally serve travel of primarily intracounty rather than statewide importance and constitute those routes on which (regardless of traffic volume) predominant travel distances are shorter than on arterial routes. Consequently, more moderate speeds may be typical. To define collectors more clearly, this system is subclassified according to the following criteria:

- 1) Major Collector Roads. These routes (1) serve county seats not arterial routes, larger towns not directly served by the higher systems, and other traffic generators of equivalent intracounty importance, such as schools, county parks, and important agricultural areas; (2) link these places with nearby larger towns or cities, or with routes of higher classifications; and (3) serve the more important intracounty travel corridors.
- 2) Minor Collector Roads. These routes should (1) be spaced at intervals consistent with population density to accumulate traffic from local roads and bring all developed areas within reasonable distances of collector roads; (2) provide service to the remaining smaller communities; and (3) link the locally important traffic generators with their rural hinterland.

Key links between major collectors will be provided by four lane, 72-100 foot wide minor arterials. Generally, these roads would not be equipped with paved shoulders, but would, in some instances, require landscaped center medians and adequate storage capacity at important intersections.

As shown on the Circulation Map, roads in this category are existing roads. Upgrading them to their ultimate right-of-way is proposed. New road proposals include possible realignment of Scotts Corner Road with Friendship Road in South Brunswick Township, implementation of a new north-south arterial connector

route through the Princeton Forrestal Center to Route 92 and new roadways to service the Princeton Nurseries property. The realignment of Scotts Corner Road with Friendship Road will require further in-depth analysis due to the impacts on adjacent properties and accounting for Route 92 and other traffic related impacts. Key major collector proposals are as follows:

1) Route 1 Parallel Service Road

A new north-south minor arterial connector route east of and parallel to Route 1, connecting Scudders Mill Road and the Plainsboro Road "Link" with College Road East at Research Way. See alignment on the Circulation Plan Map in the PMUD Zone. The right-of-way and cartway may be reduced to that of a major collector if supported by traffic analysis.

2) College Road East and Research Way

Install traffic signal.

Provide a separate left-turn lane and a shared through-right turn lane on Service Road approach when Service Road is constructed.

Provide individual left-turn, through, and right-turn lanes on Research Way approach when service Road is constructed.

3) Research Way and Schalks Crossing Road

Install traffic signal.

Re-stripe intersection to provide separate right-turn lane on southbound Schalks Crossing Road and a separate left-turn lane on northbound Schalks Crossing Road.

Depending upon an ultimate link with Route 92, re-align and extend Research Way to connect with Perrine Road, and extend Schalks Crossing Road and Parker Avenue to Research Way. Analysis suggests that the intersection of Schalks Crossing Road and Research Way would operate at acceptable service levels even if there were no re-alignment. If re-alignment is pursued, it is recommended that Research Way/Schalks Crossing Road/Perrine Road provide two through lanes per direction between College Road East and Route 92.

4) College Road West and Seminary Drive

Provide separate right turn lane for College Road West.

Provide dual left turn movement from Seminary Drive (or new collector road).

Install traffic signal.

Consider Mapleton Road as a scenic collector.

5) Schalks Crossing Road

Engineer and construct road improvements from Scudders Mill Road to Ridge Road; secure right-of-way; engineer and construct bridge improvements over Amtrak.

Install traffic signal at intersection with Wyndhurst Drive.

6) Princeton Nurseries

Extend four lane arterial from College Road West north into the Princeton Nurseries and South Brunswick Township.

7) Grovers Mill Road and Maple Avenue

Undertake traffic calming study in front of the school complex and widen Grovers Mill Road in front of the High School where it has not been widened.

8) Plainsboro Road

Implement traffic calming to reduce vehicular speeds, improve safety of Maple Avenue/Plainsboro intersection and pedestrian and bicycle safety.

Install traffic signal between Connector Road and Route 1.

9) Plainsboro Road and Connector Link

Provide separate left and right turn lanes for eastbound Plainsboro Road.

Provide a separate left lane for westbound Plainsboro Road.

Install traffic signal.

10) Edgemere Avenue

Install traffic signal at Maple Avenue intersection with appropriate intersection improvements.

11) Connector Link

A traffic signal and intersection improvements are to be installed at the existing unsignalized intersection

12) Plainsboro Road and Medical Access Road

An intersection will be constructed with a jug handle and traffic signal.

13) Plainsboro Road and Residential/Office Access Drives

A T-intersection will be installed with traffic signalization, if warranted.

14) Plainsboro Road and Schalks Crossing Road

The proposed mitigation consists of striping the east/west Plainsboro Road approaches to provide exclusive left turn lanes, signal timing changes and signal modification if required by NJDOT.

d. Minor Collectors

These are collectors providing direct links to arterial and major collector roadways. They usually have a 60 foot right-of-way width, depending on anticipated traffic carrying capacity, and contain two moving lanes. They are distinguished from minor collector roadways which function to indirectly distribute traffic to arterials. In most cases, major collectors require reverse frontage lots, whereas minor collector roadways could have direct frontage access.

Various minor collector roadways are identified on the Circulation Plan Map. These include: Mapleton Road between Seminary Drive and Route 1, Wyndhurst Drive, Derry Meeting Drive, Woodland Drive, Enterprise Drive, Sayre Drive, Walker Gordon Drive, Farmhouse Drive, Camas Court, Harvest Drive, Middlesex Boulevard, Warren Street, Atlantic Street, Franklin Drive, and Parker Road.

e. Scenic Collectors

This roadway classification applies to Mapleton Road located along the Delaware & Raritan Canal between Route 1 and South Brunswick Township. It should have a 50 foot right-of-way and should be limited to only two moving lanes. The intent is not to widen the roadway, but to make any necessary minor repairs and improvements.

g. Rural Roads

These roads include Grovers Mill Road, Cranbury Neck Road, Nostrand Road, Eiker Road and Petty Road. They are all envisioned to have 50 foot rights-of-way and two travel lanes with turning lanes at intersections.



Rural Residential Roadway

No additional rural roadways are proposed in this plan.

h. Local Streets

The local street system, in comparison to collectors and arterial systems, primarily provides access to land adjacent to the collector network and serves travel over relatively short distances. The local road system constitutes all rural roads not classified as principal arterials, minor arterials, or collector roads.

These roadways are found in subdivisions and large developments as through streets, parking lot access drives, loops, and cul-de-sacs. They typically connect with collectors, although sometimes they are found to directly interconnect with arterials.

As a result of varied traffic analyses undertaken as part of the background studies to this Master Plan, coupled with information made available by the Township's Police Department, Traffic Safety Division, key intersections operating at peak capacity or exhibiting hazardous safety conditions were identified.

Detailed traffic engineering studies of any intersection(s) should be undertaken to determine the exact geometrics of improvements required at each location. At a minimum, adequate signalization and proper turning lane movements should be considered at intersections. Through a combination of state, county and federal funds, together with monies potentially available from application of off-tract pro-rata ordinance requirements, improvement capital should be secured for systematic upgrades at critical intersections.

Implementation of the various improvements identified in this section is in large part dependent on the roadway jurisdiction.

Figure 5: Roadway Jurisdiction Map, identifies the ownership nature of all roads within the Township.

C. Plainsboro Road Traffic Calming and Improvements

1. Objectives

The boundaries of the roadway for purposes of the work completed for this project ran from the Cranbury Township border at the east to the signalized intersection of Plainsboro Road with Wyndhurst Drive/Center Drive to the West.

Within this area, Plainsboro Road moves from a 2-lane cross section at the Cranbury Township border into a 4-lane cross section with turning lanes at various locations along the roadway. Within the study area section of the roadway actual pavement widths vary from location to location. The roadway posted speed limit within the area is 45 mph.

There are currently four traffic signals located on the roadway within the study area. The first is at the western border at Wyndhurst Drive/Center Drive. The other signalized intersections are at George Davison Road, the 4-way intersection with Hunters Glen and the Plainsboro Road intersection to the Brittany townhouse development. A proposed signal is identified for the intersection of Plainsboro Road and Scotts Corner Road.

There are nine residential communities within the study area which have access to Plainsboro Road. While the houses within these communities do not front on the roadway, many have sidewalks and pathways that run to and along Plainsboro Road. At the western end of the study area there is retail shopping and dining, as well as an office complex and a senior housing development. The Morris Davison Park is also located along this section of the roadway. This park provides ball fields and a recreation area for Township residents.

This traffic calming and improvement plan was under-taken to address a number of objectives:

- To optimize safety on the roadway for pedestrians.
- To optimize safety on the roadway for bicyclists and encourage alternative transportation usage.
- To provide safe and useful locations for bus stops to promote alternative transportation.
- To create a safer and more appealing entrance and exit from Plainsboro Road while maintaining adequate vehicle capacity along the roadway.

- To insure that local motoring residents have adequate and safe access onto the roadway from local community neighborhoods.

This effort was completed to attain these objectives while at the same time maintaining the necessary capacity on the roadway to serve commuter needs.

2. Methodology

Recommendations made were a result of a number of tasks completed for the analysis of Plainsboro Road. The first step in the analysis was to review existing data and previous studies related to the area. Next, field investigations were performed to verify data contained in existing reports and to obtain additional information not elsewhere provided. The consultant team then made a presentation to the Township at a Planning Board meeting held on June 11, 1998, to obtain comments on issues and problems currently identified for the roadway. Meeting comments and written comments provided by interested Township residents were incorporated into the definition of issues to be resolved for the roadway.

3. Recommendations and Implementation Timeframes

A table of recommended improvements to Plainsboro Road is provided in Table 7, which is followed by more detailed information about issues identified by mode, and then through a block by block list of improvements along Plainsboro Road.

Phase I Restriping and Crosswalk modifications include:

- a. Wyndhurst Drive intersection crosswalk on the south side, relocation of the westbound stop bar, and leader lines for the westbound left turn into the shopping center.
- b. Scotts Corner Road intersection restriping for an eastbound left turn lane, striped crosswalks on the east and north sides of the intersection, and removal of midblock cross-walk together with sidewalk leading to crosswalk east of the intersection.
- c. Plainsboro Road restriping to one lane in each direction east of Scotts Corner Road with left turn lane into Aspen and Raven Crest Drives.
- d. Phase II Restriping and Crosswalk modifications include:
 - Wyndhurst /Center to Hunters Glen/Deer Creek Intersection removal of mid-block crosswalk and the sidewalks leading to the crosswalk.
 - Hunters Glen/Deer Creek Intersection placement of crosswalk on west, north and south intersection legs.

4. Issues and Identified Suggestions

Plainsboro Road is an important roadway for the Township. It serves local commuters who are either traveling by bus or accessing by car other major roadways in the surrounding areas. It also serves as a link for motorists, pedestrians, and bicyclists from the surrounding residential area to the Morris Davison Park.

Since the needs of the users of the roadway differ, the analysis for this study looked to address the needs of each mode group separately. The following issues were developed through past studies, through field observation, through local resident comment, and through technical analysis.

The identified suggestions and solutions are all of the items considered and reviewed as part of the analysis. Many of the suggestions have been incorporated into the recommendations for improvement. Some of the items suggested have not been included in the final list of recommendations because of considerations of cost and/or the proposed implementation of other improvements that are expected to accomplish similar objectives.

a. For Buses and Bus Riders.

Issues

- Stopping at locations not designated or designed to pick up and drop off passengers.
- Safe access of bus riders to their homes (walkers) or their cars (park and riders).

Identified suggestions and solutions

- Designated bus stop locations with bus pull off areas at locations proximate to residential areas with safe accommodation for individuals waiting for or alighting from the bus.
- Installation of bus shelters at designated stops to improve the desirability of transit use.

b. For Pedestrians.

Issues

- Speed of motorists traveling on the roadway coupled with the width of roadway which pedestrians are required to cross.
- Limited visibility of some crosswalks at mid-block locations.
- Lack of sidewalk along sections of Plainsboro Road.

Identified suggestions and solutions

- Pedestrian over or underpass from the Brittany to the park.
- Construction of missing sidewalk segments and removal of inappropriate sidewalks that encourage roadway crossings at inappropriate locations.
- Installation of Pedestrian Signals.
- Installation of traffic signals at certain locations which include pedestrian signals.
- Create improved linkages between residential developments along the roadway.

c. For Bicyclists.

Issue

- Roadway is not striped or designed for bicycle compatibility yet used by bicyclists on a regular basis who need to be safely accommodated

Identified suggestions and solutions

- Restripe and narrow travel lanes to provide shoulders on both sides of the roadway where possible.
- Create horizontal curves in the roadway at locations between Hunters Glen and George Davison and George Davison and Scotts Corner.

Table 7 Plainsboro Road Recommendations

Recommendation	Priority Time Frame	Cost
1. Phase I traffic striping and crosswalk modifications	short	low
2. Complete Missing Sidewalk Sections	short	high
3. Reduce Lane Widths to 10 1/2 feet providing a striped shoulder of 4' or greater, where possible	short	low
4. Traffic Signal and realigned intersection at Thoreau and Morris Davison Park entrance	short	high
5. Traffic Signal at Deer Creek/Hunters Glen	med	med
6. Phase II traffic striping and crosswalk modifications	med	low
7. Six foot curbed and planted center medians - Between Wyndhurst and Deer Creek/Hunters Glen Between Deer Creek/Hunters Glen and Thoreau Between Scotts Corner and Township Boundary	med	med
8. Traffic Signal at Scotts Corner	med	med
9. Interconnect signals to regulate speed progression	med	low
10. Install off-road bus pull-offs at intersections	various	low
11. Horizontal curve in roadway Between George Davison and Scotts Corner	long	high

Priority Time Frame - a sequencing of projects based on ease of implementation, costs and safety considerations.

Short Term - Projects that either are easy to implement and low cost or which should be implemented at an early stage because of their impact on safety considerations even though approval and construction factors may require a longer implementation time frame.

Medium Term - Projects that are more complex or of a somewhat higher cost or which are of lower cost but which need to be sequenced in conjunction with the implementation of other medium term projects.

Long Term - Projects that are important to the overall improvement plan but which are less critical from a safety standpoint.

Costs - Order of magnitude project costs including estimates of design, administration and construction.

5. Recommended Improvements

The next step was to work block by block to address the issues for each mode along Plainsboro Road. Integrated improvements have been identified for each of the issues developed moving along the roadway.

The first improvement looked at was the reduction of lanes on Plainsboro Road from two to one in each direction. The analysis showed that two lanes will be needed in each direction to accommodate future traffic from the western end of the study area to Scotts Corner Road.

Once the lane cross section analysis was completed, other suggestions for remediation were then systematically analyzed to determine if they would improve the identified issue conditions. Since the existing pavement width along the roadway currently varies from 11 to 12 feet, the impact of a reduction of lane width to 10.5 feet throughout the entire section was assessed. This reduction would allow for the addition of shoulder space to better accommodate bicycle travel. In some locations it would also provide additional area for a landscaped median. Review of this alternative showed that adequate capacity along the roadway could still be maintained. A recommendation to reduce through travel lane width to 10.5 feet throughout the study area is therefore included in the overall list of improvements.

Reconstruction of major sections of the roadway was not considered as an option for improvement at this time because of the prohibitive costs. As a result, one of the improvements recommended in the list below, i.e. providing a 4 foot striped shoulder for bicycles, is in many places not attainable because of constrained pavement widths. In locations where a 4-foot shoulder striping is not possible, a narrower striped shoulder should still be provided. All suggested improvements are provided below working from west to east along the roadway.

a. At Wyndhurst Drive Intersection.

Bus Stop - A far side bus stop with bus shelter exists. A far side bus stop for the eastbound movement with a bus pull-off area should be designated.

Crosswalk - Provide a crosswalk on the south side of the intersection. There is no crosswalk currently striped for this movement.

Striping Modifications - These improvements will narrow the area of conflict within the intersection and allow for better guidance of turning vehicles.

- Relocate the westbound stop line approximately 12 feet further west.

- Provide leader lines in the intersection for the westbound left turn movement into the shopping, center driveway.

b. From Hunter Glen/Deer Creek Intersection to Thoreau Intersection.

Crosswalk - Remove mid-block crosswalk and the sidewalks leading to the crosswalk.

Cartway cross section

- Travel Lanes - Restripe lanes to 10.5 feet.
- Median - Provide 6 foot curbed planted median in the roadway with 1.5' spaced striping on either side.
- Shoulders - Provide shoulders on both sides of Plainsboro Road to accommodate bicycle traffic. Ideally a 4-foot shoulder on both sides of the roadway to accommodate bicycle traffic in both directions.

Sidewalks - Complete sidewalk connections on the south side of Plainsboro Road.

c. Intersection of Hunters Glen/Deer Creek.

Traffic Control - Signalize the intersection

Bus Stops - Designate far side bus stops for east and westbound traffic at the intersection and provide bus pull-offs.

Crosswalks - Place crosswalk on west side of the intersection across Plainsboro Road and on the north and south legs of the intersection.

Sidewalks - Provide sidewalk connections to the crosswalk on both sides of the street.

d. From Hunters Glen/Deer Creek Intersection to Thoreau Intersection.

Cartway cross section

- Travel Lanes - Restripe lanes to 10.5 feet.
- Median - Provide 6 foot curbed planted median in the roadway with 1.5' spaced striping on either side.
- Provide a consistent 4-foot shoulder on the south side of Plainsboro Road to accommodate bicycle traffic. Ideally a 4-foot shoulder on both sides of the roadway to accommodate bike traffic in both directions.

Sidewalks

- Complete sidewalk connections on the north and south side of Plainsboro Road.
- If sidewalk extension on south side cannot be funded, remove existing sidewalk sections on the southbound side.

e. Intersection of Plainsboro Road to Thoreau Drive.

Roadway Geometrics - Relocate entrance to the park so that it is opposite Thoreau Drive.

Traffic Control

- Signalize the relocated intersection.
- Monitor traffic flow and install a speed hump within the Brittany development if necessary to discourage motorist cut through.
- If necessary install "No Left Turn (7am to 9am)" for northbound George Davison Road at its intersection with Tennyson Drive.

Crosswalks - Provide crosswalks at the relocated intersection.

Bus Stops

- Place far side stops for both eastbound and westbound movements.
- Construct bus pull-offs for both stops.

f. From Thoreau intersection to George Davison intersection.

Cartway cross section

- Travel Lanes - Restripe lanes to 10.5 feet.
- Median - No median in this section.
- Shoulders -Provide a shoulder on both sides of Plainsboro Road to accommodate bicycle traffic. Ideally a 4-foot shoulder on both sides of the roadway.

Sidewalks

- Complete sidewalk connections on the south side of Plainsboro Road.

g. Intersection of Plainsboro Road to George Davison Road

Bus Stops - Far side stops with bus pull-offs for both east and westbound movements.

- h. From George Davison to Scotts Corner Road intersection.

Cartway cross section

- Travel Lanes - Restripe lanes to 10.5 feet.
- Median - No median in this section.
- Shoulders -Provide shoulders on both sides of roadway.

Modification to geometrics

- Introduce a horizontal curve into the roadway section.

- i. Intersection of Plainsboro Road and Scotts Corner Road.

Roadway Geometrics

- Provide a striped left turn lane to northbound Scotts Corner Road and a striped through lane for eastbound Plainsboro Road.
- Provide a striped right turn lane and a striped through lane for westbound Plainsboro Road

Traffic Control - Signalize the intersection and restripe to provide a left turn lane for eastbound movements.

Bus Stops - Far side of intersection with bus pull off for east and westbound movements.

Crosswalks - Provide striped crosswalks on the east and north sides of the intersection.

Sidewalks - Provide sidewalk connections to the proposed crosswalk locations and remove sidewalk that enters the street behind the stop bar on the north side of the intersection.

- j. From Scotts Corner Road to The Township Line.

Bus Stops - Near side at Aspen Drive for both east and westbound movements in the existing right turn deceleration lanes (coordinate with sidewalk installations).

Crosswalks

- Remove the existing crosswalk located east of the intersection of Scotts Corner Road and the sidewalk connections going to the crosswalk on both sides of the road.
- No modification recommended for existing mid-block crosswalk located close to the Cranbury Township line.

Cartway cross section

- Travel lanes -
 - ❑ Reduce number of travel lanes from 2 to 1 in each direction to the east of the Scotts Corner intersection.
 - ❑ Stripe lanes at 10.5 foot width.
- Shoulders - Provide 4 foot shoulders on both sides of Plainsboro Road to accommodate bicycle traffic.
- Median
 - ❑ Provide 6 foot curbed planted median in the roadway with 1.5' spaced striping on either side.
 - ❑ Create left turn storage lanes for Aspen Drive/Ravens Crest Drive turning movements.

Sidewalks - Complete sidewalk connections on the north and south sides of Plainsboro Road.

- Apply for NJDOT Local Aid funding to enable widening to 4 foot shoulders on both sides of the roadway so that it is fully compatible (or six foot shoulders to have the road designated as a "bike way").
- Incorporate creation of a designated east-west bicycle trail and/or connections into future Plainsboro Township efforts.

k. Motorists.

Issues

- Straight roadway geometry and lane width gives a "wide open" major arterial feel which is not consistent with the Township road desire for a minor arterial street leading into a town center and which provides an invitation for higher speed travel.
- The volumes of local Plainsboro traffic utilizing and anticipated to utilize the roadway require that the capacity of the roadway be maintained.
- There is a significant pedestrian volume along and across the roadway as walkers for surrounding neighborhoods access the park and nearby shopping center.
- The skewed nature of the signalized intersection at Wyndhurst creates a wide area turning movement conflict zone and increases the tendency for vehicles turning left into the shopping center to aim for the outbound exit.
- The off-set nature of park entrance and the entrance to the Brittany residential development create multiple conflict points and visibility limitations for pedestrians.
- There are deviating widths along the roadway.

- There are intersections with sufficient travel volume and turning movements to warrant traffic signalization.

Identified suggestions/solutions

- Restripe and narrow travel lanes which will make motorists feel more restricted and cause a tendency to slow speeds of travel.
- Install center planted curbed medians at applicable locations.
- Provide landscaping closer to the roadway where appropriate.
- Modify the striping at the intersection of Wyndhurst.
- Install traffic signals at Plainsboro Road's intersection with Hunters Glen/Deer Creek and Scotts Corner Road.
- Realign the park driveway opposite Thoreau Drive and signalize the intersection with speed humps installed on Tennyson Drive to reduce vehicle cut through from George Davison Road.
- Interconnect all signals installed along the area to provide for a traffic speed progression of 35 - 40 mph.
- Reduce the section from the Township line to the east leg of the intersection with Scotts Corner to one lane in each direction with left turn lanes and a center curbed median opposite Aspen Drive.

D. Roadway Access and Curb Cuts

This Plan seeks to reinforce the Township's approach to continue sound highway access management procedures with respect to driveway spacing along Route 1 and the Township's major arterial and collector road system. Its intention is to preserve the traffic carrying capacity of such roadways and to preclude multiple access cuts on all roadway classifications above local or minor collector streets. Depending upon a parcel's specific location, direct access to principal arterials where other access alternatives are practically available will be discouraged.

The State Highway Access Management Code (Access Code) adopted in September 1992, requires that all land development, including subdivision of land, with access to a state highway conform to the provisions contained in the Access Code. The Access Code is a comprehensive set of regulations intended to insure future mobility on the state highway system and therefore only applies to state highways. The only state highway in Plainsboro Township directly affected by the Access Code is Route 1.

The key elements of the Access Code or Code include: spacing standards, access management plans, access classification and levels, non-conforming lots, alternative access, access permits, and desirable typical sections. Highlights of the Code include:

1. Since Route 1's speed limit is 55 MPH, the driveway or street spacing standard is 330 feet. The spacing for traffic signals ranges from 1,100 feet to 2,640 feet, depending on signal timing and speed limits.
2. The Code enables municipalities and the NJ DOT to develop an Access Management Plan (AMP), a coordinated long range highway access plan.
3. The Code establishes access levels for various state highways based on highway characteristics such as speed and function. The access level indicates the permitted turning movement to and from the state highway. The desirable typical roadway section or DTS established by the Code represents NJDOT long range plans for each state highway and indicates the limits on the configuration and dimensions of a segment of a state highway. For example, Route 1 in Plainsboro is classified as having Access Level 3 and DTS 6A, which calls for right-turn in/out movements at access point with left-turn access via grade-separated interchanges or jug handles where signalized spacing standards are met. The DTS for Route 1 in Plainsboro (milepost limits 11.96 through 14.06) consists of 6 twelve-foot lanes, divided, with shoulders or parking within a 148 foot right-of-way.
4. The Code enables NJ DOT to require permit applicants to use alternate access when beneficial to the road network.
5. Access permits would be required from NJ DOT for construction or modification of any driveway or street intersecting a state highway, expansion or change in use on a lot having access to a state highway, or subdivision or consolidation of a lot having access on a state highway. Minor, major, and major with planning review categories of access permits are also established by NJ DOT based on the number of trips per day generated by the use.

Planned improvements along the Route 1 corridor have typically indicated a 6 lane configuration with an expected right-of-way ranging from 150 to 170 feet. The Township supports this policy.

The Township's support of the Access Code has been well documented by its actions and leadership on this issue over the past twenty or more years; for example, the Township strongly supported the closure of the Plainsboro Road/Route One intersection with Mapleton Road, in conjunction with the construction of the Scudders Mill Road/Route One interchange, as well as the replacement of the at-grade intersection at College Road and Route One with a grade-separated interchange. Additionally, through its numerous planning and zoning decisions involving the development of properties along Route One, most notably the general development plan (GDP) approval for the Princeton Forrestal Center, the Township has firmly established its record in support of and in compliance with the Access Code.

Of the roughly two miles of Route 1 that passes through Plainsboro or roughly four miles of total property frontage on Route 1, there are only three points of ingress/egress serving individual properties; this includes both the east and west

sides of the roadway. These three points of access include the access to the existing FMC Corporation property, the private road access to the Princeton Plasma Physics Laboratory (Stellarator Road), and the access to the NJ State Police barracks. All three of these existing conditions have existed since the 1950's and/or 1960's and there are no new ones planned or anticipated in the Township.

New Jersey Municipal Land Use Law (MLUL) requires the regulation of land adjacent to state highways in conformity with the Access Code. Approximately 80%-90% of the properties along Route 1 in Plainsboro are within an existing planned development zone (PMUD-Planned Multi-Use Development) and under an approved GDP that comply with the Access Code. With the exception of a small commercial property at the south corner of Route 1 and Mapleton Road, which property has no opportunity for access to Route 1, the remainder of the area along Route 1 in Plainsboro includes a planned hospital and medical offices (replacement University Medical Center at Princeton), along with a related long-term care facility and age-restricted residential development. The planning and zoning for this area shall comply with the provisions of the Access Code.

E. Goods Movement

Plainsboro Township understands the significance of goods movement in the development of property in the State of New Jersey as well as the effects of such movement on land use coordination. Based on the fact that the dominant mode for movement of goods in Plainsboro and throughout New Jersey is by truck, Plainsboro has established goods movement guidelines in order to stimulate commerce while ensuring public safety and quality of life for local residents and those living in adjoining communities.

While Plainsboro does not prohibit truck traffic from traveling through the community other than for local deliveries, truck traffic is restricted from travelling through residential areas. A classification of roadways according to their ability to safely accommodate vehicles of various sizes and weights has been implemented.

Truck travel corridors have been designated to allow truck traffic to traverse through the Township from North to South and East to West directions. These travel corridors have no weight or size restrictions and allow truck traffic to reach the primary commercial and other non-residential centers located near Route 1 or Scudders Mill Road in the Township. More specifically, the traffic corridors include:

North to South-- Schalks Crossing Road and Route 1
East to West – Dey Road and Scudders Mill Road

Road restrictions have also been established for roadways that cannot handle truck traffic due to factors that may constrain the safe operation of commercial vehicles including physical conditions and land use conflicts. Pursuant to Plainsboro Code Section 96-17, trucks over four tons are excluded on specified road, except for pick-up, delivery and local service on such streets. The regulated roadways include:

<u>Name of Roadway</u>	<u>Location</u>
College Road	Mapleton Road to U.S. Route 1
College Road East	From U.S. Route 1 to Research Way
Dey Road	Between Plainsboro Road and Scudders Mill Road
Edgemere Avenue	Plainsboro Road southwesterly to Maple Avenue
George Davison Road	Entire Length
Linden Lane	Maple Avenue easterly to Prospect Avenue
Maple Avenue	Entire Length
Mapleton Road	Between U.S. Route 1 and its intersection with Academy Drive at the Plainsboro Township corporate line – South Brunswick Corporate Line
Parkway Avenue	Plainsboro Road southerly to Edgemere Avenue
Plainsboro Road	Entire Length
Prospect Avenue	Plainsboro Road southerly to Edgemere Avenue
Research Way	Entire Length
Schalks Crossing Road	Between Plainsboro Road and Scudders Mill Road
Seminary Drive	Entire Length
Wyndhurst Drive	Entire Length

Weight limits on the regulated roadways however do not apply to any vehicles used in the operation of farms which are located within the Township or utility companies serving Plainsboro Township. The **Figure 6: Goods Movement Map** illustrates the weight restricted roadways in the Township.

Managing operating speed through the Township will be essential both for allowing more closely spaced traffic signals and for reducing the impact of truck noise on residential streets

While the movement of through truck traffic will be a complex and difficult challenge, Plainsboro Township like all communities, will also have to assure that trucks have convenient access for loading and unloading.

Township ordinances establish performance standards regarding the provision of adequate loading zones. Developers will be required to identify their loading requirements and demonstrate that those requirements can be met without using adjacent streets and without being visible to neighboring properties. Developers are encouraged to develop shared loading areas so that the total space required for vehicle loading can be minimized.

F. Bus Service

1. TrainLink and Section 18

TrainLink is a shuttle bus service that provides free commuter service between the Princeton Junction Train Station and the companies in the Princeton Forrestal Center and the Princeton Forrestal Village. The Greater Mercer Transportation Management Association (TMA) manages the existing Forrestal TrainLink bus service. An A-1 Limousine bus or van is used to transport people back and forth from their place of employment.

The bus leaves the Princeton Junction Train Station making its way to Plainsboro Township via Washington Street in West Windsor Township. The bus proceeds north along Route 1 until it reaches Scudders Mill Road where it makes a right turn toward the east. It proceeds past Merrill-Lynch to the College Road East intersection with Scudders Mill Road where it makes a left turn and heads north on College Road East. The bus then proceeds across Route 1 to the Princeton Forrestal Village and eventually back onto southbound Route 1 via a slip ramp heading back to the rail station. Service is provided to and from the train station between the hours of 7:15 a.m. – 9:40 a.m. and 4:04 p.m. – 6:40 p.m.

Pick up at the train station is on the northbound side of the tracks, about three quarters of the way around the semi-circular drive which connects with Wallace Road at both ends. Drop off at the train station is on the northbound side of the tracks on the same drive in front of the station building.

TrainLink is paid for by the Princeton Forrestal Center, Merrill-Lynch, NEC, State Street, and other participating companies.

Employees of Munich Reinsurance, NEC, State Street, and others ride for free with an employee ID. Employees of participating companies without employee IDs ride free with a TrainLink Pass available from the Princeton Forrestal Center or the TMA.

Eight (8) combined TrainLink and NJ Transit bus stops are located along College Road East and one (1) is located in front of Merrill Lynch on Scudders Mill Road. Two (2) combined stops are located in the Forrestal Village. An exclusive TrainLink stop exists at 100 College Road West and four (4) others service 100, 200, and 300 series buildings located in the Forrestal Center.

On June 2, 1992 the Township submitted a Section 18 application to NJ Transit to expand the existing TrainLink service to provide public transportation between two (2) park n' shuttle lots and the Princeton Junction Train Station. The funding was approved and it started operations in 1994. The



Bus Shelter

TrainLink service was expanded by creating new stops at the Town Center Shopping Center and the Princeton Meadows Shopping Center. The ownership of both centers indicated their acceptance of the park n' shuttle idea at no charge. The Town Center Shopping Center had over 100 empty remote parking spaces available either behind the Post Office or near the bank and another outbuilding pad site. The Princeton Meadows Shopping Center had over 80 empty remote parking spaces available located close to Plainsboro Road. Five (5) shuttle trips in the morning and evening were programmed. Up to 86% of potential ridership was serviced by the expanded morning and evening TrainLink bus service schedule, based on NJ Transit and AMTRAK average loading counts. Park n' Shuttle signs were posted in the parking lots.

Management of the Section 18 service was provided on a contract basis, similar to that provided for the existing TrainLink service. The management responsibilities included scheduling, service contracting, and general supervision. The Township was responsible for marketing and establishment of the Park n' Shuttle lots. Marketing included service announcements in the quarterly newsletter mailed to all postal patrons, press releases, and direct mailing to those on the waiting list for parking spaces at the rail station. There was no purchase of vehicles. Driver training was the responsibility for the firm chosen to provide the service which was the TMA.

The Park n' Shuttle service was supported by the Township. The fare was \$2.00 per round trip of \$40.00 per book of 20 round trip tickets. Tickets were purchased at the Municipal Building or the Plainsboro Library during normal business hours.

The Section 18 service stopped in 2002. It ran successfully from 1994 to 2002. In that 9 year time period it serviced an average of 14,300 passengers a year with the peak year being 1997 at 18,031 passengers and the lowest year being 2002 at 7,545 passengers.

As previously stated in earlier Master Plan updates the Township is pursuing funding to revive the successful Park n' Shuttle service to compliment TrainLink and NJ Transit Service and possibly expand the service to provide transportation for the elderly, families and others that have to travel within the Township to shop, go to work, see a doctor at the new hospital, visit neighbors, attend an event at a Township park or visit the municipal complex. A shuttle service could become yet another important local transportation asset to support the movement of people within the community.

2. Princeton Airporter, American Limo, and NJ Transit Service

Princeton Airporter currently picks up people at the Westin, Wyndham and Marriot hotels in Plainsboro and takes them to major New Jersey and New York airports via Dey Road to Route 130 and then onto the Turn-pike.

American Limo service originates in Yardley, Pennsylvania. It provides twice daily express service to the New York Port Authority via the turn-pike. Its route through the Township is from the south along Route 1 to Scudders Mill Road, onto Schalks Crossing Road at the Town Center Shopping Center, and then Plainsboro Road to Route 130. The Limo stops along the road at the Plainsboro Plaza Town Center Shopping Center, Princeton Meadows Shopping Center, Deer Creek, Brittany, and Aspen multi-family residential developments.

New Jersey Transit provides weekday and Saturday bus service between Trenton and Plainsboro Township, servicing Quakerbridge Mall, Princeton MarketFair in West Windsor Township, Princeton Forrestal Center, the Linpro Shopping Center, and Princeton Forrestal Village.

Figure 7: Bus Routes, Stops and Shelters Map, shows the existing train link, American Limo, NJ Transit bus route, the expired Section 18 route, and where NJ Transit bus stops now exist. It also identifies additional NJ Transit bus stops along its route. The NJ Transit bus route requires eastbound buses to make a right turn from Scudders Mill Road onto Schalks Crossing Road, make a stop at the Town Center Shopping Center, and then proceed through the village onto Plainsboro Road, with another stop in front of the Enterprise Business Park, and terminating at Princeton Meadows. The return trip from Princeton Meadows does not route the buses through the village, but instead requires them to travel Scudders Mill Road and stop at the intersection with Schalks Crossing Road before proceeding onto College Road and Princeton Forrestal Village.

The Map shows the current and proposed routes for New Jersey Transit Bus Service. It is anticipated that service will be expanded onto Campus Road and to the Princeton Business Park site. Additional bus stop/shelter locations have been added to complement new routes and also reinforce service on the existing route along College Road East, Scotts Corner Road, and Dey Road. The bus shelter shown on the FMC Redevelopment site can be utilized for either a regular bus or for bus rapid transit in conjunction with hospital construction. Monies contributed by developers will be used to put new shelters and signage in place.

Establishing NJ Transit bus stops requires approval by the NJ DOT. Generally, the municipality and NJ Transit together identify the most appropriate location for bus stops. If the stop is intended for a county road, the county must also approve the proposed location. Once the proposed bus stop location is identified, the municipality and county (if the bus stop is along a county road) are required to pass a resolution officially designating the bus stop. The NJDOT reviews the proposed bus stop location and approves or denies it. If bus shelters are desired, NJ Transit must be contacted because they are responsible for funding and providing bus shelters on their routes.

A bus shelter design which is now being required and implemented has been implemented throughout the Township. This shelter design is typical

of the one used throughout the Township at other approved locations. The shelter is placed on a concrete pad and has a metal bench, tempered glass (sides and back only), a cantilever roof, and aluminum with green powder coat finish. Another special shelter design has been used for the Village Center area.

3. Bus Rapid Transit (BRT)

The Central Jersey Transportation Forum, the Greater Mercer TMA and NJDOT and others have been working to improve traffic flows within the Route 1 highway corridor and on local roadways within adjacent and adjoining communities by increasing mobility and reducing traffic congestion. One of the new and more innovative ways to address traffic within this area is to study and then implement an acceptable form of Bus Rapid Transit. This transportation system is a relatively new concept for our area although it does exist in other parts of the country and the world. For example, the Metro Rapid system in Los Angeles, which opened in June 2000, operates a total of 90 buses along 2 lines totaling 90 miles. In Pittsburg the West Busway system is an existing 5-mile long exclusive bus right-of-way constructed along an abandoned railroad right-of-way. In Ottawa, Canada "The Transitway" currently consists of 18 miles of exclusive roadway for buses plus 12 miles of exclusive shoulder lanes on highways. Other similar systems are in the planning and development stages in Boston, Las Vegas, and Northern Virginia.

BRT has been studied over the past few years as a viable long range transportation alternative for the region including portions of the Township.

BRT is a technology advanced public transportation system that uses rubber-tired vehicles on dedicated or shared roadways. The use of dedicated roadways allows BRT to operate without influence from traffic congestion and produces a more efficient, higher quality and predictable transit experience. In addition, the vehicles themselves are designed to efficiently load and unload passengers and to reduce station dwell time, with such features as midpoint doors and automated fare collection.

BRT could offer Route 1 corridor commuters an attractive alternative by reducing travel times through the use of priority treatment in areas of heavy traffic congestion. For example, BRT vehicles can be equipped with transmitters to turn traffic signals green, allowing them to travel through intersections without stopping. Roadway shoulders could be widened at intersections to allow buses to avoid queues, thus reducing travel time. By incorporating new technologies and focusing on passenger convenience and information, a BRT system could be an attractive and convenient form of public transportation. The BRT concept, if introduced into the region, would complement other forms of transportation like rail and bus service and the single occupancy vehicle.

On August 1, 2002 the Central Jersey Transportation Forum prepared a BRT analysis which presented a brief feasibility analysis for BRT

implementation in the Route 1 corridor. Following this analysis, the Forum directed NJ Transit to examine BRT alternatives. The analysis assumed use of the existing roadway network extending from I-295 in Lawrence Township to Ridge Road in Plainsboro/South Brunswick, the construction of park-and-ride lots, a concentrated land use pattern, and feeder bus routes. The proposed route would also connect with the Princeton Junction Train Station and the Dinky. The route in Plainsboro Township entered along Route 1 from the south and proceeded a short distance along Plainsboro Road where it made its way through the FMC Redevelopment site to Scudders Mill Road. The route proceeded east along Scudders Mill Road to College Road East where it continued in a northerly direction to Ridge Road and over Route 1 to the Forrestal Village area. An alternative route for the system in the Township also involved running the bus along Campus Road.

BRT is characterized as a system that can be built in sections, that is flexible as to route design and location, and that can provide service to both densely populated as well as less dense areas. The components of a BRT are as follows:

- a. Running Ways – BRT vehicles operate primarily in fast and easily identifiable exclusive transitways or dedicated bus lanes. Vehicles may also operate in general traffic.
- b. Stations – BRT stations, ranging from enhanced shelters to large transit centers, are attractive and easily accessible. They are also conveniently located and integrated with the community they serve.
- c. Vehicles – BRT uses rubber-tired vehicles that are easy to board and comfortable to ride. Quiet, high-capacity vehicles carry many people and use clean fuels to protect the environment.
- d. Service – BRT's high-frequency, all-day service means less waiting and no need to consult schedules. The integration of local and express service can reduce long-distance travel times.
- e. Route Structure – BRT uses simple, often color-coded routes. They can be laid out to provide direct, no-transfer rides to multiple destinations.
- f. Fare Collection – Simple BRT fare collection systems make it fast and easy to pay, often before you even get on the bus. They allow multiple door boarding, reducing time in stations.
- g. Intelligent Transportation Systems – BRT uses advanced digital technologies that improve customer convenience, speed, reliability, and operations safety.
- h. Running Ways – BRT can utilize or combine two or more of the following running ways: exclusive transitways, HOV lanes,

dedicated transit lanes, transit streets, mixed traffic and queue jumpers.

- i. Stations – the design of stations can vary from a single shelter to a complex transit center. They can include parking facilities, taxi stands, and support transfers to other transportation services. Many services include customer information, like maps, schedules, and real-time vehicle arrival information.
- j. Vehicles – rubber-tired vehicles that are not limited to exclusive BRT running ways but can operate on local streets where necessary.

The Greater Mercer TMA commissioned Michael Baker Jr., Inc. and SYSTRA Consulting to perform a concept study of bus rapid transit in the Route 1 corridor. The study, entitled: “A Route 1 Corridor Bus Rapid Transit Concept Study” was completed in March 2003. The objectives of the study were to:

- a. Create a vision for a Route 1 corridor BRT system.
- b. Determine the feasibility of BRT in the Route 1 corridor.
- c. Identify opportunities to create a BRT demonstration project.
- d. Complement the activities of the Central Jersey Transportation Forum.

In 2007 the NJ Transit prepared a report entitled: “Central New Jersey Route 1 BRT Alternative Analysis” which studied the transportation needs and potential transit improvements within a study and market service area which encompassed Mercer, Middlesex, and Somerset Counties and some municipalities in Bucks County, Pennsylvania. The final BRT Guideway map proposes a BRT route on both sides of Route 1 in the Princeton Forrestal Center extending up into South Brunswick Township.

The BRT program, which is under the auspices of NJ Transit, is intended to enhance the attractiveness of using buses as an alternative to automobile travel, particularly the use of single occupancy vehicles for commuting purposes. The BRT is intended to reduce commuting times through the provision of fewer local stops, dedicated lanes on highways, increased frequency of bus travel, and ultimately provide a much higher quality of service than traditional bus services. Increased BRT use would reduce traffic congestion, which in turn also mitigates pollution and losses in productivity.

Plainsboro Township is currently in discussions with NJ Transit regarding the exact location of a BRT stop within the Redevelopment Area for the FMC Corporation Site, and a route which would allow the bus to exit onto Plainsboro Road from Route 1 traveling northwards, stop and pick up or drop off passengers within the Redevelopment Area, and access Route 1 via Scudders Mill Road just north of the Redevelopment Area. A BRT stop therefore shall be provided in the Redevelopment Area at a convenient location for pedestrian access and at a

point which is safe from a vehicular traffic viewpoint. The stop shall provide the necessary road configuration to allow the bus to stop and pick up and drop off passengers without blocking or interfering with other vehicles or cyclists on, and provide for a safe, well-lit, sheltered environment for those passengers waiting at the stop. Seating, signage and a BRT system-wide map should be provided at the transit stop.

G. Travel Demand Management

The various roadway improvements described for the Township are intended to support continued growth. With their implementation a future roadway system will be available which will be responsive to expected traffic demands yet balanced against other conditions and constraints in the area.

As evident by the need to consider constrained future traffic demands, the suggested improvements by themselves will not be fully sufficient. An alternative to fully satisfying future traffic demands is to wisely manage traffic growth in such a way that the peak demands are controlled so that they match more closely with the ability of the roadway network to accommodate them without creating intolerable motorist delays. Through various management strategies, the peak traffic demands generated by area developments can be monitored and adjusted to the most efficient levels.

A variety of travel demand management strategies can be applied to regulate traffic flows. A range of possible actions have to be considered as part of any Township's travel demand management program. Several strategies are presently underway in the Township and at the Princeton Forrestal Center, in either a formal or informal sense, and others might have only minimal applicability. Morning and afternoon TrainLink shuttle bus provides service between the Princeton Junction Train Station and Forrestal Center. All stops in the Center are curbside, except Merrill Lynch and Munich Reinsurance, whose stops are at the front entrance. The shuttle makes designated stops along College Road East and terminates its run at the Princeton Forrestal Village.

Varying work hours, car pool/van pool programs, and expanded transit services may be the most effective and applicable actions in the future. Secondary actions such as coordination of site plans to compliment primary strategies or municipal direction and participation in the implementation of demand reduction programs will also be important measures.

The diversity and size of the uses within the Township lend themselves to some natural demand reduction strategies. This condition is recognized by reduced trip generation characteristics expected from large mixed use developments, and is exemplified by the overall Forrestal Center development program which places employment, residential, and retail uses in proximity to one another. Trips occurring between these types of uses do not add new traffic to the region's roadway system and can reduce overall traffic impacts. Mixed use activities are also beneficial for employees and residents in that they have retail and other service uses located more conveniently to their homes or offices.

The specific types of actions, how and when they are implemented, and an estimate of their use or effectiveness are areas that need further study. While some actions can be applied successfully on a site by site or employer by employer basis, others may be more effective when applied over a wider area and encompassing multiple sites. An operating plan describing the applicable programs, the steps for their accomplishment and a budget forecast is a desirable prerequisite for any formal plan involving transportation management strategies.

The implementation of demand reduction or management actions will likely require some form of sponsorship to provide coordination, monitoring and support. This could be through a formal Transportation Management Association, such as the Keep Middlesex Moving (KMM), or a local transportation management committee serving as a coordinator between a development, member employers, and the Township. The need for technical and support staff, office space, and project funding may also play a role in how programs are defined. A more formal structure with membership dues or assessments would allow dedicated annual funding whereas member contributions may be an easier initial step.

The various traffic improvement recommendations identified in this Master Plan element have established an outline of roadway and intersection needs to compliment and support the continued growth of the Township and surrounding area. A similar outline of transportation management actions has also been established as part of the solution to address the area's future transportation requirements. The dual approach of improving roadway and intersection capacities and monitoring traffic growth will provide the best means of dealing with the area's ongoing and future development impacts.

The Township has established a Transportation Task Force which includes representatives from major employers in Plainsboro Township as well as developers, citizen members, and the Planning Board and other appropriate boards and committees. The Task Force was specifically established to review traffic demand management and its potential impacts on the Township. The Task Force is empowered to make recommendations to the Township Committee on traffic reduction strategies to minimize adverse traffic impacts. Traffic reduction strategies will include a review of existing traffic concerns as well as a comprehensive review of regional and national strategies designed to reduce traffic congestion.

Development of a comprehensive Traffic Management Program ordinance designed to alleviate peak hour traffic movement within Plainsboro Township was adopted by the Township Committee on November 3, 1991. This traffic management ordinance included a target figure for traffic reduction as well as quantifiable methods to determine the effectiveness of individual programs. To date, the Township has received transportation management plans from Bristol-Myers Squibb and Merrill Lynch.

Members of the Task Force are appointed by the Mayor to review, monitor, manage, and advise on the implementation of the traffic management ordinance. The ordinance had the following purposes and objectives:

1. To promote efficient use of existing transportation facilities (streets, highways, intersections, overpasses, parking facilities, public transportation, etc.).
2. To reduce the impacts of traffic congestion within Township and region by reducing the number of vehicle trips, the number of vehicle miles traveled, and the concentration of vehicle trips within congested time periods compared to that which would otherwise result in meeting local commuting and other travel requirements.
3. To reduce vehicle emissions, energy use and ambient noise levels by reducing the number of vehicle trips, vehicle miles traveled, and overall traffic congestion.
4. To equitably reduce the total increase projected for peak period office-related traffic volumes generated by existing employment and new commercial and residential developments within the Township by at least ten (10) percent overall, recognizing that greater or smaller reductions may be appropriate given an individual firm's past efforts and specific traffic generation characteristics, and that reductions above ten percent may be required at sites falling under the requirements of this ordinance to offset traffic growth at sites not under influence of this ordinance.
5. To maximize the use of commute modes other than single occupant vehicles used in peak periods, through the development of company-supported and community-wide programs, incentives, and related services.
6. To minimize the share of employees driving to and from work in the Township during congested peak travel hours.

The ordinance applied to all existing businesses, complexes, and multi-tenant buildings, to all proposed residential developments of 25 or more units, and to all non-residential buildings and complexes of 15,000 square feet or more of gross building area which have not received subdivision and/or site plan approval prior to the effective date of the ordinance. The ordinance did not apply to eating and drinking establishments, retail businesses, grocery stores, shopping centers, security services, and other similar uses.

Those impacted by the ordinance were required to appoint transportation coordinators, prepare annual surveys and reports, provide an area for informational and promotional programs, and prepare a transportation management plan.

The implementation and enforcement of the Township ordinance was replaced by the Clean Air Act amendments of 1990 which required the state to prepare and adopt specific transportation control measures in order to produce cleaner air. On June 30, 1992 Senate Bill No. 35 (NJ Traffic Congestion and Air Pollution Control Act) was approved. The bill establishes a comprehensive strategy to assure compliance with federal mandates. By November 15, 1994 employers

with 100 or more employees had to submit trip reduction plans to the state that demonstrated how they would increase the average occupancy of employee vehicles by 25% during peak hours. An employer plan had to "convincingly demonstrate compliance" by November 15, 1996. Substantial monetary penalties of \$1,000 and \$5,000 per month were possible for each work location failing respectively to file an acceptable plan or to achieve reduction in peak hour travel. In California, where travel demand management programs have been instituted, positive benefits to employers have resulted in terms of reduced parking costs, shorter commute times, and increased worker productivity. The State program ended soon after it started. At this time travel demand management is not being promoted in a comprehensive manner at the state and local level. However, it remains an important TMA activity.

The Task Force utilized the services of KMM as a resource to expedite the review of strategies employed in other areas to meet similar transportation situations and to help put together the Township ordinance. Keep Middlesex Moving, Inc. was established as a public/private partnership to develop and implement plans to address traffic issues facing Middlesex County employees and residents. KMM's goals are to reduce congestion problems and to improve employee access to employment sites throughout the county. Some of the programs KMM uses to reach these goals include developing new transit opportunities, encouraging employers to implement staggered work hour programs, and helping employees and residents to form car and van pools.

The various travel demand strategies include, but are not limited to, the following:

1. Maximize the use of commuter modes other than single occupant vehicle. Encourage employers:
 - a. To appoint a traffic coordinator for traffic management within their corporation.
 - b. To implement employee ride-share programs (matching, promotion, etc.)
 - c. To provide bonus, extra vacation day, or other incentive programs for transit/ride-share users.
 - d. To implement new employee orientation programs providing incentives, information, and other inducements for commute alternatives.
 - e. To implement fare discounts to employees using transit and/or ride-sharing.
 - f. To distribute transit/ride-sharing information (flyers, bulletin board, paycheck stuffers, company newsletter, information center, etc.).
 - g. To provide on-site ticket sales and passenger amenities.

- h. To provide preferential parking, restricted parking, and to charge parking fees with differential parking costs for car and van pools.
- 2. Reduce the number of employees traveling to and from work at the same time and during peak hours of travel:
 - a. Offer flextime.
 - b. Implement staggered work hours.
 - c. Offer flextime for car/van poolers.
 - d. Allow employees to work at home as appropriate.
 - e. Establish regular work hours outside normal peak travel hours.
 - f. Set policy discouraging late afternoon meetings.
 - g. Compress the work week.
 - h. Participate in regional HOV lane evaluation program.
- 3. Increase the use of other commute modes, such as ride-sharing and car/van pooling:
 - a. Establish preferential parking and loading areas for ride-sharers.
 - b. Implement van or bus shuttles to existing rail/bus services and to serve local mid-day travel needs of ride-sharers.
 - c. Provide matching service, promotions of the matching services, vehicle purchasing (leasing), insurance, maintenance, and operating cost subsidies to van pool drivers.
 - d. Support third-party van pool services.
 - e. Provide emergency mid-day travel services for ride-sharers.
- 4. Develop and coordinate a plan in order to lower traffic capacity and maintain safety:
 - a. Adopt and announce policy supporting traffic reduction.
 - b. Approve budget for traffic reduction planning and programs.
 - c. Establish continuing planning process to reduce traffic generation.
 - d. Establish a transportation management committee to coordinate and assist in Plainsboro's traffic reduction.
 - e. Identify future roadways within Plainsboro Township.

- f. Secure service of traffic reduction consultants.
- 5. Conduct surveys of existing transportation measures in place and evaluate effectiveness:
 - a. Establish Task Force to implement surveys to residents, employers, and employees to establish existing residential commuting patterns, the level of interest in establishment of other commuter modes and measures taken by employers to reduce traffic generation.
- 6. Provide a comprehensive program to facilitate public awareness of transportation alternatives:
 - a. Present Township efforts of traffic reduction program through presentations at special meetings and conferences with the public.
 - b. Develop articles for publication in various journals, newsletters, etc.
 - c. Send mailings to local organizations, citizen groups, and other similar groups.
 - d. Coordinate with NJ DOT and other public agencies.
 - e. Support activities to both executive and commuter levels through use of TV, radio, newsletter or newspaper.
- 7. Set up policies within a work place to facilitate ride-sharing and to allow for travel in off-peak periods:
 - a. Designate a traffic coordinator to act as liaison. Traffic coordinator shall survey work force annually to gather data on place of residence, work hours, and commuter mode. Said survey shall provide:
 - Number of employees beginning and ending work by 15 minute intervals.
 - Employee residency.
 - Number of employees who are commuting to work by means other than single occupancy vehicles.
 - Description of measures taken by businesses to reduce traffic generation, including efforts to market traffic reduction measures.
 - Number of employees participating in an alternative work hour program.

- b. Compressed work weeks, staggered work hours involving a shift in the set work hours of employees at the work place:

Starting times are concentrated.

Encourage non-vehicular work trips by constructing sidewalks, paving shoulders, widening curb lanes on heavily traveled roads, and providing paved paths and storage devices for bicycle access.
- 8. Improve coverage, frequency of transit services to and from the municipality:
 - a. Construction of shelters to facilitate traffic mitigation measures.
 - b. Establishment of shuttle bus services to and from the train station in the morning and afternoon.
 - c. Establishment of an in-house or third-party ride-sharing or van - pooling program.
 - d. Coordination with public and private transit operators as potential providers of new shuttle services.
 - e. Providing shuttle service to and from the work place based on a demand response operation. Employees can arrange, by prior reservation, for pick up.
- 9. Encourage increased transit ridership:
 - a. Coordinate with New Jersey Transit to develop a comprehensive public transit service for the Township.
 - b. Door-to-door service from the train station.
 - c. Greater flexibility to meet irregular (or unexpected) trip demands.
 - d. Variability in scheduling requirements on a daily or weekly basis.
 - e. Incentive programs provided by the employer.
- 10. Review the need for a park-and-ride facility:
 - a. Park-and-ride facility shall be located with direct access off a designated collector road
 - b. Park-and-ride areas can be either dedicated to the Township or maintained by the developer
 - c. Reserve parking spaces for businesses participating in traffic reduction program.

- d. Operate as a subscription service
 - e. Participate in regional park and ride lot program, local lots, and lease/ purchase lot programs.
11. Coordinate with neighboring employers on transportation management:
- a. Annual reports/surveys shall be utilized to determine whether businesses are making progress in achieving traffic reduction goals (Traffic Reduction Plan).
 - b. Each business would be permitted to choose strategies which are most appropriate, given the nature of the business and required traffic reduction goal. Liaison person established for each business.
 - c. Establishment of workshops with businesses, New Jersey Transit and traffic consultants to help facilitate traffic management.
12. Sponsor public information campaign:
- a. Hold public meetings on transportation management program.
 - b. Publish in newspaper schedules for mass transit and other alternate commuter modes.
 - c. Company newsletters listing ride-sharers.
 - d. Establish an information center located in Township on transportation alternatives.
13. Work with traffic management associations to coordinate traffic reduction programs:
- a. Hire a traffic management consultant to work with traffic management associations to assist design and implementation of overall traffic reduction program.
 - b. Prepare a traffic reduction plan to be utilized by businesses and traffic management associations.
 - c. Coordinate workshops with businesses and traffic management associations for specific program elements, such as flexible work hours and other potential resources (i.e. manual for implementing flextime).
 - d. Production of information and marketing materials as necessary to support program activities shall be distributed by traffic management associations.

- e. Provide direct program assistance to employers and develop effective communication strategies in order to implement traffic reduction program.

The Township should continue to support and encourage others to implement transportation management plans on a site to site basis. These plans can make a difference in reducing traffic congestion and improving air quality within the local area and beyond. By way of example, the Princeton Healthcare System has offered to implement trip reduction and transit strategies within the FMC Redevelopment Area. The University Medical Center of Princeton at Plainsboro (UMCP) will explore instituting an employee shuttle from Princeton to the Plainsboro facility, if no direct NJ Transit Link is established, as well as enhancing existing shuttle programs, such as TrainLink (connecting the Princeton Junction Train Station to the Health Campus). The Medical Center will be working with the other development partners on the site (Medical Office Building(s), Retirement Community, Skilled Nursing Facility, Fitness Center) to establish campus wide shuttles linking the campus with the Plainsboro Town and Village Centers and perhaps other locations in the area depending upon the demand. The Medical Center will market transit opportunities with continuous employee communications, including transit information fairs, and incentives (i.e. prizes for mass transit users).

The Medical Center also will institute a Ride Share program in collaboration with the Greater Mercer Transportation Management Association (GMTMA). According to the GMTMA, the simplest of ride-share programs can reduce vehicle commute trips to specific worksites by five (5) to fifteen (15) percent. To get the percent of use as high as possible, the Medical Center will encourage employees to enroll in the State's "Car Pooling Makes \$ense" program which gives gas cards to individuals carpooling a certain percentage of their work week. The car pool program also would include a guaranteed emergency ride home provision.

NJ Transit is planning on serving the site by Bus Rapid Transit (BRT). NJ Transit's BRT study Executive Summary noted that the BRT would increase the percentage of work trips using transit from a range of two (2) to four (4) percent to a range of five (5) to nine (9) percent in the core study area (West Windsor, Plainsboro, Princeton Township and Princeton Borough).

H. Pedestrian and Bicycle Circulation

1. Overview

Adequate pedestrian and bicycle circulation is vital to having a successful comprehensive transportation planning process that links people with places they want to go. Plainsboro has developed this plan in recognition of the importance of enhancing the level of pedestrian and bicycle circulation in the Township.

This plan was developed to provide Plainsboro residents and workers with safe and convenient linkages between their homes and points of interest and activity, such as the library and municipal building, post

office, shopping areas, local parks and schools, and scenic areas. The implementation of a comprehensive pedestrian and bicycle circulation system also helps to alleviate some of the safety and traffic congestion problems on local roadways. Pedestrian and bicycle pathways can and will be used for commuting purposes, as well as for recreation, which, in turn, will increase the vehicular carrying capacity of local roadways.

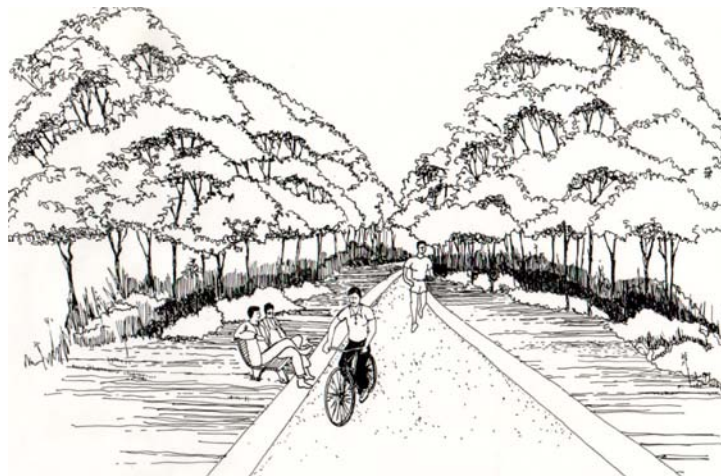


Village Sidewalk

Pedestrian circulation and bicycle plans are intended to guide Township review boards and the Township Committee in insuring that the areas designated for pedestrian paths and/or bikeways are reserved and used for that purpose. Once these plans are fully implemented, the system can be used by Plainsboro residents to locate a preferred route of unmotorized travel to recreational or nature areas, shopping facilities, places of employment and worship, and other activity centers both within and outside the Township.

2. Types of Pathways

a. Bicycle Paths



The first type of pathway is a bicycle or bike path, which is part of the broader category of pathways known as bikeways. Bike paths are designed to accommodate both pedestrians and bicyclists, and in the winter months, as conditions permit, may be used for

cross-country skiing. Such pathways can be located throughout the Township parallel to existing streets instead of sidewalks, adjacent to or within utility rights-of-way, and through natural areas such as along stream corridors. The Delaware & Raritan Canal Commission path and the Lenape Trail are examples of this later type of pathway.

The design and engineering standards for bike paths in the Township, as much as possible, should be in accordance with the New Jersey Department of Transportation Bicycle Compatible Roadways and Bikeways Planning and Design Guidelines (NJDOT bikeway standards), which are based on national bicycle facility design standards (AASHTO Guide for the Development of Bicycle Facilities).

Generally, bike paths should at a minimum measure eight (8) feet in width and include a bituminous surface material. However, bike path widths of no more than ten (10) feet may be appropriate if bicycle traffic is generally expected

to be high, where pedestrian use of path is expected to be more than occasional, where good horizontal and vertical alignment will not exist, providing safe and frequent passing opportunities, or where the path will be subjected to maintenance vehicle loading conditions that would cause pavement edge damage. Also, when a bike path is part of a multi-use pathway or trail facility, alternative surface material and pavement structure may be appropriate.



Bike Sign

b. Bicycle Routes

The second type of pathway, which is also part of the broader category of bikeway, is the bicycle or bike route. Bike routes are located on existing roadways which are either wide enough to safely accommodate bicyclists without having to provide exclusive bicycle lanes (i.e., shared-roadway condition) or roadways with specially designated and appropriately identified bike lanes along both sides of the roadway. Shared-roadway bicycle routes should be located on roadways having low to moderate traffic volumes and/or speeds, a low number of trucks using the roadway, and having anywhere from 12'-15' of travel lane width in each direction, including shoulders where on-street parking does not exist.

Generally speaking, the proposed bikeway plan seeks to utilize existing and planned roadways for bike routes (whether shared-roadway or with bike lanes) where such roadways are bicycle compatible per NJDOT bikeway standards. However, where a bike route is not the appropriate option due to the considerations listed below, an off-road bike and pedestrian path is recommended.

- Incompatibility of roadway for safe bicycle usage (narrowness of roadway, traffic speeds and/or volumes, or frequent presence of trucks)
- Heavy usage of pathway by children and/or less experienced cyclists
- Need or desire to make connections within the system where roads do not exist
- Desire to provide bikeway access to natural/scenic areas

As with bike paths, the design and engineering standards for designated bike routes, as much as possible, should be in accordance with the NJDOT bikeway standards. For example, designated bike lanes along roadways should have a minimum width of five (5) feet where the roadway is curbed or four (4) feet where no curbs exist. Important components of safe bicycle routes are bicycle friendly grates and utility covers flush with the pavement surface, a smooth pavement surface free from irregularities (i.e. rumble strips), and adequate signage. Proper signage is essential to alert motorists to the fact that certain roadways will be used by bicyclists and that special care should be taken when traveling these roadways.

The Manual on Uniform Traffic Control Devices (MUTCD) should be used for signage design and placement.

All designated bike routes should be regularly inspected or monitored to insure that debris is being picked up and removed from roadway shoulders and bike lanes, and that any necessary maintenance is done in a timely manner. Such monitoring and maintenance is critical to providing a safe and attractive bikeway system.

c. Sidewalks

The Township already has an extensive network of existing sidewalks that link residential and non-residential areas together. Proposed sidewalks expand the existing system to permit improved pedestrian access throughout the Township.

Sidewalks provide for safe pedestrian movement. In residential areas, sidewalks are used by children for playing and as a way to get to school and to parks. Adults use sidewalks as a way to get to neighbors, activity centers in the community, and for exercise.

Sidewalks should be at least 5 feet wide, which is adequate for 2 pedestrians or 1 pedestrian and 1 bicyclist. In areas where the roads are too narrow for bicycles to share use of the roadway with motorists or where an off-road bike path is not feasible, sidewalks



Sidewalk

will inevitably be used by bicyclists; especially by children and less experienced bicyclists. Even though it is not recommended that sidewalks be used in this manner, the sharing of sidewalks by bicycles can be done when pedestrian or bicycle traffic is very light.

Sidewalks should be 4 inches thick, except at driveway crossings where the thickness should be increased to 6 inches. Handicapped ramps should be provided at intersections and driveways.

Typical crosswalk design and appropriate signage is shown on the “Typical Pedestrian Crossing Signs For Plan Details” exhibit on the following page.

d. Nature Trails

A 9.8-mile system of private nature trails exists within the Princeton Forrestal Center for walking and jogging. Unpaved nature trails are encouraged to exist and expand within the Princeton Forrestal Center, in Township parks, and within other natural settings, while paved



Pedestrian Bridge

pathway systems are proposed within developments to absorb heavier use. Nature trails should be located to connect with

recreational, historic and employment sites, and other points of interest. They provide for quiet and unspoiled walking and jogging experiences to observe pleasant scenery or for exercise, usually through heavily treed areas and along stream corridors and next to wetlands. Existing sidewalks, fire lanes and loop roads on developed properties may be used as part of the network.

Nature trails should be about three (3) to four (4) feet wide for pedestrian use only. The path may be as wide as eight (8) feet if necessary, but under no circumstances less than 1'6". The trail width should be determined by the amount and intensity of use as well as by topography and vegetation. If the trail is narrow, occasional passing areas should be provided at places with gentle slopes.

Grades of 10% or less are desirable; grades may be as great as 15%, but should be avoided or kept as short as possible. Vegetation should be removed up to seven (7) feet for vertical clearance along a trail. The color and type of material chosen for surfacing, whether grass (dense fescue turf), wood chips, fine gravel, packed earth, etc., should be compatible with the environment through which the trail passes. The surfacing material must not create unacceptable run-off or erosion problems. In order to provide directional information in an unobtrusive way, we suggest using a series of cedar bollards, two (2) feet in height, placed at various entry points and at forks in the system. The location of nature trails must give preference to the existence of natural features to minimize any negative impacts.

3. Inventory of Pedestrian and Bicycle Pathways

Through visual surveys, there is a large bicycling and jogging population that now exists in the Township. While the Township's pedestrian and bicycle pathway system is currently somewhat limited, it is continuing to



Sidewalk

expand as a result of the efforts of the Township and development community. Five (5) foot wide walkways or sidewalks are commonly found within many existing residential developments. More sidewalks and now bike paths are being approved and constructed within new residential projects like Walker Gordon Farm, Crossing at Grovers Mill, and Wicoff Estates. These pedestrian and bicycle pathway

systems are being connected with existing off-tract pathways. The Township's philosophy has been to require new residential development to provide for internal pedestrian and bicycle circulation and to contribute to the implementation of external portions of a larger and more complex municipal system.

In addition to the pathways serving residential developments, the Township has required pedestrian circulation systems within non-residential developments, i.e. Princeton Forrestal Center and Enterprise Business Center.

Major components of the existing pedestrian and bikeway system include the Lenape Trail which is located adjacent to the Cranbury Brook and connects George Davison Road and the Brittany townhouse development with Enterprise Business Center, Deer Creek and Fox Run Apartments, Pond View Drive (Waters Edge Park) and Maple Avenue (Mill Pond Park). The Lenape Trail also extends into Plainsboro Park and to Plainsboro Road across from the Municipal Complex.

Another important pedestrian pathway system exists along the Cedar Brook connecting Dey Road and Petty Road with Plainsboro Road, adjacent to the Gentry and Raven's Crest residential developments. This same system extends in back of the Aspen development along the Cranbury Brook and up to Plainsboro Road, where it runs north along Scotts Comer Road to Quail Ridge Drive and then west along Plainsboro Rd. in front of the Ashford, Hampshire, and Tamarron developments. Ultimately this network of pathways connects to the Lenape Trail and to Morris-Davison Park. Pedestrian paths also exist along Plainsboro Road connecting Hunters Glen with the Princeton Meadows Shopping Center, as well as along Plainsboro Road in the Village area.

The Princeton Forrestal Center has an extensive system of informal nature trails within wooded areas along the Bee Brook. Included along these trails are node areas that include benches, litter containers and trail bollards. Forrestal's nature trail system is largely confined to areas west of College Road East and north of Research Way. The trail system east of College Road East and south of Research Way has been removed from the Township's pathway plan to be replaced by sidewalk extensions between existing and proposed buildings and College Road East to provide pedestrian access to the College Road walkway system and the Bee Brook nature trail system located generally west of College Road East.



In addition to the nature trails, the Forrestal Center has paved walking/jogging paths along College Road East and portions of Scudders Mill Road. Additional paved pathways are planned along the extension of

Campus Road. The College Road East pathway extends across the Route 1/College Road grade separation to the Forrestal Village. A pedestrian crossing at College and Scudders Mill Roads, with a paved pathway along Scudders Mill Road, to Schalks Crossing Road, provides pedestrian and bicycle access from the Forrestal Center to the Post Office, Plainsboro Town Center Shopping Center, and the rest of the Village area.

In terms of bike routes, the Township's only posted bike route is located in the Forrestal Center along Research Way and College Road East.

Another important pedestrian/bike path network in the Township exists within the D&R Canal Commission Park, which connects Princeton and West Windsor Township to South Brunswick Township along scenic Carnegie Lake.

4. Master Plan Network

The primary goal of this plan is to foster the creation of a coordinated and comprehensive network of multi-use pedestrian and bicycle pathways throughout the Township – connecting residential, recreational, community facilities, commercial and employment areas. An effort has also been made to coordinate the Township's bikeway system with bikeways planned in neighboring Townships, Middlesex County and the State.



Village Sidewalks

switching back and forth of the bike paths from one side of a street to another.

The proposed bikeway system is intended to compliment existing and planned pedestrian pathways in the Township. In order to avoid redundancy between the bicycle and pedestrian pathway networks, an effort has been made, where feasible and appropriate, to utilize existing and planned pedestrian pathways for both bicyclists and pedestrians. For reasons of bicycle safety and convenience, the bikeway system has been designed with an eye towards maximizing continuity within the overall system. This is achieved by avoiding the creation of dead-end bike paths and minimizing the

In recent years, plans have been approved and, in some cases, construction has actually taken place to implement important pathway segments in the Township. Most recently, sidewalk improvements have been completed in the Village area along Edgemere Avenue, Parkway Avenue and Plainsboro Road. Additional pedestrian and bikeway

improvements are planned throughout the Township and particularly along Plainsboro Road in the vicinity of Morris Davison Park in response to traffic calming improvements recommended by the Planning Board. Funding for these improvements is being sought from the New Jersey DOT Transportation Enhancement Activities Program.

The 1990 Pathways Plan identified a new pathway network in the Township's farmland preservation area (R-100 and R-150 zones), along Grovers Mill Road, Cranbury Neck Road., as well as along the PSE&G right-of-way and a portion of the Millstone River. Among the most critical of these pathways would appear to be the one along the PSE&G right-of-way. This pathway connection will function to link the farmland preservation area of the Township, as well as the educational facilities area along Grovers Mill Road (Middle, Upper Elementary, North High School and planned Montessori School), with the residential and non-residential areas along and north of Plainsboro Road. This proposed pathway would connect with the existing Lenape Trail, further enhancing its usefulness as a pedestrian and bicycle path. A pedestrian/bicycle access easement from PSE&G, who have granted similar easements elsewhere in the State, will be necessary to make this pathway a reality.

Other major bike paths include those planned along Grovers Mill Road, Plainsboro Road, Dey Road, and within the Village area. Bike paths are also planned in order to link the Village area and east side of the Township with areas west of the Amtrak rail road, including: Walker Gordon Farm, FMC/Firmenich complexes, and the Princeton Forrestal Center including connections across Route 1 at the Scudders Mill and College Rds. to the Forrestal Village, Princeton Landing, Princeton Nurseries and the D&R Canal.

The following two maps, **Figure 8: Pedestrian Circulation Plan Map** and **Figure 9: Bikeway Plan Map**, shows existing, as well as planned and proposed sidewalks, pedestrian paths, trails, and bikeways to be constructed by developers, the Township and others.

5. Supplemental Facilities

To improve the quality of the proposed pathways system, it is important to provide supplemental or accessory facilities. These facilities will make the pathways and designations along the pathways more enjoyable, thus encouraging their greater use.

Bike parking facilities should be provided at various stopping points along a pathway for security and weather protection. For example, shopping centers, the Municipal Center and employment centers should have adequate parking facilities that are conveniently located near building entrances or other highly visible areas that are self-policing. As noted by the American Association of State Highway and Transportation Officials, bicycle parking that is not properly designed will encourage bicyclists to use trees, railings, and other appurtenances for bicycle parking, which may lead to damage to such structures.



Sheltered Bike Rack

Accessories such as park benches, trash receptacles, exercise stations and rest areas with restroom facilities and water fountains should be considered along bicycle and pedestrian trails. The Township's plan does not specifically address these supplemental facilities for several reasons. Since the pathways system has been designed to lead pedestrians and Bicyclist's into activity centers, accessories such as rest rooms and water fountains should be provided in conjunction with existing structures and park facilities. Parking facilities would also be provided within these activity centers. If these centers do not have adequate accessory facilities, provision should be made to provide them. Also, it will be easier to properly locate and determine the types of accessory facilities needed after the paths have been used over a period of time.

6. Implementation

In order for the Township to have a successful pedestrian and bicycle pathway system, an implementation strategy is important. Initially, the Township should amend its zoning, subdivision and site plan review ordinances to encourage the development of pedestrian and bicycle pathways by:

- Adding new definitions for pedestrian and bikeway facilities
- Specifying bicycle parking requirements for new development and redevelopment
- Providing bicycle parking facilities design standards
- Identifying the NJDOT Bicycle Compatible Roadways and Bikeways Planning and Design Guidelines as the principal standards for bikeway facilities



Bike Sign

After such ordinances are amended, the Township's Community Development, Recreation and Police Departments should work together to prepare and distribute a pathways plan package. Included in this package should be a detailed pathways map(s), generally accepted "Rules of the Road," and safety tips.

One of primary means by which the pedestrian circulation and bikeway plans will be implemented will be through the development process, whereby a developer of new development or redevelopment requiring subdivision and/or site plan approval(s), would be required to construct on-tract and possibly off-tract pathways as a condition of plan approval.

While the development approval process will be the primary means of implementing the pedestrian circulation and bikeway plans, an important secondary means of implementing such plans will be through the Township itself, as a result of funds obtained through County, State and/or federal programs. For example, funds may be available in the future through the State DOT Transportation Enhancement Activities Program, funded through the U.S. DOT SAFETEA-20 Program.

In order to communicate the existence of a planned bikeway system in the Township and to demonstrate early progress in the implementation of the bikeway plan, an effort should be made to quickly move ahead with the implementation of those portions of the proposed system that can be done so without significant expense or effort. For example, one task that should be considered for early action is the posting of "bike route" signs along those roadways proposed as bike routes that already comply with NJDOT bikeway standards.

7. Recommended Priority Bikeways

On September 22, 1998, a public outreach meeting or workshop was held in the Community Room of the Municipal Building. The purpose of this meeting was to obtain meaningful public feedback regarding the issue of where in the Township bikeway facilities are needed and what priority should be given to such facilities. With this in mind, the participants, including members of the various Township boards and committees, broke up into small work groups and proceeded to reach consensus about where bikeway improvements are needed and what priority should be given to each. The recommendations of the small work groups were used to create the following list of proposed bikeways that they recommend be given high priority. The proposed bikeway plan includes all bikeway facilities recommended at that meeting as follows:

Scudders Mill Road

- *From BMS west to existing pathway near Route 1 overpass.*
- *From Schalks Crossing Road East to P-Loop.*

Plainsboro Road

- *From P-Loop/Enterprise Drive east to Cranbury border.*
- *From Schalks Crossing Road west to Connector Road ending at Scudders Mill Road.*

PSE&G Right-of-Way

- *From Grovers Mill Road northeast to Woodland Drive.*

Scotts Corner Road

- *From Plainsboro Road north to Park Drive.*

Research Way

- *From College Road East to Schalks Crossing Road.*

Schalks Crossing Road

- *From Plainsboro Road north to Scudders Mill Road.*

Cranbury Neck Road

- *From Grovers Mill Road east to Cranbury border.*

I. Rail Transportation

As the Township continues to experience population growth, a greater burden is placed on Plainsboro's road network. As a result, there is a need to integrate alternative modes of transportation into the Township's circulation system.

One of these transportation methods involves rail transportation facilities. There is one existing rail station, the Princeton Junction Train Station that serves the majority of Plainsboro's rail commuters. In addition, another rail facility is being planned in South Brunswick which also could eventually serve Township rail commuters.

1. Princeton Junction Train Station

The Princeton Junction Train Station services most of Mercer County's and part of Middlesex County's rail transit needs. Since the closest rail stations are in New Brunswick, Trenton, and Hamilton Township many commuters travel to Princeton Junction from Ewing Township, Hamilton Township, Lawrence Township, Princeton Township and Borough, Washington Township, South and North Brunswick Townships, Cranbury Township as well as Plainsboro Township. In addition, Pennsylvania commuters use the Princeton Junction Train Station.

The Princeton Junction Train Station provides Amtrak and New Jersey Transit service. Amtrak service provides links south to Philadelphia and Washington D.C. and further down the eastern coast. New Jersey Transit service has scheduled service to New York's Penn Station and various stops in New Jersey.

With regard to parking facilities at the Princeton Junction Train Station, these facilities are currently at capacity during morning rush hours. There

are both daily and permit parking lots at the station area. These parking lots are owned by New Jersey Transit, West Windsor Parking Authority and private interests.

2. South Brunswick Train Station

One planned train station facility is being considered in South Brunswick Township. The new station is proposed along the northeast corridor at the end of Northumberland Way.

The impact of this rail station on Plainsboro commuters is difficult to determine until plans are finalized for the rail station. However, if the station is built, it is reasonable to expect that many of the Plainsboro residents on the NJ Transit waiting lists for Princeton Junction will benefit from the South Brunswick train station. In addition, Plainsboro residents currently using the Princeton Junction Station may decide to use the South Brunswick Station because of its proximity.

J. Air Transportation

There are no airport hazard areas within the Township. The only air strip in the Township was located within Princeton Forrestal Center which was closed in 1988. Currently, the Township is serviced regionally by the Princeton Airport and the Trenton-Robbinsville Airport, and internationally through the Mercer County Airport, Philadelphia International and Newark.

Several corporate residents have helipad facilities including 800 and 900 Scudders Mill Road (Wyndham Hotel) and the Princeton Forrestal Center. A helipad facility may someday be proposed as part of the FMC Redevelopment Plan as a permitted use in the event of special facilities like a trauma center.

K. Implementation of Improvements

It is the Township's goal to implement all identified projects with the least impact on the Township tax payers. This is to be accomplished by encouraging NJDOT Route 1 improvements and the construction of Route 92, working with the County to have roadways under their jurisdiction improved, and by having land developers within the Township undertake or contribute toward roadway infrastructure improvements. The latter component is seen as having two parts: improvements within the Princeton Forrestal Center, and those outside it. Improvements within the Center are to be undertaken by the Center as specified in general development plan approvals. Outside the Princeton Forrestal Center, a combination or hybrid of Transportation Improvement District and Transportation Development Districts, impact fees, and negotiated improvements may be needed. All of these options are detailed below:

1. Traffic Management Plan (TMP)

Traffic improvements within the Princeton Forrestal Center are governed by a traffic management plan which seeks to coordinate the planning and development of sufficient acreage in the area of growth along Route 1, to

influence positively the pattern and quality for development in the area and to conserve the ecological resources of the Township.

The Traffic Management Plan (TMP) was proposed by Princeton University to the Planning Board as evidence of its ongoing commitment to the Township. Under this planning approach, rather than relying on a single projection of Forrester Center's impact when complete in the distant future, the Township is assured that periodic assessments of the traffic impact of the Forrester Center will be made and improvements will be implemented should they prove necessary and feasible. In addition, the plan reaffirms the University's commitment to assist the Township in gaining roadway improvements which will benefit the region.

2. Transportation Improvement District (TID)

The Transportation Improvement District (TID) is a logical component of the Master Plan in that it creates a mechanism to define and help finance specific off-tract improvements in a part of the Township ready to undergo major development. The TID can be considered a "sub-plan," enabled by the State's Municipal Land Use Law (MLUL) to further detail and refine master plan policies for managing growth in Plainsboro Township.

TID's are unified geographic areas. These areas are largely underdeveloped and are collectively zoned to accommodate much greater development than other locations within the Township. These areas are also targets for development pressures.

The Township has previously utilized a TID to foster construction of the College Road/Route 1 grade separation.

The legal basis for establishing a TID area is the Circulation and Utility Elements of this Master Plan. Essentially, the Township must identify the needed infrastructure improvements in one of these plans. Also, an ordinance must be enacted, based on these elements or studies, which contains standards that indicate how the impact of a particular project is to be measured.

To summarize, the following steps must be taken when establishing a TID area:

- a. Identify a related high growth area in the Township.
- b. Determine what road improvements are necessary in this growth area.
- c. Revise the transportation and /or utility element of the master plan to reflect the proposed TID area.
- d. Prepare an ordinance which identifies the standards by which to measure the share of future road improvements that is located

within the new TID area to be assessed with respect to each development application.

3. Transportation Development Districts (TDD)

The New Jersey Transportation Development District Act of 1989 involves financing transportation improvements in growth corridors. As stated in the Act, "Creation of these financing districts provides a mechanism in which the state, counties and municipalities will have the means to work together to respond to transportation needs on a regional bases as determined by growth conditions rather than upon the pre-existing municipal and country boundaries."

Basically, the Act encourages counties to become the leading agency in establishing a TDD area. However, the Act also leaves open the potential for the state or municipalities to form TDD's.

Transportation Development Districts (TDD) are another option to channel private monies into roadway infrastructure improvements. While the concept is sound, the implementation is problematic. The level of coordination needed among various government agencies is cumbersome, while the proportion of municipal dollars required is prohibitive.

In 2000, the state legislature set out to revise the 1989 TDD Act by introducing a new piece of legislation, the Transportation Enhancement District Act (TED). The TED process is a voluntary and cooperative partnership to share expenses of proposed transportation improvements, through a long-term comprehensive planning approach between public and private sectors. The TED provides for voluntary collaboration across local governments and with state transportation agencies and the private sector. It provides increased flexibility in meeting present and future transportation needs, in a locally driven process. The TED affords local governments the legal tools to determine how to fund transportation investments that support economic growth, by planning for and accessing both new development and redevelopment.

4. Impact Fees

To pay for expanded community services necessitated by significant growth over the last decade, municipalities are focusing upon the private sector to assist in paying for these services. Development impact fees are one way to shift the burden of paying for expanded or new facilities and improvements to developers.

5. Negotiated Improvements

Other than the previous use of a TID, all other non-governmental monies for infrastructure improvements have been negotiated from developers as part of the approval. This will continue as the only mechanism until a formal method is developed. While the timing of improvements is difficult

to program through negotiations, they can be often in excess of any predetermined formula and aimed where most urgently needed.

6. County Improvements

Many of the identified improvements are under county jurisdiction and must be included in the county's capital improvement program. It is anticipated that the county will incur expenses for the improvement beyond what is unattainable through private efforts.

7. Township Improvements

The Township's role has traditionally been to maintain the local roads which are constructed as part of development. While this is expected to continue, the Township's role has expanded to examine roads under other jurisdictions, primarily county, and work with the county to program necessary improvements. Additionally, the county has implemented a policy whereby the Township may acquire land needed to construct or widen a county road. Plainsboro reviews these items on a case by case basis. It is also anticipated that some roads under municipal jurisdiction will require improvement beyond normal maintenance. The Township may have to expend funds for some of these improvements if developer monies are unavailable.

L. Action Plan

The list below was taken from the Plainsboro Township Petition for State Plan Endorsement. It contains 27 projects that the Township would like to be able to implement. **Figure 10: Possible Projects To Be Funded by State**, locates these projects. Many of them would require some level of either funding or regulatory approvals, or both. The Township recognizes that the particular funding mechanisms as well as the regulatory requirements in New Jersey are very complex. It is anticipated that Initial Plan Endorsement will enable the Township to begin a dialogue with the respective State agencies which may be able to provide the Township with technical, financial or regulatory assistance as appropriate.

The State agencies represented on the State Planning Commission have agreed to offer their assistance, both technical and advisory, in order to help Plainsboro advance its planning efforts. However, it needs to be understood that this project list does not and should not be interpreted to create an expectation that would negate the need for respective environmental approvals or any other situation that would violate a law or regulation. And despite the name of the figure identified above, which identifies possible projects to be funded by the state, it needs to be clear that the State Planning Commission cannot commit state resources, including funding, beyond that which is appropriate and available during any particular budget cycle. However, it is expected that projects within an endorsed plan will receive a higher level of priority for the types of available funding.

It is further recommended that prior to final site plan approval of any project of submission of a parcel within the Township, that the extent of wetlands should be verified on these projects by obtaining a Letter of Interpretation (LOI) from NJDEP to the extent required by existing state regulations. Projects within the list below that reference funding by NJDOT will receive priority consideration for funding consistent with program requirements and subject to available funds.

1. Primary Priority Projects as Identified by Plainsboro

Figure Location 1: Upgrade or replacement of the Schalks Crossing Road railroad bridge to include widening for a bike and pedestrian path on the east side of the bridge. Roadway and east side pathway improvements on both approaches to the bridge and bike path and sidewalk construction to connect the Princeton Collection, other residential areas and the Princeton Forrestal Center to the north with the Village Center area to the south.

Figure Location 2: Construction of a pedestrian/bicycle bridge over the Cranbury Brook and construction of 8-foot wide pedestrian/bicycle pathways on both sides of the new bridge. The new pedestrian/bicycle pathway will begin at Grovers Mill Road and extend to the Township's existing Lenape Trail system. Construction of the new pathway will involve upgrade to the Township's Recycling and Conservation Center roadway access and permission from PSE&G to construct a bridge and pathway across the Cranbury Brook within their utility tower right-of-way. While PSE&G has not been receptive to Township initiatives in the past involving pedestrian and bikeway improvements within their rights-of-way, recent agreements reached between PSE&G and West Windsor Township involving such improvements, suggest a possible softening of their position on this matter.

Figure Location 3: Design and implementation of a much needed traffic calming project along Grovers Mill Road generally in front of the new West-Windsor /Plainsboro North Campus High School, the Upper Elementary School and the Middle School. This traffic-calming project would involve additional road widening, crosswalks, sidewalks and pathways, signage, landscaping within roadway islands and along school roadway frontages, and possibly some new, improved or additional site lighting.

Figure Location 4: Design and Implementation of traffic calming along Plainsboro Road between Morris Davison Park on the west and the municipal border with Cranbury Township on the east, near the Aspen and Ravens Crest residential developments. This project will complement existing traffic calming improvements along this roadway to the west.

Figure Location 5: Design and construct traffic calming along Plainsboro Road between Wyndhurst Drive/Center Drive (at the main entrance to the Princeton Meadows shopping center) on the east and Enterprise Drive and the P-loop jug handles on the west to include landscaping, crosswalks, signage and bus shelters.

Figure Location 6: Upgrade and construction of an eight (8) foot wide pedestrian/bicycle pathway system on the Municipal Complex site along Scudders Mill Road, Plainsboro Road and a connection between these two (2) roads through the site as shown on the Master Plan bikeway plan.

Figure Location 7: Traffic signalization at the intersection of Dey Road and Wyndhurst Drive. This improvement will make it safer for school buses to enter and exit the adjacent elementary school site and improve pedestrian/bicycle circulation in the area.

Figure Location 8: Construction of a sidewalk extension along the north side of Scudders Mill Road from the intersection of Scudders Mill Road and Schalks Crossing Road on the west to the location of the existing bus stop to the east. This project would also include the placement of a new bus shelter in this area.

Figure Location 9: Reconstruct Cranbury Neck Road from its Intersection with Grovers Mill Road on the west, to its border with the Township of Cranbury at John White Road on the east. Reconstruction is to involve the provision of bike lanes on both sides of the road and appropriate bike signage and directional signage.

Figure Location 10: Pathway construction of the village area Plainsboro Road bike path project (south side of Plainsboro Road) from the Community Gardens on the west to Prospect Avenue on the east. This project is fully engineered and ready to move to the construction phase.

2. Secondary Priority Projects Identified by Plainsboro Township

Figure Location 11: Pathway construction along the eastern edge of Grovers Mill Road. This project will connect an existing Princeton Crossing residential development with bike lane implementation along Cranbury Neck Road.

Figure Location 12: Construction of a pedestrian/bicycle bridge across the Plainsboro Pond with pathways on either side of the bridge making connections to the Lenape Trail and Grovers Mill Road. This bridge and pathway project will serve as access to a Middle School, the Upper Elementary School and the North Campus High School as well as access to the Township's linear park system.

Figure Location 13: Resurfacing and making other needed improvements to the existing six (6) foot wide Lenape Trail system located along the Plainsboro Pond and Cranbury Brook to more safely accommodate existing and anticipated walkers and joggers and bicycle usage. Widen to eight (8) feet where appropriate and possible with functional sensitivity to existing environmental resources.

Figure Location 14: Sidewalk construction along the frontage of the Princeton Meadows Shopping Center, from both intersections of Center Drive with Plainsboro Road.

Figure Location 15: A pathway interconnection between Community Park and the Plainsboro Preserve and the Environmental Education Center along Scotts Corner Road from the Community Park driveway entrance to the Plainsboro Preserve driveway entrance.

Figure Location 16: Design and construction of a pedestrian/bicycle bridge over the D & R Canal, connecting the Township's pathway system on the east side of the Canal with the D&R Canal pathway on the west side of the Canal.

3. Longer Term Priority Projects Identified by Plainsboro Township

Figure Location 17: Construction of a pathway along the Route One frontage of the Robert Wood Johnson Foundation to connect the North Campus office development and other Princeton Forrestal Center projects near Campus Road to the south with the existing pathway network to the north along College Road, including the Princeton Forrestal Village on the west side of Route One. This connection would greatly improve access between these two areas, as called for in the Master Plan bikeway plan.

Figure Location 18: Upgrade and maintenance of the existing sidewalk system across the Scudders Mill Road grade separation location at Route One.

Figure Location 19: Upgrade and maintenance of the existing Township pathway located within an existing park (Plainsboro Park) and extending along the edge of a large apartment complex (Fox Run). This will connect Plainsboro Road with the Lenape Trail.

Figure Location 21: Design and construction of a natural pathway along the Plainsboro Pond/Cranbury Brook connection with the projects No.12 and No. 20 to complete a pathway loop and to serve as a unique nature trail.

Figure Location 22: Upgrade and maintenance of the existing pathway that connects Plainsboro Road with the Lenape Trail. It is located between a townhouse development (Brittany) and an existing apartment complex (Deer Creek).

Figure Location 23: Design and construction of a pathway along the Cedar Brook between Petty Road and Plainsboro Road to service residential developments in the area.

Figure Location 24: Construction of a pathway along the northern edge of Dey Road between the PSE&G power line right-of-way and Scotts Corner Road. Pathway will provide for continuous access along Dey Road into the Village Center area of the Township.

Figure Location 25: Upgrade and maintenance of existing trails within the “Plainsboro Preserve” area of the Township to enhance opportunities to better observe and make use of this large natural area.

Figure Location 26: Evaluation, design and construction of a traffic signal at the intersection of Edgemere Avenue and Maple Avenue. This signal will improve traffic flow during both the AM and PM peak hours and result in traffic calming. Crosswalks and sidewalk connections would also be considered for this project.

4. The Township, NJDOT and others should participate in the discussions regarding the BRT and look to link regional employment centers, new facilities and Plainsboro Village accordingly.
5. Township, NJDOT, OSG and others should continue participating in discussion and study efforts regarding the Route 1 Regional Growth strategy Study being conducted by NJDOT for the purposes of exploring land use policies to support a BRT.
6. Where practical, implement multiple roadway and pedestrian and bikeway pathway projects in accordance with all existing local, county and state regulations and funding contract requirements with the assistance of NJDOT, OSG, and NJDEP, as appropriate, to advise on application of applicable design standards and environmental regulatory requirements.
7. Schedule and meet with NJDEP representatives to discuss the project known as the Campus Road Extension.
8. Re-activate “Park and Ride” service to Princeton Junction Station. Install bus shelters at key locations throughout the township along the existing Bus Route 600 service line. Continue to work with NJ Transit on study of BRT options for Plainsboro.
9. Reconstruct +/- one (1) mile of Cranbury Neck Road from its intersection with Grovers Mill Road on the west, its border with the Township of Cranbury at John White Road on the east. Reconstruction to involve the provisions of bike lanes on both sides of the road and appropriate bike lane signage & directional signage. Implementation of several identified pedestrian, bicycle & pathway improvements with the assistance of NJDOT, OSG and NJDEP, as appropriate, to advise on application of applicable design standards and environmental regulatory requirements.
10. Design and implement traffic calming projects with the assistance of NJDOT, OSG, and NJDEP, as appropriate to advise on applicable design standards and environmental regulatory requirements.
11. Install traffic signal at intersection of Dey Road and Wyndhurst Drive in order to facilitate safer ingress and egress to and from elementary school site, and also improve pedestrian/bicycle circulation in the area.

12. Construction of new sidewalk extension as identified in the township pedestrian plan and installation of a new bus shelters where appropriate with the assistance of NJDOT, OSG, and NJDEP, as appropriate, to advise on application of applicable design standards and environmental regulatory requirements.
13. Upgrade or replace Schalks Crossing Road railroad bridge to include widening for a bike path on one side and a sidewalk on the other with the assistance of NJDOT, OSG and NJDEP, as appropriate, to advise on applicable design standards and environmental regulatory requirements.
14. Explore funding related to consideration and review of BRT options for Plainsboro.
15. Consider an amendment to the Township Code (Chapter 85, Subdivision & Site Plan regulations) specifically requiring that new or modified access to US Route 1 be in accordance with the State Highway Access Code (SHAC).

In addition to the physical improvements noted on Figure 10 it is equally important to continue to pursue and support expanded New Jersey Transit 600 bus service and Bus Rapid Transit, the construction of bus shelters, encourage trip reduction strategies and continue to find ways to reduce the dependence on the private automobile to access services, employment and recreation needs.

The Township should continue to be active in the Central Jersey Transportation Forum and Middlesex County Coordinating Committee. It is important that Route 1 continues to work in an efficient manner through the Township and as such the Township should continue to support improvements like the extension of Campus Road and Nursery Road, the construction of a slip ramp from Route 1 into the Forrestal Village, and the construction of Route 92. It is important to point out that no new curb cut access points are associated with any Forrestal development activity and that the proposed Medical Center will utilize an existing FMC Route 1 curb cut. The Township feels that it is important to maintain and support the transportation integrity of the Route 1 corridor.

COMMUNITY FACILITIES PLAN



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V. COMMUNITY FACILITIES PLAN ELEMENT

A. Introduction

Plainsboro Township is a suburban/rural community located midway between New York City and Philadelphia and is comprised of 11.8 square miles. The Township is located in the southern section of Middlesex County and is bordered by the Townships of Princeton, West Windsor and East Windsor in Mercer County and the Townships of Cranbury and South Brunswick in Middlesex County. The Township is noted as a premier location for major corporate and (Princeton) University offices and research facilities. Located conveniently along a major commuter rail line and highways, the Township is a desirable residential community. The Township is also home to a variety of religious facilities like the First Presbyterian Church, Princeton Alliance Church, Gateway Ministries and Gospel Fellowship Church, The Queenship of Mary Roman Catholic Church and St. Joseph's Seminary.

This Master Plan Element discusses the following areas relative to community facilities including public school sites, historic buildings and sites, the municipal center, the present and new Township library, hospitals, public safety facilities, and other related facilities and services.

B. Municipal Center

The existing 29-acre site, known as the Municipal Center, is located at the approximate center of the Township. It is bounded on the south by Plainsboro Road, the east by Scudders Mill Road, the north by Dey Road, and the west by houses in the R-85 zone.

The structures on site include the Municipal Building, the Library, the Rescue Squad Building, and the historic Wicoff House with a carriage house and other related outbuildings, and a relatively new cell tower. A group of barns and sheds that were previously used by the Department of Public Works were removed upon the completion of the off-site Public Works facility which is located along Woodland Drive adjacent to the completed Calton Homes development.



Township Building

At one time existing municipal buildings on the site lacked the cohesive identity necessary to express the desired architectural statement that is expected for a local government center. The orientation of the buildings implied a "back door" appearance to the community. The buildings were randomly scattered

throughout the site without a viable statement of governmental, cultural or municipal "center."

The intent of the present Municipal Center is for Township government to project an inviting and cooperative image to Township residents and visitors. The architecture of the buildings is representative of the 20th century. Plainsboro's Municipal Center is in harmony with the styles of new construction recently completed in the community. It expresses a human scale and the vitality and integrity of the local government. The Municipal Center also has a professional and business campus appearance, with a timeless architectural statement of dignity and strength.



Wicoff Outbuilding

The Township building program that resulted in the construction of the Municipal Center was initiated to address municipal space requirements in a timely, efficient, and cost effective manner. The building program resulted in the consolidation of all municipal services (including the library, but excluding public works) within new structures at the site of the existing older municipal building.

The Township provides a broad range of traditional services in the municipal buildings that includes administration, finance, uniform construction code enforcement, the municipal court, housing inspection, planning and zoning, recreation, emergency services, and welfare.

The Township is governed by a Township Committee whose five members are elected at large for staggered three-year terms. A mayor and deputy mayor are selected annually by the Township Committee from their membership.

The professional staff is headed by an appointed Township Administrator, a position established by ordinance and recognized by the International City and County Management Association. The Township has six departments: Administration, Community Development, Finance, Human Services, Public Safety, and Public Works and Public Property (each headed by a director).

Many of the Township's operations, i.e. Planning Board, Zoning Board of Adjustment and other advisor committees, are conducted by volunteers with over 125 members serving the Township's interests. Autonomous fire district and rescue squad organizations provide volunteer fire fighting and emergency medical transportation services.

The Rescue Squad building is owned and occupied by a self-contained and independent organization. The building was completed in 1985 and contains a meeting room, storage space, office and a garage for the ambulances. The

Rescue Squad is funded entirely by voluntary contributions from individuals and organizations. Everything from the ambulances, to uniforms, bandages and oxygen is paid for by voluntary contributions. The Township paid EMS organization uses squad equipment during weekdays from 6:00 AM to 6:00 PM and makes a small financial contribution.

The Wicoff House remains as an historic site and is important to the success of the entire complex and to the welfare of the Township. The architecture of the Wicoff House and related out-buildings helps to recall the life and styles of the past. The buildings are used to preserve significant cultural and artistic elements and activities not prevalent in the present day. Areas inside the house have been set aside for displays. There are presentations of holiday decorations, crafts, and other functions prevalent at the time of the building's early years. Some rooms are used for more formal and elegant conferences and for special guests of the Township. Garden displays of seasonal flowers, shrubs, herbs, etc., have been created on the grounds immediately adjacent to the house. Minimal disturbance or renovation has occurred to the house.

Other uses on the site include a cell tower with service buildings that were designed to be compatible with the architecture of the Wicoff House. The Center also now includes a Memorial Park and sitting areas that were not a part of the original design.



Memorial Park

Roadway circulation generally loops around the Municipal Center. This encircling of buildings with roadways and parking lots enhances the significance of the focal point of the Center. It was envisioned that there would be no direct through-street that would imply that the buildings were a "stop-off" or "side-step." Rather, the buildings are given the prominence required to truly dominate the Municipal Center. The circulation pattern serves the buildings and implies that one has arrived at a prominent facility.

Parking areas are designed and landscaped so as not to overwhelm the site and its many visitors. Primary parking is placed closest to the structures to accommodate the majority of everyday employees and visitors. For larger and less frequent activities, secondary parking areas have been placed beyond circulation roadways. All parking areas are designed with sufficient buffers and landscape elements to eliminate any off-site negative impacts that might otherwise occur.

The farmland at the intersections of Plainsboro Road and Scudders Mill Road could be utilized for some future use that is not designated at this time. This open space area, however, enhances the entire setting of the Municipal Complex and provides an appropriate setback from surrounding high traffic volume roadways.

C. Township Fire House

The Plainsboro Volunteer Fire Company, No. 1 was organized on November 1, 1959. There were 12 Charter members who took part in the organization. The Fire Company was incorporated on February 16, 1960, and on June 18, 1960 the fire company went into full operation. The first truck was a used 1940 American LaFrance pumper. It was a 500 gallon per minute pumper with a 160 gallon booster tank. The booster tank was later increased to hold 500 gallons of water.



Fire House

The original fire house was the cinder block building still located behind the Plainsboro Hardware Store. During the winter months, the building was heated by a coal fired pipeless heater to keep the water in the fire trucks from freezing.

In July 1962 the fire company moved to its present location. The land at this location was donated by the Wicoff Family and Walker Gordon Farms.

In 1974 additional land adjacent to the fire house was donated by the Wicoff Family. In 1975 Princeton University began development of the Forrestal Center and expansion of the fire company was anticipated. Using a \$100,000 donation from Princeton University the fire company expanded the fire house and purchased a 1977 Hahn 1750 gpm pumper. Exterior work on the building addition was completed in 1977. The remainder of the interior work was completed by the members over the next 2 years. In 1981 Plainsboro Township purchased a 1979 Pierce/LTI 100 foot ladder tower for use by the fire company. In 1983 a Chevrolet Step-Van was purchased by the fire company to serve as a light rescue vehicle and mobile emergency management center.

D. Township Recycling and Conservation Center

The Township Recycling and Conservation Center has direct vehicular access off of Grovers Mill Road. It is located on top of a closed landfill site. The Center is used to temporarily store bulk waste which is picked up and hauled away. Bulk waste days are held at this site. Items accepted as waste for temporary



Recycling and Conservation Center

storage includes motor oil, auto tires, antifreeze, oil filters, auto batteries, leaves, grass, and brush. The Center is open between April 1st and December 15th as follows: Monday and Thursday 5:30 pm to 7:30 pm and Saturday from 10 am to 5 pm. Between December 16th and March 31st the Center is only open on Saturdays from 10 am to 2 pm

E. United Water Princeton Meadows Waste Water Treatment Facility

This site is home to a sewer treatment plant that services most Township areas located east of the Amtrak railroad tracks. Land areas that are serviced and/or will be serviced are located within sewer service franchise areas. Further discussion with regard to this facility takes place in the Utility Plan Element of this Master Plan.

F. Public School Sites

Plainsboro Township's public schools are part of a regional school district which includes West Windsor Township. The West Windsor-Plainsboro Board of Education has published a series of analyses and plans describing existing conditions, enrollment projections, and school facilities proposed to meet anticipated needs. Existing schools in Plainsboro include the John V.B. Wicoff School (K-3), Community Middle School (6-8), the Millstone River Upper Elementary School (4-5), the recently constructed Town Center Elementary School (K-3), and West Windsor-Plainsboro High School North Campus (9-12). A special services building also exists on the Wicoff school site.



Wicoff Elementary School

The school district's Long Range Facility Plan contains an evaluation of school capacity through the consideration of Facilities Efficiency Standards (FES). Table 7 illustrates that through consideration of District practices and FES class sizes, the District is able to reduce the unhoused students at the elementary level to within the tolerances afforded by the applicable utilization rate.

Table 8 FES Class Sizes: (Proposed Facilities incl. w/ Projected Enrollments)

Grade	Functional Capacity	Projected Enrollment	Unhoused Students
Elementary (K-5)	4,322	4,272	-50
Middle (6-8)	2,277	2,432	155
High (9-12)	3,604	2,887	-717

Working with the Township Committee and Planning Board, the Board of Education has constructed the following Township located schools which satisfy the New Jersey locational and size criteria.

1. Elementary School Sites

The recently constructed Town Center Elementary School has a building area equal to 98,000 square feet. It was constructed in 2002. There are 129 parking spaces on site. The capacity of this school is 764 students and in 2007 there were 731 students.

The John V.B. Wicoff Elementary School has a building area equal to 47,470 square feet. It was constructed in 1919 and has experienced some significant additions during the course of its lifetime. There are 66 parking spaces (12 on gravel) on the site. The capacity of this school is 430 students and in 2007 there were 420 students.

The Millstone River Upper Elementary School has a building area of 142,300 square feet. There are 206 parking spaces on the site. The school was constructed in 1988. The capacity of this school is 1100 students and in 2007 there were 842 students.

2. Middle School Site

The Community Middle School has a building area equal to 141,802 square feet. It was constructed in 1987. There are 123 parking spaces on the site. The capacity of this school is 1,350 students and in 2007 there were 1,248 students.



Community Middle School

3. High School Site

The WWP-HS North Campus has a building area equal to 332,000 square feet. It was constructed in 1995. There are 1,044 parking spaces on the site. The capacity of the high school is 1,472 students and in 2007 there were 1,442 students.

4. Special Services

The special services building is located on a 0.3064 acre parcel attached to the John V.B. Elementary School Site. The building has 2,052 square feet and there are 12 parking spaces.

Table 9 Description of Each Public School Site

SCHOOL	GRADES	STUDENTS 10-15-07	CAPACITY	TOTAL ACRES	BLDG SQ FOOTAGE
Town Center	K-3	731	764	22.89	98,000
J.V.B. Wicoff	K-3	420	430	14.06	47,470
Millstone River	4-5	842	1,100	38.95	142,300
Community Middle	6-8	1,248	1,350	30.47	141,802
High School North	9-12	1,472	1,875	89.76	322,000
Special Services	-	-	-	.3064	-

The Township coordinates with the Board of Education in many ways. First and foremost is Planning Board review of school district future planning efforts and their specific development plans for new schools and, in addition, building expansions. The Planning Board has reviewed and provided important input to the School District on the construction of the new elementary schools, the middle school and the new high school. Planning Board comments have resulted in cost savings to the School District. School projects have been coordinated with Township projects such as traffic signalization and sidewalk and pathway construction.

The School District has allowed a portion of the Town Center School site to be reforested through a developer contribution working with the Planning Board and has incorporated elements found in the new Village Center area (i.e. new lighting, landscaping, and signage design) and designed the building to compliment this area of the Township.

The Township and School District have also worked closely together to deal with temporary classroom trailers, landscape upgrades at various sites, parking lot design, recreational facilities, circulation, and storage buildings.

In addition to the Township needing to be involved with review and input associated with proposed school district projects, it is recommended that a process be established to address the following projects:

1. Upper Elementary School – design and construction of proposed pedestrian bridge over the Cranbury Brook; construction of an 8' wide bike path along Grovers Mill Road frontage with building to path sidewalk connections; landscape upgrades between Grovers Mill Road and the front of the building; removal of temporary classrooms; and landscape screening of parking lots.
2. John V. B. Wicoff School -- undertake a parking study to determine total demand and proposed design solutions; prepare and implement an agreed upon design standards that reflects the Township Village planning goals and objectives.
3. Community Middle School – reorganize the existing parking lot by removing spaces within and along existing aisle ; construct new parking

spaces and landscape islands; replace some parking lot and building mounted lights to direct light downward; construction of 8' wide bike path along Grovers Mill Road frontage with building path sidewalk connections.

4. High School North Campus – prepare a traffic calming plan for Grovers Mill Road similar to what is now being accomplished by the Township along Plainsboro Road and study the possibility of eliminating an existing grassed area located with the Grovers Mill Road frontage of the high school; review the need for additional signage along Grovers Mil Road to better clarify ingress and egress to the site.

G. Township Public Works Facility

The Public Works Facility is located along Woodland Drive directly opposite the Township's Community Park. It houses all of the Townships equipment used to maintain public streets and the extensive local park system.



Public Works Facility

H. Plainsboro Post Office

The Plainsboro Post Office is located at the intersection of Scudders Mill Road and Schalks Crossing Road. It was constructed in 1984 and is an important part of the Village area. The Post Office building has experienced one expansion over the past two decades including an upgrade of the parking lot, on site circulation, and landscaping.

I. Plainsboro Preserve and Environmental Education Center



Plainsboro Preserve

A partnership was formed between Middlesex County, Plainsboro Township and the New Jersey Audubon Society to preserve and provide accessibility to one of the region's most significant ecological legacies. The Plainsboro Preserve is over 1,000 acres of open space located in the heart of New Jersey's Route 1 corridor. The Preserve has over 5 miles of trails meandering through mature beech woods, wet meadows, and the shoreline of the scenic 50 acre McCormack Lake. The site is home to more than 150 species of birds in the course of a year. Plants on site consist of a diverse showing of spring wildflowers and also include over ten (10) species of rare or endangered plant species found sparingly elsewhere in the State including the majestic southern Twayblade Orchid. On the site is also an Environmental Education Center building that includes an indoor tree house, an "under the pond" room, and a deck with a view of the lake. Education programs offered at the Preserve include natural history programs and workshops, family nature programs, slide and lecture programs for groups and organizations, summer day camps, interpretive hikes, school site visitations and education workshops in Bridges to the Natural World, NJ waters, and others.

J. Hospitals

There are no hospitals located within Plainsboro Township at this time. Major hospitals in the area include the Medical Center at Princeton, the Robert Wood Johnson Hospital in Hamilton Township, and the Helene Fuld Medical Center, the Mercer Medical Center and the St. Francis Medical Center in Trenton, and the Robert Wood Johnson University Hospital in New Brunswick.

The Township Committee has recently approved a Redevelopment Plan for the FMC Corporation Site. Pursuant to this Redevelopment Plan is the permitted construction of the University Medical Center at Princeton (The Plainsboro Campus Master Plan) that involves the following build outs:



University Medical Center

North Parcel

Medical

1. Hospital – 960,000 SF (2,700 Employees)
2. Medical Office Buildings – 240,000 SF
3. Health/Fitness – 50,000 SF (Optional Facilities)

Residential

1. Assisted Living – 100 Units
2. Age-Restricted – 340 Units

South Parcel

Medical

1. Long Term Care – 200 Beds (Skilled Nursing)

Office/Research

1. Office – 100,000 SF
2. Research – 100,000 SF
3. Pilot Plant – 70,000 SF

It is envisioned that the project will be developed in two Phases and be fully constructed by 2011. Phase 1 construction on the North Parcel includes a 238 bed hospital, 120 SF medical offices and the health/fitness facility. Phase 2 construction on the North Campus includes 160 more beds in the hospital and a second 120,000 SF medical office. The Planning Board recently approved the

construction of a 200 bed skilled nursing facility and dialysis on the south parcel. This building will contain 107,030 Sf. The skilled nursing facility will operate on a continuous basis, whereas the Dialysis Center will operate from 8 am. until 8 pm.

K. Libraries

The original location of a library in the Township was a two room schoolhouse constructed in 1919. It was a one story structure of approximately 1,950 square feet. All aspects of the library's operation had outgrown its physical quarters, and the size and arrangement of the building inhibited the library's ability to function efficiently and to provide improved contemporary library services to its users.

Public library service was further modified and changed in 1964 with the establishment of a reading collection on three (3) shelves in the Town Hall. In 1982 the Township Committee initiated a study which concluded the Township should attempt the formation of a fully funded municipal library. As an interim measure, the existing library association was revitalized in 1983 and the Town Hall building, vacated by the Township, was extensively repaired and refurbished for library purposes. The library reopened early the following year, occupying the entire main floor of the renovated building. These quarters, located on Plainsboro Road in the Village area, are now part of the John V.B. Wicoff School which is occupied by the School District.

In November 1986 the citizens of Plainsboro voted almost six to one in favor of establishing a new Municipal Library and the Plainsboro Free Public Library came into being.

The Township is now in the process of constructing a new Library building in the new Village Center development. Plans call for the construction of a three story, 34,000 square foot library building which would hold 125,000



New Library

volumes of books and provide informal reading areas, display space for art, quiet study rooms, 40 computer stations, a children's section with a greatly expanded science/computer center, a local history room, administrative offices, storage space, and several community meeting rooms. Situated at the head of Market Square, with its expansive village green, the new site offers a unique venue for the library's established roster of indoor/outdoor community-based programs, including Plainsboro's Festival of the Arts, Haunted Tonight, Chinese New Year, Discovery Summers, Diwali and Holi.

Plans for the new library call for an active and fluid first floor with expanded computer offerings, a small café, a gallery, and a passive nature garden for outdoor use. The second floor will bring back the much needed quiet space for research and study, with a history room for archives and seminars and six individual study rooms for individual and small group use. The third floor will be

home to the children's area, with program room and science center. Two small outdoor areas will be available for both children's activities as well as casual open air use by all ages. See the three diagrams on the following pages to view "Bird's Eye Views", a front "Elevation" and "Interior Views" of the new Library.

The main entrance to the new library faces Market Street and is located on Van Doren Street; a second entrance is proposed to the rear of the building off Wilson Lane.

In addition to Township library facilities, Plainsboro's schools which are part of a regional school district formed with West Windsor Township in Mercer County, offer library space. All schools in the district have good student libraries. In addition, Plainsboro's students have access to the West Windsor branch of the Mercer County Library System.

L. Historic Buildings & Sites

Historic buildings and sites are identified in Chapter VII entitled "Historic Preservation Plan Element."

The Township should, in the future, consider the undertaking of a new and up to date historic survey of the entire community. Such a survey would note individual structures, streetscapes, potential historic district boundaries and

archeological sites. Photographs of each significant structure would also be taken and the location of each would be recorded on maps.

Plainsboro Township has become an attractive community for retail and office development and residential investment because of its many assets. An historic survey is a tool which can be used to retain the historic fabric of the Township while allowing sensitive new development to lead Plainsboro into a prosperous future with a strong tax base and a thriving business sector.

An historic survey of architectural resources could be used by the Township to designate appropriate preservation districts. In addition, individual building data would provide a basis for making informed decisions regarding alterations and other "improvements" to historically important structures.

Archeological sites should be registered with local and state agencies so that development activities can incorporate the preservation or recovery of these important remnants of the Township's past. It is recommended that this section of the Township's Master Plan be amended to reflect the findings of the survey and that it be adopted as a sub-element of this Master Plan which would formally designate all historic sites in the Township and become a basis for ordinance amendments, if desired and warranted.



Historic Structures

M. Public Safety Facilities

1. The Township public safety efforts are overseen by the Department of Public Safety, which includes the Police, Rescue Squad, and a Civil Defense/Disaster Control Unit. Fire issues are currently handled through three separate entities as detailed herein.
 - a. Police - The mission of the police division is to protect life and property and to maintain law and order in the Township. The Police Division maintains a presence 24 hours a day and routinely patrols, answers citizen calls, and responds to requests for police service. Police officers enforce traffic laws within the Township and perform specialized functions including criminal investigation and juvenile services.

The Plainsboro Police Department was formally established February 1, 1978 with the appointment of the first Police Chief. Between 1978 and 1979 daily police service ended at midnight with the New Jersey State Police patrolling the roads until 8 am. On August 2, 1979 the Plainsboro Police Department expanded its coverage to 24-hours per day.

Currently, the Police Department employs one Police Chief, 32 sworn Police Officers, four civilian support staff, three paid Emergency Medical Technicians, and six civilian Public Safety Communications Officers. The Police Department includes the Patrol Division, Detective Bureau, CORE Unit, Traffic Bureau, Emergency Medical Services, Emergency Management Operations, and the Communications Center.
 - b. Rescue Squad - The all-volunteer Rescue Squad provides emergency medical response from its building on Plainsboro Road.
 - c. Civil Defense/Disaster Control - Emergency management is within this category. An emergency management plan has been established with various Township officials participating with specific roles in the event of an emergency.
 - d. Fire Company - In 1991 a Fire District was established to be led by an elected Board of Fire Commissioners. Fire services are provided out of the sole firehouse on Plainsboro Road.
 - e. Fire Prevention - Ongoing fire inspection responsibilities are performed by the Fire Official who is appointed by the Township Committee. All life hazard uses and other uses required by state statute and local codes are inspected periodically by the Fire Official.

- f. Fire Subcode - The Fire Subcode Official, under the direction of the Construction Official, ensures that all new construction complies with state fire codes.

2. **Figure 11: Community Facilities Map** graphically depicts the location of all Community Facilities.

- a. Police, fire, and rescue squad buildings.

- b. The Rescue Squad maintains working agreements with similar organizations, medical facilities in surrounding Townships, and the Princeton Plasma Physics Laboratory to expand its response capability in the event of major catastrophe.



Rescue Squad

- c. The Fire Company's capability is expanded through a network of mutual aid agreements among the volunteer fire companies of surrounding Townships and through privately organized fire suppression units, such as those at the Princeton Plasma Physics Laboratory.

N. Municipal Boards and Committees

The following municipal boards and committees exist in the Township. Appointments are made January 1st, or as vacancies on boards occur throughout the year. The Plainsboro Township Committee and/or the Mayor are responsible for appointment.

1. **The Planning Board** reviews applications for development within the Township, reviews and adopts the Township Master Plan, and reviews development ordinance changes for the Township Committee. Members are appointed by the Township Committee. Members serve 4 year terms; alternate members serve 2 year terms. Meets 1st and 3rd Mondays of each month at 7:30 p.m. in the Town Hall.
2. **The Zoning Board of Adjustment** hears appeals for variation from Zoning Ordinance and occasionally reviews applications for development. Members serve a 4 year term; alternates serve 2 year terms. Meets as demand dictates on the 2nd Thursday at 7:30 p.m. in the Town Hall.
3. **The Recreation Advisory Committee** recommends policy relating to recreation programs for Township residents. Members serve a 3 year term. Meets 1st Monday at 7:30 p.m. in the Town Hall.
4. **The Cultural Affairs Advisory Committee** makes recommendations to the Township Committee regarding cultural programming in Plainsboro,

establishes new programs in the arts, and assists staff in the organization of existing events such as the Founders Day celebration. Meets 4th Tuesday of each month at 7:30 p.m. in the Town Hall.

5. **The Environmental Advisory Committee** provides advice to municipal bodies in such areas as use of open space, water resource management, soil control, noise control, recycling, air quality, and other environmental concerns. Consists of 7 members appointed by the Township Committee for 3 year terms. Meets 2nd Wednesday at 8:00 p.m. in the Town Hall.
6. **The Shade Tree Advisory Committee** advises Township Committee and Planning Board on matters related to plantings on public properties, shade trees, landscaping. Appointed by the Township Committee for 3 year terms. Meets 2nd Tuesday at 7:30 p.m. in the Town Hall.
7. **The Local Assistance Board (Welfare Board)** provides policy direction to the Welfare Director dealing with Public Assistance. Appointed by the Mayor to serve 4 year terms. Meet as demand dictates.
8. **The Housing Advisory Committee** advises Township Committee regarding housing issues such as rental levels, maintenance of Township housing stock, and other housing issues. Nine members appointed by the Township Committee consisting of 6 appointed at large for 3 year terms, a landlord, tenant, and Planning Board representative appointed for 1 year terms. Meets 3rd Wednesday of each month at 7:30 p.m. in the Town Hall.

O. Action Plan

1. Completion of the New Township Library in the Village Center and re-use of the existing library building to provide enhanced services to Township residents.
2. Completion of the sidewalk and crosswalk improvements along the Fire House property to complete the Plainsboro Road pathway from the Village Center area to the Walker Gordon Farm development and beyond.
3. Support construction of the new hospital within the FMC Redevelopment area.
4. Always explore creative ways in which to preserve historic buildings and their settings for future generations to appreciate and enjoy.



Pump Station

OPEN SPACE AND RECREATION PLAN



Contents

- Introduction
- Open Space Goals and Policies
- Recreation Goals and Policies
- County Open Space and Recreation Plan
- Farmland Preservation
- Open Space and Facility Inventory
- Needs Analysis
- Resource Assessment
- Libraries Building Conversion
- Park Improvement Program
- Action Plan

VI. OPEN SPACE AND RECREATION PLAN ELEMENT

A. Introduction

A series of major development approvals granted in the early 1970's set in motion the construction of some 6,500 new housing units. Since that time, Plainsboro has been wrestling with the challenges of land use growth. The Township's population has grown from 5,605 in 1980 to approximately 15,536 in 1997 and has now reached over 21,000. In addition to significant residential growth, Plainsboro's local economy has benefited from the development of office and research facilities and many commercial establishments.



Morris Davison Park

A key element in managing the growth that Plainsboro continues to experience and enjoy has been a complementary effort to preserve Plainsboro's inherent natural beauty and open spaces. The Township has aggressively pursued the preservation of open space as a way to manage growth and provide passive recreational opportunities for its growing and diverse citizenry.

In addition, the Township has placed a high priority on providing facilities for active recreation to meet the needs of the Township's diverse and growing resident and employment population. Investment in facility development and expansion has been carefully programmed. Facility development has always been prefaced by an extensive community outreach effort. Through this "grass roots process" the needs and preferences of the community at large have been carefully considered and reflected in the preparation of this Open Space and Recreation Element. Similarly, outreach efforts are used to gauge the needs of the Township's citizens in providing various recreation services and programs.

B. Open Space Goals and Policies

1. Goals

- a. Maintain and protect Plainsboro's rural heritage and open spaces.
- b. Conserve and protect as many environmentally sensitive areas as possible.
- c. Maintain preserved areas and make them accessible to all members of the public, where appropriate.

2. In pursuing these Open Space Goals, the Township employs the following Policies:

- a. Pursue land set-asides through various tools and secure lands either under terms of preservation or public control. This results in land being protected from development and left available for passive or active recreation.
- b. Use zoning powers to minimize overall densities by emphasizing a more diverse balance in housing types and utilizing other zoning tools, such as clustering, to achieve open space and farmland preservation.

- c. Establish partnerships with other governmental funding sources to aggressively pursue funding for open space preservation through partnerships by participating in other government programs, such as the County/State



School Tot Lot

- Farmland Preservation Program, the County Open Space and Farmland Preservation Trust Fund, and the New Jersey Green Acres Program.
- d. Establish a dedicated source of municipal funding for the purpose of open space preservation through the establishment of a dedicated open space tax, which would be the equivalent of 1¢ per \$100 of assessed value of taxable property, and establish a permanent municipal fund for open space preservation and recreation development and maintenance. These funds should also assist in leveraging other governmental funding sources.
- e. Enhance the interaction of Township residents with the environment by acquiring lands for public park use which in turn preserves the most important natural resources of the Township.
- f. Preserve existing and potential outdoor recreation areas and institutional land uses which serve to protect the Township's natural features.
- g. Extend park and recreation open space corridors to permanently

protect significant portions of the Township's natural features.

C. Recreation Goals and Policies

1. Goals

- a. Provide diverse recreational opportunities for all segments of Plainsboro's population.
- b. Provide recreational facilities that are diverse, well maintained, and accessible to all segments of Plainsboro's population.
- c. Determine through extensive public outreach, the recreation program services and facilities desired by the public so that the Township may respond effectively to these needs.
- d. Cultivate active community involvement in the planning, development, and the provision of programs and services.
- e. Development or enhancement of programs and services that reflect needs generated by population changes.

2. In pursuing these Recreation Goals, the Township employs the following policies:

- a. Maintain and expand municipal park and recreation facilities in a comprehensive manner without exceeding the limits of the Township's financial capabilities.
- b. Improve the character of residential neighborhoods through park and recreational development.
- c. A number of recreational facilities and programs exist in the Township which are not publicly owned and operated but constitute a significant portion of park and recreational resources. These programs and facilities should be encouraged to develop in a comprehensive manner.
- d. Maintain the safety and security of all park facilities.
- e. Development of park facilities should keep in mind reasonable flexibility of use, ease of maintenance, protection of natural features, and should minimize adverse effects on neighbors.
- f. All programs and facilities should be accessible to handicapped and elderly residents. At least a portion of the programs and facilities should encourage family recreation and participation.
- g. Facilities should be designed as a system of parks and recreational open spaces interconnected, where possible, easily accessible to a broad spectrum of the community and easily

identified.

- h. Encourage the location of new public facilities, such as parks, where they will be within effective service radii of the older village area and other developing areas.
- i. Assessment of public recreational facilities to maximize potential community benefit.

D. County Open Space and Recreation Plan

The Middlesex County Planning Board conducted an assessment of recreation, parks and open space needs about 10 years ago. This assessment is contained in the County Open Space and Recreation Plan. The observations and findings in this plan are still valid. The plan places Plainsboro along with Cranbury Township, the Borough of Jamesburg, Monroe Township, and South Brunswick Township into recreation and open space Planning Area #3. A tabulation of acreage deficits through the year 2010 for Planning Area #3 concluded the following:

- 1. This planning area met the minimum guidelines for major parks, and
- 2. Mini-parks and neighborhood parks were in deficit in Planning Area #3.

In addition, based upon County population projections and accepted facility development standards, if no public recreational facilities were gained or lost in Middlesex County from 1990 until the year 2010, the following facilities would be below the standard number suggested by the National Park and Recreation Association:

- 1. tennis courts
- 2. volleyball courts
- 3. handball courts
- 4. football fields
- 5. baseball/softball fields
- 6. soccer fields
- 7. track and field facilities
- 8. 18 hole golf courses
- 9. driving ranges

The County Open Space and Recreation Plan recommends the implementation of a greenway trail system that incorporates opportunities for bicycling (touring and off-road), hiking, walking, jogging, and horseback riding. Such a greenway

system in Plainsboro would include the Millstone River Greenway from Mapleton Road to Route 130 in Cranbury and the Cranbury Brook Greenway from the confluence of the Cranbury Brook and Millstone River in Plainsboro to Cranbury Village. The stated objective of both greenways is stream corridor, wetland, floodplain, and habitat protection.

E. Farmland Preservation

Plainsboro has been particularly successful in its efforts to preserve farmland. By utilizing the State and County farmland preservation programs, Plainsboro has preserved hundreds of acres of farmland, which has included the Stults Farm, the Hostetler Farm, the White Farm, and the DeSandre Farm.

The Township's farmland zoning has also been effectively utilized for the preservation of the Grovers Mill Farm property. At no cost to the State, County or the Township, farmland zoning resulted in the dedication, through donation, of 239 acres of farmland and 170 acres of woodlands on the Grovers Mill Farm property. This preservation came within the context of a 149 single-family home subdivision approval. These properties were then placed in the State Farmland Preservation Program to ensure the greatest protection for the preserved lands. To date, through utilizing the State and County program and through the implementation of our farmland zoning, the Township has preserved a total of 539 acres in the Grovers Mill Farm area. Plainsboro has benefited from the County program in a regional way because adjacent sections of Cranbury Township have also designated as agriculture development areas through participation in the County program.

The Township has also successfully utilized the Middlesex County Open Space and Farmland Preservation Trust Fund in its efforts to preserve lands known as the Plainsboro Preserve. The Plainsboro Preserve is a 530 acre tract of land located in the northern section of town, bordered by the Amtrak lines to the west, South Brunswick Township to the north, Dey Road to the south and Scotts Corner Road to the east. These lands, which are environmentally valuable, include McCormick Lake, Shallow Brook and Devils Brook. Through a complex arrangement involving the County and the landowner, this property has been preserved through outright land purchase.

In order to build on the Plainsboro Preserve effort, the Township also utilized the provisions of a density transfer ordinance to preserve the 100-acre McCormick tract. This property, which fronts on Scotts Corner Road, is contiguous to the Plainsboro Preserve property and, in fact, contains a significant portion of the McCormick Lake. This property, in conjunction with the neighboring Township Community Park and the Plainsboro Preserve, provides a substantial land holding that will never be available for development.

Plainsboro has also been successful through zoning requirements and the development process in securing other meaningful open space parcels. The development of Calton Homes' Princeton Manor resulted in land set-asides for the Public Works facility and the Township Community Park. Planning Board of the Wicoff Estates subdivision was accompanied by the provision of 125 acres of open space. Likewise, the Walker Gordon Farms development included the

provision of 135 acres of open space, much of it in and around the Walker Gordon Pond, the Devils Brook, and the Millstone River. Located along Dey Road is the Burken Farm subdivision, which was approved by the Planning Board, and is also accompanied by permanent open space set-asides. As part of Township required zoning set-aside efforts, the Princeton Forrestal Center is obligated to maintain 440 acres of land in open space. Through negotiations with the Forrestal Center, the Township has achieved important preservation along the Delaware and Raritan Canal. As a result of an agreement between the Township and the Forrestal Center, 30 acres of land which lie between the Canal and Mapleton Road, has been permanently preserved.

In fiscal terms, the success of the Township's farmland and open space preservation efforts has been impressive. Participation in the State and County farmland preservation programs has resulted in significant farmland preservation, with only a small portion of the cost being borne by Plainsboro taxpayers. Likewise, the use of the County Open Space Trust Fund in the Plainsboro Preserve project came at the cost of the 1¢ tax at the County level with no additional local tax funds required. Of course the use of the various cluster zoning methods noted above has resulted in the accumulation of open space holdings at no cost to the taxpayer.

F. Open Space and Facility Inventory

1. Open Space

In recent years, Plainsboro Township has placed a high priority on the preservation of farmland and open space. The Township's aggressive pursuit of land preservation has resulted in the protection of approximately 51% of Plainsboro's entire land area in some form of preservation or protection. **Figure 12: Open Space Map** and accompanying Table 8: "Plainsboro Township 2007 Open Space Inventory" provides a clear understanding of the extent of the Township's preservation efforts. Plainsboro's open space consists of:

- a. Public Parks and Open Space - Consists of land that has been secured in some form by local, County, or State government and is accessible to the public.
- b. Private Open Space - Consists of land required to remain open through Township zoning requirements, easements and condition of Planning Board approval.
- c. Preserved Farm Land - Lands that have been secured through the Township's farmland preservation ordinance or the Township's participation in the State/County Agricultural Development program.
- d. Pending Preserved Farm Land – Lands that have been identified for permanent preservation.
- e. Public Facilities – Consists of land occupied by public schools, the

Municipal Complex, fire company, state police barracks, Township Public Woks Facility, the post office, and the wastewater treatment plant.

2. Recreation Facilities



Morris Davison Park

The recreation facilities available to Plainsboro residents are varied and are provided both by the public and private sectors. Recreation facilities are provided in every geographic area of the Township. They provide diverse recreation opportunities to all residents. In addition to the substantial facilities provided by the Township and developers, additional facilities are provided by the State, County and on public school sites, which supplement what exists in Township parks and facilities located in private developments. An extensive number of recreation facilities have also been provided through private corporations to

their employees. All of these facilities play a significant role in providing access opportunities for Plainsboro citizens and for those who work in the Township. According to use of School District facility regulations, it is noted that the West Windsor-Plainsboro Board of Education “believes that the school buildings are a community resource. As such, buildings shall be available for use by community groups, for meetings and organizational objective activities, when that does not interfere with regular school activities”. The School District maintains a priority system for the use of buildings that includes Boy Scouts, Girl Scouts, Youth Sports Leagues, Township Recreation Community Youth Programs, and nonprofit Township groups, among others.

A complete inventory of all public and private recreation facilities is outlined below and identified on **Figure 13: Public Recreation Facilities Map** and **Figure 14: Private Recreation Facilities Map**.

PUBLIC RECREATION FACILITIES

Plainsboro Township Facilities

Community Park

Location:	Scotts Corner Road - 67 acres
Type:	Community/Linear
	Currently accommodating 2 softball/Little League fields, 1 Little League field, a picnic area, concession stand, and soccer field(s). Also, includes a dog park, Babe Ruth (regulation baseball) field, soccer field (s), playground/tot lot and paved open recreation area, an asphalt court

for skateboarders/rollerbladers and parking lots.

Morris Davison Park

Location:

Plainsboro Road - 15 acres

Type:

Neighborhood

Includes a playground/tot lot, softball/Little League field, two volleyball courts, two basketball courts, a soccer field, biking and jogging path (1/2 mile), a pavilion area, and a parking lot.

Plainsboro Park

Location:

Edgemere Avenue - 14.33 acres

Type:

Neighborhood

Includes a picnic area, playground/tot lot, four tennis courts, bocce, one volleyball court, three baseball/softball fields, one soccer/football field, two non-regulation basketball courts and a parking lot. Access to biking/hiking on the Lenape trail.

Schalks Meadow Park

Location:

Parker Road South - 18.95 acres

Type:

Neighborhood

Includes playground/tot lot, two basketball courts, two tennis courts, 1 Babe Ruth (regulation baseball) field, two soccer fields, cricket area, and an internal bike, jogging and walking path.

Lenape Trail

Location:

George Davison Road to Waters Edge Park - 2.2 linear miles (approx.) with markers every 0.1 miles. Total size is 42 acres.

Type:

Regional

The trail accommodates biking, jogging, walking, cross-country skiing, and is equipped with exercise stations parallel to Plainsboro Pond, which accommodates fishing and non-motorized boating.

Waters Edge Park

Location:

Pond View Drive - 5.84 acres

Type:

Neighborhood

Scenic open space park adjacent to pond. Includes a picnic area. Located at end of Lenape Trail. Offers a floating dock for non-motorized boating, a biking and jogging trail, and cross-country skiing.

Mill Pond Park

Location:

Maple Avenue

Type:

Community – 30.25 acres

This is a small park area located on the banks of Mill Pond, this scenic spot is ideal for fishing, picnicking and non-motorized boating. Includes a

parking area.

Community Garden

Location: Plainsboro Road
Type: Community
A 2.1 acre community garden.

Village Residential 1

Location: Sullivan Street – 1.352 acres
Type: Neighborhood
A passive for open field play

Village Center

Location: Market Square – 0.511 acres
Type: Community
A passive park that includes a fountain, benches, and pathways.

Plainsboro Township/Middlesex County Facilities

Plainsboro Preserve

Location: Scotts Corner Road - 778 acres
Type: Regional
This nature preserve contains a 50 acre lake, stream corridors and environmentally valuable land with nature trails, and an Environmental Education Center that is one of nine of the New Jersey Audubon Society's nature centers in the state. Township monitors this conservation area. The Township Recreation Department maintains an office on the site.

Middlesex County Facilities

Meadows at Middlesex Golf Course

Location: Hunters Glen Drive – 128 acres
Type: Regional
This is an eighteen-hole golf course with practice range and clubhouse facilities. Owned and managed by the Middlesex County Improvement Authority.

State of New Jersey Facilities

Delaware & Raritan Canal Park

Location: Mapleton Road – 19 acres
Type: Regional
The Canal was built in 1831. Approximately 27 acres of this extensive park traverses the western

edge of Plainsboro Township. Includes boating, fishing, picnicking, canoeing, comfort station and parking facilities are available.

West Windsor/Plainsboro School District Facilities (in Plainsboro Township)

Town Center School

Location

Wyndhurst Drive

Includes a playground and outdoor fields.

Wicoff Elementary School

Location:

Plainsboro Road

Includes a playground, picnic area, two softball fields and open space and outdoor basketball.

Community Middle School

Location:

Grovers Mill Road

Includes three soccer fields, three softball fields, two full court basketball and 3 ½ half-court basketball, a nature area and open space.

Millstone River School

Location:

Grovers Mill Road

Includes a playground area, one ball field, 1 full court basketball and 3 ½ half court basketball and open space.

High School (North Campus)

Location:

Grovers Mill Road

Outdoor facilities include six half court basketball, a climbing wall/obstacle facility, six tennis courts, a football stadium and many soccer, field hockey, baseball/softball and open fields.

PRIVATE RECREATION FACILITIES

Ashford Homeowners' Association

Location:

George Davison Road

This community includes one swimming pool, two tennis courts and a playground area.

The Aspen Homeowners' Association

Location:

Plainsboro Road

This community includes one swimming pool, two tennis courts and a playground area.

Barclay Square at Forrestal

Location:

Mapleton Road

This rental community includes a club house, swimming pool, tot lot and picnic area.

The Brittany Homeowners' Association

Location: Plainsboro Road
This community includes one swimming pool, one playground area and one volleyball court.

The Commons at Princeton Landing

Location: Sayre Drive
This community includes a swimming pool, two tennis courts, one basketball court and one clubhouse.

Deer Creek Apartments

Location: Plainsboro Road
This complex includes one swimming pool, two tennis courts and one volleyball court.

Fox Run Apartments

Location: Plainsboro Road
This complex includes one swimming pool, two tennis courts and one clubhouse (with fitness center).

The Hampshire Associations

Location: Scotts Corner Road
This community includes a swimming pool, two tennis courts, a playground area and a volleyball court.

Hunters Glen Apartment Complex

Location: Hunters Glen Drive (off Plainsboro Road)
This complex includes three swimming pools.

Pheasant Hollow Apartments

Location: Pheasant Hollow Drive (off of Dey Road)
This complex includes one swimming pool and two tennis courts.

Pond View Homeowners' Association

Location: Pond View Drive (off Edgemere Avenue)
This community includes two tennis courts.

Princeton Crossing Homeowners' Association

Location: Wyndhurst Drive (off Dey Road)
This community includes two tennis courts, one playground area, one adult swimming pool, one children's swimming pool, and a clubhouse.

Princeton Landing Homeowners' Association

Location: Sayre Drive (off Route One)
This community has a swimming pool, a clubhouse, four tennis courts, one handball court.

Quail Ridge Apartment Complex

Location: Quail Ridge Drive (off Scotts Corner Road)
This complex includes two swimming pools and four tennis courts.

Ravens Crest Apartments/Condominiums

Location: Ravens Crest Drive (off Scotts Corner Road)
This community includes one adult swimming pool, one children's swimming pool, eight tennis courts, one playground area and one volleyball court.

Walker Gordon Farms

Location: Plainsboro Road
This community includes one swimming pool, two tennis courts, one volleyball court, one soccer field, one softball field, one multi-purpose recreation field, a playground area and a club house, along with a community garden.

Windrows at Princeton Forrestal

Location: College Road/Seminary Drive
This community includes one tennis court, a community facility – complete with indoor swimming pool, a greenhouse and garden. It also includes a gazebo located within a small park.

Wyndhurst Apartment Complex

Location: Wyndhurst Drive (Off Dey Road)
This complex includes a basketball court, a playground area and a clubhouse.

Princeton Forrestal Center

Location: College Road
The Forrestal Center has three softball fields and two volleyball courts as well as the John P. Moran Woods trail system. Also, there are beach volleyball courts at the Marriott Hotel, tennis courts at the Westin Hotel, and the Winning Touch Tennis facility which has 4 tennis courts.

St. Joseph's Seminary

Location: Mapleton Road
The seminary has one softball field and one soccer field.

The Gentry Homeowners' Association

Location: Franklin Drive
This community has a swimming pool, two tennis courts and a play area.

The Villas at Cranbury Brook

Location: Middlesex Blvd.
This senior housing community has a swimming pool, a clubhouse, bocce courts two small parks with gazebos and pathways.

G. Needs Analysis

1. Background

Over the past decade the Township has continued to improve, develop, and expand its parks including the upgrading and introduction of recreational facilities. During that time, improvements and expansion has included:

- a. Completion of the Lenape Trail.
- b. Installation of exercise stations along the Lenape Trail.
- c. Development of the Morris Davison Park.
- d. Development of the Schalks Meadow Park.
- e. Facility improvements at Plainsboro Park.
- f. Development of Community Park.
- g. Improvements at Mill Pond Park.
- h. Construction of "Community Rooms" which can be used for social/cultural/recreational programs in the Municipal Building and the Township Library.
- i. Purchase of the Plainsboro Preserve as a nature preserve.



Community Park

2. Community Factors Related to Facility Development

- a. Population increases have been dramatic both in number and diversity. There continues to be a significant need for local services and programs, i.e. type, number, and complexity.

- b. The demographic shift has been significant and far-reaching. The nature and types of services required is impacted, in part, by the demographic shift in population.
- c. The availability of facility resources has not increased proportionally with the increase in population and the changing diversity of the population. There is a strain on existing facilities and providers which has resulted in increasing competition for limited resources.
- d. Development of new (or expansion of existing) programs and services has not kept pace with population changes at the local and regional levels, in part due to the lack of available facilities.
- e. Development of community-based initiatives (i.e. youth groups, special interest clubs, venues for socialization, etc.) to provide program and support services is closely linked to facility access. Multi-dimensional community resources are closely linked to enhancement of community living. In addition to the Township Library, the Municipal Complex is the only resource currently serving this purpose. Though other facilities are occasionally used (i.e., rental of school facilities); their availability is extremely limited.

3. Evaluation of Recreation Facilities

In assessing recreation needs, the evaluation of available facilities, in light of national standards, provides a broad frame of reference. Such an evaluation, using the standards of the National Recreation and Parks Association (NRPA), was conducted.



In Table entitled
"Evaluation of

Wicoff School

Recreation Acreage in Plainsboro Township," assessment of overall acreage by the type of recreation facility is provided. It is clear from applying these broad standards that available recreation facilities satisfy national standards in all facility types – neighborhood, community and linear, and regional. Acreage provided in Plainsboro exceeds national standards on all counts with the availability of regional facilities such as the Plainsboro Preserve, D&R Canal State Park, and Meadows at Middlesex Golf Course, contributing to a significant availability of regional

recreation facilities. It is also worth noting that the extensive private facilities offered in Plainsboro through homeowners' associations, further enhances this number.

These standards also provide a geographic service area dimension. A more detailed evaluation, in particular, types of recreational facilities, is also conducted using NRPA standards. In Table 7 the specific type of facility is compared with the number of facilities prescribed through the NRPA standards, given Plainsboro's Year 2000 population of 20,215 citizens. Again, Plainsboro measures up well against these broad standards. In all cases, Plainsboro meets the NRPA standards and when considering private facilities as well, in many cases, Plainsboro greatly exceeds the standards.



D & R Canal

Figure 15: Existing Public Park Service Rings Map, shows the effective service coverage of four key Township parks is visually displayed. These four parks are identified as the Community Park, the Schalks Meadow Park, the Morris Davison Park and Plainsboro Park. All provide service coverage (according to NRPA standards) to the vast majority of Plainsboro residents. Residential neighborhoods not covered, Princeton Landing and Windrows at Princeton Forrestal, benefit from extensive on-site private facilities and the nearby Delaware & Raritan Canal State Park.

The Township understands that local demands and experiences may not be reflected or accounted for in NRPA standards. Specifically, as it related to baseball and soccer fields, local demands far exceed prescribed standards of the NRPA. As a result, while the Township generally complies with NRPA standards, the Township continues to be faced with the challenge of providing additional playing fields to satisfy local demands.

4. Township Based Resources and Uses

Facility availability is quantified on two levels: the number of actual fields, courts, trails, playgrounds, etc., and consideration of "overlapping" factors whereby use of one facility precludes use of another. These factors are a consideration for both organized and casual uses.

Community youth athletic leagues include baseball, softball, basketball, lacrosse, junior football, and soccer. These leagues provide programming for children from 4-5 years old to high school age youngsters. They range in size from several hundred to almost two thousand participants.

In addition to youth leagues, the Township also hosts several adult leagues, including basketball, volleyball, and softball.



Mill Pond Park

Township park facility resources are used to their maximum potential. From March through the end of November, every athletic field is reserved by community leagues seven days a week. Concurrent with use of Township facilities, league officials work with the West Windsor-Plainsboro School District for use of school facilities, again reserving fields/courts to the maximum extent possible. Although private resources are very limited, several leagues have been able to make arrangements with local businesses to supplement public facility resources.

Township sponsored programs are held at both indoor and outdoor facilities on a space available basis. Tennis courts are used in the afternoons and evenings during the summer for Township instructional classes. School facilities are used for the Township camps, aquatics program, teen gym program, theatre performances, and miscellaneous classes. The Municipal Building and library accommodate a variety of classes and clubs. These spaces are also used to host community meetings and activities of local organizations, as well as fulfill a variety of Township functions.

The Township also makes use of outdoor lawn areas at the Municipal Center. Uses include community events, arts programs, and health/fitness programs. Residents are also known to make use of this space for informal activities such as kite-flying and frisbees.

Table 10 Evaluation of Recreation Acreage in Plainsboro Township

Park Type	Service Area	NRPA Standards (Acres per 1,000 Population)	NRPA Standards Per Plainsboro Population (20,215)	Acres Provided in Plainsboro
Neighborhood	1 mile	1.25 to 2.5	25.3 to 50.5	55.47
Community and Linear	2 miles	5 to 8	101 to 161.7	99.86
Regional	1 hour drive	15 to 20	303.2 to 404.3	965
Total	N/A	21.25 to 30.5	429.5 to 616.5	1,120.33

Despite continued active development of facilities, the inventory remains inadequate to accommodate local needs. The Recreation Department has developed an incentive procedure to encourage community leagues to work with each other to share facility time during seasonal changeover (spring to summer, summer to fall). General program development is limited to the availability of a host location.

Table 11 Plainsboro Township 2008 Open Space Inventory

Open Space	Acres	Percent
Public Parks Open Space	1634.83 acres	45.3
Private Open Space	945.94	26.2
Preserved Farm Land	672.20	18.6
Public Facilities	268.23	7.4
Future Public Open Space	51.65	1.4
Future Preserved Farmland	15.23	0.4
Future Private Open Space	18.30	0.7
Total	3,606.38 acres (51% of Township Land Area)	100%

5. Regional Resources

The two (2) county parks closest to the Township are Thompson Park, located in Jamesburg, and Mercer County Park, located in West Windsor. Both provide a wide range of recreational resources. Permits may be obtained for various facilities for a fee. Seasonal reservations for athletic facilities are heavy and availability is limited.



Tot Lot

Surrounding communities are experiencing the same shortage of inventory as Plainsboro. Increases in local demands have made it virtually impossible for towns to accommodate requests from non-residents.

Table 12 identifies existing Rules for Municipal Parks:

Table 12 Rules for Municipal Parks

Please obey the following rules to ensure that everyone can enjoy our parks.

- Park Hours - sunrise to sunset
- Parking permitted during park hours only
- Parking permitted in designated areas only
- Non-motorized boating only is permitted on Plainsboro Pond
- Fires are permitted in designated grills only
- All waste/recyclables must be separated and placed in containers provided
- Domestic pets must be on leash - maximum 6 feet
- Use of park facilities is at one's own risk

The following are NOT PERMITTED in Township parks:

- Alcoholic beverages
- Pets in "NO PET" zones
- Securing pet leashes to trees, equipment or park structures
- Bicycles, carriages, skates, skateboards on tennis courts
- Dumping; household waste
- Driving/parking motor vehicles on grass areas
- Damaging trees, shrubs
- Defacing, injuring or tampering with park facilities, grounds, equipment
- Hunting/harming animals or wildlife
- Creating a nuisance or public disturbance

6. Current and Future Trends

Using the combined resources listed above, several of the local organized sports groups (youth basketball, lacrosse, junior football) have been able to accommodate registration needs with current inventory, although continued population growth will place them in a deficit position. The Babe Ruth League has only one suitable (regulation size) field in the Township (although a second field is incorporated into the Phase II plan at Community Park).

The West Windsor Plainsboro Soccer Association (WWPSA) has expressed an interest in partnering with the Township to develop a soccer complex. The WWPSA is the largest sports group in town with ± 2,500 players participating in their programs. For a soccer complex to be successful, a potential site must meet the following criteria: capacity for a minimum of 4 permanent soccer fields plus ancillary improvements; minimum usable site area of 10 acres based upon a per field area of approximately 2.5 acres including the playing surface, buffer zone, pedestrian areas, parking, site drainage and water retention; capacity for hydro and irrigation; and site characteristics which permit grading for permanent soccer fields.

An important aspect of the high level of scheduled use of outdoor facilities

is the impact on the availability of park and recreation facilities for the general public. The degree to which park facilities are reserved for organized groups has resulted in a minimal amount of time available for local or casual use such as picnicking, pick-up games, kites, frisbees, or other neighborhood activities. Only on occasion is it possible to accommodate informal or single events.

Reports from Township park monitors, over the past five (5) years, has confirmed heavy use of Township facilities. The combination of passive and active recreation areas has demonstrated both the need for, and popularity of, recreational facilities for the public.

H. Resource Assessment

It is clear from our open space and recreation facilities inventory and accompanying needs analysis that Plainsboro Township has provided for a significant level of recreational facilities and open space preservation. However, the aggressive goals set by the Township to address the needs for additional open space preservation and the provision of recreation facilities, suggests the need to identify further resources available to achieve these goals.

1. Open Space

In the area of open space and farmland preservation the Township seeks to further build on past successes. In this regard, some key remaining farmland properties that are currently under active farming, are not yet covered by the preservation program. Concerns regarding possible residential development of these properties, which is contrary to land use goals, suggest the opportunity for further farmland preservation. In the area of open space, the Township made the Plainsboro Preserve the centerpiece for extensive open space efforts. In this regard, the Township has assembled a significant level of adjacent lands to build upon the 530 acre Plainsboro Preserve. However, additional adjacent lands are undeveloped and yet to be preserved and would suggest an opportunity for further open space preservation.

2. Recreation

In regards to public recreation facilities, Plainsboro's Community Park provides opportunities for further development of recreational facilities. The Community Park's Master Plan suggests a comprehensive phased approach to the development of needed recreation facilities. Currently, the park has only evolved through its first phase of development. Clearly, Community Park provides a significant opportunity to address recreational facility needs in the future. Likewise, future residential developments are identified as needing to provide recreation facilities for the immediate neighborhood. The facilities provided should to some extent be tailored to the residents of the immediate neighborhood. Future development should also recognize the specific and unique needs of senior citizens,

In general terms, the Master Plan places a premium on development

design that creates open spaces and links the community through sidewalks, bikeways, and other pathways. Likewise, the protection of natural resources and scenic corridors are priority considerations in all development plans.

I. Library Building Conversion

The Township Recreation Department is the single entity that provides a broad range of recreational, social, cultural, enrichment programs, and services for local residents. In the absence of a Township based YMCA or other like facility, the department serves a number of roles including, general recreational programming for all ages, arts and cultural programs, enrichment and instructional programs, nature and environmental education programs, health and fitness, summer camps, and programs for special populations such as seniors and the disabled. Additionally, the Recreation Department coordinates public events, family activities, arts events, and informal opportunities for socialization. Services are also broad ranging, and include information and referral services, financial assistance, and volunteer development.

The ability of the Recreation Department to keep pace with the tremendous growth in Township population has been limited by the relative shortages of facilities. Use of the Municipal Building has been augmented by rental of school facilities and initiating program partnerships that permit use of other facilities. Although beneficial, these measures do not compensate for lack of Township facilities, and their availability is always uncertain.

As the Township has grown so too have the number and variety of small community arts and cultural groups. Such special interest groups enrich a community; but like the Recreation Department, their ability to function is often hampered by lack of available venues.

Conversion of the existing Township Library building will enable the Township to better serve the community by providing space to continue and expand current operations, as well as provide the opportunity to work collaboratively with community initiatives. Its proximity to the newly created Village Center makes it ideally situated to become an integral component of “village” living. Additionally, under the leadership of the current director, the Township Library has broadened its mission to include a variety of types of programs and events. The combination of facilities and orientation to community programming between our two agencies will make it possible to significantly enhance our ability to serve community needs.

Potential Recreational Functions – Use of Library Building

General Overview

Activities and services listed below reflect the general mission of the department, and are categorized under the following major headings:

Programs
Socialization Activities

Community Resources
Community Education Events

Programs:

Arts Instructions	Discussion Groups/Lectures
Enrichment/Education Programs	Seasonal Workshops/Clinics
Cultural Programs	Programs for Foreign Born Residents
Nature/Environmental Education	
Classes for the Disabled	

Socialization Activities

- Senior Drop-In Program
- Drop-In Program for Special Population
- Teen/Family Activities (board games, ping pong, etc.)

Events

- Heath & Fitness
- Art Events (performances, exhibitions)
- Cultural Events
- Recreational Activities

Resource Area (Information Area)

- Volunteer Opportunities
- Community Activities
- Township Information
- Area Services

Administration / Other

- Recreation Offices (staff and volunteer)
- Registration

Most of the activities, services, and programs listed above currently exist, but within the limitations of available space at various locations. Accommodation of these activities would not require major architectural alterations in the building layout. This anticipates certain programs would continue to be held in the municipal building:

Exercise Programs	Family Nights
Senior Dinner Meeting	Martial Arts Programs
Multi-faceted Community Events	Indoor Concerts

It should be possible to accommodate many of the anticipated activities through a combination of dividers and a few walls. Further modifications may be recommended after the facility has been used for a year or two as a center for social and recreational activities. In this way it can be determined how best to meet future needs.

As an additional note, consideration should also be given to creating a small meeting room for community groups, which could be operated on a sign-up basis under basic procedural guidelines. It is presumed that the new library will also have space allocated for a similar purpose, and the combination of the two may alleviate some scheduling pressure from the municipal building.

J. Park Improvement Program

The priority over the years has been to expand the inventory of recreational and open space lands in combination with providing recreational facilities to service the growing resident population. The responsibility to maintain and upgrade existing facilities is extremely important. The following recommendations are offered as part of an ongoing park improvement program:

1. Community Park
 Repair/Maintenance Replace or remove wood at base of dugout areas.

 Improvements New picnic area, lights for all fields.

2. Morris Davison Park
 Repair/Maintenance Porta-john area (possible replacement structure).
 Some benches need repair or replacement.
 Review clean-up cycle.
 Replace metal nets as needed.
 Replace "No Pet Zone" signs.
 Replenish playground mulch/sand.
 Graffiti removal.
 Repair/painting of pavilion.
 Water fountain – fix drain.
 Replace faded signs.
 Light replacement.

 Improvements Park sign replacement.
 Extra plastic/recycling containers near basketball courts.
 Mutt mitts dispenser along trail.
 Accessible playground equipment has not been replaced with similar equipment .
 Planting plan for pavilion area.
 More picnic tables.
 Research better value of plastic coated fencing.

3. Plainsboro Park
 Repair/Maintenance Trash clean up on tennis courts.
 Replace signs on fence.
 Playground – replenish mulch.
 Re-paint: "No Parking on Basketball Courts".
 Clean up under grills.
 Removal of graffiti on picnic tables.
 Trim low branches and undergrowth from picnic area trees.
 Bocce Court – general court maintenance.
 Replace "Bump" signs at park entrance.
 Remove sign post with no sign on it near

		<p>entrance. Rangers remove excessive staples from message board Return bleacher in middle of the field (near shed)</p>
	<i>Improvements</i>	<p>Crack in tennis courts. Benches need replacement. Water fountain is not “accessible”; future replacement should be considered. Develop cycle for replacing rusted fencing on backstops. Location of “No Pet Zone” information in the middle of a field in the park - find a better location close to entrance/fields. Better define separation of parking lots from basketball court area. Enhancement of playground area for children with disabilities. Re-orient fields. Limit field use to two groups at one time. Evaluate need for bocce court. Expand picnic area; relocate away from ball fields.</p>
4.	Schalks Meadow Park <i>Repair/Maintenance</i>	<p>Tennis Courts – grass removal, backboard repainting. Cricket Field – clean up pitch area. Playground – replenish mulch. Research alternate to sand base due to wasps.</p>
	<i>Improvements</i>	<p>Crack in tennis courts. Partial clean up of brush area around cricket field area. Redressing stone. Cricket spectator bench. Add picnic area. Increase the amount of buffer landscaping.</p>
5.	Lenape Trail <i>Repair/Maintenance</i>	<p>Graffiti</p>
	<i>Improvements</i>	<p>Rehabilitation of the trail to include resurfacing and widening, as well as remediation of the immediate area adjacent to the walk where needed. Installation of basic signage and appropriate trash receptacles.</p>

Attention to scenic vistas and nature conservancy which includes species identification, trail guides, and seating areas.

Enhancement of entrance and gateway areas and development of linkage to existing or planned pedestrian paths in town to promote walking and biking within the central section of the Township, i.e. parks, municipal complex, library, village center, and schools.

A final phase could work toward establishment of areas on the trail for small gatherings of educational or social nature.

Investigate canoe hitch/storage, 2nd launch area near Milepost .07, and explore canoe/boat removal procedure.

Need benches, nature trail signage, and make interconnections to other areas.

6. Waters Edge Park
Repair/Maintenance

Sign logo replacement.
Trim plant encroachment on bridge.
Graffiti on bridge.
Sink hole on the island after bridge.
Missing lattice pieces on gazebo.

Improvements

Bridge accessibility – uneven between macadam and concrete.
Information kiosk or install a comparable post adjacent to bridge rail and attach a piece of finished plywood.
Add a picnic area.
Add bocce/shuffleboard courts.

7. Mill Pond Park
Repair/Maintenance

Sign logo replacement
Add information to Lenape Trail Sign (Trail approx. 2 miles).

8. Community Garden
Repair/Maintenance

Trash removal.

Improvements

Move wheelchair garden
Water/parking accessibility for wheelchairs

K. Action Plan

In pursuit of the Township's land use goals and giving due consideration to the current and emerging land use pattern, the following action plan has been formulated to support the Townships open space and recreation plan.

The projects outlined below represent priority projects for the Township. The implementation of these projects will require the dedication of municipal financial resources, partnering with other funding sources, as well as non-profit agencies..

1. Observations

- a. Development activity and population increases in recent years have been dramatic and has augmented the inventory of much needed facilities in both number and diversity.
- b. Current inventory of facilities is used at maximum level by organized athletic groups and in some cases falls short of accommodating current level of need. Use of other public and private resources is also being utilized to the maximum potential.
- c. Continued program development is limited by availability of resources and the development of new (or expansion of existing) programs and services has not kept pace with population changes at the local or regional levels.
- d. High level of use by organized groups has resulted in limitations on the availability of recreational facilities for the general public.
- e. Needs of organized groups have impacted types and level of use at neighborhood parks.
- f. Indicators from local athletic leagues show anticipation of continued interest and expansion.
- g. Continued population expansion will increase passive and active needs of the general public.
- h. Open spaces for field activities (organized as well as informal) should be integrated into the planning process.
- i. Work toward increasing availability of neighborhood parks for "neighborhood use" through relocation of league use to future community athletic facilities at the Community Park.
- j. Future planning should include consideration of seasonal needs and impact of overlapping facilities.
- k. Growing demand for indoor facilities suggests a future need for such facilities provided through a public or private entity.
- l. Due to the economic climate, statewide grants and corporate gifts

have seen reductions and as such have decreased the ability of non-profit arts organizations and service providers to operate at minimal cost to the community.

- m. Significant increases in the need for local services and programs (type, number, complexity).
- n. Nature and types of services required is impacted, in part, by the demographic shift in population.
- o. Strain on facilities and providers have resulted in increasing competition for limited resources.
- p. Reduced private support for local or regional organizations has resulted in higher use fees.

2. Trends Impacting Recreation

a. Demographics

- (1) Population increase has been dramatic both in overall numbers as well as diversity.
- (2) The demographic shift has been significant and far-reaching.
- (3) Population aging in place due to increased age-restricted housing.
- (4) Corporate growth has resulted in new forms of transience.
- (5) Increased population requires expansion of existing services.
- (6) Increased service delivery requires facility accommodations as well as staffing.
- (7) Demographic shifts due to age, diversity, and transience require re-evaluation of program and service emphasis.
- (8) Demographic shifts due to age, diversity, and transience requires increased attention to communication with the community.

b. Infrastructure

- (1) Existing facilities are aging.
- (2) Facility requirements are changing due to demographics.
- (3) Availability of facilities has not increased proportional to

growth in population.

- (4) Intra-community transportation is almost non-existent.
- (5) Anticipation of remedial work on existing facilities due to age and strain from over utilization.
- (6) Need to address new facility needs resulting from population changes (additional resources, changes in priorities).
- (7) Increased competition for limited facilities.
- (8) Need to address local transportation shortfalls.

c. Economy

- (1) Due to the economic climate, statewide grants and corporate gifts have seen reductions; and have decreased the ability of non-profit arts organizations and service providers to operate at minimal cost to the community.
- (2) Competition has increased for funding opportunities from other sources.
- (3) The future of federal and state funding resources becomes increasingly uncertain.
- (4) Reduced private support for local and regional organizations has resulted in higher use fees.
- (5) New guidelines and more restrictions have been placed on outside funding resources.

d. Government

- (1) Increasing pressure to consolidate and share services.
- (2) Prompts need to evaluate how delivery of services may be impacted and what strategies might be employed.
- (3) Need to evaluate all Township Parks at least every 2 years. Develop a park evaluation checklist.
- (4) Need a 10-year program for Township park improvement, maintenance, and repair.
- (5) Continue to address park security, proper lighting, litter management, and patrols. Maintain proper and safe views into and out of all parks.

e. Current and Potential Assets

- (1) Established track record for strategic flexibility in service delivery.
- (2) Anticipation of new library and recreation facility.
- (3) Cultivation of active community involvement in planning, development, and provision of programs and services.
- (4) Exploration of new venues through which we can qualify for special project funding.

3. Indoor Community Recreation Facility

As noted in the needs analysis, Plainsboro Township has identified the need for additional indoor recreation facilities. Such a facility would enhance overall facility availability for a broad range of indoor programs as well as improve the flexibility of scheduling. Current dependence on school facilities is limiting in various ways. Additional indoor facilities will also provide the Township the opportunity to target new programs and activities to the community's teenage population.

4. Cricket Facilities

Over the years, requests for cricket facilities have increased significantly. Based on estimates derived from residents making these requests, it appears interest runs to hundreds of individuals residing in the Township. That number is roughly equivalent to recent enrollment numbers in Little League, Babe Ruth, and Adult Softball. General indications from demographic data (based on the 2000 U.S. Census) shows that residents of national origin where cricket is a national sport exceeded 30% of the total population over 7 years ago and that trend has continued to grow in the Township as well as surrounding areas.

The competition for use of existing softball/baseball fields, already intense due to limited facilities, is exacerbated with the need for them to also serve a venue informally, in lieu of proper cricket fields. This has frequently resulted in complaints about the lack of appropriate facilities.

To the extent possible, the Recreation Department has encouraged information and facility sharing among the various cricket teams, as well as between the cricket players and the traditional softball/baseball/little league organizations. This has yielded moderate success in enhancing their ability to engage in cricket play during "down times" for the league holding a facility permit.

The request from the community is consistent. The goal is to have a playing field appropriate to accommodate adult league games. Residents have uniformly indicated an interest in a facility comparable to those found in nearby areas. In general, a cricket field is elliptic, ranging from

100 to 160 yards across. There is no fixed size or shape. The playing area needs to be reasonably level. The characteristic “pitch” is a rectangle that can be packed earth or clay. It is marked with white lines.

5. Open Space and Farmland Preservation

Even though overall development in Plainsboro is in its latter stages and the Township has achieved significant open space and farmland preservation to date, several key goals remain. These goals would seek to build upon the Plainsboro Preserve holdings, continue pursuit of farmland preservation and provide land set-asides for possible future open space. The specific properties targeted as priority properties for future farmland or open space preservation are as follows:

a. DeCarolis Property

The 7.75 acre DeCarolis property located along Grovers Mill Road and the Millstone River. This property is targeted for open space preservation.

b. Bulk Nursery Property

Located on Cranbury Neck Road in the Township’s farmland preservation area, the Bulk Nursery is the last large farm parcel in the farmland preservation zone that has not been either developed or preserved. This 84-acre site is bordered by the Millstone River to the south and is currently farmed as a nursery. An effort to preserve the property as farmland has been underway for the last few years between the Bulk family, the County and State Agricultural Development Boards and the Township. An agreement to preserve this property is anticipated in 2008.

c. St. Joseph’s Seminary

A 4.2 acre piece of property located between the D&R Canal and Mapleton Road.

d. Redevelopment Public Park

A Public Park is a required element in the Redevelopment Plan, and fixed in terms of its location and extent, as shown as **Figure 12: Future Public Open Space**. The primary purpose of the park is passive recreation. Thus the redeveloper shall remove all existing buildings, driveways, parking and other fixed improvements—with the exception of a single driveway and off-street parking area off Plainsboro Road with parking for between 25 and 50 cars—and remediate and restore the park to a natural state, with preservation of vegetation along the Millstone River waterfront, and the creation of a “meadow” environment on the remainder. The natural “meadow” shall consist of natural lawn and vegetation on rolling or level topography, interspersing open

areas—both large and small—with clusters of vegetation and trees. Efforts should be made to retain as much of the existing vegetation and grade as possible.

Aside from the aforementioned single driveway and off-street parking lot, the park shall also provide a low-impact, paved, handicapped-accessible circular walking trail, accessible to the off-street vehicular parking area, as well as to bicycle racks which shall be provided where the bike path access terminates a short distance into the park, where it intersects with the walking trail. The only other types of improvements anticipated would be accessory structures supportive of the park's passive recreational focus—such as benches, a gazebo, rest rooms, a maintenance or storage shed, and others customarily incidental to passive recreation activities.

The Public Park shall be publicly accessible, and open to residents and visitors both within and outside of the Redevelopment Area, and from within and outside of Plainsboro.

6. Tools and Methods

a. Zoning

Plainsboro utilizes its authority and the development review process to maximize open space preservation. Through its cluster zoning, Plainsboro allows developers to develop housing subdivisions on smaller lots in return for large, contiguous, meaningful set-asides of open space. The Township's cluster ordinance is unique in that it does not give developers a density bonus for clustering, but rather, bases their total lot yield on the number of lots they would have received if the subdivision fully complied with the "by-right" zoning. The lands provided through the cluster zoning can either be preserved as open space or be made available to the Township for recreation purposes.

Perhaps the most important and effective way the Township has used its zoning authority is through its efforts to preserve farmland in the Township's southern section, which has been designated a farmland preservation zone. Through farmland zoning, the Township encourages preservation by allowing the property owners to develop one single-family home per three acres of gross density in return for the commitment to permanently preserve 75% of the total tract of land. This preservation option is in contrast with the basic density requirements of the zone, which is one unit per 6 acres. This farmland zoning has been recognized as being on the cutting edge of local farmland preservation efforts. The Sierra Club stated that Plainsboro has "some of the best, if not the best, techniques currently available in New Jersey for farmland preservation." The Township has also used a new state statute allowing for intra-municipal density

transfers to preserve open space. In 1997, the Township Committee adopted an ordinance which permits density transfer between non-contiguous properties.

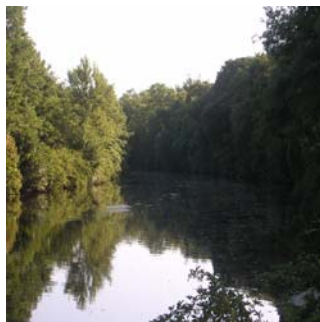
In addition, the Township zoning ordinance also includes open space requirements for developers. Each development must provide a certain percentage of open space to be in compliance with our ordinance. These open space requirements are most effective in our PMUD zone, which is the zone that includes the Princeton Forrestal Center. As a condition of their long-standing General Development Plan, the Forrestal Center is required to maintain approximately 440 acres in open space.

b. County and State Programs

Plainsboro's farmland preservation efforts have benefited from their partnership with the Middlesex County Agriculture Development Board and the State Agriculture Development Committee. These organizations provide programs for State, County and municipal cost sharing for the purchase of development easements on qualifying active farmland. With the purchase of these easements, these properties are restricted in perpetuity to agricultural use. The Middlesex County Agriculture Development Board then monitors compliance with these easements. The southern section of Plainsboro has been designated as an "agricultural development area", thereby making it eligible for participation in this program.

Plainsboro is also utilizing the Middlesex County Farmland Preservation and Open Space Trust Fund. This trust fund has resulted from the dedicated open space tax instituted by Middlesex County. It provides funding for farmland and open space preservation projects throughout the County.

CONSERVATION PLAN



Contents

- Introduction
- Well Locations
- Bedrock Geology
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- Wetlands
- Floodplains
- Topography and Woodlands
- Agricultural Capability Ratings
- Sustainable Design
- Solar Energy Systems
- Native Plants
- Action Plan

VII. CONSERVATION PLAN ELEMENT

A. Introduction

The environmental and ecological factors which are likely to influence development patterns and dramatically affect the development capacity of the Township are the location of wells, bedrock geology, extent of aquifer recharge areas, soil conditions, wetlands, floodplains, and the extent of wooded areas.



Stream Corridor

In addition to identifying existing natural features within the Township and discussing the importance of each feature, this plan element also discusses the importance of other environmental and environmental related actions that should be addressed to conserve scarce natural resources and to promote environmental friendly policies. These environmental actions and policies include the promotion of “Green Design Guidelines”, permitting solar energy systems in all zoning districts, and encouraging the use of native plants in land development applications and other instances.

The Township also acknowledges that the D & R Canal Commission has adopted a set of standards for aesthetic review of land development applications and has adopted drainage requirements for all land within one-half mile of the Canal. The D & R Canal Commission drainage requirements apply to the entire Township. Implementation of Canal Commission regulations affects the size of parcels for development and the rate of growth in Plainsboro.

B. Well Locations

The wellhead of a well is the area surrounding the well that contributes directly to its water supply. Contaminants entering the soil in an area of low permeability are less of a threat to the aquifer as a whole than in areas of high permeability, but can still pose a significant hazard to an individual well if they are within the wellhead. Wells in recharge areas are more vulnerable to contaminants entering from the surface due to the high infiltration rates. Regulatory mechanisms to protect wellhead areas in recharge zones generally focus on prohibition of land uses that pose a risk of groundwater contamination, such as on lot waste disposal sites and certain types of commercial and industrial facilities.

Well records maintained by the NJDEP are intended to provide a complete record of all wells installed in New Jersey.

In addition to the numerous small wells in the Township, two (2) public supply wells are located in Plainsboro and maintained by the New Jersey American Water Company. The more westerly of the two is located at the end of Jeffers Road, north of Plainsboro Road. This is a 12" well, drilled 208' deep into the Magothy/Raritan Formation. It is served by a pump of 295 gallons per minute (GPM) capacity, but is normally pumped at a rate of 150-180 GPM. The second supply well is located at the end of Deer Creek Drive, near Plainsboro Pond. This well is 6" in diameter and 120' deep, also drilled into the Magothy/Raritan Formation. Its pump has a capacity of 350 GPM, but the well is normally pumped at a rate of approximately 100 GPM. Of the two, the Jeffers Lane well is used on a more regular basis.

Well head protection areas should be delineated by taking into account hydrological and hydrogeological conditions, well influence zones, the presence of interfering wells, water table drawdown, actual and/or potential sources of contamination, and their transport velocities. Sources of contamination may include underground fuel storage tanks, stormwater infiltration basins, septic systems, material stockpiles, hazardous waste containers, sewer line leakage, pesticides and fertilizers, and de-icing application.

There are three (3) Tiers associated with wellhead protection areas, Tiers 1, 2, and 3, which delineate the extent of ground water captured by a pump at a specified rate calculated over a 2, 5, and 12-year periods, respectively. Of the wellhead protection areas, one of the Tier 1 and Tier 2 protection areas are located entirely within the Township, but a portion of the Tier 3 area is located within Mercer County. The third wellhead protection area is centered on the boundary between Middlesex and Mercer County. Wellhead protection areas are delineated by the NJDEP Source Water Protection Program (SWAP) and acted upon in response to the Safe Drinking Water Act Amendments Of 1986 and 1996. Please see **Figure 16: Wellhead Protection Areas Map**, for wellhead protection locations.

C. Bedrock Geology

The Township lies along the boundary between two (2) major physiographic provinces of New Jersey: the Inner Coastal Plain to the southeast and the Piedmont to the northwest. Plainsboro is underlain by three geologic formations: the Lockatong and Stockton Formations in the northwest and the Magothy/Raritan Formation in the southeast. The boundary between the Stockton and Magothy/Raritan Formations delineates the boundary between the Piedmont and Coastal Plain Provinces.

The Lockatong Formation dips shallowly northwestward and is composed primarily of argillite, a fine-grained sedimentary rock similar to mudstone or shale. The Lockatong is a relatively poor aquifer, but is used for water supply on a limited basis by individual homes in Mercer and Middlesex Counties. Lockatong Formation bedrock underlies approximately 2% of Plainsboro Township, in the extreme northwest corner along Lake Carnegie.

The Stockton Formation, or Stockton Sandstone, dips shallowly northwestward and is composed of sandstone of Triassic age. The Stockton is locally important for water supply for both domestic and industrial uses. The Stockton underlies 33% of Plainsboro, in a band extending northeast-southwest and lying to the northwest of the Amtrak railroad line.

The Magothy and Raritan Formations, although sometimes mapped separately, act as a single aquifer unit and are therefore considered together in many reports. The Magothy/Raritan is a partially consolidated sandstone of Cretaceous age that dips to the southeast. It is an aquifer of great regional importance, providing water to large areas of the Coastal Plain. The Magothy/Raritan comprises several smaller units, including several clay units of limited permeability interlayered with water-bearing sand and gravel units.

D. Aquifer/Groundwater Recharge

In a region where an aquifer reaches the surface, areas of permeable soil allow rainwater falling on the ground to infiltrate and percolate down into the aquifer, thus replenishing its water supply. These areas are known as aquifer recharge areas. Recharge areas are regionally important because they help maintain a balance between water being withdrawn from the aquifer throughout the region and water entering the



Stormwater Detention Pond

aquifer in the recharge areas.

Planning options for protection of these areas generally focus on maintaining infiltration capacity of the soil. This can be accomplished through regulations requiring that the percentage of stormwater that escapes as surface runoff be no higher in the post-development condition than the pre-development levels. This is achieved through a number of techniques. Minimization of paved areas reduces the negative effect of impervious surfaces on infiltration, as does the use of porous paving material. Installation of retention basins promotes infiltration of the retained water rather than allowing it to run off directly into surface streams. Individual housing sites can be designed with infiltration beds or dry wells that receive roof runoff, promoting infiltration on a localized scale.

The fresh water cycle consists of evapo-transpiration of water as vapor into the atmosphere, condensation of the vapor and precipitation onto land and water below. Part of that water runs off into streams, part re-evaporates, and some soaks into the ground to become groundwater. This section is concerned with the identification and protection of those areas in Plainsboro Township where ground water aquifers are recharged by the percolation of surface waters through pervious soils.

Aquifers are porous underground formations which store water that seeps below ground. Aquifers come in two types: "confined" and "unconfined." Unconfined aquifers are, generally, those that lie near the ground surface and are often referred to as the "water table." They are sandy, gravelly deposits that contain water. This water can sometimes be reached by shallow wells and often appears in holes dug in these deposits. Confined aquifers are porous geologic formations that contain water and are usually sandwiched between other layers of soil, such as clay, that are relatively impermeable. They typically start at a point on the surface and slope downward, reaching very deep underground.

Aquifers receive most of their water from rainfall. Unconfined aquifers receive their rainwater over large, widespread areas. Confined aquifers, on the other hand, can only receive water at those points of limited area where they are near the surface.

Groundwater supplies are fed by rainfall and surface waters. The most effective recharge areas are those with the most permeable soils. Soils are usually two to five feet thick, consisting of layers of unconsolidated material. The recharge potential of a given soil type depends upon the permeability of its least pervious horizon.

Distribution of aquifer recharge areas is a function of soil composition and geology. In regions where an aquifer reaches the surface, recharge generally occurs in areas covered by permeable soils, as rainwater infiltrates the soil and moves downward into the rock. Recharge can also occur in areas of low-permeability soils if flooding is frequent, because water left standing over the soil will gradually percolate downward through the soil. Areas of low-permeability soil that are not frequently flooded do not provide significant aquifer recharge, because rainwater falling on these areas runs off and is conveyed as surface water.

The Soil Survey of Middlesex County lists values for several soil characteristics related to water movement. Soil types are classified into four hydrologic soil groups based on their ability to take in water when wet and receive precipitation from long-duration storms. These groups are designed to be used to estimate runoff, or conversely, infiltration, and incorporate a number of factors related to permeability and drainage. The soil groups designated A through D, are defined as follows:

1. Group A. Soils have a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmissions.
2. Group B. Soils have a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

3. Group C. Soils have a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.
4. Group D. Soils have a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have high shrink-swell potential, soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Because the determination of hydrologic soil group is based on several factors, it is not possible to equate the groups directly with specific ranges of permeability. Most Group A soils have permeability of 6-20 inches/hour and most Group B soils lie in the range of 0.6-6 inches/hour, but there are many exceptions. Permeability of soils in Groups C and D are generally low (less than 6), but many soils with higher permeability are classed as Group C or D due to the other factors described in the definitions noted above.

Some soil mapping units are not assigned a hydrologic soil group, usually because their characteristics vary too greatly from location to location. Groups such as Humaquepts and Psamments are loosely defined and contain soils with a relatively wide range of characteristics.

Soils in Groups A and B are considered to have high aquifer recharge potential. In general, soils in Groups C and D are considered to have low aquifer recharge potential. An intermediate category of recharge potential was created to describe certain special cases. Low-permeability soils lying in the floodplains of perennial streams and categorized as frequently flooded in the Soil Survey were considered to provide intermediate recharge potential because of the special hydrologic conditions they experience. These include Manahawkin muck (symbol Ma, hydrologic group D) and Humaquepts (symbol HU, hydrologic group unassigned). Also placed in the intermediate category were Fallsington sandy loam and Fallsington loam (symbols Fa and Fb). These soils are assigned hydrologic group B/D, because their characteristics vary depending on site-specific conditions. Soils with no hydrologic soil group classification that are not frequently flooded are designated "Undetermined" on the aquifer recharge map because insufficient information is available to classify them.

Depending on specific focus, some parts of the Township could be considered more important for recharge because of the aquifer involved. The Magothy/Raritan Formation is regionally very important as a water source, and is confined by other units in much of the Coastal Plain. Its recharge area is limited to a northeast-southwest band that includes Plainsboro Township. By contrast, the Stockton and Lockatong Formations are locally important for water supply, but are unconfined (and therefore can be recharged) through most of the area in which they are used.

The Township should avoid extensive development over locally and regionally important recharge areas that would reduce the quantity or quality of percolation

reaching the aquifer. A developer should consider placing homes, parking lots, and other impervious surfaces over areas with low recharge potential and keeping high recharge potential areas in open space.



Preserved Open Space

The Township lies at the western margin of the New Jersey Coastal Plain, which is underlain by sedimentary rocks of Cretaceous age and younger. Approximately two-thirds of the Township is

underlain by the Magothy/Raritan Formation, a large aquifer system that provides a water supply for much of the Coastal Plain in New Jersey and other states. The Magothy/Raritan Formation outcrops along a northeast-southwest trending band that runs through Plainsboro, and dips down to the southeast, becoming a deep aquifer. The recharge areas in Plainsboro are therefore of regional importance because they are part of a somewhat limited band of recharge for a very large aquifer system.

In the northwest portion, approximately one-third of the Township is underlain by the Stockton and Lockatong Formations of Triassic age. The Stockton is a locally important aquifer and the Lockatong supplies water to a small number of homes in the area. Recharge of these aquifers, although not as important on a statewide or regional basis as recharge of the Magothy/Raritan, is nonetheless important to those residents served by them.

A map of the groundwater recharge areas is depicted in **Figure 17: Groundwater Recharge Areas Map**.

E. Soil Types

The U.S. Department of Agriculture (USDA) conducted an interim soil survey for Middlesex County as part of the National Cooperative Soil Survey Program in 1978. A 1980 updating of the USDA report did not affect either the soil types or the boundaries between them in the Township. In addition to soil types, the survey reviewed suitability of land for agriculture and its chemical and physical properties, water levels, the presence of soil conditions which would increase construction costs, suitability for on-site sewage disposal, and other characteristics. It should be understood, however, that not only are the boundaries between soil types only approximately located on soil maps due to the scale of the state-wide project, but that isolated soil types within areas dominated by other soil types may be lost altogether. The high water level, which varies on a seasonal basis, is also affected by terrain characteristics. Even though the USDA soils maps cannot be used as the sole basis for determining development or agricultural potential, thus requiring on-site testing

before the undertaking of any construction, they are still the best source of information regarding existing soils and are relied upon in all agricultural preservation and development efforts.

Brief descriptions of the major soil classifications found in the Township are set forth below.

1. Alluvial Series

Alluvial soils are poorly drained and frequently flooded. Their prime suitability is for pasture and woodland.

2. Downer Series

Downer soils have a relatively high agricultural productivity but are susceptible to erosion or low water availability, depending on soil subclasses.

3. Evesboro Series

Although Evesboro soil is used for farming, it presents many difficulties: available water capacity is low; soils are droughty; crops must be irrigated frequently; natural fertility is low and added fertilizer is easily leached out; and wind erosion is common in unprotected areas.

4. Fallsington Series

These soils appear in low places and, unless drained, they are almost constantly wet. Although the water table in Fallsington soils varies, in Plainsboro it is generally less than ½ foot from the surface. Even if drained, the residual wetness of Fallsington soils still delays plowing in springtime. Limitations for septic systems and construction are also severe because of poor drainage and frost action.

5. Fort Mott Series

Fort Mott soils are located near rivers and streams. Their usefulness for agricultural land is sometimes limited because of low fertility, low water capacity and low organic content. For home sites, this type of land is relatively stable and presents few limitations for septic systems.

6. Hammonton Series

Hammonton soils are capable of supporting agricultural production, but are frequently limited by a high seasonal water table which also affects construction by making septic systems susceptible to frost heaving and poor septic drainage.

7. Klej Series

The organic content and consequently the productivity of the Klej soils is low. However, when drained, this type of soil is suited to specialty crops such as tomatoes, peppers, eggplant and small fruits.

8. Manahawkin Muck

This soil is wet, acid and subject to flooding.

9. Matapeake Series

An excellent agricultural soil, the Matapeake series is particularly suited for potatoes, corn, small grains and a multitude of other crops. It also presents few limitations for home sites.

10. Mattapet Series

This soil is well suited for agricultural purposes although with some restrictions because of wetness of the subsoil during the winter and spring. This restriction, however, can be modified with artificial drainage.

11. Sassafras Series

Very similar to Downer, this is an excellent soil for agriculture because of its easy workability, moderate natural fertility, and positive response to fertilization. Lime often needs to be added to lessen acidity. There are few limitations regarding residential development or septic systems. Depth to seasonal high water table is greater than five feet.

12. Woodstown Series

This is another soil type that is well suited for agriculture, but only if moderately well drained. Otherwise, the subsoil becomes saturated during the winter and spring, thus restricting the possibility of farming. For isolated pockets of Woodstown soil, it is sometimes possible to lower the water table and improve farm production. Residential development with sewer systems generally needs a depth of 4-5 feet above groundwater, while construction with septic systems needs a minimum of six feet above the seasonal high water table. Since the seasonal high water table in Woodstown type soil is normally only 1½-4 feet below grade, any residential development would require extensive lowering of the water table or costly construction to prevent seepage into basements or shifting foundations and to allow septic systems to operate properly.

A soil map of the Township is provided and references the latest SSURGO soil survey; see **Figure 18: Soils (SSURGO) Map**.

The following strategies are recommended for soils posing constraints on construction: use of low-impact development techniques, which include porous pavements, narrowed streets, minimal impervious cover, grassed

area for bioretention and infiltration, etc.; green construction techniques, which include roof gardens, rain barrels, recycled plastic for benches and playground equipment, etc.; good construction practices such as minimizing soil compaction during construction and phasing development to minimize clear cutting and leveling; and land preservation strategies to protect areas where new construction should not occur.

F. Wetlands

Fresh water wetlands are basically associated with water bodies. Wetlands are known as palustrine systems which are non-tidal wetlands dominated by trees, shrubs, and persistent emergent vegetation. Such wetlands may occur on the shoreward side of stream channels or floodplains; ponds are also included within this type of wetland habitat. In the Township these wetlands occur along stream borders are mixed lowland forests. The dominant wetland types in the Township are immature bottomland forests and shrub swamps composed of young red maple, smooth alder, river birch, spicebush, and black willow. Jewelweed and skunk cabbage are the dominant herbaceous species in these wetlands. Emergent aquatic plant species, i.e. arrowhead, pickerelweed, and burreed line the shores of Devil's Brook and the Walker-Gordon Pond.

No extensive open marsh habitats are present. Open water areas of the Walker-Gordon Pond are utilized by various wetland bird species. No coastal wetlands regulated by the NJDEP are present in the Township.

Wetland areas, while diminishing in size during the last twenty years, have become a natural asset. Until recently, wetlands such as marshes, wet meadows, ponds, bogs, and wooded swamps were viewed as having little economic value and therefore were not beneficial to property owners. As more information became available concerning wetlands, the value of these areas to local, state and federal governments has increased.



Stream Corridor

Wetlands are now seen as a vital element in protecting the environment. These areas are home to many species of birds and fish who also use wetlands for breeding and feeding during migration periods. Wetlands provide a means to protect water quality. Wetlands filter out pollutants and silt-laden water before it enters streams, lakes and the seas. Flooding is also controlled by wetlands which act as storage basins for water. Wetlands offer recreation and visual amenities such as fishing, hunting and bird watching.

The Township has several wetland areas which are mainly located along river and stream corridors that traverse the municipality. These areas are protected

from development by state and federal regulations, which Plainsboro strongly supports.

The NJDEP regulates the disturbance of wetlands under the Freshwater Wetlands Protection Act. NJDEP has adopted the Federal Manual for Identifying and Delineating Jurisdictional Wetlands (January 1989) as the technical basis for delineating wetlands in New Jersey. The act regulates removal, excavation, disturbance or dredging of soil, sand, gravel or aggregate material of any kind; drainage or disturbance of water level and water table; dumping, discharging or filling with any materials; driving of pilings, placing of obstructions, or destruction of plant life that alters the character of wetlands; or the cutting of trees in any wetland. Any of these activities would require a permit from the NJ DEP. In accordance with the New Jersey Freshwater Wetlands Protection Act Rules, a freshwater wetland is defined as follows: “an area that is inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions, commonly known as hydrophytic vegetation; provided, however, that the NJDEP, In designating a wetland, shall use the three-parameter approach enumerated in the 1989 Federal manual for Identifying and Delineating Jurisdictional Wetlands, and any subsequent amendments thereto”.

A map of the wetlands and other constrained land is displayed in **Figure 19: Freshwater Wetlands Map**.

G. Floodplains



Lake Carnegie

Floodplains are another environmental resource worthy of protection from development. Floodplains can be defined as a relatively level area adjoining the channel of a stream or river over which floodwater may flow.

Floodplains provide many ecological, aesthetic and recreational benefits to a community. The primary purpose of floodplains is to capture any floodwater from the adjacent streams or rivers. Another function of some floodplains is to serve as a source of aquifer recharge.

Floodplains also serve some of the same roles as wetland areas, such as slowing the velocity of water flow which limits siltation and erosion of stream and river banks caused by flooding, providing valuable and pristine wildlife habitats, supporting productive plant life which helps to maintain natural ecosystems and providing an important open space, recreational, educational and aesthetic resource.

Plainsboro Township's designated floodplains are located along the Millstone River, the Delaware & Raritan Canal, and various water bodies which traverse the Township. Activities in any of these floodplains are regulated by the NJ DEP which issues stream encroachment permits and the Township's Flood Damage Preservation Ordinance.

The Township seeks to protect stream corridors which include the floodplain, wetlands, steep slopes, wooded areas and any critical wildlife habitats. Protection should take the form of maintaining the streambank with native species of trees, shrubs, and grasses and the use of best management practices for streambank restoration. In addition, in some cases it is important that the edges of the stream corridor be marked or otherwise delineated in the filed so that landowners and others know where it begins and ends.

A map of flood prone areas is displayed in **Figure 20: Flood Prone Map (FEMA/FIRM Q3 Flood Data) Map**.

H. Topography and Woodlands

Plainsboro is a relatively flat municipality. Topography ranges from 120 to 60 feet above sea level west of the Amtrak line and 90 to 60 above sea level feet east of the line. The highest areas can be found in the northwest corner of the Township where the Princeton Nurseries and Forrestal Village are located, while the lowest areas are along the Millstone River and the Delaware and Raritan Canal.

Plainsboro Township consists of a diverse environment. While the Township contains several agricultural areas, woodland areas are also present. In fact, the woodland areas are located throughout the Township.



Streamside Woodlands

Woodlands in the Township are closely associated with the floodplains of the Millstone tributary, Bee Brook, and Devil's Brook. The lowland forest canopies adjacent to the Millstone tributary and Devil's Brook are composed mostly of immature red maple trees (2-10 inch caliper.) Dense shrub thickets (spicebush and arrowwood), alternating with open herb areas composed of dense carpets of jewelweed, skunk cabbage and marsh fern are also present. The Bee Brook Woods is the most mature and natural forest area along Scudders Mill Road. Relatively large (10-25 inch caliper), widely spaced beech, red oak, red maple, and tulip trees dominate the canopy. Such vegetation is typical of mature lowland forests in the Piedmont and Inner Coastal Plain.

The high soil moisture and protection from heavy human access has enabled a thick and diverse cover of herb species to develop on the forest floor. Several species of ferns are present along with such flowering herbs as Canada mayflower, jack-in-the-pulpit, and whorled wood aster. The relatively dense woodland cover along the Bee Brook as well as the other stream floodplains, provide cover for area wildlife species. Cottontail rabbit, pheasant, and woodland jumping mice have been observed in these areas. Deer tracks have also been observed along stream banks, and raccoon, opossum, skunk, and gray squirrel probably also utilize these woodlands.

Like the other natural resources discussed previously, woodlands provide many benefits. Woodlands provide diverse habitats for many wildlife and bird species which use woodlands for breeding, food supplies and protection. The root systems of the trees and its associated vegetation slow the flow of surface water runoff which controls soil erosion and stream sedimentation. In addition, some of the surface water is retained and drains into the ground, thus replenishing an area's groundwater supply. Plants in woodlands produce oxygen while filtering out carbon dioxide which cleanses the air. Soils are also enriched by the presence of woodlands which use nitrogen and water to increase soil fertility. Woodlands also moderate the effects of strong winds, storms and other climatic extremes.

Trees serve a valuable function by helping to keep the earth's ecology in balance. By transforming carbon dioxide into the vital oxygen we breathe, trees help to support the human and animal habitat around them. A forty foot tall tree takes in 50 gallons of dissolved nutrients from the soil every day. It raises this mineral brew to its topmost leaves, converts it into 10 pounds of carbohydrate food and releases 60 cubic feet of pure oxygen into the air. Trees also filter dust and reduce airborne lead contamination and radioactivity. The removal of trees makes man more susceptible to the effects of pollution caused by man made devices such as automobiles. The removal of trees inexorably disturbs and alters the plant and animal life and disrupts the balance of nature in a given area.

There is also an aesthetic, scenic, educational and recreation value in preserving woodlands. Wooded areas are among the most scenic and serve to break up the view pattern. Woodlands may be mature forests, reforested woodlands, groves or wooded lots, which serve as excellent buffers between uses and provide unique educational opportunities for residents. From a recreational viewpoint, woodlands may serve as hunting areas, locations for active or passive trails, or informal play areas for residents. Woodlands also support and reinforce scenic drives and historic sites and areas.

Presently the Plainsboro Township Code requires the preservation of trees, woodlands management, and reforestation of developed lands. The Code prevents the indiscriminate cutting and removal of trees, and other activities during construction which, in the past, have led to the general demise of woodlands, critical areas, and natural features, and have increased soil erosion and dust. The Code has resulted in the submission of the first developer prepared woodland management and reforestation reports and a commitment to plant thousands of new trees on development sites as well as off-site on Township and School Board property. Specifically, the K. Hovnanian Companies

of Central New Jersey agreed to plant 263 trees at their Princeton Crossing development and 151 trees off-site. Bristol-Myers Squibb agreed to plant not fewer than 800 trees and not more than 1000 trees on-site at locations to be determined by their forester and the project landscape architect, and 252 trees to be planted by Bristol-Myers Squibb off-site at a location determined by the Township. Other significant reforestation efforts included Calton Homes (58 on-site), the 650 College Road office development (144 on-site), Plainsboro Acres (28 on-site and 157 off-site), and most recently the ZAHAB project at 175 on the site and 225 off-site.

The Code requires that areas of mature woodland scheduled to be destroyed by new construction shall be replaced with on-site or off –site with new vegetation indigenous to the area. Of notable importance in the Reforestation section of the ordinance are the specific requirements for tree replacements as noted below from the Plainsboro Township Ordinance, Chapter 85.30.1.B(1-5).

1. All newly planted trees and shrubs shall be of nursery grown stock. All landscape material shall be of species native to the area approved by the Planning Board, and developer or property owner and shall guarantee replacement for two (2) years.
2. The quantity of trees to be replaced shall be equal to the number of trees that would be necessary to cover the entire wooded area impacted by the development, based on a grid of twenty (20) feet by twenty (20) feet. Of this number of trees, ten percent (10%) shall be balled and burlapped 2' to 2 ½ "caliper; twenty percent (20%) shall be balled and burlapped 1 ¾" to 2" caliper, thirty percent (30%) shall be bare-root 1 ¼" to 1 ½" caliper; and forty percent (40%) shall be bare-root six (6) to eight (8) feet tall whips. A mixture of trees indigenous to the area and site shall be utilized.
3. Trees shall be planted in natural groves and spaced five (5) feet to fifteen (15) feet on center.
4. The ground plane shall be seeded with meadow grass mix. The specific blend shall be approved by the Township Planning Board.
5. All wood herbaceous plants shall be species indigenous to the area.

According to the Township ordinance, replacements are to supply the Township with a re-vegetation environmentally stable, low maintenance, natural landscape asset. The replacement species will provide shade, wind protection, noise and visual screening for wildlife. All species will be indigenous thus, naturally being environmentally stable, low maintenance and able to provide a natural landscape. The Township ordinance requires that new plant material be planted in natural groves and be spaced five (5) to fifteen (15) feet on center. This requirement is to re-create the natural setting of forest stands. Generally, a wider spacing is more acceptable to better develop canopy growth before crown spacing is absorbed. Eventually, however, the more dominant plants will evolve and spacing will increase to site specific values. Concurrently, the increased cover may be beneficial in attracting wildlife habitat. See Table 9: Typical Woodland Re-Forestation Process.

Table 13 Typical Woodland Re-Forestation Process

1. Identify and establish the wooded areas to remain in the field.
2. Erect protective fencing around the canopies of the exterior tree groups to remain. Fencing should remain until the reforestation is completed.
3. Remove existing trees as required
4. Prune, thin and trim undesirable tree growth from all newly exposed trees on the perimeter of the woodlands.
5. Prepare soil by roots and desirable undergrowth, etc. from removing stumps.
6. Treat newly exposed area with herbicide as necessary to remove unwanted growth, etc.
7. Treat soil with chemical amendments such as lime, fertilizer as required.
8. Stabilize ground plane by seeding all cleared areas with meadows grass mixture and mulch.
9. Plant reforestation trees at spacing and locations as required.
10. Maintain ground cover free of weeds with herbicide applications.
11. Mow meadow grass as required.
12. Prune, thin or remove newly planted trees as necessary.
13. After the two year warranty period expires, remove dead trees to permit hardier trees to survive.

I. Agricultural Capability Ratings

The USDA capability rating system categorizes the suitability of soils for agricultural production, pasture, woodland, or wildlife, based on chemical and physical properties, steepness of slope, and wetness. In total, there are eight capability ratings, with the primary ratings for commercial crop production ranging from Class I, which has the best soil, to Class III, which has severe soils limitations. Soils below Class III are generally unsuitable for agriculture.



Farmland

There are few limitations that restrict the use of Class I soils which have the widest range for crop use and present the least risk of crop damage. Accordingly, these soils are prime for agricultural use.

Class II soils impose limitations on the range of possible crops or require moderate conservation practices. These limitations, which may be caused by wetness, high susceptibility to erosion, or shallowness, are expressed as subclasses. A thorough understanding of the extent of any such limitation is an essential prerequisite to a determination as to whether a given Class II classification is

potentially suitable for agricultural uses or whether it is best suited for wildlife, woodlands, or development.

Analysis of the Soil Series Map reveals that the area between the Millstone River and Cranbury Brook which was designated for agriculture in the existing Master Plan is well suited for this designation. Due to its Sassafra and Woodstown soils, it is a prime agricultural area. The use of sites near the river and on the Woodstown soils for homes intended to rely on septic systems or with basements may be difficult.

The most abundant Class II soils include Woodstown and Downer soils which appear in wooded areas in the vicinity of Devil's Brook as wet spots or low ground which may impede both agriculture and development. The area in the vicinity of Dey Road including some lands to the north, consist of a mixture of soils in terms of their suitability for development, ranging from excellent (Sassafra) to extremely difficult (Alluvial).

The Township has largely supported the preservation of soils suitable for agriculture by outlining clear goals and objectives for preserving farmland, identifying areas where farmland can be preserved, encouraging and educating farmers about participating in farmland preservation programs, supporting agriculture by adopting a Right-to-Farm ordinance and allowing farm stands and other structures that foster economic diversity for local farms, and supporting clustering and the transfer of development rights that concentrate housing amidst preserved farmland.



Farmland

J. Sustainable Design

Green building guidelines ensure that development within the Township preserves the unique character of a site. The Township desires that developers construct sustainable or “green” buildings. The guidelines that follow are intended to result in environmentally friendly and economically vibrant projects. According to the U.S. Green Building Council (USGBC) LEED evaluates environmental performance from a whole building perspective over a building’s life cycle, providing a definitive standard for what constitutes a “green building”. It is based on accepted energy and environmental principles and strikes a balance between known established practices and emerging concepts. LEED is a performance oriented system in which scoring points are earned for satisfying performance criteria in the categories of sustainable site development for new construction: reducing the urban heat island, energy efficiency, water savings, materials selection and in indoor environmental quality. Different levels of green

building certification are awarded by the USGBC based on the total points earned. As a means of evaluation and measuring achievements in sustainable design, the Township encourages design, construction, and operation of developments that meet criteria for a LEED certified rating as follows:

1. General

- a. All new development located within the Township should be encouraged to meet a minimum LEED™ Certification rating under the LEED Rating System and be so certified by the US Green Building Council.
- b. If possible, all building projects should have a LEED accredited professional as a principal member of the design team from the beginning of the project.
- c. Energy Star: For multi-family residential projects; appliance and fixtures should meet US EPA's Energy Star Standards. Projects should be encouraged to include Energy Star compliant clothes washers', dishwashers, refrigerators, ceiling fans, ventilation fans (including kitchen and bathroom fans), light fixtures (halls and common areas), and exit signs. To further enhance energy efficiency, the project could also choose to install two of the following Energy Star components: programmable thermostats (in residential units), residential light fixtures, windows and doors; and HVAC systems.
- d. Applicants may submit to the Township the following information at the time of site plan application:
 - 1) The name of the LEED Accredited professional working on the project.
 - 2) A LEED score card as part of the plan. The scorecard should be accompanied by an explanation of how each credit will be achieved or why it cannot be achieved for the project.

2. Reducing the Urban Heat Island

The ambient air in urban environments is usually significantly warmer (sometimes more than 10° F warmer) than air in less developed areas – an effect known as the Urban Heat Island. Dark, non-reflective surfaces absorb heat from the sun and then radiate it back to the surrounding area. Such hotter temperatures lead to an increased need for air conditioning, which costs money and consumes significant amounts of energy. Current statistics show that air conditioning consumes one sixth of all electricity used in the United States. The following guidelines will help to mitigate the formation of an Urban Heat Island:

- a. Provide shade trees for thirty percent (30%) of a site's non-roof

impervious surfaces.

- b. Use light-colored/high albedo materials (reflectance of at least 0.3) for at least thirty percent (30%) of a site's non-roof impervious surfaces.
- c. Use highly reflective and high emissive roofing materials (at least 0.9 when tested in accordance with ASTM 408) for at least seventy-five percent (75%) of the roof surface. In addition to the operational benefits to the building, this application helps to extend the life span of a roof.
- d. Use a "green" vegetative roof for at least fifty percent (50%) of the roof area. In addition to its ability to reduce stormwater flows and provide insulation, this application helps to extend the life span of the roof.

3. Energy Efficiency

Following the guidelines below can lead to making building more energy efficient:

- a. Buildings should be designed to exceed by twenty percent (20%) the state energy code or the most recent edition of ASHRAE/IESNA Standard 90.1 (without amendments), whichever is more stringent.
- b. Building owners are encouraged to provide a portion of the total energy used by a building with on-site sources, such as photovoltaic systems.

4. Water Savings

The following guidelines help decrease the amount of municipal water needed for buildings:

- a. Decrease the quantity of potable water used for landscape irrigation by fifty percent (50%).
- b. Install ultra low flow fixtures in bathrooms and consider reusing roof runoff volumes for flushing toilets in order to reduce the amount of potable water required.

5. Materials Selection and Indoor Environmental Quality

The following materials can ensure quality environments that help decrease the environmental impact of the materials needed for buildings:

- a. Divert as much construction waste away from disposal in landfills as possible by recycling construction materials including metal, wood concrete, brick, drywall and cardboard.

- b. Incorporate building materials that contain a high percentage of recycled content.
- c. Incorporate building materials that have been manufactured and where possible generated, regionally. Using regional products not only reduces the amount of energy required for transportation, but also supports the local economy.
- d. Incorporate bio-based building materials where possible. This includes materials incorporating certified wood, bamboo, wool, cotton, cork, natural linoleum and agricultural fiber boards.
- e. Limit the amount of indoor air contaminants that are introduced through building materials where possible. Materials, including adhesives, sealants, paints and carpets with lower VOC values shall be preferred over standard versions. Materials made of wood and agricultural fiber shall contain no added urea formaldehyde.

Buildings can be designed with progressive green design, such as green roofs, harvesting of natural light, and use of solar screens and landscaping to reduce solar gain.

Green roofs can be employed where possible and where roofs are visible from upper-level floors. All buildings are encouraged to be designed to LEED standards. LEED certification is encouraged.

All exterior lighting, including building lighting, streetlights, and pathway and parking lot lighting, is encouraged to comply with “dark sky” standards that reduce energy use and eliminate glare and nighttime light pollution. Recommended light fixtures and additional information is available from the International Dark-Sky Association (IDA).

6. Building and Building Systems

- a. LEED Certification is a project goal and will utilize the following strategies among others:
 - 1) Use of sustainable landscaping techniques.
 - 2) Water efficiency through plumbing design and fixture selections.
 - 3) Use of sustainable building materials.
 - 4) Use of energy efficient building systems.
- b. Energy conservation of building systems.

7. Site

a. Lighting

- 1) Eliminate over-lighting site areas.
- 2) Use the most efficient lighting sources available for proper applications.
- 3) Use photocells to control lighting (lights will not operate when adequate daylight is available) as well as programmable time clocks.

b. Minimal Use of Culture Lawn Areas

- 1) Reduce water use.
- 2) Reduce fertilizer use.
- 3) Reduce pesticide use.

c. Minimal Use of Irrigation Systems

- 1) Reduce material use.
- 2) Reduced installation equipment use.

d. Use of Deciduous Trees at Southern Exposure

- 1) Reduce HVAC usage in summer and winter because of the predominate use of deciduous trees at southern exposures.
- 2) Reduce HVAC usage in winter because of predominant use of evergreen trees at northern exposures.

e. Green Roofs

- 1) Reduce HVAC usage in summer.

f. Reduce Maintenance of Planted Areas

- 1) Reduce maintenance equipment use for cultured lawns.
- 2) Reduce water use because of drought-tolerant plants.
- 3) Reduce fertilizer use because of proper plant selection.
- 3) Reduce pesticide use because of proper plant selection.

g. Existing Wood Areas to Remain

- 1) Reduce HVAC usage in summer (i.e. ambient air temperatures 15 to 20 degrees cooler under the tree canopies which mitigates heat island effects, especially if prevailing breezes carry this cooler air towards the building).

The new Medical Center is focused on environmental design and includes the incorporation of many elements that represent time tested approaches to sustainable design. Major sustainable design elements and strategies include: an overall east-west building orientation that facilitates control of the sun and takes advantage of efficiencies in heating and lighting, solar shades on the south elevation that reduce heat gain in the summer, site stormwater recharge, a heat recovery system for the mechanical systems, and use of recycled construction materials and landscape design consisting of native species of plants requiring minimal irrigation. The hospital will be built according to LEED standards and it should achieve the equivalent of a silver level of certification. This will not only make the facility more energy efficient and create a better healing environment for patients, but will also have significant impact in the community. Among the many sustainable aspects to the site, UMCP is looking into taking the lead on a power generation initiative that would bring energy efficiency and cost savings not only to the Hospital but also to community partners on and off the Campus.

Other recent examples of sustainable development initiatives in the Township include the PNC Bank application before Zoning Board where the bank officials spoke of their decision to obtain LEED certification. The Forrestal Center will be looking into the possibility of installing photo-voltaic panels (solar cells) on their Art Museum Storage Facility and in association with this project - will be constructing a porous pavement parking lot.

K. Solar Energy Systems

The Township may consider the introduction and use of solar energy systems through the land development and zoning permit process. The following are suggested guidelines for the implementation of solar energy systems:

1. Solar energy systems could be permitted use in all zoning districts.
2. If utilized, roof mounted systems should not be more than three (3) feet higher than the finished roof to which it is mounted.
3. Ground mounted systems and systems attached to accessory buildings should



Solar Array

be not less than ten (10) feet from any side or rear property line. Solar energy systems should be prohibited in all front yards and should not be located past the front wall of the principal building.

4. There should be no limit to the number of modules and arrays installed on each property that comprise a solar energy system, except for the exclusions contained herein in 5 and 7 below.
5. Solar energy farms should be prohibited. These are systems whose main purpose is to generate energy for sale back into energy grid systems, rather than being consumed directly on site.
6. Ground mounted solar energy systems should not be categorized as accessory buildings.
7. If solar energy systems are attached to accessory buildings the number of accessory buildings allowed should be regulated in accordance with the provisions set forth in the land development code.
8. The height of ground mounted solar energy systems and systems included on accessory buildings should be limited.
9. Zoning and construction permits should be required.
10. Limit the amount of a lot that could be covered with a solar energy system.

L. Native Plants

The native plants (perennials, grasses, ferns, shrubs, trees and vines) identified in Table 14 are recommended for use in the Township.

Table 14 Native Plants of New Jersey

Native Perennials

Blue hear-leaved aster (Aster cordifolius)

• violet with yellow centers • 2-3' • August - October •
Charming small aster that provides starry flowers for butterflies.

Boneset (Eupatorium perfoliatum)

• white • 4' • August - September •
Unimposing plant that is a top favorite with butterflies.

Wild bergamont (Monarda fistulosa)

• pale violet flowers • 36" • July •
A spreading favorite nectar plant for many summer butterflies.

Broadleaf mountain mint (Pycnanthemum muticum)

• white to violet • 3-4' • July - August •
A top butterfly nectar plant with tiny flowers surrounded by lovely silvery bracts.

Hoary vervain (Verbena stricta)

• violet • 2-3' • July - August •
Uprights spikes of lovely purple flowers top undemanding plants; butterfly favorite.

New England aster (Aster novae-angliae)

• deep violet • 36" • late August - October •
New Jersey native; butterfly favorite; thrives in moist soil but tolerates drier conditions.

New York aster (Aster novae-belgii)

• light purple • 36" • late August - September •
Lovely bushy, slow spreading New Jersey native; favorite of butterflies.

Showy aster (Aster spectabilis)

• blue with yellow central disk • 18" • September - October •
New Jersey native, especially in the south; thrives in dry conditions.

Black cohosh (Cimicifuga racemosa)

• white • 54" • July - August •
Woodland plant with graceful candle-like flowers.

Blazing star 'Rosea' (Liatris spicata 'Rosea')

• rosy-purple • 28-30" • July - September •
Spiked flowers; nectar for butterflies; seeds goldfinches.

Cardinal flower (Lobelia cardinalis)

• scarlet red • 32" • July - September •
Commanding spike of deep red; humming bird dessert; plant near birdbath for moisture.

Columbine (Aquilegia Canadensis)

• red spurs, yellow sepals • 18" • April - June •
Early season nectar for hummingbirds; charming woodland plant that gently reseeds.

Coneflower..... (Echinacea purpurea)

- purple-pink with orange/brown center • 36" • July - August •

Flowers attract a variety of butterflies; seeds a favorite of goldfinches.

Culver's root..... (Veronicastrum virginicum)

- white • 48" • August - September •

Curved spikes of flowers for butterflies; charming but under-used garden plant.

Dutchman's breeches..... (Dicentra cucullaria)

- white • 10" • April - May • 4" pot •

Spring ephemeral with pantaloons-like flowers; early season food for hummingbirds.

Stiff goldenrod.....(Solidago rigida)

- yellow • 2-5' • August - October •

Nectar for monarchs and other butterflies; flowers form a flattened panicle on upright stems; does well in moist to dry soil; in the wild it prefers a bit of lime in its soil.

Great merrybells.....(Uvularia grandiflora)

- yellow • 18-24" • April - May •

Lovely plant for the woodland shade garden; thrives if given a bit of lime.

Green and gold "Allen Bush"..... (Chrysogonum virginianum 'Allen Bush')

- yellow • 18-24" • April - May •

Lovely groundcover for many soil types; flowers may continue into summer.

Joe pye weed.....(Eupatorium maculatum)

- rose pink • 5-6' • July - September •

Dramatic nectar plant; prefers damp soil but thrives in drier areas once established.

New York ironweed.....(Vernonia noveboracensis)

- purple • 5-8' • August - October •

Nectar plant for many butterflies; thrives in both damp dry soils.

Great blue lobelia..... (Lobelia siphilitica)

- blue • 30" • July - September •

Spikes of blue flowers attract hummingbirds and large butterflies; prefers moist soil.

Butterfly weed (milkweed).....(Asclepias tuberosa)

- bright orange • 24" • July - August •

A top butterfly plant for drier soil; host for Monarch caterpillars; brilliant flowers.

Swamp milkweed.....(Asclepias incarnate)

- pink • 40" • July - August •

A leading nectar plant for butterflies; host for Monarch caterpillars; lovely flowers; prefers moist soil in the wild but is easily established in average garden conditions.

Woodland phlox 'London Grove'..... (Phlox divaricata 'London Grove')

- violet-blue • 10-12" • April - May •

Cultivar of endangered plant of New Jersey's deciduous woods; delightful early spring blooms.

Rose mallow ‘Southern Belle’ (Hibiscus moscheutos ‘Southern Belle’)

- mixed colors (red, white or pink) • 3’ • July •

Large flowered cultivar of plant native to mulch of New Jersey; prefers rich, evenly moist soil.

Wild stonecrop (Sedum ternatum)

- white • 4-8” • May •

Adaptable, creeping nectar plant favored by the small spring butterflies.

Virginia spiderwort..... (Tradescantia virginiana)

- mixed (predominantly blues, purples, lavenders) • 26-30” • June - September •

Strap-like leaves and flowers that last for a single day; thrives in any soil type.

Great white trillium..... (Trillium grandiflorum)

- white • 10-12” • April •

Tall, showy woodlander; relatively easy to grow in rich, woodsy soil.

White turtlehead(Chelone glabra)

- white • 32” • August - September •

Spreading favorite of butterflies and other insects; excellent companion plant for Cardinal Flower.

Bleeding heart (Dicentra eximia)

- pink • 12” • May - July •

Northern native with fern-like foliage; long bloom period; food for hummingbirds.

Tall tickseed coreopsis.....(Coreopsis tripteris)

- yellow • 5’ • July - September •

Clouds of butterflies from midsummer on; grows happily in the meadow or at the back of the border.

Foam flower(Tiarella wherryr)

- white • 8-10” • May - June •

Frothy wands of flowers; clumping form with heart-shaped leaves; endangered in New Jersey.

Wild geranium(Geranium maculatum)

- violet rose • 15-24” • May - June •

Perennial nodding flowers for the edge of the woodland garden; nectar for early butterflies.

Wild ginger.....(Asarum canadensis)

- mahogany • 3” • April •

Unassuming ground cover for the woodland garden; exotically shaped flowers.

Native Grasses

Indian grass (Sorghastrum nutans)

- golden seed heads • 5-6’ • August •

Beautiful native meadow grass with strong, upright growth habit.

Switchgrass ‘Heavy Metal’(Panicum virgatum ‘Heavy Metal’)
• metallic blue blades • 3-4’ • August •
Short cultivar of native meadow grass selected for sturdy, erect growth habit.

Native Ferns

Christmas fern(Polystichum acrostichoides)
• 24-26” •
Evergreen, once-divided, leathery deep-green fronds; easy and essential.

Cinnamon fern(Osmunda cinnamomea)
• 30” •
Cinnamon-colored fertile fronds emerge before green sterile ones; stately, handsome plant provides vertical accent and nesting material for hummingbirds.

Eastern hay scented fern(Dennstaedtia punctilobula)
• 18-20” •
Light green, lacy fronds that release the sweet scent of fresh hay when crushed.

Leatherwood fern(Dryopteris marginalis)
• 24-30” •
Evergreen, shiny fronds; strong, upright, and vigorous; makes a pool of green in the shade; endures considerable dry spells.

Maidenhair fern(Adiantum pedatum)
• 18-24” •
Delicate rounded fronds that spread slowly through the shade garden.

Ostrich fern(Matteuccia struthiopteris)
• 48” •
Imposing plume-like fronds create either a handsome focal point or stunning backdrop for other shade lovers; waits 2-3 years and then spreads; fiddle-heads may be eaten.

Woodfern(Dryopteris)
• 18-24” •
Evergreen, erect, outward curving fronds; easy naturalizer.

Native Shrubs and Trees

Lowbush blueberry(Vaccinium angustifolium)
• white flowers; blue fruit • 18-24” • May - June •
Something for everyone: nectar for early spring butterflies and hummingbirds, habitat for caterpillars, fruit for birds, and wonderful fall color; prefers dry soil.

Buttonbush(Cephalanthus occidentalis)
• creamy white • 6-12’ • July - August •
Butterfly favorite; lovely round “button” flowers shine against glossy deep green leaves; thrives in wet soil and even in standing water.

Black chokeberry(Aronia melanocarpa)

- black fruit • 3-8' • May •

Spring flowers, lovely fall color, fruit for winter birds; adaptable plant for dry to moist conditions.

Red maple (Acer rubrum)

- red • 40-70' • March - April •

Flowers provide crucial food for early spring butterflies; brilliant red leaves in fall; adaptable tree that tolerates a wide range of soil types and moisture levels.

Gray dogwood (Cornus racemosa)

- white flowers • 3-8' • May - June •

Fruit is a favorite snack for birds; naturally occurs in damp to wet soil but is more drought tolerant than many other dogwoods; best for naturalizing.

Shadblow (Amelanchier canadensis)

- white flowers; blue fruit • 10' • April •

Early spring flowers for insects followed by edible fruit for us if the birds don't get it first; adaptable plant that tolerates dry garden soil once established.

Spicebush (Lindhera benzoin)

- soft yellow • 8-12' • April •

Essential, understated understory shrub for much of the woodlands of northern New Jersey; nectar for early insects and forage for birds; blue-green leaves, turn yellow in autumn.

Sweet pepperbush (summersweet) (Clethera alnifolia)

- ivory • 4-9' • July - August •

Butterfly favorite; the native alternative to the invasive Butterfly Bush; blooms in midsummer; sweet scent perfumes the garden; non-cultivar rarely found in the trade.

Fragrant sumac (Rhus aromatica)

- yellow • 3-6' • May •

Spring flowering, colonial plant ideal for stabilizing banks; thrives in poor quality soil and hot sun; red to burgundy fall foliage.

Blackhaw viburnum (Viburnum prunifolium)

- clusters of white flowers, blue-black fruit • 6-15' • May - June •

Understated small tree providing shelter for caterpillars, late summer fruit loved by the birds and deep red leaves in the autumn landscape.

Cranberry bush viburnum (Viburnum trilobum)

- clusters of white flowers, bright red fruit • 6-15' • May - June •

The American Cranberrybush; flowers in spring, with autumn berries much appreciated by birds; red foliage in fall; flowering and fruiting best with some sun.

Winterberry holly (Ilex verticillata)

- greenish flowers, red berries • 6-10' • May - June •

Fruit for winter birds; non-cultivar rarely found in the trade; prefers moist to damp soil; only female holly produce fruit; our plants are not identified by sex so we can not guarantee that you will receive a female plant; for best chances of having fruit, order at least two plants.

Native Vine

Coral honeysuckle (***Lonicera sempervirens***)

• red-orange • 8-10' • June-August •

Trumpet-shaped blossoms; a hummingbird favorite throughout its long bloom period.

M. Action Plan

1. Seek to continue to permanently preserve existing sensitive environmental features and encourage sustainable developments.
2. Promote a healthy environment for all citizens by providing adequate air, light, water, and open spaces.
3. Protect existing wildlife in the community.
4. Proactively address any and all noise issues that may create negative impacts.
5. Protect scenic view sheds from negative influences.
6. Promote the dedication of conservation easements to permanently protect sensitive properties.
7. Become actively aware of and, if possible, participate with the County in its drafting of the "Sustainable Middlesex Plan" which has been funded by the NJ Office of Smart Growth.
8. Explore the possibility of drafting a "Green Buildings and Environmental Sustainability" Plan Element, as recently included in the Municipal Land Use Law as a permitted Master Plan Element.

ECONOMIC PLAN



Contents

- Introduction
- Population and Employment Data
- Existing Land Use Pattern
- Employment Generating Land Use Districts
- Existing and Projected Employment Levels
- Action Plan

VIII. ECONOMIC PLAN ELEMENT

A. Introduction

As permitted by the New Jersey Municipal Land Use Law, the Planning Board has chosen to prepare this plan element that considers and addresses both local and regional aspects of economic development to promote sustained economic vitality into the foreseeable future. The plan includes a comparison of the types of employment expected to be provided and promoted. The characteristics of the labor pool in the Township and nearby areas and an analysis of the stability and diversity of the local economy is also identified.

B. Population and Employment Data

Based on the 1990 U.S. Census, Plainsboro Township's population was 14,213 people. The 2000 Census Bureau population calculation for Plainsboro was 20,215 people, which represents about a 42% increase over a 10 year period. Plainsboro's population is expected to increase to 22,780 people by the year 2015, according to the Township. The Township anticipates that the population in the Township will reach 22,750 in 2010 and 22,850 in 2020.

In conjunction with the Township's population growth that has occurred over the past decade, employment is expected to grow continue through the next decade. Employment growth within the Township will exceed population growth in percentage terms as well as total numbers because there are limited opportunities for new housing developments except for the occasional small lot subdivision and/or infill development. Table 15 identifies the occupation of employed persons 16 years of age or over within the Township according to the 2000 U.S. Census:

Table 15 Occupation: Employed Persons 16 Years and Over

	Male	Female	Total
Finance, insurance, real estate	1,127	624	1,751
Construction, manufacturing, wholesale trade, retail trade, transportation	2,321	1,325	3,646
Information	489	423	912
Arts, entertainment, recreation, accommodation and food services	246	185	431
Professional, scientific and technical services	1,760	890	2,650
Educational, health and social services	622	1,364	1,986
Public administration	168	207	375
Other services	147	230	377
Totals	6,880	5,248	12,128

As to future employment activity within Plainsboro, that is addressed in the Table 17 entitled: "Summary of Township Employment".

Plainsboro Township's employment base has increased significantly since the 2000 U.S. Census was taken. Covered employment in Plainsboro Township has increased by 2,620 jobs, or 26.8 percent between 1992 and 2002 ("Covered Employment" includes private sector jobs covered by the NJ Unemployment Compensation Act). According to the New Jersey State Data Center, Plainsboro had a Covered Employment number of 12,105 in 2003.

As indicated in Table 16 entitled: "Employment Data", there were 9,789 jobs in 1992 and by 2002 this number had increased to 12,409 jobs. The large increase in local employment is largely attributable to the ongoing development within the Princeton Forrestal Center area.

Table 16 Employment Data -- Covered Private Sector Employment, 1992-2002

		Plainsboro Township		Middlesex County		
		Difference		Difference		
Year	Number of Jobs	Number	Percent	Number of Jobs	Number	Percent
1992	9,789	-	-	288,737	-	-
1993	10,478	689	7.0	292,281	3,544	1.2
1994	11,676	1,201	11.4	299,172	6,891	2.4
1995	13,025	1,349	11.6	310,375	11,203	3.7
1996	13,795	770	5.9	317,788	7,413	2.4
2000	13,526	(269)	-1.9	343,376	25,588	8.1
2001	13,001	(53)	-0.4	349,915	6,539	1.9
2002	12,409	(592)	-4.6	345,306	(4,609)	-1.3
Employment Change 1992-2002		2,620	26.8		56,569	19.6

Source: NJ Department of Labor, Covered Employment Trends 1992-2002.

Plainsboro Township has a stable economic base and is moderately job intensive, as shown in Table 17 entitled: "Population to Jobs Ratio". In 1990, Plainsboro had a 1.67 to 1 job ratio, which means that there were 1.67 residents for every one job in the Township. In comparison to Middlesex County and other counties in the area, Plainsboro is generally a more employment based community with a lower population to jobs ratio.

Plainsboro residents are largely employed in white-collar jobs located outside of the Township. The largest occupational category in the Township is Professional Specialty, which represents 25.2 percent of resident employment, while the Executive and Managerial category comprises 23.4 percent of resident employment. Middlesex County's largest occupational category is Administrative Support which accounts for 20.1 percent of resident employment. The second largest occupation in the County is Executive and Managerial, which represents 15.6 percent of all occupational categories. The largest sector of workers for both the Township and County are private wage and salary, representing 86.6 and

82.3 percent, respectively. Local government is the second highest worker class for both the Township and County.

Table 17 Population to Jobs Ratio

Northwest Housing Region

Area	2000 Population	2000 Employment	Population to Jobs Ratio
Plainsboro Township	20,215	12,128	1.67 to 1
Middlesex County	750,162	402,745	1.86 to 1
Mercer County	350,761	182,869	1.92 to 1
Monmouth County	615,381	217,824	2.82 to 1
Somerset County	297,490	180,612	1.65 to 1

Source: NJ Department of Labor.



Firmenich

The majority of Township residents commute by car to jobs outside of Plainsboro Township. Over 77 percent of the workers from the Township drove to work alone in 1990, compared to 75.2 percent in the County as a whole. Of the remaining workers in the Township, 9.5 percent carpooled and 9.2 percent used public transportation. A higher percentage of workers in the Township used public transportation than in the County, where only 8.1 percent used public transportation. This is most likely due to the Township's proximity to the Princeton Junction train station. The high proportion of the labor force working outside the Township is

evidenced by a mean travel time to work of 28.99 minutes. This is greater than the 26.26 minutes for all Middlesex County workers.

The employment base in Plainsboro is expected to continue to increase in the future, due largely to the continued development within the Princeton Forrestal Center which includes the Princeton Forrestal Village and the Princeton Nurseries property that borders South Brunswick Township. The Princeton Forrestal Center is a large planned multi-use development that is being comprehensively planned and built out under the auspices of Princeton University. This 1,725 acre development contains a growing mix of complementary land uses, including 4.5 million square feet of office/research, 950,000 square feet of education/research, 956,000 square feet of hotel/conference center, and 162,000 square feet of retail/restaurant/child care as well as 1,377 dwelling units. The Princeton Forrestal Center contains many well-known corporations including 800 and 900 Scudders Mill Road (formerly Merrill Lynch), Bristol Myers-Squibb, Munich Reinsurance America, Inc., Novo Nordisk, the Robert Wood Johnson Foundation and others.

Based on the General Development Plan approval for the Princeton Forrestal Center, there is approximately 2.4 million square feet of planned additional non-residential development. A 1999 amended approval of the General Development Plan provided an extended vesting period of 20 years for completion of the development projects.

Outside of the Princeton Forrestal Center, the other areas of the Township that could experience a substantial amount of change involving new development, over the next decade or two, includes the roughly 160 acres of land formerly owned and occupied by the FMC Corporation. This area of land, located along the east side of Route One, south of Scudders Mill Road and north of Plainsboro Road and the Millstone River, is currently zoned I-100 Limited Industrial.



Office Building

The Planning Board passed a resolution with a recommendation for the Township Committee to adopt the Redevelopment Plan for the FMC Corporation Site which allows development of the properties for a new Princeton Medical Center campus, based on a series of new planning goals and objectives for this area, intended to lead toward the establishment of a high quality coordinated and comprehensive plan of development. As a result, the Township decided to work in a cooperative effort with FMC and the Princeton Medical Center to explore development for this area.


The Redevelopment Area consists of a number of parcels owned by the FMC Corporation that are located in the southwestern portion of the Township. According to the official tax maps of the Township, the Redevelopment Area encompasses ± 156.0 acres and includes one (1) property assemblage, consisting of six (6) tax lots on portions of three (3) tax blocks. The tax blocks include Block 1701, Lots 3 and 4; Block 1703, Lots 1, 2, and 3; and Block 1704, Lot 1. The lots range in size from ± 0.27 acres to ± 64.84 acres. At its widest point, the Redevelopment Area is $\pm 2,562.3$ feet wide and varies in length from $\pm 1,820$ feet on the west side to $\pm 3,896$ feet on the east side. The property has $\pm 1,820$ feet of frontage on Route 1, ± 746.7 feet of frontage on Scudders Mill Road, and $\pm 2.893.3$ feet of frontage on Plainsboro Road.

The Redevelopment Area is bounded generally by U.S. Route 1 to the west; the municipal border of the Township of West Windsor and the Millstone River to the south; Connector Road, state-owned lands to the east; and Scudders Mill Road and as yet undeveloped portions of the Forrestal Center to the north. Plainsboro Road bisects the property, creating a northern and southern portion of the FMC property.

C. Existing Land Use Pattern

The existing land use pattern in the Township is shown on **Figure 21: Existing Land Use Map** and the amount of acreage in each land use category is identified in Table 1. This pattern of land uses reflects growth and development, environmental and agricultural protection, the roadway transportation infrastructure, and as a result it also identifies areas within the Township that will continue to absorb additional growth and development.

The land use pattern reflects the achievement of Township goals, objectives and visions over the past three (3) decades. Over the years the Township has achieved the following:

1. An impressive record in land use and economic development. The result of this planning has been a balance of open space and development. The Township has preserved its agricultural heritage while becoming a center for education and research, business and industry and of course the hometown for more than 21,000 residents.
 2. Over fifty percent (50%) of the Township has been permanently preserved as open space. This open space network includes the Plainsboro Preserve, which currently contains approximately 1,000 acres of passive and active parks, stream preservation areas, and farmland protection.
- 
- Forrestal Village**
3. The centerpiece of the Plainsboro Preserve is the Plainsboro Environmental Education Center. This educational facility is owned by the Township and, like the rest of the Preserve, operated by the New Jersey Audubon Society.
 4. Plainsboro Village, the original settlement in the Township with buildings dating back from the 18th Century, is benefiting from controlled growth that is guided by the Plainsboro Village Area Master Plan, adopted in 1999. This plan called for the preservation of the village's historic character while introducing appropriate and attractive commercial and residential development to help the village become the center of community life.
 5. The heart of the Village Plan is the new Plainsboro Village Center mixed-use development. The Village Center is Smart Growth design at its best; pedestrian and bicycle friendly streets and paths, a public town square, and an attractive mix of commercial, residential and civic uses, all located in the geographic center of the community.

Major future growth and development that will compliment the existing land use pattern will occur in the Township's non-residential zones. It will primarily take place in the Princeton Forrestal Center along Campus Road, on the Princeton Nurseries property, and be associated with the approved build-out on the BMS and former Merrill Lynch sites. Other major development activity will take place within the I-100 zone on lands owned by the Medical Center and Firmenich. Most new development will be in the form of infill development located throughout the Township on smaller sites and also in the form of some redevelopment as existing patterns of development continues to modernize and upgrade their plant, facilities, and growth objectives.



Novo Nordisk

D. Employment Generating Land Use Districts

The Township has created several zoning districts which permit industrial and commercial development:

PMUD	Planned Mixed Use Development
PCD	Planned Community Development
OB-1	Office Business
I-100	Limited Industrial
NB	Neighborhood Business
GB	General Business
SR	Service Residential
VC	Village Center

The PMUD Zone is located west of the railroad, bounded by Plainsboro Road to the south and the South Brunswick Township municipal line to the north. It is primarily known as the Princeton Forrestal Center and contains office and research type land uses for a total of 6.5 million square feet. In recent years this zone has been expanded to include the Princeton Forrestal Village mixed use shopping center project and a Princeton Nurseries rezoning which permits up to 2,000,000 square feet of office including some additional commercial development within this total amount. Over the past few years the Princeton Forrestal Center has experienced continued growth in the form of the Windrows age-restricted housing development, the opening of the 147 room Homewood Suites by Hilton located on a 4.5 acre site located immediately north of the existing Courtyard by Marriott, the



Super Fresh

construction of a new Patrinely owned 167,000 square foot, 5 story office building located along Campus Road on the Campus North site of the Forrestal Campus, and a 220 unit high-end apartment complex known as Barclay Square at Princeton Forrestal which is located along Mapleton Road on 24 acres. In addition, the Princeton Forrestal Village has seen the construction of the Salt Creek Grille restaurant as a pad site and the introduction of the Cando Fitness Club as a new fit out use within the existing Center. Most recently, the Planning Board approved a site plan for the construction of a Ruth Chris restaurant as a pad site within the confines of the Forrestal Village.

Additional development activity in the Forrestal Center includes The Research Collections and Preservation Consortium (RECAP) which occupies a processing center and three storage modules at the Forrestal Campus Area. A forth module is presently under construction. The Consortium owns land that can accommodate 9 modules and has the option on nearby land for an additional 6 modules. The Consortium consists of Princeton and Columbia Universities, and the New York Public Library.

A-site of the Forrestal Campus is the former location of the Princeton-Penn accelerator. There is zoning in place under the terms of the Third Amendment to the General Development Plan for between 350,000 and 500,000 square feet of office/research space. There is a curb cut from Campus Road and the site has excellent visibility from both Scudders Mill Road and Route 1.



Office Building

The Chemical Sciences building, built in 1916, was renovated to be leased to commercial users. The architectural firm, Ford Farwell Mills & Gatch, has leased the top floor. Two other buildings on the B-site, the Power House and New Guggenheim, have had less substantial upgrades and are functioning as incubator space. There is a wide-range of small tenants on short term leases.

The PCD planned community development zone was historically developed by the Linpro Company. It is the zone that includes thousands of dwelling units, an existing shopping center known as the Princeton Meadows Shopping Center, a 1-story professional office complex located directly behind the shopping center, and the Enterprise Business Park. The PCD zone is essentially built out. A few years ago the Planning Board approved the construction of an age-restricted development as part of the Townships Village Area plan initiative that took the place of some of the land area within the Enterprise Business Park that had otherwise been devoted to non-residential land use development.

The OB-1 Zone is a small area located west of Route 1. It includes the existing St. Joseph's Seminary on Mapleton Road and the state police barracks.

Along that portion of Plainsboro Road that lies west of the railroad is located Plainsboro's I-100 Zone which includes the unique and extensive research, industrial, and the office campus facilities of Firmenich. A portion of the I-100

Zone is also located east of the railroad tracks and can accommodate a modest increase in development intensity.

The Neighborhood Business Zone was created to include three (3) already developed lots on Plainsboro Road generally opposite the existing fire house. Existing buildings within this zone are currently occupied by commercial land uses.

The 47-acre General Business Zone, which is generally located along Scudders Mill Road and Schalks Crossing Road, includes the freestanding Post Office, a freestanding CVS drug store and a 210,000 square foot shopping center which contains a Super Fresh, Ace Hardware store, Pebbles department store and numerous other smaller stores including a McDonalds. The General Business Zone also contains an existing PNC bank building which was recently the subject of a site plan application to the Zoning Board for demolition and replacement. The site plan received Board approval.



Enterprise Business Park Office

The Service-Residential Zone located along Mapleton Road and Route 1 consists of the existing 120-unit Millstone apartment complex and a cluster of historic buildings that have by and large been converted to professional offices.

Lastly, the Village Center zone was created over the past few years to replicate a village setting that would be connected with the existing developed fabric of the historic mixed-use Plainsboro Village area and the emerging and changing Town Center Shopping Center located within the GB Zone. The Village Zone is being developed by the Sharbell Corporation to create an area for offices, retail and personal service establishments, restaurants and some apartments including single family detached and townhouse dwelling units. The new Township Library will be located in the Village Center Zone.



Pharmacy

All of these employment generating zone districts continue to thrive in the Township because of their proximity housing and the local and regional transportation network. Land uses within these zones are not stagnant as new construction is added while existing development is upgraded and/or otherwise modified to reflect new local and regional economic realities of the marketplace.

E. Existing and Projected Employment Levels

Over the past six years the Township has experienced a decrease in the number of workers located with the largest employers in the Township. Between October 2002 and September 2004 the number had decreased from 10,873 to 9,658 for a decline of 1,215 and more recently that number has fallen to 7,799

A review of Table 18 entitled: "Comparison of Largest Employers", notes that total employment with these identified companies and organization totals 7,799 at this time. 2002 and that the Township can expect



Increased total Township employment projections in five (5) year increments from 2005 to 2020 could be as follows:

Salt Creek Grille

1. 2005-2010: 1,807 or 18,457 total Township employment
2. 2010-2015: 3,013 or 21,470 total Township employment
3. 2015-2020: 2,792 or 24,262 total Township employment

Total Township land use build-out should result in over 30,000 total employees. Reaching this ultimate level and the five year increments noted above is dependent upon local, regional, state and national economic conditions. The Master Plan does anticipate and can successfully accommodate the ultimate build-out projection of 39,000.

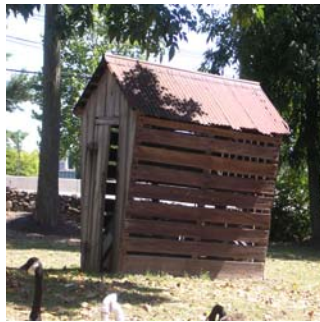
F. Action Plan

1. Support local business as they desire to grow within the Township to create a good vibrant business climate.
2. Respond to out of town inquires that seek information about the Township and School District.
3. Provide for a streamlined land development review and approval process that is cost-efficient for both the developer and the Township.
4. Retain and support the local agricultural community.
5. Limit the amount of land zoned for retail uses so that existing shopping centers and other existing retail areas are first and foremost utilized.
6. Support the expansion of alternative transportation modes including public transit, walking and biking.
7. Managing traffic congestion by improving roads, using new technologies, and reducing rush-hour traffic.

Table 18 Comparison of Largest Employers

Company/Organization	Type of Business	2008 Employees
Bloomberg	Communications	230
Bristol-Myers Squibb	Pharmaceuticals	1550
Buildings & Grounds (located in HSN)	Maintenance/Plainsboro District	15
Community Middle School	Plainsboro Middle School	176
Firmenich	Flavors & Fragrances	800
FMC Corp.	Chemical Research/Dev.	100
High School North	Plainsboro High School	198
Marriott Princeton	Hotel/Conference Center	225
Merrill Lynch	Financial Services	0
Millstone River	Plainsboro Middle School	144
Munich Re (formerly American Re)	Insurance	1027
Novo Nordisk	Pharmaceuticals	760
PPPL (Princeton Plasma Physics Lab)	Physics Research	420
Princeton eCom	Telecom	250
Robert Wood Johnson Foundation	Philanthropy	275
Siemens	High tech/electronics	150
Special Services	Part of Plainsboro School District	29
State Street Corp., 600 & 500 College Rd. E.	Financial Services	300
Town Center	Plainsboro Elementary School	84
Westin Forrestal Village	Hotel	179
Wicoff School	Plainsboro Elementary School	67
Princeton Financial Systems	Financial Services	140
Integra LifeSciences Corp.	Pharmaceuticals	470
Windrows	Residential	210
Total		7,799

HISTORIC PRESERVATION PLAN



Contents

- Introduction
- Historic Resources
- Development Application Review Process
- Recommendations for Alterations and Additions
- Historic Commercial Properties
- Demolition
- Relocation
- Visual Design Standards
- Local Preservation Efforts
- Action Plan

IX. HISTORIC PRESERVATION PLAN ELEMENT

A. Introduction

This historic preservation plan element identifies the location, significance, utilization, and means of preserving of historic resources. The plan also identifies the standards used to assess worthiness of existing historic resources within the Township.



B. Historic Resources

The Township's historic resources are identified on Table 19. They are important to the Township's heritage and sense of identity. A balance is required between the need to preserve these structures and sites, and the economic cost of doing so. At least three (3) methods are available to foster preservation: inclusion on the National Historic Register, inclusion on the State Historic Register, and protection through municipal regulation. Township policies and regulations should stress protecting and reusing historic resources and sites by way of the development review process while maintaining their original appearance. New construction next to an historic building should not necessarily duplicate its style, however it should be compatible and not detract from its historic characteristics. Demolition of an historic building should be avoided.

The purposes of this plan element are to:

1. Encourage the continued use of historic resources and facilitate their appropriate re-use.
2. Safeguard the heritage of the Township by preserving resources within the Township which reflect elements of its cultural, social, economic, and architectural history.
3. Maintain and develop an appropriate and harmonious setting for the historic and architecturally significant buildings, structures, sites, objects, landmarks and/or districts within the Township.
4. Stabilize and improve property values and discourage the unnecessary demolition of historic resources.
5. Foster civic beauty and neighborhood pride.
6. Promote appreciation of historic resources for the education, pleasure, and welfare of the citizens of the Township and its visitors.
7. Spur beautification and private reinvestment.

8. Manage change by preventing alteration and new construction not in keeping with the historic structure.
9. Recognize the importance of all buildings in historic districts or areas and of individual historic structures located outside of the district by urging property owners and tenants to maintain their properties in keeping with Township requirements and standards.
10. Encourage the proper maintenance and preservation of historic settings and landscapes.
11. Encourage appropriate alterations of historic structures and buildings.
12. Enhance the visual and aesthetic character, diversity, continuity and interest of the Township.
13. Promote the conservation of historic sites and landmarks and invite compliance through the adoption of standards in a manner that minimizes hardships on residents, especially those of low and moderate income.



Village Restaurant

C. Development Application Review Process

The following general criteria should be used in reviewing a development application's effect on an historic building or site:

1. Every reasonable effort should be made to provide a compatible use for structures which will require minimum alterations to the structure.
2. Rehabilitation should not destroy the distinguishing qualities or character of the structure. The removal or alteration of any historic material or architectural features should be held to a minimum, consistent with the proposed use.
3. Deteriorated architectural features should be repaired rather than replaced, whenever 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 documentation supporting the accurate duplication of original features.
4. Distinctive stylistic features or examples of skilled craftsmanship which characterize older structures and often predate the mass production of building materials should be retained whenever possible.
5. The original siding and roofing material should be maintained or repaired,

and, if replacement is needed, it should be of the same material and size. If the same material is not available, a substitute material should be of the same shape and size. Replacement materials or features may achieve their own significance over time and should not be prohibited.

6. All structures should be recognized as products of their own time. Alterations to create an appearance inconsistent with the original character of the structure should be discouraged.
7. Signs, except public and temporary signs, should be reviewed for their conformity in exterior material composition, external appearance and size with similar advertising or information media used in this architectural period of the building. Signs should be reviewed in their relationship to the structure to which they are attached.
8. An archaeological and historic sites program that includes at least the following:
 - a) An archaeological and historic sites survey giving a history of the site and identifying all known historic features. Sites identified in such survey should be registered by a qualified archaeologist in the New Jersey State Museum Site Registration Program; and
 - b) A proposal as to how archaeological sites and historical sites will be treated and who during construction will be responsible.
9. The Planning Board or Zoning Board should require deed restrictions as it deems desirable to protect the historic features of the property.

These criteria can either be codified into a Historic Preservation Overlay Ordinance or utilized by the Planning Board or Zoning Board during the development review process.



Theobald Smith House

before its demolition to make way for a residential subdivision.

It is the intent of this plan element to preserve the integrity and authenticity of historic buildings and to insure their compatibility with new structures. If past architectural styles are to be used, a copy of a specific structure is preferable to an amalgam of building types and styles.

As part of the application review process, developers may be required to submit "Cultural Resource Assessments" of impacted historic landmarks, as was prepared by Carlton Homes for the Jonathan Stout Farm (1808-1822), located at the corner of Dey Road and Scotts Corner Road,

The Office of the U.S. Secretary of the Interior, which administers historic preservation at the federal level, recognized the public's need for design guidance. Working with preservationists across the country, they developed standards and guidelines for the rehabilitation of historic buildings. First published in 1979, the Standards for Rehabilitating Historic Buildings presents ten (10) clear and brief statements representing appropriate design in a historic context. Supplemental to these standards, an extensive set of guidelines was also developed, providing more specific guidance on things such as exterior surfaces, roofs, windows, interiors and even sites and districts.

To evaluate a specific development application, the



Corn Crib

Planning Board or Zoning Board should also utilize the U.S. Secretary of the Interior's standards and guidelines. These standards and guidelines can be used to assist in determining whether proposed changes should be approved or disapproved. The standards and guidelines are nationally accepted, and represent the present thinking on appropriate methods of intervention. The following standards should be applied to building and sign projects in a reasonable manner, taking into consideration economic and technical feasibility:

1. A property should be used as it was historically or be placed in a new use that requires minimal change to the defining characteristics of the building such as its distinctive materials, features, spaces, and spatial relationships.

2. The historic character of a property should be retained and preserved. The removal of historic and/or distinctive materials or alteration of features, spaces, and spatial relationships that characterize a property should be avoided.



19th Century House

3. Each property should be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other

historic properties, should not be undertaken.

4. Most properties change over time; those changes that have acquired historic significance in their own right should be retained and preserved.
5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property should be preserved.

6. Deteriorated historic features should be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture and, where possible, materials. Replacement of missing features should be substantiated by documentary, physical or pictorial evidence.



19th Century House

7. Chemical or physical treatments to exterior surfaces, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials, such as sandblasting, should not be used.
8. Archaeological resources should be protected and preserved in place. If such resources must be disturbed, mitigation measures should be undertaken.
9. New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work should be differentiated from the old and should be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.
10. New additions and adjacent or related new construction should be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

D. Recommendations for Alterations and Additions

1. Retain original siding whenever possible, without the application of any surface treatment unless required to solve a specific problem that has been studied and identified.
2. Avoid the application of new material, which is inappropriate or was unavailable when the building was constructed, such as artificial brick siding, artificial cast stone veneer, asbestos or asphalt shingles, and vinyl

or aluminum siding. Such material can also contribute to the deterioration of the structure from moisture and insects.

3. Replace missing significant architectural features, and repair or replace, where necessary, deteriorated architectural features of wood, iron, cast iron, terra cotta, tile and brick. Retain those architectural features such as siding, cornices, brackets, railings, shutters, windows, doorway pediments, hand rails, balusters, columns and trims, brackets and roof decorations.



Old Barn

4. Preserve the original roof shape and the original roofing material, whenever possible. When not possible, apply new roofing material that is appropriate to the style and period of the building and neighborhood.
5. Preserve or replace where necessary, all architectural features that give the roof its essential character, such as dormer windows, cupolas, cornices, brackets, chimneys, cresting, and weather vanes. Avoid changing the character of the roof by adding new inappropriate features such as dormer windows, vents or skylights.
6. Avoid altering the size of windowpanes or sash. Such changes destroy the scale and proportion of the building.
7. Retain and repair existing windows and door openings including window sash, glass, lintels, sills, shutters, doors, pediments, hoods, steps, and all hardware whenever possible. If new sash and doors are used, duplicate the material, design, and the hardware of the older window sash and doors.
8. Install visually unobtrusive storm windows and doors, where needed, that do not damage existing frames and that can be removed in the future. Avoid aluminum storm and screen window with insulating glass combinations that require the removal of original windows and doors.
9. Use original doors and door hardware when they can be repaired and reused in place.
10. Avoid installing plastic, canvas, or metal strip awnings or artificial shutters that detract from the character and appearance of the building.

11. Avoid enclosing porches and steps in a manner that destroys their intended appearance.
12. Retain porches and steps that are appropriate to the building and its development. Porches or additions reflecting later architectural styles are often important to the building's historical integrity and, wherever possible, should be retained.
13. Keep additions to historic buildings and adjacent new construction to a minimum.
14. Design an addition so there is the least possible loss of historic materials and so the character defining features are not obscured, damaged, or destroyed.
15. Locate an addition at the rear or on an inconspicuous side of a historic building and limit its size and scale in relationship to the historic building.
16. Design additional stories that are set back from the wall plane and are as inconspicuous as possible when viewed from the street.
17. Design the addition so it is clearly differentiated from the historic structure. Offset the walls of the addition so they are simply extensions of the existing walls.
18. Design the addition to be compatible in terms of mass, materials, relationship of solids to voids, etc.
19. Design the addition to compliment the rhythm of the historic structure.
20. Make sure the addition is not so similar that it appears to be part of the original structure.



Church

Remember an Addition:

1. Should be compatible with the size, scale, and architectural features of the original structure.
2. Should be differentiated from the original structure.
3. Should not harm the integrity of the original structure.
4. Should (theoretically) be removable from the original structure.

E. Historic Commercial Properties

It is essential to understand that the best design approaches for rehabilitating historic commercial properties are generally the most simple and obvious, not necessarily the most creative. An evaluation of the storefront's architectural features and physical condition will help determine the best course of action in the actual rehabilitation work. An initial step in this evaluation should be the removal of any inappropriate covering materials in several places to determine just how much of the original character remains. The standards and guidelines used to direct the appropriate rehabilitation of residential properties, including building materials, windows and doors, new construction, demolition, and the environment, are equally applicable to commercial properties.

In applying the standards to determine the most sympathetic method of rehabilitating a historic commercial property, the following guidelines should be applied. Any proposal which does not comply with the following will be considered inappropriate.

1. Identify and sensitively rehabilitate original or other character defining features and materials of the building or the environment. As commercial buildings are recognized as products of time and place, retain significant building fabric in its original location.
2. Identify and retain changes to the property which have gained significance in their own right, reflect significant trends in the evolution of the building, or help to define the structure's architectural integrity.

3. Appropriate preventative maintenance and repair will ensure the protection of original elements while reducing potential replacement costs. Replacement should be limited only to those features and materials



Historic Building Cluster

- that are deteriorated beyond repair. If replacement is warranted, new features should duplicate the originals in size, design, configuration, color, texture, and other visual qualities, and, where possible, materials.
4. Cleaning, when required, should be undertaken by the gentlest possible means. The appropriate cleaning agents should be determined in consideration of the building material to be cleaned and the desired

results (i.e. removal of light or heavy soils or removal of paint). Cleaning methods should be considered in consultation with a qualified professional and tested in an inconspicuous location on the building.

5. Designs for new construction or missing architectural features should be derived from similar surrounding properties or elements present on the subject building. Avoid creating a false historical appearance by incorporating ornamental features that are insufficiently documented physically or photographically. When replacing missing features, keep the new design simple, yet compatible, and avoid the destruction of the building's original integrity. Designs for infill buildings should respect the height, scale, mass, setback, materials, spatial rhythm, proportion, and color of adjacent properties. The guidelines for new construction projects in residential districts are equally applicable to commercial areas.

F. Demolition

New development may demand the removal of historic structures. Consideration should be given to relocation rather than demolition. The removal of the structure and the proposed location should be carefully considered. With each new additional demolition the historic integrity is further eroded.

All demolitions should be reviewed by the Planning Board or Zoning Board. A request for demolition should be accompanied by a request for new construction.

In regard to an application to demolish an historic building, the following matters should be considered:

1. Its historic, architectural, cultural, or scenic significance.
2. Its significance as a key contributing or non-contributing structure and the probable impact of its removal.
3. Its potential for use for those purposes currently permitted by the Land Development Ordinance.
4. Its structural condition and the economic feasibility of alternative uses.
5. Its importance to the Township and the extent to which its historical or architectural value is such that its removal would be detrimental to the public interest.
6. The extent to which it is of such old, unusual or uncommon design, craftsmanship, texture or material that it could not be reproduced or could be reproduced only with great difficulty and expense.
7. The extent to which its retention would promote the general welfare by maintaining and increasing real estate values, generating business, attracting tourists and new residents, stimulating interest and study in architecture and design, or making the Township an attractive and desirable place in which to live and work.

8. The probable impact of its removal upon the ambiance of the area in which it is located.

G. Relocation

In regard to an application to move an historic building, the following matters should be considered:

1. The historic loss of the original site location.
2. The reasons for not retaining the historic building or structure at its present site.
3. The compatibility, nature, and character of the current and of the proposed surrounding area as it relates to the protection of historic interests and values.
4. The probability of significant damage to the historic building or structure itself.
5. If it is to be removed from the Township, the proximity of the proposed new location to the Township, including the accessibility to the residents of the Township and other citizens.



J. Perrine House

H. Visual Design Standards

Any portion of a proposed development plan located near an historic building and determined to have a visual impact on the building should be required to satisfy the following visual design standards:

1. Height of the proposed building should be visually compatible with buildings and places within the area to which it is proximate or visually related.
2. The relationship of the width of the building to the height of the front elevation should be visually compatible with buildings and places within the area to which it is proximate or visually related.
3. The relationship of the width of windows to the height of windows in a building should be visually compatible with buildings and places within the area to which it is proximate or visually related.

4. The relationship of solids to voids in the front façade or facades fronting a public right-of-way or space should be visually compatible with buildings and places within the area to which it is proximate or visually related.
5. The relationship of the building to the open space between it and adjoining buildings should be visually compatible with the buildings and places within the areas to which it is proximate or visually related.
6. The relationship of entrance and porch projections to the street should be visually compatible with buildings and places within the area to which it is proximate or visually related.
7. The relationship of materials, texture and color of the façade and roof of a building should be visually compatible with the predominant materials used in the buildings and places within the area to which it is visually related, and such materials, texture, and color should act as a backdrop to and should not intrude visually upon the buildings and places to which the building is selected.
8. Appurtenances of a building such as walls, open-type fencing and landscape masses should form cohesive walls of enclosure along a street to the extent necessary to maintain visual compatibility with buildings and places within the area to which it is proximate or visually related.
9. The roof shape of a structure should be visually compatible with buildings within the area to which it is visually related.
10. The size of a building, the mass of a building in relation to open spaces, the windows, door openings, porches and balconies should be visually compatible with the buildings and places within the area to which it is proximate or visually related.
11. A building should be visually compatible to the buildings and places to which it is proximate or visually related and its directional character, whether this be vertical character, horizontal or non directional character.
12. The pattern and variety of plantings should be visually compatible with the historic landscape within the area to which they are visually related.



Mid 19th Century Houses

13. Parking areas should be screened from view from the public right-of-way and from the structures within the area.

14. To the extent possible, views from structures or places within the area should not be blocked or impeded.

I. Local Preservation Efforts

It is not the intention of this plan element to discourage contemporary architectural expression or to encourage new construction which emulates existing buildings of historic or architectural interest or of a certain period of architectural style, but to preserve the integrity and authenticity of the area and to ensure the compatibility of alterations and new construction therein.



Office Conversion of Historic Barn

It should be understood that even though the Township has not adopted a Historic Preservation Overlay Ordinance it values historic sites, landmarks, buildings, and historic settings. The Township actively promotes the reuse of historic buildings for other reasonable and compatible land uses, it preserves open space and agricultural lands that surround historic sites, and it encourages and approves compatible building expansions. In addition, the Township has adopted and implemented zoning that has resulted in the new construction of village homes, retail and mixed use buildings that are compatible with surrounding older and historic buildings and has carefully crafted a village residential zoning code that permits the compatible expansion and construction of new houses in the village area.

J. Action Plan

1. The Township should investigate the appropriateness of preparing, adopting and making available historic preservation guidelines for historic buildings that may in the future experience exterior alterations.
2. As part of the land development review process, the Township should encourage: maintaining historic views, use of traditional paving materials, planting styles that complement architectural styles, using appropriate traditional signage, installing traditional lighting that complements the architectural style of the historic building and utilizing traditional materials and styles for fences, walls, gates, and site furnishings.
3. The Township should work with local and regional interests to promote the ongoing preservation of historic properties and landscapes for future generations to enjoy.

Table 19 List of Historic Resource

1. Van Dyke-Gulick House, c. 1790	28. Robert Stockton House, c. 18th century
2. Mattias Can Dyke House, c. 1756	29. Stockton's Mill, c. late 18th century
3. St. Joseph's College, c. 1914	30. J. Perrine House, c. late 18th century
4. S. Van Dyke cemetery	31. Library, c. 1890-1900
5. Late 18th/early 19th century house	32. Wicoff School, c. 1919
6. Theobold Smith House, c 1920	33. R. Applegate House, c. late 18th century
7. George Perrine House, c. 1850	34. Mrs. Perrine House
8. Rockefeller Institute of Medical Research, est. 1901	35. Hutchinson Hotel
9. Pre-Revolutionary Scudder's Mill site	36. 18th century house
10. Mid-19th century Short & Ford building	37. A.G. Cochs House
11. Mid-19th century house	38. Late 18th century house
12. Mid-19th century house	39. J.G. Hultz House
13. 2nd half 19th century barn	40. Plainsboro Post Office, c. 1860-1870
14. Mature trees between Route 1 & railroad overpass	41. c. 1780 house
15. Walker-Gordon Farms	42. Little House, mid-19th century
16. Cemetery, c. 1812	43. Britton House, mid-19th century
17. Mid-19th century house	44. Wicoff Farm, c. 1790
18. 1st half 19th century house	45. Freedman House, c 1880
19. McNamee House, c. 1860	46. W. Grant Farm, c. 1900-1940
20. R.D. Dye Farm, mid to late 18th century	47. Schalk's Road viaduct, c. 1948
21. Sullivan House, c. 1800	48. White's House, c. 1850
22. 2nd half 19th century house	49. Petty Farm House, c. 1800
23. E. Conover House, c. 1840	50. Simonson House, c. 1850
24. W. Grant House, c. 1800	51. Nostrand House, c. 19th century
25. S. Grover House	52. Barr House, c. 19th century
26. J. Cox House	53. Jones House, c. 1880
27. Robert Stockton House	54. Sohl House, c. 1900

Source: Middlesex County Inventory of Historic, Cultural, & Architectural Resources, 1977-1979
N.J.D.O.T. Route 92 Technical Environmental Study, Volume I, Cultural Resources, Appendix D, Nov. 1984
Local residents knowledgeable of Township history

UTILITY SERVICE PLAN



Contents

- Introduction
- Water Supply
- Stormwater Management
- Sewage and Waste Management
- Individual Subsurface Sewage Disposal Facilities Management Program
- Solid Waster Disposal
- Wireless Telecommunications Facilities
- Electric Power, Gas and Telecommunications
- Action Plan

X. UTILITY SERVICE PLAN ELEMENT

A. Introduction

The Utility Service Plan Element analyzes the need for and shows the future general location of water supply and distribution facilities, drainage and flood control facilities, sewerage and waste treatment, solid waste disposal and provision for other related utilities, wireless telecommunication facilities, and includes a storm water management plan section as required pursuant to the provisions of N.J.A.C. 7: 14A-25 Municipal Stormwater Regulations.

B. Water Supply

Plainsboro Township is located within the New Jersey American Water Company franchise area. The long-term availability of water is not seen as a problem because American Water utilizes surface water for 95% of its supply. In 2006, the available water supply for their entire system was at 145 million gallons per day from the D & R Canal, Spruce Run and the Round Valley reservoirs, in addition to at least 140 existing wells located within the franchise area. Two (2) treatment plants are in use by the Company. The first and largest is a 155 million gallon a day facility and the second is a 60 million gallon a day facility, neither of which are located in the Township. The smaller of the two is currently being considered for expansion to 80 million gallons a day. Over the years the American Water Company has shown an interest in securing well sites within the Township near Merrill Lynch, the Princeton Forrestal Village, and other properties in addition to testing water in the man-made lake within the R-350 zone to supplement anticipated surface water volumes. The Company provides water service to approximately 208,700 customers.

Plainsboro Township is located in the 321' HGL pressure gradient zone of the water company. The area served by this zone includes Montgomery Township, Princeton Township, Princeton Borough, Wets Windsor Township, Plainsboro Township, Franklin Township, South Brunswick Township, Lawrence Township, Cranbury Township and the Village of Cranbury. In addition, this zone has an interconnection with



Standpipe

the Jamesburg water system.

This zone serves the Lawrenceville Water Company and municipal water systems in South Brunswick and Monroe Township through meter connections, and has emergency interconnections to the City of Trenton along the Princeton Pike. South Brunswick Township is served through a meter connection in Route One and through the Scotts Corner Road Booster Station. Monroe Township is served through a meter connection on Prospect Plains Road. The Lawrenceville Water Company is served through a meter connection on Laurel Wood Drive.

Storage is provided by five (5) storage facilities. Two (2) of these tanks are on Route 206 in Princeton Township, each with a capacity of 7,000,000 gallons, two (2) others are also in Princeton Township, the Mount Lucas tank and the Terhune elevated tank with a capacity of 3,000,000 gallons and 500,000 gallons, respectively. The fifth tank is a 1,500,000 gallon hydro pillar in Cranbury.

This zone receives its water supply from zone 273' HGL through the Montgomery Knoll and Montgomery II Booster stations and from a variety of well fields. Zone 321' HGL receives water supply from zone 273' HGL, from the following:

Facility	Capacity	Firm Capacity
Montgomery II Booster Station	20.20 mgd.	15.10 mgd
Montgomery Knoll Booster Station	25.35 mgd	19.60 mgd.
Stony Brook Well Field	1.24 mgd.	1.24 mgd.
Jefferson Park Well Field	1.64 mgd.	1.64 mgd.
TOTAL	48.43 mgd.	37.58 mgd.

The American Water Company service area is shown on **Figure 22: Existing and Future Water Service Areas Map**. The existing service areas includes the Princeton Forrestal Center and other Route 1 corridor developments, major residential and mixed-use projects, the Princeton Forrestal Village, Princeton Collection development, and all existing school sites.

The American Water Company system that serves the PFC is comprised of interconnected looped water mains with sizes ranging from 8" to 24".

PFC plans indicate an existing 16" water main which runs along the east side of Route 1 from Plainsboro Road to College Road through the middle of the PFC. That portion of PFC east of Route 1 is served by two major water main loops. The first loop is comprised of 12" water main which runs along College Road East from Route 1 to the vicinity of 600 College Road East, where it changes to a 16" water main. The 16" water main continues to Scudders Mill Road with two (2) 12" interconnects out to Schalks Crossing Road. From Scudders Mill Road, the 16" line traverses the Merrill Lynch complex with an interconnection to an existing 16" water main within Plainsboro Road. As the Merrill Lynch project develops, a second connection point to Plainsboro Road will be constructed opposite Firmenich. Secondary loops have been created off of the primary College Road East loop system to serve the majority of the 582.6 acres of office research lands.

A second major loop which serves the eastern portion of PFC, originates at Route 1 and traverses through the Forrestal Campus to and through the Bristol-Myers Squibb (BMS) site. The second loop is comprised of 12" and 24" lines which cross Scudders Mill Road at BMS and interconnect with the College Road East/Merrill Lynch major loop system. A separate 12" main connected to the 16" main along Route 1 serves the Princeton Plasma Physics Laboratory. A 12" water main crossing exists on Scudders Mill Road near the Plainsboro Connector Road for future use.

The Princeton Forrestal Village, located west of Route 1, is currently served by a 24" water main which runs along Mapleton Road to Seminary Drive where it turns and interconnects to the 16" line running along Route 1. The Princeton Landing residential site is served by internal water main loops which interconnect to a 12" water line interconnected to both College Road West and Route 1. The Windrows at Princeton Forrestal is served by an internal 12" water main loop connected to the existing water mains in Seminary Drive and College Road West.



Fire Hydrant

PFC plans indicate potential future connection points to the existing American Water system which could be utilized to serve the underdeveloped portions of the PFC. As each parcel is developed, the American Water Company will provide adequate potable water service and fire protection in conformance with applicable regulatory requirements.

The undeveloped parcels remaining along College Road East and Research Way will be serviced by the existing American Water lines which run along these roads.

Forrestal Campus, which comprises the majority of the undeveloped land east of Route 1, will be served by interconnection to the water main stubs provided by American Water along the existing 24" line which runs from Route 1 to BMS. The water system indicates potential connection points to the existing 24" system.

The Princeton Nurseries, located on the western side of Route 1, will receive water service by interconnection to the existing 24" water mains which run along Mapleton Road and Seminary Drive as well as 16" water line running along Route 1.

Village South, located between Princeton Landing and Route 1, is served by the existing 12" water main loop which parallels Route 1 from the Princeton Forrestal Village to Sayre Drive.

The current development of the Hotel Site located at Mapleton Road and Route 1 utilizes the existing 12" waterline that connects to the existing 16" waterline along Route 1.

The water system west of the railroad tracks services all existing development patterns located within the Dey road and Plainsboro Road corridors.

C. Stormwater Management

The Township Stormwater Management Plan documents the strategy for the Township to address stormwater-related impacts. The creation of this plan is required by N.J.A.C. 7:14A-25 Municipal Stormwater Regulations. This plan contains all of the required elements described in N.J.A.C. 7:8 Stormwater Management Rules. The plan addresses groundwater recharge, stormwater quantity, and stormwater quality impacts by incorporating stormwater design and performance standards for new major development, generally defined as projects that disturb one or more acre of land. These standards are intended to minimize the adverse impact of stormwater runoff on water quality, water quantity and the loss of groundwater recharge that provides base-flow in receiving water bodies. This subsection has been amended to indicate that the goals have been met per the Statewide Basic Requirements that have been implemented by the Township via the Tier A Municipal Stormwater Master General Permit (NJDES #NJG0152391, P.I.I.D. #208518)

The plan addresses long-term operation and maintenance measures for existing and future stormwater facilities. The final component of the plan is a mitigation strategy for when a variance or exemption of the design and performance standards is sought. As part of the mitigation section of the stormwater plan, specific stormwater measures are identified to lessen the impact of existing development. Township stormwater management goals are identified on Table 20.



Stormwater Detention Basin

The Stormwater Management Plan was prepared by the Township Engineer and is entitled: "Municipal Stormwater Management Plan for the Township of Plainsboro, Middlesex County, New Jersey" and dated April 2005 and revised January 2007. The Plan was adopted by the Planning Board as an amendment to this Utility Service Plan Element.

In order to implement the Township stormwater management plan the Township is encouraged to adopt a comprehensive list of identified proposed ordinances that implement stormwater management requirements and controls by

way of amending Chapter 85 of the Township Code entitled: "Subdivision and Site Plan Review". Specifically, Section 85-32, Drainage, has already been amended by adding a new Section 85-28.1 entitled: "Stormwater Management".

The purpose of the ordinance which implements the plan is to establish minimum stormwater management requirements and controls for major development and to reduce the amount of non-point source pollution entering surface and ground waters. This ordinance guides new development in a manner that is proactive and minimizes harmful impacts to natural resources. Specifically, the ordinance will:

1. Reduce flood damage to protect public health, life and property.
2. Minimize increased stormwater runoff rates and volumes.
3. Minimize the deterioration of existing structures that would result from increased rates of stormwater runoff.
4. Induce water recharge into the ground whenever suitable infiltration, soil permeability, and favorable geological conditions exist.
5. Prevent an increase in non-point source pollution
6. Maintain the integrity and stability of stream channels and buffers for their ecological functions, as well as for drainage, the conveyance of floodwater, and other purposes.
7. Control and minimize soil erosion and transport of sediment.
8. Minimize public safety hazards at any stormwater detention facility constructed pursuant to subdivision or site plan approval.
9. Maintain adequate base-flow and natural flow regimes in all streams and other surface water bodies to protect the aquatic ecosystem.
10. Protect all surface water resources from degradation.
11. Protect ground water resources from degradation and diminution; and
12. Ensure that any additional $\frac{1}{4}$ acre of impervious surface complies with this ordinance.

The Township plan and implementing ordinances will be coordinated with Freehold Soil Conservation District, Mosquito Control Commission, adjacent municipal plans; D&R Canal Commission, and applicable state and federal rules, regulations and statutes.

This Plan Element has been amended to address the goals per the Statewide Basic Requirements that have been implemented by the Township via Tier A Municipal Stormwater Master General Permit (NJPDES #NJG0152391, P.I.I.D. #208518).

Table 20 Stormwater Management Goals

- Slow rate of runoff/increase time of concentration.

By allowing runoff to slowly move through vegetated swales and landscaped areas rather than traditional pipes.
- Reduce Volume of runoff.

By lowering the post development runoff curve number (CN). The runoff potential for a site is characterized by the runoff curve number (CN). Limiting the percentage of impervious with green roofs and pervious alternatives along with increasing the time of concentration, works together to achieve this.
- Provide recharge throughout development.

By integrating infiltration techniques and opportunities to allow runoff to be captured and recharged to groundwater within the development footprint, minimizing the loss of pre-development recharge capacity.
- Provide stormwater treatment close to source.

By providing small scale treatment opportunities within, i.e. landscaped islands, parking lots, medians, curb lines, parking lanes, right-of-ways, creating a treatment train.
- Integrate stormwater management within open space features.

By utilizing open space features such as parks, right-of-ways, open fields, market places and landscape areas for the dual purpose of stormwater storage, treatment and conveyance.
- Incorporate low impact development techniques for aesthetics as well as function.

By utilizing such options as decorative permeable pavers, stormwater planters, rain gardens and ponds.
- Reduce impervious surfaces.

By utilizing alternative treatments such as porous paving/concrete, permeable pavers, green roofs or reductions, such as islands.
- Integrate natural conveyance with traditional pipe conveyance.

By utilizing techniques such as bioswales, stormwater planters, vegetated swales to convey storm flows with large storm overflow to traditional piped systems.
- Disconnect impervious surface flow.

By redirecting roof runoff to grass swales, infiltration systems, bioretention systems, landscaped areas or rain barrels and directing paved surfaces to these pervious options as well.
- Increase vegetation within dense urban environment.

By providing dual purpose landscaping features within medians, traffic calming bumpouts, pedestrian walkways, parking lots, roof tops and lots.
- Balance design with ecological function.

By managing stormwater runoff as a resource utilizing low impact development techniques within the urban environment that mimic a site's pre-development hydrology and ecology.

D. Sewage and Waste Treatment

Existing development in Plainsboro Township are presently being serviced by either the Stony Brook Regional Sewerage Authority (SBRSA) waste water treatment plant located in Princeton Township or the United Water Princeton Meadows (UWPM) plant located off of Maple Avenue, adjacent to the railroad tracks in Plainsboro Township. The SBRSA provides service to the Township through existing lines in South Brunswick Township.



Pump Station

Currently, unless otherwise designated, Plainsboro Township is within the sewer district of the Middlesex County Utilities Authority (MCUA). The MCUA does not provide sewer service to any lands within Plainsboro Township. However, the MCUA has stated that because portions of Plainsboro Township are included in the Authority's sewer service area, they have considered the potential flows to be generated from these areas in their planning process.

Sanitary sewer service is provided to lands of Plainsboro Township via either the SBRSA, the United Water Princeton Meadows, privately owned wastewater treatment plants, or individual subsurface sewage disposal facilities. In general, the SBRSA's sewer service area is to the west of the Amtrak right-of-way and the UWPM's sewer service area is to the east of the Amtrak right-of-way. The Stony Brook Regional Sewerage Authority (via South Brunswick Township) and the UWPM wastewater sewer service areas have been established and amended from time to time with the approval of the Middlesex County Utilities Authority. The Township is currently involved with the County Utilities Authority and the County Planning Board in the updating of the Lower Raritan-Middlesex County Wastewater Management Plan.

The SBRSA was established in 1971. SBRSA operates three treatment plants and three regional pumping stations. The River Road Treatment plant is currently rated for 13.06 million gallons a day. The Pennington and Hopewell Treatment plants are located in Pennington Borough and Hopewell Borough respectively, are each rated for 0.30 million gallons a day. The three treatment plants, along with 49 employees provide sewage treatment service to six municipalities in Mercer and Middlesex Counties with a combined population totaling 80,000. In addition, SBRSA operates two multi-hearth sludge incinerators and provides sludge disposal services for other municipalities.

Sanitary sewer service is provided through a franchise agreement with the Township of South Brunswick dated December 23, 1974. This agreement was supplemented on December 19, 1975 and amended by two separate agreements dated September 21, 1982 and September 1, 1987. South Brunswick Township is a member municipality of the Stony Brook Regional Sewerage Authority (SBRSA), whose sewer service area within Plainsboro

Township is delineated to include most of the lands in Plainsboro Township situated to the west of the Amtrak right-of-way, including all of the PFC. In accordance with these agreements, South Brunswick is responsible for the conveyance of the wastewater generated from the Princeton Forrestal Center to the Authority's River Road Wastewater Treatment Plant for final treatment and disposal. Wastewater within the PFC area is presently collected in gravity, sewer pipes and is conveyed either to the north to the abandoned South Brunswick Township Pumping Station No. 6 or to the south to a metering chamber located northeast of the intersection of the Millstone River and U.S. Route 1.

The wastewater generated from the Robert Wood Johnson Foundation to the 300 series of buildings on College Road East, along with the wastewater flows from the Princeton Plasma Physics Laboratory (PPPL) and Princeton Forrestal Village, is conveyed to the abandoned South Brunswick Pumping Station No. 6. The 1996 construction of the Harry's Brook Trunk Sewer eliminated the then existing South Brunswick Pumping Station No. 6. The Harry's Brook Trunk, a 24" and 30" gravity sewer line, traverses the Princeton Nursery property and discharges into existing South Brunswick Township sanitary sewer facilities along Ridge Road. This trunk line was sized to handle the wastewater flows from Pumping Station No. 6 as well as from the undeveloped northern portion of the Forrestal Campus. In addition, the US Homes Residential development is serviced by the Harry's Brook Trunk with flows conveyed to the trunk line via gravity sewer lines would serve the buildings on College Road East, after initially flowing through the residential area's pumping station.

Southerly wastewater flows are conveyed via two major systems. The first system comprises the remainder of College Road East, Research Way, the Bristol-Myers Squibb (BMS) site, and Merrill Lynch. These areas are serviced via an 18" gravity line which runs through the Merrill Lunch site to Plainsboro Road and into a 24" gravity sewer line which runs along Plainsboro Road and then through the FMC property along the Millstone River. There is also a gravity sewer line which runs from BMS down to the 24" gravity sewer along Plainsboro Road. This sewer was constructed in order to accommodate the anticipated wastewater flows of the three remaining buildings to be built on that site. The second subsystem of the southern sewer system serves most of the lands to the west of Route 1 and the Forrestal Campus. St. Joseph's College and Princeton Landing are serviced via gravity lines which run to the Mapleton Road Pumping Station. In addition, a pump station serves the Millstone Apartments which discharges that wastewater to the Mapleton Road Pumping Station. Wastewater is then pumped from the Mapleton Road Pumping Station, via force main, under U.S. Route 1 to a 15" gravity sewer which provides service to the Forrestal Campus and then runs in a southerly direction down the Connector Road to Plainsboro Road and discharges into the previously mentioned 24" gravity sewer line. The remaining buildings on the Forrestal Campus, excluding PPPL, are serviced via an 8" gravity line which discharges into the previously referenced 15" gravity sewer.

A portion of the Plainsboro flow is metered through the Princeton Forrestal Meter Chamber, however there is also a portion of Plainsboro that flows directly to the South Brunswick Pumping Station which is not metered separately by SBRSA.

The facilities owned and operated by SBRSA within Middlesex County includes the South Brunswick Pumping Station, South Brunswick Force main, a portion of the Millstone Force main and Princeton Forrestal Meter Chamber.

Currently there is a total of 476,359 gallons per day (gpd) of approved (committed but not connected) flow from South Brunswick and Plainsboro. The commitment of flow allocation is on a first come first serve basis. All projects that are greater than 2,000 gpd are submitted to SBRSA for review. Projects greater than 8,000 gpd also go through the NJDEP TWA process. These projects are then included on SBRSA's list of committed/approved projects and flow is allocated to that project/municipality. The "projected" flows are removed from the list and allocated flow totals as the projects are connected to the system.

Each of SBRSA's participant flows are metered and each participant is charged for operation, maintenance and all debt service costs based on their percent of the total actual flow. There is no charge for an allocation of remaining capacity.

With respect to future development, the Princeton Nurseries will be serviced through the Harry's Brook Trunk, which is shown on the plan as a 24" and 30" gravity sewer line traversing the Princeton Nurseries, and was designed to accommodate the development of the Princeton Nurseries site as well as eliminate the South Brunswick Pumping Station No. 6. With respect to western portion of Princeton Nurseries, there is also shown a proposed gravity sewer line which will carry wastewater flow from this area in a northerly direction into the existing South Brunswick gravity sewer facilities.

With respect to the southern portions of PFC, the existing sanitary sewer lines along College Road East and along Plainsboro Road and through the FMC property have sufficient capacity to accommodate the expected future development on College Road East and Research Way. With respect to the Forrestal Campus, the 15" gravity sewer line will provide service to the southern portion of the Forrestal Campus. With respect to the northern portion of the Forrestal Campus, a line would have to be extended in order to serve these lands. With respect to the lands to the west of U.S. Route 1, sewer lines were extended in 1988 to the West and South Campuses of Princeton Forrestal Village. The Windrows at Princeton Forrestal is now connected to these lines and Village South will be in the future. These lines would then convey the wastewater flow from these sites through the existing facilities within Princeton Landing to the Mapleton Road Pumping Station. As previously discussed under the existing facilities, the pumping station which conveys the wastewater from the Millstone Apartments to the Mapleton Road pumping station was previously used to service the Holiday Inn-Princeton site until 1990 when the hotel closed. The same pumping station and associated facilities is providing service for wastewater flows generated from the Hotel Site.

The existing UWPM plant, which is a public utility regulated by the State Public Utilities Commission, was constructed primarily to service the PCD zone which was ultimately to accommodate nearly 1.0 million square feet of commercial, office and light manufacturing space; and 6,500 dwelling units. The UWPM has a rated capacity of 1.64 million gallons per day. In 2002 the Planning Board approved a site plan application for the plant which resulted in the construction of

a 377,000 gallon concrete flow equalization basin that increased rated capacity from 1.5 million gallons per day to the present level. The expanded wastewater treatment capacity was needed for adequate treatment of remaining Village area homes that were served by septic systems and for new development purposes.

Future sewer service areas reflect the Township's desire to promote an infill development pattern rather than encouraging undesirable suburban sprawl which would introduce sewer services to large lot residential, agricultural, and open space areas.

Table 21: Sewer Flow Allocation Summary provides information relative to UWPM services area as of 2007.

With respect to future planning, construction and/or operation of wastewater treatment and conveyance facilities (pump stations, trunk lines and collector lines, and/or other facilities requiring Treatment Works Approval or co-permittees):

1. The Township of South Brunswick is responsible for the facilities within that portion of the Township which is within the sewer service area of the Stony Brook Regional Sewerage Authority.
2. The UWPM is responsible for the facilities within that portion of the Township which is within the sewer service area of the UWPM
3. The Township of Plainsboro is responsible for the facilities within that portion of the Township which is within the sewer service area of the Middlesex County Utilities Authority.

At such time as the Middlesex County Utilities Authority has extended sewer service into this portion of the Township, the MCUA will be responsible for their facilities.

Other treatment plants within Plainsboro Township, as identified by the NJ DEP, are indicated on **Figure 23: Existing and Future Sewer Service Areas Map**. The Firmenich Sewage Treatment Plant is located just off of Plainsboro Road on the 37.564 acre Firmenich site. With respect to this plant, it is currently envisioned that this facility will continue to operate and discharge via spray irrigation and surface water discharge to the Millstone River in accordance with state regulations. Firmenich is in the process of planning for the expansion of its existing office, laboratory and manufacturing operations.

The Firmenich plant includes sludge drying beds, contact stabilization unit, mix activated sludge tanks, an equalization basin, sludge holding tank and a maintenance building. Current flows to the plant total 18,100 gallons per day. Future flows from Building "N" and from manufacturing buildings are anticipated to be 10,225 gallons per day. Total permitted flow to the plant is 36,000 gallons per day.

Table 21 Sewer Flow Allocation Summary
Provides information relative to the UWPM Service Area 2007

Site	Block	Lot	Existing Committed Flow (GDP) As Per UWPM 10/27/06	Anticipated Future Needed Flow (Priority Projects) (GPD)	Anticipated Future Need Flow (Long Range Projects) (GDP)
Princeton Meadows Office Park (Office Center 4) *	3301	19,20	2,200		
Villa's & Highlands at Cranbury Brook (TWA 02-0039)*			26500		
Township Dey Road Parcel (30.7 ac @ 11un/ac=337 units)***	1304	1			81,500
Princeton Alliance Church (1200 seats + day care)*	1401	3	5,000		
Plainsboro Library (3 floors with partial basement)**	1404	440	4,300		
Village Center (TWA 04-0163)*	1404	4.01	14,700		
Village Center Amended – new bldg 10(comm./office), amended bldg 11 (comm./office), amended bldg 12 (comm./apts), future corner bldg (comm./off)***	1404	4.01		5,100	
VR-1 (TWA 03-0441)*			4,700		
Queenship of Mary Mission (600 seats + day care) ***	1404	17			2,500
PNC Bank (proposed 4400 sq ft)(allowable 26,570sqft)***	1508	7			2657
Habibian (R-85 exist office 4800sqft)(future VC 4000 sqft)	1404	2			1200
Constantini (T-85 exist office)(future VC 4000 sqft)	1404	2			480
SU (3236sf)(Commercial)	1404	26			324
Plainsboro Hardware (7193sf)(Commercial)	2002	3			720
Palumbo (R-300 residential) 5.375 ac (4 Homes)	1205	14			1200
Schalk's Crossing Road (R-300 residential) 0.87 ac (1 home)	1401	4			300
Dey Road (12 homes)	1301	38, 39			3600
	1303	38, 40			
	1205	17-19, 23			
	1304	2-5			
Petty Homes (3 Homes)	2804	10,34, 56			900
Brentwood Lane (14 Homes)	1101	40-43,45-54			4200
Brookside Court (26 Homes)	1101	56-69			7,800
	1101	71-75			
	1101	77-82			
Scotts Corner Road	1101	2-8			2,700
	1102	3			
	1201	12			
Luther (1 Home)***	1503	7			300
Lickteig (1Home)	1901	8			300
Rauh (1 Home)	1902	11			300
Schaefer (1 Home)	2002	14			300
Walker Gordon Lab (1 Home)	2001	31			300
TOTALS			57,400	5,100	111,231
					173,731
					26,961

* Highlighted Areas are Properties shown on UWP Franchise Map as currently not in Franchise Area

** Figures furnished by UWPM through 10/27/06

*** Represents Estimated Flows Based upon Current Development Proposals

Needed flows may be higher subject to further review of proposed development

E. Individual Subsurface Sewage Disposal Facilities Management Program

The siting, design, construction, operation and maintenance of individual subsurface sewage disposal facilities, such as septic systems, are currently under the jurisdiction of the Middlesex County Board of Health. Currently, enforcement is shared by the Board of Health and the Township Engineer pursuant to Plainsboro Township Ordinance and NJ DEP pursuant to Chapter 199 of NJ State Sewage Disposal Code.

Current data indicates that there are no existing individual subsurface sewage disposal facilities which are outside of the proposed sewer service areas that are experiencing significant individual subsurface sewage disposal facilities operational problems.

F. Solid Waste Disposal

The Township addresses solid waste management issues through the Middlesex County Division of Solid Waste Management and the County Utilities Authority. The updated Middlesex County Solid Waste Management Plan dated May 16, 2006 addresses current data on waste quantities and projections, includes the revised county recycling plan, and adopts a recycling goal of at least 50% of the current year's municipal waste stream and at least 60% of the total waste stream as approved by NJDEP. The Division of Solid Waste is responsible for preparing the County Solid Waste Management Plan which addresses facilities, recycling, transportation routes, costs, etc., while the Utilities Authority is responsible for the Middlesex County Landfill.

The Middlesex County Landfill opened on February 5, 1992 after six-months of intensive construction preparing the initial cells for solid waste. The Landfill initially had three cells, each with its own double-liner system, leachate collection and secondary detection system. The Landfill features a state-of-the-art double liner system, which has a maximum permeability of 1.0×10^{-7} cm/sec (meaning 1 inch of water may seep through every 30 years). It also consists of 60 ml high-density polyethylene liner, 18 inches of filter sand, and 80 ml high-density polyethylene liner, drainage net, a filter fabric and 18 more inches of filter sand. Additional cells were constructed bringing the total number to six cells.

The Landfill also has a leak detection system between the liners and leachate collection system on top of the 80 ml liner that collects rainwater permeating the landfill or liquid from any biodegradation taking place in the Landfill. This leachate is pumped into the MCUA trunk line and transported to the Wastewater Treatment Plant in Sayreville.

In addition, systems are in place to collect methane gas formed by biodegradation in the Landfill, so this greenhouse gas can be collected before re-entering the atmosphere and put to beneficial use. This gas is collected using a combination of vertical and horizontal gas wells spaced approximately every 200 feet across the surface of the Landfill. The gas is then transmitted through a

processing skid where it is recycled as fuel for the electrical power generation facility.

The area where waste is placed is called “workface”. As the solid waste is tipped it is compacted to conserve space. At the end of each day, approximately six inches of cover material is placed and compacted on top of nine-inches on side slopes of the solid waste. If the area is not used again for 24 hours, a twelve-inch additional layer of cover material is added. In addition to soil, recycled products are used for daily intermediate cover.



Conservation Center

Each person in Middlesex County generates approximately 11 lbs. of waste each day, which amounts to 4000 lbs. per person, per year. Based on averages during calendar year 2005, every day approximately 335 trucks transport approximately 2,350 tons of garbage into the Landfill. This equates to over 720,000 tons of solid waste every year. The trucks are weighed at the scale facility as they enter the Landfill for revenue and waste tracking purposes. Only trucks registered with the NJDEP and carrying solid waste collected in Middlesex County's 25 towns are permitted to dispose solid waste at Middlesex County Landfill.

Based on Middlesex County's population, recycling efforts, and market trends, it is anticipated that the Middlesex County Landfill will be able to accept 20 million cubic yards of solid waste for disposal, operating beyond 2015. The Middlesex County Landfill will cover over 300 acres of land and reach its permitted maximum height of 165 feet above sea level. To prevent degradation of the surrounding environment, protective barriers such as landfill liners, layers of cover material, and a protective cap are implemented to seal-off the inactive cells. These barriers naturally control potential releases from the landfill. Once the Landfill is capped the MCUA will continue monitoring the site for 30 years.

The following are the important elements of the County Solid Waste Management Plan:

1. Waste reduction, i.e. changes in manufacturing and packaging, expanded use of recycled newsprint.
2. Recycling.
3. Waste diversion, i.e. re-processing of waste wood, concrete and large tree parts; tree and brush trimmings, leaf and grass composting.
4. Landfill.
5. Diversion of materials, i.e. collecting household hazardous waste, recover old car tires, etc.

6. "Selective" incineration.
7. Long-haul transportation to out-of-state facilities in the event landfill capacity is lost.

This Master Plan supports the county solid waste management plan except for any proposal to locate and develop a landfill or incinerator within the Township or neighboring municipalities which would compromise the integrity of agricultural activities, threaten environmentally sensitive features, or negatively impact the local roadway network.

G. Wireless Telecommunications Facilities

In order to promote competition in the wireless telecommunications industry, Congress enacted the Telecommunications Act of 1996. The Telecommunications Act of 1996 ("TCA") is the federal law which governs the regulation of the placement, construction, and modification of personal wireless service facilities by any State or local government. Specifically, the TCA, 47 U.S.C. § 332©(7)(B) provides in part:

1. The regulation of the placement, construction, and modification of personal wireless service facilities by any State or local government or instrumentality thereof; shall not unreasonably discriminate among providers of functionally equivalent services;



Wireless Co-location

- and shall not prohibit or have the effect of prohibiting the provision of personal wireless services.
2. Any State or local government or instrumentality thereof shall act on any request for authorization to place, construct or modify personal wireless service facilities within a reasonable period of time after the request is duly filed with such government or instrumentality, taking into account the nature and scope of such request.
3. Any decision by a State or local government or instrumentality thereof to deny a request to place, construct, or modify personal wireless service facilities shall be in writing and supported by substantial evidence contained in a written record.

4. No State or local government or instrumentality thereof may regulate the placement, construction, and modification of personal wireless service facilities on the basis of the environmental effects of radio frequency emissions to the extent that such facilities comply with the Commission's regulations concerning such emissions.
5. Any person adversely affected by any final action or failure to act by a State or local government or any instrumentality thereof that is inconsistent with this subparagraph may, within 30 days after such action or failure to act, commence an action in any court of competent jurisdiction. The court shall hear and decide such action on an expedited basis. Any person adversely affected by an act or failure to act by a State or local government or any instrumentality thereof that is inconsistent with clause 4, may petition the Commission for relief.

The TCA further provides at § 253(a):

"No State or local statute or regulation, or other State or local legal requirement, may prohibit or have the effect of prohibiting the ability of any entity to provide any interstate or intrastate telecommunications service."

As relates to the TCA, first and foremost, the Master Plan seeks to encourage wherever possible the continued co-location of telecommunication antennas on existing nonresidential buildings and structures in the Township, including existing telecommunications tower structures. Secondly, the Plan attempts to limit the number of new telecommunications facilities in the Township by requiring a comprehensive approach to the siting of all new facilities by the telecommunications carriers (i.e., AT&T, Cingular, Nextel, Verizon). Thirdly, the Plan tries to keep applications for such facilities before the Planning Board (i.e., site plan applications), as opposed to their being relegated to the Zoning Board because of the need for a Use Variance. In an effort to do this, however, some decisions needed to be made regarding where in the Township such facilities should be permitted subject to meeting certain standards, versus where they should be expressly prohibited.

Specifically, the Township's new telecommunications ordinance will permit such facilities in the R-95, R-100, R-150, I-100 and GB Zones, as well as the nonresidential portions of lands zoned PCD and PMUD. On the other hand, the ordinance prohibits them in the R-85, R-90, R-200, R-300, R-350, VR-1, VR-2, VC, SR, NB and OB-1 Zones. Realize that wherever such facilities are not permitted, a Use Variance to the Zoning Board would be required and could be sought by a telecommunications carrier. In a situation before the Zoning Board, the following legal balancing test would be followed:

To minimize applications before the Zoning Board, a special effort was made to identify the areas of zoning districts where such facilities should be prohibited because of the character of the area involved and lack of opportunities in such

areas, thereby making it unlikely that a Use Variance would be sought. See the attached: **Figure 24: Telecommunications Facilities Map** showing the location of existing facilities in the Township.

H. Electric Power, Gas and Telecommunications

Public Service Electric and Gas Company (PSE&G) currently provides electrical power and gas services to the Township. As individual sites develop, PSE&G will extend their facilities to provide the required service to each site.

Verizon currently provides telephone service to the Township. In addition, other telecommunication providers, such as AT&T, and Teleport Communications Group, provide fiber optic services to various buildings throughout the Township and surrounding areas.

As the Township develops, the appropriate utility company will provide electric power, gas, and telecommunication services. The utility company or the individual site developers, will fund the cost of new facilities, and will be determined by the utility company's policy in place at the time of construction. Consistent with current practices, the Township is responsible for electrical usage charges for streetlights that may be installed to serve public roadways dedicated to the Township.



Power Line

I. Action Plan

1. The Township should utilize the most recent update of the Residential Site Improvement Standards (RSIS) in the stormwater management review of residential areas.
2. The Township's Stormwater Control Ordinance should require all new development and redevelopment plans to comply with New Jersey's Soil Erosion and sediment Control Standards.
3. The Township should amend Chapter 85, Subdivision and Site Plan Review Ordinance standards to incorporate the recommendations contained in the Municipal Stormwater Management Plan (pages 17 and 18) to amend Section 85-13. Preliminary Plat Details, Section 85-20. Streets, Section 85-22. Sidewalks, Section 85-23. Curbing, Section 85-28. Drainage, Section 85-36. Details Required for Preliminary (Site Plan) Approval, Section 85-43.1. Criteria to be Considered, and additional

design criteria associated with the use of native plant materials for landscaping buffers and to permit the incorporation of nonstructural stormwater management techniques into landscape buffers, where they would not detract from their purpose.

4. The Township should continue to be involved with the updating of the County Wastewater Management Plan and monitoring the sewer flow at the UWPM. The NJDEP is requiring the County to prepare a plan that evaluates local sewer service areas for consistency with the County plan.

5. The Township should keep informed of any failing subsurface sewerage disposal systems and facilitate the appropriate remedial action(s).



Power Box

6. The Township should continue to promote the timely and efficient collection and disposal of solid waste and to promote recycling.
7. The Township should continue to promote the sharing of facilities for wireless telecommunication systems and to make sure that installations are appropriately screened from nearby neighbors and other incompatible land uses and to promote the coordination of ground mounted support facilities among different companies in association with antenna installations.
8. Monitor water and wastewater capacity needs of the Township that are required to support new growth and development within Planning Area 2 of the Township, and support limiting the extension of related infrastructure to other areas except where necessary to protect public health and safety.

RECYCLING PLAN



Contents

- Introduction
- State and County Recycling
- Township Recycling
- Action Plan

XI. RECYCLING PLAN ELEMENT

A. Introduction

The recycling plan element incorporates the goals and objectives of both the State Recycling Plan and the Middlesex County Solid Waste Management Plan (MCSWM), including provisions for the collection, disposition and recycling of recyclable materials designated in the Township recycling ordinance, and for the collection, disposition and recycling of recyclable materials within any development proposal for the construction of 50 or more units of single-family residential housing or 25 or more units of multi-family housing and any commercial or industrial development proposal for the utilization of 1,00 square feet or more of land. These are the components of a municipal Master Plan as set forth in the M.L.U.L. 40:55D-28(12).

In 1999, the Township sent 10,971.89 tons of Type 10 (municipal waste collected from residents, businesses and institutions) material, 9,041.40 tons of Type 13 (bulky waste such as construction and demolition debris, tires, furniture, appliances, and logs) material, 1 ton of Type 23 (vegetative waste such as grass and branches) material, and 163.89 tons of Type 27 (dry non-hazardous industrial waste which must be pre-approved by the MCUA; no hazardous waste or asbestos is permitted in a landfill) material for a total of 20,178.18 tons to County landfills.

In 2006, the Township sent 13,027.25 tons of Type 10 material (municipal waste collected from residents, businesses and institutions); 8080.15 tons of Type 13 material (bulky waste such as construction and demolition debris, tires, furniture, appliances); and 135.06 tons of Type 27 material (dry non-hazardous industrial waste, which must be pre-approved by the MCUA) for a total of 21,242.46 tons to County landfills.

B. State and County Recycling

In 1987 the State and County goal was to recycle 25% of municipal waste. This goal was established through the 1987 legislation, The New Jersey Statewide Source Separation and Recycling Act (P.L. 1987, c.102, hereafter "Recycling Act"). Today, the goal is to recycle 60% of total solid waste. Strategies for meeting this new goal are contained in the MCSWM Plan as prepared by the Middlesex County Department of Planning, Division of Solid Waste Management, dated November 2006.

The county recycled an average of 30% of municipal waste in 1989. The county also diverted or recycled leaves, yard waste, wood waste, concrete, and asphalt. In relation to total waste, overall recycling was 25%, or 318,000 tons. The 1989 per capita waste generation rate was 7.8 pounds per person per day. With recycled materials added, waste generation was 10.5 pounds per person per day.

In 1998, the total amount recycled in the County had increased to 1,133,615 tons or 60.46% of total waste generated. In 1999, Plainsboro Township successfully recycled 41.76% of total waste generated and that number continues to increase.

In 2006, the total amount recycled in the County increased to 1,715,885 tons or 64.46% total waste generated. The per capita waste generation rate was 6.62 pounds per person per day, and with recyclable materials added, waste generation was 18.62 pounds per day. The Township successfully recycled 43.89% of total waste generated, and increase of 2.13% from 1998

C. Township Recycling

The Township has adopted a recycling ordinance which makes it mandatory for all residents and non-residents who are owners, lessees or occupants of residential structures, businesses, offices and institutional uses located within the Township to separate used newspaper, used paper, clean corrugated cardboard, glass and aluminum cans from all other solid waste, and deliver such items to the designated drop-off point within Plainsboro or comply with whatever other regulations for such recycling by the Municipal Recycling Coordinator. The goal of the ordinance is to promote recycling in a way that is compatible with the state recycling plan and the county recycling plan, the goals of which are included in this Master Plan Element by reference.

The Township requires the following:

1. The owner, lessee and occupant of any residential, office or institutional use must place for disposal, removal or collection the following items, conforming to the following regulations:
 - a. Used newspaper, used paper and clean corrugated cardboard must be bundled separately and secured in bundles not exceeding fifty (50) pounds and shall not be contained in plastic bags.
 - b. Glass and aluminum cans must be contained in suitable containers supplied by owners, lessees or occupants.
 - c. Before glass and aluminum containers are delivered to the designated drop-off points, they must be thoroughly rinsed.
 - d. Leaves must be separated and recycled.
 - e. An explanation of the method used to determine the size of the storage area is required.



Trash Can and Bench

- f. The outdoor storage area shall be conveniently located for disposition of recyclables, preferably near, but clearly separated from a refuse dumpster. The outdoor area must be enclosed on three (3) sides by a six (6) foot tall solid wall or fence, and landscaping must be provided around the fence.
- 2. The owners or managers of all businesses, offices and institutional uses located within the Township must meet the following additional recycling requirements:
 - a. A recycling system must be established for all mandated materials.
 - b. Recycling containers must be clearly marked and adequate to hold materials between collections.
 - c. The owner/manager is responsible for arranging for recyclables to be removed from the premises and assuring that they are marketed.
 - d. The owner/manager must provide notice to employees and customers if they are impacted by the recycling system.
 - e. The owner/manager must arrange for reports of recycling materials and tonnage information to be submitted to Plainsboro Township on a quarterly basis.
- 3. The owners or managers of all multi-family uses within the Township must meet the following additional recycling requirements:
 - a. Drop-off or curbside collection must be provided for all mandated materials.
 - b. Drop-off containers must be clearly marked and adequate to hold materials between collections.
 - c. The management is responsible for arranging for recyclables to be removed from the premises and assuring that they are marketed.
 - d. Management must issue notifications to tenants every three (3) months.
 - e. Management must arrange for reports of recycling tonnage information to be submitted to Plainsboro Township on a quarterly basis.

In addition to implementing these ordinance provisions, the Township provides for the collection and disposition of recycling materials by operating a drop-off facility at the Township's Environmental Center (Block 11, Lot 27.01), located off Grovers Mill Road. The drop-off facility accepts all recyclables as required by the Township. The facility is open Monday and Thursday, 5:30 p.m. to 7:30 p.m.; and Saturday, 8:00 a.m. to 12 noon and 1:00 p.m. to 5:00 p.m. Winter hours are

Saturday, 10:00 a.m. to 3 p.m. Materials are collected by the MCIA every 2 months.

The Township has also included requirements in its Subdivision and Site Plan Review Ordinance to address the adequate provision for the collection and disposal and, where possible, the recycling of garbage, trash and solid waste as generated in the PMUD and PCD zones. It is recommended that the Township Code be amended to require the submission of recycling plans for all applications for single family developments in excess of 50 dwelling units and multi-family developments in excess of 25 dwelling units. Furthermore, any commercial development in excess of 1,000 sq. ft. should also include provisions for recycling.



Trash Can

The Township will investigate other ways in which to increase recycling by placing recycling containers at public facilities and parks, requiring that those seeking construction and building permits provide information about how materials will be properly recycled, and work with Middlesex County to continue to meet recycling tonnage targets.

The following recycling procedures and standards are required in the Township as described in detail on Table 22.

D. Action Plan

1. The Township should examine its current ordinances that deal with recycling to ensure that they are up to date.
2. The Township should continue to promote recycling through educational methods and through the development approval process.

Table 22 Recycling Procedures

Definitions:

Aluminum – Includes all recyclable aluminum cans.

Brush – Branches, woody plants, and other like vegetative material not exceeding five inches in diameter, and Christmas trees. Brush does not include leaves and grass clippings.

Clean Corrugated Cardboard – Nonfood containers constructed of layered cardboard with a center that is shaped into ridges, folds or grooves (such as shipping boxes and the packaging for most appliances or larger household items.)

Electronics – Televisions, CPUs, monitors, laptops and mercury-containing devices.

Fluorescent Bulbs – Lamps that contain mercury.

Glass – Includes all products made from silica or sand, soda ash and limestone; the product being transparent or translucent and being used for packaging or bottling various matter and all other materials commonly known as “glass,” excluding, blue and flat glass commonly known as “window glass.”

Masonry/Paving Materials – Asphalt, block, brick, cinder and concrete.

Mixed Paper – Glossy inserts, magazines, telephone books, junk mail, colored paper, computer paper, office paper, paperboard (chipboard and pressboard), non-metallic wrapping paper, soft cover books, hard cover books with covers removed and fine paper.

Plastic Containers – Soda bottles made of PETE (SPI code #1) and milk, water and laundry product bottles made of HDPE (SPI code #2). Excluding products containing or that contained household hazardous waste.

Plastic Film – Stretch/shrink wrap, plastic shopping bags for warehouses, retail establishments and supermarkets with 25 or more employees.

Rechargeable Batteries – Nickel Cadmium (Ni-Cd), Nickel Metal Hydride (Ni-MH), Lithium Ion (Li-ion) and Small Sealed Lead (Pb).

Solid Waste – Includes all garbage and rubbish normally collected for the residents, institutional and commercial occupants of Plainsboro Township.

Steel Cans – Tin plated, bi-metal, and other ferrous food and beverage containers.

Textiles – Clean, dry clothing or other fabric measuring at least one foot by one foot in size.

Tires – Rubber-based scrap automotive, truck and equipment tires.

Used Newspaper – Includes paper of the type commonly referred to as “newsprint” and distributed at stated intervals, usually daily or weekly, having printed thereon news and opinions and containing advertisements and other matters of public interest.

White Goods – Washers, dryers, ranges, refrigerators, dehumidifiers and air conditioners. Note: all devices that contain CFC’s must be properly evacuated by licensed individuals and all CFC’s recovered must be sent to an EPA approved reclaimer.

Wood Scrap – Unfinished lumber from new construction projects, including pallets. Unfinished shall mean non-chemically treated (not pressure treated, impregnated with preservatives, insecticides, fungicides, creosote, or other chemicals, and not painted, resin-coated or otherwise surface treated, and not laminated or bonded; and not similarly altered from its natural condition).

Recycling Procedures:

In an effort to promote savings and subsidies the Middlesex County Improvement Authority (MCIA) created a shared-services partnership in 1995, for the curbside collection of recyclables. As of 2008, Plainsboro Township was one of the 16 participating municipalities within the county. The MCIA provides a comprehensive website (www.mciauth.com) listing recyclable materials and the proper way to recycle them. An individual can contact the MCIA directly at 101 Interchange Plaza, Cranbury, 08512, or by calling (609) 655-5141.

HOUSING AND FAIR SHARE PLAN



Contents

- Housing Plan
- Fair Share Plan
- Action Plan

XII. HOUSING AND FAIR SHARE PLAN ELEMENT

A. Housing Plan

1. Preface

Plainsboro Township lies in the southwest corner of Middlesex County. Its westerly boundary with Princeton Township and its southerly boundary with West Windsor and East Windsor Townships are formed by the Millstone River. The northerly boundary with South Brunswick Township from Carnegie Lake easterly to Schalks Crossing Road does not follow a natural or man-made feature, but runs through farmland, open space and developing properties. The balance of the northerly boundary follows local roads and the easterly boundary with South Brunswick and Cranbury Township follows roads and brooks.

The township was incorporated in 1919 and has a land area of 11.8 square miles. Approximately 40 percent of Plainsboro Township is developed with the remaining areas consisting of vacant land, wooded acreage, environmentally sensitive lands, open space, and agricultural land. Physically, Plainsboro Township is divided by Route 1 and the Amtrak railroad right-of-way which generally run north-south through the township.

The township has historically been an agricultural community, even before its incorporation. The community's economic and cultural roots were established by agricultural activity which, to a large measure, remains important today. However, the character of Plainsboro has changed with suburbanization and growth pressures. Since the 1970's major development interests, including Princeton University, Lincoln Property, U.S. Homes, Merrill Lynch and Bristol Myers Squibb and others, acquired significant land holdings and contributed to the completion of extensive projects which have significantly contributed to development market forces within Plainsboro.

While dramatic land use changes have occurred in recent years and continue to impact the community, Plainsboro recognizes both the inevitability of accommodating new suburban growth and its responsibility to encourage conservation and protection of its agricultural and open space heritage.

A municipality's Housing Element must be designed to achieve the goal of providing affordable housing to meet the total 1987-2018 affordable housing need comprised of the Rehabilitation Share, Prior Round obligation and the targeted Growth Share number. The regulations of the Council on Affordable Housing (COAH), N.J.A.C. 5:97 et seq., delineate a municipality's strategy for addressing its present and prospective housing

needs, and, as such, each municipality's Housing Element must contain the following:

- a. An inventory of the municipality's housing stock by age, condition, purchase or rental value, occupancy characteristics and type, including the number of units affordable to low and moderate income households and substandard housing capable of being rehabilitated;
- b. A projection of the municipality's housing stock, including the probable future construction of low and moderate income housing, for the 10 years subsequent to the adoption of the housing element, taking into account, but not necessarily limited to, construction permits issued, approvals for development and probable residential development of lands;
- c. An analysis of the municipality's demographic characteristics, including, but not limited to, household size, income level and age;
- d. An analysis of the existing and probable future employment characteristics of the municipality;
- e. A determination of the municipality's present and prospective fair share for low and moderate income housing and its capacity to accommodate its present and prospective housing needs, including its fair share for low and moderate income housing;
- f. A consideration of the lands that are most appropriate for construction of low and moderate income housing and of the existing structures most appropriate for conversion to, or rehabilitation for, low and moderate income housing, including a consideration of lands of developers who have expressed a commitment to provide low and moderate income housing;
- g. A map of all sites designated by the municipality for the production of low and moderate income housing and a listing of each site that includes its owner, acreage, lot and block;
- h. The location and capacities of existing and proposed water and sewer lines and facilities relevant to the designated sites;
- i. Copies of necessary applications for sewer service and water quality management plans submitted pursuant to Sections 201 and 208 of the Federal Clean Water Act, 33 U.S.C. §1251, et seq.;
- j. A copy of the most recently adopted municipal master plan, and where required, the immediately preceding, adopted master plan;
- k. For each designated site, a copy of the New Jersey Freshwater Wetlands map where available. When such maps are not

available, municipalities shall provide appropriate copies of the National Wetlands Inventory maps provided by the U.S. Fish and Wildlife Service;

- l. A copy of appropriate United States Geological Survey Topographic Quadrangles for designated sites; and
- m. Any other documentation pertaining to the review of the municipal housing element as may be required by the Council.

2. Inventory of Housing Stock

a. Age

More than 94 percent of the township's housing stock was built between 1970 and 2000. Significant residential construction occurred between 1980 and 1989 when 46 percent of the housing stock was constructed. Plainsboro has a total housing stock of 9,133 units. The median year that a structure was built in Plainsboro was 1984.

Table 23 Age of Housing Units

Date of Construction	Total	Percent
1939 or earlier	127	1
1940 - 1949	46	1
1950 - 1959	173	2
1960 - 1969	223	2
1970 - 1979	2,167	24
1980 - 1989	4,241	46
1990 - March 2000	2,156	24
Total Units	9,133	100

Source: 2000 Census of Population and Housing

Units built before 1949 and contain 1.01 or more persons per room are highly correlated with substandard housing indicators. This is an index utilized by COAH in determining the Rehabilitation Share. In Plainsboro, 173 units or 0.01 percent of the housing stock was built before 1949. This is generally an important indicator in calculating Plainsboro's rehabilitation share and explains why Plainsboro's rehabilitation share is 44 units.

b. Condition

Rehabilitation Share is the total deficient housing signaled by selected housing unit characteristics unique to each community. It is assumed that units so indicated will be prime candidates for

rehabilitation. Characteristics indicating a need for rehabilitation are:

- 1) *Persons per Room.* 1.01 or more persons per room in housing units built 1939 or before. These are old units that are overcrowded.
- 2) *Plumbing Facilities.* Inadequate plumbing sufficient for rehabilitation is indicated by incomplete plumbing facilities, i.e., lack of hot and cold piped water, flush toilet or bathtub/shower.
- 3) *Kitchen Facilities.* Inadequate kitchen facilities signaling rehabilitation are indicated by the non –presence of kitchen facilities within the unit, or the non–presence of one of three components: a sink with piped water, a stove or a refrigerator.

These characteristics of deficient housing are nationally recognized indicators of housing inadequacy. Each one, properly identified and not double-counted or multiplied is enough to signal the call for unit rehabilitation. This is true not solely because the characteristic specified is itself debilitating but rather signals a unit that is either old or missing a basic component of normal housing services. These characteristics exist at the municipal level, are reported by the U.S. Census such that they can be isolated and not over counted, and individually indicate the need for structure rehabilitation.

The age of Plainsboro's housing stock has been presented in Table 23. Tables 24 through 26 address the other surrogates of deficient housing.

Table 24 Persons Per Room

Persons Per Room	Occupied	Owner Occupied	Renter Occupied
1.01 to 1.50	241	49	192
1.51 to 2.00	270	36	234
2.01 or more	60	8	52
TOTAL	571	93	478

Source: 2000 Census of Population and Housing

Table 25 Plumbing Facilities

	<u>Total Units</u>
Complete plumbing facilities	9,119
Lacking complete plumbing facilities	14

Source: 2000 Census of Population and Housing

Table 26 Kitchen Facilities

Complete kitchen facilities	9,083
Lacking complete kitchen facilities	50

Source: 2000 Census of Population and Housing

Based on the above, COAH has determined that Plainsboro has 44 housing units that are substandard and occupied by low and moderate income households.

c. Purchase and Rental Value

Approximately 59 percent of the owner-occupied housing units in Plainsboro had values over \$200,000. The median value was \$257,100.



Millstone Apartments

Table 27 Owner-Occupied Housing Unit Values

		Units	Percent
LESS THAN \$15,000		18	0
\$15,000	- \$19,999	0	0
\$20,000	- \$24,999	0	0
\$25,000	- \$29,999	37	1
\$30,000	- \$34,999	6	0
\$35,000	- \$39,999	0	0
\$40,000	- \$49,999	21	1
\$50,000	- \$59,999	57	2
\$60,000	- \$69,999	88	2
\$70,000	- \$99,999	344	9
\$100,000	- \$124,999	232	6
\$125,000	- \$149,999	212	6
\$150,000	- \$174,999	225	6
\$175,000	- \$199,999	284	8
\$200,000	- \$249,999	531	14
\$250,000	- \$299,999	561	15
\$300,000	- \$399,999	681	19
\$400,000	- \$499,999	215	6
\$500,000 OR MORE		165	4
TOTAL		3,677	99*

Median Value \$257,100

Source: 2000 Census of Population and Housing

* Does not add up due to rounding

Of the 5,032 rental units with cash rent in Plainsboro, 975 were rented for more than \$1,000 per month. The median contract rent was \$850 per month.



Princeton Meadows

Table 28 Contract Rent Values

<u>With cash rent:</u>	<u>Units</u>
\$0 - \$ 99	25
\$100 - \$149	0
\$150 - \$199	0
\$200 - \$249	0
\$250 - \$299	0
\$300 - \$349	17
\$350 - \$399	0
\$400 - \$449	11
\$450 - \$499	33
\$500 - \$549	33
\$550 - \$599	54
\$600 - \$649	99
\$650 - \$699	186
\$700 - \$749	491
\$750 - \$999	3,108
\$1,000 - \$1,249	718
\$1,250 - \$1,499	119
\$1,500 - \$1,999	98
\$2,000 - or more	40
Total	5,065
No cash rent	33
Median contract rent	\$850

Source: 2000 U.S. Census of Population and Housing

d. Occupancy Characteristics and Types



Princeton Crossing

Approximately 42 percent of the housing in Plainsboro is owner occupied. Approximately 58 percent of the occupied housing stock is rental.

Table 29 Tenure and Vacancy

Housing Units	
Total Occupied	8,742
Occupied	
Owner Occupied	3,677
Renter Occupied	5,065
Vacant	
For Rent	119
For Sale only	103
Rented or Sold, not occupied	97
For seasonal, recreation, or occasional use	72
For migrant workers	0
Other vacant	0

Source: 2000 Census of Population and Housing

e. Units Affordable to Low and Moderate Income Households

Units are affordable to low and moderate income households if the maximum sales price or rent is set within a COAH specified formula. A moderate income household is a household whose gross family income is more than 50 percent of median income, but less than 80 percent of median income for households of the same size within the housing region. A low income household is a household whose gross family income is equal to or less than 50 percent of median gross household income for a household of the same size within the housing region for Plainsboro. Plainsboro is in Region 3, which encompasses Middlesex, Hunterdon and Somerset counties.

Using current regional income limits adopted by COAH, a four person Middlesex County median household income is estimated at \$96,700. A moderate income four person household would earn a maximum of \$77,360 (80 percent of regional median) and a four person low income household would earn a maximum of \$48,350 (50 percent of regional median).

Income levels for one, two, three and four person households as of 2008 are given below:

Table 30 2008 Low and Moderate Regional Incomes

Income	1 person	2 persons	3 persons	4 persons
MEDIAN	\$67,690	\$77,360	\$87,030	\$96,700
MODERATE	\$54,152	\$61,888	\$69,624	\$77,360
LOW	\$33,845	\$38,680	\$43,515	\$48,350

Source: COAH, 2008 Income Limits

Based on the qualifying formula in N.J.A.C. 5:80-26, the monthly cost of shelter which includes mortgage (principal and interest), taxes, insurance and homeowners or condominium association fees, may not exceed 28 percent of gross monthly household income based on a five percent downpayment. In addition, moderate income sales units must be available for at least three different prices and low income sales units available for at least two different prices. The maximum sales prices must now be affordable to households earning no more than 70 percent of median income. The sales prices must average 55 percent of median income.

Under COAH regulations, rents including utilities may not exceed 30 percent of gross monthly income. The average rent must now be affordable to households earning 52 percent of median income. The maximum rents must be affordable to households earning no more than 60 percent of median income. In averaging 52 percent, one rent may be established for a low income unit and one rent for a moderate income unit for each bedroom distribution. The utility allowance must be consistent with the utility allowance approved by HUD and utilized in New Jersey.

Plainsboro currently has 40 low incomes, for sale units in the Tamarron section of Princeton Meadows and 40 moderate income sales units in Princeton Crossings. The township also established the Plainsboro Non-Profit Housing Corporation that owns and administers 126 low and moderate income units at the Wyndhurst. In addition, the township negotiated an agreement with Princeton University for 60 low and moderate income rental units at the Millstone Apartments. Finally, Plainsboro has a new three bedroom group home sponsored by SERV Centers of New Jersey.

3. Projection of Housing Stock

a. Building Permits

According to the New Jersey Department of Labor, Residential Building Permits Issued, 1,215 building permits were issued in Plainsboro during 1990 and 1999. A total of 435 residential building permits were issued between 2000 and August 2008.

b. Future Construction of Low and Moderate Income Housing

Plainsboro will address the future construction of low and moderate income housing in the Fair Share Plan.

4. Demographic Characteristics

a. Population

The population in Plainsboro increased by 42 percent between 1990 and 2000. Table 31 illustrates the figures.

Table 31 Population

Year	Population
1990	14,213
2000	20,215

Sources: 1990 and 2000 Census of Population and Housing

Table 32 Selected Population Characteristics

The majority of Plainsboro residents or 59 percent are between the ages of 25 and 54 years.

	Number	Percent
TOTAL POPULATION	20,215	100*
SEX		
Male	10,241	51
Female	9,975	49
AGE		
Under 5 years	1,480	7
5 to 17 years	3,439	17
18 to 20 years	286	1
21 to 24 years	1,063	5
25 to 44 years	9,292	46
45 to 54 years	2,681	13
55 to 59 years	730	4
60 to 64 years	413	2
65 to 74 years	421	2
75 to 84 years	295	1
85 years and over	115	1

Source: 2000 Census of Population and Housing

*Does not add up due to rounding

b. Household Size and Type

A household profile of Plainsboro shows that there were 8,789 households with a total household population of 20,215 in 2000. The average number of persons per household was 2.30.

Table 33 Household Profile 2000

	<u>Total Number</u>
Households	8,789
Population of households	20,215
Persons per household	2.30

Source: 2000 Census of Population and Housing

Table 34 Household Type and Relationship

In family households:	15,769
householder:	5,112
Male	4,169
Female	943
Spouse	4,520
child:	5,424
Natural born/adopt	5,345
step	79
grandchild	27
other relatives	558
non-relatives	155
In non-family households:	4,381
householders living alone	2,963
householders not living alone	667
Non-relatives	751
In group quarters:	65
Institutionalized population	0
Non-institutionalized population	65

Source: 2000 Census of Population and Housing

Table 35 Type of Housing Units by Structure

Units in Structure	Total Units	PCT
1, detached	2,099	.23
1, attached	1,433	.16
2	73	.01
3 or 4	707	.08
5 to 9	1,515	.17
10 to 19	2,261	.25
20 to 49	520	.06
50 or more	525	.06
Mobile home or trailer	0	
Other	0	
TOTAL	9,133	1.02*

Source: 2000 Census of Population and Housing

**Does not add up due to rounding*

c. Income Level

Approximately, 54 percent of the households in Plainsboro earn between \$60,000 and \$199,999 according to the 2000 census.

Table 36 Household Income

Household Income	Number	Percent
\$0 –9,999	234	.03
\$10,000-\$14,999	169	.02
\$15,000-\$19,999	175	.02
\$20,000-\$24,999	212	.02
\$25,000-\$29,999	281	.03
\$30,000-\$34,999	298	.03
\$35,000-\$39,999	427	.05
\$40,000-\$44,999	441	.05
\$45,000-\$49,999	306	.04
\$50,000-\$59,999	895	.10
\$60,000-\$99,999	2,578	.29
\$100,000-\$149,999	1,533	.18
\$150,000-\$199,999	639	.07
\$200,000 or more	554	.06
TOTAL	8,742	.99*
Median Household Income	\$72,097	

Source: 2000 Census of Population and Housing

**Does not add up due to rounding.*

d. Age

The age of the Plainsboro population has been discussed under Section III, Demographic Characteristics, A. Population.

e. Marital Status

In 2000, there were almost the same number of women and men over the age of 15 years in Plainsboro. There were 507 more males that never married. There were 249 more widows than widowers and more divorced females than males.

Table 37 Sex by Marital Status Persons 15 Years and Over

Marital Status	Total	Male	Female
Total	15,843	7,963	7,880
Never Married	4,615	2,561	2,054
Now Married	9,877	4,955	4,922
Widowed	349	50	299
Divorced	1,002	397	605

Source: 2000 Census of Population and Housing

5. Existing and Probable Future Employment Characteristics

Of the 12,128 Plainsboro residents employed in the civilian labor force, 83 percent are in educational, health and social service occupations or professional, scientific and technical services, or construction, manufacturing, wholesale trade, retail trade, transportation fields or finance, insurance and real estate industries.

Table 38 Occupation – Employed Persons 16 Years and Over

	Male	Female	Total
Finance, insurance, real estate	1,127	624	1,751
Construction, manufacturing, wholesale trade, retail trade, transportation	2,321	1,325	3,646
Information	489	423	912
Arts, entertainment, recreation, accommodation and food services	246	185	431
Professional, scientific and technical services	1,760	890	2,650
Educational, health and social services	622	1,364	1,986
Public administration	168	207	375
Other services	147	230	377
Total	6,880	5,248	12,128

Source: 2000 U.S. Census of Population and Housing

According to the New Jersey State Data Center, Plainsboro had a covered employment number of 12,647 in 2006.

Plainsboro continues to experience a decline in overall employment, particularly within the corporate sector of the local economy. Employment by Plainsboro's major employers has declined by approximately 20% over the last six years.

Putting aside the unknown effects of the current global economic crisis, given current available information regarding planned economic development in Plainsboro (e.g., relocation of University Medical Center of Princeton at Plainsboro and the Merwick skilled nursing facility to the former FMC site, continued expansion of Novo Nordisk at the North Campus site), while acknowledging the current trend that shows a continued decline in employment by the major employers, Plainsboro will experience a steady level of employment over the next 10 years.

6. Total Obligation For Rehabilitation and Prior Round

a. Rehabilitation Share

Plainsboro has a 44 unit rehabilitation obligation.

b. *Total Obligation From Prior Rounds*

Plainsboro's total obligation from prior rounds is now 205 units.

7 Growth Share Obligations

Plainsboro accepts the household and employment projections in Appendix F of COAH's rules. However, Plainsboro has non-residential exclusions that reduces the COAH targeted number to 385 affordable units.

8. Plan Endorsement

Plainsboro Township received Plan Endorsement on January 18, 2006.

9. Analysis of Existing and Future Zoning To Accommodate Growth Projections

Plainsboro believes that the existing and proposed rezoning of FMC, the site on Route 1, to a hospital/residential use can accommodate the growth projections based on the affordable housing options selected. No additional zoning changes are necessary.

a. Availability of Existing and Planned Infrastructure

Most of Plainsboro is located within the New Jersey-American Water Company (formerly Elizabethtown Water Company) public water franchise area. The balance is on private wells. The long-term availability of public water will accommodate all anticipated future development in the township.

The public wastewater treatment demands of new and existing development are presently being serviced by either the Stony

Brook Regional Sewage Authority facility in South Brunswick or the United Water Princeton Meadows (UWPM) facility in Plainsboro. For the most part, the Stony Brook facility serves the township west of the Amtrak main line and the UWPM facility serves the township east of the Amtrak main line. While the Stony Brook facility has capacity to accommodate anticipated future development in its franchise area, the UWPM facility has limited capacity and expansion potential.

b. Anticipated Demand for Types of Uses Permitted by Zoning Based on Present and Anticipated Future Demographic Characteristics

Plainsboro has carefully reviewed anticipated demand by approving residential and non-residential developments according to market demand and sound planning principles. The township has approved applications for 645 new homes and has a variety of non-residential, approved applications for office, retail, restaurants, a tennis club, hotels, storage and a new library to name a few.

c. Anticipated Land Use Patterns

Plainsboro has evolved into a community exhibiting a wide variety of uses and life styles. The 2004 Master Plan shows a land use plan that incorporates rural, village residential, low density, planned medium density and medium density residential zones. The land use plan also reflects a village center, service residential, neighborhood business, general business, office business, limited industrial and planned unit development zoning.

d. Economic Development Policies

Plainsboro has and is continuing to experience economic growth of major ratables from the Princeton Forrestal Center, which contains large corporate office and office-research uses such as Merrill Lynch, Bristol Myers Squibb, American Re-Insurance Company and Novo Nordisk. Plainsboro has encouraged a sound economic development policy by providing multiple zoning districts intended to accommodate various types of non-residential uses, from small scale village and neighborhood commercial uses to large scale corporate office and industrial uses, and everything in between. Among these zones are the Neighborhood Business, Village Center, Office Business, General Business, Limited Industrial, and Planned Multi-Use Development Zones

e. Constraints on Development

- 1) State and federal regulations: Plainsboro is not located in the Highlands area, CAFRA, the Meadowlands or the

Pinelands. There are no known federal regulations that constrict development.

- 2) Land ownership patterns: According to the 2000 census, 42 percent of the housing stock in Plainsboro is owner-occupied. Approximately 58 percent of the occupied housing stock is in rental apartments. Plainsboro has approximately seven million square feet of non-residential uses in private ownership and over 1,500 acres of existing farmland, much of which is permanently preserved as such.
- 3) Incompatible land uses: Plainsboro is not aware of any incompatible land uses.
- 4) Sites requiring environmental remediation: Plainsboro is not aware of any sites requiring such remediation.
- 5) Environmental constraints: The existing UWPM wastewater treatment facility serving the eastern portion of Plainsboro has capacity limitations.
- 6) Existing or planned measures to address any constraints: While the existing UWPM wastewater treatment facility serving the eastern portion of the township has capacity limitations, limited improvements to the facility have added capacity needed to accommodate planned development in this portion of the township, particularly in the Village Center area.

B. Fair Share Plan

1. Preface

A municipality's affordable housing obligation is cumulative, and includes affordable housing need for the period 1987 to 2018. The affordable housing obligation consists of three components:

- Rehabilitation Share (2000)
- Prior Round Obligation (1987-1999)
- Growth Share (2000-2018)

A municipality's Rehabilitation Share is a measure of old, crowded, deficient housing that is occupied by low- and moderate-income households. Rehabilitation Share numbers from each prior round are replaced with the latest round numbers because the numbers are updated with each decennial census.

A municipality may receive credit for rehabilitation of low- and moderate-income deficient housing units completed after April 1, 2000 provided the units were rehabilitated up to the applicable code standard, the capital cost spent on rehabilitating a unit was at least \$10,000 and the units have the appropriate controls on affordability to ensure the unit remains affordable during the required period of time.

Rehabilitation credits cannot exceed the Rehabilitation Share and can only be credited against the rehabilitation component, not the new construction component.

The prior round obligation is the municipal new construction obligation from 1987 to 1999. All municipalities participating in the COAH process must use these figures. COAH continues to offer credits, reductions, and adjustments that may be applied against the Prior Round Obligation (1987-1999) for affordable housing activity undertaken from 1980 to 1999.

2. Rehabilitation Share

The purpose of a rehabilitation program is to renovate deficient housing units. Deficient housing units are defined as units with health and safety code violations that require the repair or replacement of a major system. A major system includes weatherization, roofing, plumbing, (including wells), heating, electricity, sanitary plumbing (including septic systems), lead paint abatement and/or load bearing structural systems. Upon rehabilitation, the housing deficiencies must be corrected and the unit must comply with the applicable code standard.

A municipality must demonstrate that it has the capability to administer a rehabilitation program by either designating an experienced employee to administer the program or entering into an agreement with a governmental agency or private consultant to administer all or some of the program. A municipality must provide the consultant or municipal employee's credentials to administer the program as well as a procedures manual.

Rental units cannot be excluded from a municipal rehabilitation program. There must be at least 10-year affordability controls placed on both owner-occupied units and rental units. For owner-occupied units, these controls may be in the form of a lien filed with the appropriate property's deed. For rental units, the controls must be in the form of a deed restriction. Units rehabilitated after April 1, 2000 are eligible for credits against the Rehabilitation Share.

The municipal investment for the rehabilitation of a unit must be at least \$10,000 per unit. Documentation must also be submitted demonstrating adequate funding source(s) and a resolution of intent to bond in the event there is a shortfall of funds. Financing of rehabilitation programs must be structured to encourage rehabilitation and continued occupancy.

A municipality is also required to prepare and submit a rehabilitation manual to COAH that summarizes the administration of the rehabilitation program including an affirmative marketing plan. The affirmative marketing program must clearly describe the outreach efforts to be used in implementing the program. COAH expects that a combination of media approaches – cable television, radio and print – plus appropriate mailing to residents, local civic, social and religious groups will be included in the marketing program.

Plainsboro has a 44 unit Rehabilitation Share.

Plainsboro will continue its participation in the Middlesex County Rehabilitation Program that is funded by Community Development Block Grant (CDBG) funds. Plainsboro will also reach out to see if the owners of the existing, but dated, affordable units are in need of rehabilitation assistance. The program will be made available to both owner and renter-occupied units including any family rentals in the Market to Affordable Program. Plainsboro will seek an experienced administrative agent to administer the program. Plainsboro expects to complete four units per year.

3. Prior Round Obligation

COAH has determined that Plainsboro's Prior Round Obligation is 205 units.

a. Rental Obligation and Rental Bonuses

Plainsboro has a 52-unit rental obligation and may receive 52 rental bonuses.

b. Maximum Age-restricted Units.

Plainsboro may age-restrict 56 units.

c. Regional Contribution Agreement (RCA) Maximum

A municipality may transfer one-half of its obligation to another willing municipality within the COAH housing region. Plainsboro may transfer 124 units.

d. Implementation

1) Plainsboro is proposing to address the 205 unit obligation with eligible credits from its second round certification.

2) Plainsboro addressed its second round obligation with the following:

Second Round Plan	Type	Units
Princeton Meadows	For Sale	40
Princeton Crossing	For Sale	40
Wyndhurst	Rentals	126
Millstone Apartments	Rentals	60
RCA	New Brunswick	25
TOTAL		291

- 3) Princeton Meadows contains 40 units of low income for-sale, affordable housing. All units are constructed and occupied. All documentation is on file with COAH.
- 4) Princeton Crossing contains 40 units of moderate income, for-sale, affordable housing in a K. Hovnanian development. All units are constructed and occupied. All documentation is on file with COAH.
- 5) Wyndhurst contains 126 low and moderate income rental units that are open to the general public. The township established a non-profit housing corporation in 1987 that owns and administers the rental units. The Plainsboro Non-Profit Housing Corporation manages the rentals. All units are constructed and occupied and have controls in perpetuity. All documentation regarding the all-affordable complex is on file with COAH.
- 6) Millstone Apartments contain 60 low and moderate income rental units that were the result of a developer's agreement between Plainsboro Township and Princeton University in 1994. All units are occupied. The apartments are open to the general public. All documentation regarding the 60 apartments is on file with COAH. The Millstone Apartments result in an exclusion of 960 jobs from Plainsboro's employment growth because they meet the criteria in N.J.A.C. 5:97-2.4 (b) 1.
- 7) Plainsboro executed an RCA to transfer 25 units to the City of New Brunswick. All monies have been transferred. All documentation regarding the RCA is on file with COAH.
- 8) The following chart presents the plan to address the prior obligation of 205 units:

Prior Round Obligation	Type	Units
Princeton Meadows	For Sale	40
Princeton Crossing	For Sale	36
RCA	New Brunswick	25
Millstone Apartments	Rental	52
Millstone Apartments	Bonuses	52
TOTAL		205

- 9) As a result, the following surplus units will be used to address a portion of the growth share obligation:

Surplus for Growth Share	Type	Units
Wyndhurst	Rentals	126
Millstone Apartments	Rental	8
Princeton Crossing	Sales	4

4. Growth Share Obligation

The Fair Share Plan includes the projects and strategies to address an affordable housing obligation and any municipal ordinance in draft form that a municipality is required to adopt as a requirement of certification. The Fair Share Plan is based upon the municipal fair share obligation developed by COAH. The planning board adopts the Fair Share Plan and it is endorsed by the governing body prior to the petition for substantive certification. The proposed implementing ordinances may be adopted prior to substantive certification but in any event must be adopted no later than 45 days after COAH grants substantive certification.

The Fair Share Plan consists of a proposal on how a municipality intends to provide for its affordable housing obligation. Once certified, the plan will be monitored by COAH to verify that the construction or provision of affordable housing is in proportion to the actual residential growth and employment growth. Zoned sites addressing a prior obligation will also be reviewed at these intervals.

COAH rules have a number of different provisions regulating the development of affordable housing. The options available to meet the 2000-2018 fair share obligation include:

- Municipal zoning
 - Zoning for inclusionary developments
 - Redevelopment districts/sites
- Municipally sponsored new construction and 100 percent affordable developments
- Alternative living arrangements
 - Permanent supportive housing
 - Group homes (shared supportive)
 - Congregate housing
 - Residential health care facilities
- Accessory apartments
- Market to Affordable Program
- Municipally sponsored rental program
- Assisted living residences
- Affordable housing partnership program
- Expanded crediting opportunities

- Extension of affordable units with expiring controls
- Age-restricted housing
- Rental housing with bonus credits
- Very low-income housing with bonus credit

COAH has given Plainsboro a targeted Growth Share obligation of 445 units which was reduced to 385 because of employment exclusions from the Princeton Forrestal development that was required to provide 60 family rental apartments at the Millstone Apartments complex. All documentation is on file at the COAH office.

a. Rental Obligation and Rental Bonuses

The rental component is calculated as follows:

$$.25 \text{ (growth share)}$$

$$.25 (385) = 97$$

Therefore, Plainsboro has a rental obligation of 97 units and could receive bonus credit for rental units over the 97 that are open to the general public.

b. Age-Restricted Maximum

Plainsboro may age-restrict 96 units based on the following formula:

$$.25 \text{ (growth share)}$$

$$.25 (385) = 96.25$$

c. Fair Share Plan

Plainsboro will address its growth share obligation with 138 surplus credits from the prior round.

1) Surplus Credit

Both Millstone Apartments and Wyndhurst were previously included in Plainsboro's certified plan and are all affordable, rental units, open to the general public. The 126 units at Wyndhurst are not eligible for COAH rental bonuses because they were occupied prior to 1999. However, the Millstone Apartments yield eight bonuses because they were occupied after 1999 and exceed the rental obligation.

2) SERV Center

In addition, Plainsboro has a group home on 191 Cranbury Neck Road (Block 13, Lot 4) that contains four bedrooms. The group home has a 20-year operating commitment from the Division of Mental Health Services (DMHS) that may be renewable for another 10 years and thus meets the COAH requirement of N.J.A.C. 5:94-7 (e). The group home was opened in 1997 by SERV centers. All documentation is on file with COAH.

d. Implementation

1) Extension of Expiring Controls

Plainsboro is proposing to extend controls on 14 of the family sale units at Princeton Crossing that expire between 2014 and 2015. All 14 units have executed Affordable Housing Agreements that state in the Description section of the Agreement that the Agreement may be "...extended by municipal resolution as described in Section III Term of Restriction.

Section III C. states "The terms, restrictions and covenants of this Affordable Housing Agreement may be extended by municipal resolution as provided for in N.J.A.C. 5:92-1 et seq. Such municipal resolution shall provide for a period of extended restrictions and shall be effective upon filing with the Council and the Authority. The municipal resolution shall specify the extended time period by providing for a revised ending date. An amendment to the Affordable Housing Agreement shall be filed with the recording office of the county in which the Affordable Housing unit or units is/are located."

As a result, Plainsboro is exercising its right to extend controls on the 14 units that are in the Appendices. In a conversation with Lucy Vandenberg, COAH's Executive Director, at the planning seminar on July 28, 2008, I questioned the need for a written commitment from the owner based on the language in the Affordable Housing Agreement. Ms. Vandenberg said if that was the case, to send in the Affordable Housing Agreement with the plan.

Plainsboro will obtain a continuing certificate of occupancy or a certified statement from the building inspector that the restricted units meet all code standards. If the unit requires repair and/or rehabilitation, Plainsboro will fund and complete the work. All 14 units will have controls extended for 30 years. The controls will be extended in

accordance with UHAC. Once extended, the filed deed restrictions will be forwarded to COAH.

2) Redevelopment Area

Plainsboro Township has adopted an executed Redevelopment Agreement plan by ordinance.

This Redevelopment Plan sets standards for the redevelopment of the FMC site located on Route 1 between the Millstone River and Scudder's Mill Road that was designated as an Area in Need of Redevelopment on September 10, 2007. The Redevelopment Area was developed as an office/research facility of the FMC Corporation and is a gateway into the township from Route 1 on its western border. It is underdeveloped relative to the current zoning and suffers from an overall uncoordinated plan of development. Moreover, an extensive portion of the Redevelopment Area located south of Plainsboro Road is located within the 100-year floodplain of the Millstone River, which limits that portion of the Redevelopment Area's developability. The purpose of the Redevelopment Plan is to provide the regulatory framework in which the Redevelopment Area can be redeveloped for the betterment of the township and the region.

On June 13, 2007 the Township Committee of the Township of Plainsboro determined the FMC site to potentially be an Area in Need of Redevelopment pursuant to New Jersey's Local Housing and Redevelopment Law (NJSA40:12A et seq.), and authorized the Plainsboro Township Planning Board to undertake an investigation and perform analyses to determine whether the FMC site met the criteria set forth therein. The planning board then authorized Phillips Press Shapiro Associates Inc. (PPSA), a planning and real estate consultant, to conduct the area in need of redevelopment investigation of the FMC site. Following completion and submission of the study in July 2007, and upon the consideration and recommendation of the planning board, the township committee declared the FMC Site to be an Area in Need of Redevelopment on September 10, 2007. On September 17, the planning board authorized PPSA to formulate a Redevelopment Plan of the Redevelopment Area.

The Redevelopment Area consists of a number of parcels that are located in the southwestern portion of the Township. According to the official tax maps of the Township, the Redevelopment Area encompasses

+_156.0 acres and includes one (1) property assemblage, consisting of six (6) tax lots on portions of three (3) tax blocks. The tax blocks include Block 1701, Lots 3 and 4; Block 1703, Lots 1, 2, and 3; and Block 1704, Lot 1. The lots range in size from +_0.27 acres to +_64.84 acres. At its widest point, the Redevelopment Area is +_2,562.3 feet wide and varies in length from +_1,920 feet on the west side to +_3,896 feet on the east side. The property has +_1,820 feet of frontage on Route 1, +_746.7 feet of frontage on Scudders Mill Road, and +_2.893.3 feet of frontage on Plainsboro Road.

The Redevelopment Area is bounded generally by U.S. Route 1 to the west; the municipal border of the Township of West Windsor and the Millstone River to the south; Connector Road, state-owned lands to the east; and Scudders Mill Road and as yet undeveloped portions of the Forrestal Center to the north. Plainsboro Road bisects the property, creating a northern and southern portion of the property.

In terms of its locational context, the Redevelopment Area is located within a portion of the township characterized primarily by large corporate office campuses. To the north, across Scudders Mill Road, is the Princeton Forrestal Center, a corporate research center owned by Princeton University. To the northeast of the Redevelopment Area is a corporate campus for Bristol-Myers Squibb, a global pharmaceutical company. In the area north of Plainsboro Road and east of the Redevelopment Area is a Merrill Lynch corporate campus. Located to the south of Plainsboro Road and east of the Redevelopment Area is the corporate campus. Located to the south of Plainsboro Road and east of the Redevelopment Area is the corporate headquarters of Firmenich Incorporated. To the west, across Route 1, is a commercial area which includes a Ruby Tuesday restaurant, as well as a Marriott Courtyard hotel and a Homewood Suites hotel.

The Redevelopment Area consists of six (6) tax lots on three (3) tax blocks, all under common ownership. It is irregularly shaped and located in the southwesterly portion of the Township along the Millstone River, which also serves as the northern border of West Windsor Township.

The Redevelopment Area encompasses+_160 acres and is improved with 19 buildings, totaling more than one-half million square feet of floor area, inclusive of basement and penthouse mechanical space. The property also contains farmlands that are being leased for agricultural purposes.

Both wetlands and floodplains are present within the Redevelopment Area which limit the extent of redevelopment that is possible.

Given the Redevelopment Area's history of use, a possibility exists that some form of environmental contamination exists on the old FMC corporation site. To date, no conditions have been identified that present a significant environmental hazard that cannot be remediated to all applicable NJDEP standards, or that upon cleanup, make the site in any manner unsuitable for the proposed uses set forth in the Redevelopment Plan.

The Redevelopment Plan envisions a comprehensive redevelopment of the subject property, as a mixed health care, residential and office community. Continuation of the FMC Corporation use would be permitted until such time as the components of the Redevelopment Plan are approved (via site plan and subdivision approval), and constructed. Moreover, if the redeveloper fails to acquire the FMC Corporation property, the current I-100 zoning would continue in full force and effect unless otherwise amended by Plainsboro Township pursuant to all applicable legal requirements.

At its core, the Redevelopment Plan will accommodate the relocation of the University Medical center at Princeton from Princeton Borough / Mercer County as a hospital-medical office complex, along with skilled nursing facility, senior independent living apartments, assisted living and general offices as adjunct complementary facilities, along with accessory facilities for accommodating vehicular, pedestrian and bike circulation and open space.

Within this redevelopment site, nine assisted living Medical Waiver bedrooms and 82 independent senior living apartments are proposed to be integrated into the assisted living and independent apartment complexes. Both the nine assisted living apartments and the 82 senior apartments comprise the affordable component.

The Redevelopment Plan was adopted on June 11, 2008 and meets the criteria of N.J.S.A. 40A:12A-1 et seq.

3) Market to Affordable Program

Plainsboro is also proposing a 60-unit Market to Affordable Program. Plainsboro has over 5,000 market rate apartments in the township that would be available for this

program. Plainsboro will contract with an experienced administrative entity to administer the program. To administer the program, the experienced consultant would prepare a list of all owners of market rate apartments in Plainsboro together with the range of rents; prioritize the apartment owners who should initially be contacted about participation in the program; negotiate the buydown subsidy that would result in each apartment being deed restricted for 30 years, with income eligible tenants and a regulated rent and insure that no more than 20 percent of the apartments in each complex are deed restricted.

Plainsboro is calculating 60 rental bonuses because the market to affordable rentals are surplus family units over the rental obligation.

4) Shared Living Bedrooms

Finally, Plainsboro is proposing two, four bedroom group homes. Plainsboro will contract with an experienced group home provider when additional units are needed to maintain the necessary proportion of market and affordable units. There is a two-unit rental bonus credit as per N.J.A.C. 5:97-6.10.

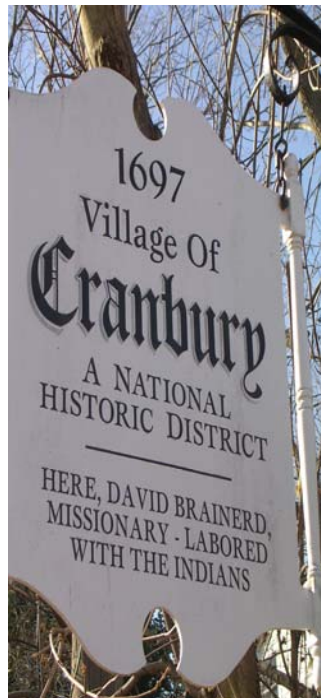
PROPOSED GROWTH SHARE PLAN

Project	Type	Units
Princeton Crossing	Surplus Sales	4
Wyndhurst	Surplus Rentals	126
Millstone Apartments	Surplus Rentals	8
Millstone Apartments	Rental Bonus	8
Group Home	SERV Centers	4
Extend Controls	Princeton Crossing	14
Hospital Independent Living	Senior Rentals	82
Assisted Living	Medicaid Bedrooms	9
Market to Affordable	Family Rentals	60
Rental Bonus	Family Rentals	60
New Group Homes	Bedrooms	8
Group Homes	Rental Bonus	2
TOTAL		386

C. Action Plan

1. Maintain, update and implement the new Housing Plan Element and Fair Share Plan in association with maintaining substantive certification with COAH under the new Third Round rules and requirements.

RELATIONSHIP TO PLANS OF OTHER JURISDICTIONAL AGENCIES



Contents

- Introduction
- Master Plans of Contiguous Municipalities
- Compatibility with Local and County Master Plans and the State Development and Redevelopment Plan
- District Solid Waste Management Plan
- Implementing the Land Use Plan
- Summary of Planning Issues

XIII. RELATIONSHIP TO PLANS OF OTHER JURISDICTIONAL AGENCIES

A. Introduction

This section includes a specific policy statement indicating the relationship of the proposed development of the Township as developed in the Master Plan to: (1) the master plans of contiguous municipalities; (2) the master plan of the county in which the Township is located; (3) the State Development and Redevelopment Plan adopted pursuant to the "State Planning Act," P.L. 1985, c. 398 (C. 52:18A-196 et al.); and the district solid waste management plan required pursuant to the provisions of the "Solid Waste Management Act," P.L. 1970, c. 39 (C. 13:1E-1 et seq.) of the county in which the Township is located.

B. Master Plans of Contiguous Municipalities

In addition to achieving compatibility with the larger regional framework, it is desirable that local plans also take into consideration those of adjoining municipalities. By reviewing their existing land use patterns and policies, Plainsboro can seek to achieve compatibility of land uses across municipal boundaries -- using buffer or transitional areas where needed -- determine appropriate zone boundaries, and identify any environmental concerns that may need to be addressed on an intergovernmental level.

The adjoining municipalities to Plainsboro have varying degrees of influence as determined from their land use development. The most intensive use is in the Route 1 corridor from South Brunswick and West Windsor that is primarily attributed to Route 1 access. Corporate offices and research oriented facilities are generally found in these neighboring areas in this corridor. Also, Princeton Township and Princeton University, through the Forrestal Development, contribute to the developing influences along the Route 1 corridor.

Those municipalities east of the AMTRAK line and adjoining Plainsboro - South Brunswick, Cranbury, East Windsor and West Windsor - have primarily agricultural and low density land uses. Thus minimal development influences are anticipated for the near-term future.

1. South Brunswick

The area from Carnegie Lake to a point 1,500 feet west of Route 1 is zoned for single-family cluster development on minimum 20,000 square foot lots with 30% of the total tract devoted to open space. From that point to approximately one mile east of Route 1, the land is zoned OR Office-Research, which also permits hotels and commercial development. In Plainsboro, the adjoining land has been placed into the PMUD zone which is compatible with both South Brunswick zones.

Continuing eastward along Perrine Road which forms the inter-municipal boundary as far as Dey Road in Cranbury, the land in South Brunswick is zoned OCH Office/Computer Headquarters, R-2 single-family cluster

residential on minimum 15,000 square foot lots with 25% of the total tract devoted to open space, and Rural Residential which requires three (3) acre and two (2) acre minimum lots per dwelling unit. The OCH zone permits executive offices, corporate headquarters and campus development. All of these lands are characterized by poor soils, interspersed with on-going farm operations. The Plainsboro land use plan recommends that the adjoining areas be placed into R-200 and R-350 low density residential classifications. Both proposed types of uses are compatible with those proposed in South Brunswick, possibly requiring appropriate setbacks along the district boundary.

2. Cranbury Township

In Cranbury, the lands adjacent to Petty Road are planned for light impact residential use at one dwelling unit per three (3) acres of land, while those adjacent to Cedar Brook are recommended for agricultural preservation, permitting residential development at a density of six (6) acres per dwelling unit. The adjoining lands in Plainsboro are part of the Linpro Company's planned development which, when fully completed, will provide single-family homes along Petty Road and garden apartments along the Brook. The agricultural lands in Cranbury will be protected by the open space buffer along Cedar Brook which is a part of the approved Linpro development plan.

The remaining land in Cranbury that is adjacent to Plainsboro is separated from lands in Plainsboro by George Davison Road and John White Road. Both Townships propose to preserve farmlands on both sides of that boundary.

3. East Windsor

Plainsboro and East Windsor have only approximately 2,000 feet of common boundary which runs through the floodplain of the Millstone River. In East Windsor, the land is planned for public, conservation and recreation uses, while on the Plainsboro side of the line, the land is proposed to remain in agricultural use.

4. West Windsor

The municipal boundary between Plainsboro and West Windsor continues along the Millstone River which, with its trees and floodplains, provides a substantial buffer between the two communities. The adjoining land uses are fully compatible. From the East Windsor boundary to the railroad, the West Windsor land is zoned for residential use at one dwelling unit per one acre with a cluster option. In Plainsboro, the permitted use is one unit per 6 acres in the R-100 and R-150 zones. The remaining land in West Windsor from the railroad to the D&R Canal is zoned in three classifications: Research, Office, Manufacturing ROM-1; Special Education (Princeton University); and R-2 low density residential. In Plainsboro, permitted uses are the Fountain Oaks planned

residential development in the R-90 zone, the I-100 zone containing FMC and Firmenich, and the small Service Residential zone west of Route 1.

5. Princeton Township

The boundary between Plainsboro and Princeton Township runs along Carnegie Lake and the D&R Canal, both of which provide a substantial buffer between adjoining land uses, which is not even crossed by roads. This buffer is further enhanced by the D&R Canal Commission's park system along the canal. In any event, the proposed uses on the Plainsboro side of these natural buffers would be compatible with those in Princeton Township even if they were directly contiguous to one another. Zoning in Princeton Township includes an E-1 Educational and Multi-Family Residential District and R-5 Residential District with minimum ½ acre lots.

C. Compatibility with Local and County Master Plans and the State Development and Redevelopment Plan

The Plainsboro Master Plan achieves a land use pattern that is fully compatible with planned land uses in adjoining municipalities and with the planning objectives and the broad development guidelines of the County Master Plan and the State Development and Redevelopment Plan.

D. District Solid Waste Management Plan

The Master Plan is consistent with the county solid waste management plan in that the Township has a viable recycling program and requires the hauling of trash to approved county landfills.

E. Implementing the Land Use Plan

The implementation of this Plan requires its adoption by the Planning Board, followed by the preparation of land development ordinance revisions and their adoption by the Township Committee.

F. Summary of Planning Issues

The above analysis has identified a series of land use, environmental, and transportation planning issues ranging from regional concerns to very specific local ones. All of these, which will have to be addressed in the Master Plan, are broadly summarized below:

ISSUE

PLAN IMPLICATION

State Development and Redevelopment Plan

To be consistent with the State Development Plan, Plainsboro's existing Rural Zones should remain in agricultural use, the Route 1 corridor should remain the most intensively used, and a limited growth policy should be applied to the remainder of the Township.

Middlesex County Master Plan

The County Land Use Plan is in agreement with the State Development Plan. The County's more detailed year 2000 land use projections indicate that land in the vicinity of Devil's Brook will probably remain undeveloped because of environmental constraints.

Land Use Policies in Adjoining Municipalities

In South Brunswick, the land bordering on Plainsboro falls into classifications: generally, east of Schalks Crossing Road, a planned agricultural area, also permitting single family residences on minimum 2 and 3 acre lots; and to the west, as far as Carnegie Lake, an area planned for residential cluster development and light industrial uses. In Cranbury, all lands south of Cedar Brook are planned to be preserved in agricultural use, with residences permitted on lots of not less than 6 acres. Between Cedar Brook and Dey Road, the Cranbury plan calls for a low density residential use similar to that in South Brunswick's agricultural zone.

In East Windsor, across its very short common boundary with Plainsboro, the land is classified for public conservation and recreational uses. In West Windsor, from its boundary with East Windsor to the railroad, the land is planned for low density residential use requiring 1-acre minimum lots. Between the railroad and Route 1 the intent is to encourage offices and research uses as well as special educational uses on land owned by Princeton University. Princeton Township is separated from Plainsboro by the broad expanse of Carnegie Lake and the D&R Canal.

Preservation and Development

Plainsboro Township's total area amounts to 7,240 acres, of which approximately 2,611 are urbanized, 2,529 are still used for agriculture, 109 are vacant, and about 1,747 are environmentally sensitive.

If the Township will follow the State Development Plan, it will preserve large amounts of farmland and open space in its rural zones. All new growth would be located along Route 1 and between Dey Road and Plainsboro Road east of the Municipal Center.

The area west of the AMTRAK railroad focusing on Route 1 is best suited for intensive use. Route 1 provides the major access road; soils and environmental problems are at a minimum; water and sewer are provided; land uses north and south in the adjoining municipalities plus the influences of existing development and approvals all promote office/research/selected manufacturing uses.

The area north of Cranbury Brook in the vicinity of Dey Road, with Plainsboro Village anchoring the western end of the area now provides the core residential district. The major concerns that will surface for this district include delivery of municipal services (police and fire protection, school and library systems), and traffic impacts due to limited access roads.

The largely vacant, environmentally sensitive area in the vicinity of Devil's Brook should be retained a low intensity area for large lot or cluster residential development. It has a variety of soil problems, flood hazard zones, and access problems.

North of the Millstone River and south of Cranbury Brook is an area now predominantly devoted to agricultural use. Also, there are severe access problems because of the watercourses and the road bottlenecks over the railroad.