2002 Master Plan

Goals and Objectives
Land Use Plan Element
Conservation Plan Element

Township of Hopewell
Mercer County, New Jersey

Prepared by the Hopewell Township Planning Board
in consultation with Banisch Associates, Inc.

May 2002

Adopted as revised on May 23, 2002, memorialized on June 13, 2002

The original of this report was signed and sealed
in accordance with N.J.A.C. 13:41-1.3

HOPEWELL TOWNSHIP MASTER PLAN

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Foreword

From the rugged terrain of the Sourland Mountains to the fertile farmland of the Hopewell Valley, Hopewell Township's rural character is a vanishing treasure. The Township offers a rare blend of resources, and their use and management have shaped its landscape and its quality of life. Linked by the highway network, services and employment to the urban and regional centers in Trenton, Princeton and beyond, Hopewell Township is unique among Mercer County's 13 municipalities. But its environmental, cultural, agricultural and historical importance to the region and State goes beyond either the Township's or County's borders.

Natural forces and human activities have shaped the natural and cultural landscape that this Plan seeks to protect, enhance and maintain in the best interests of current and future citizens. The Delaware River, a federally designated Wild and Scenic River, and an intricate network of headwater tributaries have carved an attractive landscape that includes the broad floodplain of the Delaware River, the Stony Brook lowlands and Pleasant Valley, while unique geomorphologic changes have formed the rugged terrain of Baldpate, Pennington and the Sourland Mountains. The cultural landscape is represented by historic settlement areas and land use patterns, as well as a broad assortment of housing and employment opportunities

The changes that have occurred over centuries are reflected in the small settlement areas and scattered suburban neighborhoods set amid fields and forests, and long-established commercial and office establishments have been joined by major new commercial and office facilities, all relying on the critical water resources of the Stony Brook, Delaware River drainage basin and groundwater.

The last decade has seen major, irreversible changes affecting the Township and its land and water resources, as new housing and major employment have been met with new commitments to open space preservation. If not properly managed, this development trend threatens to overwhelm, and forever alter, the special sense of "place" that is Hopewell Township. How change is managed today will forever shape the quality of life in the Township.

In this Master Plan, Hopewell is choosing to deal with the pressures for growth responsibly and conservatively, channeling development to appropriate areas with available infrastructure, and limiting the effects of growth in the "environs". In this way, the Township's land and water resources can be conserved, farmland can be retained for agricultural use and the character that attracted past and present residents, and provides Hopewell's unique identity, can be protected. Land use and management decisions made

today will determine whether we squander these riches through ill-conceived development and exploitation, or choose to be worthy stewards of the land and water, preserving what is best about the Township, and its critical resources, for future generations.

In preparing this Master Plan, the Planning Board has built upon past planning initiatives. Nonetheless, to achieve the goal of retaining large contiguous tracts of farmland and other open lands in the "environs", this Master Plan includes creative resource conservation zoning initiatives. In conjunction with the continuing acquisition of open space, farmland and easements, which has resulted in the preservation of over 700 acres of farmland, 1,500 acres of conservation easements and 3,500 acres of open space, these initiatives provide the balanced approach to land use management that the Township seeks to implement.

In order to accomplish the above goal, land use alternatives for the future must afford a sustainable lifestyle, which meets the needs of the present without compromising the future, and without depriving property owners of a reasonable use of their land. Land use policies should operate within the bounds established by the carrying capacity of the natural and built environment, where growth and development are designed within limits defined by natural resource capabilities and existing infrastructure. As part of the development of this Master Plan, the Township's water resources were extensively studied, and the maintenance of water quantity and quality are of singular importance to sustainability and capacity limitations.

This Master Plan is designed to maintain or establish compact and desirable residential neighborhoods, which conserve the forested expanses of mountain and the broad open spaces and bucolic setting of the valley. The compact settlement patterns of present and future neighborhoods should provide vital places to live, work and play in safe and attractive surroundings, where an expanding network of public open spaces connects residents with recreation, open spaces, and cultural and community facilities.

Open lands dominate the valley and mountain portions of Hopewell Township, and are the "environs" that contain important natural systems, critical to the ecological balance. These pastures, fields and woodlands, which define the visual character of much of the Township, are closely aligned with perceptions of quality of life. They also form the backdrop for current and future neighborhoods, where linkages will be expanded or developed to promote non-vehicular travel and increase opportunities for meaningful human interaction. The vision of this master plan calls for planning and zoning strategies that, in combination with open space, farmland and easement purchases and other conservation efforts, can assure that future residents can share this sense of place in a safe, healthy environment. This vision is also consistent with and complements the vision articulated in the *New Jersey State Development and Redevelopment Plan* (State Plan or SDRP).

In the absence of the significant policy adjustments provided in this Land Use Plan, random and uncoordinated development will undermine the fundamental goals of the planning process and continue to erode the quality of life in Hopewell Township. Land use patterns and intensities should promote the viability of farming prime soils, protect an

adequate supply of clean water to meet future needs and preserve the scenic roadsides and broad expanses of rural countryside. Special care should be devoted to preserving the unique character of the historic villages and hamlets.

The planning strategies for managing change are designed to provide careful stewardship of the limited resources on which current and future generations will rely. Enhanced resource protection will offer a future where farmlands maintain a centuries-old land use pattern and activity, wildlife habitat is preserved, and natural systems remain integrated for healthy functioning and the regional public benefits they afford.

Guiding Principles

This Master Plan is dedicated to preserving, protecting and enhancing Hopewell's natural and cultural resources, and promoting a sustainable future for the Township and the region. The vision for managing change in Hopewell's future is reflected in these key principles:

Design and performance standards should protect environmentally sensitive areas with the goal of maintaining the quality of the air and water that flow through Hopewell.

Development should be sustainable in meeting the needs of the present without compromising the future, and should be based on capacity limits established by natural resource capabilities and infrastructure.

Community character should be conserved by carefully managing the scale, form, design and intensity of new residential and non-residential development, retaining farmland, woodlands and other open lands, preserving historic structures and districts, and by managing change to complement historic resources.

Scenic vistas of the rural countryside and the villages and hamlets should be protected.

A variety of housing and a balance of opportunities to live, work and play in safe and attractive surroundings should be provided, in part by identifying locations and developing criteria for mixed-use development.

An efficient circulation system that promotes important circulation linkages, retains the character of the rural road network and provides for safe vehicular, pedestrian, equestrian and bicycle movements should be maintained.

The Greenway system, a network of pathways, waterways and natural features linking significant public and private open spaces, should be expanded.

Farmland and open lands should be retained and the impacts of development should be limited throughout the valley and mountain areas, in part by allowing the

use of techniques to encourage developers to transfer development to designated villages and hamlets.

A long-range policy for Route 31 should be developed to manage community design, circulation and safety considerations.

The realization of these objectives will require a combination of public actions, such as farmland and open space preservation and sustainable land use strategies and zoning techniques, as well as a variety of private conservation efforts.

Introduction

The Hopewell Township Planning Board initiated a review of the 1992 Master Plan in 1998. That process culminated in the adoption by the Planning Board of the 1998 Reexamination Report on December 14, 1998. The principal recommendation of the 1998 Reexamination Report was that a new Master Plan be prepared and adopted.

For the past three years the Planning Board has explored the planning issues which will shape Hopewell's future, so that this Master Plan can properly reflect the goals and vision for the Township's future. During this period, the Township Committee adopted a series of zoning amendments designed to implement some of the recommendations of the Reexamination Report.

This Master Plan includes the statement of objectives, principles, assumptions, policies and standards upon which the subsequent proposals for the physical, economic and social development of the Township are based; the Land Use Plan Element, which a municipality is required to adopt in order to maintain the authority to zone; and, the Conservation Plan Element, which is intrinsically related to the proposals in the Land Use Plan Element. The Planning Board adopted the other required Master Plan element, the Housing Plan Element, in 1997. The optional elements of the Master Plan will be prepared in a multi-year, phased approach, commencing with the Open Space and Recreation Plan, Farmland Preservation Plan and Circulation Plan.

Goals and Objectives

Through the statement of objectives, principles, assumptions, policies and standards, the Planning Board articulates the vision for the future development of the municipality. This vision builds upon what has come before, incorporates these conditions, and expresses what the Township wants to be in the future.

The statement of purposes of the Municipal Land Use Law (MLUL) articulates the objectives of the State in providing municipalities with the power to plan and zone. These purposes of the enabling legislation combine with detailed local goals and objectives to guide the development of the Master Plan. The purposes of the Municipal Land Use Law (*N.J.S.A. 40:55D-2*) are as follows:

a. To encourage municipal action to guide the appropriate use or development of all lands in this State, in a manner which will promote the public health, safety, morals, and general welfare;

b. To secure safety from fire, flood, panic and other natural and manmade disasters;

c. To provide adequate light, air and open space;

d. To ensure that the development of individual municipalities does not conflict with the development and general welfare of neighboring municipalities, the county and the State as a whole;

e. To promote the establishment of appropriate population densities and concentrations that will contribute to the well being of persons, neighborhoods, communities and regions and preservation of the environment;

f. To encourage the appropriate and efficient expenditure of public funds by the coordination of public development with land use policies;

g. To provide sufficient space in appropriate locations for a variety of agricultural, residential, recreational, commercial and industrial uses and open space, both public and private, according to their respective environmental requirements in order to meet the needs of all New Jersey citizens;

h. To encourage the location and design of transportation routes which will promote the free flow of traffic while discouraging location of such facilities and routes which result in congestion or blight;

i. To promote a desirable visual environment through creative development techniques and good civic design and arrangements;

j. To promote the conservation of historic sites and districts, open space, energy resources and valuable natural resources in the State and to prevent urban sprawl and degradation of the environment through improper use of land;

k. To encourage planned unit developments which incorporate the best features of design and relate the type, design and layout of residential, commercial, industrial and recreational development of the particular site;

l. To encourage senior citizen community housing construction;

m. To encourage coordination of the various public and private procedures and activities shaping land development with a view of lessening the cost of such development and to the more efficient use of land;

n. To promote utilization of renewable energy sources; and

o. To promote the maximum practicable recovery and recycling of recyclable materials from municipal solid waste through the use of planning practices designed to incorporate the State Recycling Plan goals and to complement municipal recycling programs.

In addition to the MLUL purposes, and the goals of rural conservation and resource protection outlined above in the Introduction, the objectives of the 1992 Master Plan are refined and expanded in this Master Plan. The statement of objectives is the fundamental component that guides the Planning Board's development of policies, strategies and standards. These include:

Land Use and Management

- To exercise stewardship over the lands and waters of Hopewell Township to ensure that these resources are available for the sustenance and enjoyment of present and future generations.

- To protect and maintain the prevailing rural character and unique sense of place of the Township, which includes diverse residential neighborhoods, attractive non-residential uses, historic settlement areas and scenic landscapes, which result from the natural topography, agricultural lands, woodlands and watercourses.

- To establish development densities and intensities at levels that do not exceed the carrying capacity of the natural environment and available infrastructure, based on the sensitivities and limitations of these systems.

- To promote cooperation with neighboring municipalities in the region, particularly the Boroughs of Hopewell and Pennington, to advance consistent development and open space goals, policies and plans.

- To promote the goals and objectives of Hopewell Township through the incorporation of local policies and strategies that respond to the basic premises, intent and purposes of the State Development and Redevelopment Plan and the Mercer County Master Plan.

- To provide a future land use pattern that serves the needs of the community for housing, community services and a safe and healthful environment, and that promotes public health, physical activities and social interaction.

- To continue and expand upon land use policies that promote controlled development at suitable locations and appropriate intensities by directing and limiting the more intense development to areas where sanitary sewer service and public water supplies exist or are planned, and by discouraging the extension of growth-inducing infrastructure into rural areas.

- To provide for a reasonable balance among various land uses that respects and reflects the interaction and synergy of community life.

- To offer flexibility in development techniques which recognize new approaches and technologies that are responsive to evolving demographic, economic and environmental needs.

Community Design

- To develop standards to ensure good visual quality and design for all land use categories.

- To ensure that new development is visually and functionally compatible with the physical character of the Township.

- To provide for a proactive approach to physical design and community planning so that adjacent land uses function compatibly and harmoniously in terms of scale and location.

- To improve the visual and physical appearance of developed areas while protecting residential neighborhoods from encroachment by incompatible uses.

- To establish land use policies and design standards that will enhance views along existing commercial corridors.

- To retain to the greatest extent practicable attractive vistas from public rights-of-way, including views of hills, valleys, ridgelines, woodlands, farmlands, hedge rows, stream corridors, flood plains and other natural areas.

Natural Resources

- To protect sensitive environmental resources from destruction or degradation**,** including but not limited to steep slopes, ridgelines, trout streams, wetlands, stream corridors, potable water supplies, watersheds, aquifers, rivers, viewsheds, forests and other vegetation, soils, habitats of threatened and endangered species and unique natural systems.

- To preserve and maintain the interrelationships between land and water resources that contribute to their functioning as an ecological system.

- To relate the intensity of development, in areas relying on groundwater supplies and on-site sewage disposal, to conservative estimates of available water resources and the ability of the soil and ground water to sustain on-lot disposal systems without degrading or impairing the water quality.

- To protect biological diversity through the maintenance of large contiguous tracts and corridors of recreation, forest, flood plain and other open space lands.

- To protect prime agricultural soils, soils of statewide importance and soils of local importance for their contribution to agricultural production.

- To continue the acquisition of important open space through the use of the Township's open space tax and other sources of funding.

- To promote private conservation efforts (donations, easements) that help protect natural assets.

- To promote land use and management policies that provide for clean air and protection from noise and light impacts.

- To promote the development and adoption of resource management standards to manage land use activities in a manner that protects the integrity of natural resources for the future use and enjoyment of generations to come.

- To identify and manage stream corridor buffer areas by maintaining undisturbed vegetation in order to protect and improve water quality, and provide wildlife corridors and opportunities for passive and active recreation.

- To ensure that development involving steep slopes is planned and constructed to minimize steep slope disturbance.

- To protect groundwater supply and quality through the adoption of aquifer management programs, including relevant standards for wellhead protection programs, and standards to protect and enhance groundwater recharge areas, such as impervious coverage limitations.

- To establish a regional watershed management plan to mitigate stormwater impacts, with particular focus on non-structural solutions to flood control and stormwater runoff.

- To promote the use of minimal necessary levels of nighttime outdoor illuminance so as to protect and preserve the dark sky quality and starscape of the Township and to prevent negative impacts on neighboring properties.

Housing

- To provide for a variety of housing types which respond to the needs of households of varying size, age, and income, persons with disabilities and emerging demographic characteristics.

- To promote and support the development and redevelopment of affordable housing intended to address the Township's fair share of the region's lower income housing, particularly in areas served by public transportation which connect to areas of employment.

- To provide a range of housing opportunities within the Township, with densities and lot sizes that respond to the capabilities and limitations of natural systems and available infrastructure.

Agriculture

- To encourage the preservation of agriculture through proactive planning where there are suitable conditions for the continued operation and maintenance of agricultural uses.

- To preserve a large contiguous land base to assure that agriculture remains a viable, permanent land use.

- To promote agricultural preservation activities with the Township's Agricultural Advisory Committee, the State Agriculture Development Committee (SADC), the Mercer County Agricultural Development Board (CADB) and other open space preservation activities in the Township.

- To recognize agriculture as a significant economic industry in the community and to encourage economic opportunities in this industry.

- To provide financial incentives, financing mechanisms and enhanced opportunities for agricultural businesses that assist in maintaining agriculture as a viable economic activity.

- To encourage compatibility between agricultural operations and neighboring non-agricultural development through the right-to-farm ordinance.

Transportation

- To create a circulation plan sufficient to accommodate planned development.

- To encourage proactive planning and regulation to ensure the adequacy of transportation facilities for planned future development, including the establishment of appropriate street design standards, the establishment of public/private partnerships for funding mechanisms, the coordination of transportation modes to accommodate changing commuter patterns, and the establishment of park and ride facilities and shuttle service.

- To coordinate with other municipalities, governmental bodies and corporate partners for a regional approach to transportation that respects and enhances the character of the community.

- To promote the development of future passenger rail service to and from the Township, and to de-emphasize further highway development or extension into agricultural or scenic areas.

- To establish transportation policies and programs that improve connections among housing, employment and commercial uses, including provisions for vehicular and pedestrian travel and bicycle paths.

- To promote transit alternatives in new and existing development to reduce traffic congestion, including ride shares, buses, mass transit, taxis, car/van pools, dial-a-ride, and flextime.

- To control development in rural areas so that traffic will not exceed the capacity of the existing rural road network and historic bridges to provide safe, efficient and convenient traffic movements, based on rural road service standards designed to maintain the character of the community.

- To recognize that roadways are public lands that deserve aesthetic design consideration as well as efficient movement of vehicles, and to carefully preserve viewsheds and plan entrances to the Township because they represent a visitor's first impression of the Township.

- To promote the design and development of roadway improvements necessary to serve existing population and employment sectors of the Township.

- To encourage transportation funding for maintenance of the existing transportation system, rather than encouraging the development of new systems in rural areas.

- To establish highway access management plans for arterial highways.

- To minimize the impacts of transportation systems on the environment, including air and noise pollution.

Economic Development

- To provide for desirable non-residential development in appropriate areas of the Township that will complement the existing character of the community and aid in broadening the local tax base.

- To promote the redesign of existing commercial sites to provide a more efficient land use pattern through such approaches as reduced curb cuts, interconnecting driveways, improved pedestrian and bicycle linkages and enhanced landscaping.

- To provide for new commercial areas in compact forms in areas with utilities in order to concentrate businesses and provide a variety of services.

- To coordinate such items as architectural design, access, landscaping, lighting, signs and similar design features to produce visually and functionally compatible economic development.

- To provide commercial activities in proximity to populations where adverse impacts to the community can be minimized, and to avoid commercial development that is unrelated to the needs of the community.

- To promote regional cooperation with adjoining municipalities, with particular reference to the Boroughs of Hopewell and Pennington, in the development of economic development strategies.

Historic and Cultural Resources

- To safeguard the heritage of the Township by preserving those resources that have historic, archaeological, scenic, social, cultural, economic and architectural significance, based on national, state and local importance and criteria.

- To discourage encroachment on historic structures and sites by uses and buildings that are incompatible or detract in design.

- To encourage the preservation, rehabilitation or adaptive reuse of historic buildings and structures that protects their architectural integrity and preserves their context within the historic landscape.

- To encourage the development of land use regulations which acknowledge and permit special treatment for historic landscapes, viewsheds, districts, sites, and structures including setbacks, buffers and other design criteria.

Community Facilities and Utilities

- To plan for the expansion of necessary public services, such as utilities, community facilities and recreation, at a reasonable cost in response to the proposals in the land use plan element.

- To establish a system whereby necessary capital improvements can be programmed and planned in advance, and land can be reserved to meet the future needs for community facilities and open space.

- To provide facilities for community groups and cultural activities.

- To ensure that the development process acknowledges and addresses the impact on community facilities and utilities through the payment of the fair share of any off-tract improvements for community facilities to the extent permitted by law.

Recreation and Open Space

- To promote the provision of appropriate and balanced public open space and recreational facilities through public action and the development review process.

- To prepare and maintain recreation and open space master plans to establish and enhance recreational lands and public open space; to establish linkages of public spaces through the use of greenways, greenbelts, waterways, paths and bikeways; and, to establish as the highest priority for public acquisition, areas of critical recreational, scenic or environmental value.

- To encourage the public acquisition of areas of exceptional recreational or scenic value, or environmental sensitivity, at all levels of government, with priority given to acquisition of land to meet present and future demand for active and passive recreation.

- To continue the Township's commitment to work with neighboring municipalities, the Hopewell Valley Regional School District and interested groups and citizens to establish and promote recreational opportunities through regional partnerships, for both active and passive recreation and for people of all ages.

- To promote cultural activities that provide recreational opportunities for a broad spectrum of residents and visitors.

- To assess and provide opportunities for active and passive recreation to meet the needs of all citizens.

- To devise appropriate strategies for the public and private ownership and maintenance of open space and recreation lands.

- To provide tax benefits for private owners who permit public use through participation in the State's open lands program.

The challenge is to address these far-reaching objectives in a manner that provides the greatest good for the most people, and to determine the best uses in the most appropriate locations to serve the general welfare of the people, while respecting the rights of property owners to achieve a reasonable beneficial use of their land.

THE LAND USE PLAN

This Land Use Plan Element is designed to implement the foregoing goals, objectives, principles and assumptions in a manner which respects and responds to the capabilities and limitations of the natural conditions - groundwater quantity and quality, surface water

resources, agricultural use opportunities, soils, steep slopes, woodlands, wetlands and flood prone areas. The Plan generally depicts the proposed location, extent and intensity of development of land to be used in the future for varying types of residential, commercial and industrial purposes, as shown on the Land Use Plan Map (Figure 1). These land use planning proposals become effective change agents when implemented through the Land Use Management Ordinance.

The Land Use Plan Element is the fundamental unit of the Master Plan, with the broadest scope and most far-reaching consequences. It represents a municipality's basic statement about the future disposition of land and the physical form of the community. Informed by the other plan elements, which play supporting roles, the Land Use Plan and the Conservation Plan have the greatest influence on the Township's future, as they shape local zoning.

To an extent this Plan maintains the policy orientation of prior Master Plans, but refines this orientation to better address evolving conditions and concerns. It provides a more detailed description of the goals, objectives and intent of the Plan, and suggests new planning initiatives to achieve the Township's objectives. The recommendations of the 1998 Reexamination Report, as modified during the planning process since its adoption, are also reflected in this Land Use Plan.

In general, non-residential districts have been reduced in size and number, to minimize the sprawl effects of highway frontage development and more clearly target specific use types in distinct districts, which better respond to the objectives of the Master Plan. The residential and resource conservation districts have been enlarged in size, although the number of districts remains the same. Residential densities have been modified to address the findings of the land use and natural resource background information. Specifically, residential uses will be less dominant throughout the valley and mountain districts, where Hopewell's "environs" strategy has been designed to deter sprawl and promote the goals of the State Plan. This policy approach responds to the objectives of protecting groundwater and surface water quality, and better accomplishes the goals of rural conservation, environmental protection, agricultural retention and protection of the scenic attributes of Hopewell Township.

Valley and Mountain Resource Conservation Districts

The Valley Resource Conservation (VRC) and Mountain Resource Conservation (MRC) Districts include approximately 78% of the land area of Hopewell Township. The lack of public water and sewer infrastructure throughout these Districts limits future development potential, which should respect the carrying capacity limitations of the natural systems to provide potable water and treat septic effluent without degrading water quality below prescribed limits. Capacity-based planning involves the measurement of a municipality's ability to accommodate growth and development within limits defined by natural resource capabilities and existing infrastructure. A capacity analysis determines the limiting factors in an area's ability to grow and evaluates the capacity of the limiting factor. With the

Figure 1
Land Use Plan
Hopewell Township, NJ

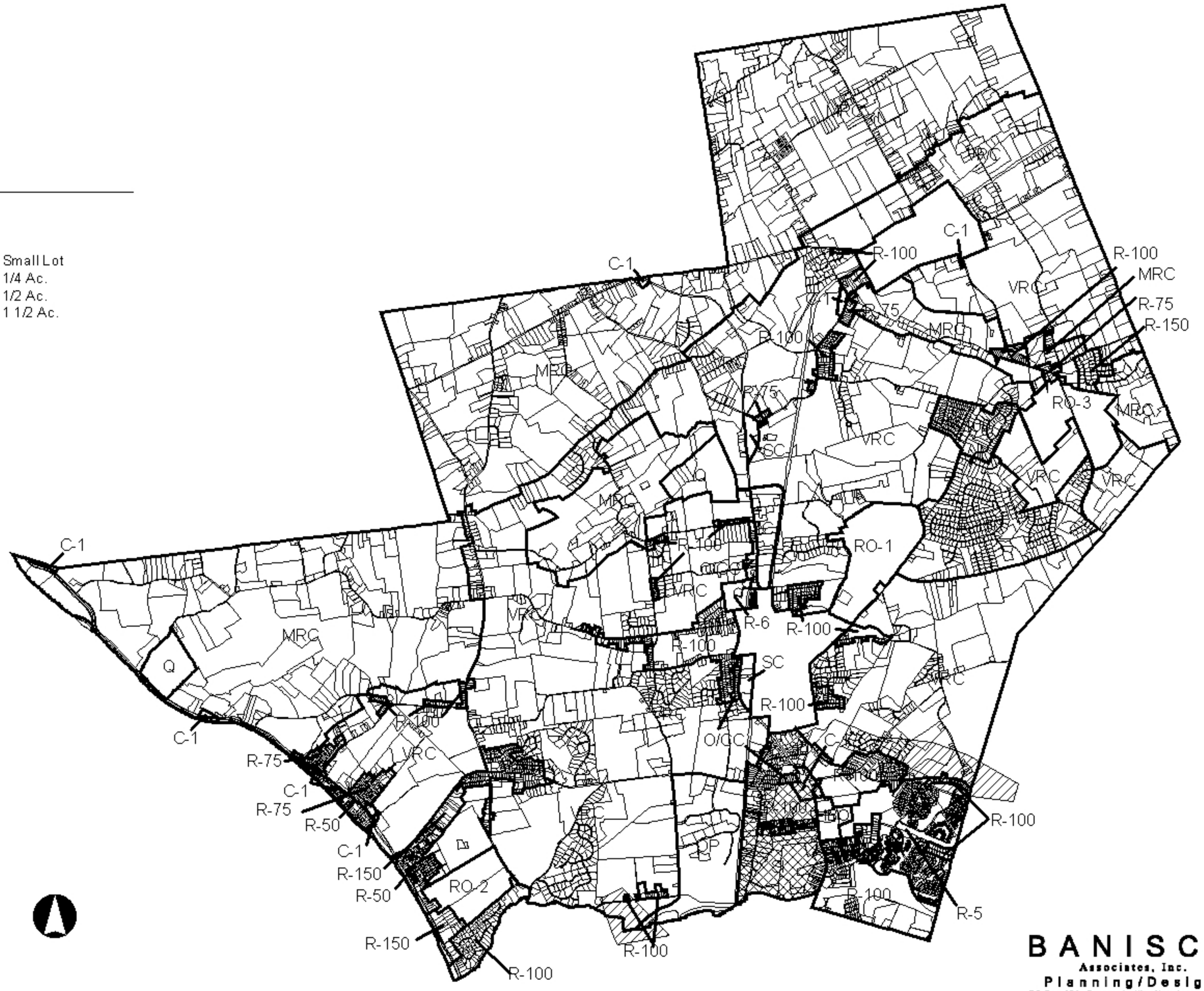
May 2002

Legend

Zone	Zone Name
R-5	Residential 5/Ac.
R-6	Age Restricted Residential
R-50	Residential, Existing Single Family - Small Lot
R-75	Residential, Existing Single Family - 1/4 Ac.
R-100	Residential, Existing Single Family - 1/2 Ac.
R-150	Residential, Existing Single Family - 1 1/2 Ac.
VRC	Valley Resource Conservation
MRC	Mountain Resource Conservation
C-1	Neighborhood Retail Commercial
SC & SC-1	Shopping Center
HBO	Highway Business Office
O/CC	Office/Commercial Conversion
SI	Special Industrial
OP	Office Park
IC	Industrial/Commercial District
RO-1	Research Office
RO-2	Research Office
RO-3	Research Office
Q	Quarry

Airport Hazard Area

TND Overlay



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absence of public water and sewer infrastructure, the limiting factor thus becomes an element of the natural environment, such as water.

Sustainable development policies provide a land use framework that meets the needs of the present without compromising the ability of future generations to meet their own needs. It responds to capacity limits with a margin of safety, and incorporates the goals of stewardship over land and water resources, and the prolonged maintenance of a healthy and desirable physical environment.

A dominant theme in the planning process is the protection of water resources, with a particular emphasis on groundwater quantity and quality. Because of the critical importance of this resource, the Planning Board commissioned a study of the groundwater resources of the Township. This study, prepared by M^2 Associates and titled *Evaluation of Groundwater Resources of Hopewell Township, Mercer County, New Jersey* (March 2001), incorporated herein by reference, analyzed the ability of the groundwater system to provide a sustainable yield of water, and the parameters which affect the quality of groundwater. The Township's groundwater resources are of value not only to the current and future residents of the Township, but also to downstream consumers and ecological receptors. The study points out that the aquifers of Hopewell Township and the surrounding area are sole source aquifers, meaning that the New Jersey Department of Environmental Protection (NJDEP) and United States Environmental Protection Agency (USEPA) consider groundwater to be the single source of potable water within the designated areas and indicate that measures should be taken to protect this critical resource from potential health hazards. As a recharge and headwaters area for one of the most populous and fastest growing regions in the State, Hopewell Township is choosing a responsible course of action, designed to protect these resources through all available measures.

The Township is underlain by two distinct aquifers, or groundwater systems: the Stockton/Passaic formations, consisting of sandstones and shales; and, the Lockatong/Diabase formations, mudstones, sandstones, siltstones and volcanic rock. The Stockton/Passaic formations generally coincide with the VRC District, while the Lockatong/Diabase formations generally coincide with the MRC District. Available groundwater in the Stockton/Passaic formations permits higher development densities than in the Lockatong/Diabase formations due to the differing characteristics of the aquifer systems. The storage potential of the Stockton/Passaic formation is enhanced by some fracturing which provides void spaces for groundwater storage, while the Lockatong/Diabase formations are less porous with limited fracturing and limited available groundwater. One of the unique features of the Township's geology is the Hopewell Fault, a major regional fault separating the Stockton Formation and Passaic Formation. This fault is a valuable recharge zone, not only to Hopewell Township and Hopewell Borough, but also to downstream portions of the Bedens Brook basin in Somerset County.

The groundwater management strategy for the VRC and MRC Districts seeks to limit the degradation of groundwater while also permitting appropriate uses of land. The land and water management policies of this Plan do not attempt to achieve non-degradation of

groundwater, because such a policy would essentially prevent further development in these areas. While a strong argument can be made that the Township's groundwater resources merit a non-degradation approach, this Plan seeks a balance between resource protection and reasonable development expectations. Thus, this Plan seeks to program uses of land that can conserve limited resources while also permitting development at densities which produce limited degradation while protecting the potability and availability of groundwater resources.

The surface water resources of the Township provide additional support for the protection of water resources. The streams in the Township are primarily headwaters, defined as small streams that are the sources of a river. Headwaters are particularly vulnerable to degradation because of the limited available flow, and any degradation in headwaters is transferred downstream throughout the surface water system. Surveys of the biological makeup of the Township's streams indicate that in large part the streams draining to the Delaware River, a federally designated Wild and Scenic River, are non-impaired, while those draining to the Raritan River are moderately impaired. Surface water classifications indicate that the streams range from non-trout to trout maintenance categories. Trout maintenance streams are those designated by the NJDEP as supporting trout throughout the year, while non-trout waters are generally not suitable for trout because of their physical, chemical, or biological characteristics, but are suitable for a wide variety of other fish species.

In addition to the protection of groundwater and surface water resources, the VRC and MRC Districts respond to the goals of conserving significant elements of the rural and agricultural countryside. The rural character that pervades much of Hopewell Township, embodied in the scenic vistas, wooded hillsides, agricultural fields and historic settlement patterns, is highly susceptible to degradation. Full development at previously permitted densities has consumed most of the countryside, and even when clustered, has produced minor conservation acreages which generally contain critical lands (wetlands, flood plains, steep slopes, etc.). In this development pattern, permitted units have been situated in a somewhat geometric arrangement that fails to recognize the natural patterns of the landscape and eliminates or mars scenic vistas and natural lands.

Full development has also produced dramatic alteration of rural roadways and bridges to accommodate traffic movements and increased traffic demand. As this alteration occurs, roadside features (trees, hedgerows, stone rows, etc.) and alignments (narrow cartways and winding alignments) are frequently lost. The rural character undergoes a process of change that results in conversion to a more suburban appearance with the environmental and traffic impacts of this form of development. With an extensive system of scenic roadside views, including the only designated scenic roadway, Route 29, in New Jersey, the maintenance of visual quality is particularly important to the overall planning strategy.

Similarly, suburban development has consumed substantial agricultural lands in the Township. Suburban development can result in land use conflicts with agriculture as new neighbors object to the noise, odor, and other impacts of agricultural land uses on residential neighborhoods. The VRC and MRC Districts are intended in part to reduce the

amount of residential development so that agriculture is affected by fewer residences and more lands can be retained for agricultural use. Lower densities also mean that more water is available for agricultural needs, as agriculture is reliant on the availability of significant water resources. As agriculture continues to become more intensive and entrepreneurial, smaller agricultural parcels can have a meaningful role in agricultural production, especially with the advantageous access to the regional highway network and markets for ease of distribution to densely populated areas.

Virtually all except the mountainous portions of Hopewell Township consist of important farmlands—prime soils, soils of statewide importance and soils of local significance. In addition, the vast majority of the land area in Hopewell Township is designated an Agricultural Development Area (ADA), and Hopewell Township represents a majority of all the ADAs in Mercer County. The long-term utility and viability of this resource is enhanced if critical masses of agricultural lands and soils are maintained wherever they currently exist. The combination of prime soils, access to densely populated markets and the Township's regional location all combine to assure an agricultural future, so long as the farmland base can be preserved. The significant amount of farmland, which still accounts for approximately half of the Township's land area, can make farming a permanent part of the local landscape and economy.

Many different programs are available, and have been used, to preserve, protect and maintain the Township's agricultural base. The Township's approach involves a range of preservation strategies with a number of options for the landowner. The Township is in the process of preparing a farmland preservation plan, which outlines a variety of mechanisms to preserve farmland, and the Township's Agricultural Advisory Committee will assist in the development of the plan. In addition to the acquisition and management strategies outlined in the farmland preservation plan, land use regulation can assist agriculture by preserving two vital physical resources, land and water. If residential and non-residential development consumes all of the available water, then water will not be available to agriculture. Similarly, if development consumes all of the land, then the farmland base is lost forever. In addition, the ability to retain agriculture as a viable industry is compromised by the fragmentation of the resource that occurs with conventional subdivisions.

Hopewell Township's vision for the future of undeveloped lands embodies the smart growth principles of the State Plan intended to deter sprawl. Residential zoning, which has been perceived as a sort of "basic right" of landowners throughout New Jersey's countryside, has proven to be a root cause of sprawl. As efforts to hold back the tide of suburban sprawl have found the support of State planning efforts in New Jersey and around the country, a clearer focus has been brought to the problems created by sprawl, and the benefits to alternative patterns of development.

History shows that development will occur at permitted suburban densities (2, 4 or 5 acres) when the market demands in an area justify the cost of such development. Hopewell Township and surrounding areas have been shaped by several "generations" of suburban development, which have generally occurred during times of a strong economy. Suburban

residential zoning standards have evolved from the Euclidean model, which segregated undesirable commercial and industrial uses from residential uses in order to afford safe and healthy neighborhoods.

When viewed through the lens of residents of America's cities a century ago, the rationale of segregating residential uses is obvious. However, smart growth planning recognizes that today the threat has changed. When applied to the undeveloped countryside, single family residential zoning consumes a valuable resource and fails to capitalize on opportunities to retain substantial open lands, provide for non-vehicular travel and enhance the potential for human interaction. If sprawl is to be discontinued, then sprawl zoning must be eliminated. Thus, the underlying residential "by right" zoning, which generates sprawling suburbs throughout the country, must be ended.

While a range of definitions of sprawl are advanced in the planning literature, Webster's Dictionary puts it clearly - "to spread out in an awkward…way, so as to take up more space than is necessary". Hopewell's Master Plan proposes to achieve the objectives of the State Plan for the Environs through a variety of zoning techniques that avoid sprawl. Each permitted land development option will create a pattern designed to maximize the use of enlightened community design templates to make conservation of open lands a by-product of all residential development. These patterns will promote continued agricultural use of prime farmland, and sound management and conservation of environmentally sensitive lands. They will also establish compact new neighborhoods, which benefit from, and are a benefit to, the expanding mosaic of preserved and conserved lands.

Unlike sprawl, the land development options in this Land Use Plan are each fully supportive of the master plan objectives, and maintain and reinforce historic land use and settlement patterns. Providing a range of development options offers a series of alternatives to a property owner, which may more readily meet individual needs or desires, and is less monolithic as a planning template. In addition, the proposed development alternatives offer more diverse design options. In combination with comprehensive acquisition strategies, these options will serve to shape the Township's physical form into the future.

If we are to depart from the trend toward suburban expansion which has contributed to the general awareness of increasing sprawl, we must abandon the paradigm which has created this pattern. In turn, we must replace it with a new model, where by-right development standards produce more holistic approaches to the merger of built places with farmlands, natural lands and rural features. Rather than requiring suburban sprawl, or simply allowing it to occur, development opportunities provided "by right" should offer the preferred balance of built and natural lands, where the natural character of the land can be substantially retained after development. Permitted zoning options are targeted at building neighborhoods and communities, not "developments", and community building techniques have been chosen specifically for this purpose.

Two hallmarks of the Hopewell Land Use Plan for undeveloped land areas are the village development and the traditional neighborhood development. The village development

option allows transfer of permitted residences between parcels, providing for the establishment of more compact neighborhoods in areas which are more suitable for development, and permanent preservation of the lands from which these residential units are removed. Traditional neighborhood designs (TND), which promote pedestrian movements and neighborhood interaction, are modeled after the small lot and mixed use development patterns found in neighborhoods in Pennington, Hopewell, Princeton and other "places" within the region which have strong identities and are highly desirable as residential locations.

In order to promote the goals of the Plan relative to resource protection, and to provide an off-tract cluster option for land in the RC Districts, the Plan proposes that development in the village and traditional neighborhood formats utilize development potential transferred from the RC Districts. The method for allocating and using development potential under these options is further discussed in subsequent sections on the village and traditional neighborhood concepts. Additional options for protecting critical resources through the transfer of development potential, including inter-municipal or mandatory transfer programs, may be available in the future if enabling legislation is adopted.

In addition to village or traditional neighborhood designs, the open lands zoning option permits an appropriate scale of residential development, while also retaining prime agricultural lands and protecting sensitive environmental features. Open lands zoning is patterned after the objectives of the State Plan, and provides for the retention of the substantial majority of a parcel for continuing agricultural or resource conservation use, limiting the residential development to no more than 20 to 40 percent of the tract, depending on the District. In this way, the "sprawl factor", while not entirely eliminated, is dramatically reduced, enabling permanent preservation and conservation of major portions of the natural and agricultural landscape.

Open lands zoning permits property owners in the Valley Resource Conservation District a density of approximately one unit per 6 acres, provided that a significant remainder (60 to 70 percent of the parcel) is permanently deed restricted against future residential use and remains available for agricultural or other resource conservation uses. Minimum lot sizes should be large enough to assure an adequate site for a home, septic system and accessory uses, but small enough so that the open space ratios can be provided. In the Mountain Resource Conservation District, the open lands zoning permits a density of approximately one unit per 13 to 14 acres, provided that 75 to 80 percent of the parcel is permanently deed restricted against future residential use and remains available for agricultural or other resource conservation uses. In this District minimum lot sizes also should be large enough to assure an adequate site for a home, septic system and accessory uses, but small enough so that the open space ratios can be provided. The vision for Hopewell's open lands is that these natural systems or agricultural management units are retained in sufficient area and with all vital components to support continued healthy functioning. In order to assure that the open lands are not remnant unusable properties, minimum standards for soil quality and usable land should be established.

Two other development options, clustering and lot averaging, are also recommended for the VRC and MRC Districts at the same densities as with the open lands zoning option. Clustering, designed to provide useful tracts of open space as a byproduct of residential development, permits a reduction in the minimum lot size in return for permanent commitments of open space areas, with the open space dedicated to either a public body or homeowners' association. Clustering is only permitted where at least 60 percent of the tract in the VRC District, and at least 75 percent of the tract in the MRC District, can be retained in open space, subject to a minimum lot size that is large enough to assure an adequate site for a home, septic system and accessory uses, as with the open lands zoning approach. Lot averaging, a variation on the cluster design concept, requires a majority of lots meet a specified range of lot sizes smaller than the required minimum lot size to permit other larger lots designed to meet specific conservation objectives, is also recommended. This form of lot averaging can shape development so that critical resources are preserved. The taxable status of all resulting lots is retained, and questions about the long-term maintenance of public or homeowners' open space and any related municipal responsibilities are eliminated, since all properties remain in private ownership.

In order to foster the preferred open lands, clustering, and lot averaging options, and the transfer of development potential to the village and traditional neighborhood, which techniques prevent the loss of the countryside, conventional subdivision opportunities must be curtailed. One technique to promote these patterns would be to permit conventional subdivision designs only as a conditional use. Under this approach, mandatory design features could offset the negative effects of sprawl-type development. For instance, when a conventional subdivision is planned to consume an entire tract, reforestation strategies could be required to recreate wildlife habitat opportunities and migration corridors, as well as to screen the visual impacts of new suburban development. Similarly, the siting of buildings and structures can be regulated to limit the negative impacts of new construction on the resources prioritized for protection. The conditional use standards could require a demonstration that the preferred community design options are not achievable, and could provide a reduced density as a disincentive for the conventional subdivision. These standards provide an opportunity for residential use which can co-exist with the preferred options.

When viewed together, and compared to conventional subdivisions, the preferred development alternatives for the Valley and Mountain Resource Conservation Districts will maintain large contiguous tracts of farmland and other open lands, promote continued agricultural use of prime agricultural lands and maintain the delicate balance among the various components of the natural systems. The VRC and MRC Districts have been designed to comprehensively address the interrelated goals of protecting groundwater quantity and quality, maintaining surface water resources, conserving the scenic rural character, addressing limiting soil conditions and promoting continued agricultural use opportunities, while also honoring the property rights of landowners.

Villages

During the course of this planning process the Board has spent a considerable amount of time exploring the concept of transferring development potential. Although a true, mandatory transfer of development rights program is only authorized by the MLUL in Burlington County, the MLUL provides authorization for the implementation of a program to cluster development between noncontiguous parcels. Specifically, *N.J.S.A. 40:55D-65*, which details the permitted contents of a zoning ordinance, states in item c. under the section on standards for planned developments the following: "Such standards may provide for the clustering of development between noncontiguous parcels and may, in order to encourage the flexibility of density, intensity of land uses, design and type authorize a deviation in various clusters from the density, or intensity of use, established for an entire planned development". Through this mechanism the municipality has the authority to establish a program for the transfer of development between noncontiguous parcels.

The intent of the noncontiguous cluster option is to preserve and protect the critical environmental and agricultural resources that prevail in the VRC and MRC Districts, while accommodating development in well planned and located nodes. Thus, the VRC and MRC Districts serve as the area from which development potential is relocated to preserve the area's resources and provide alternative forms of planned development. To effectuate this proposal the Land Use Plan recommends two alternative forms to serve as the receiving areas for the transferred development potential. One form is the Traditional Neighborhood Development, located in a sewered area, or an area with greater potential for infrastructure, where greater development densities can be accommodated, as discussed in detail below. The other form of development is the Village, a form intended to address the Plan's vision for flexible development techniques that promote controlled development, livable communities, environmental protection and agricultural retention.

Under the Village development option, nodes of development in the VRC District would be permitted to develop in accordance with the following standards and delineation criteria:

- Contiguous and/or noncontiguous parcels are preserved from development through the transfer of development potential from the VRC or MRC Districts.

- The Village should be located on a County Road, in order to provide appropriate transportation linkages.

- The Village should be located in proximity to existing development and community facilities, so that the area can form a neighborhood and utilize these community resources.

- The Village should be located where suitable soils for on-site wastewater disposal exist, so that a community wastewater system can be developed.

- The Village should be located on tracts with a mix of woodlands and open fields, so that the site design can take advantage of these features and the development can be attractively designed and shielded/screened.

- The Village should be located where the Stockton/Passaic formations underlie the site, and not in the Lockatong/Diabase areas, due to the need for adequate water supply. Thus, the Village is only permitted in the VRC District, but development may be transferred from the MRC as well as the VRC District.

- The Village should be located in an area where aquifer testing demonstrates that sufficient water supplies are available to sustain the proposed development.

- The Village should be designed with wastewater treatment systems that incorporate the latest technology, avoid the discharge of untreated wastewater to the groundwater, and are operated by a responsible utility.

In order to promote the vision for the Village development option, the development area will have to be carefully planned as to scale and design features. As part of the planning process the Board examined various scales and features for Village development areas. The preferred size for the Village was determined to be 150 to 250 dwelling units, arranged on lot sizes as small as 7,500 square feet, mimicking the village lot sizes experienced in places like Pennington and Hopewell Boroughs. Even though the minimum lot size of 7,500 square feet equates to a net density of 5.8 units/acre, the open space, parks, community facilities, streets and other uses reduce the effective density by approximately half, to a maximum gross density of approximately 2.5 to 3 units per acre. Based on these gross densities and the desired number of dwelling units, the minimum and maximum tract sizes for the Village development option are 50 and 100 acres, respectively, and the Village must be developed at a minimum gross density of 2.5 units per acre and a maximum gross density of 3 units per acre.

In order to create a diverse and self-sustaining neighborhood, the intent of the Village development option is to include a community building, recreation facilities, a few shops for conveniences, or office space for professionals or telecommuters. The public and quasi-public uses contribute to the sense of community for the neighborhood, and can serve as a focal point for the surrounding areas. The commercial uses can be a mandatory or optional component of the Village, but their inclusion promotes other objectives of the Master Plan relative to community design and circulation.

Under this scenario, and given the location of the potential Villages, a formula or mechanism is needed to limit the extent of the non-residential development, and to equate the level of non-residential development to the level of residential development. For example, if 75 square feet of commercial/office space per residential unit is permitted, a 150 unit development would allow 11,250 square feet of commercial/office development, and a 250 unit development would allow 18,750 square feet.

Allowing commercial development, as outlined above, is one form of incentive that might induce the creation of a Village by an interested developer. However, in terms of the residential development, if a developer can build one unit on 5 or 10 acres, or one unit on a 7,500 square foot lot, the economics will dictate the larger lot development. Thus, additional incentives are needed in order to promote the alternative development pattern.

The Village development is only permitted as a noncontiguous cluster option where the proposed units result from a transfer of development potential from properties in the VRC and MRC Districts. In order to facilitate this option, and promote the resource protection goals of the Plan, a bonus density is recommended for land in the VRC and MRC Districts if the units are transferred to a Village or Traditional Neighborhood. For the purposes of this noncontiguous cluster option, units could be transferred at a ratio of one unit per 2 to 4 acres in the VRC District and one unit per 4 to 8 acres in the MRC District, and the transfer ratio may vary depending on whether the units are transferred to the Village or Traditional Neighborhood.

The Villages must also fit into the context of where they are developed and, because they permit commercial development not normally permitted in a residential zone, must include a sensitive design for the non-residential development. In order to provide an attractive setting which relates to but does not infringe upon the surrounding rural environs, part of the preserved land which provides the bonus densities for the Village should be in the form of a greenbelt around the development area. This greenbelt provides a clear definition of the boundaries of the village, while also serving as a buffer to surrounding land uses. The design of non-residential development should respond to the specific location and needs of the planned community. In some cases the appropriate location for commercial development is the interior of the planned village, so that pedestrian linkages are increased and motor vehicle movements reduced. In other cases, the non-residential development should be located at the fringe of the village in order to provide services to the surrounding community. A design that integrates both functions may be the most appropriate in certain locations.

Traditional Neighborhoods

The second form of community development that has emerged from the planning process is the concept of a Traditional Neighborhood Development (TND). New Jersey is rich with examples of livable mixed use communities, where the combination of multiple land uses in a central location has created a desirable living environment. While varying in scale, geographical location, and specific land use patterns, these communities have a number of common elements that contribute to their vitality. Among these items are the following:

- Public spaces that provide a focal point for the surrounding community, including village greens, community parks, open space and greenbelts, and water features, sometimes referred to as green or blue infrastructure.

- Quasi-public or civic uses, such as a church, library or community center, in close proximity and integrated into the residential and commercial fabric of the neighborhood, promoting a sense of community and interaction.

- Relatively small single-family lot sizes, ranging between 4,000 and 8,000 square feet, with minimal setbacks to encourage design flexibility and neighborhood interaction.

- Multiple-use buildings, with retail on the ground floor and offices or apartments above, including two-family dwellings and accessory apartments.

- A circulation system that provides transportation alternatives and interconnectivity, with sidewalks and pedestrian accessibility, direct access or linkages to mass transit, and a traditional or modified grid pattern.

- Narrow streets and wide sidewalks to encourage pedestrian interaction and movement, promoting the development of public and quasi-public spaces that foster interaction and compatibility among uses.

In terms of the geographical location for the mixed use, or traditional neighborhood, development concept, this Plan recommends most of the area bounded by Route 31 on the east, the Township boundary to the south, Reed Road on the west, and Washington Crossing-Pennington Road (Route 546) on the north. This area is recommended for a TND because there is a relatively large amount of open space that is in reasonable proximity to areas with public sewer and water, to Interstate 95 and Route 31, to existing commercial development and employment opportunities, to a potential railway station, and to some quasi-public facilities.

In order to promote the type of mixed-use, traditional community that would address the goals of the Plan, the standards for this planned development option depart from those typically recommended under conventional planning options. Rather than rigidly separating uses into specific districts, this approach seeks to provide flexibility in the development pattern in order to support the larger objectives of a cohesive community. Likewise, development standards provide greater flexibility in order to allow creativity in the arrangement of buildings and uses.

The TND standards include a list of permitted uses, like a conventional planning option. These uses may include public uses, such as parks, squares and buffer areas; civic uses, such as libraries, religious buildings and cultural facilities; commercial uses, including retail, office and mixed use; and, high and medium density residential uses, which may include single-family homes, townhouses, apartments and live/work arrangements. However, the TND option departs from conventional planning by requiring a specific mix of uses and allocation of land to each use. Thus, a minimum and maximum of each use type is provided within the development, creating a unified, sustaining community. In order to promote flexibility and design ingenuity in the arrangement of the community, the zoning standards are generally less rigid and permit greater intensity.

In addition, the density of residential development in the TND is an important consideration. The base density in the TND should be established at a level low enough so that bonus densities can be utilized, but high enough so that the TND alternative is attractive to a potential developer. Bonus densities to achieve an increased residential density are provided if some other public purpose is accomplished through the proposed development pattern. For example, some bonus density is available if the proposed development includes housing affordable to middle income households, defined as households with an annual income equal to 80 to 120% of the regional median income. Bonus density is also available if development potential is clustered from the VRC and MRC Districts to the TND neighborhood, as further detailed in the preceding section on the Village development option. The maximum density for the TND depends upon the use of bonus densities, and cannot be achieved unless density is transferred from the VRC and MRC Districts.

The development of the TND will involve a formalized process of community consensus building and public involvement. A center design study that specifies the development regulations and design guidelines will be prepared. Neighbors and stakeholders will be included in the planning and design of the TND. The implementation of the TND will be carefully reviewed and analyzed so that adjustments to the content and design can be incorporated.

Residential Land Use

The residential development opportunities in the Township cover a broad spectrum. In addition to the two resource conservation districts and the two planned development overlay districts identified previously, the Land Use Plan provides for six residential districts. The districts range from high density with attached, age-restricted and affordable housing and a complement of water and sewer infrastructure, to moderate density districts which recognize existing settlement patterns. The higher density districts generally occur in existing settlement areas and the southern part of the Township, while the resource conservation districts are spread throughout the central lowlands and northern hills.

R-150 Residential District

This residential district is largely designed to recognize existing development patterns resulting from the historical street pattern and prior planning initiatives. The largest R-150 District includes Elm Ridge Park, bounded by Pennington-Rocky Hill Road, Elm Ridge Road, and Bayberry Road, and adjacent rural residential development. The R-150 District also provides a transitional residential development opportunity on River Road (Route 29) and Washington Crossing-Pennington Road; and, an established development area around the village of Mt. Rose, recognizing the existing development along Cherry Valley Road.

Development standards for the R-150 District are proposed to remain the same, in accordance with the health regulations and zoning standards currently in existence in the Township.

R-100 Residential District

The R-100 District largely encompasses pockets of existing development, many of which were historically developed as subdivisions under prior zoning or strip frontage lots along collector and arterial roads. This pattern occurs throughout the Township. In the Titusville area, for example, Maddock Road and Washington Crossing Estates are included in this district. Around Pennington, the Timberlane area, Penn View Heights, the "tree streets", the Ingleside area and the Orchard Avenue area are part of this land use category, while near Hopewell older developments along Pennington-Hopewell Road and Hopewell-Princeton Road also are included. All of these areas around Pennington are currently served by on-site septic systems, but are under investigation for public sewers due to septic problems in many of these areas. This district includes developed areas currently on public sewer along Pennington-Rocky Hill Road at Moore's Mill-Mt. Rose and Bayberry Roads.

In addition to these and other developed areas, there are several undeveloped tracts in the area south of the Pennington circle that afford opportunities for continued residential development. East of the circle and accessing the south side of Pennington-Lawrenceville Road (Route 546) is the approved Wellington Manor development, consisting of 115 age-restricted, single-family detached dwellings. West of the circle and south of Washington Crossing-Pennington Road (also Route 546) are undeveloped lands located in this district and designated for inclusion in the Traditional Neighborhood Development overlay outlined previously. Outside of the TND, development standards for the R-100 District are proposed to remain the same.

R-50 and R-75 Residential Districts

The R-50 District is located in two areas in the western section of the Township, and is designed to reflect the existing small lot pattern that has evolved in these areas. One location is in the Washington Crossing area, east of River Road (Route 29) and south of Washington Crossing-Pennington Road. The other location encompasses the river community of Titusville, north of Washington Crossing State Park and west of River Road. The configurations, densities and proposed uses in these areas are not proposed for change under this Plan.

The R-75 District is located in several parts of the Township, and also is intended to recognize existing development areas with smaller lots. This District predominantly occurs as a transitional area between higher and lower density residential areas, as around Titusville and west of Hopewell Borough off of Route 518, or in small hamlets of existing residential development, as in Marshall's Corner and Mt. Rose.

R-5 (Residential) and R-6 (Age-restricted Residential) Districts

The R-5 residential district is located only in the southeast part of the Township adjacent to the Lawrence Township border. This district includes the existing developed area of Brandon Farms, as well as the approved developments of townhouses and age-restricted affordable housing at Hopewell Grant. The R-5 District is served by public water and

sewer, and has access to the major Interstate, State and County roadways in the Township. Included in the approximately 1,300 unit Brandon Farms development are single-family detached dwellings, age-restricted housing, townhouses and apartments, as well as recreational facilities and the site of the Township's newest elementary school. The Hopewell Grant development is approved for 240 townhouses and 150 age-restricted, affordable apartments.

The R-6 District also is identified in only one part of the Township, immediately to the northwest of Pennington Borough on either side of Route 31. Included in this district is the existing development of Pennington Point East, consisting of 50 age-restricted townhouses. On the west side of Route 31 is the proposed development of Pennington Point West, comprised of 44 affordable apartments open to the general public and 244 age-restricted units. This development also provides a mix of uses, including offices, retail and child care.

The R-5 and R-6 Districts are proposed to continue in their current configuration and in accordance with current zoning standards. These Districts play an important role in the Township's overall land development strategy, as they provide alternative residential development options and increase the diversity of housing types in the Township. They also play a critical role in meeting the Township's affordable housing obligations.

Non-residential Land Use

The non-residential districts in the Township are characterized by two major factors, the prevalence of existing and approved research office and office park development throughout the Township, and the influence of Route 31 and the existing development pattern. The widespread Research Office districts are vestiges of a period when the Township permitted major corporate research and office uses in the agricultural and residential areas provided they were on very large tracts. The Office Park district, which in part replaces a former industrial office park district, includes a more recent office campus development, the Merrill Lynch complex on Scotch Road.

The other major component of the non-residential districts in the Township is the existing, approved and programmed development along the Route 31 corridor and abutting properties. As a major north-south route serving Mercer, Hunterdon and Warren Counties, the Route 31 corridor represents a unique planning challenge. The existing land use pattern reflects decades of development, much of it predating the existing zoning or reflecting a planning and zoning approach that did not discriminate among various use types.

The challenge in the Route 31 corridor is to shape the existing development pattern into cohesive communities, reflecting each community's development expectations, while respecting the corridor's important transportation function. To effectuate this vision the Township is undertaking a specific Route 31 design study, which will generate a subplan element to be adopted as an addendum to this Land Use Plan. The goal of this study is to develop a set of model land use guidelines that integrates the vehicular transportation

function of a State highway with community design concepts that enhance the quality and experience of life in a small-town, rural community.

The Land Use Plan includes 11 non-residential districts that provide for retail, office, research and limited industrial development. These districts are located both within and outside proposed sanitary sewer service areas. When on-site sewage disposal is proposed, the intensity of development shall take into account the overriding goal of protecting groundwater quantity and quality.

Due to the prominence of the non-residential districts along the major transit corridors in the Township, and the proximity of these districts to residential areas, attentive site design is extremely important to protect the scenic amenities and residential character of the Township. Therefore, each of the non-residential districts will include screening, buffering, and landscaping standards designed to promote attractive and compatible development.

This Plan recommends several changes to the former planning and zoning scheme that prevailed in the non-residential districts. Many of the industrial office park districts have been eliminated in favor of less intensive residential uses. Other areas are recommended for modified land use classifications that relate better to the surrounding land uses and environment. Other specific areas of change are referenced below.

Research Office Districts

The existing Research Office (RO) District is situated in three distinct parts of the Township: on Bear Tavern Road (Route 579) in the southwest corner of the Township; on Pennington-Rocky Hill Road in the central part of the Township; and, on Carter Road (Route 569) in the southeast corner of the Township. The RO District on Bear Tavern Road is presently occupied by Janssen Pharmaceutica, a research office complex and farm on 242 acres. The tract has preliminary site plan approval for approximately 880,000 square feet of building floor area, approximately half of which has been built. The existing zoning standards provide for an additional 675,000 square feet of potential development.

The other two Research Office Districts are the subject of General Development Plan (GDP) approvals. Bristol-Myers Squib occupies a 433-acre campus on Pennington-Rocky Hill Road that was formerly the site of the Mobil research complex. The GDP approval for this tract permits approximately 2,820,000 square feet of building floor area, of which approximately 990,000 square feet have been developed. The easterly RO District is the subject of a GDP approval for approximately 800,000 square feet of development, of which approximately 300,000 square feet have been developed. All three Research Office Districts lie within wastewater management planning areas that permit on-site or off-site sewage treatment facilities.

This Plan proposes some modifications to the existing RO Districts, based on the Board's evaluation of utility limitations, circulation, water supply and residential development patterns. The RO-1 District includes the BMS tract, which is proposed to continue under

the existing RO standards and GDP approval with a floor area ratio (FAR) of 15 percent. The RO-2 District includes the Janssen tract and is proposed for a floor area ratio of 13 percent. The recommendation for a 13 percent FAR is partially based on traffic data submitted by Janssen, which it contends will not create an undue burden on existing roadways or cause major expansion of roadways. The Planning Board approves of the 13 percent FAR subject to confirmation at the time of preparation of the Circulation Plan Element of the Master Plan. This recommendation for the Janssen tract is also based on the property's location in the Suburban Planning Area; the location of the property in a sewer service area and an area with public water supply; the distribution and overall impact of site-generated traffic; and, design parameters affecting the square footage per employee and the desirable employee population. The RO-3 District on Carter Road is proposed to have a floor area ratio of 5 to 10 percent, depending on whether the FAR is applied to the whole tract (East and West parcels) or the East parcel only. A FAR of approximately 10 percent on the East tract alone would accommodate the approved development, while a FAR of approximately 5 percent applied to the entire tract also would accommodate the approved development.

Office Park District

The Office Park (OP) District is located in one area of the Township, bounded by Route 95 to the south, Scotch Road to the west, Washington Crossing-Pennington Road to the north and the CSX Railroad line to the east. As noted previously, the OP District replaces a former industrial office park planning classification. The major facility in this area is the 450-acre Merrill Lynch complex, which has received a GDP approval for 3,500,000 square feet of development at a floor area ratio of 18 percent. Approximately 1,250,000 square feet of this development has received site plan approval, and is largely constructed and occupied. In addition to the office uses, the GDP approval permits child care centers, a hotel and conference center, retail uses and recreational facilities.

The portion of the OP District occupied by the Merrill Lynch facility is within a wastewater management planning area with allocated sewage capacity, while the remainder of the District is not. This Plan proposes to eliminate the industrial uses that were formerly permitted in this area, as they are not compatible with the intent of this Plan concerning the type and location of non-residential development. The remaining development standards relating to area, yard and other bulk requirements are not proposed for change under this Plan. Development in the non-sewered portions of the District will be limited by wastewater management rules affecting the on-site disposal of sewage.

Special Industrial District

The Special Industrial District is located in the south central portion of the Township, defined by the Township boundary to the south, the CSX Railroad line to the west, Diverty Road to the north and Route 31 to the east. This District combines a former industrial office park district and special industrial district into one zoning district that combines the features of each. The District currently includes a diverse assortment of uses, including offices, warehouses, flex space, residences and commercial services.

Because this district involves the combination of two districts, the development standards that formerly applied have been modified to incorporate relevant provisions from the former industrial office park district and the special industrial district.

In order to promote the Traditional Neighborhood Development concept outlined earlier, a portion of this district is proposed for designation under the planned development overlay. This largely undeveloped section of the SI District offers an excellent opportunity for mixed-use development, given its proximity to services, sewer infrastructure and the regional road network. The opportunity for public transportation is also enhanced by its proximity to the railroad line and Interstate 95. The Denow Road extension, a major County roadway initiative, is planned to pass through this area, connecting Reed Road to the eastern part of the Township.

Highway Business Office District and Shopping Center District

The Highway Business Office (HBO) District and the Shopping Center (SC) District represent the Township's major retail commercial areas. The HBO District is recommended for one location in the Township, on the east side of Route 31 south of the Pennington Circle. A former HBO District at the intersection of Routes 31 and 612 has been eliminated, and is now proposed for residential development. The SC District is found in two locations: one on the east side of Route 31 south of Delaware Avenue to the railroad overpass; and, the other encompassing the Pennytown development on Route 31 at Marshalls Corner. Two former SC Districts, located on Princeton Avenue south of Hopewell Borough, and on Washington Crossing-Pennington Road west of the Pennington Circle, have been eliminated, the former because the tract involved has been purchased by the County and State, and the latter because it is part of a larger residential tract and the TND district.

The HBO District includes uses such as the Mercer Professional Center and the approved Hopewell Town Center, a 125,000 square foot retail and office complex. The SC District at Delaware Avenue includes the 92,000 square foot Pennington Center, the approved expansion of the Somerton Springs Golf Center, and a small commercial industrial park.

These two districts occupy prominent locations in the heart of the Township, and have major influences on the visual and land use character of the southern stretch of Route 31. Because of this prominence, careful site design is required to blend proposed development and redevelopment into the overall planning program for the Township. The study of Route 31 design guidelines, and the proposal for a Traditional Neighborhood Development, will have particular importance in shaping future development within these districts. As noted previously, the recommendations from the Route 31 study will be incorporated into a subplan element, which may include recommendations concerning the land uses permitted in these districts.

Industrial Commercial District

The Industrial Commercial (IC) District is designated in one location in the Township, on the east side of Route 31 from the northern boundary of Pennington Borough to the railroad spur overpass to the Trap Rock Quarry. This stretch of the Route 31 frontage, which is approximately one mile long, is largely developed with the following uses, beginning at the Pennington boundary: the Pennington public works center; Pennington Sales and Service; Bridge Auto Parts; Goebel Art; Hopewell Car Wash; Barbour Brothers Steel; Bish Sales; general and veterinarians' offices; Rosedale Mills and 84 Lumber.

The above list of uses highlights the diverse nature of the commercial and industrial activities that occupy this district. The IC land use designation appears to have been developed to recognize this diversity, as it incorporates offices and industrial uses with shopping centers, garden centers and smaller commercial uses. The Township's Circulation Plan Element has recommended a new street in this area to provide an alternative access, and to relieve the curb cuts and congestion resulting from multiple driveways accessing Route 31.

Similar to the other non-residential districts that front on Route 31, the challenge in this district is to develop a set of community design guidelines that can shape the functional and visual character as the area develops and redevelops. Existing floor area ratios and bulk standards are proposed to remain the same as currently provided in the land use ordinance, with some modification to the permitted uses in order to eliminate uses that are inappropriate for the long-term redesign of the corridor.

Office/Commercial Conversion District and Neighborhood Retail Commercial District

While this Plan intends to prevent future strip commercial development patterns and locate new commercial uses in centers, there are certain parts of the Township where this pattern already exists. This Plan proposes that these small-lot commercial areas be retained in order to recognize the existing pattern of uses, but that these areas not be enlarged or intensified to perpetuate the strip commercial pattern.

The existing Commercial Conversion (CC) District is located in two parts of the Township, on the west side of Route 31 extending from the Pennington Borough boundary north to Woosamonsa Road, and west of the Pennington circle on the north side of Washington Crossing-Pennington Road. The Route 31 stretch of this district includes some active businesses such as the Stony Brook Gardens and the Cream King, and smaller businesses in converted homes such as a realtors and piano studio. This district is intended to permit residential uses with low intensity commercial and office exceptions, akin to home occupations, but no intensive commercial uses such as service stations, car washes, fast food restaurants or food stores.

The existing Office (O) District also is located in two small areas of the Township, on the east side of Route 31 north of the Pennington Borough boundary to a point opposite Yard Road, and on the west side of Route 31 south of Pennington Titusville Road/West

Delaware Avenue to a point opposite the Golf Center. These locations include a mixture of office and residential uses, but the office uses have already established the land use character in the area. The conversion of the residences to small-scale office uses is permitted, but these areas should be redesigned to control access to Route 31 by interconnecting parking areas to result in shared parking. Like the CC District and other districts fronting on Route 31, the development of design guidelines as part of the Route 31 community design study seeks to enhance the form and function of this district.

Due to similar physical and land use characteristics and zoning standards, the Plan proposes the combination of the Office and Commercial Conversion Districts into a single Office/Commercial Conversion District. It is further recommended that the permitted uses include uses currently permitted in both districts.

The Neighborhood Retail Commercial (C-1) District is intended to recognize patterns of existing, isolated retail uses consisting of single lots or two adjoining uses. This district includes the WaWa and Karen's at the intersection of Route 31 and Route 518; existing commercial uses in Titusville and along Route 29; the existing commercial uses at the Pennington Circle; the former restaurant and day spa on Pennington Hopewell Road; and the office building on Princeton Avenue adjacent to Hopewell Borough. The purpose of this district is not to perpetuate strip development, but merely to recognize existing uses. Permitted uses include retail sales and service establishments, offices, banks, restaurants and commercial recreational establishments.

In general, the boundaries of this district are intended to follow the outline proposed in former Master Plans. As with the 1992 Master Plan, the C-1 District at the intersection of Route 31 and Route 518 is proposed to include only the existing uses at the intersection.

Quarry District

The Quarry (Q) District recognizes the presence of the two existing quarries in the Township, which operate under a specific, established set of standards. The Moores Station quarry is located at the intersection of Route 29 and Pleasant Valley Road, and is the subject of an agreement negotiated during the acquisition of Baldpate Mountain that will result in future recreational use of some of the property. The Pennington Quarry, located on Pennington Mountain, is situated on the west side of Route 31at the railroad spur overpass, and is surrounded by preserved farmlands and agricultural uses.

The 1992 Master Plan identifies the quarries as "industrial/office/flex space" on the Land Use Plan map, although no discussion appears in the Commercial/Industrial section of the Land Use Plan, and the land use ordinance indicates that, upon depletion of quarry material, the zoning becomes office park. As noted previously, the Moores Station quarry is the subject of an agreement concerning future use of the property. However, the industrial/office/flex space designation is inappropriate for the two quarries, as the parcels are surrounded by public land, preserved farms, active agricultural operations and residences. The land use designation upon depletion of quarry materials should be

changed to one that is more in keeping with the areas surrounding the quarry, including residential and recreational opportunities.

Conservation Plan Element

"Conservation is a state of harmony between men and land. By land is meant all of the things on, over, or in the earth. Harmony with land is like harmony with a friend; you cannot cherish his right hand and chop off his left. That is to say, you cannot love game and hate predators; you cannot conserve the waters and waste the ranges; you cannot build the forest and mine the farm. The land is one organism. Its parts, like our own parts, compete with each other and cooperate with each other. The competitions are as much a part of the inner workings as the cooperations. You can regulate them – cautiously – but not abolish them.

The outstanding scientific discovery of the twentieth century is not television, or radio, but rather the complexity of the land organism. Only those who know the most about it can appreciate how little we know about it. The last word in ignorance is the man who says of an animal or plant: 'What good is it?' If the land mechanism as a whole is good, then every part is good, whether we understand it or not. If the biota, in the course of aeons, has built something we like but do not understand, then who but a fool would discard seemingly useless parts? To keep every cog and wheel is the first precaution of intelligent tinkering." Aldo Leopold, 1948

Introduction

The Municipal Land Use Law (*N.J.S.A. 40:55D-1 et seq.*) authorizes municipalities to plan and zone to promote the general welfare. The 15 purposes of the MLUL (*N.J.S.A. 40:55D-2*) explain the State legislature's rationale for the statutory authorization for municipal land use planning and regulation. More than half of these purposes highlight the importance of conserving natural resources and a clean healthy environment:

- The public health and safety (subsection "a") bear a direct relationship to the use and management of New Jersey's land and water resources.

- Securing safety from floods and other natural and manmade disasters (subsection "b") and providing adequate light, air and open space (subsection "c") are similarly directed at conserving natural resources.

- "Preservation of the environment", in part through planning for "appropriate population densities and concentrations" (subsection "e") is a key underpinning of local land use policy.

- Providing sufficient space in appropriate locations for a variety of land uses, according to their respective environmental requirements, is intended to meet the needs of all New Jersey citizens" (subsection "g") for a healthy environment.

- The statute also seeks to promote the conservation of "open space, energy resources and valuable natural resources in the State and to prevent urban sprawl and degradation of the environment through improper use of land" (subsection "j").

- The conservation of energy is cited in subsection "n" ("promote utilization of renewable energy sources)" and subsection "o" ("promote the maximum practicable recovery and recycling of recyclable materials").

Preventing urban sprawl also has long been an objective of New Jersey's planning and zoning law, which is supported by the related objectives of protecting the natural environment and preventing its degradation. Sprawl is energy intensive and resource consumptive, increasing traffic and air pollution and destroying open spaces.

In furtherance of these conservation objectives, the MLUL provides for preparation and adoption of a Conservation Plan Element (*N.J.S.A. 40:55D-28b.8.*) which reads as follows:

> "Conservation plan element, providing for the preservation, conservation and utilization of natural resources, including, to the extent appropriate, energy, open space, water supply, forests, soil, marshes, wetlands, harbors, rivers and other waters, fisheries, endangered or threatened species, wildlife and other resources, and which systematically analyzes the impact of each other component and element of the Master Plan on the present and future preservation, conservation and utilization of those resources;"

This Conservation Plan outlines Hopewell Township's strategies to meet the statutory purpose to preserve, conserve and utilize natural resources. While it is designed to function in concert with the other plan elements, the most important linkage will be between the Land Use Plan and the Conservation Plan. Together, these plan elements propose the location, scale and intensity of new development and the resource management strategies needed to protect the environment.

This Master Plan recognizes that "business as usual" will not meet the conservation objectives of the MLUL. Retaining suburban residential zoning and other high intensity zoning options will overtax the natural environment, with substantial degradation of surface water and groundwater quality. It will also entail the removal of substantial forested areas, which are in short supply in New Jersey, and farmlands, which are particularly vulnerable to elimination by suburban sprawl.

The most effective way to protect farmland and natural resource lands is to buy the land or the development rights and manage the preserved resources. This approach permanently preserves these valuable features, and is the most effective means of limiting the effects of development. The continuing New Jersey voter support for open space preservation, most recently evidenced in the approval of the $1 billion Garden State Preservation Trust, bodes well for such acquisitions. Hopewell Township, through its local open space assessment, support for a Mercer County open space assessment, and establishment of a regional Open Space Advisory Committee with Hopewell and Pennington Boroughs, has demonstrated its

commitment to open space acquisitions. However, hundreds of thousands of acres of undeveloped and "underdeveloped" land throughout the State will remain beyond the reach of publicly funded acquisitions. Thus, local land use regulations continue to play a controlling role in how the environment is managed, during and after development.

Air, water and soil are the essential resources which support a healthy biota. The natural ecosystem finds a balance among its organic and non-organic components, where resources are used, not used up, and cyclical changes return to the point of beginning. Development disrupts these cycles, and places a heavy burden on man to reestablish the semblance of a natural balance. The principles of sustainable development demand that resource commitments made during this generation will be sustainable—that is, able to be continued for the benefit of future generations.

Fragmentation and degradation of vegetation, land and water resources have been a byproduct of human activity. Woodlands, initially cleared for agricultural use, have given way to residential neighborhoods easily developed on these high, dry and usable soils. Water quality has been progressively altered and impacted by human activity. Environmental impact statements (EIS) routinely admit the negative consequences of new development by acknowledging that each new house will produce a "house-worth" of pollution. A typical EIS purports to assure us that all the conventional safeguards will be employed, and that there are really no other alternatives available. However, it has become increasingly obvious that there are other alternatives available, and that zoning for sprawl does not protect the general welfare, but rather substantially degrades the environment and erodes the quality of life and human interaction.

The quality of the air we breathe, the water we drink and the food we eat determines the health of the human organism and all life forms. This Conservation Plan seeks to minimize further degradation of these resources and establish an arsenal of environmental health-building tools for the 21st century and beyond. This plan recognizes the inherent limitations of our ability to disassemble the natural world and put it back together again. It argues in favor of a lighter touch on the land, one that is more respectful of natural systems, and that limits the resource commitments and impacts of human intervention. This calls for a systems approach to natural resource conservation, where interconnected natural systems are viewed as a collective resource, not a series of separate features.

The variety of biological species is an indicator of the health of an ecosystem. Maintaining biological diversity requires protection of critical habitat areas. While habitats of endangered or threatened plant or animal species are of special importance, threatened or endangered status may be transient. For instance, the great blue heron and bald eagle have been removed from the protected list, yet their critical habitats remain essential to their continued survival. Additionally, the eradication of rare species removes elements from the food chain that help maintain ecological balance. The explosive deer population in New Jersey is but one example of the damage that can be wrought when this natural balance is lost.

Protecting biodiversity requires the protection of terrestrial and aquatic habitats that are highly susceptible to degradation. Surface water quality cannot be maintained without protection of the watershed areas that contribute to the streams. Freshwater wetlands play an important role in filtering contaminants from the surface water and groundwater regime and, while protected by state statutes, are not immune from impacts that occur beyond the regulated areas. Similarly, prime forested areas, including mature stands of native species, are easily lost or damaged through fragmentation, a manmade impact that reduces bio-diversity. A study prepared for the Friends of Hopewell Valley Open Space, *The Woodlands of Hopewell Valley* (White, 1990) identifies woodlands throughout Hopewell Township, and suggests priorities for conservation efforts based on the survey.

Because of its critical locale and the extent of its remaining habitat, Hopewell Township is host to exceptional species diversity. Hopewell Township's landscape gradually rises from the lower lands to the south and east through rolling hills to higher slopes in the north and west. A diagonal line running northeast to southwest forms a boundary between the red shales and the diabase formations of the Piedmont physiographic province. In a geologic sense, this divide provides the Hopewell Valley with its varied topography. One can trace this line on a map and see that it transects one of the fastest growing regions in the State. But this is not just the intersection of distinct geological features. It is also an overlap zone marking the northern limit of many southern native plant species and the southern range limit of many northern species. For instance, redbud, a tree common in the southern states, reaches the northern terminus of its natural range in the New Jersey piedmont and is listed as endangered in the State. Likewise, creeping spearwort, which is common in northern latitudes but endangered in New Jersey, is not found south of our area. Some bird species also reach the limits of their ranges in the piedmont, such as two chickadee species, black-capped from the north and Carolina from the south. In the biological sense, Hopewell Township's rural landscape is a remnant of what was once some of New Jersey's richest habitat for wildlife and wild plants – an ecological treasure of which we are the stewards.

The scenic wonder of ridgelines, slopes and ravines is only one aspect of the value of these natural features, without which certain species will not remain. Similarly, grassland habitats are essential to the nesting, feeding and breeding of a variety of grassland bird species, yet such areas are frequently lost to development. The effects of agriculture and suburban development have isolated woodland segments, and eliminated or prevented the interconnection of the remaining woodlands. The background studies identify woodland areas by forest cover type, as well as critical wetland, water and grassland habitats. Land development should be arranged to maximize the conservation of substantial masses of critical habitat areas, by limiting the aerial extent of development and promoting conservation techniques targeted to these resources.

Carrying capacity is a planning technique used to establish the maximum population level of a species based on the availability of natural resources. Carrying capacity had its genesis in ecological studies, used to manage wildlife habitat rangeland for grazing. In the context of land use planning, carrying capacity has been defined as the ability of natural and man-made systems to support a level of population growth and ancillary development while maintaining established standards of performance. When applied to regulating land use, an assessment of

carrying capacity is useful in establishing maximum densities or intensities of development. However, sustainability requires that we provide a margin of safety, and not plan for the maximum development that can currently be supported.

The policies and strategies of this Conservation Plan seek to limit the impacts of development and retain the natural terrain and features to the greatest extent practicable. This plan also promotes the restoration of natural systems that have been degraded by past activities. As new regulatory tools or techniques become available, they should be evaluated for their ability to promote the Conservation Plan objectives and adopted where appropriate. Conservation easements for critical resources should be established, and a program of mapping and monitoring instituted. Additionally, open space and woodlands acquisition priorities should be established to address the goals of the Conservation Plan.

Energy and Air Quality

Protection of the Township's air quality is largely dependent on regional, state, national, and even international factors. Similarly, energy conservation and utilization is shaped by a host of factors. However, local land use regulations determine future land use patterns, which have a direct effect on air quality and energy use. Management approaches that the Township can initiate to mitigate air pollution and promote energy conservation include the following:

a. Promote alternative means of transit by providing opportunities and access for buses, car and van pooling, bicycling, and walking.

b. Adopt development regulations that provide for compact residential neighborhoods and retain existing wooded areas and large contiguous open land areas.

c. Reduce the need for vehicular trips by facilitating better pedestrian and public transit interconnections among residential, commercial, office, and recreational uses.

d. Encourage staggered work hours for large employment centers to improve air quality.

e. Encourage energy conservation through subdivision and site plan design, building design, building orientation, and the evaluation of microclimate conditions such as solar access, shade and wind direction.

f. Recommend landscaping standards that provide buildings and parking areas with maximum solar access, shading, and wind protection.

g. Require air quality assessments at principal intersections for significant developments (300 or more vehicle trips per day) to identify problem areas and mitigation strategies.

h. Design bikeways, pedestrian walkways and other routes to maximize opportunities for non-motorized travel in existing and new development.

Forest Resources and Native Vegetation

Woodlands and other native vegetation perform a series of important functions related to the ecological balance Forests produce oxygen, giving them intrinsic value. They reduce soil erosion and surface runoff, absorb pollutants and promote aquifer recharge, because of the high moisture holding capacity of the forest soils and tree canopy. Forests provide habitats for plants and animals and provide open space and recreation lands. They enhance the visual character of scenic corridors, create a feeling of privacy and seclusion and reduce noise impacts. And they affect local climatic conditions near or within their boundaries, such as the cooling effect on trout streams. Woodlands and other native vegetation also provide visual diversity in the terrain, enhancing the value of property. Removal of trees and other vegetation can result in ecological, hydrological, and economic impacts.

The following approaches are recommended to preserve, protect and improve the forest resources in the Township.

a. A woodland conservation program, including identification of the floodplain, mesic and upland forest stands on the tract should be required as part of any application for development.

b. Performance standards should be established limiting the extent of forest removal, based on the quality of the forest type. Priority wooded areas for preservation include unique forest types, woodlands adjacent to public water supply tributaries, habitats critical for endangered and threatened species, specimen trees, large wooded patches, 100-year floodplains, wetlands, stream corridors, and slopes of 15 percent or greater.

c. Performance standards should encourage the preservation of habitat areas that are as large and circular as possible, gradual and undulating at the edges and connected by wildlife corridors wide enough to maintain interior conditions (i.e. 300' or more).

d. Hedgerows and forest areas along traveled roadways and established property boundaries should be retained and enhanced, where appropriate, with native species.

e. Woodland areas along open space corridors should be preserved and interconnections among existing woodlands should be promoted.

f. Reforestation and afforestation of open spaces, resulting from cluster designs, should be required to enhance habitat, promote recharge and reduce surface runoff, erosion and flooding through the use of native species.

g. A construction mitigation plan, which minimizes and mitigates construction-related impacts on woodlands, should be required prior to disturbance of more than 10,000 square feet of woodlands.

h. A local permitting process should be developed for isolated lots, to prevent the removal of trees and other vegetation from an area greater than 1,500 square feet unless on- or off-site replacement is provided.

i. Residential densities and impervious coverage should be reduced in order to promote the retention of forests in the Township.

Groundwater

The groundwater resources of the Township provide irrigation and potable water supplies to the Township's rural areas. In addition, groundwater provides the base flow to rivers and streams during low flow periods, and sensitive plant and animal communities are dependent upon this surface hydrology. The importance of this resource is further highlighted in the M^2 Associates report *Evaluation of Groundwater Resources of Hopewell Township, Mercer County, New Jersey* (March 2001). The following activities are recommended to protect and maintain this critical resource:

a. A program should be established, or coordinated with an existing County or State program, to ensure that existing septic tanks are regularly pumped and maintained.

b. Ongoing public education should be directed at preventing the discharge of toxic and hazardous pollutants to groundwater.

c. A public education program emphasizing the use and importance of water conservation measures should be instituted.

d. The Environmental Commission, in conjunction with the Health Department, should conduct an environmental audit of groundwater quality, including an analysis of existing groundwater samples and an identification of existing facilities that could adversely impact groundwater. Among the facilities that should be mapped and inventoried are the following:

    1. Underground storage tanks.
    2. Gas, fuel, and sewer line locations.
    3. Large septic systems for commercial/industrial users.
    4. Permitted community septic systems.
    5. Hazardous substance storage areas and facilities
    6. Permitted NJPDES groundwater or surface water discharge facilities.

e. The Township should consider the establishment of a wellhead protection program to protect community water supply systems, and should examine similar

management strategies for development activities occurring over the Hopewell Fault. This unique geologic feature should be identified and designated a critical water resource protection zone in order to maintain its function.

f. Landscaping standards should require the use of native and locally adapted plants, and designs which minimize irrigation, maintenance and turf areas and require mulches to preserve soil moisture.

g. New irrigation systems for lawns and landscaping should be curtailed or eliminated.

h. Development activities should seek to maximize groundwater recharge, with the ultimate objective of no net reduction in recharge, through creative management approaches.

i. The Township should evaluate alternative well testing methodologies in order to assure that groundwater availability is accurately analyzed. Test wells installed as part of a groundwater availability analysis should be tested for potability.

j. A water balance analysis should be provided with proposed subdivision and site plan applications.

k. Residential densities and impervious coverage should be reduced in order to protect the availability and potability of groundwater.

Scenic Resources

Scenic character is an important element in the general perception of the quality of life in Hopewell Township. The protection of scenic vistas, particularly those seen from public rights-of-way, will serve to maintain the Township's rural character. Since the local development review process plays a primary role in shaping new land use patterns, local review agencies are the appropriate administrative authority to encourage conservation of scenic characteristics. The following activities are recommended:

a. Scenic roads, bridges and corridors should be identified and categorized in terms of the scenic elements that contribute to their quality.

b. Design standards should be developed to guide the location and configuration of development, in order to protect the various categories of attractive views, including enclosed roadside views, extended roadside views, and distance views.

Steep Slopes

Development of steep slopes produces a variety of environmental impacts, including increased soil erosion and sedimentation, decreased surface water quality, decreased soil fertility, increased overland flow, decreased groundwater recharge, and altered natural

drainage patterns. In order to reduce the potential for these negative impacts, the Township should:

a. Develop standards that relate the intensity of development to the slope gradient.

b. Develop standards that limit tree removal and soil disturbance on steep slopes.

Stream Corridors

The Township is laced with a network of headwater tributaries to the Delaware and Raritan Rivers. In order to protect stream corridors from development impacts, it is recommended that the Township consider the following management approaches:

a. Woodlands and other vegetated buffers should be maintained or established along all stream corridors.

b. Where past land use practices have resulted in the removal of trees along stream corridors, management practices should include the reestablishment of the tree cover.

c. A stream corridor protection ordinance, modeled after the programs established by the Delaware and Raritan Canal Commission and the Stony Brook-Millstone Watershed Association, which seeks to protect the stream corridor and adjacent wetlands, floodplains, and contributory uplands with steep slopes, has been developed.

d. Management and monitoring strategies should be developed for stream corridor areas.

Surface Water

Surface water is impacted by both point and non-point source pollution. Point sources are generally subject to State regulations. Non-point source pollution, which has become a major concern, can be mitigated by local land use strategies and management approaches. Non-point source pollutants include septic system effluent, agricultural runoff, stormwater runoff, lawn maintenance chemicals and construction activities. In order to mitigate potential impacts to the Township's surface waters, the following management approaches are recommended:

a. Water quality best management practices should be adopted or refined, to protect the quality of surface waters and promote maximum habitat values. These include:

   Clustering development on the least porous soils, to promote infiltration

   Buffer strips and techniques to maximize overland flow, such as grassed swales and filter strips

Regional stormwater management approaches and extended detention facilities

Wet ponds (retention basins) and wetland or marsh creation

Detain runoff using infiltration practices, including trenches, basins, drywells and other structural solutions

Water quality inlets and oil/grit separators

b. Reductions in permitted residential densities and impervious coverage can reduce the potential impact to surface waters from non-point source pollution.

Threatened and Endangered Plant and Animal Species

Threatened and endangered plant and animal species are indicators of ecological diversity and environmental quality. Like the canary in the coal mine, they warn us when we are spoiling the quality of the environment beyond natural tolerances. The presence of rare species in the Township are testament to the historical emphasis on land stewardship. In order to protect and maintain these species, the Township should:

a. Conduct an ongoing inventory of threatened, endangered and declining species.

b. Prohibit development which will result in adverse impacts on the survival of threatened, endangered and declining species.

c. Develop a list of habitat requirements for threatened, endangered and declining species.

d. Map and preserve critical habitats, either through the open space acquisition or the development review process.

e. Preserve, expand or establish riparian wildlife corridors.

f. Preserve significant uplands areas where unique associations of habitats (some rare, some not) combine to promote biodiversity.

g. Preserve nodes of biodiversity wherever they occur.

h. Residential density and impervious coverage should be reduced in order to promote the preservation of critical habitats.

Wetlands

Since wetlands are regulated by the State and Federal governments, the Township is preempted from adopting conflicting regulations. However, management of protected

wetlands and transition areas remains an important issue, and site design decisions will affect wetlands ecosystems.

a. A system to periodically monitor and enforce conservation easement restrictions should be developed.

b. Permitted development should be arranged to avoid all significant wetlands, and when road crossings are unavoidable, they should be located at the point of minimum impact.

Relationship to Land Use Plan

The Conservation Plan identifies natural resource protection strategies which support the Land Use Plan. The resource management standards outlined in the Conservation Plan will serve to shape the development permitted by the Land Use Plan in a manner that will preserve and protect the Township's natural resources. In addition, the Conservation Plan is intended to involve local agencies, other than the Planning Board, in a comprehensive program to conserve critical resources.

Summary

The future face of the Hopewell Valley will be shaped, in large measure, by this Master Plan. The open fields and meadows, the calming influences of free flowing streams and rivers, and the beauty of forested slopes are a legacy for future generations. Faithful adherence to the policies outlined in this Conservation Plan, combined with a broad concept of stewardship where all citizens contribute, will protect and enhance the special character of the landscape, and the healthy ecology with which Hopewell Township is blessed.

"We do not inherit the earth from our fathers, we are borrowing it from our children." David Brower

Land Use and Natural Resource Background Information

Land Use by Property Class and Land Use/Land Cover

Figures 2 and 3 are maps of the Township identifying, respectively, land use by property tax class and land use according to land cover derived from aerial photography. Figure 2 of land use by property tax class indicates the type of use on a property according to the property tax records of the Township's tax assessor. Coupling tax assessment records with a tax parcel map through the use of Geographic Information Systems (GIS), the map depicts various land use and ownership categories to create a picture of land use patterns. However, a land use classification system by tax class assigns a single use to the lot, and thus tends to obscure more detailed information concerning woodlands, wetlands and other open lands on a lot.

On a Township-wide basis the land use by property class (according to the year 2000 tax list), is as follows:

Property Class	Acres	Percent
Vacant	2,100	5.8
Residential	7,263	20.1
Farm	17,989	49.9
Commercial	733	2.0
Industrial	1,570	4.4
Railroad	110	0.3
Public	5,780	16.0
Quasi-Public	509	1.4

According to these data, the predominant property class in the Township is farmland at 50 percent of the Township's land area. The second most common property class is residential, representing 20 percent of the land area, followed by public and quasi-public, with approximately 17 percent of the land area. The public land category involves a diverse assortment of ownership, including State and County lands, municipal lands and school property. The quasi-public category comprises cemeteries and graveyards, churches and other charitable property, including such uses as the Stony Brook-Millstone Watershed Association and the American Legion. Industrial land, which includes the Research Office Districts and the two quarries, accounts for approximately 4 percent of the land area, while commercial lands, which involves retail uses, small offices, the airport and private golf courses, occupies approximately 2 percent of the land area.

Given the differences in methodology and mapping conventions, it is not possible to directly compare current land use by property class to land use summaries in past Master Plans. Land use and development changes in the Township since the 1992 Master Plan are discussed later in this section.

A more detailed and accurate depiction of land use can be taken from the Land Use/Land Cover classification, completed by the New Jersey Department of Environmental Protection. This data was derived from the 1995 Digital Ortho Quarter-Quads, flown for the entire State. As a comparison to the Land Use by Property Class, the Land Use/Land Cover data shows what is actually on the ground. The Property Class information may show an entire property as farm assessed, giving the impression that all of its acreage is farmed. In actuality, 50 percent of the tract may be wooded and not farmed at all. The Land Use/Land Cover is more accurate in that it will show the true land use of the property, where, for example, 5 percent may be residential, 50 percent wooded and 45 percent cultivated.

On a Township-wide basis the land use/land cover map shows the following distribution of land use in the Township (see Figure 3):

Land Use Type	Acres	Percent
Agriculture	11,519	30.7
Barren land	423	1.1
Forest	14,441	38.5
Urban	7,232	19.3
Water	586	1.6
Wetlands	3,335	8.9

The most expansive land use type in Hopewell Township is forest, accounting for approximately 39 percent of the land area. Forested areas occur over much of the Township, but are concentrated in the higher elevations and marshy lowlands. Much of the forested area represents high priority habitat for wildlife. Agricultural lands cover approximately 31 percent of the Township's total acreage, and represents the second most prevalent land use type in the municipality. Agricultural lands are concentrated in the Township's valleys, although much of the Township's higher elevations are devoted to agricultural lands. Comparing the land use by property tax to the land use/land cover, approximately 64 percent of the land classified as agricultural by tax class is agricultural by land use type.

Land Use/Land Cover designated as urban on the mapping covers land uses that range from individual rural residential units to commercial and major office uses. The general classification of urban describes areas that are developed in one fashion or another, and includes power lines, roads and athletic fields or golf courses. The urban land covers approximately 19 percent of the Township. The urban land is concentrated around Pennington, Titusville and Washington's Crossing, in suburban developments between Pennington and Hopewell Boroughs, and in the Township's research and office developments.

The other land use types include barren land, wetlands and water. The barren lands category includes the two quarries in the Township and sites under construction at the time of the aerial photography. Wetlands account for approximately 9 percent of the

Township's land area, while water represents approximately 2 percent. The distribution of wetlands is discussed below in the Wetlands section, while the category of water includes the Delaware River, Rosedale Lake, Baldwin Lake, Honey Lake and scattered small ponds.

As previously referenced, during the 1990's the Township has seen vast and irreversible changes in land use and the concomitant effects. Among the salient points are the following:

- During the 1990's over 1,800 building permits were issued for new residential development, and approximately 1,800 new housing units were created.

- During the 1990's the Township added 4,515 residents, which is equivalent to the total combined population of the Boroughs of Hopewell and Pennington.

- The new housing stock included approximately 570 townhouses and 100 apartments.

- From 1988 to 1998 the Township approved approximately 650 dwelling units in the lower density zoning districts (R-200 and R-250), which consumed approximately 2,400 acres of land.

- In addition to the development referenced above, the Township has approved 240 townhouses, 150 age-restricted rental apartments and 115 age-restricted single-family dwellings, and has zoned for a 288 unit development of age-restricted and lower income apartments.

- During the 1990's the Township approved over 8,000,000 square feet of non-residential development, of which approximately 3,000,000 square feet currently exists.

- As of the year 2000, the Township's zoning permitted a total of 18,200,000 square feet of non-residential development, including existing and approved development.

These figures highlight the dramatic changes that have occurred in the Township, and support the responsible approach to land use management that the Township is pursuing in this Plan.

Geology and Hydrogeologic Zones

The bedrock of Hopewell Township occurred during two major time eras. The first is during the Triassic Era (208 to 245 Million years ago) and the second, the Jurassic (208 to 145 million years ago). During this time these basins were formed as a result of continental separation and rifting. There are five major bedrock classifications in Hopewell Township depicted in the attached map, Bedrock Geology Hopewell Township (Figure 4). A detailed analysis of geology is provided in the groundwater study prepared by M^2 Associates, titled *Evaluation of Groundwater Resources of Hopewell Township, Mercer County, New Jersey* (March 2001).

The Stockton Formation is the oldest formation and consists of sand, gravel and silt sized sediment of light gray and yellow arkosic sandstones. The Lockatong Formation was deposited on top of the Stockton Formation, and is comprised of gray-red, dark brown, and grayish-purple mudstones, sandstones, and siltstones. The Passaic Formation was deposited in the late Triassic and early Jurassic period and is distinguished by its red-brown, brownish-purple, and grayish-red shale, siltstones, mudstones and sandstones. A subset of the Passaic Formations is the Passaic Formation Gray Bed, which gray lake deposits was made throughout the Passaic Formation and thus are considered a subset of the parent formation. Finally, the Jurassic Diabase is the youngest formation and is found beneath the Sourland, Belle, Baldpate and Pennington Mountains and along Crusher Road. The Diabase formations are identified by their bluish-gray hornfels and the black fine-grained hornfels.

The hydrogeologic zones in the Township consist of two distinct zones. The first is the Stockton Formation that covers 43.6 square miles (72 percent) of the Township. This zone includes the Stockton Formation and the Passaic Formation, which have a yield range of 10 to 15 gpm. The wells in this formation may find additional water bearing fractures and are not dependent on other zones to transmit and store groundwater. The median aquifer transmissivity in this zone is estimated at 950 gallons per day per foot. The second zone, encountered at the Lockatong and Diabase Formations, are of poorer quality. These aquifers encompass 16.7 square miles (28 percent) of the Township. Median yields in this zone range from 5 to 7 gpm and drilling past 125 feet is unlikely to produce any water bearing fractures. The median transmissivity for these aquifers is estimated at 225 gallons per day per foot.

Topography and Steep Slopes

The Township is blessed with a diverse assortment of topography. The Pennington Mountains and the diabase ridge on Crusher Road form a backdrop for much of the central portion of the Township, while Baldpate Mountain in the northwest and the Sourlands in the northeast provide the same type of experience in these areas. Pleasant Valley is aptly named for its interesting topography and land cover, and the extensive agricultural uses and topographic changes in the west central portion of the Township provide a diverse and appealing landscape. The low lands of the Stony Brook valley, which provide long views over fields to wooded backdrops and stream corridors, impart a unique experience in this part of the Township.

Elevations in the Township range from a low of 40' above sea level along the Delaware River in the southwest to a high of 480' above sea level on Baldpate Mountain, and 460' above sea level on Pennington Mountain and the Sourlands at Mountain Church Road (Figure 5). The northern third of the Township is generally comprised of small mountains, while the southern two-thirds consists of broad valleys formed by Jacob's Creek, Shabakunk Creek, Bedens Brook and the Stony Brook. Approximately three-quarters of the land is within the 3 to 12 percent slope range, with steep slopes (15 percent or greater) occurring along the diabase ridges and stream corridors (Figure 6). Steep slopes require

special management approaches to reduce runoff and erosion, and to maintain water quantity and quality. In addition, it is anticipated that in the future an elevation map can be developed to provide visual assessments of the existing environment and proposed development.

Forested Areas

The protection of forested areas in Hopewell is an important piece in maintaining the character of the Township. Woodlands offer habitats to a variety of plant and animal species, maintain climate, reduce erosion, maintain nutrient levels and improve air quality. These areas also offer scenic vistas and natural corridors that identify the character of the region. Hopewell's wooded areas are relatively young, due to past agricultural and other activities that have cleared portions of the town's forests, and as such offer larger mixed specie stands that offer a unique habitat and scenic vista and should be properly maintained and protected.

Hopewell Township's location, in the Piedmont land formation, gives it a rich diversity of tree species and habitats as seen in the attached map, Forest Types (Figure 7). There are at least 43 tree species found in the Township, ranging from conifers to soft and hardwoods. In general the forest cover consists primarily of three forest types: Coniferous, Deciduous, and Mixed Forests. The combined forest cover in Hopewell Township is approximately 14,441 acres (39 percent) of the total land area. Of this forest cover, coniferous forests cover 847 acres (2.3 percent of the total land area), mixed forests cover 1,947 acres (5.2 percent), and deciduous forests cover 10,261 acres (27.3 percent), with the remainder in old field and plantation. Due to the nature of the Piedmont formation, the type of forest cover ranges throughout the Township, which produces a changing landscape unique to Hopewell. The plains region of the Township produces woodlands that are larger, wetter and younger. The primary trees of the plains areas are beech, red maple, and oak. Upland areas are more prone to see upland oaks, sugar maple, and other mixed hardwoods.

Some of the larger stands of woods are currently under the ownership of the State Parks and Forestry or the Stony Brook-Millstone Watershed Association. These woods are protected and offer recreational value but are not overused to the point of deteriorating the ecosystems. Other wooded sections still lay outside of public lands and, given their location near the Delaware River and other State Parks, should be conserved as much as possible. *The Woodlands of Hopewell Valley* (Douglas White, 1990), a study prepared for the Friends of Hopewell Valley Open Space, identifies and characterizes woodland plots throughout the Township, and suggests priorities for conservation efforts.

Freshwater Wetlands

The regulatory framework for the identification and protection of freshwater wetlands in New Jersey was established by the Freshwater Wetlands Protection Act (FWPA) in 1987. Among the unique values of wetlands are the purification of surface water and groundwater resources; the mitigation of flood and storm damage through the storage and absorption of water during high runoff periods; the retardation of soil erosion; the

provision of essential breeding, spawning, nesting, and wintering habitats for the State's fish and wildlife; and, the maintenance of critical base flows to surface waters through the gradual release of stored flood waters and groundwater. The method for identifying and designating wetlands includes three parameters, hydrology, soils and vegetation. The hydrological factor relates to the degree of flooding or soil saturation found through soil borings; the soil factor relates to the presence of hydric soils; and, the vegetation factor relates to the presence of hydrophytes, or plant species adapted to hydric conditions.

One of the requirements of the FWPA was that the N. J. Department of Environmental Protection (NJDEP) provide a comprehensive mapping of wetlands in the State. The attached map (Figure 8) of Freshwater Wetlands is a composite of the quarter-quad maps prepared by the NJDEP to satisfy this mandate. The categories of freshwater wetlands shown on the map include the following:

- Agricultural wetlands (Modifed)
- Artificial lakes
- Coniferous wooded wetlands
- Deciduous scrub/shrub wetlands
- Deciduous wooded wetlands
- Disturbed wetlands (Modified)
- Herbaceous wetlands
- Managed wetlands (Modified)
- Mixed forested wetlands (Deciduous dominate)
- Natural lakes
- Streams and canals
- Wetland rights-of-way (Modified)

The greatest concentrations of wetlands occur in four parts of the Township: in the southeast part of the Township; along the Stony Brook; in the Sourlands and foothills; and, in the north central part of the Township around Route 518. Wetlands also occur along the main stem and tributaries of the major streams in the Township, including Jacob's Creek, Fiddler's Creek, Moore Creek, Shabakunk Creek and Bedens Brook. The most common type of wetland found in the Township is the deciduous wooded wetlands, followed by agricultural wetlands (modified), deciduous scrub/shrub wetlands, and streams and canals. Although the NJDEP mapping of wetlands and the soils' map of hydric soils can provide guidance as to the location of wetlands, only a field investigation can substantiate the presence or absence of wetlands and the associated buffers. In the future the Township's GIS system will incorporate actual field locations of delineated wetlands.

Trout Maintenance and Non-Trout Waters

The streams found in the Township fall within two major categories set by the NJDEP. These are Trout Maintenance and Non-Trout waters (Figure 9). The first, Trout Maintenance streams, indicates streams that have been identified as being able to support the long-term health and life of trout. The second category, non-trout waters, indicates

streams that are not generally suitable for trout, given their physical, chemical or biological characteristics, but are suitable for a wide variety of other fish species.

The majority of streams in the Township fall under the second category, non-trout production. These streams tend to have a lower flow due to their location as headwaters and natural seasonal variations. This means that pollutants or stream degradation easily affects these streams. According to biological surveys, the streams on the western portion of the Township, which flow into the Delaware River, are in large part non-impaired, while the streams in the eastern part of the Township, which flow to the Raritan River, are moderately impaired.

There are two streams in the Township that are classified as trout-maintenance streams. These are Moores Creek, located in the western corner of the Township, and Fiddler's Creek, which is just south of Moores Creek. These two streams flow into the Delaware River and are also listed as non-impaired. However, these streams face the same issues of degradation as the other streams in the Township and should be properly maintained and protected in order to keep their current status as non-impaired.

Agricultural Soils

The current classification system used throughout the State was established by the State Agricultural Development Committee (SADC) in 1990 under the auspices of the Agriculture Retention and Development Act of 1983 (Figure 10). This system refines the agricultural capability classifications established by the USDA, NRCS, which had been the norm for 20-30 years, by rating agricultural soils for their specific applicability to New Jersey. While the USDA classification system provided ratings of agricultural soils based on an eight-part system (Agricultural capability classes I-VIII), the classification system developed under the above legislation established a five-part system: prime farmlands, soils of statewide importance, farmland of local importance, unique farmlands, and other. This system is used in the mapped representation of Agricultural Soils.

Despite the pressures for and commitments to residential and non-residential development that have impacted the Township through its recent history, agriculture remains the predominant land use in the Township, reflecting the Township's earlier agrarian roots and current conditions. Approximately half of the Township remains in agricultural use, according to the farmland assessment classifications and reports.

Agricultural soils are not necessarily critical areas; they are, however, or at least they are becoming, an endangered resource. In the Township where development pressures are so great, more and more agricultural soils are lost every year for non-agricultural development. This is because the very same attributes that make soil good for agriculture, i.e. level ground, good drainage, fertility, etc., also make them attractive for residential and non-residential development. Productive agricultural soils are, however, a finite resource and irreplaceable; once committed to other forms of development, it is unlikely that these areas will be redeveloped for agricultural use.

The value of agricultural soils, and the land use and industry they support, is widespread. In addition to providing a source of income to farmers and other landowners, the unique combinations of fields, forests and topography create much of the visual environment that is so highly prized by residents and visitors to the Hopewell Valley. Agricultural soils also provide the basic resource to supply food and forage to man and other species. The protection and retention of this resource helps to assure the long-term stability of these species.

The following descriptions of prime farmlands, soils of statewide importance, and farmland of local importance are taken from the "New Jersey Important Farmlands Inventory", prepared by the SADC in 1990. Not included in this description is the category of unique farmlands, which are generally poorly drained soils used for specialty crops such as cranberries and blueberries, and which do not occur in the Township.

Prime Farmlands-Prime Farmlands include all those soils in Land Capability Class I and selected soils from Land Capability Class II. Prime Farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber and oilseed crops and is also available for these uses. It has the soil quality, growing season, and moisture supply needed to economically produce sustained high yields of crops when treated and managed according to acceptable farming methods. Prime Farmlands are not excessively erodible or saturated with water for a long period of time, and they either do not flood frequently or are protected from flooding.

Soils of Statewide Importance-Farmlands of statewide importance include those soils in Land Capability Classes II and III that do not meet the criteria as Prime Farmland. These soils are nearly Prime Farmland and economically produce high yields of crops when treated and managed according to acceptable farming methods. Some may produce yields as high as Prime Farmland if conditions are favorable.

Farmland of Local Importance-Farmland of local importance includes those soils that are not prime or statewide importance and are used for the production of high value food, fiber or horticultural crops.

A review of the map of Agricultural Soils indicates that Prime Farmland occupies approximately 44 percent of the Township's land surface, and the combination of Prime Farmland and Soils of Statewide Importance cover more than 77 percent of the Township, with only the diabase ridges and stream corridors not included in these categories. As the Township pursues the development of a Farmland Preservation Plan Element, and additional opportunities for agricultural preservation, in the future, the use of these data in combination with the farmland assessment tax data provide the basic information for identification of priority areas for preservation.

Limitations for the Onsite Disposal of Sewage Effluent

The map of Limitations for the Onsite Disposal of Sewage Effluent (Figure 11) is an interpretive map that applies the two prior factors, and other soil properties, to provide a

composite representation of environmental limitations. Important soil properties represented in this depiction are percolation rate, depth to seasonally high water, slope, amount of stone, depth to and kind of bedrock, and flood hazard. While this map layer does not have regulatory implications given the current regulatory programs, it provides an illustrative composite of limitations based on soil properties because it incorporates such a wide variety of factors. The classifications and the factors which contribute to the classifications are described below.

Severe Limitations-The severe limitations category identifies soil phases which indicate that soil properties are so unfavorable or so difficult to overcome that the soil is unsuitable for development, or requires special design, significant increases in construction costs, and intensive maintenance. The factors identified in the Soil Survey of Mercer County (USDA, NRCS) which contribute to the severe limitations category are listed below:

- High water table (0-1' below the surface)
- Water table moderately high (1-2 ½' below the surface)
- Frequent stream overflow
- Slow permeability
- Very stony
- Depth to bedrock (½ - 6')
- Moderately steep slopes (12-18%)
- Steep slopes (18-30%)

Moderate to Severe Limitations-The moderate to severe limitations category identifies soil phases that exhibit variable characteristics such that a definitive ranking cannot be established. These soil phases have one or more limitations that cannot be overcome without considerable cost, or have one limitation or more that can normally be overcome at moderate cost by careful design and construction. The factors identified in the Soil Survey that contribute to the moderate to severe limitations category are the following:

- Depth to bedrock (3-6")
- Moderately slow permeability
- Strong slopes (6-12%)

Moderate Limitations-The moderate limitations category identifies soil phases which indicate that soil properties are unfavorable but that the limitations can be overcome by careful planning and design, careful construction and good management. The factors identified in the Soil Survey that contribute to the moderate limitations category are the following:

- Depth to bedrock at 4-6' or 5-10'
- Stream overflow hazard
- Strong slopes (6-12%)

Slight Limitations-The slight limitations category includes soil phases which have soil properties that are generally favorable for the onsite disposal of sewage effluent or, in other

words, limitations are minor and easily overcome. Only one of the approximately 80 soil phases in the Township is categorized by a slight limitation for the disposal of sewage effluent.

Approximately 62% of the Township is identified as having severe limitations for the onsite disposal of sewage effluent, and approximately 95% of the Township is identified as having severe or moderate to severe limitations. The only areas not exhibiting these limitations are along the Delaware River, on Baldpate and Pennington Mountains, in the Sourlands, and along the diabase intrusion on Crusher Road. As indicated previously, because this classification system incorporates such a wide variety of factors relating to soils, geology and hydrology, it provides an excellent composite of the severe environmental limitations prevalent in most of the Township.

Depth to Bedrock

The Township's land is comprised of approximately 80 different soil phases according to the classification system established by the U. S. Department of Agriculture (USDA), Soil Conservation Service, now Natural Resource Conservation Service (NRCS). Depth to bedrock is the measure of the thickness of the soil above rock and fractured rock material. Bedrock occurring within 5' of the surface has associated with it problems of foundation placement, grading, location of utilities, and lack of soil volume necessary to filter sewage effluent.

The attached map of Depth to Bedrock (Figure 12) utilizes four categories, and water, to describe bedrock conditions in the Township. The 0-5' category identifies those areas with generally shallow soils, which may have rock outcrops, and which generally have severe limitations for development; this category includes approximately 80 percent of the Township's land area, and occurs throughout the Township. While the bedrock conditions in the generally moderate category of 3.5-7' are less limiting, these conditions restrict the location of foundations, basements and septic systems; this category accounts for approximately 12 percent of the land area.

The areas with the greatest depth to bedrock (the variable category, 4.5-10'), or the deepest soils, are located on the ridge tops of Pennington and Baldpate Mountains, in the Sourland Mountains, and along the ridge at Crusher Road. All of these areas are underlain by the diabase geological formation, and include approximately 6 percent of the land area. While identified as having a deep depth to bedrock, these soil phases are very stony. In fact, the description for the soil phases in the Sourlands states "Rounded boulders of diabase that are more than 24 inches in diameter cover 50 to 90 percent of the surface of this land type". Thus, conditions in the Sourlands and along portions of the Crusher Road diabase ridge are highly variable.

Depth to Seasonal High Water Table

The depth to seasonal high water table is the distance from the surface of the soil to the highest level that groundwater reaches in the soil, and is referred to as seasonal because

the groundwater generally reaches its highest level in the soil between December and April. The depth to seasonal high water table is an important determinant of the limitations and opportunities for development. On the one hand shallow depths to the water table severely limit the location of buildings and septic systems and are associated with wetlands, but on the other hand these same areas often support more diverse vegetation and wildlife communities. Thus, their protection benefits the environment by both preserving areas of high resource value, and by avoiding areas where problems can occur.

The attached map of Depth to Seasonal High Water (Figure 13) identifies five categories of soil phases, plus variable and water. The generally shallow 0-3' category identifies poorly drained soils with water tables at the surface; somewhat poorly drained soils; soils with moderate to moderately slow permeability; and, includes hydric soils associated with wetlands, flood hazard areas and floodplains, depressions, drainage ways and the lower part of slopes. This category generally presents severe limitations for development. The category of generally moderate, 3-6' below the surface, is generally found where impervious layers impede drainage and along the Delaware River and other stream terraces. Depending on which end of the spectrum they fall, these soils can be very constraining or relatively unconstrained.

The analysis of land areas in each category indicates that approximately 45 percent of the Township has seasonal high water tables of 0-3', approximately 49 percent of the Township has seasonal high water tables between 3 and 6', and that 4 percent of the Township has seasonal high water tables which are greater than 10'. The latter category is concentrated on the ridge tops of Baldpate and Pennington Mountains, and in small areas in the northeast portions of the Township.

Figure 2
Land Use by Property Class
Hopewell Township, NJ
January 2002

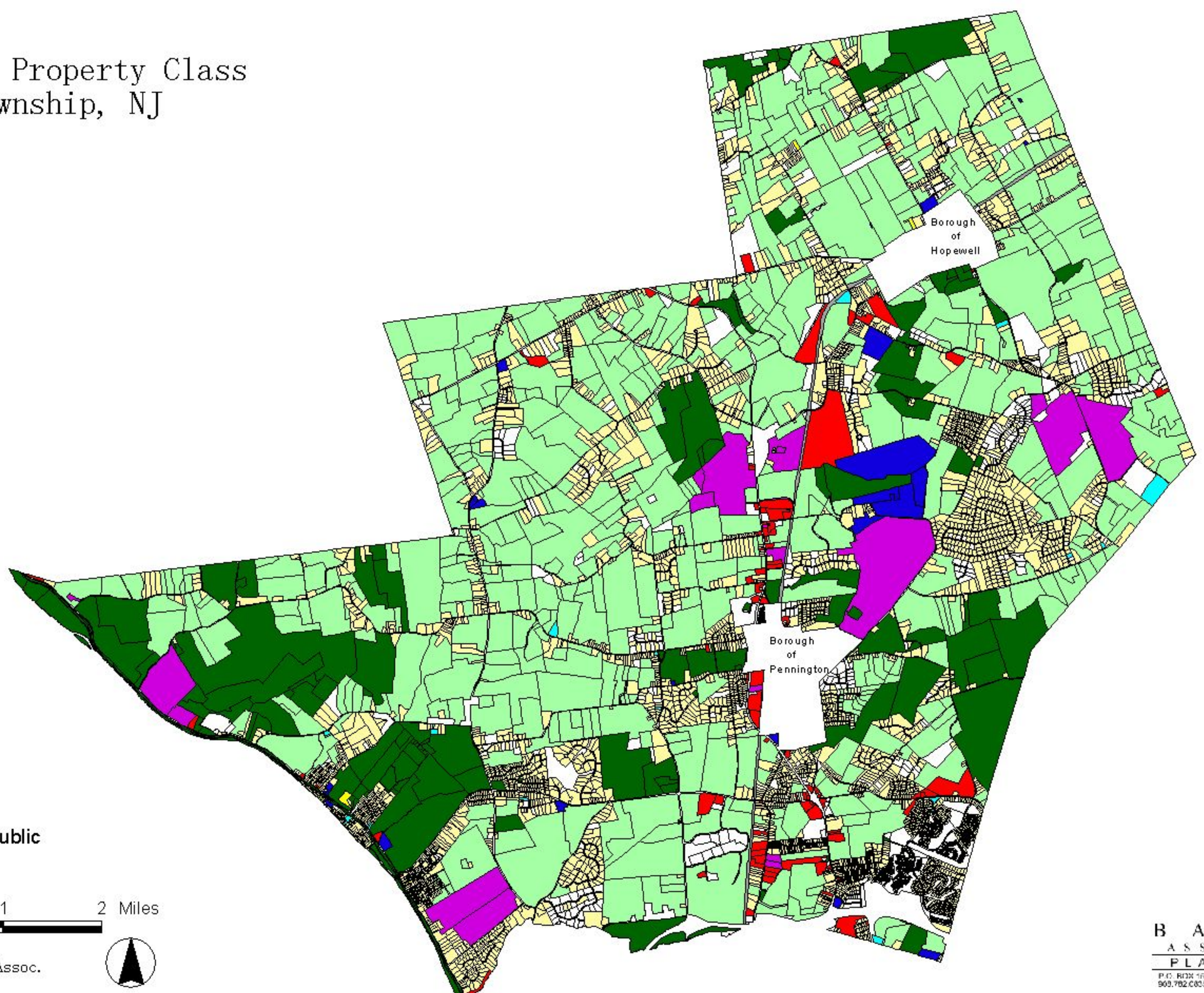

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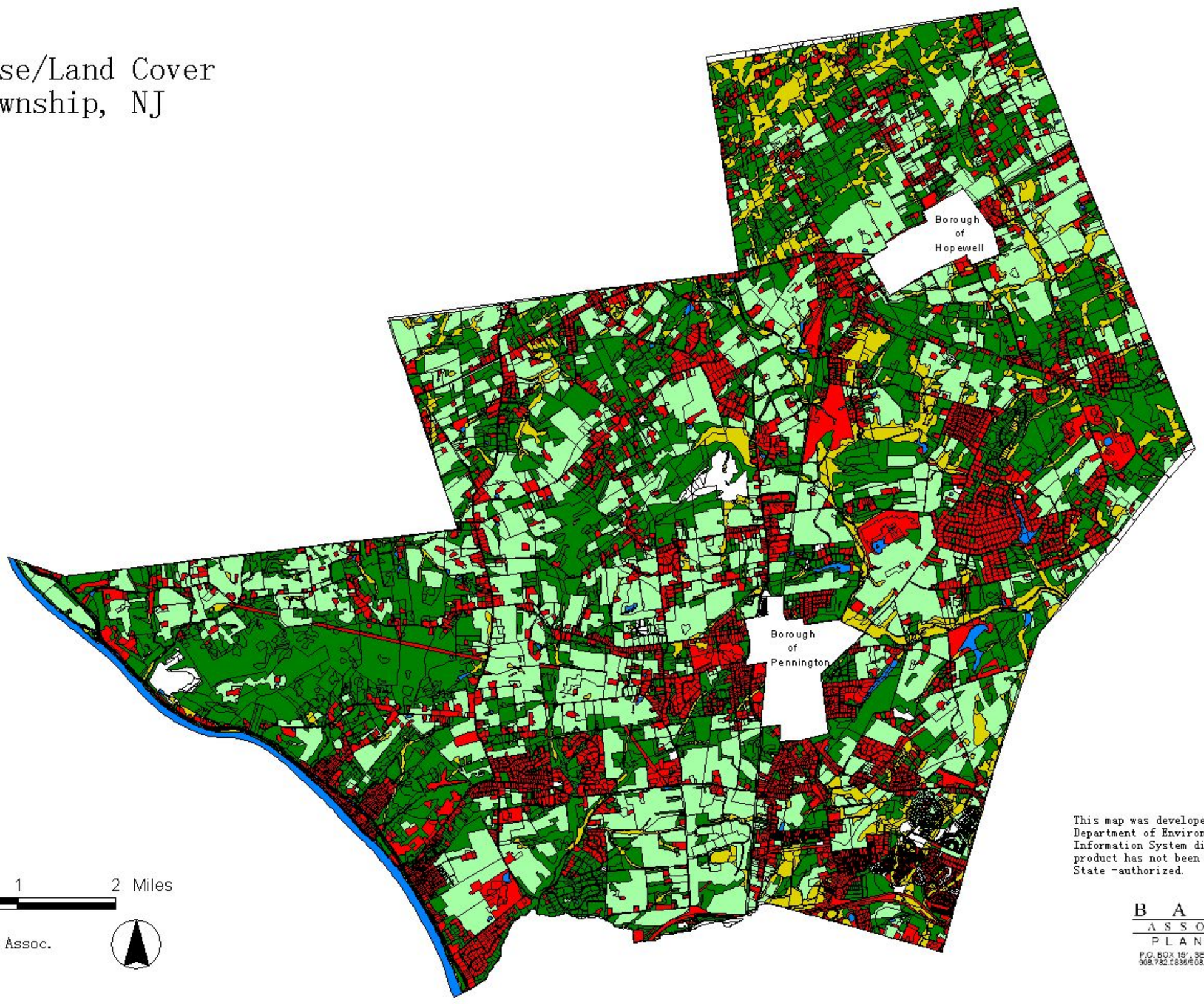
Figure 3
1995 Land Use/Land Cover
Hopewell Township, NJ
January 2002



Legend

- Agriculture
- Barren Land
- Forest
- Urban
- Water
- Wetlands

1 0 1 2 Miles

Data Sources:
Van Cleef Engineering Assoc.
NJDEP

This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not State -authorized.

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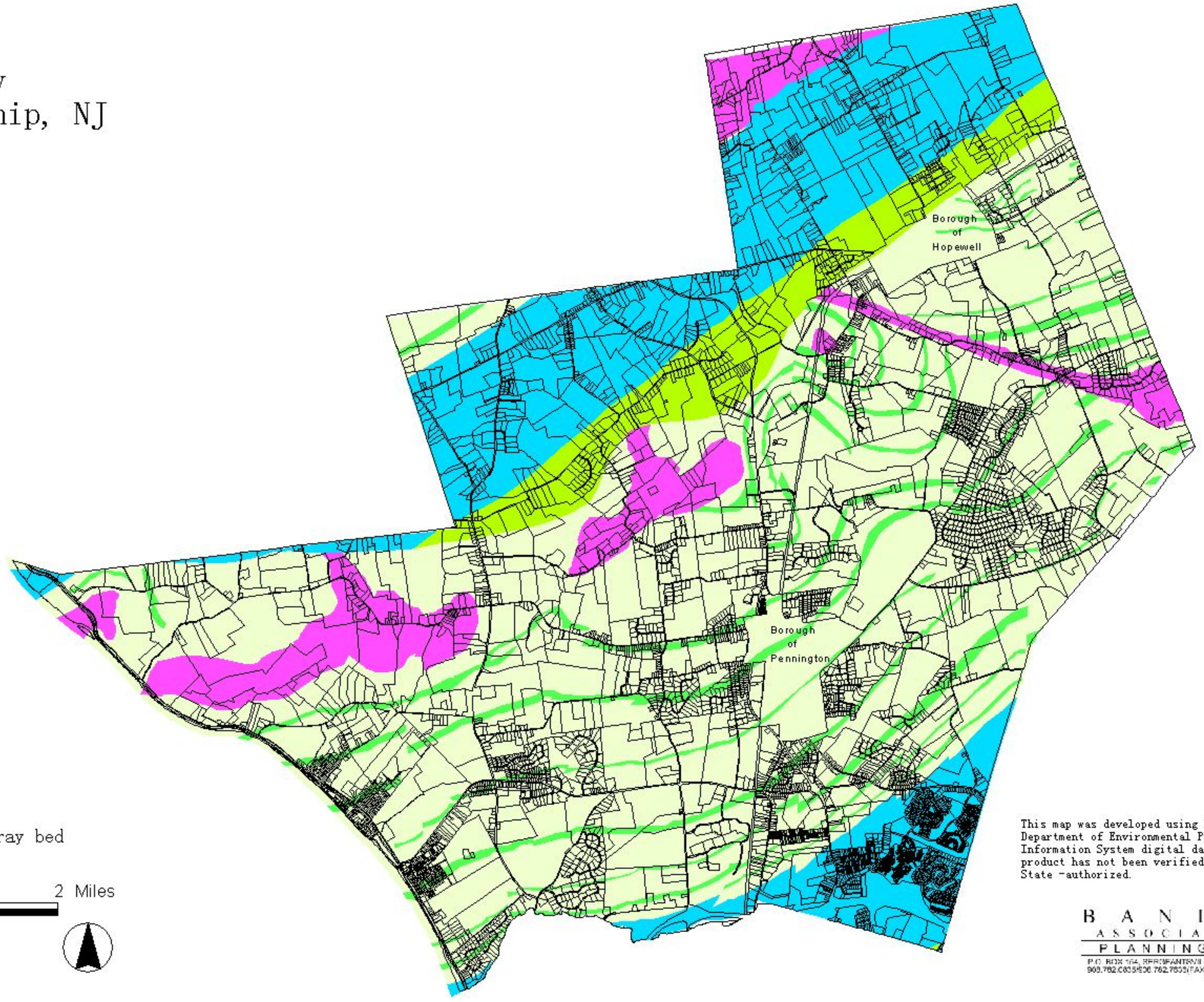
Figure 4
Bedrock Geology
Hopewell Township, NJ
January 2002



Legend

- Jurassic Diabase
- Lockatong Formation
- Passaic Formation
- Passaic Formation Gray bed
- Stockton Formation

1 0 1 2 Miles

Data Sources:
Van Cleef Engineering Assoc.
NJDEP

This map was developed using New Jersey Department of Environmental Protection Geogaphic Information System digital data, but this secondary product has not been verified by NJDEP and is not State -authorized.

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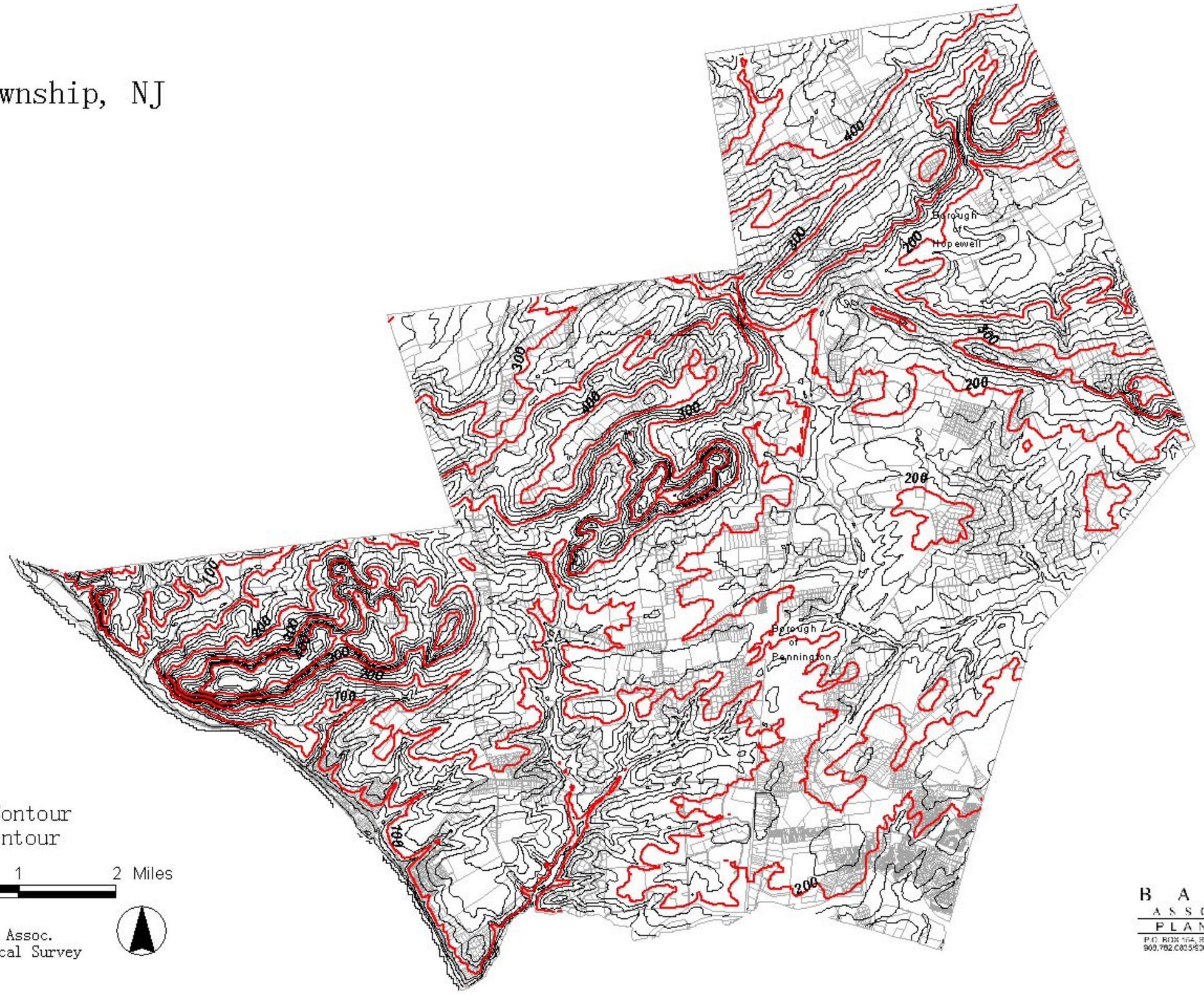
Figure 5
Topography
Hopewell Township, NJ
January 2002



Legend

100 Foot Contour
20 Foot Contour

1 0 1 2 Miles

Data Sources:
Van Cleef Engineering Assoc.
United States Geological Survey

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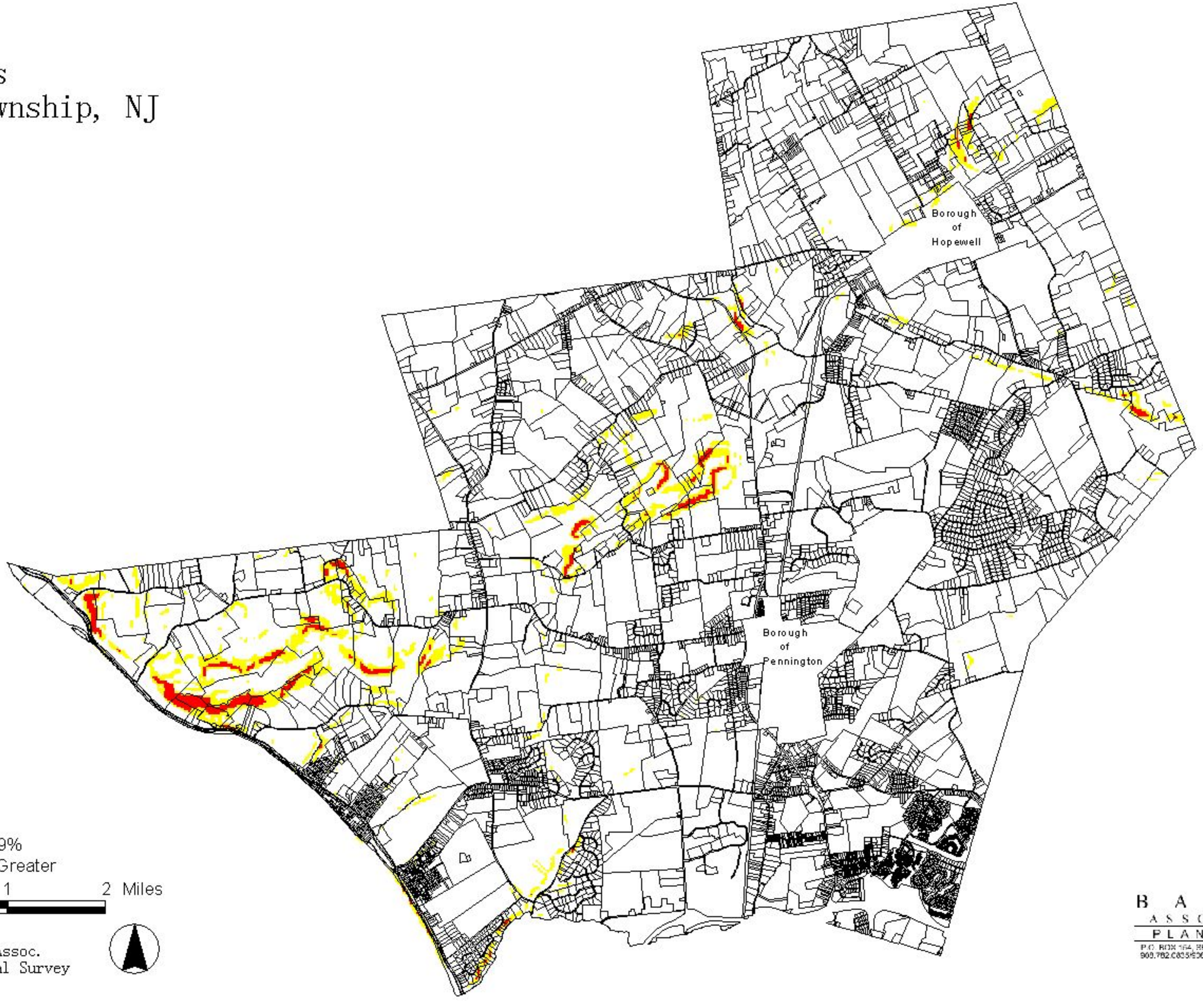
Figure 6
Steep Slopes
Hopewell Township, NJ
January 2002



Legend

Slopes 15%-24.99%
Slopes 25% and Greater

1 0 1 2 Miles

Data Sources:
Van Cleef Engineering Assoc.
United States Geological Survey

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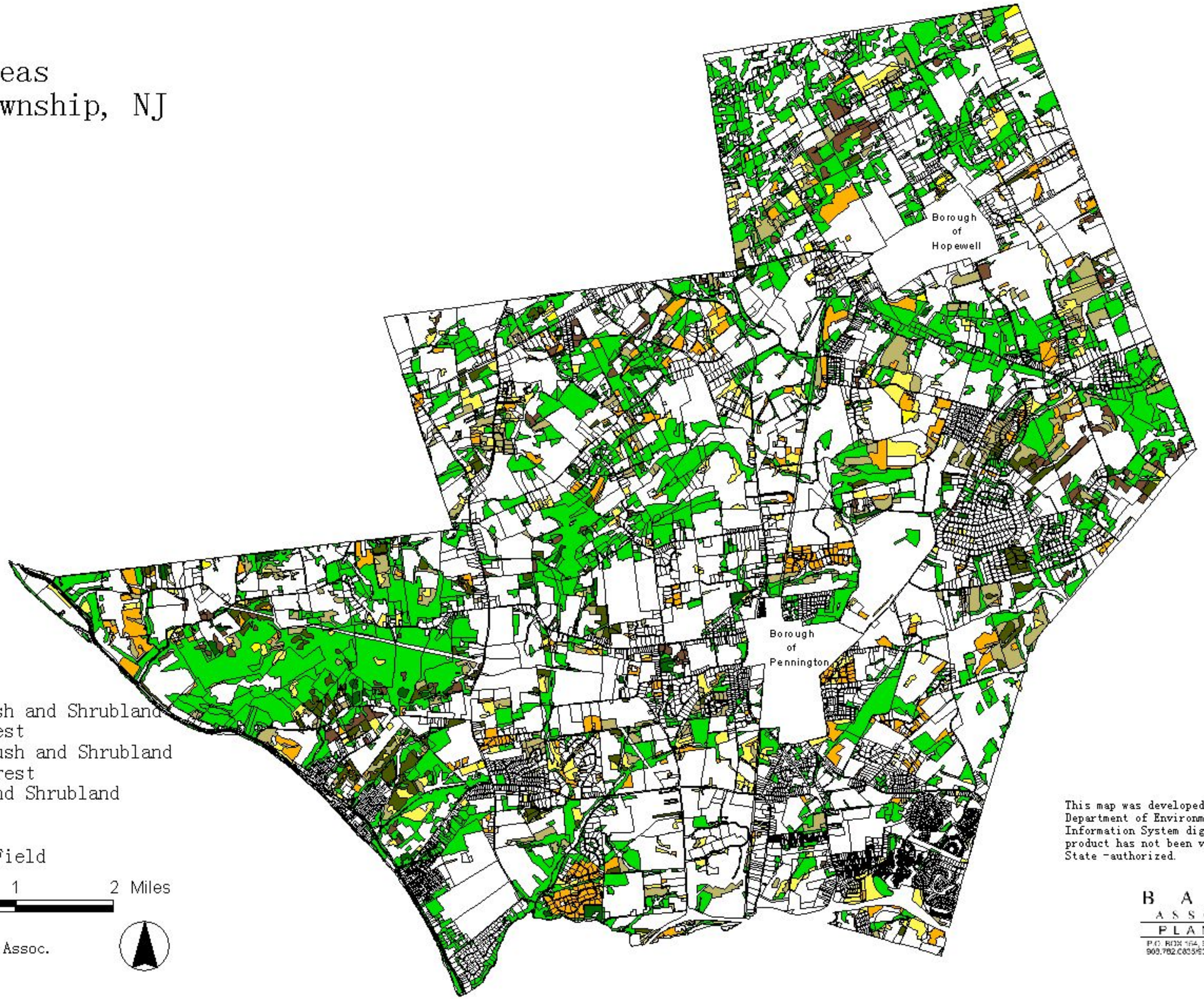
Figure 7
Forested Areas
Hopewell Township, NJ
January 2002



Legend

- Deciduous Brush and Shrubland
- Deciduous Forest
- Coniferous Brush and Shrubland
- Coniferous Forest
- Mixed Brush and Shrubland
- Mixed Forest
- Plantation
- Successional Field

1 0 1 2 Miles

Data Sources:
Van Cleef Engineering Assoc.
NJDEP

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Figure 8
Wetlands
Hopewell Township, NJ
January 2002

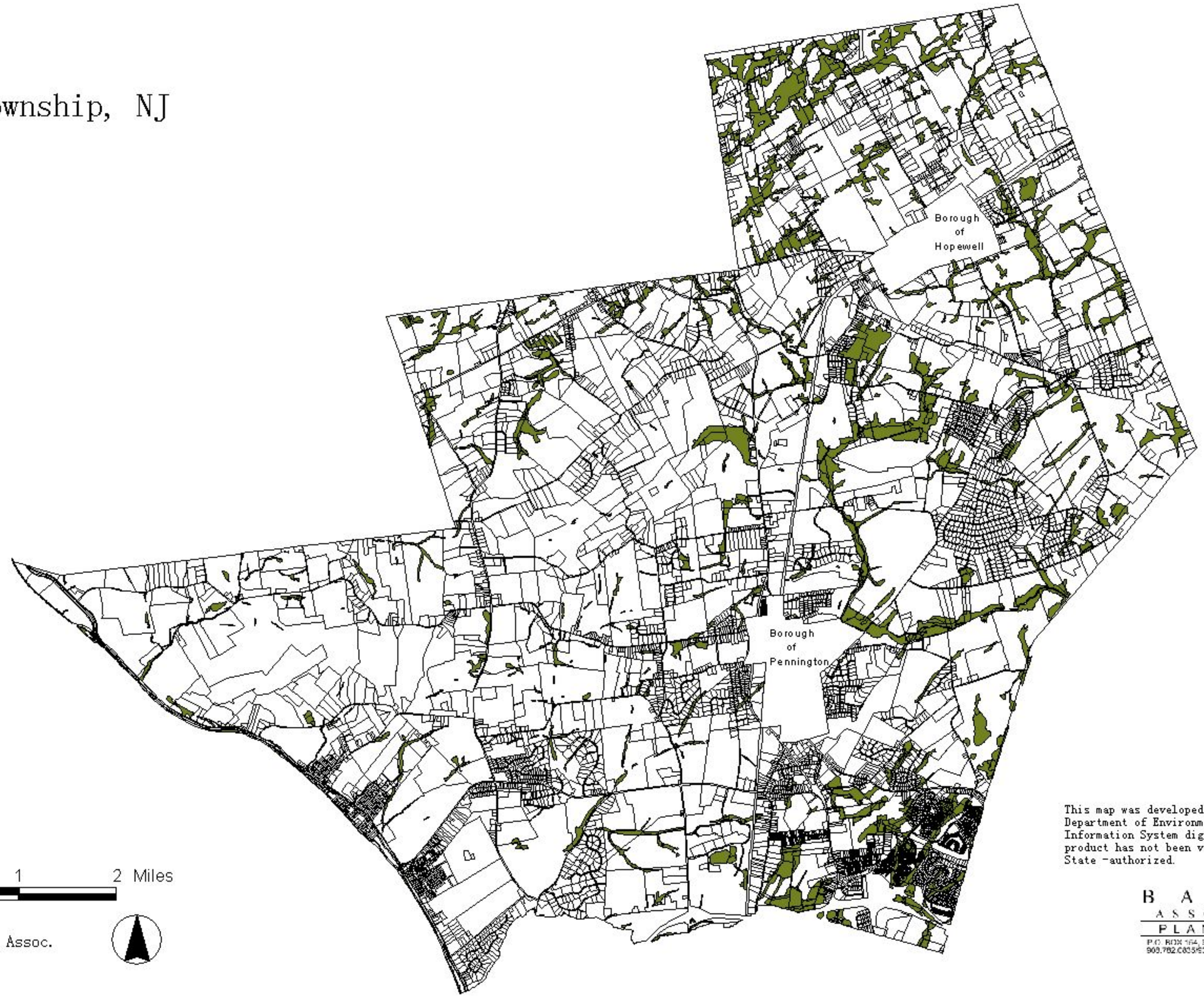

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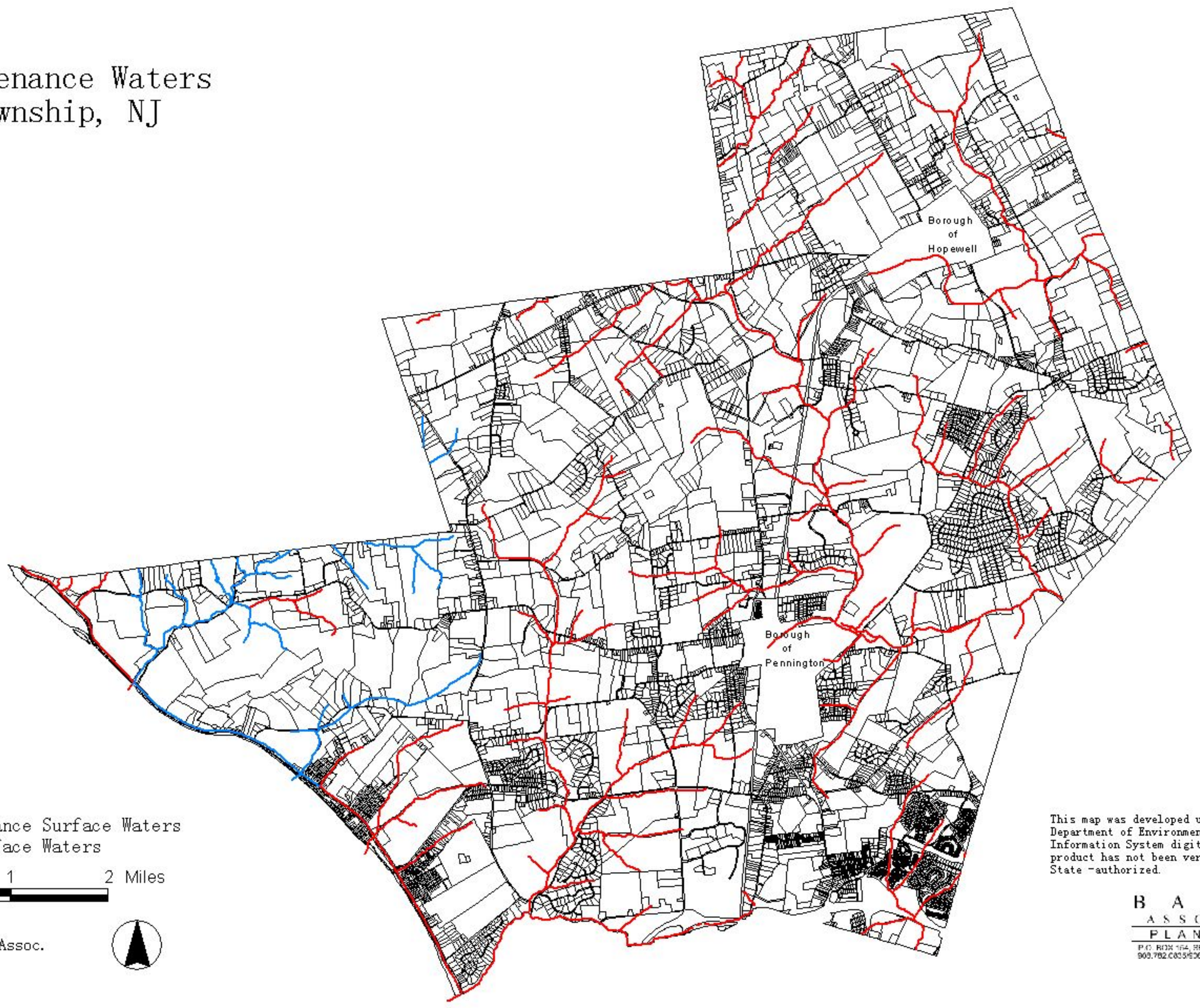
Figure 9
Trout Maintenance Waters
Hopewell Township, NJ
January 2002



Legend

Trout Maintenance Surface Waters
Non-Trout Surface Waters

1 0 1 2 Miles

Data Sources:
Van Cleef Engineering Assoc.
NJDEP

This map was developed using New Jersey Department of Environmental Protection Geogaphic Information System digital data, but this secondary product has not been verified by NJDEP and is not State -authorized.

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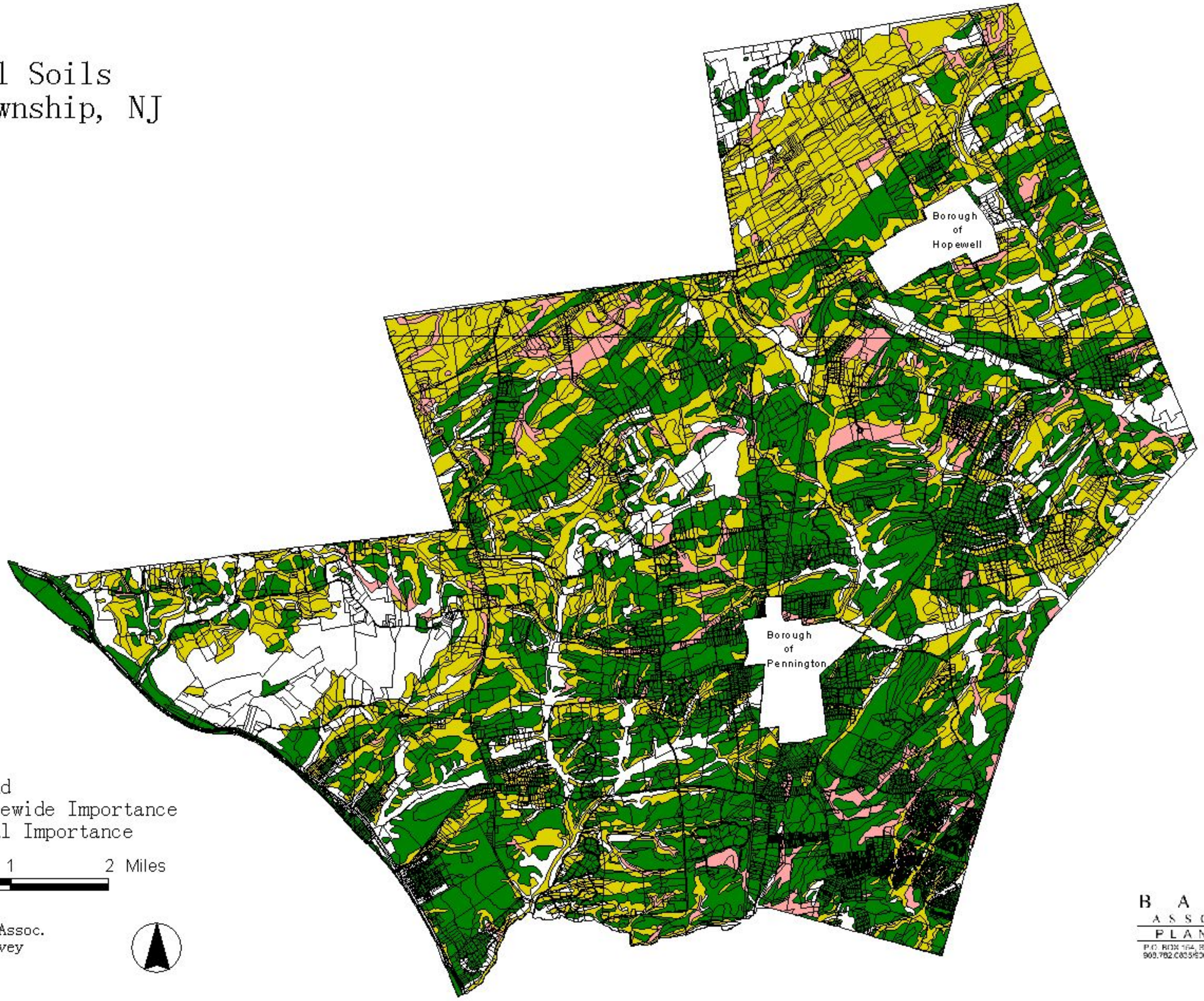
Figure 10
Agricultural Soils
Hopewell Township, NJ
January 2002



Legend

- Prime Farmland
- Soils of Statewide Importance
- Soils of Local Importance

1 0 1 2 Miles

Data Sources:
Van Cleef Engineering Assoc.
Mercer County Soil Survey
USDA NRCS

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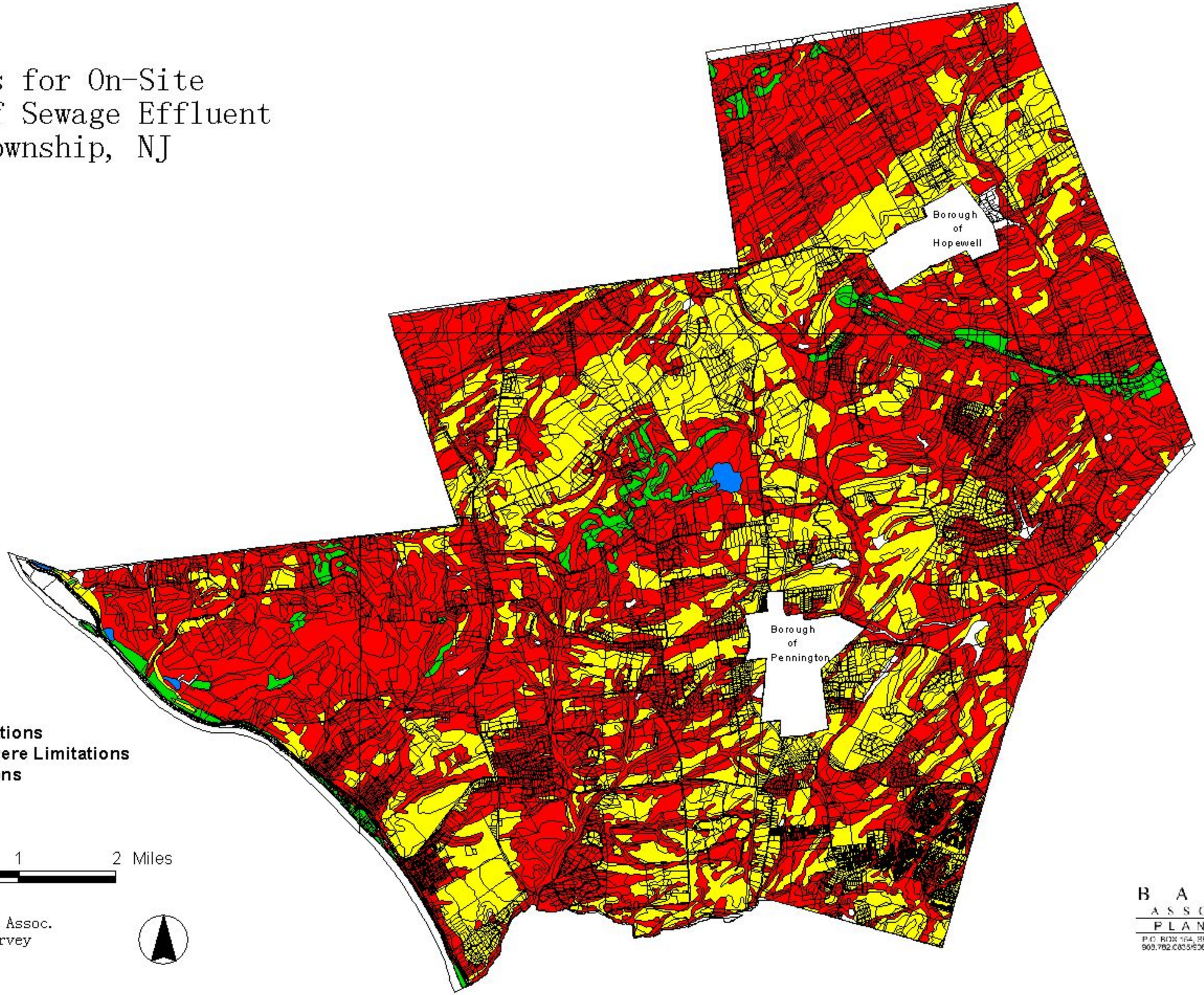
Figure 11
Limitations for On-Site
Disposal of Sewage Effluent
Hopewell Township, NJ
January 2002



Legend

- Moderate Limitations
- Moderate to Severe Limitations
- Severe Limitations
- Variable
- Unclassified

1 0 1 2 Miles

Data Sources:
Van Cleef Engineering Assoc.
Mercer County Soil Survey
USDA NRCS

BANISCH
ASSOCIATES, INC.
PLANNING/DESIGN
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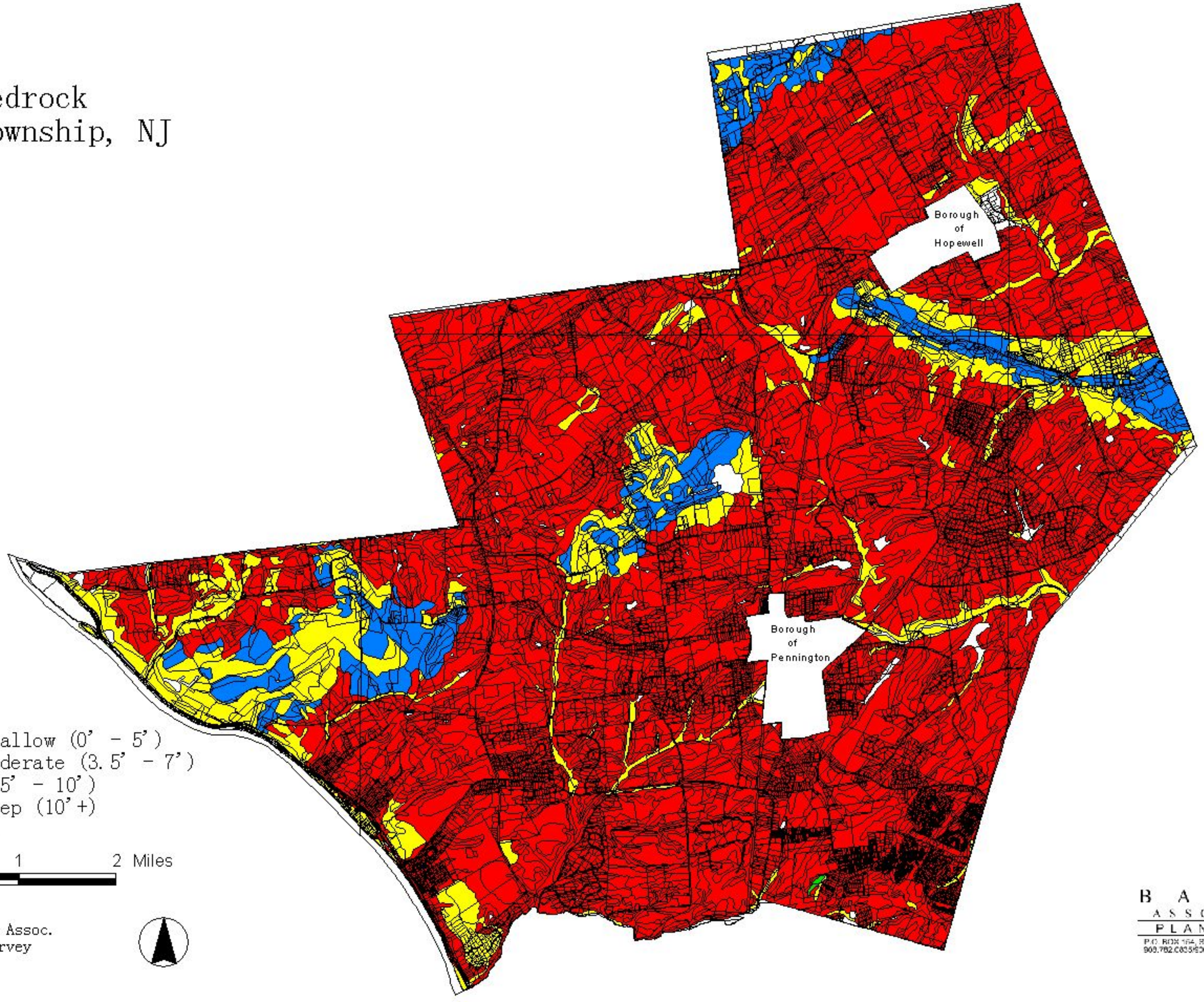
Figure 12
Depth to Bedrock
Hopewell Township, NJ
January 2002



Legend
- Generally Shallow (0' - 5')
- Generally Moderate (3.5' - 7')
- Variable (4.5' - 10')
- Generally Deep (10'+)
- Unclassified

1 0 1 2 Miles

Data Sources:
Van Cleef Engineering Assoc.
Mercer County Soil Survey
USDA NRCS

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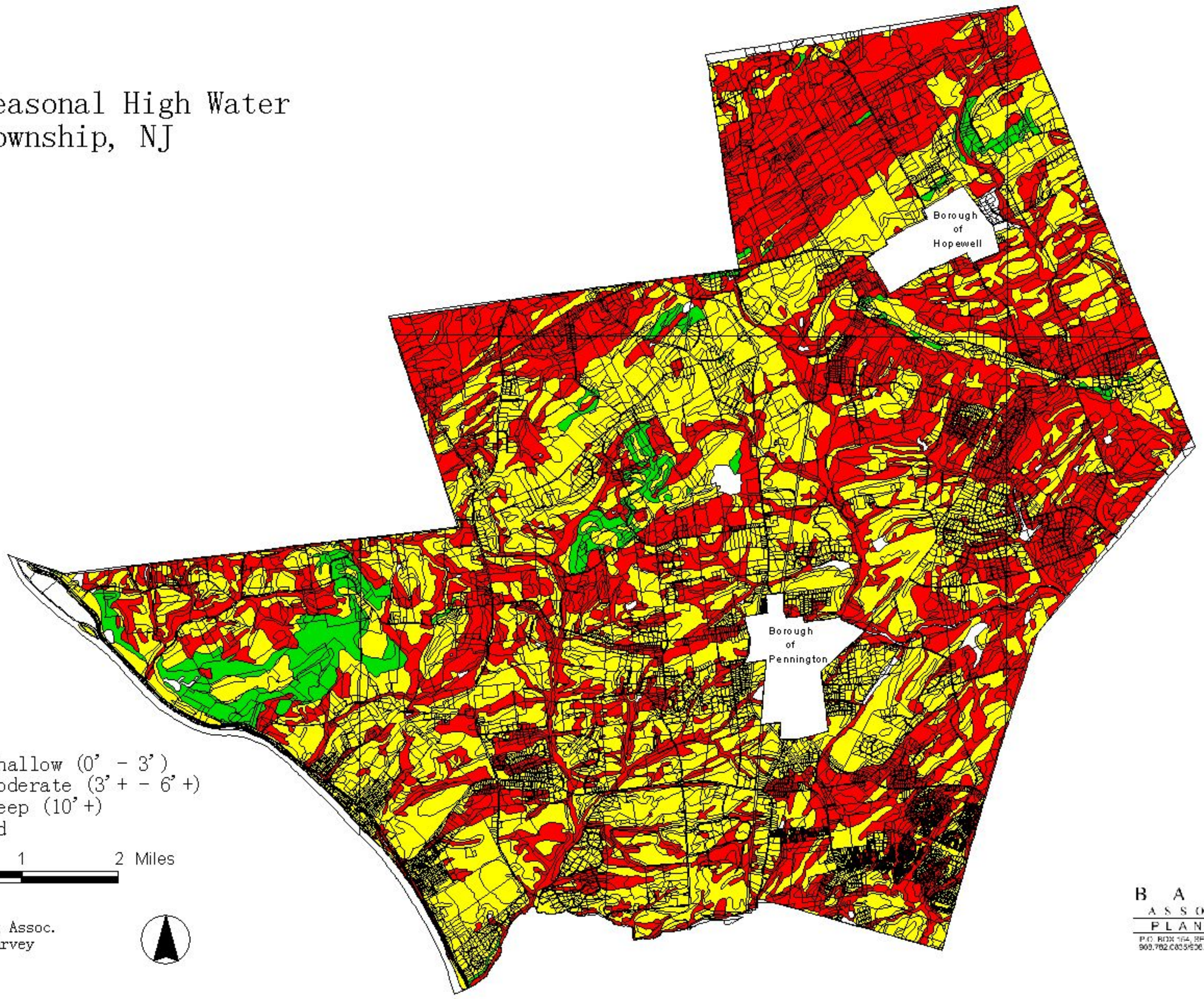
Figure 13
Depth to Seasonal High Water
Hopewell Township, NJ
January 2002



Legend

- Generally Shallow (0' - 3')
- Generally Moderate (3' + - 6' +)
- Generally Deep (10' +)
- Unclassified

1 0 1 2 Miles

Data Sources:
Van Cleef Engineering Assoc.
Mercer County Soil Survey
USDA NRCS

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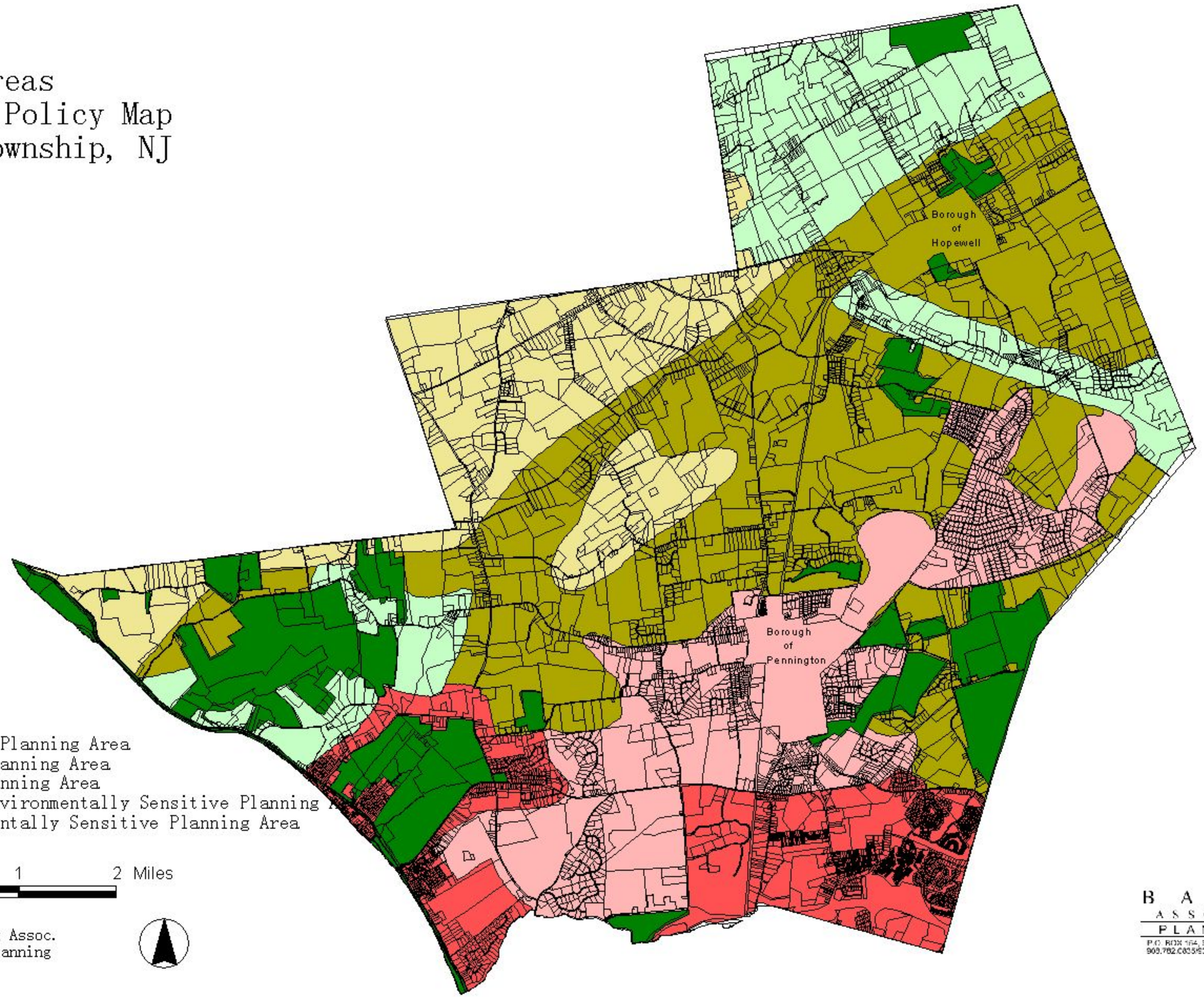
Figure 14
Planning Areas
State Plan Policy Map
Hopewell Township, NJ
January 2002



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Review of Municipal, County and State Plans

The Municipal Land Use Law (MLUL) requires that a municipal Master Plan include a statement concerning the relationship of the Plan to the plans of contiguous municipalities, the master plan of the county in which the municipality is located, the State Development and Redevelopment Plan (SDRP), and the district solid waste management plan of the County (*N.J.S.A. 40:55D-28d.*). The purpose of this analysis is to ensure that the general welfare of adjoining municipalities, the County and the State as a whole is addressed in the local planning process. Towards this end, this review of other agency plans addresses the plans of adjoining municipalities, Mercer County and the State of New Jersey.

Plans of Contiguous Municipalities

Hopewell Township's adjoining municipalities include Ewing and Lawrence Townships, Mercer County to the south; Princeton Township, Mercer County and Montgomery Township, Somerset County, to the east; and, East Amwell and West Amwell Townships, Hunterdon County, to the north. Pennington and Hopewell Boroughs are entirely within the Township's limits.

Ewing Township, Mercer County

Hopewell Township shares its southern border with Ewing Township. Beginning in the west, the adjacent land use district is low density residential, which permits single family dwellings on a minimum lot size of 18,750 square feet. This low density residential district is contiguous with Hopewell's medium density residential (Existing Single Family - ½ acre) district, with similar lot sizes. Moving east along the common border the adjacent district changes to public/private recreation. This district includes the Mountain View Golf Course. East of Interstate 95 the adjacent district changes to the Airport Related/Economic Development district, which includes the Mercer County Airport and some commercial uses. These districts are contiguous with Hopewell's office park, low density residential and medium density residential districts. East of Scotch Road the adjacent districts includes office, open space and low density residential, where the contiguous districts in Hopewell include office park, special industrial and medium density residential.

Lawrence Township, Mercer County

The southeastern border of Hopewell Township is shared with Lawrence Township. South of Interstate 95 the adjacent district includes a small portion of high density residential (R-4), where 4.5 to 7 units per acre are permitted. Moving north along this border the adjacent district changes to low density residential (R-2), where 1.5 to 2.5 units per acre are permitted. This district is contiguous with Hopewell's high density residential district, which permits 5 units per acre. North of Lawrenceville-Pennington Road the adjacent district includes a small portion of Environmental Protection 1 (EP-1), where agricultural and single family uses are permitted on lots 4 acres or greater. The district to the north of

the EP-1 district changes to open space where parkland and passive recreational uses are permitted. Moving north along the border the adjacent land use is characterized by the Environmental Protection 2 (EP-2) district, which permits agricultural and single family use on lots 3 acres or greater. The EP-1, OS and EP-2 districts in Lawrence Township are contiguous with Hopewell Township's Valley and Mountain Resource Conservation low density residential districts.

Princeton Township, Mercer County

The common boundary with Princeton Township includes a low density residential zone where single family dwellings are permitted on a minimum lot size of 5 acres. This district is contiguous with Hopewell Township's low density residential Mountain Resource Conservation district.

Pennington Borough, Mercer County

The Borough of Pennington is located entirely within the limits of Hopewell Township. The Borough is situated in the southeastern quadrant of Hopewell Township east of Route 31. As the entire Borough is surrounded by Hopewell Township, all of its districts are contiguous with districts in Hopewell Township. Those districts include; Public/Semi-Public, Recreation/Open Space, Special Use, Regional Office, Highway Business, Office/Limited Business, Multi-Family residential and Single-Family residential. The northern, eastern and southern border of Pennington Borough is almost entirely comprised of the single family residential district with a small recreation/open space district along the northeastern border; these districts are contiguous with low and medium density residential districts in the Township. The remaining districts listed above are located along the western border and are contiguous with Hopewell's Shopping Center, Medium Density residential, Age Restricted Residential, Office, Industrial/Commercial, Valley Agriculture and Research Office districts. According to the 1998 Master Plan Land Use Element the zoning ordinance is substantially consistent with the Land Use Plan.

Hopewell Borough, Mercer County

The Borough of Hopewell is also located entirely within Hopewell Township's limits. The Borough is situated in the northeastern quadrant of the Township. The 1997 Land Use plan includes the following uses; Low and Medium Density Residential, Residential Office, Business, Service, Public/Semi Public and Open Space. These districts are almost entirely contiguous to a mix of residential densities in Hopewell Township. A very small portion of the Borough's business district abuts a compatible neighborhood retail commercial district in Hopewell Township.

Montgomery Township, Somerset County

To the northeast, Hopewell Township abuts a mix of residential densities in Montgomery Township. These districts include the Residential 2 district (1 unit per 3 acres), the Residential 3 district (1 unit per 5 acres) and the Mountain Residential district (1 unit per 5

acres). These districts are contiguous with Hopewell's Mountain Resource Conservation and Valley Resource Conservation districts.

East Amwell Township, Hunterdon County

Hopewell Township shares its northern border with East Amwell Township. The adjacent low density residential land uses include the Sourland Mountain district, which permits 1 unit on a minimum of 5 acres and the Amwell Valley district, which permits 1 unit on a minimum of 3 acres. These districts are compatible with Hopewell's Mountain Resource Conservation district.

West Amwell Township, Hunterdon County

A majority of Hopewell Township's northwestern border from the Delaware River to Marshall's Corner -Woodsville Road abuts West Amwell's low density residential districts with the exception of a small Highway Commercial district along Route 29. The low density residential districts permits single family dwelling units on minimum lots sizes ranging from 2 acres to 3 acres. These districts are contiguous with Hopewell's Mountain Conservation district.

In general, the plans of Hopewell Township's adjoining neighbors include a mix of residential and non-residential districts. For the most part, the character of the development and planning and zoning in adjoining municipalities conforms to that in Hopewell Township. However, where potential conflicts exist, as in cases of non-residential and abutting residential development, careful site planning and design can minimize most impacts.

Mercer County 1986 Growth Management Plan

In accordance with the New Jersey County and Regional Planning Act of 1968 (N.J.S.A. 40:27-2) the Mercer County Planning Board prepared a Master Plan for the physical development of the County, entitled the Mercer County Growth Management Plan, 1986. The stated the need for growth management in a region experiencing strong pressures from development and established a vision for the future to meet the needs for development within the region while preserving and enhancing the existing communities, economy and quality of life in Mercer County. The Township of Hopewell's Master Plan is not in conflict with any enunciated County land use policy.

The 1986 Growth Management Plan for Mercer County is the operative County master plan. The Growth Management Areas Maps included in the Plan divide Mercer County into two general growth management areas, Growth Areas and Limited Growth/Agricultural Areas. Growth Areas are further divided into three subareas, Urban Growth, Regional Growth and Suburban Growth Areas. All lands not in Growth Areas are included in the Limited Growth/Agricultural Area. The Plan also includes two types of Special Areas, Conservation Areas and Village Centers.

The Growth Management Areas Maps include a map of Growth Management Areas for the year 1990, Growth Management Areas for the year 2000, and Conservation Areas. The extent of Growth Management Areas was determined based on the high range of forecasted demands for residential and non-residential development. The Conservation Areas map includes all of Titusville and portions of the I-95 and Marshall's Corner identified Centers. The 1990 Growth Management Area map includes Titusville as a Village Center and the I-95 area east of Scotch Road as a Regional Growth Area; these delineations are consistent with the Planning Area 2 designation in the State Plan. Marshall's Corner is shown as a Limited Growth/Agricultural Area, consistent with the Planning Area 4 designation in the State Plan. The Plan indicates that these Growth Management Areas will remain in effect until the Mercer County Planning Board determines that the level of forecasted population, employment and land development represented by the high range 1990 forecasts are attained. On the year 2000 Growth Management Areas map Titusville and Marshall's Corner are unchanged, and the Regional Growth Area has spread to the west side of Scotch Road.

State Development and Redevelopment Plan

The New Jersey State Planning Act was signed into law over fifteen years ago, providing for the first State Plan ever formally adopted with input from New Jersey's Counties, municipalities, and citizens. The State Planning Act of 1985 (*N.J.S.A. 52:18A-196 et. seq.*) recognized the intent of the legislature to provide for sound and integrated statewide planning in order to "conserve its natural resources, revitalize its urban centers, protect the quality of its environment, and provide needed housing and adequate public services at a reasonable cost while promoting beneficial economic growth, development, and renewal...."

The State Planning Act established a process (Cross-acceptance) that invited the active participation of state agencies, and County and local governments as well as concerned citizens and private interests**.** Among the guiding principles of the State Planning Act are "the provision of adequate and affordable housing in reasonable proximity to places of employment" and the recognition that "the preservation of natural resources and environmental quality is vital to the quality of life in New Jersey".

The State Planning Commission, created under the State Planning Act, was empowered to effectuate its goals by promoting coordination among state agencies and local government, providing technical assistance to local governments, developing recommendations for a more efficient and effective planning process and recommending to the Governor and Legislature such actions as would improve the efficiency or effectiveness of the planning process.

The Cross-acceptance process is a collaborative, participatory process by which state agencies and local governments join in statewide planning to achieve full public participation in the process and a consensus among all levels of government. For this reason, the State Development and Redevelopment Plan (SDRP) carries with it the weight of a long and detailed process of comparison of planning goals, negotiation of differences, and resolution of issues, allowing for a coordinated set of public policies which resonate around central themes.

Additionally, N.J.S.A. 40:55D-28 (d) requires that municipal master plans include a statement indicating the relationship of the municipal master plan to the SDRP.

On March 1, 2001, the State Planning Commission adopted the Final State Plan. This document represents modifications that came about during cross-acceptance of the Preliminary State Development and Redevelopment Plan, which began in 1997 and came to a close in 1999.

While some of the policies and mapping in the Plan have changed, many have remained the same. What has also remained the same is the classification system that the State Planning Commission has used to map the entire State into appropriate "Planning Areas". The Planning Areas for Hopewell Township are shown on Figure 14.

Hopewell Township includes five Planning Area designations and areas designated as Park, as identified in the State Plan Policy Map in the Final State Plan. They are Planning Area 2, Suburban; Planning Area 3, Fringe; Planning Area 4, Rural; Planning Area 4B, Rural/Environmentally Sensitive, and Planning Area 5, Environmentally Sensitive and Parkland.

The significance of these Planning Area designations and the State Plan itself has been largely ceremonious to date, with no regulatory authority backing either. However, the State Plan has gained more clout as a regulatory tool amongst State agencies themselves over the past couple of years. Many state funding sources and discretionary awards have had State Plan compliance requirements built in, making use of the State Plan and its policies more attractive to municipalities throughout New Jersey.

Planning Area 2, the Suburban Planning Area, are areas intended to shoulder much of the future development throughout the State. These Planning Areas are often located near metropolitan areas and are delineated by non-congruent low-density patterns of development that are highly dependant on private transportation and still contain larger tracts of developable land. The portions of the Township that contain the Suburban Planning Area are confined to the area bounded by Scotch Road to the west, Washington Crossing-Pennington Road to the north, and the Township's borders to the south and east; and, the Washington Crossing and Titusville areas in the Township's southwest corner.

Planning Area 3, the Fringe Planning Area, is identified by its rural landscape and freestanding residential and commercial development. The Fringe Planning Areas are often located in regions that sit between the Suburban Planning areas and the Rural Planning areas, and thus act as a transition zone between the two. These regions are recognized by their rural character, which does not consist of prime agricultural soils or environmentally sensitive land. The Fringe Planning Area extends from Route 579 on the west, and then northeasterly through the municipal and school district properties, Pennington Borough, Bristol Myers-Squibb and Elm Ridge Park, terminating at Princeton Farms, Hopewell Hunt and a portion of the Townsend properties.

Planning Area 4, the Rural Planning Area, is describes as regions with large cultivated or open space surrounding centers that act as a distinguishable buffer between areas of development. The Rural Planning Areas are sparsely populated and are intended to act as greenways throughout the State. These often contain agriculturally prime soils, environmentally sensitive areas, and continuous portions of wooded tracts. The Rural Planning Areas in the Township can be found throughout the central portions of the Township, extending from Route 579 on the west through Hopewell Borough to the Township's eastern boundary with Princeton and Lawrence Townships.

Planning Area 4B, the Rural/Environmentally Sensitive Planning Area, represents lands in the State that have environmentally sensitive features, yet still possess agriculturally productive soils or may have a prevalence of farming as an industry. The challenge in this Planning Area is the continuation of agriculture as a viable business, through continued funding of farmland preservation efforts, while balancing environmental resource protection. Planning Area 4B occurs in the north-central and northwestern portions of the Township.

Planning Area 5 possesses many of the State's significant environmental resources, but lacks the farming and productive soils found in Planning Areas 4 and 4B. It is comprised mainly of land that has wetlands, forests, and steep slopes, and may also possess scenic views and other valuable qualities as well. The portion of the Township that is categorized as Planning Area 5 is found in the Sourland Mountains, near Baldpate Mountain, and along the diabase ridge that outcrops along Crusher Road and extends through Mount Rose.

Hopewell Township's Land Use Plan evolved in response to the Cross-acceptance process and State Development and Redevelopment Plan. Hopewell officials participated in Cross-acceptance in order to assess the implications of the basic principles which guide the State Plan. The goals of the Township's Master Plan, which articulate the Township's vision for its future, have been formulated in response to these basic principles.

Significantly, under the adopted SDRP approximately 71% of the Township's land area is classified as either PA-4, PA-4B, PA-5 or Park. The acreage figures by Planning Area are as follows:

Planning Area	**Acreage**
2	4,138
3	6,808
4	12,520
4B	4,879
5	5,406
Park	4,558

The Suburban Planning Area (PA 2) is described by the State Plan as:

- Land area that is contiguous to the Metropolitan Planning area

- Land area that is greater than one square mile
- Natural infrastructure and systems able to meet the needs of a growing population which includes, public water supply, sewage collection and treatment facilities, stormwater, transportation, public schools and parks.

The intent of the State Plan for PA 2 is to:

- Provide for much of the State's future development
- Promote growth in Centers and other compact forms
- Protect the character of existing stable communities
- Protect natural resources
- Redesign areas of sprawl
- Reverse the current trend toward further sprawl
- Revitalize cities and towns

The Fringe Planning Area (PA 3) is characterized in the State Plan as:

- Areas that are adjacent to metropolitan or suburban planning areas
- Regions that are lacking in major infrastructure investments, for example roads are mainly provided and maintained by the State or County and traffic is meant to move through the area
- Land that does not meet the criteria of Rural or Environmentally Sensitive Planning Areas

The intent of the State for PA 3 is to:

- Accommodate growth in centers
- Revitalize cities and towns
- Protect the character of existing stable communities
- Protect natural resources
- Provide a buffer between more developed Metropolitan and Suburban Planning Areas and less developed Rural and Environmentally Sensitive Planning Areas
- Confine programmed sewers and public water services to Centers

The Rural Planning Area (PA4) is described as:

- Land that is currently used for agricultural or natural resource protection activities where the soils are of state or local importance
- Vast contiguous tracts of wooded, vacant, or agricultural lands that lay outside of centers and are served by two lane roads and private sewers and public water

The intent of the State Plan for these areas is to:

- Maintain the Environs as large contiguous areas of farmland and other lands
- Revitalize cities and towns
- Accommodate growth in Centers

- Promote a viable agricultural industry
- Protect the character of existing, stable communities
- Confine programmed sewers and public water services to Centers

The Rural/Environmentally Sensitive Planning Area (PA 4B) is characterized in the State Plan by:

- Land currently in agriculture or natural resource production, or having a strong potential for production based on soil productivity for agriculture
- Undeveloped wooded tracts, vacant lands and large contiguous tracts of agricultural lands, and other areas outside Centers predominantly served by rural two lane roads and individual wells and septic systems.

The intent of the SDRP for PA 4B seeks to:

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

The Environmentally Sensitive Planning Area (PA 5) is characterized in the State Plan by:

- High quality surface waters and their watersheds
- Watersheds of potable water supply sources
- Aquifer recharge areas
- Valuable ecosystems and habitat for threatened and endangered species
- Contiguous freshwater wetlands systems
- Significant natural features or landscapes, including critical slope areas, ridge lines, important geological features and unique ecosystems.
- Prime forested areas

The SDRP cites PA 5 as "highly vulnerable to damage of many sorts from new development…including fragmentation of landscapes, degradation of aquifers and potable water, habitat destruction, extinction of plant and animal species and destruction of other irreplaceable resources ." These environmental sensitivities prompted concern in the SDRP that "new development (in PA 5) has the potential to destroy the very characteristics that define the area."

The intent of the SDRP for PA 5 seeks to:

- Protect environmental resources through the protection of large contiguous areas of land
- Accommodate growth in Centers
- Protect the character of existing stable communities

- Confine sewers and programmed water services to centers
- Revitalize cities and towns

According to the SDRP, Planning Areas 4, 4B and 5 "are not currently nor are they intended to be urban or suburban". The State Plan recommends protecting the rural character of the area by encouraging a pattern of development that is supportive of agriculture and other related economic development efforts that promote a stronger rural economy in the future while meeting the immediate needs of rural residents, and by identifying and preserving farmland and other open lands. The Plan also promotes policies that can protect and enhance the rural economy and agricultural industry, thereby maintaining a rural environment while also protecting valuable ecosystems or wildlife habitats.

The State Plan emphasizes that growth should be organized within existing or planned centers, and that the Environs, outlying areas of lower development intensity outside centers, should be protected from suburban sprawl. The State Plan does not include any designated centers in the Township, however, the current list of proposed centers includes the Pennington Existing Village, the Titusville Existing Village, the Marshall's Corner Proposed Village, and the I-95 Proposed Regional Center. The Township has submitted a petition to the Office of State Planning to delete the Titusville, Marshall's Corner and I-95 Centers from the State Plan, as the planning for these areas are better handled through the Plan Endorsement process, which entails a detailed analysis of the Township's planning approaches in relation to the goals of the State Plan.

In order to accommodate State Plan goals for both the Environs and central places, development needs to be realigned along smart growth principles. A push-pull relationship should evolve where growth is directed away from the Environs and into the cities and older suburbs, where redevelopment opportunities abound. The redevelopment vision of the State Plan cannot be realized unless the economic force behind sprawl is redirected toward these redevelopment opportunities.

The State Plan vision for New Jersey in 2020 sees diverse and thriving cities and towns with a desirable quality of life where reinvestment and public/private partnerships have reclaimed brownfield sites. At the same time, this 2020 vision foresees rural areas where limited growth has been accommodated "while maintaining the rural character and large contiguous areas of farmland so important to all the citizens of New Jersey" and where "farmland and other open lands have been preserved to ensure the future viability of agriculture and maintain a rural environment."

The State Plan is not mandatory; however, it is a comprehensive guide to land use planning for a better New Jersey built upon an inclusive cross-acceptance process, and the ultimate success of the endeavor is largely in municipal hands. Hopewell Township has incorporated local policies and strategies that respond to the basic premises, intent and purposes of the State Plan.

District Solid Waste Management Plan

Mercer County has adopted a Solid Waste Management Plan in accordance with the requirements of the State "Solid Waste Management Act". The Solid Waste Management Act established a comprehensive system for the regulation of solid waste collection, recycling and disposal. The Act authorizes Counties to develop and implement comprehensive solid waste management plans that meet the need of municipalities within the County.

The Township adopted a recycling ordinance in 1989 in order to be consistent with the County's Solid Waste Management Plan and the N. J. Statewide Mandatory Source Separation and Recycling Act. In the Hopewell Township program, the following material is to be separated for curbside collection in residential areas: acceptable glass, metal and plastic containers; acceptable mixed paper; tires; white goods; and, leaves. Curbside recycling occurs every two weeks, except for leaves, which are periodically picked up by the municipality and taken to the Township composting facility. General solid waste collection is handled by private waste haulers on a contractual basis with individual property owners.

Commercial, industrial and institutional establishments are to separate acceptable mixed paper; corrugated cardboard and office paper; acceptable glass and metal containers; tires; and white goods. Commercial, industrial and institutional establishments are to submit a recycling plan to the County in order to meet State requirements. This plan may be done jointly with others or separately by individual businesses. The plan is to identify each type of waste material generated, the volume of each type, whether the business has any agreement with a solid waste hauler, and describe recycling efforts for designated materials. If these businesses do not enter into a recycling plan, recycling services will be provided by the Mercer County Improvement Authority and the cost for those services will be billed to the business.