

Washington Township

Morris County

Master Plan

December 2003



Land Use Plan
Circulation Plan
Community Facilities Plan
Utility Service Plan
Open Space & Recreation Plan
Recycling Plan
Conservation Plan
Economic Plan
Historic Preservation Plan
Farmland Preservation Plan
Housing Element and Fair Share Plan
Implementation Plan
Natural Resource Inventory

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Washington Township Master Plan 2003

Introduction

The Planning Board has prepared the 2003 Washington Township Master Plan to document the environmental and land use characteristics of the community and educate Washington's citizens on the important issues and environmental challenges confronting the Township. Through education, the Planning Board hopes to ensure that the essential character of Washington Township survives the challenges of the future and the persistent regional growth development pressures that threaten to forever alter its destiny. Through careful, well-reasoned and balanced land use policies and regulations, the prized landscape that defines Washington Township can be protected for today's residents and future generations to come.

The Master Plan coordinates Land Use policies with the goals and objectives of the Master Plan, and particularly the Conservation Plan Element, which establishes the foundation for planning and environmental protection in Washington Township. The continued loss of productive farm fields and productive soils, woodlands, steep slope areas, floodplain lands and other areas that establish critical habitat to development has prompted the Planning Board to establish policies that are designed to protect these resources, while at the same time provide for sensible use of the land and water resources upon which all residents and natural systems depend.

Goals and Objectives

N.J.S.A. 40:55D-2 identifies the purpose of the M.L.U.L. and the statutory authority for municipal land use planning and regulation in New Jersey. More than one-half (eight of fifteen) of the purposes of the M.L.U.L. charge the Planning Board with a mandate to protect the environment, prevent urban sprawl, and protect the State's natural resources. The Planning Board has prepared the Master Plan in response to this statutory charge and to conserve natural resources and promote the maintenance of a clean and healthy environment. The eight purposes of the law are listed below.

- (a) To encourage municipal action to guide the appropriate use of or development of all lands in the 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 man-made 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 the preservation of the environment;
- (g) To provide sufficient space in appropriate locations for a variety of agricultural, residential, recreational, commercial, 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;
 - (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 the 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 compliment municipal recycling programs.

The State Development and Redevelopment Plan (SDRP) offers guidance to the Planning Board in the formulation of land management and natural resource conservation policy. The SDRP designates all of Washington Township as either the Rural/Environmentally Sensitive Planning Area (PA4B) or the Environmentally Sensitive Planning Area (PA5). These designations recognize the valuable agricultural resources and environmentally sensitive natural features that Washington Township seeks to protect from the siege of development pressure that threatens to transform these valued resources to suburban sprawl.

Just beyond Washington Township to the east and north, suburban development is consuming what was once a vast agricultural and natural landscape. The transformation of rural and open natural lands to residential neighborhoods brings with it the loss of irreplaceable natural and economic resources. Unchecked, suburban sprawl will forever alter the rural, natural and cultural landscape that Washington Township seeks to protect and preserve. Washington acknowledges the SDRP Rural and Environmentally Sensitive planning area designations and embraces the challenge in maintaining and protecting these areas.

The SDRP describes Rural Planning Area as follows:

“Prudent land development practices are required to protect these resources and retain large contiguous areas of agricultural land. If a viable agricultural industry is to be sustained in the future, the conversion of some of the lands to non-farm uses must be sensitive to the areas predominant rural character and agricultural land base. Throughout New Jersey, some Rural Planning Areas are subject to greater development pressure than other areas. Without greater attention to maintaining and enhancing our rural areas, these economic activities are at risk. Tools and techniques need to be tailored to address the distinctive situation. In particular, new development may require additional attention in areas with environmentally sensitive features.”

For the Environmentally Sensitive Planning Area, the State Plan offers the following description:

“The Environmentally Sensitive Planning Area contains large contiguous land areas with valuable ecosystems, geological features and wildlife habitats particularly in the . . . Highlands region, . . . The future environmental and economic integrity of the state rests in the protection of these irreplaceable resources. . . Environmentally Sensitive Planning Areas are characterized by watersheds of pristine waters, trout streams and drinking water supply reservoirs; recharge areas for potable water aquifers; habitats of endangered and threatened plant and animal species; coastal and freshwater wetlands; prime forested areas; scenic vistas; and other significant topographical, geological or ecological features, . . . These resources are critically important not only for the residents of these areas, but for all New Jersey citizens.

The Environmentally Sensitive Planning Area is highly vulnerable to damage of many sorts from new development in the Environs, including fragmentation of landscapes, degradation of aquifers and potable water, habitat destruction, extinction of plant and animal species and destruction of other irreplaceable resources which are vital for the preservation of the ecological integrity of New Jersey’s natural resources. . . New development in these Environs has the potential to destroy the very characteristics” (environmental sensitivities) “that define the area”.

The SDRP promotes the retention of large open land areas in PA4B & 5, and the Plan defines “large contiguous area”.

“When applied to habitat, (large contiguous area) means the area of undisturbed land required to maintain a desired community of plants and animals”, and “when applied to farmland, large contiguous area means the amount of contiguous farmland usually considered necessary to permit normal farm operations to take place on a sustained basis.”

The Township is endowed with large contiguous land areas with valuable ecosystems, geological features and wildlife habitats that support critical habitat. Whether it is the maintenance of large contiguous areas for farmland or to protect environmentally-sensitive areas, Washington’s stewardship of these areas requires policies and management techniques to sustain the landscape in such a way that the long-term viability and function of these lands is assured. Washington seeks to manage these resources consistent with the SDRP policy orientation for the Environmentally Sensitive Rural Planning Area and the Environmentally Sensitive Planning Area.

The Township is uniquely situated within the region in that its landscape establishes the headwaters of the Musconetcong, and the North and South Branch of the Raritan River watersheds. From Washington Township’s large contiguous areas of farmland and environmentally sensitive lands flow the pristine waters and trout streams that feed the

rivers that fill reservoirs for the region and overland flows that recharge potable groundwater aquifers. Washington Township's woodlands, farmland, wetland and grassland resources provide important habitat for endangered and threatened species. Washington Township's prime forested areas, scenic farmland areas, undisturbed hillsides and mountainous topography are important resources within a rapidly developing region where these features are being transformed to a sprawling suburban landscape. These resources are critically important not only for the residents of the region, but for all New Jersey citizens and the protection of these features assumes the highest priority.

The Goals and Objectives of this plan establish, reinforce and expand upon the goals and objectives of Washington Township's 1995 Master Plan. The basis of this plan is to protect and preserve natural resources, including important farmland soils, groundwater resources, including limestone formations and aquifer recharge zones, streams and their corridors, floodplains, wetlands and critical habitat. This plan seeks to protect and preserve woodlands, steep slopes, unique views and vistas such as ridgelines, and hillsides and mountainsides. This plan seeks to advance policies that will serve to limit the impact of development and retain the natural terrain and features to the greatest extent practicable. Fundamentally, this plan seeks to maintain open lands, minimize disturbance of the natural environment and protect critical habitat and biodiversity with strategies designed to contribute to the well-being and environmental health of the region. The Planning Board has identified the following series of Master Plan goals and objectives.

1. Protect and preserve important farmland soils.
2. Protect groundwater aquifers and surface water quality and quantity.
3. Protect groundwater recharge areas, prevent contamination of ground water resources, and maintain safe drinking water supplies.
4. Target groundwater contaminated sites for open space protection.
5. Protect environmentally sensitive natural resources including floodplains, stream corridors, steep slopes, ridgelines, wetlands and their transition areas, important woodlands, grasslands and unique critical threatened and endangered species habitat.
6. Offer a range of development options for the maintenance and protection of interconnected lands.
7. Reduce land use densities and intensities commensurate with the capacity of the environment to sustain development.
8. Preserve and protect the high quality trout production and trout maintenance waterways.
9. Recognize and protect the unique views and vistas.
10. Encourage energy efficiency in the location, siting and construction of new development.
11. Encourage pedestrian and public transit and linkages.
12. Implement the Township's recycling ordinance.
13. Limit disturbance and development of forests, meadows, grassland areas, steep slopes, ridgelines, scenic vistas and views, streams and their corridors,

groundwater aquifers and recharge areas, wetlands and swampy areas, unique landscapes, and agricultural areas.

14. Create the position of Environmental Specialist.

Supplemental Goals and Objectives are identified throughout the Master Plan, within each individual element of the Plan.

I. Land Use Plan Element

This Land Use Plan Element has been prepared pursuant to the Municipal Land Use Law (N.J.S.A. 40:55D-1 et seq.) and addresses the statutory requirements of N.J.S.A. 40:55D-28.

The Land Use Plan is designed to implement the goals, objectives, principles and assumptions of the master plan in a manner that 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, flood prone areas and critical habitat. 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. These land use planning policies become effective land management tools when implemented through the land use management ordinances.

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.

The Land Use Plan maintains a conservation emphasis and continues the general policy orientation that has guided Washington's prior Master Plans. 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 South Branch Raritan River, Lamington River and Musconetcong River and an intricate network of headwater tributaries have carved an attractive landscape of fields and forests, while unique geomorphologic changes have formed the rugged terrain of Schooley's Mountain. The changes that have occurred over centuries are reflected in the small historic settlement areas and scattered suburban neighborhoods set amid an open landscape, and joined by compact business sectors and limited highway commercial establishments.

The past decade has seen major, irreversible changes affecting the Township and its land and water resources, as new housing developments have proliferated and commitments to open space preservation have been expanded. If not properly managed, this pattern of residential subdivision threatens to overwhelm, and forever alter, Washington's special sense of "place." How change is managed today will shape the quality of life in the Township for many years to come.

In this Master Plan, Washington 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", consistent with the Township's Farmland Preservation Plan, Open Space Plan, Greenways Plan and

Conservation Plan. In this way, the Township's land and water resources and critical habitat can be conserved, farmland can be retained for agricultural use and the character that attracted past and present residents, and provides Washington's unique identity, can be protected.

Sustainable development, a key objective of smart growth planning efforts, seeks to manage resource utilization in ways that will provide effectively for the needs of future generations, maintain ecological integrity and conserve limited resources. 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 protecting environmentally sensitive and other open lands in the "environs", this Master Plan provides for reductions in residential density and patterns of land use which will retain significant natural resources and farmland as by-products.

This Master Plan is designed to maintain or establish compact and desirable residential neighborhoods, which conserve the forested and sloping expanses of the 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, cultural and community facilities.

Open lands dominate the valley and mountain portions of Washington Township, and are the "environs" that contain important natural systems, critical to the ecological balance. These pastures, fields, woodlands, slopes and ridgelines 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 combine with easement purchases and other conservation efforts to assure that future residents can share this sense of place in a safe, healthy environment.

Land use patterns and intensities should promote the viability of farming on prime soils, protect an adequate supply of clean water to meet existing and future needs and preserve the scenic roadsides and broad expanses of rural countryside. Land development patterns and intensities should maintain and enhance the superior water quality of the Township's rivers and streams that are classified FW-2TP (trout production) and FW-2TM trout maintenance surface waters in "Surface Water Quality Standards" prepared by the NJDEP and found at N.J.A.C. 7:9B1.1 et seq. Protecting their headwater intermittent and perennial streams is critical to protecting these precious resources. Special care should be devoted to preserving the unique character of the "historic villages" and "hamlets."

It is the policy of this Land Use Plan to be consistent with the State Development and Redevelopment Plan (SDRP) adopted in March 2001. The SDRP includes Washington Township within the Planning Area 4B (Rural/Environmentally Sensitive Planning Area) and Planning Area 5 (Environmentally Sensitive Planning Area). The SDRP identifies a community development boundary of the Hackettstown Regional Center that extends into the northwest portion of Washington Township with PA5. However, rather than advancing a regional Center designation within the next 5-6 year planning horizon, the Planning Board identifies the need to protect the environmentally sensitive character of this area, particularly due to the superior water quality of the Musconetcong River and the potential degradation of surface water quality if land use activity is concentrated and intensified in this portion of the municipality in a Center-based planning strategy.

The Musconetcong River is currently under consideration by the National Park Service as a Wild and Scenic River due to high water quality, regional recreation activities it supports and plant and aquatic species that thrive in the river. Suburban sprawl and unchecked development in nearby communities has resulted in degradation of the river's water quality, an undesirable impact under the State Plan. Washington's land use efforts to reduce the harmful effects of development on the river and protect water quality include preserving the Mine Brook Golf Course when previously under threat of development, and reducing the number of housing units built in Hidden Hills to 95 from the 1,480 units originally proposed. If the State Planning Commission designates a regional center in the northwest portion of the Township, the Board should further reevaluate the appropriateness of regional center designation in this portion Washington Township.

The State Plan intent in the Rural Planning Area (PA-4B) is to maintain the Environs as large contiguous areas of farmland and protect environmentally sensitive areas and natural resources. The challenge is to maintain and enhance the rural character of the PA-4B in the face of significant market pressures prompted by development interests that view the Rural Planning Area as prime real estate for new suburban residential development. To achieve consistency with the State Plan, this plan seeks to effectively protect large contiguous areas of farmland, natural resources and environmentally sensitive features.

In the Environmentally Sensitive Planning Area (PA5), the State Plan seeks to protect sensitive environmental resources through the protection of large contiguous areas of land, direct growth to centers and protect the character of existing stable communities. The challenge in PA5 is to manage and protect critical and irreplaceable natural resources and features, such as the Township's forests, steep slopes, ridgelines, streams, rivers, floodplains and aquifers, by directing growth to centers. To achieve these planning area objectives, Washington's plan is to protect these and other features throughout the Township, as indicated in the State Plan.

The Land Use Element is the backbone of the Township's Master Plan. Its intent is to guide the use and development of the land within the community. The Municipal Land Use Law requires the Zoning Ordinance to "be substantially consistent with the land use

plan element and the housing plan element of the Master Plan or designed to effectuate such plan elements.” The Land Use Plan therefore is not intended to be interchangeable with the Zoning Ordinance, but rather it should provide the specific policy guidance needed to craft zoning, land conservation and development ordinances necessary to implement those policies.

Environmental Constraints

This Master Plan proposes several techniques to limit the intensity of development in areas with environmental constraints.

The Zoning Ordinance should be amended to include methods and strategies, which will protect and preserve environmentally sensitive lands in a legally defensible manner. Additionally, this plan includes proposals to lower densities in areas, which are environmentally sensitive due to steep slopes, aquifer recharge, floodplains, wetlands and the presence of critical habitat. The following provisions are recommended.

- Disturbance of land with slopes of 30 percent or greater is not permitted (this is a current standard).
- Limited grading only (no structures, roads or driveways) is permitted in areas with slopes of 25 percent to less than 30 percent. This grading and disturbance is for such items as side slopes for roads, or grading for structures which are themselves not located in slope restricted areas.
- A requirement for an approved grading plan for all activities in areas of 15% to less than 25% slope (this is a current standard).
- A 1,000-sq. ft./lot steep slope cumulative exception should be added to the ordinance for disturbance of isolated steep slopes where activities are limited by ordinance.
- Wetland and transition area requirements, or stream encroachment regulations, of the NJDEP regulate development in proximity to wetlands and surface water. Such regulations sometimes result in the unwanted effect of providing access to areas that should remain undeveloped. Permitted development densities should be reduced and mandatory clustering provisions should be amended so that reduced lot sizes are required when wetland crossing, stream encroachment and floodplain development can be avoided.
- Stream and surface water setbacks should be increased from all watercourses that are currently in effect where no wetlands are involved to provide the maximum protection possible for stream corridors and surface water quality throughout the Township.
- There should be a minimum improvable area for each single-family residential lot created. That is a contiguous area within the required lot setbacks, and

unencumbered by wetlands, transition areas, stream corridors, floodplains, open waters and restricted steep slopes. The Planning Board should reexamine the current standard of 7,500-sq. ft. minimum improvable lot area based upon its effectiveness in protecting environmental constraints, as improvable lot area is defined in the ordinance.

- The maximum intensity of development in non-residential zones is adequately regulated by the floor area ratio (F.A.R.) restrictions, setbacks, lot coverage, and maximum height regulations.
- Ordinance standards should be established and implemented for architectural design of new development to maintain a desirable visual environment, encourage creative development techniques, protect and enhance the Township's rural ambiance and enhance historic settlements.
- The multi-family zones density restrictions should be based on the number of dwelling units per gross acre. That gross acreage should be the land which is devoted to the residential use.
- Multi-family zones which include a component set-aside for low and moderate income households should exclude from gross acreage areas of wetlands, transition areas, floodplains, stream corridors and slopes in excess of 15 percent, as allowed in COAH's regulations.
- Maintain a ridge protection ordinance which prohibits development/disturbance within a specified number of feet from a ridgeline. The intent of such an ordinance is to protect the pristine view of the mountains from the valley areas in and around the Township, and to minimize the potential for erosion, sedimentation and ensure the survival of treelines and vegetation in Ridgeline areas.
- Maintain the limestone protection ordinance which requires an investigation program of the geologic conditions in certain areas of the Township when development applications are submitted. This Master Plan recognizes that there are valuable water resources in the community which are in need of protection. There is also the potential for geological conditions such as faults, voids, and sinkhole formation which could pose public health and safety concerns. The limestone protection ordinance establishes an overlay zone that corresponds to those areas of the Township suspected to have, or known to have limestone, carbonate rock formations. The ordinance details site investigation requirements, and requirements for proposed engineering solutions, measures or alternatives if warranted.

Agricultural Retention

Retention of valuable agricultural land has been a long-standing objective of Washington Township. There are a number of ordinances which currently implement this goal.

These include the Cluster Ordinance, the Agricultural Use Overlay Zone, and the Right to Farm Ordinance.

In New Jersey, a parcel cannot qualify for farmland assessment unless it contains at least five (5) acres, and if the dwelling is included on the property, this minimum increases to six (6) acres. However, since some nonproductive lands may not qualify for farm assessment, a six (6) acre minimum will not assure the potential for preferential farmland tax assessment.

Conflicts between farm and non-farm uses can frequently result in a loss of farmland or farm uses. Agricultural retention objectives have prompted many localities to adopt large lot zoning strategies to retain agricultural lands for farm use and to discourage non-farm uses in agricultural areas. If the farmland base is not protected in the near term, farming may decline sharply with a critical mass of farmland converted to non-farm uses. Viable agriculture cannot be expected to succeed if new development proceeds according to the currently permitted density. Such zoning permits the entry of large numbers of non-farm residences and the conflicts they inevitably bring.

Recommended techniques for preserving agriculture in moderate strength farming areas include comprehensive planning, agricultural zoning, maximum building lot sizes for non-farm development (i.e., 2 acres), purchase and transfer of development rights and establishment of urban growth or village boundaries. A review of the professional literature and research from the American Farmland Trust, the Smart Growth Network, the American Planning Association and the New Jersey Pinelands Commission indicate that large lot zoning for a minimum lot size of 20 to 45 acres is appropriate as an agricultural protective zoning technique, when non-farm residences are to be permitted. In addition, lot size averaging and off-site clustering can be useful land use techniques, when the proper balance is achieved between permitted densities and lot area requirements.

New Jersey courts have recently upheld 10-acre agricultural zoning as a reasonable means to retain agriculture and protect the agricultural land base of a community. Bedminster Township in nearby Somerset County and East Amwell Township, Hunterdon County are two examples where agricultural zoning strategies were found to be valid use of municipal zoning powers when zoning validity was challenged. Additionally, environmental protection weighed heavily into the Bedminster decision in which involved lands included in the Township's Environmentally Sensitive Planning Area. These court decisions are consistent with appropriate agricultural land use strategies for the protection of agricultural areas identified by the National Agricultural Lands Study (NALS) (Coughlin & Keene, 1981) which found that half of the communities surveyed relied on a large minimum lot areas the principal density control in the agricultural zone. Most of these communities were in or adjoining metropolitan areas. Within the communities surveyed by NALS, minimum lot sizes ranged from ten (10) acres to six hundred forty (640) acres.

It is noteworthy that the NJ Supreme Court upheld 40-acre zoning in the Pinelands in what is known as the Gardner decision. In Gardner, the Court found that a 40-acre

minimum lot size requirement was found to be valid under the policies of the Pinelands Comprehensive Management Plan, a regional land management plan that focuses growth into areas that are appropriate and designated for higher densities, while maintaining open areas for continued viable agriculture and natural resource protection, such as the 40-acre zoning district which was the subject of the court challenge. This is a similar situation to the State Plan policies for Planning Area 4B and Planning Area 5, as found throughout Washington Township, which are designated for protection of large contiguous environmentally sensitive and agriculturally productive areas, and where zoning is an effective technique to achieving these resource protection goals.

In 1997, The American Farmland Trust (AFT) examined a range of approaches to retaining farmland, and recommended “Agricultural Protection Zoning” (APZ) as a zoning technique used to support and protect farming by stabilizing the agricultural land base. The AFT is a nationwide nonprofit organization dedicated to protecting agricultural resources, founded by a group of concerned farmers in 1980. AFT's mission is to stop the loss of productive farmland and to promote farming practices that lead to a healthy environment. AFT defines APZ as ordinances that allow no more than one house for every 20 acres, support agricultural land uses and significantly restrict non-farm land uses.

As described by AFT, APZ is a zoning technique used to support and protect farming by stabilizing the agricultural land base. APZ designates areas where farming is the desired land use, generally on the basis of soil quality as well as a variety of locational factors. Other land uses are discouraged. APZ ordinances vary in what activities are permitted in agricultural zones. The most restrictive regulations prohibit any uses that might be incompatible with commercial farming. The density of residential development is limited by APZ. Maximum densities range from one dwelling per 20 acres in the eastern United States to one residence per 640 acres in the West.

APZ ordinances establish procedures for delineating agricultural zones and defining the land unit to which regulations apply. They specify allowable residential densities and permitted uses, and sometimes include site design and review guidelines. Some local ordinances also contain right-to-farm provisions and authorize commercial agricultural activities, such as farm stands, that enhance farm profitability. Occasionally, farmers in an agricultural protection zone are required to prepare conservation or farm management plans.

The definition of APZ varies with jurisdiction and by region of the country. A minimum lot size of 20 acres, combined with other restrictions, may be sufficient to reduce development pressures in areas where land is very expensive and farming operations are relatively intensive. Several county APZ ordinances in Maryland permit a maximum density of one unit per 20 acres. In areas where land is less expensive and extensive farming operations such as ranches predominate, much lower densities may be required to prevent fragmentation of the land base. In Wyoming and Colorado, counties are not permitted to control subdivision of lots that are larger than 35 acres. The 35-acre

provision has led to the creation of hundreds of 35-acre "ranchettes" in both states, fragmenting ranches into parcels that are too small for successful commercial ranching.

Many towns and counties have agricultural/residential zoning that allows construction of houses on lots of one to five acres. Although these zoning ordinances permit farming, their function is more to limit the pace and density of development than to protect commercial agriculture. In fact, such ordinances often hasten the decline of agriculture by allowing residences to consume far more land than necessary. AFT defines APZ as ordinances that allow no more than one house for every 20 acres, support agricultural land uses and significantly restrict non-farm land uses.

The courts first validated zoning as a legitimate exercise of police power in the 1920s, giving local governments broad authority to regulate local land use. Rural counties in California, Pennsylvania and Washington began using zoning to protect agricultural land from development during the mid-1970s. In 1981, the National Agricultural Lands Study reported 270 counties with agricultural zoning. In 1995, an informal AFT survey found nearly 700 jurisdictions in 24 states with some form of APZ.

APZ helps reserve the most productive soils for agriculture. It stabilizes the agricultural land base by keeping large tracts of land relatively free of non-farm development, thus reducing conflicts between farmers and their non-farming neighbors. Communities also use APZ to conserve a "critical mass" of agricultural land, enough to keep individual farms from becoming isolated islands in a sea of residential neighborhoods. APZ also helps promote orderly growth by preventing sprawl into rural areas, and benefits farmers and non-farmers alike by protecting scenic landscapes and maintaining open space. Washington's remaining agricultural landscape may well be an appropriate candidate area for the application of Agricultural Protection Zoning.

APZ can also limit land speculation, which drives up the fair market value of farm and ranch land. By restricting the development potential of large properties, APZ is intended to keep land affordable to farmers. A strong ordinance can demonstrate to farmers that the town or county sees agriculture as a long-term, economically viable activity, instead of an interim land use. APZ also helps promote orderly growth by preventing sprawl into rural areas, and benefits farmers and non-farmers alike by protecting scenic landscapes and maintaining open space.

APZ also protects equity. Webster's New World Dictionary defines "equity", in part as fairness; impartiality; justice; and anything that is fair or equitable." In Washington Township, there has been significant public investment in preserving farmland and open space. The 1995 Master Plan reported 977-acres of permanently preserved farmland in the Township. The Morris County Agricultural Development Board reported a total of 2,921-acres of preserved farmland as of December 2001, or approximately 10% of all land in Washington Township. Current data maintained by the Township's Farmland and Open Space Committee identify a total of 3,187 acres farm preserved (11% of all land). This steady and substantial growth in preserved farmland demonstrates the public interest in preserving farmland will be best served through APZ strategies that reinforce these

public expenditures and protect the Township's agricultural base. Zoning strategies should be implemented that effectively assure the protection of these limited resources, protect public equity, build upon prior public investments and enhance quality of life.

BENEFITS

- APZ is an inexpensive way to protect large areas of agricultural land.
- By separating farms from non-agricultural land uses, APZ reduces the likelihood of conflicts between farmers and non-farming neighbors.
- APZ helps prevent suburban sprawl and reduces infrastructure costs.
- Compared to purchase of conservation easement and transfer of development rights programs, APZ can be implemented relatively quickly.
- APZ is easy to explain to the public because most landowners are familiar with zoning.
- APZ is flexible. If economic conditions change, the zoning can be modified as necessary.

Source: American Farmland Trust, *Saving American Farmland: What Works* (Northampton, Mass., 1997).

Natural Resource Conservation

The Township's Master Plan also recognizes the variety of benefits related to forestlands, including recreation, wildlife habitat, reduction of surface run-off, and visual and noise benefits. Air quality improvements also result from retention of forestlands. The Master Plan seeks to provide a comprehensive approach to woodland conservation that promotes preservation of contiguous tracts of undeveloped lands to maintain forest ecology to the greatest extent possible. Some threatened and endangered species rely on large "interior patches" for successful, and sustained breeding habitat. When forests are fragmented, an extensive edge effect may be created that invites unfavorable plant growth (lawns, shrubs and vines) which favor direct sunlight, and thereby diminish the suitability of habitat for desired species. The maintenance of large contiguous tracts of forest assume a high priority in this plan.

Protection of surface and groundwater resources is also an important element of the Washington Township Master Plan. The Land Use Plan responds to the Township's designation in the SDRP within the Rural/Environmentally Sensitive Planning Area (Planning Area 4) and the Environmentally Sensitive Planning Area (Planning Area 5) throughout the entire Township. Increasing the minimum lot area and reducing the number of new dwellings, which will be developable will better protected the scenic character of Washington's countryside.

Protecting groundwater supplies on Schooley's Mountain and in the Fox Hill Range in Washington Township assumes a local high priority. There is a substantial amount of residential development in these areas of Washington Township that occurred as a result of previously permitted densities. Many homes in these areas are dependent on individual water wells, which are located in Precambrian rock that is characteristic of

Highlands geology. This plan calls for a conservative land use strategy to protect limited groundwater supplies and ensure that domestic wells upon which residents rely will be protected. Therefore, this Land Use Plan calls for reducing the permitted density of development in these Highlands formations.

Extensive high quality watercourses and rivers throughout the Township are the legacy of Washington's land stewardship. Surface waters, which flow through Washington, are a potable water source for downstream communities. For this reason, protection of surface water quality promotes the health, general welfare and interests of not only Washington's residents but for the residents of the region at large. High quality waters from Washington serve to dilute more degraded waters and reduce the cost for treatment of such potable water sources. NJDEP designations of Washington's surface waters as Category One (C-1) Trout Production and Category Two (C-2) Trout Maintenance waters indicate that careful planning and reduced residential development densities will be required if high surface water quality is to be maintained.

This land use plan also promotes maintenance and/or retention of terrestrial and aquatic habitats which currently exhibit a high level of environmental quality in supporting threatened and endangered species and their critical habitat. Extensive areas of critical habitat, which are associated with the trout waters, are also found throughout the Township, as documented by the NJDEP Landscapes Project. C-1 waters carry an anti-degradation so that these waters "shall be protected" from any measurable changes to the existing water quality necessary to support existing ecosystem health. C-2 water quality policies indicate that protections are needed to maintain water quality within a defined range of to maintain existing water quality capable of supporting the trout populations and aquatic life these waterways support.

While current permitted densities and environmental protection standards attempt to limit the non-point pollution impacts of future development, extensive undeveloped steep slope areas remain vulnerable to development pressure. Significant limits in permitted land disturbance and intensities of residential development will be required if the high surface water quality of water courses in the Township are to be maintained to the benefit of regional potable water supplies and aquatic life, particularly within steep slope areas that are vulnerable to the impacts of development. This area poses one of the most significant challenges to the protection of surface water quality, maintenance of undisturbed habitat and rural character.

There are a number of undeveloped isolated steep slope lots lying between the valleys and ridgelines that are inappropriate for residential use or agricultural development. They were sometimes created as logging parcels and their precarious position on the mountainside and along steep slope areas heighten the concern of future development activity that could result in erosion, critical habitat fragmentation and negative water quality impacts. These lots are impractical for development and are inappropriate for residential development or agricultural use. The Township should explore the availability of State funding programs that may be available to assist in the acquisition of

these parcels to ensure their protection and the maintenance of the natural systems they support.

NJDEP Green Acres funding is available for direct purchase of land from landowners and conservation easement purchase, which in some cases requires little or no public access. Green Acres direct purchase program pays fair market value and may offer life tenancy to landowners. Direct open space purchases avoid the requirement for farmland assessment rollback taxes, among other advantages. This type of assistance can help make landowners partners in protection of the landscape.

The Green Acres Program also developed a “Limited Practical Use” program for the acquisition of premature or nuisance subdivision lands, termed such due to creation “without utilities, paved roads and other infrastructure necessary to make them work” and now are impractical for development. While targeted to small lots in the Pinelands, this type of program would be of great assistance to Washington as well as other municipalities that share similar topography and environmental features that give rise to high quality water supply headwaters in the region. Washington should partner with municipalities and the State to develop a similar approach tailored to these unique conditions.

Ongoing field surveys of critical habitat and documentation of threatened and endangered species assumes a high local priority. Species identified in the Conservation Plan Element include the wood turtle, bog turtle, barred owl, timber rattlesnake and the Cooper’s hawk, among Washington residents. If suitable habitat is to be maintained to support these species, diligent efforts should be sustained on an ongoing basis to monitor the natural conditions and systems that support them.

Washington has partnered with Morris County and New Jersey in a prolific program of purchasing development rights and thereby preserving agricultural lands in the Township. A total of 4,079-acres or approximately 14.2% of the Township’s agricultural land is now either preserved farmland, or in the process of being preserved, including much of the fertile agricultural valley of the South Branch of the Raritan River, that extends from Hunterdon County to Chester Township. The farmland assessment program has also encouraged the retention of agricultural lands for decades. Farmland preservation activities are continuing and, should be expanded wherever possible to promote the long term viability of the agricultural industry in Washington.

Zoning Districts

Resource Conservation District (RCD)

The Resource Conservation District responds to the goals of conserving significant elements of the rural and agricultural countryside. The rural character that pervades much of Washington Township, embodied in the scenic vistas, wooded hillsides, agricultural fields and historic settlement patterns, is highly susceptible to degradation.

The Resource Conservation District occupies 23,746-acres - in Washington Township (approximately 83% of the total land area). Within that area approximately 80% of the land is classified as: agricultural use (22%), woodland (43%) or wetland (15%).

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 to accommodate traffic movements and increase carrying capacity. 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 subtractive process resulting in conversion to a more suburban appearance with the environmental and traffic impacts of this form of development.

Similarly, despite significant success in farmland preservation efforts, suburban development has consumed substantial agricultural lands in the Township, and the preserved landscape is a continuing magnet for sprawl. 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 Resource Conservation District is designed to limit 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, these factors have a meaningful role in agricultural production for parcels of various sizes, especially with the advantageous access to the densely populated regional markets.

Virtually all except the mountainous portions of Washington Township consist of important farmlands—prime soils, soils of statewide importance and soils of local significance. 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, and protected from intrusion by suburban sprawl. The significant amount of remaining farmland can make farming a permanent part of the local landscape and economy.

The Township has prepared a farmland preservation plan, which outlines a variety of mechanisms to preserve farmland. In addition to the acquisition and management strategies outlined in the farmland preservation plan, land use regulation can promote continued agriculture by preserving two vital physical resources, land and water. If

residential and non-residential development consumes all of the available water, then agriculture will not find it available. Similarly, if development consumes all of the land, then the farmland base is lost forever.

Washington's vision for the future of undeveloped lands embodies the smart growth principles 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. Conservation subdivision designs, which can retain substantial farmland and sensitive natural resource-restricted lands, will be key elements in fulfilling Washington's vision.

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. However, 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.

Unlike sprawl, the land development options in this Land Use Plan for the Resource Conservation District are 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 in the district to shape the Township's growth strategies.

History has shown that development will occur at permitted suburban densities (2, 3 or 5 acres) when the market demands in an area justify the cost of such development. Washington Township and surrounding areas have been shaped by several "generations" of suburban development, which have generally occurred during times of a strong economy. 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".

Washington's Master Plan proposes to achieve the objectives of the State Plan for the Environs through the use of zoning techniques that avoid sprawl. Permitted land development options 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.

The Resource Conservation District has been created in furtherance of the SDRP to respond to a broad range of local objectives and the goal of maintaining large contiguous open lands throughout the Township's rural landscape and mountainous terrain. The Resource Conservation District provides for clustering or lot averaging. These residential densities will be applied to the remaining portions of the Township not served by centralized waste water treatment facilities and public water supply.

Open Lands Ratio

The Township's Master Plan, like the plans of Morris County and the State of New Jersey, prioritizes the protection of sensitive natural resources and the retention of the large contiguous masses of agricultural lands, which are required if agriculture is to have a viable future in New Jersey.

Open lands ratio zoning is a technique that defines the portion of a tract to remain open and available for farmland or other resource use, and requires that these open lands meet minimum standards of soil quality and useable land. The remaining land is then planned to accommodate the permitted non-farm residential development.

The Municipal Land Use Law directs municipalities to provide "sufficient space in appropriate locations" for agriculture and open space. The MLUL also recommends "creative development techniques and good civic designs and arrangements" to preserve and enhance the visual environment". Notable among the primary objectives of the MLUL is the conservation of valuable natural resources and prevention of urban sprawl.

Since its adoption, the State Development and Redevelopment Plan has called for a growth management strategy which channels development into compact centers, and seeks to protect the "Environs" which are New Jersey's countryside. The "Environs", which include the Resource Conservation District, are highlighted for protection of "large contiguous areas" of farmland, open space, and forests.

The State Development and Redevelopment Plan defines "Large Contiguous Areas" as the amount of contiguous farmland necessary to permit normal farm operations on a sustained basis, or the undisturbed land required to maintain a desired community of plants and animals". The Open Lands Ratio provides for future land development patterns that promote the objectives of the State, Morris County and Washington Township.

A key feature in Washington's farmland preservation approach is to retain large contiguous tracts and areas of farmland and open space which are undisturbed by new residential or other development. Toward this end, an open lands ratio of 75% is recommended, to be achieved through a combination of density and lot size standards.

This strategy is designed to preserve enough open land so that active farming operations can be continued or initiated without interference from incompatible neighboring development.

Cluster Zoning and Lot Size Averaging

These zoning techniques have been developed to address special land use concerns such as the retention of agriculture, open space and environmentally sensitive areas. The inadequacy of conventional zoning to achieve specialized community goals has prompted the widespread use of these techniques in agricultural and environmentally sensitive areas.

Clustering or cluster zoning is designed to provide useful tracts of open space as a by-product of residential development. This approach generally permits a reduction in the minimum lot size in return for permanent commitments of open space areas. The MLUL provides that clustering may be permitted within a contiguous tract or by arranging development among non-contiguous tracts (N.J.S.A. 40:55D-65(c)). Non-contiguous clustering offers the potential to accomplish total preservation of some sites, while allowing a greater measure of development on other sites. However, suitable areas for higher density development must be designated under this approach.

Lot size averaging, a variation on the cluster design concept, permits a reduction in the size of some lots provided that other lots exceed the minimum lot area requirements so that the average lot size meets or exceeds an ordinance standard. This technique has been found particularly useful for preserving farmland, woodland, or for wildlife conservation purposes. It retains the taxable status of all resulting lots and also eliminates questions about long-term maintenance of public open space and any related municipal responsibilities, as all properties remain in private ownership.

Lot size averaging should be designed to facilitate community-planning objectives. For instance, municipal regulations could require that a certain proportion of the site be retained in large lots with the remaining permitted development on small lots. This can retain parcels of adequate size to permit continued farming to have economic utility. Conversely, without such a standard, lot size averaging can still assist resource conservation objectives by including environmentally sensitive lands in oversized lots.

Design standards should be developed to provide for new residential development at reduced densities away from natural resource restricted lands and away from the most productive agricultural lands and in locations where they will be least disruptive of farming activities. On- and off-site clustering and lot size averaging can minimize the impact of non-farm dwellings in the Resource Conservation District, provided that a minimum percentage of lots (i.e. 50% to 60%) are required to conform to maximum lot area requirements (i.e. 3 acres), based on a 15 acre density.

Design Standards

Land development procedures should be structured to allow a landowner and the Planning Board to determine the pattern and layout of future development through a process that involves significant dialogue and discussion before requiring detailed engineering plans of drainage, grading, and utilities. This process would identify the portions of a parcel that will be devoted to agriculture, roads, open space, houses, and other uses.

The impact of new residential development on the productivity of farming operations, protection of critical environmental resources and on community character should be mitigated by encouraging it to follow development forms that reflect the rural character of the Township through the application of flexible design standards and land use controls. A series of rural conservation design guidelines that could form the basis for ordinance standards are outlined below:

- Locate construction to preserve the better quality soils for agriculture
- Encourage construction on the edge of the fields and orient driveways along hedgerows and the edge of woodlands to minimize intrusion on agricultural lands
- Encourage road design and layout to conform to the topography
- Preserve prime woodlands and hedgerows
- Encourage planted buffers using native species arranged to resemble existing woodland patterns
- Locate new development to maintain significant views and vistas and the landscape's rural character
- Encourage common driveways; particularly on wooded, or sloped terrain to minimize interruptions to traffic flow

Other Ordinance Considerations

The changing face of agriculture will require new planning and regulatory approaches. Farmers and farm operations are advancing different techniques to prosper in this day and age. Besides the prevalence of off the farm income, New Jersey farmers are looking to new markets for products and new technologies. The New Jersey Farm Bureau is providing a leadership role in bringing about an increase in production opportunities in new use agriculture for farmers in this State. A new movement in American agriculture is underway that seeks to use plant material raised on farms as a new, substitute source of material used in industrial and pharmaceutical products. There are proven technologies available for the conversion of carbohydrate material into many products, as an alternative to a near-exclusive reliance on petroleum products. Any shift in this direction within the American economy would benefit production agriculture, lessen the costs to society from the environmental impact of synthetic products and assist the national security through increased reliance on domestically-produced renewable resources.

Farmers looking to new markets for products and new technologies will require structural solutions at the site of production. In establishing its ordinances for the Resource Conservation District, Washington Township should examine these techniques and opportunities to provide needed support of current and future farm operations within the Township

A. Summary of Recommended Zoning Techniques

This Land Use Plan combines several conservation subdivision approaches to address the Township's Agricultural retention and natural resource conservation objectives. Conventional suburban subdivisions have been eliminated, as Washington seeks to prevent the wholesale conversion of the Resource Conservation District to suburban residential development. Recommended alternatives are prioritized based on their ability to meet conservation and agricultural retention objectives, with residential densities designed to encourage techniques most effective in meeting local goals, such as:

- | | |
|---------------------------------|---|
| <u>Conventional subdivision</u> | • 20 acres/unit |
| <u>Open Lands Subdivision</u> | • 10 acre/unit density |
| | • 80,000-sq. ft. minimum lot area |
| | • 75% open lands with deed restriction against further subdivision for non-agricultural purposes |
| | • 2/3 of the open lands to include priority farmland soils and/or mature woodlands |
| <u>Cluster Subdivision</u> | • 10 acre/unit density |
| | • 80,000-sq. ft. minimum lot area |
| | • 75% farmland/woodland open space with deed restriction against further subdivision for non agriculture, woodland or conservation resource management purposes |
| | • 2/3 of the open lands to include priority farmland soils and/or mature woodlands |
| <u>Lot Averaging</u> | • 10-acre/unit density |
| | • 80,000-sq. ft. minimum lot area |
| | • 50% of lots created between 80,000-sq. ft. and 120,000-sq. ft. in area |

This Master Plan calls for the addition of a grandfather provision to the zoning ordinance that protects existing undersized lots made non-conforming by the enactment of the Township's Resource Conservation District regulations.

Districts Enumerated - In addition to the Resource Conservation District, the lands of the Township of Washington are further divided into the following zoning districts:

- “R-1/R-2” Single-Family Residential
- “R-1” Single-Family Residential

- “R-1-T” Single-Family Residential/Transitional District
- “R-MDU” Single-Family Multiple Dwelling Unit Residential
- “PUD/R-2” Planned Unit Development
- “C-1” Neighborhood Business
- “C-2” Highway Business
- “I” Industrial, Manufacturing, Research and Office
- “OR” Office Research
- “OR/I”
- “GC/R” Golf Course Residential
- “RCH-SC” Reduced-Cost Housing – Senior Citizen

Viewed together, the land use districts in Washington provide for a wide range of single family and multiple family housing types, retail sales and service uses and a variety of office and employment development opportunities. Overlay Districts are identified to encourage continued agriculture, protect groundwater resources, promote senior citizen housing opportunities and protect identified historic districts.

Within the Township’s residential zoning districts, the following uses are principal permitted uses: Single-family detached dwellings, any form of agriculture or horticulture, public uses and buildings, houses of worship and the installation of wireless telecommunications antennas on existing structures. Home occupations, roadside stands, the keeping of horses, and family daycare are permitted accessory uses in the residential districts.

“R-1/R-2” Single-Family Residential

The R-1/R-2 Single-family residential district acknowledges existing developed residential neighborhoods that are served by public potable water and sewage collection infrastructure. The R-1/R-2 permits single-family residential dwellings on lots of at least 80,000 square feet in these neighborhoods when either public water or public sewer service is not available and thus an on-site septic system or individual well is required.

“R-1” Single-Family Residential

The R-1 District has been designated to permit single-family residential dwellings on lots at least 40,000 square feet within defined public water and sewer service areas of the Township. Residential dwellings are permitted on lots of 40,000 –sq. ft. only when the dwelling will be served by both public water and sewage collection infrastructure.

“R-1-T” Single-Family Residential/Transitional District

For the R-1 District located at the intersection of Newburgh Road and former Route 24, this plan calls for an “R-1-T” transitional district that permits a narrow range of nonresidential conditional uses for those R-1 properties developed residentially, but located adjacent to the OR/I and the R-MDU Districts. Recognizing that these properties are impacted by the relatively intensive land use development patterns of these abutting districts and busy traffic patterns affecting these roadways, the R-1-T district responds to

the changing character of Newburgh Road and former Route 24 due to localized growth and regional traffic patterns. The district permits professional and medical offices and certain personal service uses in addition to single-family detached dwellings.

“R-MDU” Single Family and Multiple Dwelling Unit Residential

The R-MDU District permits single-family attached housing, garden apartments, two- or four-family units and patio or zero line dwellings. To provide a diverse mix of housing types in the R-MDU, no single housing type may exceed 60% of the total number of dwelling units. Additionally, a minimum of 5% of the gross tract area and a maximum of 10% of the gross tract area must be developed with retail and services uses that are designed primarily to serve the residents of the development. Single-family detached dwellings are permitted on lots of at least 80,000 square feet in area in the R-MDU district, when multiple dwelling units residential development is not proposed. However, the R-MDU has been developed as an age restricted community with a range of housing types uniquely suited to the needs of the elderly, including a continuing care retirement facility for elderly persons that are unable to fully maintain an independent living arrangement on their own.

“PUD/R-2” Planned Unit Development

The Planned Unit Development district provides a conditional use development option in the northwesterly portion of the Township along former Route 24. The PUD option provides an area where mixed use and mixed housing types are permitted as a single entity according to a plan. The PUD was devised for flexibility in meeting the Township’s municipal obligation to provide housing for low- and moderate-income households in accordance with rules established by the Council on Affordable Housing, with 10% affordable housing set aside. The district is developed as Hastings Square and is fully developed in accordance with the PUD district standards as adopted by the Township in 1983.

“C-1” Neighborhood Business

The C- 1 Neighborhood Business zoning district permits a wide range of retail and personal service uses to respond to the everyday needs of residents of the community. C- 1 zoning districts are oriented along the major roadways in the Township including East Mill Road and Schooley’s Mountain Road (former Route 24), and West Mill Road in Long Valley and along existing commercial developed areas of US Route 46 in the northwest portion of the Township adjacent to Hackettstown. The C-1 District provides the opportunity for neighborhood commercial uses on lots of at least 20,000-sq. ft in area.

In Long Valley, where the C-1 District adjoins the German Valley Historic District, the Township should identify appropriate architectural design standards targeted at maintaining and reinforcing the historic character of the community and extending the Historic District character with a common architectural design theme. In this area, open lands and existing commercial development dominate the visual gateway to the Historic

District and define community character, particularly along East Mill Road. This plan calls for the implementation of architectural controls and neighborhood commercial design standards consistent with the established historic community character, as defined by the Historic District. These design strategies will help ensure that a desirable visual environment is maintained and extended, and that Historic District character be appropriately protected, reinforced and extended, whenever new commercial development and redevelopment occurs at this important visual gateway to the community. Mixed use in the Long Valley C-1 zone should be encouraged to permit residential use in this zone to retain the residential character of the Village.

In the northerly portion of the Township, the Planning Board and the Township should explore the option of rezoning residential properties that included in the C-1 district along Drakestown Road. The area along Drakestown Road is a stable neighborhood of modest homes that may continue in residential use after nearby portions of the highway corridor are developed for non-residential use.

“C-2” Highway Business

The C-2 Highway Business zoning district permits regionally oriented retail shopping centers at a more intense level of development than the C-1 District. The district permits all neighborhood and community-scale retail and personal service establishments as well as integrated developments of significantly greater intensity. Large-scale retail development is permitted in the C-2, located along US Route 46 east of Hackettstown. For this development option, architectural theme and enhanced site design standards are recommended to ensure that large-scale retail developments appropriately reinforce community character and results in a desirable visual environment respectful of environmentally sensitive constraints characteristic of this portion of the Township. The minimum lot size for C-2 district uses is 80,000-sq. ft., with substantially larger lots required for large-scale retail and shopping center uses.

“OR” & OR/I” Industrial, Manufacturing, Research and Office

The “OR”& “OR/I” zoning districts are oriented along the floodplain of the Musconetcong River in the northwesterly corner of the Township in the vicinity of Hackettstown and Mansfield Township. In Long Valley, an OR/I zone extends east from the village along the north bank of the South Branch of the Raritan and Fairview Avenue. The district permits offices for business management, executive, professional and administrative purposes as well as a broad range of high value private sector business and service uses including research facilities and laboratories, computer and data processing centers, conference centers with lodging facilities, and printing and publishing businesses. The OR/I district also permits the manufacture of a broad range of engineering, scientific, mechanical, optical and computer instruments, as well as corporate office and industrial park development involving the combination of permitted manufacturing uses.

The minimum lot size in the OR/I district is 200,000-sq. ft. and it is acknowledged that floodplain soils and associated environmental constraints occurring throughout the district will require careful and innovative storm water management techniques and buffering if the high water quality of the Musconetcong River is to be protected and maintained as development proceeds in this zoning district.

In the OR/I District in Long Valley, the Planning Board recommends that the Township establish a zoning overlay to permit the development of age-restricted housing to redevelop the now defunct Welsh Farms facility, which is served by the public sewer system and includes high-yielding potable wells on site. The district includes underutilized lands that are capable of supporting this alternative housing choice, which is not found elsewhere in the Township. The adjacency of this tract to the downtown, existing open space, the Columbia Trail, and the South Branch of the Raritan River makes this tract a unique candidate for, and provides an excellent opportunity to provide age-restricted housing for older residents of the community. Existing residential neighborhoods would be minimally impacted by the addition of an age-restricted residential neighborhood, particularly when compared to redevelopment of the tract for manufacturing or industrial purposes.

Redevelopment of the idle Welsh Farms dairy processing facility has become a local land use planning priority since Parmalat Corporation acquired the facility, and operations have been ceased. The zoning overlay option for this zoning district should permit age-restricted development of the tract at a gross density not to exceed 2-units per acre, plus any required affordable housing component that the development will generate under COAH's proposed growth share formula. Multi-family housing of buildings not exceeding 4 units per building should be considered to conserve open space. The subdivision plan for redevelopment of the Welsh Farms tract should include an open space linkage to the Washington Township Land Trust property and provide a public path to the center of Long Valley, pedestrian linkage to the Columbia Trail and other Morris County Park Commission trails, and sidewalks. Neighborhood amenities, such as a clubhouse, and outdoor public recreation areas should be required. Enhanced stormwater treatment practices will be needed to maintain and improve water quality of the South Branch.

The addition of age-restricted housing along Fairview Avenue should be designed to integrate physically with existing neighborhoods and architecturally with the historic district in Long Valley. The internal roadway system of the neighborhood should be continuous and the use of cul-de-sacs should be limited to the extent achievable. Appropriate buffering of the new neighborhood from all adjoining neighbors will be required. If, after preliminary investigation, it becomes apparent that small additions to or lot line adjustments of the Welsh Farms tract are required in the interest of sound planning, the overlay should be drawn to include these lands to facilitate redevelopment of the tract.

Existing wetland areas on the Parmalat-Welsh tract reduce the amount of developable land. These environmental constraints may limit the opportunity to construct affordable housing on the tract. In order to maintain age-restricted development market viability and at the same time accommodate affordable housing needs, consideration should be given to including affordable housing in buildings redeveloped on site. Affordable housing units

should be included in market-rate unit buildings to the extent achievable. Increased building height in the zone may be necessary to include age-restricted development and affordable housing in the same building. In addition, increased building height would permit varied building designs that may add visual interest with staggered roof-lines and peaks, which may be a worthy design objective.

The existing wells on the Parmalat-Welsh tract once used by the dairy plant should be preserved and acquired for municipal water supply if possible. These are high-yielding wells that produce up to 500,000 gallons of water per day and may serve to replace low-yielding wells that require replacement in the municipal public water supply system. Maintaining these wells may require relief from certain wellhead setback standards due to the limited developable land on site. If the municipality can secure relief from the NJDEP for building and development setbacks from the wellhead(s), the developer should be required to put management practices in place limiting chemical and fertilizer applications in proximity to the wellhead(s) to protect the wells. The homeowners association created for this development should be required to abide by wellhead protection practices deemed appropriate by the NJDEP.

“OR” Office Research

The “OR” zoning district is located along US Route 46 in the northwest portion of the Township. The OR district is intended to attract high quality office/research employment generating land uses that would logically locate along the major transportation corridor for accessibility to major interstate transportation corridors in the region. The OR district permits the establishment of limited manufacturing, processing and fabrication of products and materials only as ancillary to a research laboratory, and when subordinate in floor areas to such uses. Conference centers and corporate office park development is also permitted in the OR district. The minimum lot size in the OR Office-Research district is 200,000-sq. ft.

“RCH-SC” Reduced Cost Housing – Senior Citizen

The “RCH-SC” district in the northerly portion of the Township permits senior citizen apartments and single-family detached houses as a means to address the Township’s affordable housing obligation assigned by the NJ Council on Affordable Housing. The Peachtree development was constructed in response to the zoning which permits a maximum of 94 units to be constructed in the zone, provided that at least 40% of the units constructed are provided for low and moderate-income senior citizen households.

II. Circulation Plan Element

Introduction

This section of the Master Plan is prepared in accordance with the Municipal Land Use Law, as specifically referenced in N.J.S.A. 40:55D-28b.(4):

- (4) A circulation plan element showing the location and types of facilities for all modes of transportation required for the efficient movement of people and goods into, about, and through the municipality, taking into account the functional highway classification system of the Federal Highway Administration and the types, locations, conditions and availability of existing and proposed transportation facilities, including air, water, road and rail

This Circulation Plan Element responds to the proposals outlined in the Land Use Plan Element, as well as the regional context in which Washington Township is located. The purpose of this Plan Element is to establish a program of circulation improvements and programs that will address the Township's needs into the future. The Township's 1995 Master Plan included the following local objectives relative to transportation:

Goals and Objectives

1. Implement the former Route 24 by-pass around the German Valley Historic District.
2. Avoid inappropriate traffic intensity on Township roads.
3. Provide a hierarchy of street classifications to meet the traffic generation demands of various land uses.
4. Provide appropriate connections between subdivisions to permit circulation through residential blocks and discourage subdivision patterns and flag lot development, which would inhibit the opportunity for future connections of local streets and the safe and efficient flow of traffic.
5. Coordinate the local street system, which separates through-regional corridors from local access routes to the greatest extent possible.
6. Establish a circulation system with the broader regional system.
7. Eliminate existing and potential traffic hazards.
8. Develop road and bridge design standards that will permit safe and convenient roadways while keeping the rural character of the community. Avoid the over-design of roads and piecemeal widening.

9. Encourage various modes of transportation, including mass transit, buses, van pooling, and park and ride facilities at strategic locations within the Township in order to promote the goals of the Clean Air Act.
10. Develop, in coordination with the parks and open space element, a system of hiking, bicycle and equestrian routes.
11. Identify and actively enforce speed limits at levels consistent with the character of individual roadways.

How people travel to, through and around the Township affects community character, land use, and the local quality of life. The circulation element should not only address the road system, but roads with all forms of transportation, including bus service, rail, bicycle and pedestrian modes of travel.

The road network is the primary transportation system in the Township. It is organized as a hierarchy of roads, as follows:

1. Major arterials that convey large volumes of traffic through the municipality.
2. Minor arterials and collector roads extending from arterials that convey lesser traffic volumes and provide access between and among neighborhoods.
3. Local roads, which provide direct access to the frontage of properties located thereon.

The Township's system should be coordinated with the regional transportation network. The Interstate Highway System and rail service are elements of the regional network that impact local traffic patterns even though these elements of the transportation network are not located in the Township.

The challenge in circulation, planning arises from conflicting goals to protect existing rural historic narrow roads and steep topography of the Township's road network, which was established in the 1800's; and the modern day expectations for a roadway system capable of supporting traffic volumes in excess of the capacity of the historic roadway system. Today's objective is to plan for a safe and efficient circulation system that minimizes congestion and maintains the historic character of the Township and the quality of life that residents want to protect. The transportation system should promote pedestrian circulation, protect the quality of the air we breathe and improve the livability of the community. These objectives are the basis for this plan.

The Existing Circulation System

Washington Township's circulation system is comprised of Federal, State, County, and Township roads. These are ultimately connected to Interstate Highways, which include

1-80 to the north, 1-287 to the east, and 1-78 to the south. These roads are approximately 10 to 14 miles from the center of Washington Township.

There are approximately 171.3 miles of public roads in Washington Township. The largest bulk of this mileage is comprised of 150.8 miles of municipal roads. These are followed by 18.93 miles of Morris County roads, and 1.57 miles of Federal highway (US Route 46). There are also private roads which are not inventoried in the above system. The two major arterials which are the primary links from Washington Township are Routes 46 and 24 (portion of CR 513 & portion of CR 517).

Route 46 is located in the northwest corner of the community and is a major east-west traffic carrier in northern New Jersey. This road connects the community to 1-80 and the highly developed metropolitan area to the east. It roughly parallels 1-80 west towards Pennsylvania.

Former State Highway Route 24 extends through the Township from Chester Township to Hackettstown. This highway extends from Chester Township to Long Valley as CR 513 (East Mill Road) and then extends from Long Valley to Hackettstown as CR 517 (Schooley's Mountain Road). The CR 513 portion of former Route 24 connects Long Valley to U.S. Route 206 located to the east in the Chesters. Route 206 provides connections to 1-80 to the north and 1-287 to the south. The CR 517 portion of former Route 24 provides access from Long Valley to Hackettstown and Route 46 to the north via Schooley's Mountain Road.

There are three main traffic arteries under the jurisdiction of Morris County within the Township including CR 513, CR 517 and CR 625. Route 513, travels in an east-west direction across the Township and connects Chester to the east with Califon to the west. From Long Valley to Lebanon Township CR 513 is West Mill Road. From Long Valley east to Chester Township CR 513 is East Mill Road. Route 517 travels in a north-south direction across the Township and travels from Tewksbury Township to Hackettstown. CR 517 is Fairmount Road from Long Valley to Fairmount and extends to the south to CR 523 in Oldwick, which provides access to Route 78 and Route 22 south of Oldwick. The third County Route is Route 625 (Bartley Road), and extends from East Mill Road (Route 513), in a northeasterly direction to Mount Olive.

The remainder of the public roads are under the jurisdiction of the Township. These are mostly improved with some minor exceptions. The most heavily traveled municipal roads are: Newburgh Road, Naughtright Road, Pleasant Grove Road, East Avenue, Flocktown Road, Kings Highway, Parker Road, and East Valley Brook Road.

Road Classifications

This Circulation Plan classifies streets within the Township on the basis of their function. Roads are classified as arterials, primary collectors, collectors, and local roads and are defined as follows:

Arterial Roads – A vehicular right-of-way whose primary function is to carry through traffic in a continuous route across or through the township or area while also providing some access to abutting land. Arterial roads convey traffic from collector streets that serve neighborhoods and often connect to other arterial roads, freeways, expressways, and/or parkways. In Washington Township, arterials are the principal part of the road network for through traffic flow.

Collector Roads – A road that carries traffic between arterials and local streets and provides access to abutting property. In Washington Township, collector roads are subdivided into two function road systems: primary and secondary. The primary collector road is classified due to its higher traffic volumes (both present and anticipated in the future), and its importance in the overall circulation system. Essentially, this road carries more traffic and is more important than the typical collector road, yet is not an arterial road. The secondary collector is the more typical collector type road connecting local streets with arterials or primary collectors and is herein referred to as a collector in this plan.

Local Streets/Roads – A road that primarily provides access to abutting property, usually single family homes in the Township. It typically conveys low traffic volumes and has a low speed limit.

Rural Historic Scenic Corridors – The Township developed this classification of Township roads acknowledging that certain roadways in the Township are important for their contribution to the rural character of the Township. These roads convey varying volumes of traffic, but are noted for protection in the Master Plan because of their historic configuration, varying roadway width and scenic roadside and corridor elements that contribute to the rural character of the Township, such as stone-walls, roadside hedges, mature trees, forests and open scenic vistas.

The following table classifies the Township’s existing roads in accordance with the road types identified above.

Washington Township
Street and Road Classification

<u>Arterial:</u>	Route 46 (Federal) Schooley's Mountain & East Mill Road (Former State Route 24 & County Route 513 partial) Bartley Road (County Route 625) Fairmount Road (County Route 517) West Mill Road (County Route 513)
<u>Primary Collector:</u>	Naughtright Road (Municipal) Coleman Road (Municipal) Flocktown Road Pleasant Grove Road
<u>Collector:</u> (All Municipal)	Beacon Hill Road Califon Road Drakestown Road East Avenue East Avenue - Reservoir Road Connection East Springtown Road Esna Drive Fairview Avenue Kings Highway Long Valley Boulevard Newburgh Road Old Farmers Road Parker Road Reservoir Road Rock Road Spring Lane West Springtown Road East and West Valley Brook Road Zellers Road - W. Mill Connection (All other streets and roads are classified local)

Washington Township – Rural Historic Scenic Corridors

Apgar Road (east of Green Hills Rd.)	Fox Hill Road	North Mt. Lebanon Road
Beacon Hill Road	Frog Hollow Road	Old Turnpike Road
Black River Road	Hacklebarney Road	Parker Road
Califon Road	Heath Lane	Pickle Road
Camp Washington Road	Hollow Brook Road	Pleasant Grove Road
Church Lane	Kings Highway	Reservoir Road
Coleman Road	Laketown Road	Sand Hill Road
Drakestown Road (north of Route 46)	The Maples (East/West/North)	Spring Lane
East and West Springtown Road	Maple Lane	Stephensburg Road
East Valley Brook Road	Middle Valley Road	Turtleback Road
Fairview Ave. (north of Naughtright Rd)	Mission Rd. (Reservoir Rd. to Marjorie Dr.)	Van Pelt Road
Fishers Mine Road	Mount Lebanon Road	West Valley Brook Road (south of Beacon Hill Rd.)
Flocktown Road	North Four Bridges Road	Wherli Road
		Zellers Road

Road classifications are identified on the map entitled Circulation Plan – Washington Township. In addition to the classifications of arterial collector and local streets this plan calls for the roadway classifications Major Arterial, Minor Arterial and Rural Historic Local Roads.

US Route 46 can be classified as the only major arterial roadway in Washington Township, in order to place a distinction in function between this road and other arterials in the Township. A major arterial is a highway with limited access, channelized intersections, restricted parking, which collects and distributes traffic to and from minor arterials, and in some cases collector roads. Major arterials generally provide linkages to the interstate highway system.

All other arterials identified in this plan are classified as minor arterials. A minor arterial is a road with signals at important intersections and stop signs on the side streets. These serve as the primary roadways that convey traffic through the Township and are noted for their high traffic volume, relative to other roads.

The Rural Historic Scenic Corridor local road category serves the same function as local roads with very low traffic volumes. They are different from local roads in that they have changed little from their historic origins. They are generally very narrow, follow the existing terrain, and have radii and grades, which do not meet current standards. They characterize the older settlement and development patterns of the Township and frequently have structures located close to the edge of pavement.

This plan finds that the preservation and protection of Rural Historic Scenic Corridors and their existing character is essential to retaining the rural character of the Township and the areas of the Township in which these roads are located. These roads are distinct from other roads in the Township and have their own distinct policy orientation to protect their unique contribution to community character.

The subdivision ordinance includes minimum right of way and pavement widths for the different road classifications. These widths are intended for future development in the Township when it occurs. Pavement widths should be individually assessed on a case-by-case basis, given the condition of the road and the development pattern surrounding it. The widths identified in the ordinance are as follows:

<u>Road</u>	<u>Right-Of-Way Width</u>	<u>Pavement Width</u>
Arterial	80 Feet	50 Feet
Primary Collector	66 Feet	48 Feet
Collector	60 Feet	40 Feet
Minor	50 Feet	30 Feet
Rural-Historic	Varies	20 Feet (or as per RSIS)

The road classification not only impacts the proposed right of way and pavement width, it affects land use as well. It is desirable to locate lower intensity land uses adjacent to

lower classified roads. For example, single-family residences should generally be located on minor local roads, whereas the location of certain home occupations may be dependent on the type of road which it fronts.

Additionally, it should be noted that while the road classifications identify desirable right of way and pavement width, local conditions may not warrant or even allow roadway standards in the ordinance to be achieved. In Washington Township especially, there are many locations with unique limitations to road widening such as historic districts, existing home and building placement, and physical and environmental constraints that should be considered whenever roadway improvements are considered.

The State of New Jersey specifies the desirable typical section for Route 46. Within the Township it has two designations. One is from the Musconetcong River to where it divides opposite East Avenue. The State calls for a 90 foot right-of-way width and 52 feet of pavement. The divided portion of the highway to the Mount Olive border is proposed as a 114-foot right-of-way, and each direction of travel having 37 feet of pavement. Route 46 is considered a major arterial given its limited access highway and function conveying regional traffic. This road is not in the same category as the other arterials in the Township.

The minor arterials are all under the jurisdiction of Morris County. This plan proposes those roads to remain with two travel lanes and two fully paved shoulders for a pavement width of 40 feet. Where possible the right-of-way should be 80 feet in order to accommodate future planning.

Collector roads should accommodate two travel lanes and two paved shoulders. These roads should generally have 40 feet of pavement width, which can generally be accommodated within a right of way of 60 feet.

Rural Historic Scenic Roads have varying right of way widths often due to historic and older homes and structures and environmental features such as steep slopes and mature trees located very close to the right of way. These roads have changed little from their historic origins, generally follow the existing terrain, and have characteristics that do not meet modern standards. The intent of the rural historic road designation is to maintain rural character and preserve this component of Washington's rural tradition. Generally, the desirable traveled way width of these roads is not less than 20 feet, with no curbs while keeping in mind the historic character of the road. There are also frequently severe constraints on road widths within the historical districts given the setback of the existing buildings from these roads.

Rural Historic Scenic Roads assume special importance under this plan. In order to retain the visual character of the rural portions of the Township, road improvements should not be initiated to open rural lands for development. Limiting access points, such as roadways and driveways will serve to maintain the free flow of traffic while also maintaining scenic roadside resources and views.

The treatment of roadside features is an important element in preserving and maintaining rural historic character and this plan calls for a 50' rural historic road buffer easement, 50 feet in width adjacent to the right-of-way and in addition to the shade tree easement, within which special practices and treatments are to be required. These include replanting when similar vegetation wherever natural vegetation is removed, the use of common driveways and limited access for new streets to limit driveway cuts, the removal of vegetation and existing roadside features and the alteration of grades. In order to preserve rural historic roads and character, historic features along the roads such as stone rows, hedgerows, stone retaining walls and fences, should not be disturbed. Sidewalks should be separate from the roadway and meander where necessary to avoid features to be preserved. The use of alternative construction materials should be required to maintain the rural scenic character of these corridors.

Public Transportation

Public transportation available to Washington Township residents is very limited. There is one bus route, which provides commuter service in the Township and is operated by the Martz-Trailways Line.

Martz Trailways offers service via Route 46 in Washington Township to New York City - Mid-town and Wall Street. This service is available on weekdays. There are 11 eastbound trips on a weekday, starting from 5:15 a.m. to 8:20 p.m. A free park and ride facility with approximately 100 spaces located on Route 46 west of Reservoir Road provides parking for riders of this bus service.

Villani Bus Service provides commuter mass transit in the Township with one trip daily and stops on Schooley's Mountain and in Long Valley. From Long Valley the bus travels through Chester, Flanders, to Route 80 then the Willowbrook Mall, and then into NYC via the Lincoln Tunnel. The bus stops at 7th Avenue, 34 Street and travels uptown along Madison Avenue.

The Morris Area Paratransit System (MAPS), formed in 1987, is a special transportation service for senior citizens and disabled residents in the County. MAPS, managed and operated by Morris County Division of Transportation Management (MCDOTM), offers service to people over 60 years of age and disabled persons over 18 years who have no transportation alternative. Transportation services are offered by MAPS for employment, medical, social services, daycare, shopping, recreation, nutritional, and educational purposes. MAPS is served from five (5) regional offices. Generally, users call in at least 48 hours in advance to schedule primarily weekday trips. Riders are asked for a \$1 round-trip fare donation.

NJ Transit Rail service to New York City is available weekdays from Hackettstown, Mount Olive, Netcong and Lake Hopatcong. There are two lines originating from Hackettstown, the Morris & Essex Morristown Line, and the Montclair-Boonton Line. Both lines provide service to Mid-town Penn Station and Hoboken, with stops in Newark. Scheduled service from Hackettstown is limited, however more frequent A.M. rush hour

departures are available from the nearby communities of Mount Olive, Netcong and Lake Hopatcong. The lines run together to Dover, at which point the Morris & Essex line diverges south to Newark via Morristown and Summit and the Montclair-Boonton Line extends easterly to Newark via Boonton and Montclair.

Two bus service lines were formerly available in Hackettstown, but have been discontinued. The Morris County Metro discontinued bus service, which originated in Chester, traveled through Long Valley and across Schooley's Mountain via East Mill and Schooley's Mountain Road, with its destination of Rockaway Mall. Transfers at the Rockaway Mall enabled connections to NYC. Lakeland formerly offered commuter service from the park & ride facility on Route 46, which has been replaced by the Martz-Trailways service, which departs from the park & ride parking lot on Route 46.

Pedestrian Sidewalks and Bicycle Paths –

Pedestrian sidewalks and bicycle paths are an important component of the Township's Circulation Plan for those residents of the community that walk and ride for exercise and particularly for the Township's youth, unable to drive themselves. Pedestrian sidewalks safely separate pedestrians from vehicular traffic along busy thoroughfares, collector and local roads. Bicycle paths and routes can also be effective in providing connectivity among residential neighborhoods and non-residential destinations in the community, such as schools, parks, the library, and commercial services.

Sidewalks assume a particularly high priority throughout the downtown area to provide connectivity among commercial and community services and schools. A goal of this plan is to establish a continuous sidewalk among downtown destinations to serve both residents of and visitors to the downtown. Sidewalks have evolved in a somewhat piecemeal fashion downtown, and a common brick design coordinates various segments of the discontinuous network that has been constructed to date.

The local challenge in establishing a continuous sidewalk throughout the downtown includes a series of challenges and objectives, as noted below:

- (1) limited right-of-way width within the historic district leaves little room for vehicular travel lanes, a shoulder and a sidewalk, thus restricting the placement of sidewalk along existing roads;
- (2) a single design theme that reinforces the historic character of the downtown is highly desirable to coordinate and guide future sidewalk development;
- (3) capital funding is needed to construct a comprehensive, continuous network of sidewalks –County, State and federal grant programs to fund sidewalk construction are limited and highly competitive, which limits funding opportunities for the Township to fund sidewalk construction.

There is the potential for significant residential development in the northwest portion of the Township where age-restricted development is permitted along CR517 and Newburgh Road in the OR/I zone. Sidewalks should be required along these busy roads to establish

safe pedestrian access to connect new neighborhoods to commercial services in this portion of the Township, Hackettstown and Mansfield Township. An internal network of neighborhood sidewalks should also be required to establish pedestrian linkages to sidewalks along heavily traveled roads and to existing and planned hiking paths.

Sidewalks are provided throughout many of the Township's residential neighborhoods and the Planning Board evaluates the need for sidewalks on a case-by-case basis. New subdivisions almost always include cul-de-sac roads, and school district policy only permits buses to pick up students at cul-de-sac intersections. Since morning student pick-up coincides with peak hour travel, the Board considers factors such as the length of the cul-de-sac, the number of homes in the neighborhood and, in some cases, environmental constraints when determining if sidewalks are needed. Bus pads are normally required at the end of cul-de-sac roads to provide students with a safe place to wait at the bus stop.

The intent of this plan is to provide pedestrian access to local points within the community such as Long Valley Village, Schooley's Mountain Park, Rock Spring Park, Palmer Park, the Library and other parks. Where desirable along rural historic roads, sidewalks should be constructed in such a way as to preserve roadside features and the use of alternative construction materials is recommended where appropriate to maintain rural historic character.

Bicycle access to these points of interest should also be provided, and consideration should be given to identifying and signing "bicycle routes" throughout the Township. Adding bicycle routes may provide an alternative means of transportation for youngsters who rely on their parents for transport to sports and social activities. Signing of these routes will aid in calling drivers attention to the need to share the road with bicyclists. Design of arterial and collector roads should include bicycle lanes within their paved width where possible. Bicycle routes should be designated along the major thoroughfares in the Township, particularly along County roads.

ROAD IMPROVEMENTS

This plan acknowledges and recommends certain road improvements for improving traffic safety, connectivity and travel throughout the Township. The intent is to identify locations for new routes and improvements, which will serve to remove some of the burden from existing thoroughfares and reduce travel time. The circulation planning challenge in Washington Township is to respond to emerging transportation needs within the suburbanizing region while at the same time respecting and maintaining Washington's narrow, steep, rural roads that are testament to the Township's rural historic past.

This Circulation Plan has scaled back the proposals from the 1988 & 1995 Master Plan in light of farmland and open space preservation, environmental conditions, reduced development and changes in zoning, which has occurred since the last Plan update. The Circulation Plan identifies essentially three road improvements that are intended to ease

traffic flow primarily during the morning and evening peak travel hours and enhance the quality of life for Washington's residents.

The road and street proposals in this plan represent the best opinion of where they would be most appropriate given the knowledge at hand. Specific engineering and environmental studies have not been undertaken in the formulation of these recommendations and it is acknowledged that such analyses are an essential aspect to roadway improvement engineering and design. The improvements recommended should not be taken as specific alignments, but rather should be used to guide municipal and other agency road improvement planning. In addition, the recommendations identified in this plan are intended as a guide for the Planning and Zoning Boards in assessing the need for road widening and improvements when reviewing development plans and evaluating the appropriateness of land uses relative to the municipal circulation system.

There have been two bypass proposals analyzed by the Planning Board, including the Long Valley bypass and a Hackettstown bypass to link Route 57 to Route 46 in the northerly section of the Township. This plan endorses the Long Valley bypass as an important roadway improvement that assumes a high local priority, as explained below. While the Planning Board recognizes that traffic congestion in Hackettstown is a problem, it is not clear that the need for the Hackettstown bypass has been established and the proposed bypass raises environmental concerns as well. Therefore the Board does not endorse the construction of the bypass, and recommends that other remedial measures be undertaken to address Hackettstown traffic congestion.

The Board believes that every effort should be made to relieve Hackettstown traffic congestion within existing road right-of-ways. For example, reconfiguring the "Five Corners" intersection would ease traffic flow at this bottleneck intersection. In addition, reconstruction of the existing bridge and the addition of a parallel bridge across the Musconetcong River on East Avenue, which currently does not permit trucks to use this crossing due to weight limitations, could provide an alternative route for trucks that impede traffic flow through the five corners intersection. These measures would be less costly than constructing a bypass, minimize environmental impacts in the Musconetcong River floodplain and at the same time ease traffic congestion.

SPECIFIC ROAD IMPROVEMENTS AND CIRCULATION PLAN RECOMMENDATIONS

The following list identifies the specific roadway improvements recommended in this Circulation Plan Element of the Master Plan. The location of these improvements are identified as numbered below on the Circulation Plan Map.

Road #1. - The Long Valley bypass around the Village of Long Valley remains a very important traffic and circulation improvement for the community and it is the primary recommended roadway improvement of this plan. The bypass is needed to ease the increasing traffic congestion and wait times that characterize the CR513/CR517

intersection in Long Valley, particularly during peak hour travel times. The existing Route CR517 (Schooley's Mountain Road) includes steep grades and unsafe curves that convey increasingly heavy regional traffic volumes. The bypass is planned to eliminate excessive stacking at the CR513/CR517 intersection and address safety concerns associated with the rural historic road alignment on the Mountain.

The County has revised the proposed bypass alignment since the adoption of the last Master Plan, and the County's scheduling and completion for bypass construction in the near future appears doubtful. The County has advised that construction of the bypass is dependent on federal funding, which cannot be guaranteed within a fixed timeframe. In addition, the County explained that the project is in a "queue" behind other County roadway improvements awaiting federal funding.

The Planning Board recommends further analysis of the feasibility of the alignment and its construction with the County. The County advised the Planning Board that altering plans for the bypass could move the project to the end of their queue. However, the nature of the federal funding required, and the absence of a funding commitment to construct the bypass, suggests that an alternative scaled-back alignment should be investigated.

As currently planned, the bypass will extend from East Mill Road approximately 1,150' east of the Fairmount Road and East/West Mill Road intersection to a new Fairmount Road intersection to be located approximately 800' south of the existing traffic light. The bypass will then extend easterly to the south and east of the Middle School to intersect with and cross West Mill Road. From West Mill Road the bypass is planned to cross the South Branch and extend up the side of the mountain to converge with Schooley's Mountain Road just south of Camp Washington Road.

The County has indicated that the proposed alignment will require ending Schooley's Mountain Road in a cul-de-sac north of the municipal building. This is due to the difference in the existing grade of the road relative to the grade where the bypass would intersect Schooley's Mountain Road. The Planning Board believes that the cul-de-sac may negatively impact the Village and recommends the County revise the design to link Schooley's Mountain Road from the village to the bypass, if possible. However, the Board believes that a very important environmental consideration is to minimize the disturbance of slopes on the Mountain required to construct the bypass. Ideally, construction of the bypass up the mountain should result in minimal change to the view of the Mountain, when viewed from the Valley, particularly along traveled roadways. Bypass street lighting and removal of mature forest vegetation on the Mountain should be minimal. In addition, the ultimate design of the bypass should be sympathetic to the character of historic district.

Due to the uncertainty of funding to construct the bypass in its entirety, it may be possible to construct the roadway in phases. The first phase could include two legs (1) extending between East Mill Road and Fairmount Road and (2) between Fairmount and West Mill Road. The second phase would then require the South Branch crossing and

construction of the road up the mountain connecting with Schooley's Mountain Road above the Village. This may require funding from an alternative source and negotiations with the County to hold the project where it is in their funding queue to assure future funding is not forestalled. However, the bypass is not only an important quality of life improvement for local and regional traffic that must negotiate the Fairmount – East/West Mill Road intersection, but also an important safety improvement, since the road up the Mountain becomes unsafe and difficult to negotiate during inclement weather, particularly during winter months, and this project rises to a level of importance beyond any roadway improvement in the Township.

Road #2 (formerly Road #5 in 1995 Circ. Plan) - The local road (William Way) which was constructed as part of a subdivision should be considered for connection to West Springtown Road, as was planned in the prior Master Plan. This connection may be possible if intervening land between the two roads is proposed and could aid circulation in this neighborhood.

Road #3 (formerly shown as #14 in 1995 Circ. Plan) – This roadway is proposed as a potential connection between Drakestown Road and Naughtright Road. This connection would improve circulation when the new elementary school is constructed along Naughtright Road.

These road improvements are recommended to ease traffic flow, provide enhanced connectivity and reduce travel time. All recommended improvements should be designed and engineered to complement, and where possible, enhance Washington's rural historic character through the preservation of scenic roadside and historic features.

When the removal of mature vegetation and/or alteration of roadside features and scenic elements that contribute to Washington's rural historic character is required for road improvements, special design elements should be integrated into construction plans to preserve and, where appropriate, recreate community character. Recommended design elements include, but are not limited to:

- a. shade tree and hedge plantings;
- b. stone retaining walls;
- c. stone veneer on bridges, whenever replacement of, or substantial upgrades to bridges are required;
- d. traditionally styled traffic signals, sign posts and street lighting; and
- e. other creative roadside buffering techniques aimed at the enhancement of Washington's rural historic character.

A historic design theme should be developed by the Township identifying specific standards to guide the design and construction of future road improvements undertaken in the Township, whether undertaken by public agency or private entity.

Pedestrian Sidewalks and Bicycle Paths

This plan recommends the development of a Sidewalk Plan to supplement the Circulation Plan. The plan should identify a comprehensive network of sidewalks, pedestrian paths and bicycle routes to link residential areas with local points within the community such as Long Valley Village, Schooley's Mountain Park, Rock Spring Park, the Library, Palmer Park and other parks and the schools. The plan should identify linkages to the Columbia Trail, Patriots Path and other trails and paths in the Township.

The plan should also identify

- a single design theme that reinforces historic character, and design specifications to guide future sidewalk development (in historic districts and other areas).
- a design standard and specification for historic village roads, where right-of-way width limits sidewalk construction along existing roads.
- a priority list of sidewalk segments to guide publicly funded sidewalk construction and identify public sources of funding to assist with sidewalk and pedestrian path construction.

The Sidewalk Plan should also identify bicycle routes throughout the Township as well as identify where bicycle paths should be provided. Design of arterial and collector roads should accommodate bicycle lanes within their paved width. Where necessary, they should be appropriately marked.

Public Transportation

Since the adoption of the 1995 Master Plan, passenger rail service has been established from Hackettstown to Newark and New York City. This has made the Township a more accessible community for commuters by providing an alternative to bus and auto commuting.

While commuter bus service to New York remains available, some of the services available in 1995 have been discontinued. As the region continues to grow, however, public transportation choices can be expected to continue to evolve to respond to the growing concentration of population, particularly in the communities northwest of the Township.

At the present time there does not appear to be the need for the park/ride facility in Long Valley that was recommended in the 1995 Master Plan. The Route 46 park/ride provides ample parking that is not normally used, despite numerous departures daily to the employment centers located to the east. Better use of the facility may require raising awareness of the facility and the availability of public transportation from this location.

The Township should investigate the feasibility and demand for a commuter park/ride facility on Bartley Road near the easterly municipal boundary.

III. Community Facilities Plan Element

Introduction

This Community Facilities Plan Element of the Master Plan has been prepared in accordance with the Municipal Land Use Law, which provides at 40:55D-28b(6) for “A community facilities plan element showing the existing and proposed location and type of educational or cultural facilities, historic sites, libraries, hospitals, firehouses, police stations and other related facilities, including their relation to the surrounding areas.” This plan identifies existing community facilities and services in Washington Township and identifies needs as they relate to current and anticipated future demands for facilities and services.

Background

The following discussion of community facilities identifies the current level of community facilities and services in Washington Township. Facilities are discussed in terms of current staffing, adequacy of physical facilities and location of facilities relative to the population served. The following facilities and services are discussed:

- Police Protection
- Fire Safety
- First Aid
- Office of Emergency Management
- Public Works Department
- Municipal Building
- Public Library
- Public Schools
- Public Recreation and Cultural Resource Center
- Senior Citizens Center

Police Protection

The Washington Township Police Department is located at 1 East Springtown Road at the corner of Schooley’s Mountain in a modern 12,000-sq. ft. building. This facility houses the police headquarters and communications center. The municipal court is located in the municipal building at 43 Schooley’s Mountain Road, where court operations will remain once the municipal building renovation project that is currently underway has been completed.

Current police staffing includes 33 police officers, 9 communications officers, 3 technical specialists, 2 special officers, 2 matrons, an animal control officer and two secretaries. The department operates a fleet of patrol cars, a dog van, and a communications van. The Police Department has approximately 20 vehicles, including cruisers, unmarked cars and four-wheel drive sport utility vehicles.

The department has realized consistently higher service call volumes in recent years, and expects this trend to continue over the next decade as regional growth generates increased demand for

police protection services. Other police services include dispatching for surrounding municipalities and local fire and first aid squads. The Department maintains a web page which identifies the Department's mission and policies, and the availability of public services, including crises response, senior aid and assistance, crime prevention, drug abuse resistance education (DARE). The Department's web site also provides public awareness-raising information.

Washington Township currently has, per the 2000 census of 17,592 persons, a ratio of 1.88 police officers per 1,000 population, not counting communications officers, technical specialists, special officers, and other support staff, which compares as a slight increase since 1995 when a ratio of 1.73 police officers per 1,000 population was identified. However, it appears that since the 1995 ratio was calculated using year 1990 Census results, the ratio at that time is believed to have been approximately what it is today, since the population growth of the first five years of the 1990's was not calculated into the ratio.

The need for a new police station identified in the 1995 Master Plan has been addressed with the construction of the police station at the corner of East Springtown Road and Schooley's Mountain Road. Formerly housed in a converted residential dwelling on West Mill Road, the new station is a significant improvement over the Department's previous facility and the new location is more centrally located relative to the population served, thereby improving response time from the station.

Fire Safety

The Washington Township Fire Department consists of three volunteer fire companies, as follows:

1. Schooley's Mountain Fire Protection Association on Schooley's Mountain Road;
2. Long Valley Fire Company on Fairview Avenue in Long Valley; and
3. Fairmount Fire Company on Parker Road in Fairmount.

Schooley's Mountain Fire Protection Association maintains six fire-fighting apparatus, including two Class A pumpers, a ladder truck, a support vehicle, brush truck and Chief's vehicle, as follows: 2003 Pierce Pumper, 1989 International Pumper, 1997 Pierce Aerial ladder truck, 1997 Chevrolet Support Vehicle, 1969 Ford Brush Truck and 1994 Chief's car. The Association's active firefighter roster reports a total of 38 volunteers. The Association operates out of a four bay firehouse with office facilities on Schooley's Mountain Road. Their service area includes Schooley's Mountain and the northerly reaches of Washington Township. The Association responds to an average of 250 calls in a typical year. Mutual aid is provided to nearby communities.

The Long Valley Fire Company No. 1 is located on Fairview Avenue and operates a three bay, 1,750 square foot building. The Company has 20 active members and responds to about 200 calls annually. Company equipment includes two pumpers and a van. The station is located on a site

that cannot physically accommodate expansion of the facility. Continued demand for service suggests the need to identify an alternative site in the Valley to accommodate a new firehouse.

The Fairmount Fire Company operates an expanded facility located at 12 Parker Road. The building has four bays and covers approximately 6,000 square feet. The Company has 42 active volunteers that are supported in their efforts with two Class A pumpers, a utility van, a tanker front end pumper, a support truck and a chief's car, including a 1992 Pierce Dash pumper with foam capability, 1987 Pierce Lance tanker/pumper, and a Saulsbury 4-wheel drive front mount pumper. The Company responds to about 270 calls annually. Fairmount Fire Company provides 24-hour emergency response services in Washington Township and Tewksbury Township. Tanker assistance is provided to neighboring townships.

The 1988 & 1995 Master Plan reported a standard for determining the number of fire companies, which should be established in a community based on population. That standard from the National Board of Fire Underwriters is as follows for communities with populations less than 50,000.

$$\text{Number of Companies} = 0.85 + 0.12 \times (\text{each } 1,000 \text{ population})$$

For Washington Township this is calculated as follows:

$$0.85 + (0.12 \times 17,592) = 2.95 \text{ companies.}$$

The three companies in Washington Township with a combined active membership of 100 volunteers adequately responds to this standard. However, more important to the community given its size, topography and road network is the location and travel distances to populated and developed sections of the community. According to the Fire Protection Handbook by the National Fire Protection Association, "Some areas in the community will contain higher risk potentials than others, such as those containing primarily business, industrial, mercantile, institutional, and multifamily residential occupancies... Topographical features of a community may also affect fire station locations and the total number of stations required. Communities that are divided by natural and manmade barriers such as rivers, mountains, limited access highways, and railroads, may limit response routes and require additional stations.

The analysis completed for the two prior master plans utilized standards of the Fire Insurance Rating Organization of New Jersey, as follows:

For residential areas:

- 1 . Where density exceeds 3 units per acre, a pumper within a 1-1/2 mile travel distance.
2. At lower densities, a pumper within 3 miles.

For business areas:

- 1 . A pumper within 1/4 mile travel distance.
2. An aerial ladder within one mile travel distance.

Given these standards there was an acknowledged deficiency in the coverage for the northwest part of Washington Township between Newburgh Road and Hackettstown. That deficiency has

been exacerbated by the construction of Peachtree Village and additional residential development in the northwest portion of the community. Therefore, the need for a fire facility in this area is greater than it was in 1988 & 1995. A new facility in the northwest of Washington Township would reduce response time to industrial, commercial, multifamily and new residential sections of Washington Township. No new facility should be constructed until it can be adequately staffed and equipped. The Fire Company maintains mutual aid agreements with surrounding municipalities including Mansfield and Hackettstown, as well as a formal agreement with Tewksbury. These agreements are especially helpful in areas on the perimeter of the community. However, a comprehensive Five-Year Emergency Services Master Plan should be developed to better coordinate the delivery of services among mutual aid participants.

In addition, and as noted above, there exists the need for new Long Valley Firehouse to replace the existing facility on Fairview Avenue. The best location for the new firehouse would probably be on East Mill Road in order to provide good accessibility to the local road network and service area. However, if the Long Valley by-pass is developed prior to site acquisition and facility construction, portions of the proposed alignment south of East and West Mill Road should be evaluated as a potential location for the new firehouse.

First Aid

The Long Valley First Aid Squad provides first aid services for all of Washington Township. The squad operates out of its main headquarters on East Mill Road and also from a satellite three bay facility located on Flocktown Road. This facility serves the Schooley's Mountain section of Washington Township. Since the 1995 Master Plan, the Emergency Squad has expanded it's main facility on East Mill Road, which now includes four bays with storage facilities in the garage, and a meeting multi-purpose room, which includes a kitchen, cloak room, and separate restrooms. First Aid Squad volunteers now number approximately 25, and equipment includes 3 ambulances and two crash trucks. The ambulances are fully equipped and the two crash trucks are outfitted with heavy rescue equipment (i.e. jaws of life, high angle rescue apparatus). The squad responds to approximately 1,000 calls per year.

Consideration should be given to providing a new first aid facility in the Schooley's Mountain Road -Route 46 area in the northwest section of Washington Township. This should be established in conjunction with a new fire fighting facility. The concentration of multifamily development in this portion of the community, and the distance from the existing first aid facilities, are reasons why a new first aid facility is recommended for this area. As with fire safety, no new facility should be built unless adequate staffing and equipment can be provided.

The police currently have a program where officers have emergency medical training and are equipped with some first aid apparatus. The Police Department has received six donated defibrillators to aid officers in the immediate response for heart attacks and other related conditions. The Department has trained all officers and equipped patrol vehicles with defibrillators so that all sworn officers will be ready to render first aid during a crisis. Since the officers and equipment are on the road, first aid response time can be shortened in many instances.

Long range planning for the delivery of First Aid services should be examined as part of the Emergency Services Five Year Plan previously recommended for fire protection services. Cost saving advantages can be shared with regional towns through partnerships and/or sharing in equipment purchases, training requirements and knowledge of available equipment.

Office of Emergency Management

Washington Township established the Office of Emergency Management (OEM) to be responsible in the event of an emergency for (1) establishing priorities, (2) providing life safety protection, and (3) providing property protection. Washington Township has established a website for the dissemination of information to the public regarding emergency preparedness. In the event of an emergency, information will be available through the website and will be communicated through the media and by WRNJ 1510 AM radio. Emergency “Alert Status” can be checked through the OEM website.

The OEM operates out of the Washington Township Police Department, and can be contacted by phone and/or e-mail from the website. The OEM website offers a series of downloadable information guides for residents, including (1) the New Jersey Office of Emergency Management Family Preparedness Guide, (2) the Morris County Prosecutor's Domestic Preparedness Guidelines, (3) the FEMA Guide to Citizen (4) the Office of Homeland Security Guidance for Citizen Preparedness (5) the National Crime Prevention Council's Citizens Preparedness Guide, and (6) a public safety brochure developed by FEMA, the Red Cross and the USDA, which provides guidance on how to prepare and store food and water to prepare for an emergency. All residents should visit Washington Township’s Office of Emergency Management Website and familiarize themselves with available services and emergency preparedness documents.

Public Works Department

The Washington Township Public Works Department and Recreation Department operate from a multiple building complex on Rock Road. The Department of Public Works provides Washington Township with a wide array of services that include road maintenance and construction, snow removal, road drainage improvements, shade tree work, and vehicle repair, including maintenance of police and first aid squad vehicles. A shared services agreement between Washington Township and the Schools has been implemented to reduce the duplication of personnel and services in the Department and Public Works and the Schools, and reduce costs to taxpayers.

The need for a salt storage shed identified in 1995 has been addressed through construction of a new salt storage building. The new building permits the DPW to store road salt out of the weather and minimize adverse environmental impacts associated with outdoor salt storage from overland storm water runoff from outdoor salt stockpiles.

Recreation Department

The Washington Township Recreation Department is located on Rock Road at the DPW complex. The Recreation Department is responsible for maintenance of buildings and grounds including parks and recreation facilities, the library and Senior Citizens Center. Until recently recreation buildings and grounds was coordinated and provided through the DPW. Recognizing the growing demand for these services in the Community, and the need to better coordinate the delivery of these services, the Township Committee separated Recreation from DPW to clearly distinguish their missions and provide residents with staff dedicated to each of these Departments separate missions. Together, there are a total of 24 DPW and Recreation Department employees. The Township will construct a new building at the Rock Road site that will be primarily dedicated to Recreation Department needs.

The 1995 Master Plan called for consideration to constructing storage buildings in Rock Spring Park and Palmer Park for the storage of maintenance equipment and supplies. Mowers, tractors, fertilizers, and other materials and equipment used in the parks could be stored there to save storage space at the Rock Road facility, and provide it in proximity to where it is needed. A football league field house has been approved for Rock Spring Park, which will include storage space and press box (observation deck for filming games). The league carefully designed the building to thematically coordinate the exterior appearance of the building with other buildings at the park. In the future, all building construction at Township parks should be undertaken with sensitivity to the appearance of the building, which should be designed to reflect historic architectural forms, materials and massing found throughout Washington Township.

Municipal Building

The Washington Township Municipal Building is located at 43 Schooley's Mountain Road at the base of Schooley's Mountain. The building is a former school of local historic significance, which contains less than 5,000 square feet of space and houses municipal administrative offices, with the exception of the Tax Collector and Assessor's office. These offices are located nearby at 24 Schooley's Mountain Road in a former bank building and were moved off site due to the spatial limitations of the existing municipal building.

Long in need of modernization and expansion, the Township Committee has undertaken a rehabilitation project for the municipal building, which will modernize the offices at 43 Schooley's Mountain Road and is expected to provide sufficient space for all municipal functions, with a design respectful of the building's heritage. The Township has vacated the building temporarily while this project is underway, which is expected to be completed in 2004. In the meantime, municipal offices are temporarily located nearby on Fairview Avenue in the former offices of the Welsh Dairy Company. Washington Township employs 17 full time and 5 to 6 part time employees that work in the municipal building.

The Washington Township tax offices and its four (4) full-time employees are presently located in a former bank on a level site on Schooley's Mountain Road in the Village, where drive-through window service is available to taxpayers. It has been proposed to relocate the tax offices to the Municipal Building at 24 Schooley's Mountain Road once the renovation and expansion of the Municipal Building is complete, where drive-through window service cannot be provided. The tax office in its current location has been found to be convenient for taxpayers, particularly

for mothers with young children and the elderly who may not easily be able to leave their cars to visit the tax office. This location should be maintained for the tax office if possible. Morris County's plans to construct a Village by-pass include making Schooley's Mountain Road a dead-end just uphill of the renovated municipal building. This may have the effect of making the present location of the tax office more convenient. If the tax offices cannot remain at their existing location, the Township should evaluate the possibility of reusing the building for another municipal purpose.

The Township Committee's decision to maintain municipal administrative offices in the existing building at 43 Schooley's Mountain Road reinforces village life in the Historic District, while at the same time continuing the adaptive use of the former school building in a manner that is consistent with the historic character of the village. Improvements include expansion of the building and addressing long-standing inadequacies, including parking, storage, handicap accessibility, and restroom facilities. It is anticipated that the municipal building renovation will address long-term community needs for an updated, modern municipal building.

Public Library

The Washington Township Public Library is located at 37 East Springtown Road in Rock Spring Park. Patrons access the library from a driveway extending from East Springtown Road past the sports fields located in the Park to the new facility. The library is relatively new having opened in June of 1996. The 12,000-sq. ft. facility replaced a much smaller library (3,400-sq. ft.) facility that was a converted residential dwelling located at the corner of East Springtown Road and Schooley's Mountain Road.

The library reports a current collection of 300,000 volumes and is one of thirty-five members of M.A.I.N. which stands for Morris Automated Information Network. A visit to the library's website finds a wealth of on-line data, information and entertainment resources, including educational sites, homework help and other programming that is targeted to Washington's school-age children. The M.A.I.N. resource permits the visitor of the library website to use an online catalogue to locate a volume anywhere throughout the network. Other resources available at the website include a children's department, electronic reference desk, search engines and a vast array of links to State, national and foreign libraries, cultural and entertainment sites.

The new library adequately responds to community needs and is not in need of expansion at this time. This plan calls for the periodic evaluation of the adequacy of the facility relative to the population served, however as determined by the Township's population base, State Library standards indicate that Washington's current 12,000-sq. ft. facility adequately responds to local needs.

Public Schools

The most recent Five-Year Long Range Facilities Plan for the Washington Township Board of Education was prepared in December 2000. That plan and current enrollment figures were examined in preparation of this study, and is incorporated by reference.

Public school students living in Washington Township attend schools within the local district for grades pre-kindergarten through 8. Students in grades 9 through 12 attend the West Morris Central High School, which is a regional facility of the West Morris Regional High School District Board of Education with a sending area of approximately 100 square miles, including Washington Township, the Chesters and Mendhams. West Morris Central is located in Washington Township on Bartley Road. Students residing in Washington Township generally attend West Morris Central High; students residing in the Chesters and Mendhams generally attend West Morris Mendham High School.

The following illustrates the current enrollments and functional capacities of schools within Washington Township. The pre-K-8 schools have a “district practices” capacity of 1,964 students and enrollment reported in the 2000 Five-year Long Range Facilities Plan for the 1999-2000 school year was 2,655 students. This translates into a capacity deficit on a gross basis of 691 students. Year 2002 enrollment compared to district practices capacity translates to a deficit on a gross basis of 881. These deficits become more pronounced when compared to the State’s Facility Efficiency Standards (FES) developed by the Commissioner of Education to support achievement of the “core curriculum.” West Morris Regional High School District is currently reviewing options to address overcrowding of the District’s two high schools. These facility capacity deficits are a stark contrast to excess capacities identified in the 1995 Master Plan, which identified surplus capacities of 682 students in both districts combined.

**Five-Year Long Range Facility Plan
School Capacities & 1999-2000 Enrollments
Washington Township Schools**

School	Grades	Existing Capacity		1999 - 2000 Enrollments
		District Practices	FES	
Flocktown Road School	K-4	419	375	385
Kossmann School	K-4	365	395	598
Old Farmers Road School	K-4	432	354	486
Long Valley Middle School	5-8	748	745	1,186
SUB-TOTAL		1,964	1,529	2,655*
West Morris Central	9-12	2,045**	N/A	1,111
TOTAL		4,009		3,766

-SOURCE: Washington Township Board of Education and West Morris School Regional School District, existing capacity analysis reports, 2000.

-FES – Facility Efficiency Standards developed by the Commissioner of Education for elementary, middle, and high schools. These standards determine the extent to which a district's construction project qualifies for state aid. They represent the instructional and administrative spaces that are educationally adequate to support the achievement of the Core Curriculum Content Standards

-*2,845 total enrollment K-8 in year 2002 reported by Washington Township Board of Education; Board of Education projects year 2007 enrollment at 3,157 as per 2003 referendum.

-**Value provided for district practices suggests excess capacity, however, the West Morris Regional High School District is currently evaluating alternative solutions to correcting severe overcrowding in the Districts two high schools.

**Washington Township Board of Education &
West Morris Regional High School District Board of Education
Student Enrollment History - 1996 – 2002**

Grade	96-97	97-98	98-99	99-00	00-01	01-02	6-yr. Change
K – 4	1,338	1,330	1,379	1,403	1,458	1,458	+9%
5 – 8	1,064	1,110	1,139	1,186	1,198	1,247	+17%
Special Education	74	87	101	118	122	101	+36%
Pre-Kindergarten	N/A	N/A	N/A	N/A	N/A	39	
District Total	2,467	2,527	2,619	2,707	2,778	2,845	+15%
West Morris 9 – 12	1,059	1,064	1,072	1,078	1,134		+7%

-SOURCE – Washington Township Board of Education & West Morris Regional High School District Board of Education, 2000 & Washington Township Enrollment Projections Report, 2002, Washington Township Board of Education.

-(**96 – 00** bolded digits denote reporting year from the West Morris Regional High School District Board of Education)

When schools capacity is compared to reported enrollments for the years 1996 – 2001, facility deficits are noted. Beginning in the school year 1996-1997, total enrollment of 2,467 falls short of the district practices capacity by 26% (enrollment of 2,467 vs. capacity of 1,964). When compared to the State Facility Efficiency Standards, the 1996-1997 capacity deficiency becomes more exaggerated at 61% (1,529 FES capacity vs. 2,467 enrollment). For the school year 2001-2002, student enrollment of 2,845 further demonstrates the degree to which district practices capacity falls fails to keep pace with enrollment (44% deficiency). The deficiency for the 5-year period 1996 – 2001 between student enrollment and district practices capacity widened by 18%.

**Washington Township Board of Education &
Student Enrollment Projections 00-01 thru 05-06**

School Year	Special Education	Total K-5	Total 6-8	District Total
2000 – 2001	122	1,746	910	2,778
2001 – 2002	124	1,801	894	2,819
2002 – 2003	126	1,823	915	2,863
2003 – 2004	129	1,849	969	2,947
2004 – 2005	133	1,860	1,027	3,020
2005 - 2006	135	1,897	1,041	3,073

-Source – Washington Township Board of Education Demographics Tables, prepared by Whitehall Associates, December 2000.

-The projected percentage change from school year 2000 – 2001 to school year 2005 – 2006 is approximately an 11% increase in enrollment and an increase of 295 students.

2000 & Projected 2001 to 2010 October 15, grade 9 – 12 Enrollments

Students Residing in Washington Township School District Community

Grade	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
9-12	1,134	1,211	1,264	1,312	1,360	1,392	1,436	1,536	1,616	1,657	1,715

- Source – West Morris Regional High School District, “An Updating of Enrollment Projections for Use in Preparing the State-Mandated Five Year Long Range Facilities Plan, December 2000.
- The projected percentage change is 45% in enrollment for the 10 year 2001 to 2010 period.
- The projected increase in student enrollment in 2010 is projected to be 581 students over the 2000 enrollment of 1,134 students from Washington Township.

As noted above, the 1995 Master Plan identified surplus capacities of 682 students in both districts combined (440 students in K-8 facilities and 242 students in the High School). When compared to updated capacity standards and current enrollment levels, Washington Township is faced with capacity deficits. In response, voters passed a \$28 million bond referendum in March 2003 authorizing the construction of a new elementary school and additions to two existing schools. The construction of a new elementary school will permit the District to accommodate the community’s preference for a K-5 school model, as opposed to grade 5 being located at the Middle School. The bond referendum will permit the organization of the school district as follows: Kossmann School will accommodate grades K-2; Flocktown School will accommodate grades 3-5; Old Farmers Road School will accommodate grades K-5 and the Long Valley Middle School will accommodate grades 6-8.

With the passage of the bond referendum, the Board of Education forecasts that facility capacity will be sufficient to accommodate anticipated student population for at least five years into the future, and likely beyond. Activities approved through the referendum include (1) acquisition of land and construction of a new K-5 school, (2) renovations and minor additions to all existing schools, including Old Farmers Road School, Kossmann/Flocktown Road Schools (i.e. add to music and art rooms, create practice rooms through renovation of small spaces, add outdoor storage) and (3) site work at Kossmann and Flocktown Schools for improved traffic circulation and parking, and renovation of aging bathrooms, and (4) upgrading the bleachers, locker rooms, lavatories, floor and partition in the gymnasium of the Middle School.

In the West Morris High School District, State standards require increased square footage per student as well as additional space for students with special needs. Academic credit requirements have been increased at the state and local levels requiring more classroom utilization. Special programs in science and technology warrant dedication of specialized space. Therefore, continued increased enrollments that are forecast for the District along with State standards requiring increased square footage per student, increased academic credit requirements at the State and local level suggest the need to immediately address overcrowding conditions in the Districts two schools and plan for future expansion to keep pace with project enrollments.

Public Recreation and Cultural Resource Center

On the belief that a facility is needed to respond to Township residents’ needs for a recreation and cultural community center, a task force was formed to assess local preferences for a facility to address local needs. The task force has been active for more than a year working to assess

local needs and periodically reporting to the Township Committee on its activities and findings. An informal survey of the community was conducted, which revealed that the type of facility most desired by residents is a community pool, followed by an indoor facility capable of supporting community cultural and social activities, as well as youth recreation.

The task force has focused on identifying a location in Washington Township to construct a community pool and recreation facility. A site in the Valley is preferred in response to basic parameters identified by the task force that include (1) a site of at 15 – 20 acres of unconstrained land and (2) a site near the middle school and downtown commercial services. The advantages of a Valley location include minimizing travel to all residents, concentrating community activities near the traditional center of town and locating the facility where commercial services would be readily available and convenient for youth utilizing the facility.

In accordance with the N.J.S.A. 40:55D-44 “Reservation of public areas” the Planning Board may identify a site or sites in the Master Plan for development of a future public recreation area. A municipally-owned recreation and cultural facility responds to the M.L.U.L. definition of “public area”, which “means (1) public parks, playgrounds, trails, paths and other recreational areas; (2) other open spaces; (3) scenic and historic sites; and (4) sites for schools and other public buildings and structures.” When a site is reserved under this section of the M.L.U.L., the municipality may enter into a contract to purchase the site or institute condemnation proceedings according the law for the fee or a lesser interest in the land comprising such a public area. If the site is included in a subdivision application, the Township may “reserve” the site for up to one year from the time a final plat for the subdivision is approved. However, if after one year following approval of the plat the municipality has not acquired the reserved site, the developer/landowner of the reserved site is entitled to just compensation and may proceed with development of the site. Therefore, Washington Township may utilize its eminent domain authority to acquire a site for the proposed facility, if necessary.

Senior Citizens Center

The Senior Citizens Center is located adjacent to the library on East Springtown Road, in Rock Spring Park. The Center is open weekdays and offers a broad scope of services to meet the needs of the older population (55+ years) of Washington Township, including Information and Referral, Legal Services, Senior Health Insurance Program Assistance and Blood Pressure Screening. Programs offered on a regular basis include Line Dancing, Social Card Playing, Golden Age Group Meetings and American Veterans Association Meetings. Monthly luncheon and mall trips are regularly scheduled. The Senior Advisory Council sponsors programs throughout the year. These programs include educational seminars, social luncheons, and other social events.

Community Facilities Plan Comments & Recommendations:

- Emergency Services 5-year Plan – Cost saving advantages can be shared with regional towns, by projecting and /or sharing in equipment purchases, training requirements and knowledge of available equipment. Township needs should be considered in a “regional”

light, as Washington Township and surrounding communities depend on mutual aid to meet emergency service needs.

- Township should acquire land for a community center, which may include a community pool with facilities for cultural activities, such as a theatre. The minimum site requirements are 15 – 20 acres of unconstrained land and the facility should be approximately 30,000 – 40,000-sq. ft. A location in the Valley, near the middle school and the downtown has been identified as the preferred location in for this facility. Washington Township owns development rights on a site adjacent to the middle school, which may be an appropriate location for this facility.
- With the 2003 passage of the schools bond referendum, school capacity deficits will be eliminated and the delivery of K-8 education improved in the community.
- Overcrowding of the District’s two high schools is the result of capacity deficits within the West Morris Regional High School District. The possibility of building a new school to address capacity deficits in the District has given way to current plans, which will be the subject of a bond referendum in March 2004. The Board of Education has made provisions to address the immediate enrollment growth for the next two years by adding classrooms to both high schools. To accommodate enrollments in the next five to ten years, adding on to existing facilities may be necessary.
- An immediate need exists to connect the West Morris Central High School to the Washington Township Municipal Utilities Authority centralized wastewater treatment facility in Long Valley to replace the outdated on-site septic system, which needs to be replaced due to capacity constraints.
- Growth has slowed dramatically in recent years due to conservation zoning strategies that have been implemented by Washington Township, which are focused on farmland and open space preservation. This decrease in growth from the “boom” years of the 1980’s and 1990’s may reduce the need for more school expansion in the future if the school-age population levels off.
- The Office of Emergency Management reports that efforts are underway to institute a process whereby all Washington Township websites (i.e. schools, library, fire, police, etc) will have a single button showing current emergency status, that will link all those sites to the OEM web page in the event of an emergency to provide directions and/or instructions for how residents should act in response to the emergency.

IV. Utility Service Plan Element

Introduction

This Utilities Service Plan Element was prepared in accordance with N.J.S.A. 40:55D-28b(5), which provides for:

“A utility service plan element analyzing the need for and showing the future general location of water supply and distribution facilities, drainage and flood control facilities, sewerage and waste treatment, solid waste disposal and provision for other related utilities, and including any storm water management plan required pursuant to the provisions of P.L.1981, c.32 (C.40:55D-93 et seq.);”

The Utilities Service Plan Element reviews the current status and adequacy of sanitary sewerage treatment facilities, public water supply, solid waste disposal, and stormwater management facilities. The future utility needs are then analyzed based upon anticipated population use demands. This establishes parameters for monitoring the adequacy of these systems and identifies improvements as may be required to meet anticipated needs. The Washington Township Planning Board currently maintains a policy to not expand the Township’s sewer districts and sewer infrastructure beyond existing sewer infrastructure improvements and service areas. Consistent with this policy, there should be no extension of sewer lines or the sewer districts throughout the remainder of the Township. However, it is acknowledged that minor sewer line extensions will be necessary to serve existing and planned nonresidential uses in the northwesterly portion of the Township, particularly for planned economic development along Route 46. Additionally, a connection to the West Morris Central High School, Palmer Park, the elementary school on Naughtright Road and the approved Black Oak Golf Course is anticipated in the near future.

Sanitary Sewerage Treatment Facilities

There are two primary providers of wastewater treatment in the Township of Washington including the Hackettstown Municipal Utilities Authority (HMUA) and the Washington Township Municipal Utilities Authority (WTMUA). The HMUA service area includes the northwesterly portion of the Township, generally extending west to east between the Muconetcong River and the westerly ridgeline of Schooley’s Mountain; and from Drakestown Road in the north to Kings Highway as the southerly limit. The WTMUA service areas include residential neighborhoods on the top of Schooley’s Mountain, Long Valley Village and Mountain View Estates, and Parker Acres in the southwesterly portion of the Township.

The HMUA reported wastewater treatment service to 655 accounts in Washington Township as of December 2002, accounting for service to approximately 1,850-1,900 residents based upon an average household size of 2.9 persons per household (2002 Census). Additional accounts are expected to come on line in 2003 as a result of residential development approved and under construction on the northwesterly slope of Schooley’s Mountain, and as infill development occurs within the service area over time. The number of accounts served does not actually correlate to the number of customers served, since some industrial customers in the Township maintain multiple accounts with the HMUA. Compared to the 1,100 people served by the HMUA in 1990, this represents a growth of approximately 70% during the 12-year period 1990–2002.

The HMUA wastewater treatment plant is located on Esna Drive in Washington Township. The facility has a design capacity of 3.3 million gallons per day (MGD) in accordance with the most recently adopted wastewater treatment plan. The facility not only serves customers in Washington Township, but also serves all of Hackettstown, and portions of Independence, Allamuchy, Mount Olive, and Mansfield Townships. The HMUA provides service to customers throughout its service area on a first come, first served basis. Therefore, there is no allocation set aside for Washington, but rather wastewater treatment will remain available until such time as HMUA reaches capacity.

Since 1987, there have been two slight revisions in the HMUA Service Area, including an exchange of lands within Mount Olive Township, and a second “automatic” revision, in which the HMUA assumed Diamond Hill Estates wastewater collection as a result of joint action by the NJDEP and Board of Public Utilities (BPU). The DEP found cause to order HMUA to acquire Diamond Hill’s franchise operations based upon ongoing violations of the Water Pollution Control Act and the Safe Drinking Water Act. This order is noteworthy because it includes installing a collection line to connect the failed system to the HMUA franchise area with a stipulation prohibiting any connections to the line in non-sewer service areas located between Diamond Hill Estates and the HMUA franchise area. In assuming the Diamond Hill operations, the HMUA will be assigned an increased design capacity by the DEP, which is expected to rise to approximately 3.4 MGD in 2004 after actual flows from the development are determined by one year of measurements.

The WTMUA operates two wastewater treatment plants in the Township; one on Schooley’s Mountain serving residential neighborhoods on the Mountain and another plant in Long Valley serving the Valley and Parker Acres. The Schooley’s Mountain plant has a design capacity of 500,000 gallons per day (GPD) of which approximately 410,000 GPD is used (approximately 80% of capacity). According to the WTMUA there are a total of 1,291 connections on the Mountain as of December 2002, including two elementary schools, the library, police station, public works garage and parks facilities. Of these, there are a total of 1,282 single-family dwelling connections, with the remainder being municipal/park facility connections.

Upon reaching 80% of capacity, the operator of a treatment works is required to submit to the NJDEP a capacity assurance program in accordance with N.J.A.C. 7:14A-22.16. The capacity assurance program identifies information and specific measures to be implemented in order to prevent an overloading of the facility or a violation of the NJPDES permit, and is to include the following:

- (1) Implementation of conservation measures;
- (2) Reduction of inflow and infiltration (I&I) along with measures to identify the causes and course of corrective action to reduce I&I;
- (3) Maximize treatment plant capacity at minimum cost;
- (4) Construct needed improvements;
- (5) Disconnect roof leaders, sump pumps and other sources of inflow from sanitary sewer lines and connect to storm sewers where available;
- (6) Quarterly reporting to DEP identifying flow information; and
- (7) Preparation for the imposition of a self-imposed sewer connection ban, as may be required to assure water quality and adequate functioning of the treatment works.

The WTMUA’s capacity assurance plan for the wastewater plant on the mountain, which is operating at 80% of capacity, should be consistent with Planning Board’s policy to not increase

plant capacity, expand the Township's sewer districts or extend infrastructure that will encourage new residential growth in SDRP Planning Areas 4B and 5.

The WTMUA's Long Valley plant has a design capacity of 244,000 GPD. The plant currently treats 110,000 gallons of flow, which results in 134,000 GPD of unused capacity. The plant serves Long Valley and Parker Acres service areas. There are a total of 635 billing accounts/connections in the Valley, including the Middle School, Old Farmers Road School, the firehouse, first aid squad, a variety of commercial properties and residential dwellings. The MUA reports a total of 574 single-family connections of the 635 accounts currently served.

The WTMUA last received approval of its Wastewater Management Plan (WMP) in February 2001. The MUA plans to submit an amendment to the WMP in early 2003, which will designate isolated locations for service where wastewater treatment is to be provided to serve existing development with aging and/or failing on-site septic systems and recently approved development.

Municipal Wastewater Treatment Issues

The Hackettstown Municipal Utilities Authority has the capacity to serve existing and planned growth in the northwest portion of the Township. The Planning Board has identified the need for a sewer collection line extension in the Route 46 section of the HMUA service area (East Avenue to Five Corners). Non-residential land uses in this area currently rely upon on-site septic systems. In at least one case a commercial use utilizes a holding tank of all wastewater generated on site, which must be regularly emptied to permit occupancy and operation of the use.

The HMUA has identified a cost of approximately \$750,000 to complete the East Avenue extension. The project has been included in the HMUA's capital budget for several years. According to the Executive Director of the HMUA, the utility has no objection to installing the line except that the HMUA Board does not want to shoulder the cost of installing the line alone as it would result in passing along costs to existing rate-payers to bear its cost. The HMUA has suggested that the Township adopt a new local ordinance requiring properties in the area to connect to the line and pay connection fees to help defray the cost for this improvement (the existing Mandatory Sewer Connection Ordinance appears to be targeted to land uses existing as of July 1995). Under these conditions, the connection fees to users in the area would be high and burdensome to individual users. One solution to this problem is expected to be that the cost for installing the line will be substantially subsidized by one or more developers of the larger vacant parcels zoned Office Research or Commercial located in the Route 46 corridor.

The WTMUA is in the process of preparing an amendment to the WMP to include targeted situations on the Mountain where existing developed sites require wastewater treatment due to small lot sizes and/or failure of on-site septic systems. The WMP amendment will address only existing developed sites where documented conditions indicate the need for connection to the system to remedy failures of on-site systems on small lots. The MUA's treatment plant on the Mountain is reported at approximately 80% of capacity. No expansion of the service area on the Mountain is recommended or planned, except where existing on-site system failures can be corrected through connection to the system. The remaining capacity of this facility should be reserved to address such situations as they may arise in the future.

The West Morris High School currently utilizes an on-site septic system with large percolation beds for groundwater discharge of wastewater generated by the facility. A force main is planned to

connect the West Morris High School to the Long Valley plant, which will serve to eliminate the aging on-site septic system and potentially permit expansion of the high school. The force main is planned to collect wastewater from recreation facilities at Palmer Park and from an approved golf course on Bartley Road. The Long Valley plant can easily accommodate the increase flow projected from this force main.

The ability of the Long Valley treatment plant to accommodate additional flow is identified as a conflict with the Township's fundamental land use planning principles, which include preserving farmland and environmentally sensitive areas and protecting open space areas from development. The entire Township is designated Environmentally Sensitive Rural Planning Area (PA-4B) and Environmentally Sensitive Planning Area (PA-5) in the State Plan. Planning Area policies for these planning areas discourage growth and limit the conversion of agricultural uses and environmentally sensitive lands to developed uses. The availability of wastewater treatment, which may accommodate growth, directly conflicts with local and State rural and environmentally sensitive planning policies, which discourage sprawl development.

During 2003, the DEP proposed a statewide mapping system called the Blueprint for Intelligent Growth (BIG) Map. This map was developed through the use of overlays of data inventoried by DEP, including environmental factors such as surface water quality, watershed and groundwater recharge areas, critical habitat, waste water treatment areas and SDRP planning areas. The BIG Map was to be used to identify a series of tiers, including areas appropriate for growth and environmental protection throughout the state, and to establish permitting policies that would be coordinated with proposed tier delineations on the map. These tiers included the ESA (Environmentally Sensitive Area), Transition Area and Smart Growth Area. The draft BIG Map showed downtown Long Valley and the northwest portion of the Township that is developed adjacent to Hackettstown as "smart growth" areas, with the balance of the Township shown as "ESA" and with "Transition Area" embedded within the ESA. In October 2003, the State abandoned the BIG map approach to regulating areas for development and environmental protection, opting instead to incorporate the data sets developed for the BIG Map into the SDRP through Cross Acceptance III, which is to begin in March 2004. The data sets are also to be the basis for revised DEP permitting policies, which will be enacted through DEP rules and are not yet scheduled for publication in the NJ Register.

The use of the "BIG Map" data sets in the SDRP and revisions to DEP permit rules should be monitored by the Planning Board and the Township, since designations proposed on the BIG Map, which used these data sets proposed growth in Long Valley, where growth is not appropriate because intensification of development in the downtown and nearby neighborhoods will threaten the integrity of these established neighborhoods and the Historic District, which would be contrary to Smart Growth planning objectives. In Long Valley, surface water quality in the South Branch, which is a high-quality trout production stream, assumes the highest priority. The goal of protecting and improving water quality in the South Branch calls for rigorous permitting policies, rather than growth policies that may result in increased stormwater runoff to the river that may degrade water quality. However, carefully managed growth should be encouraged in the northwest portion of the Township, particularly along the Route 46 highway corridor where adequate infrastructure is in place to accommodate increased traffic that will result from growth. The Planning Board and Township should fully participate in Cross Acceptance III and comment on DEP proposed rules to ensure consistency among SDRP Planning Area designations, DEP regulatory policies and Washington Township's local land use and environmental protection policies.

It is the policy of this Master Plan that the Planning Board, Township Committee, the WTMUA and the HMUA cooperatively identify existing developed land uses and areas programmed for growth to ensure that wastewater treatment is provided where needed. Coordinated planning is required to protect public investments in open space and farmland preservation by maintaining wastewater management plans consistent with the SDRP policy objectives for the rural and environmentally sensitive planning areas. For the environmentally sensitive planning area, the policy is to: “establish adequate levels of capital facilities and services to support centers; to protect large contiguous areas of environmentally sensitive features and other open spaces; to protect public investments in open space preservation programs and to minimize conflicts between Centers and the Environs.” In the Rural Planning Area, infrastructure policy objectives include programming wastewater treatment facilities “to protect large contiguous areas of productive farmlands and other open spaces; to protect public investments in farmland preservation programs and to minimize conflicts between Centers and surrounding farms.”

It is recommended that the Township investigate inter-municipal arrangements, where possible, to accept wastewater flow from growth areas currently in need of wastewater treatment. Under these conditions, it will be important that only existing developed areas and areas planned for growth will be permitted to connect to collection lines. This type of inter-municipal arrangement will require that the WMP explicitly not permit connections to the system in areas designated for individual on-site septic systems. For example, if collection lines to connect two sewer service areas are extended through areas designated in the local WMP for individual on-site septic systems, no connections to lines will be permitted outside of designated sewer service areas. In this way, existing capacity at the Long Valley plant may be effectively utilized by existing developed areas currently in need of wastewater treatment, while PA-4B and PA-5 land preservation policies discouraging sprawl and growth may be maintained.

Notwithstanding the above, a major policy question is whether sewer lines should be extended into non-sewer district areas to service development at existing densities. These areas have previously been zoned one unit per two and three acres because of environmental constraints. Due to the lack of public sewer infrastructure and environmental constraints throughout these areas, the Land Use Plan recommends a reduction of density that respects the carrying capacity limitations of the natural systems. The Land Use Plan recommends a density of one unit per ten acres in the Washington Township Conservation District to limit the degradation of groundwater while also permitting appropriate uses of land.

According to the Wastewater Management Plan, all locations outside of the existing sewer service areas must use individual on-site septic disposal. It is recognized that certain areas will not be suitable for traditional on-site septic systems due to severe soil limitations. On-site disposal methods are the preferred means of wastewater treatment for those areas outside of the sewer service areas. These areas were zoned for larger lots with mandatory clustering that can accommodate on-site disposal on areas with suitable soils.

Groundwater quality surveys throughout New Jersey have identified areas where the past discharge of toxic and hazardous chemicals have caused the pollution of groundwater supplies to the extent that they are unusable. In some cases the suspected chemical has come from septic tank cleaners. To avoid these possibilities, the Township should prohibit the discharge of toxic and hazardous pollutants and should require the use of septic tank cleaners that do not introduce noxious

chemicals into the groundwater. Particularly in areas where on-site wells provide the primary source of drinking water, stringent measures must be enacted to avoid future problems.

Another important aspect of groundwater protection concerns the maintenance of individual on-site septic systems. Poor maintenance of septic systems results in poor operation and eventual groundwater and surface water pollution and potential groundwater contamination. Regular pumping of septic tanks can alleviate some of these problems and help protect a homeowner's investment. Public Education brochures or mailings from the Township every two to three years can provide residents with a reminder of the importance of septic system maintenance. An ordinance should be implemented requiring homeowners to perform regularly-scheduled maintenance of individual on-site septic systems. In addition, the Township should consider implementing a tracking system to assist homeowners in identifying when system maintenance should be performed.

The now defunct Welsh Farms/Parmalat site on Fairview Avenue in Long Valley includes a wastewater treatment works formerly used in conjunction with dairy production facilities on that site. The plant is located along the South Branch with a discharge permit to the river. The site now serves as temporary municipal offices while the municipal building on Schooley's Mountain Road is being renovated. The Board and Township Committee are evaluating the potential of this site to support age restricted housing once the municipal building renovation is complete and municipal offices are moved back to Schooley's Mountain Road. Since there is ample wastewater treatment capacity for any reuse of the Parmalat site at the WTMUA plant in Long Valley, any redevelopment of the site should include decommissioning and removal of the treatment works and abandonment of the NJPDES permit to operate the treatment works at the Parmalat site.

Community Septic Systems

The Wastewater Management Plan only provides for individual septic systems under 2,000 gallons per day. Municipalities in the past were frequently not advocates of community systems treating over 2,000 GPD, since NJDEP required a co-permittee. NJDEP regulations no longer require that the Township or Authority be a co-permittee on an application for a community system. Nevertheless, there is always concern that if a homeowners association or other entity fails to maintain the system, it may ultimately befall the Township or Utilities Authority to correct the problems. Therefore, the use of community septic systems is strongly discouraged and the WMP should explicitly state this policy.

Public Water Supply

Public water supply is provided in four areas of the Township by three providers, the HMUA, the WTMUA and a small private purveyor, Cliffdale Park Associates. The HMUA provides water within its franchise area in the northwesterly portion of the Township and currently provides water to 740 connections in Washington. The HMUA has one well in Washington Township on the Heath Village site, two wells in Hackettstown, one well in Independence Township, and a surface water treatment facility in Hackettstown fed by three reservoirs, including one in Washington on Reservoir Road and two in Mount Olive Township.

The HMUA reports that the utility has been evaluating the need for well protection areas for their wells, particularly wells located in developed areas such as Heath Village where there is development all around the wellhead. The utility is pursuing an open space project Hackettstown

for wellhead protection and the utility is evaluating the need for wellhead protection of its Diamond Hill water supply area, which it was ordered to take over by the DEP and is nearing completion of its acquisition.

The HMUA reports that firm capacity is now a pressing planning concern for the utility. The DEP requires that a utility be able to meet its current demand with its largest source of supply out of service. The HMUA's largest well produces 1,000 gallons per minute or 1.440 million gallons per day. When subtracted from current water production capacity, this requirement cannot be met, which presents a problem that has prompted the utility to identify a location for a new well.

The WTMUA provides potable water to three service areas in the Township, including Schooley's Mountain neighborhoods, Long Valley and Parker Acres, including southerly portions of the Township and homes in Tewksbury Township impacted by groundwater contamination. The WTMUA reports a total of 2,387 water service connections among these three areas of the Township. This is an increase of approximately 37% since 1990, when the utility reported a total of 1,746 connections. Of the 2,387 connections in 2002, the MUA indicated that the Mountain service area accounts for 1,388, while connections in the Long Valley, Parker Acres and southerly portion of the Township total 999, approximately 70 of which are located in Tewksbury Township.

The MUA reports that its biggest problem of maintaining water supply on the Mountain has recently been corrected with the receipt of a groundwater allocation permit from the DEP in December 2002 for three new wells that produce a total of 350 gallons per minute. The need for the well arose from the limited production capacity of older wells on the Mountain, most of which yield less than 100 gallons per minute and date to the 1960's. The MUA notes that it costs nearly as much to maintain a low producing well as it does a higher producing well, such as a 350 gallons per minute producer, and replacement of the older low yielding wells will improve supply and cost efficiencies of operating the system. The need for another well to permit the retirement of older, low yielding wells on the Mountain may be addressed by tapping into groundwater supplies available in the Valley.

The utility indicated that it is now able to meet the DEP requirement to meet demand with its largest producing well out of service, in both service areas, and does not foresee shortages in either of its service areas. The WTMUA's primary water supply objective is to ensure that a plentiful and safe water supply will be available to residents of the Township in the future, not expansion of the system to accommodate growth. However, the utility does expect that water line extensions will be needed in areas of the Township where groundwater contamination resulting from the Combe Fill South Landfill and the Cleaveland Industrial Center will prevent dwellings from utilizing individual on-site wells, and where existing wells become contaminated from migration of the contaminated groundwater plume.

As mentioned above, there is a small private water supply purveyor in the Township, which serves a total of 32 residential connections in the Port Murray section of the Township. Cliffdale Park Associates maintains two wells and a treatment plant. The distribution system is aging and may soon require upgrading, however the system is functionally sound and in service. The practical aspect of operating such a small system suggests there may be the need in the future for a larger purveyor to assume operations. The system lies approximately 1 mile from the Diamond Hill service area that the HMUA will soon acquire. The system is approximately 7 miles from the WTMUA's Long Valley operations, thus requiring a 7-mile pipe to connect to the system. This situation should be monitored in the future.

The wells on the Welsh Farms/Parmalat site on Fairview Avenue in Long Valley, which formerly served plant operations, has a groundwater diversion permit for 1.8 million gallons per year. Since Parmalat's acquisition and cessation of operations at the site, the wells are no longer needed. These wells and the groundwater diversion permit can prove useful to the WTMUA in providing water to the community in the future. When this site is redeveloped, the wells along with the 1.8 million gallon per year groundwater diversion permit should be acquired by the WTMUA to respond to future community water supply needs.

Public Water Supply Issues

The most pressing water supply issue in the Township is contaminated groundwater from the two Superfund sites: the Cleaveland Industrial Center and the Combe Fill South Landfill.

According to NJDEP Publicly Funded Cleanups – Site Status Report 2001, the history and status of each of these two sites were reported as follows:

Cleaveland Industrial Center

Cleaveland Industrial Center (CIC) has a history of industrial operations dating back more than five decades. The U.S. government manufactured explosives at the site during the 1940s. The property was sold to a private company in 1947 and it has operated as an industrial park since the 1950s. A CIC tenant that manufactured sodium and iodine salts reportedly discharged its process waste water directly onto the ground in an area behind the complex. Another tenant, Lanterman Machine and Tools, Inc., allegedly discharged hazardous wastes into septic systems. Fabritex Mills abandoned approximately 1,000 containers of chemicals, including flammable solvents, caustics, dry chemicals and laboratory reagents, when it ceased operations at the site in 1986.

During the 1980s, sampling of private potable wells in the area revealed that 17 wells were contaminated with volatile organic compounds at levels exceeding New Jersey Drinking Water Standards. NJDEP installed Point-of-Entry Treatment (POET) systems on the contaminated wells as an interim remedy to provide potable water for the residents. The results of a preliminary investigation by NJDEP indicated that contaminated ground water was migrating from the CIC site. USEPA conducted a removal action in 1991 to dispose of the chemicals left at the buildings formerly occupied by Fabritex Mills. Between 1993 and 1997, NJDEP and the Washington Township Municipal Utilities Authority installed public water lines to service the residences with contaminated wells and approximately 170 additional properties with wells that were at risk of becoming contaminated.

In 1999, NJDEP began a Remedial Investigation and a Remedial Action Selection (RI/RAS) to determine the nature and extent of the contamination in the soil and ground water at the CIC site and off-site areas and evaluate cleanup alternatives. The following year, NJDEP conducted an Interim Remedial Measure (IRM) to remove all abandoned above ground and underground storage tanks at the industrial park. NJDEP is installing on-site and off-site monitor wells to delineate the ground water contamination and conducting soil sampling.

Combe Fill South Landfill

Combe Fill South Landfill operated as a municipal landfill from the 1940s until 1981. During this time, the landfill was licensed to accept municipal wastes, sewage sludge, chemicals and waste oils. After the landfill was closed, contamination was detected in leachate seeping from the sides of the landfill, in shallow and deep on-site ground water monitor wells, and in the nearby Trout Brook. In addition, several private potable wells close to the site were determined to be contaminated with volatile organic compounds at levels exceeding New Jersey Drinking Water Standards. NJDEP

installed Point-of-Entry Treatment (POET) systems on the wells to provide potable water for the residents.

USEPA added Combe Fill South Landfill on the National Priorities List of Superfund sites in 1983. NJDEP subsequently conducted a Remedial Investigation and Feasibility Study (RI/FS) at the site, and in 1986 USEPA issued a Record of Decision (ROD) with NJDEP concurrence that required capping of the landfill, venting of the landfill gases, installation of an on-site system to extract and treat the contaminated ground water in the shallow aquifer, and fencing of the site. The ROD also required installation of a public water line to replace the contaminated private wells and those wells at risk of becoming contaminated in the future, and a supplemental RI/FS for the deep aquifer after initial treatment of the shallow aquifer. NJDEP completed construction of the landfill cap and the ground water treatment system in 1996 and operation and maintenance (O&M) of the cap and ground water treatment system are ongoing. Installation of the public water line was postponed, however, because ground water monitoring conducted after the ROD was issued has shown that little impact to nearby private potable wells is likely. USEPA plans to amend the 1986 ROD in 2002 to remove the water line requirement. NJDEP is maintaining the POET systems and sampling private wells at select homes in the area on a semi-annual basis to monitor potable water quality. NJDEP initiated the supplemental RI/FS to determine the extent of the contamination in the deeper aquifer in 2001.

Aquifer and groundwater quality monitoring will be required to continually assess the impact of groundwater contamination resulting from these two USEPA Superfund sites. In light of these realities, efforts should be concentrated on limiting residential growth in these areas of the Township and acquiring land for open space and farming.

Furthermore, the Planning Board believes that the assertion in the NJDEP Publicly Funded Cleanups – Site Status Report 2001 stating that “little impact to nearby private potable wells is likely” from the Combe Fill South Landfill groundwater contamination is premature. It is recommended that several decades of monitoring will be required to adequately assess the situation. The Planning Board disagrees with the USEPA’s plans to amend the 1986 ROD to remove the waterline requirement at this time due to the need for long-term monitoring.

Well Head Protection

The New Jersey Department of Environmental Protection has established guidelines for the delineation of Well Head Protection Areas in New Jersey in response to the 1986 Federal Safe Drinking Water Act Amendments. The Safe Drinking Water Act requires states to develop a Well Head Protection Program for both public water-supply wells. New Jersey’s Well Head Protection Program (WHPP) was approved by the USEPA in December 1991. The goal of well head protection is to prevent contamination of ground water resources, and maintain safe drinking water supplies for the segment of the State’s population that relies on ground-water to meet their water supply needs. With the exception of a the surface water impoundments supplementing the HMUA’s water supply needs, all of Washington Township’s residents rely upon groundwater for potable drinking water.

The NJDEP advises that ground water is particularly vulnerable to contamination, and once contaminated, it is costly and difficult to clean up. To demonstrate the potential cost impact, the DEP cites 1991 USEPA cost estimates to replace contaminated ground water supplies. In 1991, the EPA estimated that it cost about \$100 to obtain a million gallons of untreated ground water. Whereas, in areas of New Jersey where ground water supplies were replaced with surface water, the EPA estimated that cost increased by ten times or more. In addition, the EPA estimated replacing an untreated ground water source with a surface water supply results in an approximate

increase of \$340 per household per year. The Well Head Protection Guidelines are provided by DEP to assist counties and municipalities in identifying Well Head Protection Areas to prevent ground water pollution and protect precious ground-water resources.

The DEP defines a Well Head Protection Area as “an aquifer area . . . around a well, from within which ground water is reasonably likely to flow to the well and through which ground water pollution, if it occurs, is reasonably likely to pose a significant threat to the water quality of the well. The WHPA is delimited by the use of a time-of-travel and hydrologic boundaries, and is further subdivided by multiple times of travel.” In other words, the WHPA is the land surface area around a well, which is likely to influence ground and well water quality, especially if pollutants are introduced into this area, either at or below the surface of the ground. The WHPA is delineated by three tiers or areas, each based upon “time-of-travel” which is the average time it takes for water to travel underground from a given point to a pumping well. Time of travel is influenced by local geology and the rate at which water is pumped from the well. The three Tiers are delineated as follows:

- Tier 1 = two years (730 days)
- Tier 2 = five years (1,826 days)
- Tier 3 – twelve years (4,383 days)

The purpose in delineating each these tier is to identify areas susceptible to ground water pollution, so that potential sources of pollution within the WHPA can be managed, thereby protecting the quality of the ground water in the aquifer(s) that provides water to a public water supply system. For example, if a potential source of pollution is located a distance of 400’ from the well, and water is estimated to travel underground toward the well at the rate of 200’ per year, a spill could be expected to reach the well head in approximately 2 years time, and the potential pollution source would be located within Tier 1.

According to the DEP, the land uses and commercial and industrial facilities and activities which have historically been identified as major sources of ground water contamination in New Jersey include, but are not limited to underground storage tanks, septic systems, unsecured landfills, leaking drums, above ground storage tanks, road salt piles and lagoons/surface impoundments. Once the WHPA is delineated, the municipality can begin to identify potential sources of pollution and these sources can be managed in relation to their location within the protection area. Appropriate protection strategies, such as preserved open space and land use controls may then be pursued targeting the protection of the well head.

For Washington’s residents, identifying well head protection areas and sources of potential contamination to groundwater within those areas assume a high priority. It is recommended that the HMUA and WTMUA undertake a comprehensive well head protection program delineating well head protection areas for all wells and identifying strategies for protecting these areas and emergency response procedures to respond to a potential contamination event. In addition, the Township should initiate a public education campaign advising the public of the need to identify well head protection areas for individual private wells and non-MUA wells serving individual nonresidential uses. This Master Plan calls for the adoption of a well head protection ordinance requiring the delineation of all public well head protection areas.

Solid Waste

The Washington Township Department of Public Works does not have a sanitation department. Residents must make arrangements for solid waste pick-up with a private sanitation company. There are three authorized carriers in Washington Township, and each of the private haulers bring waste to approved facilities for ultimate disposal in accordance with the Morris County Solid Waste Management Plan.

All solid waste generated in Morris County and being disposed of is required by law to be delivered to one of two Morris County Municipal Utilities Authority solid waste transfer stations. This waste flow control requirement is part of the NJDEP approved Morris County Solid Waste Management Plan. From the transfer stations the waste is trucked to the Tullytown Landfill owned and operated by Waste Management, Inc. The landfill is located in eastern Pennsylvania just a few miles southwest of Trenton, New Jersey.

The Township Public Works Department conducts a quarterly Bulky Item Clean-up Program in March, June, September and December. Residents are required to secure a dumping permit, at a nominal cost, to bring bulky residential household material including miscellaneous items such as appliances, furniture, carpeting and tires to the Public Works Yard at 54 Rock Road during scheduled times. Items such as construction and demolition debris including lumber, roofing, sheetrock, paneling, decking, concrete, plumbing fixtures, etc. and hazardous waste such as chemicals and paint are not accepted at the Public Works Yard, but may be brought to the County transfer station in Mount Olive for a fee.

In terms of recycling, the Township provides residents with the opportunity to drop off recyclables at the Recycling Center next to the Department of Public Works Garage located on Rock Road. Recycling drop-off is accepted every Saturday and the first and third Wednesday of the month from 8am – 2 pm. The Recycling Center accepts newsprint, magazines, cardboard, glass, bi-metal and aluminum cans, Type 1 & 2 recyclable plastics, auto and truck batteries, used motor oil and clothing. Each of the three private residential waste haulers provides regularly scheduled curbside pick-up of recyclables including newsprint, glass, bi-metal and aluminum cans and certain plastic items.

Stormwater Management

The NJDEP has recently released proposed Stormwater Management Regulations that will, in short, require three basic items from the Township; 1) a NJPDES permit for operation of storm water management facilities within the Township, 2) a storm water management plan and 3) ordinances pertaining to storm water management. Originally intended to be adopted in the 80's, the regulations being proposed by the New Jersey Department of Environmental Protection (NJDEP) will trigger the requirements within the MLUL found at 40:55D-93 through 40:55D-99A.

The MLUL requirements for a stormwater management plan can be found at N.J.S.A. 40:55D-95, which states that "A storm water management plan and storm water management ordinance or ordinances shall conform to all relevant Federal and State statutes, rules and regulations concerning storm water management or flood control and shall be designed:

- a. to reduce flood damage, including damage to life and property;
- b. to minimize storm water runoff from any new land development where such runoff will increase flood damage;
- c. to reduce soil erosion from any development or construction project;

- d. to assure the adequacy of existing and proposed culverts and bridges;
- e. to induce water recharge into the ground where practical;
- f. to prevent, to the greatest extent feasible, an increase in nonpoint pollution;
- g. to maintain the integrity of stream channels for their biological functions, as well as for drainage; and
- h. to minimize public safety hazards at any storm water detention facilities constructed as part of a subdivision or pursuant to a site plan.

Washington Township falls within the two largest drainage basins in the State, the Delaware River Basin and the Raritan River Basin. North and west of Schooley's Mountain, Washington's land area along the boundary with Warren County drains to the Musconetcong River, eventually flowing to the Delaware River. The remaining acreage of the Township drains to the Raritan River, primarily through the South Branch of the Raritan River. A small portion of the Township in the southeast along the Chester and Tewksbury Township border flows to the North Branch of the Raritan River.

Washington Township's surface watercourses are characterized by high quality Category 1 Trout Production Waters and Category 2 Trout Maintenance waters. The NJDEP is proposing, with the promulgation of the new rules, a water quality protection initiative, which would afford significant protection to all Category 1 waters in the State. Applicants proposing development which drains to a Category 1 water body will be required to provide a 300' special water resource protection area consisting of existing and/or restored herbaceous and woody vegetation. Within the water resource protection area, new stormwater discharges and storm water piping will not be permitted. With the proposed regulations working in conjunction with the Freshwater Wetland Act requirement for a 150' transition area around all FW1/FW-2 Trout Production waters, significant benefits to the protection of surface water resources should be realized.

The primary focus of the proposed regulations is to manage storm water runoff in a manner that more closely simulates natural methods occurring in undeveloped areas. While fields and forests have a certain amount of runoff occurring, post development runoff volumes are significantly greater. Current regulations focus on detaining water and controlling the rate at which it flows from a site. While the rate should not exceed that which existed prior to development, the volume of water flowing off the site is greatly increased. The proposed regulations require that both the volume and rate must remain the same as the pre-developed condition, requiring developers to utilize methods that achieve greater infiltration and groundwater recharge.

The rules essentially establish a hierarchy of measures: first, integrate low impact site design techniques to maintain natural vegetation and drainage; next, evaluate if performance standards are met; then, incorporate structural best management practices (BMPs) as necessary. New runoff control performance standards for groundwater recharge, water quality and water quantity are established, along with special area protection measures for pristine and exceptional value waters. The Department is providing an updated New Jersey Stormwater Best Management Practices (NJ BMP) Manual to provide guidance on how to meet the performance standards.

Within the proposed rules, the new definition of "Major development" is particularly noteworthy, as it drives the regulatory framework. Major development means any development shown on a site plan or subdivision that provides for the disturbance of one or more acres of land or increases impervious surface by one-quarter acre or more; currently the definition covers only an increase of impervious surface by one acre. Disturbance is broadly defined, including disturbance of soil and

clearing, cutting or removing vegetation. For purposes of developing municipal stormwater plans, major development will be based on disturbance of one or more acres of land, which is consistent with the proposed permitting rules.

Within the proposed rules, Subchapter 4 outlines the requirements for the municipal preparation of a storm water management plan. The basic elements required in the plan include the following:

- Assessment of water quality, recharge and water quantity impacts from major development, with the option to address existing development;
- The plan shall conform with the regional plan (if any);
- A description of how the plan will achieve the general goals of the proposed regulations;
- Mapping of water bodies, recharge areas and well head protection areas;
- Description of the degree to which design and performance standards of the regional plan (if any) are incorporated into the municipal plan;
- Description of long term operation and maintenance of storm water management measures;
- Description of compliance with Safety Standards for Storm Water Management Basins;
- Description of coordination with the Soil Conservation District and other plans in the basin;
- Evaluation of how the Master Plan and development regulations implement the requirements of the proposed regulations. This shall also be included in any reexamination of the Master Plan. This is a rigorous but important aspect of the rules.
- Mapping of existing and projected land uses and HUC 14 drainage areas (subwatersheds), including an estimate of total impervious coverage at future build-out by subwatershed
- A mitigation plan, identifying the necessary requirements when a municipality grants a variance or exemption from the design and performance standards within the regulations (grant of a variance or exemption also requires a written report to the County and NJDEP)

Under the proposed rules, a municipality must adopt a storm water management plan within 1) the time frame required by the NJPDES permit, necessary to operate the Township's storm water management facilities, which is generally one year, or 2) by the next reexamination of the Master Plan, provided that the Department has made a grant available to cover 90% of the costs related to preparation of the plan. A municipality is required to adopt storm water control ordinances within one year of adoption of the plan. County approval of both the plan and ordinance is required, with amended plans to be re-submitted as per County requirements. The County has 60 days in which to review the plan for conformance with the proposed regulations and regional plan. Within 30 days of approval, the plan and ordinance must be posted to the World Wide Web, with notification to NJDEP, the Soil Conservation District and the State Soil Conservation Committee. The storm water management plan is re-examined on a six-year cycle, as per the MLUL.

Stormwater Quality Issues

This Master Plan recognizes that stormwater management is one of the primary factors in maintaining the high water quality of the Township's surface water courses and groundwater. Careful planning and specific measures will be required to ensure that stormwater is effectively recharged to groundwater supplies, effectively especially when the Township's environmentally sensitive lands when land are disturbed. The Planning Board endorses the DEP's new policy orientation for stormwater management. It is anticipated that DEP will require all NJ municipalities to prepare and adopt a stormwater management plan in January 2004, or shortly thereafter. Upon adoption of the NJDEP's stormwater management regulations, the Township will be required to take the steps necessary to prepare the mandatory stormwater management plan, implementation of associated stormwater management ordinances, and submit an application for the municipal NJPDES permit for operation and maintenance of municipal stormwater management structures. The Township should comply with DEP's stormwater management rules when adopted.

V. Open Space and Recreation Plan

This element of the Washington Township Master Plan is consistent with the provisions of the Municipal Land Use Law found at N.J.S.A. 40:55D-28b(7), which provides for:

“A Recreation Plan element showing a comprehensive system of areas and public sites for recreation;”

This Recreation and Open Space Plan also addresses the requirements for an NJDEP Green Acres “qualifying plan”, which qualifies Washington Township to receive preferential funding available to municipalities with an adopted “open space tax”. Under the NJDEP Green Acres Program Planning Incentive Program, N.J. municipalities with an adopted open space tax and qualifying plan may receive up to 50% grant funding for the acquisition of open space. In addition, Green Acres may from time-to-time make low-interest loans available for municipal recreation facilities development. This type of financial assistance can reduce the cost for open space and recreation facilities to Washington’s residents, and leverage open space tax revenue to continue to aggressively expand it’s municipal inventory of parkland and active recreation facilities to respond to the demand for recreation facilities and the Township’s local open space protection goals and objectives.

This plan is also an update of the Planning Board’s 1995 Master Plan Element and the Township’s 2001 Open Space and Recreation plan that was developed through a series of public meetings and presentations, and significant input from the Washington Township Open Space Committee, Planning Board, Environmental Commission, Agriculture Advisory Board, Recreation Committee and Historic Preservation Commission.

Executive Summary

In accordance with Green Acres organizational requirements for a qualifying plan, this section is a summary of the plan’s origin, its purpose, planning processes and findings, major goals established and actions to be undertaken.

The Township adopted its Green Acres qualifying Open Space and Recreation Plan in 2001. The Open Space Committee and Planning Board prepared the plan to receive Green Acres preferential open space funding in conjunction with the Township’s adopted 2% open space tax. Green Acres requires the adopted open space tax to ensure that a stable local funding source exists for open space acquisition. The qualifying plan and Master Plan Element are combined in this plan to ensure consistency among local planning documents and to streamline local open space and recreation planning. This will assist Washington in continuing to protect environmentally sensitive lands, expand its inventory of public parks and reduce the cost of open space to the taxpayers.

Washington Township is primarily a single-family residential and agricultural community, occupying approximately 45.1 square miles in southwestern Morris County. The Township’s unique identity is the result of its topography, rural vistas and hilltop views. The place names of Long Valley and Schooley’s Mountain describe these features.

Of Washington's 28,864 acres; approximately 3,328 (Morris County CADB – 2003) acres are permanently preserved as agriculture and 482.5 are preserved as municipal parkland and open space (Township's Inventory of Open Space and Farmland Preservation Properties – July 2002). Combined, this accounts for 3,810.5 acres or 7.5% of the Township. This does not include environmentally sensitive lands and agricultural set asides protected under conservation and open space easement. This plan identifies natural areas; inventories the Township's natural, historic and recreation assets; identifies land preservation objectives; and recommends a variety of strategies to expand the inventory of municipal parkland and facilities and preserve open space areas.

Municipal partnerships among Washington's Township Committee, Planning Board, Open Space Committee, local volunteers and Morris County have served the Township well in preserving recreation and passive open space areas, and preserved farmland. Vital to these accomplishments are partnerships with the CADB, SADC, the nonprofit preservation community, and the NJDEP. These partnerships are underpinned by Washington's 2% Open Space Tax, which the taxpayers provide to assist these efforts.

In spite of this progress, open space is quickly disappearing in the Township. Residential home construction continues unabated, despite the recent economic downturn. Washington continues to be one of the most desirable Morris County communities in which to live.

The following is a brief summary of Washington Township's open space program and action plan:

- Aggressively expand the supply of passive open space and active recreation parkland in the Township;
- Provide for the active recreation needs of the Township residents of all ages;
- Diversify the type of active recreation facilities available to Township residents;
- Protect and preserve the remaining environmentally sensitive lands in conjunction with farmland in the Township;
- Protect and preserve the large contiguous tracts of forested land that contribute to a diversified ecosystem and the protection of surface and ground water quality;
- Protect and preserve Washington's unique landscape, historic properties and viewsheds that establish Washington's essential character; and
- Establish a recreation complex including an indoor community recreation facility and outdoor community pool in a central location in the Township.

The primary strategy to accomplish these goals is to continue to expand partnerships with outside groups such as the State, County, neighboring municipalities and nonprofit organizations to protect and preserve the land and secure funding to acquire land by fee or easement. Utilize available funding at all levels of government for achieving a diversified base of active recreation facilities. Where possible and practical, establish partnerships with government agencies and the private sector to expand the amount of preserved land and increase the number of active recreation facilities. Other strategies to accomplish these goals will be to review and update land use ordinances and expand public awareness of the need for active recreation facilities and to conserve natural resources.

Goals and Policies

Despite the Township's significant progress in protecting open space and preserving farmland, continued efforts will be needed now and in the future to preserve the Township's remaining large tracts of contiguous open space and habitat, the Township's ridgelines, slopes, farmland and undeveloped forested areas. Development pressure remains intense; as a result, undeveloped areas cleared of trees and vegetation for development and the conversion of open space to residential use. The value of forests and open fields in preventing sedimentation of streams, preventing erosion of slopes and soil loss and flood control is being lost. This may lead to the degradation of water quality and contribute to flooding along the South Branch and the Musconetcong. This plan recommends that the Township work with all interested parties in the protection and preservation of its open space; including landowners, Morris County, the State, federal agencies and nonprofit organizations.

The goals and policies of this plan are consistent with the 2000 Master Plan Reexamination Report, the 1988 Morris County Open Space Plan and the State Development and Redevelopment Plan, and the plan identifies updated goals, as follows:

1. Provide for the recreation needs of all Township residents.
2. Expand the municipal supply of parkland and develop additional active recreation areas for existing and future residents and diversify the type of active recreation facilities available to Township residents.
3. Plan and provide for an adequate mix of passive and active recreation facilities and activities that responds to existing and future recreation needs in the community.
4. Develop a system of linked hiking, bicycle, cross county ski, and equestrian routes.
5. Encourage development of both active and passive open space through clustering in subdivisions, conservation easements, and private donations, especially in areas that include floodplains, stream corridors, wetlands, their transition areas and steep slopes and ridgelines.
6. Actively implement the Greenway Plan to link open spaces including private, municipal, County, and State lands, and preserved farmland.
7. Protect environmentally sensitive areas, especially groundwater resources, including limestone formations, aquifer recharge zones, and wetlands protection.
8. Recognize and protect unique views and vistas.
9. Preserve the rural quality of the community by establishing methods to retain farmland in conjunction with parkland acquisition and open space preservation.
10. Encourage the continued use of historic properties, and when necessary and appropriate, permit new and adaptive reuse consistent with historic preservation objectives.

11. Recognize the Township as an element in regional conservation and open space systems and encourage partnerships with surrounding municipalities and nonprofits in preserving these open space and recreation areas.
12. Establish a municipal recreation complex including an indoor recreation facility and outdoor community pool.
13. Encourage local and interagency action to preserve and protect Washington's open space, undeveloped landscape and natural resources, consistent with the policies and strategies of the State Development and Redevelopment Plan.

Consistency with Other Plans and Open Space Goals

State Development and Redevelopment Plan (SDRP) Washington Township is entirely within the Rural Environmentally Sensitive Planning Area (PA4B) and the Environmentally Sensitive Planning Area (PA5). The Township's 2001 Open Space plan summarized SDRP policies as follows:

PA5 is defined as having "large contiguous land areas with valuable ecosystems and wildlife habitats. These lands have remained somewhat undeveloped or rural in character. They are characterized by watersheds of pristine waters, trout streams and drinking water reservoirs; recharge for potable water aquifers; habitat for endangered or threatened plant or animal species, coastal or freshwater wetlands; prime forested areas; scenic natural landscapes; and other significant topographical, geological or ecological features. These resources are critically important, not only for the residents of the Planning Area, but for all New Jersey citizens. The future environmental and economic integrity of the State rest in the protection of these irreplaceable resources.

4B - The Rural Planning Area includes large masses of undeveloped land interspersed by sparse residential, commercial and industrial development; wooded tracts; rural towns and villages; and most of the State's prime farmland. The Area also includes lands related to other rural economic activities such as ... fishing. With respect to agriculture, these lands are currently under cultivation and are the State's most productive. They also have the greatest potential of sustaining continued agricultural activities in the future. Their location, current use and high soil quality distinguish them from agricultural lands in other Planning Areas.

In the major farming regions of the State, adequate water resources and large, contiguous tracts of land with minimal land-use conflicts are essential to sustaining successful farming operations and farmland productivity. Acceptable farming practices can protect prime, fertile soils. Prudent land development practices are required to protect water resources and retain large, contiguous tracts of agricultural land. If a viable agricultural industry is to be sustained in the future, the conversion of some of these lands to nonfarm uses must be sensitive to the Area's predominant rural character and agricultural land base.

Many areas in the Township are characterized by large, contiguous, hardwood-forests that provide critical habitat for wood turtle, rattlesnake, Cooper's Hawk and migratory neo-tropical birds. The steep slopes of Schooley's Mountain filter water going into the South Branch of the Raritan, a trout production stream, and a source of drinking water for the Spruce Run and Round Valley reservoirs. The river also runs through Ken Lockwood Gorge, a wildlife area managed by NJ Fish Game & Wildlife. The Township has 2,546 acres of preserved farmland.

The Township is blessed with breathtaking natural and historic scenic views. Growth pressure to develop mountain ridgelines and hillsides threatens to forever alter these views. Ridgeline and hillside protection will require effective land use regulation and, in some cases, preservation through acquisition in fee or easement to ensure that these scenic resources remain undisturbed.

1988 Morris County Open Space Element

Summary

The Morris County Open Space Element views open space from the following two perspectives: 1) recreational purposes & 2) environmental purposes.

The Morris County Open Space Plan states that "Morris County is under constant substantial growth pressure" (p 112), . . . new development is taking place on land with an "increasing proportion of environmentally constraining characteristics. Future development will further encroach upon remaining sensitive, critical and scenic areas of the county.

When added to negative environmental impacts from existing development, it may be expected that the potential damage to the protective characteristics of the remaining sensitive areas will exacerbate the problems of flooding, erosion and sedimentation, water quality and water supply that exist today ... (E)nvironmental constraints are vital components in the planning process and need to be considered when making future land use policy recommendations, including those for open space. Open space has too frequently been relegated to being an afterthought in land use planning, rather than one of the basic land uses of the community on par with residential, commercial and industrial uses". (p 112)

Additionally, it is planned that areas in the project area can be a trail to be used to connect sections of Patriots Path and the Columbia Trail. Patriots path is an example of utilizing open space to serve two purposes: environmental protection and recreation and the Path is also a positive example of county-municipal-private cooperation in developing a linear park system (p. 113).

Recommendations

The Morris County Open Space Plan recommends that "The acquisition of open space to provide protection for essential municipal and county needs such as water supply, flood control, and stormwater management should be actively pursued. The location of local aquifers, recharge areas, well fields, flood areas and excessive slopes should be a major consideration in forming open space acquisition pans... " (p. 114).

"Acquisition of development rights, ...and obtaining pedestrian and conservation easements should be considered as possible means for obtaining the benefits of additional open space (p. 115).

"Privately-owned open space and even publicly-owned open space not controlled by the municipality ... can suddenly disappear ... When such open space is considered to be an important part of a community's open space plan, the community should take whatever steps are available to assuring continuation of the open space use (p. 115).

Washington Township already boasts Morris County Schooley's Mountain Park, the Columbia Trail and a large and expanding section of Morris County Park Commission's Patriot's Path. Efforts will continue in the Township to ensure that trail easements are provided for.

Other Concerned Programs

- Washington Township lies within project preservation areas designated by the Morris County Park Commission, and the NJ Division of Fish, Game and Wildlife.
- Washington is a "Critical Treasure" of New Jersey's Highlands as designated by the Highlands Coalition. According to the Coalition, "some consider the South Branch, which feeds the Spruce Run and Round Valley water supply reservoirs, to be the most endangered watershed in New Jersey. Currently the upper watershed is mostly forested and farmed but the headwaters are owned by major developers, threatening the State's finest brown trout fishery"...and watershed development could degrade water quality in the reservoirs. (3/1/00 Highlands Coalition).
- Washington's historic past has earned the Township candidacy for inclusion in the National Park Service "Crossroads of the American Revolution" project area.
- Private nonprofit environmental protection organizations that will be valuable partners in Washington's passive open space preservation efforts include: (1) the Musconetcong Watershed Association, (2) the South Branch Watershed Association, (3) the Washington Township Land Trust, (4) the New Jersey Conservation Foundation, (5) the Morris Land Conservancy and (5) the Trust for Public Land.
- USDA Forest Service has designated Washington's woodlands "Legacy Forests", which seeks to retain forests in woodland management through a program that coordinates woodland management with environmental strategies to protect water quality and critical habitat. This program is implemented with the assistance of the NJDEP Green Acres Program.

Inventory and Needs Analysis

This Background Analysis reviews the existing inventory of recreation resources and facilities offered within the Township by the State, County, Municipality and Board of Education. A review and discussion of open space standards applied to Washington Township's population and parkland/open space inventory is included, and an action plan has been developed toward achieving a comprehensive system of public sites for recreation and open space.

Washington Township includes a unique mix of housing types, sizes, densities and spatial orientation. The Township's landscape includes a scenic mountainous terrain, fertile agricultural valleys and a wealth of environmentally sensitive areas that together embody Washington's unique rural countryside character. The Recreation and Open Space Plan identifies the type and nature of recreation and open space facilities and proposes additions to the Township's network of recreation and open space resources. The Washington Township Planning Board has developed a series of planning goals and strategies that are designed to protect and preserve Washington's environmentally sensitive, open landscape of scenic vistas, ridgelines, and pristine waterways, while at the same time addressing the need to provide an adequate supply of active recreation lands sufficient to meet local needs.

The following discussion briefly identifies existing recreational facilities in the Township. A detailed listing of existing municipally-owned facilities follows this summary.

State.

Within Washington Township, the NJDEP Division of Fish, Game and Wildlife maintains 233-acres of Hacklebarney State Park, an 892-acre preserve located in the southwest corner of the Township, near Pottersville and located along the Black River. The portion of Hacklebarney in the Township is the northerly-most portion of the State Park, which extends east to Chester Township and southward to Bedminster Township, Somerset County and Tewksbury Township in Hunterdon County.

Hacklebarney provides primarily passive recreation uses available at the site, including fishing, hunting, and hiking. Trails can be accessed from the main park facilities located in Washington Township, where a picnic area, comfort stations and access to an extensive trail network for hiking and other seasonal outdoor activities are located.

County

Morris County maintains Schooley's Mountain Park which includes 797 acres of active and passive recreation facilities. The active recreational facilities of the park include a ballfield, boating, fishing, hiking, ice skating on an eight-acre lake, a play area and picnicking and a comfort station. A natural amphitheater in the park is host to outdoor concerts during the summer. Swimming was previously permitted, however water quality issues prevent the County from opening the beach up to public bathing.

Municipal

There are primarily five parks where the Township maintains active recreation facilities. These include Rock Spring Park, Palmer Park, Cobblestone Fields, Califon Fields and Falcon Fields. Together, these sites establish the primary basis of the municipal recreation inventory. The Township has expanded the municipal recreation and open space inventory during the last several years by adding recreation fields at Palmer Park and Califon Fields. The Township has made significant progress toward its goal of providing a balance of active and passive recreation and open space resources for citizens of all age groups in the community. These municipal recreation areas are located in the easterly, north-central, and southwesterly areas of the Township. New fields constructed at Palmer Park during 2003 and 2004 will more than double

the amount of available recreation at that site. In addition, the Township has added Falcon Fields to the municipal inventory of parkland for active facilities development. After completing a wetlands delineation of the tract, the Township will begin facilities planning at that site for athletic field development.

Schools

Active recreation facilities are available at four schools sites in the Township. These include the West Morris Central High School, Long Valley Middle School, Flocktown Road School, the Old Farmers Road School. The schools provide neighborhood park-like amenities for Washington residents and athletic fields. However, the Board of Education fields are not generally open to the public at the High School and Middle School.

Recreation Facilities

Municipal

Washington Township's inventory of recreation and open space facilities offers a variety of municipal sites that are located throughout the Township for active and passive recreation. An inventory of municipal sites and facilities is listed in the table entitled Washington Township, Inventory of Existing Recreation and Open Space, below.

There has been a substantial increase of passive open space dedicated to the Township resulting from cluster subdivisions since the adoption of the 1995 Recreation Plan. In addition, the Township adopted new cluster provisions that require a 50% open space or agricultural land set-aside, which will serve to increase the supply of protected open space and permanently preserved farmland due to requirements that one-half of the total tract area proposed for residential subdivision must now be dedicated as either passive open space or permanently preserved farmland. Also noteworthy is the Township's progress in adding new recreation facilities in response to residents' needs for active play areas.

In addition to the inventory of municipal recreation facilities, recreation sites available to the Township include facilities and fields at a number of sites owned by religious houses of worship. These include Zion Lutheran, Pleasant Grove Presbyterian, Liebenzell Mission, and Schooley's Mountain Presbyterian Church. These are valuable alternative recreation resources to the community, especially during times of high demand for municipal facilities.

Washington Township
Inventory of Existing Recreation and Open Space

Site	Location	Classification – Size (acres)		Facilities
		Passive Open Space	Active ⁽¹⁾ Recreation Facilities	
Cataract Park	Schooley's Mountain Road	50.16		Hiking
Koehler Pond	Flocktown Road	24.8		Pond (Fishing)
Parker Acres	Old Farmers Road	25.1		
Quail Run	Quail Run Road	24.1		
Rock Spring Park (73.9-ac.)	Schooley's Mountain Road	43.9	20 ac. active (10 ac.)	3-soccer/multi-purpose fields 3-softball fields 1-Babe Ruth field 1-football field 3-tennis courts 2-basketball courts tot lot/playground Library & Senior Center
Scott Park	West Mill Road	38.6		Fishing
Spring Acres	Rosalyn Drive	42.0		
Wooded Valley East	Buttonwood Road	46.68		
Califon Fields (31.6-ac.)	Califon Road	15.2	16.4 ac. active	2-soccer fields 1-softball/Little League field 2-multi purpose fields Pond (fishing)
Cobblestone Field (11.5-ac.)	Cobblestone Road	5.8	5.7 ac. active	1-softball/Little League field 2-soccer fields
Palmer Park 69.1	Bartley Road	42.1	27 ac. active	3-multi purpose fields (incl. 2-lighted soccer fields) 5-baseball fields (1 w/ lights); 4-LL & 1 Babe Ruth 3-softball fields; Ice skating (seasonal) Additional planned facilities include concession stand/pavilion/comfort station, , tennis, basketball, volleyball courts, etc.
Falcon Field (45.0-ac)	Rock Road	33.25	11.75 ac. active	4-soccer fields 1-multipurpose field
Other Municipal Land	Various Locations	423+		
TOTAL		906.3+⁽²⁾	69.1. 69.1 ac.	Active When Palmer Park is complete

(1) All active recreation area totals are estimates calculated from photography and typical active recreation facility land requirements.

(2) This figure includes 423 acres of “other municipal land”, which is not designated parkland.

As indicated by the data in the "Existing Recreation and Open Space" table, the municipal recreation and open space inventory of Washington Township includes a total of approximately 900 acres of land. Of this total, 391.69 acres, or 43% percent, represents municipal parkland open space and passive recreation facilities. This includes Cataract Park, Koehler Pond, Scott Park and other environmentally sensitive parcels and residential subdivision open space set-aside areas in the Township. All public lands and lands devoted to open space are illustrated on the map entitled "Open Space Map, Washington Township, 2003".

The Township has dramatically expanded the supply of active athletic fields for residents of the Township of all ages since the adoption of the 1995 Recreation and Open Space Plan. These include the addition of athletic fields at Palmer Park, formerly referred to as Bartley Fields, and additional fields at the Califon Fields site. The Township is constructing an additional 6 fields at Palmer Park, which are expected to be in service in the spring/summer of 2004. Plans for Palmer Park identify a variety of active recreation facilities and recreation support structures, including a pavilion, concession stand and restrooms. These facility improvements respond to previously identified facility deficits and define the Township's continued commitment to increasing the availability of recreation facilities needed to maintain a high quality of life for Washington's youth and adult residents.

Active recreation facilities are located at five municipal parks including Rock Spring Park, Califon Fields, Cobblestone Fields, Palmer Park and Falcon Fields. These developed areas account for a total of approximately 80 acres of active recreation facilities in the recreation and open space inventory. Including the recent additions of facilities at Palmer Park and Califon Fields, this is an increase of approximately 40% from the amount of 56.54 acres of municipal land devoted to active recreation in 1995. This results in a substantially expanded facilities inventory that is more effectively distributed throughout the Township to serve residents.

Schools

There are active recreation facilities at school sites in the Township, which are primarily used by the schools, and are not part of the municipal inventory. The table below entitled "Existing Recreation Facilities, Board of Education, Township of Washington", identifies facilities maintained by the Washington Township Board of Education and the West Morris Regional High School District. These include five land parcels covering 92.2 acres, approximately 45-acres of which are used for active recreational use by school children, and at times are available to Township residents, and for sports league activities on a limited basis. These schools currently accommodate much of the demand for active recreation space in the Township. Increasing enrollment in the Township school system, however, indicates that these school facilities will be hard pressed to continue providing recreation areas for Washington Township's residents.

Existing Recreation Facilities
Board of Education
Township of Washington

Facility Name	General Location	Size – Acres (1)	Facilities Description
Flocktown Road School	Flocktown Road	(12.6 ac. site) 8.6-ac. active	Active Recreation 3-ballfields 1-soccer field basketball courts playground
Kossmann School	Flocktown Road		(2)
Long Valley Middle School	West Mill Road	(25.2 ac. site) 6.5-ac. active	Active Recreation 2-ballfields 1 soccer field basketball courts
Old Farmers Road School	Old Farmers Road	(14.4 ac. site) 4.5-ac. active	Active Recreation 1-soccer field 1-ballfield 1-playground
West Morris Central Regional High School	Bartley Road	(40.0 ac. site) 25.2-ac. active	Active Recreation 1-all weather track 2-softball fields 2-baseball fields 5-multi-purpose fields 6-tennis courts
TOTAL - ALL FACILITIES		44.8-ac. active	
NOTE:			
(1) Tract size and amount of recreation land areas are provided for each site. “()” denotes area of tract; “ac. active” identifies amount of land attributed to recreation use on each site.			
(2) Kossmann School active recreation facilities are listed with the Flocktown Road School.			
SOURCE: 1995 Master Plan, updated by Washington Township Planning Board with information provided by Township Recreation Department.			

Additional passive recreation lands in the Township are maintained as County and State parkland. These include Schooley's Mountain Park and Hacklebarney State Park, facilities owned by the Morris County Park Commission and the State of New Jersey, respectively. These two facilities account for approximately 1,014 acres of passive open space in the Washington Township open space inventory, which respond to regional demand for such facilities, as well as providing important quality of life amenities in the community for Washington's residents.

The recreation and open space inventory in Washington Township is summarized below.

Washington Township
Recreation and Open Space Summary⁽¹⁾

ACTIVE RECREATION LAND	
Township active recreation:	80.85 acres
Board of Education active recreation:	44.8 acres
TOTAL ACTIVE RECREATION AREAS:	125.65

PASSIVE OPEN SPACE LAND	
Township Passive Open Space:	825.5 acres
County and State Passive Open Space:	1,030. acres
TOTAL PASSIVE OPEN SPACE LAND:	1,855.5 ACRES

TOTAL – ACTIVE AND PASSIVE OPEN SPACE LAND(1):	1,936.35 acres
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(1) Acreage used to calculate land totals are derived from the Township’s “Inventory of Open Space and Farmland Preserved Properties – July 15, 2002”

For the purposes of system evaluation, active recreation in the Township is considered to total 80.85 acres, as of the date of this plan. The Township’s 1988 Master Plan goal to develop a municipal recreation system independent of school facilities remains valid, since Board of Education lands are not always available for Township recreation. This is important because the summary above shows that Boards’ of Education facilities account for approximately one-third of all active recreation municipal land. Toward the goal of establishing a system of recreation facilities independent of school sites, the Township’s efforts to develop a system of active recreation facilities independent of school facilities have been largely successful, but more parkland and facilities will be needed to adequately respond to local demand.

The passive recreation system is considered all Township, County, and State open space and passive recreation areas. These areas total 1,855.5 acres.

* * * * *

Recreation Facilities and Standards.

Various groups at the state and national level have developed standards to identify the minimum amount of open space and recreation lands that should be available at the municipal level. Recreation and Open Space planning standards that have been recognized by the State of New Jersey are discussed below.

Outdoor Recreation Plan of New Jersey.

This plan, published in November 1984 was revised in 1988 & 2003 to update the original New Jersey Statewide Comprehensive Outdoor Recreation Plan. Two methods of determining open

space needs are identified, termed balanced land use guidelines and the acres/population standard. These are two widely accepted methods of calculating municipal open space need which are generally used for recreation planning. The Balanced Land Use Guidelines seek to assure that a minimum proportion of the municipal developed or developable land is set aside as open space. The acres/population standard provides a measure of the adequacy of recreation lands in proportion to the local population. The application of these standards to Washington Township is briefly discussed below.

The Balanced Land Use Guidelines used to calculate the open space need generated at the local level yields an open space need of 730 acres of municipally-owned recreation and open space land, based on 3% of the developed and developable acreage in Washington Township.. The current inventory of municipal land and open space in Washington Township includes a total of **900-acres**, excluding Board of Education property. Thus, slightly exceeding the 3% balanced land use guideline. However, this method of calculating municipal open space demand does not address the facilities required to serve the recreation needs of the resident population adequately.

Balanced Land Use Guidelines: 730-acre need vs. 900 acre supply

While the State’s 3% Balanced Land Use guideline remains a valid and useful tool for calculating a *minimum target* for acquiring municipal recreation land, the standard is not intended to include public lands acquired for conservation of natural, scenic and historic resources, or private open space such as golf courses, farmland and similar open areas. In fact, it was observed by the Monmouth County Park System that “the limitations of this approach are demonstrated by the fact that Union and Essex Counties are the only two counties which have exceeded the guidelines for county level public recreation.” Further, it was observed that “if your vision of your community at full development is something different than Union and Essex Counties, the Balanced Land Use minimums may not be enough.”

The "New Jersey Outdoor Recreation Plan" also recommends the acres/population standard. This is a standard of 8 acres/1,000 persons to calculate the developed open space needed at the local level. This approach yields a municipal open space need of 141 acres, based on Washington’s 2000 population of 17,592 persons. Washington Township currently maintains approximately 80.8 acres of developed areas devoted to active municipal recreation facilities, with minor additions now planned for Palmer Park and Falcon Field. Measured against the “acres/population standard”, this results in a supply of developed open space approximately 57% of the recommended standard. The Township’s anticipated population at full build-out is 23,300 persons. Based upon the 8 acres/1,000 persons standard this population is expected to require approximately 186-acres of active recreation land to meet local needs. This suggests that additional sites should be planned for acquisition and the existing supply of facilities should be expanded to keep pace with current demand, and ensure that future needs will be met as the population grows.

Acres/Population Guideline:

	Recommended	Supply	Deficit
2000 Population:	141-acres	80.8-acres	60.2-acres
Ultimate Population:	186-acres	80.8-acres	105.2-acres

Deficits should be considered in the context of the adequacy of available recreation facilities relative to the demand for facilities in the Township. The existing supply of recreation fields results in scheduling difficulties for league play in all sports categories. Guidelines indicate that the existing supply of developed open space at the local level should be greatly increased. Sites for another community-scale park should be identified and the incorporated into local plans to respond to existing and emerging recreation needs.

Applying the amount of school land in the Township that is dedicated to active recreation uses suggests that the supply of active recreation land in the Township is 167.75 acres, including Palmer Park after all facilities development at that site is complete. This amount of developed acreage falls short of the standard by approximately 25 acres of land or 20% of the amount indicated for the Township's current population. However, this is misleading since school properties are not generally available for everyday municipal recreation needs. Current recreation scheduling difficulties and limited the availability of fields for scheduled use indicates that there is a need for additional municipal recreation facilities.

Active recreation areas typically include a range of developed facilities such as tennis, street hockey, and basketball courts, baseball, softball, football, soccer, and open play fields, playground equipment, etc., to serve multiple age groups. These types of facilities may be located at parks that range in size from one acre or less (mini parks) up to 25 acres or more (community park). The size, type, mix, and nature of recreation facilities offered at these parks should respond to the needs of the intended users within a defined service radius. A review of the Township's municipal inventory reveals that Washington's parks ranges from the 11.5-acre Cobblestone Field to the much larger community-scale 73.9-acre Rock Spring Park and 69.1 acre Palmer Park. Most parks include a substantial area of open space that enhances the utility of the parks for a broad range of active and passive recreation activities.

Washington's active facility sites are distributed throughout the Township, with Palmer Park being located in the southeasterly portion of the Township, Rock Spring Park centrally located in the Township on Schooley's Mountain, and Cobblestone Field and Califon Fields located in the south-westerly area of the Township. The Township should assess whether a park with active recreation facilities is needed in the northwesterly area of the Township to supplement the inventory of available recreation facilities in the Township. The variety of recreation facilities available to the residents should also be assessed to determine whether the utility of existing parks could be enhanced by a more diversified range of facilities.

The active recreation facility deficit may not be effectively addressed through facilities that are under construction and that are planned for Palmer Park and Falcon Field. This is assessed relative to the acres/population standard. As the Township's population continues to grow, new facilities will be needed to address emergent demand. The Recreation Committee's role to assess the Township's recreation inventory, identify needs, and recommend additional facilities development may be one of the best ways to guide changes and additions to the municipal inventory. Rather than relying on a facility/population standard to try to predict recreation demand, the Township should continue to employ an interactive process with the Recreation Committee for recommendations concerning the types of facilities that may be needed in the future.

The difficulty in applying a standard to effectively gauge needs and project demand for facilities may be explained by the age distribution of the Township’s population. A review of the 2000 Census data for Washington’s child/youth age distribution compared to State and County data reveals an interesting fact about the Township’s population. Washington Township has a higher than average proportion of children among its population, when compared to the County and the State averages for children/youth, as indicated in the table below.

State, County, Municipal Comparison of Child/Youth Population

	Washington Township		Morris County	New Jersey
Under 5 years	1,213	6.9%	7.0 %	6.7%
5 to 9 years	1,570	8.9%	7.3%	7.2%
10 to 14 years	1,598	9.1%	6.9%	7.0%
15 to 19 years	1,292	7.3%	5.7%	6.2%
Under 5 years to 19 years	5,673	32.2%	26.9%	27.1%
5 to 14 years	3,168	18%	14.2%	14.2%
5 to 19 years	4,460	25.3%	19.9%	20.4%

Source: US Census Bureau, Census 2000, Summary File 1 (SF1) 100-Percent Data

On a percentage basis, Washington Township’s child/youth population under the age of 19 is higher than both the County and State percentages. The two age groups 5 to 9 years and 10 to 14 years are above County and State percentages, with the Township’s 5 to 9 years group 1.6% higher than the County, and 1.7% above the State percentage. Washington’s children/youth ages 5 to 14 years exceeds the County and State percentage by 3.8% and the 5 to 19 years age group exceeds the County percentage by 5.4% and the State percentage by 4.9%. This is due to the fact that Washington Township is predominantly a community of families. In fact, 85% of the households in the Township are family households, which is 15% above the State average, and 11% above the County average. This explains why there is a high demand for recreation facilities in the Township; because children/youth generate a high demand for such facilities and Washington Township has a higher percentage of children/youth than both the County and the State.

In addition to identifying target recreation and open space sites for municipal acquisition, the Township should seek open space set-asides for the purposes of developing recreation facilities as a by-product of residential subdivision as another means of adding active recreation facilities to the municipal inventory. By requiring open space set-asides at the time of subdivision for active facilities development, the Township may be able to more easily reach its goal of an adequate supply of land for recreation facilities that are needed locally. The Planning Board should evaluate open space set-asides at the time of subdivision for their utility in increasing the supply of land for active recreation facilities development.

A periodic needs evaluation process including community surveys, public meetings, interviews with municipal department heads and organized sports league representatives is recommended to help identify needed facilities in the future. This type of practice is

recommended in addition to a standards based approach and has proven successful for a number of communities in meeting local recreation facilities needs. In Washington, a public opinion poll revealed that residents are looking for the establishment of an indoor pool, teen facility and a facility capable of supporting cultural activities. Washington's inventory of active outdoor recreation facilities has been expanded in response to needs identified in this way, and the number and distribution of active recreation facilities that have been developed directly respond to the identified recreation facility deficits. However, the Township should investigate the possibility of developing a facility such as a "YMCA" with an indoor pool, gym, meeting rooms and other amenities capable of supporting teen and adult recreational and cultural activities.

a) Passive Recreation

Regional Open Space

Washington Township is blessed with two extraordinary regional parks: Schooley's Mountain Park and Hacklebarney State Park. These are significant components of the Township's open space system and important underpinnings of the Township's Greenway system.

The establishment of a regional open space network can significantly enhance the diversity of recreation activities accessible to the local population while advancing the Township's conservation and environmental protection goals and objectives. Often, regional open space networks are comprised of natural resources that extend across municipal boundaries such as large contiguous tracts of farmland, forest stands, wetlands, stream corridors, slopes and other unique natural systems. Regional management of these areas and natural systems may best preserve and enhance the integrity of the resources while also managing human enjoyment and access to these areas.

Regional open space can also include elements of the built and man-made environment, such as scenic transportation corridors and recreational travel routes such as rural roads, abandoned railroad rights-of-way, or hiking, cycling and bridle trails. These may provide access to and enjoyment of areas of exceptional natural beauty or scenic towns, villages and hamlets. Morris County has been instrumental in the consolidation of Patriot's Path in Washington Township which is an example of a linear system of trails that are designed to link regional open space and natural resources with population centers. Washington Township has been active in the consolidation of this system of pathways and the acquisition of trail linkages since the inception of the Patriot's Path plan. This is an important component of the Township's trail system that is expected to further expand over time as the Township acquires additional trail donations and secures easements for trail development.

Greenways

Greenways are linear open space elements, which combine watercourses, floodplains, wetlands, forests and other natural terrain features such as steep slopes and ridgelines to form an interconnected network of open spaces. Sometimes referred to as linear parks, greenways capitalize on the general unsuitability of these lands for urban development.

Greenways foster the goals of natural resource protection by protecting these areas from more intensive development and allowing natural processes to function without impediment. In 1987 the President's Commission on Americans Outdoors called for a nationwide system of greenways to provide "... corridors of private and public recreation lands and waters to provide people with access to open spaces close to where they live and link together the rural and urban spaces in the American landscape."

In a 1989 publication titled "The Common Wealth of New Jersey - Outdoor Recreation Resources Planning Summary," the Department of Environmental Protection highlighted the "... need to establish an interconnected accessible recreation system of countryside, suburban and urban "greenways" in New Jersey." Citing the public benefits of combined recreation and conservation, DEP outlined a policy to develop such linkages by establishing "an interconnected system of "greenways" through legislation, planning and acquisition and the utilization of multiple private/public and other land use initiatives."

The State Development and Redevelopment Plan (SDRP) also highlights greenways as an important component in the State's open space and recreation planning. The SDRP cites the benefits of greenways to protect sensitive natural lands and wildlife corridors, enhance biological density, and to promote linkages.

Greenways can combine the multiple objectives of natural resource conservation, open space preservation and cultural resource protection. In a 1989 publication of the Association of New Jersey Environmental Commissions titled "Keeping Our Garden State Green: A Local Government Guide for Greenway and Open Space Planning," ANJEC identified four principal benefits of a greenways network. These included:

- (a) Protecting environmentally sensitive areas by targeting stream corridors, floodplains, wetlands, steep slopes and woodlands.
- (b) Creating areas for passive recreation such as scenic enjoyment, hiking, jogging, picnic areas, bird watching, canoeing and fishing.
- (c) Preserving local character and "rural" qualities through the buffering of stream corridors, protection of prominent ridgelines and historic sites and scenic rights-of-way and by developing linkages to larger contiguous parcels of open space and to historic settlement areas.
- (d) Saving tax dollars by controlling development and directing new development away from environmentally sensitive lands.

Greenways typically seek to provide linkages among various public or quasi-public open space reserves, and may involve acquisitions in fee or less than fee interests (deed restrictions, conservation easements, etc.). Washington's preserved open space and farmland provide an impressive open space anchor for the greenway system. Indeed, Washington has been exceptionally successful in implementing its Greenways Plan and through the purchase and acceptance of donations of open space, acquisition of parcels through the development approval process, and preservation of farmland.

The primary thrust of Washington's Greenbelt is to protect environmentally sensitive areas by targeting stream corridors, floodplains, wetlands, steep slopes and woodlands throughout the Township so as to consolidate an interconnected network of protected natural features. Linkage beyond Township borders can result from connection of the Township's protected greenbelt areas to adjoining municipalities such as Patriot's path extends east to Chester Township and southward as the Columbia Trail into Lebanon Township, through Ken-Lockwood Gorge and into High Bridge Hunterdon County for hiking and bicycling. The greenways plan should seek to develop and expand convenient connections among the more populated sectors of the Township, and may include limited access improvements such as hiking, bicycling and jogging trails.

Resource Assessment

There remains a deficit in Township-owned active open space acreage and a need for more active recreation facilities. This deficit of active recreation is partially offset by facilities provided by the Boards of Education, the County, and others. This plan encourages the coordination of Township facilities and programs with the recreational efforts and programs offered by the Boards of Education, local houses of worship, County, State and other entities, both public and private, as appropriate, to maximize facility use, expansion and development. The Township should continue partnerships with all of the above entities to foster cooperation and sharing of recreation and open space facilities in Washington Township. Nevertheless, the municipal inventory remains inadequate and additional parkland acquisition may be need to provide land needed to satisfy facility deficits.

With regard to critical environmental areas, Washington Township has enjoyed a long history of successful coordination of its land use policies and regulations with natural resource conservation goals. Despite past successes, much of the development pressure is now focused on marginal lands, which include those areas most worthy of protection and preservation, including environmentally critical soils, slopes, geology, aquifer recharge areas, mature forests, watercourses, wetlands, and surface water and groundwater supply and critical wildlife habitat. The Township will need to remain diligent in its efforts to protect these areas and will likely to rely on its partnerships with County, State and others to protect these environmentally sensitive areas.

- Slope
- Agriculture/Farms/Prime Soils
- Prime Aquifer Recharge Areas
- Geology and Groundwater
- Watercourses
- Mature Forests
- Wildlife Protection
- The Greenway

Action Plan

The Action Plan identifies projects and strategies Washington Township should use to implement this Open Space and Recreation Plan. The activities listed for the first year after the

adoption of the OSRP are those that are most urgent and will further the Township's open space program immediately. The interim recommendations are urgent but will take time to complete. This action Plan envisions a five-year timeframe and should be reviewed and updated periodically as may be appropriate. The OSRP is not a static document and may be amended at any time at the discretion of the Planning Board and Township.

Year One:

- Adopt this Open Space and Recreation Plan, include it as an element in the Township's Master Plan and submit it to NJDEP Green Acres Program for a consistency determination with the Green Acres Incentive Planning Program.
- Prioritize acquisition targets in consultation with the Open Space Space Committee. Decide whether properties can be preserved by acquisition of fee or easement or whether some other action may be taken or pursued, i.e. donation.
- Begin a dialogue with adjoining municipalities to coordinate open space preservation across municipal boundaries.
- Update the list of properties 10 acres or larger to target as potential acquisitions.
- Implement mandatory clustering for parcels over 40 acres. Draft and implement trees preservation ordinance.

Intermin to five years:

- Create an historic scenic overlay district to preserve the viewshed.
- Pursue acceptance into and become designated a "Crossroads of the American Revolution" municipality.
- Work in partnership with Watershed Management Areas's 1 and 8 to preserve critical areas.
- Educate the owners of large private land holdings and the residents of Washington Township of the importance of preserving environmentally critical areas of their land and encourage protection.

The following list is taken from the 2003 SCORP “Action Plan” prepared by the NJDEP. It outlines various recreation and open space issues and identifies recommended actions. Portions of the “actions” text has been **bolded** to call attention to those actions, which are directly related to Washington’s action plan for Open Space and Recreation.

Statewide Comprehensive Outdoor Recreation Plan (SCORP)

Chapter 5

Action Plan

The successful implementation of the policies of this plan (SCORP) depends on outlining a plan framework through which strategies can be formulated and orchestrated to advance New Jersey's open space and recreation program. Organized according to the issues and policies previously presented, the Action Plan offers a basis for future direction. Given the constraints of limited funding and staff resources at all levels of the public and private sectors, the recommended strategies are intended to improve deficiencies in New Jersey's open space and recreation infrastructure.

V. Issue: Land Preservation

The preservation of open space and farmland is a strong growth management tool and is essential to successful smart growth. Land preservation for conservation, recreation and agricultural purposes yields substantial environmental and economic benefits.

V. Actions

- 1. Continue to provide Green Acres funding for the acquisition of land for state parks, forests, wildlife management areas, and natural areas. (NJDEP)**
- 2. Continue to provide funding to local governments and conservation organizations for open space preservation projects. (NJDEP, local governments, conservation organizations)**
- 3. Focus open space preservation projects on protecting water resources and biodiversity. (NJDEP, local governments and conservation organizations)**
4. Support federal open space preservation projects at the Forsythe, Wallkill River, Cape May and Great Swamp National Wildlife Refuges. (NJDEP, local governments, conservation organizations)
- 5. Encourage local governments to utilize the Municipal Land Use Law to preserve open space through environmental ordinances. (NJDEP, local governments, environmental commissions)**
6. Continue to evaluate the conservation and recreation potential of State owned lands such as hospitals. (NJDEP, State authorities and agencies)
- 7. Promote the preservation of farmland through acquisition and cooperative projects. (NJDEP, NJ Department of Agriculture, County Agricultural Development Boards)**
- 8. Continue ongoing farmland and open space preservation projects such as the Musconetcong Greenway. (NJDEP, NJ Department of Agriculture, County Agricultural Development Boards)**
9. Continue to acquire development rights and conservation easements on scout camp properties. (NJDEP)
- 10. Continue to provide programs such as the Green Acres Tax Exemption Program as a way to preserve private open space and recreation areas. (NJDEP, local governments, private providers)**
- 11. Seek the permanent protection of privately held watershed lands. (NJDEP, State Legislature, water companies)**

12. Promote the retention of private open space and recreation areas through planning, education and other methods. (NJDEP, private providers)

V. Issue: Recreation

Recreation is a vital ingredient of the quality of life issue in New Jersey. A growing population is creating greater demand for recreation facilities.

V. Actions

- 1. Continue to acquire land for recreational open space. (NJDEP, local governments, conservation organizations)**
- 2. Continue Green Acres funding for the development of recreational facilities on municipal, county and state parkland. (NJDEP, local governments)**
- 3. Utilize monies from Land and Water Conservation Fund, Urban Park and Recreation Recovery Program and the Transportation Enhancement Act to develop and improve recreation facilities. (NJDEP, National Park Service, New Jersey Department of Transportation)**
4. Foster greater interaction between local government recreation agencies and school boards on shared facility use. (NJDEP, local governments, local school boards)
- 5. Encourage municipalities to utilize the provisions of the Municipal Land Use Law to establish park and recreation facilities as part of the master plan and planning board processes. (NJDEP, local governments, environmental commissions)**
- 6. Continue the Green Acres Tax Exemption Program in order to provide for public access to private lands and recreation facilities. (NJDEP, local governments, private recreation providers, private land owners)**
- 7. Implement the recommendations of the New Jersey Trails Plans through funding, planning and technical assistance programs. (NJDEP, New York/New Jersey Trail Conference, local hiking clubs)**

V. Issue: State Resource Areas

The six State Resource Areas represent the best of New Jersey. There is nothing more Jersey than the Jersey Shore or more serene than the Pinelands, or more threatened than the Highlands. The very sustainability of New Jersey depends on the protection of these resource areas.

Actions:

1. Continue to preserve important natural resource areas of the Pinelands. (NJDEP, Pinelands Commission)
2. Provide funding for local governments and conservation organizations to acquire lands for parks and develop recreation facilities in the Pinelands. (NJDEP, local governments, Pinelands Commission, conservation groups)
3. Ensure that open space and recreation projects are consistent with the Pinelands Comprehensive Management Plan. (NJDEP, Pinelands Commission)
- 4. Continue to protect important water resource areas of the Highlands. (NJDEP, local governments, conservation organizations)**

5. **Focus protection efforts on lands identified in the Highlands Regional Study. (NJDEP, United States Forest Service, local governments, conservation organizations)**
6. **Utilize funds from the Forest Legacy Program to protect lands in the Highlands. (NJDEP, United States Forest Service)**
7. Continue to provide Green Acres funding for state coastal and waterfront recreation areas. (NJDEP)
8. Continue funding to local government and conservation organizations for coastal and waterfront projects. (NJDEP, local governments, conservation organizations)
9. Continue participation in the Barnegat Bay National Estuary Program. (NJDEP, local governments, conservation organizations)
10. Preserve lands identified in the *Century Plan*. (NJDEP, local governments, conservation organizations)
11. Continue Green Acres funding for state land acquisition projects along the Delaware Bayshore. (NJDEP)
12. Continue funding for local government and conservation organization projects along the Delaware Bayshore. (NJDEP, local governments, conservation organizations)
13. Utilize funding from the North American Wetlands Conservation Act to acquire Delaware Bayshore Wetlands. (NJDEP)
14. Continue participation in the Delaware Bay National Estuary Program. (NJDEP, local governments, conservation organizations)
15. Continue participation in the New York/New Jersey Harbor Estuary Program. (NJDEP, local governments, conservation organizations)
16. **Continue to preserve and protect State Resource Areas through planning, regulation and acquisition efforts. (NJDEP, local governments, regional agencies, conservation organizations)**
17. Focus preservation efforts on water resources. (NJDEP, local governments, regional agencies, conservation organizations)
18. Promote ecotourism as a way to provide economic development and protect important natural, recreation and historic resources. (NJDEP, New Jersey Department of Commerce and Economic Development, local governments)

V. Issue: Greenways

Greenways have become a graceful solution to the need for increased open space and recreation statewide. Whether in urban or rural areas, greenways offer the potential to provide close to home recreation and the establishment of a network of green infrastructure.

Actions:

1. **Continue the development of the *Garden State Greenways* plan. (NJDEP, local governments, conservation organizations)**
2. **Support greenway projects through local government funding and technical assistance. (NJDEP, local governments, environmental commissions, conservation organizations)**
3. **Coordinate greenway plans with the New Jersey Trails Plan. (NJDEP, New Jersey Trails Council, New York/New Jersey Trail Conference)**

4. Encourage local governments to adopt greenways as part of local master plans. (NJDEP, local governments, environmental commissions)

V. Issue: Partnerships

Working through partnerships enables the State to achieve multiple conservation and recreation goals in a cost effective manner. Cooperative projects with local governments, conservation organizations and private land owners will continue to be an important strategy for the State.

Actions:

1. Foster partnerships and cooperative projects between the State, local governments and conservation organizations. (NJDEP, local governments, conservation organizations, private landowners)
2. **Continue funding local government and conservation organizations cooperative projects. (NJDEP, local governments, conservation organizations)**

V. Issue: Stewardship

The management, operation and maintenance of the State's open space and recreation infrastructure is a critical issue because it relates directly to improving the quality of life for New Jersey residents.

Actions:

1. Continue funding for local governments and conservation organizations for park and recreation development projects. (NJDEP, local governments, conservation organizations)
2. Seek increased funding for operation and maintenance on State public open space and recreation areas. (NJDEP)
3. Develop strategically located Regional Interpretive Centers at five sites statewide. (NJDEP)
4. Encourage the expansion of environmental education throughout New Jersey's educational system. (NJDEP, New Jersey Department of Education, environmental groups and conservation organizations)
5. **Promote the involvement of open space agencies and organizations in furthering environmental education goals. (NJDEP, local governments, environmental and conservation organizations)**
6. Continue to provide Green Acres funding for state and local projects for compliance with the American With Disabilities Act. (NJDEP, local governments)

VI. Recycling Element

Background

On April 20, 1987, Governor Kean signed into law Public Law 1987, Chapter 102, the New Jersey Statewide Mandatory Source Separation and Recycling Act, herein referred to as Chapter 102. This legislation recognized that the disposition of solid waste has become one of the most serious problems facing each municipality in the State, and it outlined a recycling program which has been described as the most comprehensive in the nation. The statute stipulates the following municipal obligations:

1. Designate a recycling coordinator;
2. Provide for a collection system of recyclable materials;
3. Adopt a municipal recycling ordinance;
4. Review the municipal Master Plan at least once every 36 months and revise, if necessary, the provisions for the collection, disposition and recycling of recyclable materials;
5. Revise the Land Use Ordinance requiring site plans and subdivisions to conform with the recycling ordinance;
6. Permit commercial and institutional facilities to be exempt from the source separation requirements of the ordinance if other provisions for recycling are arranged;
7. Submit a recycling tonnage report to the New Jersey Office of Recycling on or before July 1st of each year.
8. Notify all persons occupying residential, commercial, and institutional premises at least once every six months of recycling opportunities and the source separation requirements of the ordinance.

Items #4 and #5 above relate directly to responsibilities of the municipal Planning Board. Specifically, Chapter 102 provides that the governing body of each municipality shall conduct a review and make necessary revisions to the Master Plan and development regulations of the community within thirty (30) days of the effective date of an ordinance requiring mandatory source separation within the municipality.

The legislation further provides that, "The revised Master Plan shall include provisions for the collection, disposition and recycling of recyclable materials designated in the municipal recycling ordinance adopted pursuant to subsection b. of this section, and for the collection, disposition and recycling of designated recyclable materials within any development proposal for the construction of 50 or more units of single-family residential housing or 25 or more units of multi-family residential housing and any commercial or industrial development proposal for the utilization of 1,000 square feet or more of land." This provision has been added to C.40:55D-28 of the Municipal Land Use Law.

Chapter 102 introduced other new legislation related to the duties of municipal Planning Boards which amended the Municipal Land Use Law (40:55D-1 et seq.). Section 40:55D-41

requires that site plan review and approval include the "Recycling of designated recyclable materials." The Periodic reexamination of municipal plans and regulations, Section 40:55D-89, requires a statement of "significant changes in the assumptions, policies, and objectives" of the Master Plan including the "collection, disposition and recycling of designated recyclable materials . . ."

County

The Morris County Board of Chosen Freeholders has adopted a Solid Waste Management Plan (Plan) that provides for the management and disposal of solid waste in Morris County. This Plan was adopted pursuant to the requirements of the New Jersey Solid Waste Management Act (N.J.S.A. 131E-1).

The Plan established source reduction and recycling goals. These include the stabilization and eventual decrease in County-wide solid waste generation as well as 60 percent recycling goal. For the most part, Morris County has achieved these goals through a variety of recommended waste management techniques. These include, but are not limited to, the mandating of specific materials to be source separated and recycled. These mandated materials include newspaper, corrugated cardboard, mixed paper (junk mail, office paper, magazines, etc.), aluminum containers, (steel and tin cans), yard waste (grass leaves and brush), tires, batteries, white goods (appliances), used motor oil, oil contaminated soil, and stumps. All new development in the County must be designed to provide for the storage and collection of recycled materials.

Municipal

The recycling plan for Washington Township as provided in the Municipal Recycling Ordinance, adopted in December 1988, includes the following basic features:

1. Recyclable materials include aluminum, batteries, corrugated cardboard, glass (three colors), tin cans, plastic beverage bottles, waste motor oil, used newspapers and white goods.
2. As of the effective date of the Recycling Ordinance, it became mandatory for all residential, institutional and commercial properties of Washington Township to source separate designated materials from all other solid waste for recycling. These are designated as used newspapers, corrugated cardboard, aluminum cans and high-grade aluminum, glass, plastic bottles coded Nos. 1 (PET) and 2 (HDPE), ferrous containers, paper bags, mixed paper, batteries, tires, white goods, motor oil, oil contaminated soil, stumps, asphalt shingles household dry cell batteries, yard waste. Non-residential properties may be exempted if they have a privately arranged resource recovery program.
3. All recyclable materials are to be either deposited at curbside for pickup pursuant to a contract with a private recycler (waste hauler) or transported by the resident to the designated recycling center at the DPW facility on Rock Road.

4. The ordinance provides that Washington Township or the private hauler assumes ownership of recyclables either dropped off at the Township recycling center or when an authorized collector picks up recyclables at curbside.
5. The Department of Public Works Superintendent or his/her authorized designee is charged with enforcement of the Recycling Ordinance. The ordinance specifically states a fifty-percent recycling goal for the Township, and that periodic curbside and non-residential inspections are to be conducted until the goal is reached.

In terms of recycling, the Township provides residents with the opportunity to drop off recyclables at the Recycling Center next to the Department of Public Works Garage located on Rock Road. Recycling drop-off is permitted the first, third and fifth Wednesday of each month from 8 AM to 1 PM and every Saturday from 8 AM to 1 PM. The Recycling Center accepts newsprint, magazines, cardboard, glass, bi-metal and aluminum cans, Type 1 & 2 recyclable plastics, auto and truck batteries, used motor oil and clothing.

Each of the three private residential waste haulers provides regularly scheduled curbside pick-up of recyclables including newsprint, glass, bi-metal and aluminum cans and certain plastic items.

A Goodwill box accessible during recycling hours is provided for the collection of used clothing.

Leaves and brush are accepted from residential properties of 2 acres or less from September through December only. Brush must be bundled and tied with a maximum diameter of 3 inches and a maximum length of 3 feet.

The Township has designated a Recycling Coordinator to coordinate and carry out municipal recycling responsibilities. Information about recycling in the Township is available on the Township's website, or by contacting the Recycling Coordinator directly by telephone.

Findings

- The Township's ordinances are appropriate and effective for the collection and disposition of recyclables in the Township.

Recommendations

- In accordance with State law, the Planning Board should review the Township's Recycling Plan (once every 36 months) and ordinances to maximize recycling in the Township.
- The Township should determine whether the 50% recycling goal has been met, and if so, the goal should be increased. If the 50% recycling goal has not been met, the Township should consider whether the hours of operation of the recycling center should be extended to help meet the goal.

- The Township's recycling efforts should be stepped-up to encourage more recycling of recyclable materials;
- The hours of operation of the Township's recycling center should be reviewed to determine if the recycling center could be more accessible to the public; and
- Bulk item recycling times should be reviewed to determine if the Township could develop more convenient methods for residents to dispose of bulk items, such as curbside pick-up by appointment on selected days throughout the year.

VII. Conservation Plan Element

Introduction

This Conservation Plan Element has been prepared in accordance with the Municipal Land Use Law (M.L.U.L.) as found at N.J.S.A. 40:55D-28(8), which provides that the Planning Board may prepare and, after public hearing adopt or amend a master plan, or component parts thereof, to guide the use of lands within the municipality in a manner which protects public health and safety and promotes the general welfare. The purpose of the Conservation Plan is to identify the terrestrial and aquatic natural resources in the Township, and establish policies appropriate to their protection. It is the goals and objectives, strategies and policies of this plan that will serve to guide the careful management and sustainability of these resources over time.

Washington Township has a long history of environmental land use planning and coordination of land use policies with natural resource conservation goals and objectives. Previous plan iterations have been informed by the natural resource inventory of 1976 prepared by the South Branch Watershed Association, and relied upon the input and assistance of the Environmental Commission in order that policy recommendations responsibly protected the Township's rich natural resource base. This Conservation Plan Element is an update of the 1995 Plan, and includes revised goals and objectives for natural resource protection and critical habitat preservation in Washington Township. The Planning Board prepared an updated Natural Resource Inventory (NRI) utilizing digitized data that identifies, quantifies, and describes the environmental resources in Washington Township. The NRI establishes the background for the updated policy recommendations and conservation strategies identified in this element of the Master Plan.

The Municipal Land Use Law describes the contents of the Conservation Plan Element at N.J.S.A. 40:55D-28(8), as a plan

“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 systemically 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;”

N.J.S.A. 40:55D-2 identifies the purpose of the M.L.U.L. and the statutory authority for municipal land use planning and regulation in New Jersey. More than one-half (eight of fifteen) of the purposes of the M.L.U.L. charge the Planning Board with a mandate to protect the environment, prevent urban sprawl, and protect the State's natural resources. The Planning Board has prepared this Conservation Plan in response to this statutory charge and to conserve natural resources and promote the maintenance of a clean and healthy environment. The eight purposes of the law are listed below.

- (a) To encourage municipal action to guide the appropriate use of or development of all lands in the 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 man-made 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 the preservation of the environment;
- (g) To provide sufficient space in appropriate locations for a variety of agricultural, residential, recreational, commercial, 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;
- (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 the 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 compliment municipal recycling programs.

The State Development and Redevelopment Plan (SDRP) offers guidance to the Planning Board in the formulation of land management and natural resource conservation policy. The SDRP designates all of Washington Township as either the Rural/Environmentally Sensitive Planning Area (PA4B) or the Environmentally Sensitive Planning Area (PA5). These designations recognize the valuable agricultural resources and environmentally sensitive natural features that Washington Township seeks to protect from the siege of development pressure that threatens to transform these valued resources to suburban sprawl.

Just beyond Washington Township to the east and north, suburban development is consuming what was once a vast agricultural and natural landscape. The transformation of rural and open natural lands to residential neighborhoods brings with it the loss of

irreplaceable natural and economic resources. Unchecked, suburban sprawl will forever alter the rural, natural and cultural landscape that Washington Township seeks to protect and preserve. Washington acknowledges the SDRP Rural and Environmentally Sensitive planning area designations and embraces the challenge in maintaining and protecting these areas.

The SDRP describes Rural Planning Area as follows:

“Prudent land development practices are required to protect these resources and retain large contiguous areas of agricultural land. If a viable agricultural industry is to be sustained in the future, the conversion of some of the lands to non-farm uses must be sensitive to the areas predominant rural character and agricultural land base. Throughout New Jersey, some Rural Planning Areas are subject to greater development pressure than other areas. Without greater attention to maintaining and enhancing our rural areas, these economic activities are at risk. Tools and techniques need to be tailored to address the distinctive situation. In particular, new development may require additional attention in areas with environmentally sensitive features.”

For the Environmentally Sensitive Planning Area, the State Plan offers the following description:

“The Environmentally Sensitive Planning Area contains large contiguous land areas with valuable ecosystems, geological features and wildlife habitats particularly in the . . . Highlands region, . . . The future environmental and economic integrity of the state rests in the protection of these irreplaceable resources. . . Environmentally Sensitive Planning Areas are characterized by watersheds of pristine waters, trout streams and drinking water supply reservoirs; recharge areas for potable water aquifers; habitats of endangered and threatened plant and animal species; coastal and freshwater wetlands; prime forested areas; scenic vistas; and other significant topographical, geological or ecological features, . . . These resources are critically important not only for the residents of these areas, but for all New Jersey citizens.

The Environmentally Sensitive Planning Area is highly vulnerable to damage of many sorts from new development in the Environs, including fragmentation of landscapes, degradation of aquifers and potable water, habitat destruction, extinction of plant and animal species and destruction of other irreplaceable resources which are vital for the preservation of the ecological integrity of New Jersey’s natural resources. . . New development in these Environs has the potential to destroy the very characteristics” (environmental sensitivities) “that define the area”.

The SDRP promotes the retention of large open land areas in PA4B & 5, and the Plan defines “large contiguous area”.

“When applied to habitat, (large contiguous area) means the area of undisturbed land required to maintain a desired community of plants and animals”, and “when applied to farmland, large contiguous area means the amount of contiguous farmland usually considered necessary to permit normal farm operations to take place on a sustained basis.”

The Township is endowed with large contiguous land areas with valuable ecosystems, geological features and wildlife habitats that support critical habitat. Whether it is the maintenance of large contiguous areas for farmland or to protect environmentally-sensitive areas, Washington’s stewardship of these areas requires policies and management techniques to sustain the landscape in such a way that the long-term viability and function of these lands is assured. Washington seeks to manage these resources consistent with the SDRP policy orientation for the Environmentally Sensitive Rural Planning Area and the Environmentally Sensitive Planning Area.

The Township is uniquely situated within the region in that its landscape establishes the headwaters of the Musconetcong, and the North and South Branch of the Raritan River watersheds. From Washington’s large contiguous areas of farmland and environmentally sensitive lands flow the pristine waters and trout streams that feed the rivers that fill reservoirs for the region and overland flows that recharge potable groundwater aquifers. Washington’s woodlands, farmland, wetland and grassland resources provide important habitat for endangered and threatened species. The Township’s prime forested areas, scenic farmland areas, undisturbed hillsides and mountainous topography are important resources within a rapidly developing region where these features are being transformed to a sprawling suburban landscape. These resources are critically important not only for the residents of the region, but for all New Jersey citizens and the protection of these features assumes the highest priority.

Goals and Objectives

The Goals and Objectives of this plan reinforce and expand upon the goals and objectives of the Township’s 1995 Conservation Plan. The basis of this plan is to protect and preserve natural resources, including important farmland soils, groundwater resources, including limestone formations and aquifer recharge zones, streams and their corridors, floodplains, wetlands and critical habitat. This plan seeks to protect and preserve woodlands, steep slopes, unique views and vistas such as ridgelines, and hillsides and mountainsides. This plan seeks to advance policies that will serve to limit the impact of development and retain the natural terrain and features to the greatest extent practicable. Fundamentally, this plan seeks to maintain open lands, minimize disturbance of the natural environment and protect critical habitat and biodiversity with strategies designed to contribute to the well being and environmental health of the region.

The Planning Board has identified the following series of conservation goals and objectives for this plan.

1. Protect and preserve important farmland soils.

2. Protect groundwater aquifers and surface water quality and quantity.
3. Protect groundwater recharge areas, prevent contamination of ground water resources, and maintain safe drinking water supplies.
4. Target groundwater contaminated sites for open space protection.
5. Protect environmentally sensitive natural resources including floodplains, stream corridors, steep slopes, ridgelines, wetlands and their transition areas, important woodlands, grasslands and unique critical threatened and endangered species habitat.
6. Offer a range of development options for the maintenance and protection of interconnected lands.
7. Reduce land use densities and intensities commensurate with the capacity of the environment to sustain development.
8. Preserve and protect the high quality trout production and trout maintenance waterways.
9. Recognize and protect the unique views and vistas.
10. Encourage energy efficiency in the location, siting and construction of new development.
11. Encourage pedestrian and public transit and linkages.
12. Implement the Township's recycling ordinance.
13. Limit disturbance and development of forests, meadows, grassland areas, steep slopes, ridgelines, scenic vistas and views, streams and their corridors, groundwater aquifers and recharge areas, wetlands and swampy areas, unique landscapes, and agricultural areas.
14. Create the position of Environmental Specialist.

The strategies to implement these goals and objectives are discussed below.

Farmland

- Protect and preserve important farmland soils.

Agriculture has flourished in Washington Township since the times of the earliest German settlers in the community in the 18th century. Agriculture flourished due to the

abundance of fertile soils and it remains a defining element of the landscape and an important element of the local economy today. However, residential development during the 20th Century and increased development pressure in the Township during the 1980's and 90's has resulted in the loss of farmland. This residential development has consumed prime soils, as can be seen in Figure 5, Agricultural Productivity of the NRI. The loss of these soils throughout the Township, but primarily on Schooley's Mountain, is attributable, to the relative ease with which prime farm soils can be developed as these soils are found in open, generally level areas of the Township.

With over 55% or roughly 15,875 acres of the Township's soils being of significant agricultural value, including Prime Soils (40.4%), Soils of Statewide Significance (15.8%) and Unique Farmland, opportunities remain for residential development to consume the very soils needed to support agricultural activities in the future. The Township has preserved a significant amount of the important agricultural soils in the Township with local, County and State farmland preservation efforts totaling in excess of 2,500 acres of farmland with a concentration of preservation occurring in the valley. Farmland preservation remains the most effective way of protecting agriculture and efforts to vigorously pursue farmland preservation through the County and State easement purchase programs should continue to ensure the preservation of these areas.

Protecting farmland takes on added significance when viewed in the context of hydrologic function as the open character of these lands permits groundwater recharge that is critical to aquifer recharge and groundwater availability. The conversion of agricultural lands to non-agricultural use introduces impervious coverage that reduces groundwater recharge as stormwater runoff is directed away from soils disrupting the natural cycle.

In addition to the loss of groundwater recharge, the introduction of non-agricultural uses, particularly residential uses, to agricultural areas results in land use conflicts as the proximity of housing to agriculture can result in private nuisance actions. To avoid such conflicts large contiguous agricultural areas should be retained to the maximum extent achievable and development should be concentrated so that the loss of farmland is minimized. Similarly, appropriate separation between agricultural and non-agricultural uses should be maintained. In this way, agriculture as a viable economic activity can be protected.

The following activities are recommended to protect farmland soils and agricultural activities and preserve the ecological function of agricultural areas.

- Implement strategies to retain large contiguous areas of farmland and promote the long-term viability of continued agriculture, such as mandatory clustering and open lands zoning to concentrate the loss of farmland to non-agricultural use areas and retain large contiguous areas of farmland.
- Continue to vigorously pursue farmland preservation through County and State easement purchase programs. Utilize alternative means of protecting agricultural areas including easement donation and acquisition, purchase of development

- rights, direct easement purchase, and other creative strategies to preserve as much farmland as possible and the Township's prized agricultural base.
- Establish standards for agricultural buffers to limit potential impacts between agricultural activity and non-residential land uses.
 - Encourage agricultural activities that keep land open and preserve the natural hydrologic cycle of groundwater recharge to maintain groundwater supplies and the availability of water for agriculture.
 - Establish impervious coverage limits for agricultural land uses that respect the needs of agriculture, but maximize groundwater recharge and limit stormwater runoff volumes entering streams and watercourses.
 - Permitted residential densities should be reexamined to determine whether the resulting open land set aside through mandatory clustering are sufficient to maintain viable agricultural opportunities in areas containing important farmland soils.
 - Required open space/open lands set-asides should be increased to preserve as much viable agricultural land as possible.

Ground and surface water quality and quantity

- Protect groundwater aquifers and surface water quality and quantity.
- Protect groundwater recharge areas, prevent contamination of ground water resources to maintain safe drinking water supplies.

Groundwater

The groundwater resources of the Township provide irrigation and potable water supplies to much of 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. Maintaining a high quality, adequate supply of groundwater to meet the needs of the residents, plant and animal communities and their ecological function assumes a high local priority in this Conservation Plan.

As referenced in the NRI, the Land Oriented Reference Data System (LORDS) report of 1974, published by the New Jersey Geological Survey and NJDEP identified potentially high recharge rates for some of the formations in Washington Township. The LORDS report showed that the Kittatinny Limestone formations, specifically the Leithsville Formation, had the potential to recharge 350,000 gallons per day per square mile in a normal year and 225,000 gallons per day per square mile in a dry year. Jacksonburg Limestone and many of the other formations in the Kittatinny Valley Sequence are listed as having recharge rates of 300,000 gallons per day per square mile for normal years and 200,000 gallons per day per square mile in dry years. A number of other weathered geologic formations in the Township exhibit similar recharge rates to the Kittatinny Valley Sequence.

The importance of identifying potential aquifers and recharge areas is two-fold. The first is to review land use policies to insure compatibility with the need to protect the areas that overlay these formations. If development occurs at a density that is relatively low and impervious surfaces are limited, areas can remain viable for aquifer recharge. The second is to continue to identify areas for land preservation in order to limit future development potential to preserve this regionally valuable resource and maintain groundwater quality.

The limestone formations take on added significance due to the effect of dissolution and weathering. Water in combination with carbon dioxide and/or organic carbon can chemically react with limestone and dissolve sections of rock forming solution channels such as cavities, caverns, and sinkholes. These enlarged openings can store and transmit vast quantities of water. Limestone/dolomite aquifer systems are some of the most prolific in New Jersey (NJDEP 1996).¹

Although site-specific data is needed to identify actual yields and specific capacities, the limestone formations are known to be excellent groundwater producing formations and their integrity should be protected, as they are particularly susceptible to groundwater contamination. The protection of aquifer recharge areas is critical to protecting water quality and appropriate strategies are needed to maintain their integrity. Although the Township's limestone protection ordinance requires a disclaimer to the homeowner when development is approved on a site that is underlain by these formations, development activity in these areas of the Township should be minimized to protect groundwater quality.

On the ridges and mountain, groundwater is transmitted through fractured bedrock, where aquifers are characterized as openings between rock that can be separated by a few inches or several feet. Since these rocks are not porous, the groundwater capacities depend on the size of the fractures between the weathered rock. Therefore, water quality in these aquifers can be highly susceptible to degradation from groundwater contaminants, such as those transmitted from septic systems, particularly in individual wells. Together, the limestone and fractured weathered rock formations each require careful management to protect water quality and maintain sufficient quantities for well dependent water users.

An important component of wetland function is groundwater recharge. 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 affect wetlands ecosystems. Wetland systems support critical habitat for threatened and endangered species and a system to periodically monitor and enforce conservation easement restrictions should be developed by the Township.

The following activities have been identified to protect groundwater aquifers and ground water quality and quantity in the Township.

¹ Mulhall, Evaluation of Groundwater Resources of Lebanon Township, Hunterdon County, NJ

- Protect aquifer and groundwater recharge areas and prevent contamination of ground water resources to maintain safe drinking water supplies.
- Protect groundwater quality and quantity through the proper management of aquifer recharge areas, wetlands and their transition areas and limestone and fractured bedrock groundwater aquifers.
- Reduce permitted residential densities to limit the potential for water quality impairment and to maximize groundwater recharge capacity.

Groundwater contamination

In Washington Township, there are two known groundwater contamination sources. The first is the Combe Fill South Landfill in Chester Township, with a generalized extent of approximately 2,900 acres. The second is the Cleveland Industrial Center, with a generalized extent of 3,200 acres. These two known extents overlap each other in the vicinity of Black River Road.

The Combe Fill South Landfill site on Parker Road operated as a municipal landfill from the 1940's until 1981. During this time the landfill was licensed to accept municipal wastes, sewage sludge, chemicals and waster oils. After closure, contamination was detected in monitoring wells and leaching into Trout Brook. The site was added to the USEPA Superfund list in 1983. In 1986 the EPA and DEP ordered capping of the landfill, venting of landfill gases, installation of an on-site system to extract and treat the contaminated groundwater. Although a water line was originally determined to be necessary, the line was never installed. Instead, water filtration systems are being maintained on the contaminated private potable wells and NJDEP samples select homes in the area on a semi-annual basis. The DEP reported that a remedial investigation and feasibility study of site conditions was to be initiated in 2001.

The Cleaveland Industrial Center also on Parker Road, operated as an industrial park since the 1950's. During the 1940's, a weapons manufacturing plant occupied the site. In the 1980's the site was identified as a possible source of groundwater contamination after volatile organic compounds were detected in nearby wells. In 1991, EPA conducted a removal action to remove and dispose of approximately 1,000 containers of flammable solvents, caustics, and dry chemicals from buildings on site. Monitoring wells were installed in 1995 by DEP to assess groundwater contamination migration. In 1997, the DEP and Washington Township installed a water line to serve the effected residences and 170 other homes with wells at risk of contamination. DEP planned to install off-site monitoring wells to delineate the groundwater contamination plume.

As a community with at least two known contaminated sites, documented groundwater pollution, contaminated wells and case histories of ongoing remedial action, the following activities are identified to prevent groundwater contamination in the Township.

- Map wellhead protection areas for public and private wells and establish a Township-wide wellhead protection program with wellhead protection standards to prevent contamination of wellhead areas.

- Target areas around groundwater contaminated sites for open space protection.
- Reduce permitted residential densities in groundwater contaminated areas, and establish noncontiguous clustering as a development technique to provide a mechanism to direct development away from groundwater contaminated areas.

Surface water

In 1998, the DEP adopted new Surface Water Quality Standards for water bodies statewide. The DEP applied several different classifications to the Township's surface waters that relate to water quality as well as a variety of uses and maintenance standards that will ensure their maintenance. The classifications are depicted on Figure 11 in the NRI and their uses correspond to their designations. The surface waters in Washington Township are predominantly classified as FW2-TP (C1), or Category 1 Trout Production Waters. These include the entire reach of the South Branch of the Raritan River, portions of the Musconetcong River and portions of the Lamington River. Many of their tributaries are also classified as high quality waters. DEP's use and maintenance standards for these waters are described as follows:

“Category One Waters shall be protected from any measurable changes (including calculable or predicted changes) to the existing water quality. Water quality characteristics that are generally worse than the water quality criteria, except as due to natural conditions, shall be improved to maintain or provide for the designated uses where this can be accomplished without adverse impacts on organisms, communities or ecosystems of concern. Therefore, these waters are protected from changes in water quality.”

Also identified are a smaller number of streams and rivers classified as FW2-TM(C2). The TM denotes Trout Maintenance status, whereby a water body supports populations of trout, although these waters do not support spawning trout.

The C2 indicates a Category 2 anti-degradation policy, as follows:

“For Category Two Waters, water quality characteristics that are generally better than, or equal to, the water quality standards shall be maintained within a range of quality that shall protect the existing/designated uses, as determined by studies acceptable to the Department, relating existing/designated uses to water quality. Where such studies are not available or are inconclusive, water quality shall be protected from changes that might be detrimental to the attainment of the designated uses or maintenance of the existing uses. Water quality characteristics that are generally worse than the water quality criteria shall be improved to meet the water quality criteria.”

Trout Production and Trout Maintenance differ from a planning perspective, as they carry different anti-degradation policies. The Trout Production waters carry the C1 designation, which require that the high quality of these waters must be maintained, and protected from any measurable changes. The Trout Maintenance C-2 waterways are slightly less restrictive, requiring protection “from changes that might be detrimental to the attainment of the designated uses or maintenance of the existing uses.”

The Tanner’s Brook and Drakes Brook are the only two non-trout surface waters in the Township and these waters are subject to the C-2 anti-degradation policy of the DEP’s surface water quality standards. However, irrespective of DEP’s rating, all surface waters should be afforded careful planning consideration if critical habitat is to be protected and a diversity of species is to be encouraged.

Washington’s pristine waters and trout streams originate in the upland reaches of the Musconetcong and the South Branch of the Raritan River watersheds. Almost all of Washington provides recharge to these watersheds and the Township’s high quality surface waters feed these rivers that that fill reservoirs for the region and supply water to one of the fastest growing regions of the State that will continue to grow in the future. Protection of these watercourses assumes the highest priority, not only for the Township’s residents, but also for the general welfare of all residents of the region.

High water quality is dependent on preventing point and non-point source pollution from entering waterways. 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 and construction activities. In order to mitigate potential impacts to the Township’s surface waters, the following management approaches are recommended:

- Implement innovative strategies to protect water quality to limit the impact of stormwater runoff on floodplains, watercourses, streams and rivers, and maximize groundwater recharge.
- Encourage the use of creative stormwater management techniques and secure an exception from the Residential Site Improvement Standards, if necessary, to implement local stormwater management standards that are more stringent than currently required by State law to protect the Township’s high quality waterways and downstream water quality, which is vital to the general welfare of the residents of the region.
- Preserve and protect the high quality trout production and trout maintenance waterways in the Township from point and non-point source pollution. Wherever appropriate, require Best Management Practices (BMP’s) such as, but not limited to:
 - Buffering
 - Created wetlands
 - Multistage stormwater treatment systems
 - Drywell infiltration systems for groundwater recharge
 - Extended basins

- Bioretention plantings in basins
- Implement the adopted greenway system that protects environmentally sensitive features by placing conservation easements over floodplain areas, stream corridors, wetland and their transition areas.
- Reduce permitted residential density and impervious coverage standards to minimize potential negative impact to surface waters from non-point pollution.

Woodlands

- Protect and maintain a diverse network of interconnected forests
- Identify and protect from fragmentation “keystone forests”

Woodlands and forested areas are locally important natural resources that serve a variety of functions and uses. Including wooded wetlands, Washington Township has over 15,000 acres of forested areas. This is just over 50% of the total acreage of the total land cover in the Township. 10,294 acres or 67.5%, of wooded land cover is deciduous forest. Combined with deciduous wooded wetlands, over 90% of the forested areas in Washington are deciduous in nature.

Removal of trees and other vegetation can result in ecological, hydrological, and economic impacts. Woodlands affect local climatic conditions near or within their boundaries, such as the cooling effect on trout streams. Washington’s forested areas comprise a majority of the critical habitat identified by the NJDEP Natural Heritage Program’s Biological Conservation Database (BCD). This habitat supports threatened and endangered species in the region and provides an important resource to the protection of these species.

Woodlands and other native vegetation perform a series of important functions related to the ecological balance.

- They stabilize steep slopes and reduce soil erosion and surface runoff, absorb pollutants and promote aquifer recharge, because of the high moisture holding capacity of forest soils.
- Forests produce oxygen, and affect local climatic conditions, such as the cooling effect on trout streams.
- Woodlands provide habitat for plants and animals and establish critical linkages among natural systems and open space areas such as stream corridors, wetlands and agricultural areas, and protected areas such as State, County and Municipal lands and conservation easement areas.
- Woodlands affect local climatic conditions near or within their boundaries, such as the cooling effect on trout streams.
- Forests establish important open space and recreation lands.
- They enhance the visual character of the community, including ridgelines and scenic corridors.
- Woodlands serve to create a feeling of privacy and seclusion and reduce noise impacts.

- Woodlands and other native vegetation provide visual diversity in the terrain, enhancing the value of property.
- Woodlands provide a renewable resource that can be harvested and sold, thereby providing an economic benefit to landowners.

Washington’s woodlands and forests have been identified for protection under the USDA Forest Service Forest Legacy Program. The USDA Forest Legacy Area designation in Washington Township derives, in part, from the findings of the NY-NY Highlands Regional Study (originally published in the early 1990’s and updated in 2002), which recognized the development threat to New Jersey’s Highlands forests. Congress authorized the Forest Service to work with State and other agencies to influence responsible forest stewardship on private lands.

The Forest Service and the State of New Jersey agreed that the forest legacy area designation was appropriate because of the regional dependence on high surface water quality for public drinking supplies. In addition, the legacy forests designation stems from the finding that the Highlands supports over 200 threatened and endangered species and that habitat protection was essential to the survival of a number of species.

In Washington, the Forest Legacy area designation means that landowners are eligible for easement purchases on their woodlands. The easements are directed toward maintaining forests as productive woodlands and are administered through the NJDEP Green Acres Program. This sustainability effort seeks to provide for long-term timber management so that timber may be harvested and provide for timber harvest by the next generation. However, the easements require that foresters consider all natural resources in their forest, rather than just timber. This includes taking into consideration factors such as minimizing erosion to protect water quality, and coordinating activities to enhance critical wildlife habitat. This initiative provides financial resources to protect woodlands much as farmland is protected under permanent easements.

A fundamental aspect of preserving woodland function is preventing fragmentation and degradation of forests and vegetation cover. Forests establish connecting linkages among other sensitive landscape features such as wetlands, steep slopes and critical grassland habitat. The Township’s forests are of varying age and character and their unique ability to establish linkages gives rise to protection of “keystone forests;” those forests with special attributes, such as mesic and upland forests, mature forests and those wooded areas that provide linkage and connectivity among already protected forest resources. This plan seeks to protect Washington’s forested areas from fragmentation and ensure their health and function as an underpinning of the biodiversity in the Township. The following strategies are proposed to protect forested critical habitat and woodland areas.

- A woodland conservation ordinance should be adopted to minimize the loss of critical forest habitat.
- “Keystone forests” should be identified including mesic and upland forests, mature forests and wooded areas that provide linkage and connectivity among protected forests and environmentally sensitive land features. Keystone forests

should be protected and maintained as a continuous network of diverse forest habitat throughout the Township.

- Performance standards should be established limiting the extent of forest removal, based upon forest type. Priority should include forested slopes, critical habitat for threatened and endangered species, 100 year floodplains, wetlands, stream corridors and slopes 15% or greater.
- Standards should be established to maintain 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 forest conditions (i.e. 300' or greater).
- Development should minimize the disturbance of critical forest habitat.
- Reduce permitted residential density and increase required open space/open lands set asides to limit loss of woodlands and forests and to promote the retention of critical forest habitat.

Critical Forest and Grassland Habitat

In 1993, the New Jersey Department of Environmental Protection Endangered and Non-game Species Program (ENSP) initiated a move to a landscape level approach for endangered species protection. With suburbanization and development occurring in all areas of the State, an increasing amount of habitat that could potentially support threatened and endangered species was being lost daily. ENSP developed the "Landscapes" Program digital data set that is shown on Figure 19 and 20 of the NRI. These maps identify critical forest and grassland habitat and critical emergent and forest wetland habitat in the Township.

As indicated in the NRI, Washington Township is rich in critical habitat that can support populations of threatened and endangered species. In fact, there isn't much of the Township that isn't suited as habitat for threatened and endangered species. Four of the five Landscapes Project categories are represented in the Township including forested wetland, emergent, and forest and grassland habitat. Most of these habitat types have documented presence of State threatened and endangered species. Species include the wood turtle, bog turtle, barred owl, timber rattlesnake and the Cooper's hawk.

Threatened and endangered species are indicators of ecological diversity and environmental quality. Like the canaries in the coalmine, they warn us when we are spoiling the quality of the environment beyond natural capacities. The presence of these species is an indicator of the historic emphasis on land stewardship. The following activities are identified to protect and preserve these species.

- Implement the adopted greenway system that protects and unifies environmentally sensitive features by providing conservation easements over floodplain areas, stream corridors, steep slopes, ridgelines and wetlands and their transition areas.
- Protect, critical habitat including woodland and grassland areas, unique habitat and threatened and endangered species habitat areas through the placement of these areas in conservation easement.

- Prepare a threatened and endangered species and declining species study of the Township by coordinating community efforts and State data sources to develop an inventory of species to be protected and strategies for maintaining essential habitat.
- Consideration should be given to the reduction of permitted residential densities to promote the maintenance and preservation of critical habitats.
- Utilize zoning strategies and techniques such as clustering, lot size averaging, non-contiguous clustering and open lands zoning to offer a range of development options for the maintenance and protection of interconnected natural lands, air and water systems, critical habitat, particularly threatened and endangered and declining species habitat areas, and large contiguous areas that support biological diversity.
- Wherever possible, limit disturbance and development of forests, meadows, grassland areas, steep slopes, ridgelines, scenic vistas and views, streams and their corridors, groundwater aquifers and recharge areas, wetlands and swampy areas, unique landscapes, and agricultural areas.
- Require mitigation measures such as reforestation, meadow restoration, natural hedgerow treatments, and context sensitive buffering and landscaping to limit impacts to these areas resulting from development.
- Establish and maintain reduced land use densities and intensities, which respect the capacity of the environment to sustain development and the natural resource conservation and environmental protection objectives of this plan.

Steep slopes

- Protect steep slopes from erosion and degradation resulting from permitted development and vegetation removal.

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:

- Review and revise, if necessary, standards that relate the intensity of development to the slope gradient.
- Develop standards that limit tree removal and soil disturbance on steep slopes.
- Avoid the disturbance of steep slopes and protect these areas through the placement of conservation easements on these areas at the time of subdivision.

Scenic views and vistas

- Recognize and protect unique views and vistas.
- Protect undisturbed scenic mountain, hillside, ridgeline and steep slope views and vistas for the scenic enjoyment of all NJ citizens.

The land and water features that establish Washington's essential character and sense of place are defined by the natural and cultural landscape and the wealth of natural resources that have shaped the community over time. The Township's scenic views and vistas are an important element in the perceived quality of life in Washington. The primary stewards of these resources in the community are the local review agencies, and the development review process plays the primary role in shaping and protecting the visual character of the landscape after development. These are the agencies best positioned to encourage the protection of the scenic views and vistas of the Township.

The Planning Board has previously adopted, and in this Master Plan updated, a rural historic roads section to the Circulation Plan element of the Master Plan and the Township Committee has adopted an ordinance to protect scenic roadside features . This ordinance seeks to protect scenic rural historic roads and roadside features by first requiring avoidance of the unique rural historic features that establish community character and if that's not possible, replanting hedgerows, and replacing natural features to the extent practicable. A 50' roadside buffer is required along rural historic roads to protect the quality of the viewshed from the road.

Similarly, land forms, hillsides, the steep slopes of Schooley's Mountain, the Fox Hill Range and Beacon Hill are valued scenic views and vistas to be protected and maintained for the enjoyment of all NJ citizens. Distant views of these scenic views and vistas require protection. Distant views of the agricultural landscape is likewise worthy of protection, as is the cultural landscape embodied in Washington's historic settlements and farmsteads. Protection of these unique scenic attributes that establish Washington's essential character should be advanced through the following actions.

- Identify and protect the unique views and vistas that are intrinsically linked to the rural and historic landscape, including, but not limited to important roadside viewsheds and scenic vistas for the protection of these features.
- Protect scenic views and vistas through the careful placement of new development, and require mitigation where practical when scenic views and vistas are to be compromised by new development.
- Protect scenic views and vistas through the placement of these areas in conservation easements at the time of subdivision or whenever development is approved.
- Adopt a comprehensive scenic mountain, ridgeline, hillside and steep slope ordinance to protect Washington's values distant views of these land features.
- Consideration should be given to reducing permitted densities on steep slope, hillside and ridgeline areas to protect these features from degradation and compromise by development.

Energy and Air Quality

- Encourage energy efficiency and protect air quality through the location, design, and construction of new development.

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

- Arrange development in compact forms to minimize energy consumption and retain existing wooded areas and large contiguous areas, by utilizing development techniques such as clustering, lot size averaging.
- Encourage multi-use development forms in locations such as commercial districts and centers that will maximize utilization of the land and reduce reliance on the automobile.
- Encourage pedestrian and public transit and linkages wherever practical and encourage ridesharing and alternative transportation systems (buses, car and van pooling, bicycling, and walking).
- Reduce the need for vehicular trips by facilitating better interconnections among residential, commercial, office, and recreational uses.
- Encourage energy conservation through subdivision design, building design, building orientation, and the evaluation of microclimate conditions such as solar access and wind direction.
- Design bikeways, pedestrian walkways and other routes to maximize opportunities for non-motorized travel in existing and new development.
- Recommend landscaping standards that provide buildings with maximum solar access, shading, and wind protection.
- Fully implement the Township's recycling ordinance as it pertains to all solid waste generating land uses in the community. Review and revise the Township's recycling ordinance as necessary to ensure that a workable long-term recycling program can be established in the Township of Washington. .

Washington's Greenbelt Plan

VII. Greenbelt Establishment - Introduction and Purpose

This Greenbelt sub-Plan of the Conservation Plan is prepared pursuant to the authority of the Municipal Land Use Law (N.J.S.A. 40:55D-44 Reservation of public areas), and purposes of the State Development and Redevelopment Plan, and other State and Federal Statutes. In recognition of the fact that natural landscape features and associated plant and animal communities contribute to the welfare of its residents, the following guidelines provide reasonable controls governing the conservation, disturbance and management of open space within Washington Township. In addition, the specific purpose of this article is to:

- Plan and regulate the land use, siting, and engineering of all development so as to be consistent with the intent of the greenbelt, accepted conservation practices, and the carrying capacity of existing natural resources.

- Integrate floodplain, ridgeline protection, steep slope, and other regulations affecting environmentally sensitive areas to minimize hazards to life and property, and retain or enhance the existing quality of life for Township residents.
- Conserve the wide variety of land and water resources areas (including wetlands and their buffers, floodplains, stream corridors, groundwater recharge areas, wellhead protection areas, steep slopes, prime wildlife habitats, woodlands, especially closed canopy forest) and other areas constituting high passive recreational value or containing amenities that exist on developed or undeveloped land.
- Promote an interconnected complex of undeveloped open space across the Township that will help to maintain the ecological integrity (i.e., the biodiversity) of existing plant and animal communities both within the Township and the region.
- Maintain or improve the safety, reliability, and adequacy of the water supply for natural, domestic, agricultural, commercial, industrial, and recreational uses.
- Require cluster development plans or similar alternative development approaches that create significant open space areas and linkages and connections among identified Greenbelt areas.
- Encourage the donation of private lands and the acquisition of Greenbelt areas by State, county, and municipal agencies and land trusts or similar agencies to establish open space linkages among Greenbelt areas.

Definition and Establishment of the Greenbelt

Definition - The Greenbelt is defined as an Overlay consisting of wetlands and their buffer zones, State Open Waters and their buffer zones, steep slopes, wooded ridgelines, floodplains, publicly-owned lands, conservation easements, farmland protection areas, connecting corridors between these areas, and other sensitive plant or wildlife habitats or exceptional natural resource areas identified during ongoing review or during the development review process.

Establishment - The Greenbelt is an overlay, which applies to areas exhibiting one or more of the following criteria:

Primary Criteria - Currently Mapped

1. State, County and Municipally Owned Land
2. Farmland Preservation Areas
3. Wetlands, State Open Waters (including perennial streams), and intermittent streams
4. Stream Corridor Buffers of Streams Lacking Associated Wetlands

5. Existing Conservation Easements
6. Steep Slopes (i.e., > 25%)
7. Mapped Connecting Corridors Among the Above Categories
8. Significant Drainage Easements

Other Criteria - Based on Existing or Proposed Ordinances

1. Ridgeline & Hillside Protection Areas
2. Wellhead Protection Areas
3. Habitat for Threatened or Endangered Species

Greenbelt Plan Objectives

To effect the objectives of this plan at the time of application for development or a building permit, the applicant should determine whether any portion of the Greenbelt, as defined above, exists on or immediately adjacent to (e.g., within 150' for exceptional resource value wetlands) the subject property. The Township Greenbelt Map should be used as a general guide for this purpose, although unmapped segments of Greenbelt may exist on a parcel based on application of all criteria. Any area of Greenbelt found to exist on the property should be depicted on a map to be reviewed by the Township Engineer. Where areas of the Greenbelt consist of any areas that are regulated by other Township ordinances, the plan also should be prepared in accordance with the guidelines of those ordinances.

The applicant is encouraged to utilize clustering or similar alternative development approaches so that large areas may remain open as linkages and connecting corridors among Greenbelt areas. Donations of land to support these objectives are encouraged.

Municipal Environmental Specialist

- Create the position of Environmental Specialist

The Township's long-standing and continuing commitment to protecting natural resources and the environment results in the need for a municipal environmental specialist to educate the public, consult to the Environmental Commission and act as liaison to the Planning Board. The Township should create the position of Environmental Specialist to serve these and a variety of capacities related to environmental protection in Washington Township. The network of conservation easements extending throughout the Township should be monitored on a regular basis and a municipal staff person is needed to provide that monitoring. Additionally, the Environmental Specialist could serve as a local grant writer to secure funding for a variety of projects including environmental commission projects, land acquisition and public education.

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 Washington's critical resources.

VIII. Economic Plan Element

Introduction

This element of the Master Plan has been prepared in accordance with N.J.S.A. 40:55D-28b.(9), which provides for:

“An economic plan element considering all aspects of economic development and sustained economic vitality, including (a) a comparison of the types of employment expected to be provided by the economic development to be promoted with the characteristics of the labor pool resident in the municipality and nearby areas and (b) an analysis of the stability and diversity of the economic development to be promoted;”

This Master Plan element identifies the existing level of employment and the types of employment that may be expected to develop in areas of Washington Township that are zoned for economic development (i.e. non residential) uses. A profile of the Township’s labor force is provided from the 2000 Census, which compares the current labor force to 1990 Census labor force data. The stability and diversity of the economic development promoted through local zoning is assessed, along with a current and projected fiscal characterization of the municipal tax base. This element concludes with a series of recommendations to encourage a mix of economic development uses to build long-term fiscal stability of the community.

Goals and Objectives:

1. To establish a diversified, stable tax base, taking into account the need to provide reasonable opportunities for employment of the Township’s resident labor pool.
2. To promote economic development in a manner that respects the carrying capacity of the land and the infrastructure needed to support economic development uses.
3. To promote viable agriculture and encourage innovative agricultural uses that will ensure the productivity of Washington’s agricultural lands, while at the same time respecting the carrying capacity of the land and natural systems; and ensuring the compatibility of agricultural land use with adjoining non-agricultural land uses.
4. To reduce the municipal dependence on residential land use as the primary land use category for fiscal stability, by encouraging nonresidential land development in appropriate locations with a view of lessening the cost of such development and to the more efficient use of land.

Employment

The following table identifies covered employment in Washington Township for selected years during the 1986 – 1999 period. Covered employment includes all private sector jobs covered under the New Jersey Unemployment Compensation Law. The table shows the level of covered employment of the Township compared to Morris County. Covered employment in the Township dropped from 1,465 private sector jobs in 1986 to 893 jobs in 1992. A total of 2005 covered jobs were reported in 1997, which grew to 2,266 in 1999, the last year the NJ Department of Labor reports for the Township. This table shows that the job losses of the late 1980’s and early 1990’s in the Township were gained back during the latter part of the 1990’s. Covered employment in Morris County between 1987 and 1992 fell as did employment in the Township, but employment steadily grew in the County between 1997 – 2001. In 2001, a nationwide recession began and the region began to experience job losses again.

Covered Employment
Selected Years 1986- 1999

YEAR	WASHINGTON TOWNSHIP	MORRIS COUNTY
2001		250,534
2000		248,517
1999	2266	242,228
1998	2002	233,240
1997	2005	228,388
1992	893	201,024
1991	943	199,312
1990	1,069	208,635
1987	1,270	210,861
1986	1,465	205,299
SOURCE: New Jersey Department of Labor, 1993 & 2003		

The table below entitled “Places of Work” identifies the employment location for Township residents as reported in the 1990 and 2000 Census. In the 2000 Census, it was reported that the majority of Township residents continued to work outside of the municipality, but within Morris County (53.4%), as was the case in the 1990 Census (54.4%). There were slight gains in the percentage of residents working outside of the State, County, and from home in Washington Township. Interestingly, the number of residents reported working in Washington Township dropped considerably from 987 in 1990 to just 209 in 2000.

Places of Work 2000 & 1990
Washington Township Residents

PLACE OF WORK	1990		2000	
	NUMBER	% OF TOTAL	NUMBER	% OF TOTAL
Out of State	346	4.4	409	4.8
Out of Morris County	3,151	39.9	3,529	41.7
Morris County ¹	4,302	54.4	4,511	53.4
Washington Township	987	12.5	209	2.4
Worked at home	321	4.1	480	5.7
TOTAL	7,899	100	8,449	100

¹The Morris County total includes those workers that work at home and within Washington Township.
SOURCE: 1990 & 2000 U.S. Census

The following table compares educational attainment as reported in the 1990 and 2000 Census. Educational attainment statistics show that Washington's residents are well educated and that the number and percentage of residents with bachelors and advanced or professional degrees increased between 1990 and 2000. Morris County educational attainment trended upward during the same period, but the Township's educational attainment profile shows that on a percentage basis, Washington's residents have higher educational attainment than the County averages.

Educational Attainment.
Washington Township and Morris County 1999 & 2000

EDUCATIONAL LEVEL Persons 25 years and older	1990				2000			
	Washington		Morris County		Washington		Morris County	
	#	%	#	%	#	%	#	%
Less than, 9th Grade	163	1.7	14,136	5.0	202	1.8	11,247	3.5
9th-12th Grade - No Diploma	348	3.7	22,851	8.0	216	1.9	19,247	5.9
High School Graduate	2,244	23.6	77,431	27.2	2,088	18.5	77,730	24.0
Some College - No degree	1,763	18.6	48,481	17.0	2,057	18.2	54,824	16.9
Assoc. Degree	763	8.0	17,143	6.0	728	6.4	18,063	5.6
Bachelor's Degree	2,672	28.1	66,339	23.3	3,760	33.2	87,641	27.1
Graduate or Prof. Degree	1,550	16.3	38,053	13.4	2,262	20.0	55,129	17.0
TOTAL	9,503	100	284,434	100	11,313	100.0	323,881	100.0

SOURCE: 1990 & 2000 U.S. Census

The following tables "Occupations 2000" and "Comparison of Selected Occupations – 1990 & 2000" provide an analysis of Washington workforce. The Township's workforce is predominantly categorized as "Management, Professional and Related Occupations" under the 2000 Census (54.8%), which has continued to grow on a percentage basis since the 1990 Census (51.44%). The number of "Sales and Office Occupations" increased between the 1990 and 2000 Census, but narrowed on a percentage basis of the total workforce. The number of residents employed in the "Construction, Extraction and

Maintenance, and “Transportation and material moving occupations” decreased as did those employed in “Farming, Fishing and Forestry Occupations” between 1990 and 2000.

Farming, Fishing and Forestry occupations employed 162 of the Township’s residents in 1990, while this number dropped sharply to just 18 in the 2000 Census. Occupational categories in the Census are the occupations an individual reports as their primary means of employment. Washington prides itself on its agricultural heritage and rural character, and there is a significant amount of preserved farmland, the drop in the number of persons reporting farming as their primary means of employment may indicate that full-time farming and agriculture as an industry and a way of life in the Township may be seriously threatened, thus requiring local efforts to encourage economically viable agriculture.

Occupations 2000
Washington Township and Morris County

OCCUPATION	Washington Township	8,801	Morris County	243,783
Management, professional, and related occupations	4,827	54.8%	116,282	47.7%
Service Occupations	849	9.6%	24,641	10.1%
Sales and Office Occupations	2,178	24.7%	66,699	27.4%
Farming, Fishing and Forestry Occupations	18	0.2%	226	0.1%
Construction, Extraction and Maintenance occupations	523	5.9%	16,150	6.6%
Production, transportation and material moving occupations	406	4.6%	19,785	8%
SOURCE: 2000 U.S. Census.				

Comparison of Selected Occupations¹ 1990 & 2000
Washington Township

Employed persons 16 years & over	1990		2000	
	7,963		8,801	
OCCUPATION	#	%	#	%
Management, professional and related occupations	4,041	51.44	4,827	54.8
Service Occupations	588	7.4	849	9.6
Sales and Office Occupations	2,040	25.7	2,178	24.7
Farming, Fishing and Forestry Occupations	162	2.0	18	0.2
Construction, Extraction and Maintenance occupations ¹	778	9.8	523 – 752	5.9
Transportation and material moving occupations ¹	315	4	406 - 177	4.6
¹ The 1990 and 2000 Census occupation categories do not all identically correlate. Ranges are provided to reconcile the inconsistency in occupational categories between the two decennial Censuses.				
SOURCE: 1990 & 2000 U.S. Census.				

The table below entitled “Household Income – 1999” compares household income for Washington Township and Morris County, as provided in the 2000 Census. 1999 median household income in Washington Township (\$97,763) is approximately 26% higher than the median income for Morris County (\$77,340). 74% of households in Washington Township earn \$60,000 and above annually, compared to the County average of 61%. 66% of Washington households reported annual incomes above \$75,000 in 1999, which compares to 52% of all County residents reporting income above \$75,000 for the same year. Conversely, 26% of Washington households reported income less than \$60,000 annually compared to 37% of Morris County households. These statistics show the relative affluence of Township residents in comparison to County-wide average household income.

Household Income - 1999

Annual Household Income	Washington Township		Morris County	
	Number	Percent	Number	Percent
Less than \$10,000	150	2.6	5,280	3.1
\$10,000 to \$14,999	112	1.9	4,162	2.5
\$15,000 to \$19,999	96	1.7	4,068	2.4
\$20,000 to \$24,999	165	2.9	4,948	2.9
\$25,000 to \$29,999	142	2.5	5,405	3.2
\$30,000 to \$34,999	132	2.3	6,123	3.6
\$35,000 to \$39,999	80	1.4	6,244	3.7
\$40,000 to \$44,999	171	3.0	6,992	4.1
\$45,000 to \$49,999	130	2.3	6,068	3.6
\$50,000 to \$59,999	320	5.5	12,827	7.6
\$60,000 to \$74,999	455	7.9	19,851	11.7
\$75,000 to \$99,999	1016	17.6	26,978	15.9
\$100,000 to \$124,999	910	15.8	19,508	11.5
\$125,000 to \$149,999	607	10.5	12,283	7.2
\$150,000 to \$199,999	716	12.4	13,776	8.1
\$200,000 or More	570	9.9	15,281	9.0
TOTAL:	5,772	100	169,794	100
Median Household Income:	\$97,763		\$77,340	
Median Household Income 1989:	\$68,555		\$56,273	

SOURCE: U.S. Census 1990 & 2000

Median housing value in Washington Township increased 15% between 1990 and 2000, rising from \$242,700 to \$279,300 during that time period.

Median Housing Value 1990 and 2000	
1990	\$242,700
2000	\$279,300

Housing construction was robust throughout the 1990's in Washington Township, but slowed considerably when compared to the 1980 to 1990 time period. Building permit activity in the Township reported by the NJ Department of Community Affairs is provided in the table below, entitled "Building Permits and Values 1980-2002". Between 1980 and 1989, there were a total of 1,766 residential building permits issued, of which 1,676 were issued for single-family residential dwellings, 32 were issued for 3 or 4 family units and 58 were issued for 5 or more family units. For the 1990 – 1999 time period, a total of 689 building permits were issued, all for single-family residential dwellings. Permits issued during the 90-99 time period, account for 40% of permits issued for the prior ten-year period. Permits issued during 2000, 2001 and 2002 account for a total of 250 new homes, which is 36% of all permits issued for the 1990 to 1999 ten-year period. Dwindling availability of developable land, changes in zoning and local efforts to preserve farmland and open space are expected to further reduce the pace of residential development witnessed in the 1990 – 1999 ten-year time period.

Building Permits and Values 1980-2002

Year	Total	Single	3 or 4 Family	5 or more	Value
1980	231	231	0	0	\$13,231,000
1981	74	74	0	0	\$5,399,500
1982	168	164	4	0	\$12,085,810
1983	234	234	0	0	\$14,702,527
1984	245	245	0	0	\$18,009,218
1985	210	210	0	0	\$18,950,513
1986	203	203	0	0	\$20,007,507
1987	142	100	4	38	\$14,885,194
1988	105	61	24	20	\$11,016,500
1989	154	154	0	0	\$12,130,850
1990	23	23	0	0	\$3,806,750
1991	41	41	0	0	\$5,180,230
1992	67	67	0	0	\$10,284,832
1993	86	86	0	0	\$10,945,075
1994	79	79	0	0	\$13,222,382
1995	59	59	0	0	\$9,122,380
1996	64	64	0	0	\$10,531,913
1997	82	82	0	0	\$14,231,250
1998	67	67	0	0	\$12,896,957
1999	121	121	0	0	\$23,672,183
2000	137	137	0	0	\$26,651,155
2001	65	65	0	0	\$14,491,588
2002	48	48	0	0	\$9,343,015

Property Valuation Comparison for 1994 and 2003

REAL PROPERTY CLASSIFICATION	NO. OF ITEMS	1994*		NO. OF ITEMS	2003**	
		ASSESSMENT	% OF TOTAL ASSESSMENT		ASSESSMENT	% OF TOTAL ASSESSMENT
Vacant Land	679	\$ 19,422,100	3.2	501	\$37,887,700	2.55
Residential (4 Families or Less)	4,726	\$514,455,450	85.3	5,238	\$1,348,100,800	90.80
Farm (Regular)	191	\$22,359,500	3.7	62	\$17,557,400	1.18
Farm (Qualified)	449	\$3,676,900	0.6	384	\$4,037,200	0.27
Commercial	147	\$19,147,550	3.2	89	\$38,092,400	2.57
Industrial	24	\$15,181,600	2.5	22	\$24,511,600	1.65
Apartment	4	\$8,613,700	1.4	3	\$14,452,700	0.97
TOTAL		\$ 602,856,800	100		\$1,484,639,800	100.00

SOURCE: *Washington Township Tax Assessor's Office, 1994. Calculations by Keller & Kirkpatrick, Inc.

** Washington Township Tax Assessor's Data, 2003.

Residential real property classifications accounted for 85% of the total assessments in Washington Township in 1994. In 2003, residential land use accounts for 91% of total assessments in the tax base. The number of items listed in this category grew from 4,726 in 1994 to 5,238 in 2003. Farm regular real property classifications dropped from 191 items on the tax list in 1994 to 62 items in 2003, while at the same time farm qualified classifications decreased in number from 449 in 1994 to 384 in 2003, showing that farms and assessed farmland were probably lost to gains in single-family residential land uses developed during the 1994 – 2003 time period. During the same period, vacant real property classified items reduced from 679 in 1994 to 501 in 2003, probably also as a result of conversion to residential use in the Township.

Nonresidential real property tax classifications showed losses as well, with Commercial real property classified items on the tax list being reduced from 147 in 1994 to 89 in 2003. Industrial land uses accounting for 24 items on the 1994 tax list were reduced slightly to 22 in 2003. The number of apartment category items on the tax list, which includes the age-restricted and continuing care facility in the northwest portion of the Township, was reported as 4 in 1994 and as 3 in 2003.

All non-residential real property tax classified items showed actual and percentage decreases between the 1994 and 2003 tax lists, while at the same time the only real property tax classification that showed an actual and percentage increase was the residential property tax class. Residential property tax classified land uses (single-family) generate higher municipal service and educational costs than do the other property classifications, due largely to the cost of education for school-age children in single-family homes.

Statistics show Washington’s heavy reliance on residential property tax classified land for its fiscal stability. The trend over the prior 10 year period shows increased reliance on Township’s residential land uses for fiscal stability, and a reduction of fiscal stability in nonresidential real property tax classified lands.

Age Distribution

The following table compares the age distribution for Washington Township’s population to the County population as reported in the 1980, 1990 & 2000 Census. Between 1980 and 2000, the Township’s population grew from 11,402 in 1980, to 15,592 in 1990; and then to 17,592 in 2000. In each Census, the percentage of the Township’s population under 18 exceeded the County average; was less than the County average for the population ages 19-34; exceeded the County average for the population ages 35-54; and was less than the County average for the population ages 55 and over.

Washington Township is primarily a child rearing family community, which is evident in

Age Distribution 1980, 1990 & 2000 – Washington Township & Morris County

Washington Township								
1980			1990			2000		
Age	#	%	Age	#	%	Age	#	%
Under 5	924	8.1	Under 5	1,137	7.3	Under 5	1,223	7.0
5-18	3,536	31.0	5-18	3,966	25.4	5-18	4,351	24.7
19-24	495	4.3	19-24	988	6.3	19-24	705	4.0
25-34	2,000	17.5	25-34	1,855	11.9	25-34	1,477	8.4
35-44	2,088	18.3	35-44	3,530	22.6	35-44	3,445	19.6
45-54	1,029	9.0	45-54	2,289	14.7	45-54	3,337	19.0
55-64	557	4.9	55-64	880	5.6	55-64	1,631	9.3
65 and over	773	6.8	65 and over	947	6.1	65 and over	1,423	8.1
Total	11,402		Total	15,592		Total	17,592	

Morris County								
1980			1990			2000		
Age	#	%	Age	#	%	Age	#	%
Under 5	24,081	5.9	Under 5	27,637	6.6	Under 5	32,466	6.9
5-18	105,385	25.9	5-18	74,047	17.6	5-18	89,199	19.0
19-24	31,268	7.7	19-24	35,715	8.5	19-24	24,666	5.2
25-34	65,572	16.1	25-34	71,457	17.0	25-34	62,924	13.4
35-44	58,845	14.4	35-44	72,240	17.1	35-44	87,939	18.7
45-54	48,686	11.9	45-54	55,965	13.3	45-54	71,707	15.2
55-64	37,997	9.3	55-64	39,870	9.5	55-64	46,850	10.0
65 and over	35,796	8.8	65 and over	44,422	10.5	65 and over	54,461	11.6
Total	407,630		Total	421,353		Total	470,212	

the population data. In real numbers the Township’s population:

- Under 18 increased from 4,460 in 1980, to 5,103 in 1990, to 5,574 in 2000;
- The 19-24 age group grew from 495 in 1980, to 988 in 1990, and then decreased to 705 in 2000;
- The 25-34 age group steadily decreased from 2,000 in 1980, to 1,855 in 1990 and then to 1,477 in the 2000 Census;
- The 35-44 age group swelled by 70% from 2,088 in 1980 to 3,530 in 1990 and then decreased slightly to 3,445 in 2000;
- The 45-54 age group steadily grew as a percentage of the Township’s population, and in number from 1,029 (9.0%) in 1980, to 2,289 (14.7%) in 1990, to 3,337 (19%) in 2000;
- The 55-64 age group grew from 557 in 1980, to 880 in 1990, and then roughly doubled to 1,631 in 2000; and
- The 65 and over population grew from 773 in 1980, to 947 in 1990 and to 1,423 in 2000.

The following table identifies the Township age distribution, expressed as a percentage of the total population for the years 1980, 1990 & 2000.

Washington’s Age Distribution (%)
1980, 1990, 2000

	1980	1990	2000
Under 5	8.1	7.3	7.0
5-18	31.0	25.4	24.7
19-24	4.3	6.3	4.0
25-34	17.5	11.9	8.4
35-44	18.3	22.6	19.6
45-54	9.0	14.7	19.0
55-64	4.9	5.6	9.3
65 and over	6.8	6.1	8.1

Municipal Land Use Law Considerations

As indicated above, N.J.S.A. 40:55D-28b.(9), provides for “An economic plan element considering all aspects of economic development and sustained economic vitality, including (a) a comparison of the types of employment expected to be provided by the economic development to be promoted with the characteristics of the labor pool resident in the municipality and nearby areas and (b) an analysis of the stability and diversity of the economic development to be promoted;”

The purposes of the Municipal Land Use Law can be found at N.J.S.A. 40:55D-2, which include the following purposes that, in part, respond to the stated goals and objectives of this plan.

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.

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;

These purposes illustrate that Washington's economic development goals and objectives are consistent with and can further the purposes of zoning. Washington's commitment to environmental protection and diversifying its tax base are not necessarily mutually exclusive and are recognized under the law in the purposes of zoning. Plan Recommendations for economic development in this plan are advanced mindful of the environmental protection underpinnings that characterize Washington's land use philosophy.

Economic Development Land Use Opportunities & Challenges

Opportunities for economic development land uses are provided in Washington Township through local zoning. Economic development land uses are permitted in appropriate areas of the Township along major roadways in proximity to historically developed areas. Economic development land uses are not encouraged nor generally permitted in the Township's residentially zoned areas, with the exception of agricultural use and home occupations permitted in residential zones.

In Long Valley, commercial economic development land uses are permitted downtown and along East Mill Road, consistent with the Village's historic role and the center of economic activity in this agricultural community. Additional commercial uses evolved over time adjacent to the village in response to municipal population growth. This plan does not call for encouraging new economic development land uses in the village or Long Valley. However, it is acknowledged that commercial uses have been slow to develop downtown where permitted, which may be in part due to traffic congestion which characterizes this area. Proposals for a Long Valley bypass should be evaluated in the context of the potential for invigorating commercial activity and encouraging tourism downtown.

The Township's primary area zoned for economic development land uses is the northwest portion of the Township, where nonresidential zoning permits Office Research and Industrial uses, and Commercial uses adjacent to Hackettstown, Mansfield and Mount Olive Township. County and State highways that are appropriate for supporting traffic volumes that will be generated by economic development land uses serve this area. This

area continues to be the logical location in the Township for these uses, given the historic development patterns in the region and the location of US Route 46, which provides access to the regional highway system. High density age-restricted housing is permitted as a zoning overlay in the OR/I zone along the Musconetcong, as a development option that will promote the preferred diversification of residential land use in a location well served by existing infrastructure and services.

Areas zoned for office research - industrial use in the northwest portion of the Township have experienced no meaningful new development since 1995, and there has been little change in the amount of office-research uses existing in the Township during the time period 1995 to 2003. This is contrary to the regional trend, which experienced growth during this period. One notable development has occurred that required a rezoning to permit large-scale retail use, which is the regional trend in commercial retail use. Although this site has received Planning Board approval, the site is yet to be developed as approved.

The northwest portion of the Township is plagued by traffic congestion, which may impact the viability of areas zoned office-research/industrial, since accessibility is frequently a factor in citing these uses. A proposal for improving traffic circulation between Route 57 and US Route 46 should be considered in the context of improving accessibility to the Township's economic development zones in this portion of the Township to encourage development of this area of the Township as zoned.

Office-research/industrial zoning may provide the opportunity for economic development land uses that are well-suited to Washington's resident labor pool. 2000 Census data identifying the occupational profile of the Township suggests that these types of uses could provide employment opportunities for Washington's highly skilled and specialized labor force.

Agriculture as an industry is deep rooted in Washington's past and remains an economic development opportunity today, largely due to County and municipal efforts to preserve farmland in the Township. If agriculture is to thrive, it should be recognized that farming changes over time in response to market forces, which will likely result in the reuse of Washington's farmland resources with forms of agriculture that respond to today's and future market forces. In addition, regulatory requirements and procedures may need to be adapted to encourage the productive use of farmland, when proposals for agricultural use are proposed. Agriculture may be a source of promoting tourism in the Township, which could serve to improve the vitality of existing commercial centers.

Washington's experience with age-restricted development and a continuing care facility in the northwest portion of the Township shows that this form of residential land use can contribute toward the fiscal stability of the community. This high value land use generates little demand for municipal services and requires no educational services. This type of land use should be encouraged where appropriate.

Summary Findings and Recommendations

The background analysis provided in this plan identified a series of findings, which are summarized below. Recommendations provided in this plan build upon the recommendations of the 1995 Plan and seek to encourage economically beneficial land uses in an environmentally responsible manner, with the goal of establishing a more balanced, fiscally stable tax base.

Findings

1. Washington's residents are well educated and the number and percentage of residents with bachelors and advanced or professional degrees increased between 1990 and 2000.
2. A total of 2005 covered jobs were reported in 1997, which grew to 2,266 in 1999. The job losses of the late 1980's and early 1990's in the Township were gained back during the latter part of the 1990's.
3. The 2000 Census reported that the majority of Township residents continued to work outside of the municipality, but within Morris County (53.4%), as was the case in the 1990 Census (54.4%). The number of residents reported working in Washington Township dropped considerably from 987 in 1990 to just 209 in 2000.
4. The Township's workforce is predominantly categorized as "Management, Professional and Related Occupations" accounting for 54.8% of the resident labor pool in 2000. This occupational category has continued to grow since on a percentage basis since the 1990 Census (51.44%), as did the number of "Sales and Office Occupations" listed for the resident workforce.
5. Farming, Fishing and Forestry occupations employed 162 of the Township's residents in 1990, while this number dropped sharply to just 18 in the 2000 Census.
6. Annual income of Washington's residents generally exceeds the County average. In 2000, 74% of households in Washington Township earned \$60,000 and above annually, compared to the County average of 61%. 66% of Township households reported annual incomes above \$75,000 in 1999, compared to 52% of all County residents.
7. For the 1990–1999 period, a total of 689 building permits were issued for single-family residential dwellings, accounting for 40% of the 1,766 permits issued for the prior ten-year period (1980's). 250 permits were issued during 2000, 2001 and 2002 for new homes, which is 36% of all permits issued between 1990-1999. Demand for housing in Washington remains strong, however dwindling availability of developable land, zoning and preserved farmland and open space are expected to reduce the historic pace of residential development in the Township.

8. Residential real property classifications accounted for 85% of the total assessments in Washington Township in 1994, compared to 91% in 2003. All non-residential real property tax classified items showed actual and percentage decreases between the 1994 and 2003 tax lists. This 10-year trend shows increased reliance on Township's residential land uses for fiscal stability, and a reduction of fiscal stability in nonresidential real property tax classified lands.
9. The reduction of farm, farm qualified, vacant and nonresidential real property classified land as a percentage of the overall tax base, particularly in relation to residential real property, raises the concern that achieving a balanced and fiscally stable tax base is becoming an increasingly unattainable goal, unless substantial and directed efforts are brought to bear to reduce residential growth and correct this imbalance.
10. Census data reinforces the fact that the age distribution of Washington Township's population is characteristic of a child-rearing family community, with sustained strength in the population among the school age and parenting age groups. Population growth from the 1980 Census to the present has been concentrated among these age groups, while the 25-34 age group (ostensibly a younger parenting age group) has declined during this time period.

Recommendations

The first three of the following recommendations remain essentially unchanged from the 1995 Economic Plan, as the Board has found that these recommendations are valid and consistent with Washington's economic planning objectives. The subsequent recommendations of this plan have been formulated in consideration of the findings of this plan, when viewed in the context of the goals and objectives of this plan element and the Master Plan in its entirety.

1. Areas zoned for non-residential office-research use should be encouraged for that development.
2. Appropriate home occupations should be permitted where they do not impact residential character of the property and neighborhood.
3. The Long Valley and Northwest economic development zones in the Township should remain the commercial and employment centers of the community.
4. Traffic congestion in downtown may be relieved if the planned Long Valley bypass is constructed. Bypass planning should be aimed at protecting and invigorating commercial activity and encouraging tourism downtown, as well as improving traffic circulation around downtown.

5. Age-restricted housing is a high value land use that will diversify the type of housing available to township residents and may serve to relieve dependence on the single-family dwellings for fiscal stability. This type of land use should be encouraged where it can be appropriately accommodated with available water, sewer and circulation infrastructure.
6. Traditional forms of agriculture, particularly those forms of agriculture that may encourage tourism, should be promoted. New forms of agriculture that are compatible with adjoining land uses should be encouraged. A review of land use ordinance provisions should be undertaken to determine whether the local approval process can be streamlined for agricultural uses.
7. Investigate whether a special category of limited commercial-home occupation uses that are compatible with agriculture and residential use should be permitted on farms to permit farmers to supplement farm income and thereby help sustain agriculture as a way of life in the Township.
8. Mixed-use residential & permitted nonresidential uses should be encouraged and permitted in the C-1 Zone.
9. Diversify permitted uses in the Township's nonresidential zones, including and with particular attention to permitting residential use in the C-1 Zone, and flexible commercial/office/industrial permitted uses in the Township's OR and OR/I zones.
10. Evaluate the potential for permitting limited non-residential development that is compatible with residential and agricultural use, when proposed in conjunction with farmland and open space preservation.
11. Commercial uses that encourage tourism and are compatible with the Township's rural historic community character and adjoining land uses should be encouraged. A review of land use ordinance provisions should be undertaken to determine whether the local approval process may be streamlined to facilitate the establishment of such commercial uses.

IX. Historic Preservation Plan Element

This element of the Washington Township Master Plan responds to the requirements of a Master Plan as found in the Municipal Land Use Law at N.J.S.A. 40:55D-28(10), which provides for a historic preservation plan element as follows:

“A historic preservation plan element: (a) indicating the location and significance of historic sites and historic districts; (b) identifying the standards used to assess worthiness for historic site or district identification; and (c) analyzing the impact of each component and element of the master plan on the preservation of historic sites and districts;”

This is an update of the Historic Preservation Plan Element of the 1988 and 1995 Master Plan, which included an excellent description of the historical background of Washington Township. That description is included in this plan element with updated comments.

Washington Township is fortunate in that it still retains a wealth of visible and tangible resources from the past. These resources are a continual reminder that the present physical appearance and character of the Township has evolved over a time period of several millennia. In the following pages a short synopsis of what is known about Washington Township is presented. Within the last 250 years of growth and development, three particular themes are evident. One is the rural agricultural character of the Township, the second is the related growth of hamlets and villages dispersed throughout the Township, and the third is existence of small industries. Concluding this element is an inventory and assessment of present historic and cultural resources known today. The following pages are intended as a starting point to identify, recognize, and appreciate the wealth of resources of Washington Township for the purposes of general education and to develop sound and appropriate preservation planning strategies and practices.

Washington Township Prehistory

Prehistoric peoples are known to have occupied New Jersey for at least 10,000 years. Generally, our knowledge of their lifeways as well as of how and why these lifeways have changed over time is ever-increasing, as systematic, professional archaeological research in many parts of New Jersey continues to add to our understanding of aboriginal occupation throughout the State. The prehistory of Washington Township, however, is poorly known. To date, only seven sites in the entire Township have been identified. In addition, only a small number of isolated artifact finds have been reported. While these artifacts indicate that prehistoric peoples occupied Washington Township for many millennia, the information now available greatly under-represents prehistoric activity in the Township.

It is likely that Washington Township's prehistoric cultural resources are numerous and significant. The floodplain of the South Branch of the Raritan River, the forested upland

areas, and the numerous wetlands of the Township undoubtedly provided a resource-rich natural environment for prehistoric occupation and settlement. In terms of the potential for understanding the nature and extent of this occupation, Washington Township is very fortunate; limited development within the Township has allowed for the likely existence of many important, undisturbed prehistoric sites not yet located. There is evidence of that with artifacts discovered on an Elizabethtown Gas site near the South Branch of the Raritan River. Identification and documentation of prehistoric sites is essential in order that the rich prehistory of Washington Township be known and preserved.

Development History

In the several Morris County municipalities where agricultural traditions have continued to define the historic environment, the development of hamlets, small villages, and local cottage industries charted the evolution of the community more than any other factor. Nowhere is this more apparent than in Washington Township, where these historic factors are still very much in evidence today and continue to influence Township development.

German Valley Village The Township's dominant national strain in the 18th century was not English stock but German, a phenomenon treated from a genealogical perspective by Theodore Frelinghuysen Chambers in his 1895 book, Early Germans of New Jersey. The earliest important settlement in the Township was named "German Valley," a name that survived until the xenophobia of World War 1, when the present-day "Long Valley" replaced that name. The village portion of this valley is included in the National Register of Historic Places and is labeled therein as the German Valley Historic District. A map of this district is included in this element.

This fertile, 8-mile-long valley, watered by the South Branch of the Raritan River, became the nucleus of settlement in the Township. Today it includes some of the most representative architecture from the second half of the 18th century and the first quarter of the 19th century. Much of the land in this valley is still actively farmed.

Expanded German Valley Historic District -In April 1999, Gail L. Hunton, Historic Preservation Consultant, prepared a report entitled the German Valley Historic District Boundary Review. The project was undertaken in recognition of the fact "that German Valley is an unusually well preserved historic area in New Jersey," and the protection and preservation of "the agricultural landscape, historic structures and scenic views of the valley outside of the existing village historic district" assume a high local priority. The project was intended as a first step in expanding the German Valley Historic District.

The consultant reviewed existing historical documentation and cultural resources reports; and surveyed the project area to evaluate the cultural resources and land uses to submit a recommendation for a new or expanded historic district. The extent of the surveyed project area encompassed the following two areas:

- (1) The valley northeast of German Valley Historic District, bound by East Mill Road on the south; Naughtright Road, the village of Naughtright, and Coleman's Road on the north and east; and Fairview on the west.
- (2) The valley southwest of the German Valley Historic District, generally following the West Mill Road corridor, bound by Fairmount Road on the east; the abandoned railroad corridor on the west; and Beacon Hill Road on the south.

The area was evaluated on the basis of eleven landscape characteristics for the purpose of recommending expanded historic district boundaries. Written analysis and documentation for registration and designation on the historic register will be required. The significance of properties in the proposed expanded historic district was determined according to the National Register Criteria for Evaluation.

The report found that "(A)s a totality, the proposed expanded German Valley Historic District represents the cultural landscape of a distinctive historical agricultural community, a landscape that is unusually well preserved for New Jersey." The recommended boundaries of the expanded Historic District include historic, scenic and natural resources that are significant to German Valley's historic rural landscape and that contribute to the historic setting of the village. The recommended expanded District encompasses the German Valley village cluster, a significant collection of contiguous outlying farms, former farmland that is preserved as public open space, and natural areas along the river corridor. "As with most historic districts . . . there are a number of non-contributing properties that are included because their location within the overall district would make exclusion difficult."

The recommended boundaries of the historic district are shown on the map entitled "German Valley Historic District, Washington Township, Morris County, Proposed Expanded Boundaries" as shown and described in the Hunton Report.

The report divided the expanded historic district investigation into two study areas including (1) Valley Northeast of Historic District; and (2) the Valley Southwest of the Historic District. The Hunton Report distinguishes between contributing and non-contributing resources in these areas and potential exemption from building review.

In addition to the two delineated areas in the Hunton Report, existing non-residential development along the south side of East Mill (Route 24) east of the German Valley Historic District establishes a significant visual gateway that affects the quality and character of the entrance to the Historic District. These properties are predominantly of post war vintage in contrast to the older contributing elements of the Historic District. Conditions such as varying age, occupancy characteristics and site conditions indicate a strong likelihood that these properties will be expanded or improved to address a timeworn appearance or other site inefficiencies. The potential impact of redevelopment and site improvements to these properties, such as façade improvements, suggest a strong potential to influence the gateway to the District. The prominent location of these properties as a gateway to the commercial District and their contributing influence as

surrounding elements of the historic District warrant inclusion in the expanded German Valley Historic District. Historic District building controls and architectural review should apply to these properties to improve the visual environment, enhance this portion of the gateway to the Historic District, and extend an architectural theme consistent with the contributing elements of the Historic District.

Middle Valley Village A once bustling village, smaller than German Valley but larger than a crossroads hamlet, was Middle Valley, situated at the intersection of West Mill Road and Middle Valley Road, with the same relation to the South Branch of the Raritan River as German Valley.

In 1880, Middle Valley could boast of a population numbering no more than 60 people (130 persons inhabited German Valley). A traveler in that year could find in the village two blacksmith shops, a wagon shop, general store, post office, chapel, school and mill, as well as any number of small cottage industries.

Naughtright Village At the turn of the century, Naughtright competed with Middle Valley and in fact surpassed it in population for a while. The widening of the Raritan at Naughtright made possible some small-scale but thriving industry, including a sawmill, gristmill, and a foundry. As the nature of these industries suggests, they were tied to the local agricultural economy, and their markets never exceeded close-in boundaries. The expanded scale of later 19th century industry, together with the fact that the Central Railroad of New Jersey bypassed it, left Naughtright without further growth after the beginning of the 20th century, so that today its appearance is more modest than that of Middle Valley.

Other Villages Four Bridges and Stephensburg as well as Pleasant Grove all enjoyed some small measure of prosperity within their agricultural spheres, but today they are little more than crossroads. The greatest success story of any Washington Township village is Schooley's Mountain.

Schooley's Mountain Unlike the other villages and hamlets in the Township, Schooley's Mountain enjoyed a reputation far beyond the borders of Washington, because it was not tied to the local economy. Its fame as a spa made it one of the most written about places in New Jersey. The health-giving properties of its water were well known even to the aboriginal inhabitants, but its commercial success was at its height in the decades before and after the Civil War. The hotels and boarding houses built to accommodate its many guests are largely gone, as is the Schooley's Mountain Seminary, but the topography itself, as well as the ruins of the once fashionable Schooley's Mountain Presbyterian Church, the largest in the Township, still attest to its prominence.

State and National Preservation Program - National Historic Preservation Act (NHPA)

The National Historic Preservation Act of 1966 established a State/Federal partnership in historic preservation. A historic preservation fund was authorized for the identification, recognition, and preservation of historic properties. State responsibilities were placed

under the aegis of the New Jersey's Historic Preservation Office (HPO), located within the Division of Parks and Forestry, Department of Environmental Protection. The HPO is responsible for designation of historic sites and districts. HPO provides oversight and comment on the treatment of historic resources and development proposals that could impact on historic resources. HPO also provides local governments and private entities with technical assistance in identification and appropriate treatment of historic resources.

The National Historic Preservation Act of 1966, as amended, also provides for the institution of a Certified Local Government Program. In addition to offering financial and technical assistance to local governments for preservation purposes, this program provides for the enactment of local historic preservation ordinances and for the establishment of Historic Preservation Commissions. Washington Township adopted its historic preservation ordinance in 1986, which established the Township's Historic Preservation Commission and procedures for the treatment of historic resources in the Township. In January 1987, a Historic Preservation Commission was appointed. Soon afterwards, Certified Local Government status was awarded to Washington Township.

State and National Register Program

The National Register is the official list of America's cultural resources. Districts, sites, buildings, structures, and objects of significance in American history, architecture, archeology and culture on the national, state or local level are eligible for the National Register. According to HPO, The New Jersey Register of Historic Places is the official list of New Jersey's cultural resources. Created by the New Jersey Register of Historic Places Act of 1970, Chapter 268, Laws of 1970 - N.J.S.A. 13AB-15.128, the State Register is closely modeled after the National Register. The State Register nomination process is incorporated into the National Register Program. Both registers use the same criteria for eligibility, nomination form, and review procedures.

In New Jersey, State and National Register nominations may be prepared by individuals, cultural/historical organizations, governmental agencies, professional consultants, and historic sites surveyors. The nominations are reviewed locally by the Historic Preservation Commission and presented to the State Review Board, comprised of professionals in architecture, history, archeology, and related fields. If passed by the State Review Board, the nomination is sent to the SHPO. When the SHPO signs the nomination, the property is listed on the State Register. The nomination is then forwarded to Washington for consideration for the National Register.

The State and National Registers provide a degree of review and protection with regard to public encroachments. Inclusion on the National Register makes property owners eligible to apply for Federal matching grants for historic preservation, however funding is quite limited. Inclusion on the Registers may also enable owners of income-producing properties to qualify for tax act benefits under the Tax Reform Act of 1976.

Municipal Land Use Law

The Municipal Land Use Law (MLUL) defines an "historic district" as "one or more historic sites and intervening or surrounding property significantly affecting or affected by the quality and character of the historic site or sites." (N.J.S.A. 40:55D-4)

"Historic site" means "any real property, man-made structure, natural object or configuration or any portion or group of the foregoing of historical, archaeological, cultural, scenic or architectural significance".

N.J.S.A. 40:55D-65.1 provides that "a zoning ordinance may designate and regulate historic sites or historic districts and provide design criteria and guidelines therefor. Designation and regulation pursuant to this section shall be in addition to such designation and regulation as the zoning ordinance may otherwise require."

The MLUL also requires that after July 1, 1994, all historic sites and historic districts designated in the zoning ordinance shall be based on identifications in the Historic Preservation Plan Element of the Master Plan, unless the governing body adopts an inconsistent ordinance by majority vote of its full membership and records its reasons in the minutes and a resolution.

Washington Township contains an impressive display of historic resources that provides modern day evidence of a past way of life in Morris County. It is the purpose of the Historic Preservation Plan Element to identify the historic sites and districts within Washington Township and indicate their significance to the history, architecture, archeology, and culture of New Jersey.

The wealth of historic resources within Washington Township highlights the importance of the Historic Preservation Plan Element of the Master Plan. Formal recognition of these historic resources in the Master Plan assists the effort to protect and conserve the resources in a comprehensive manner, including the formulation and ongoing maintenance and improvement of appropriate ordinance regulations.

Historic District Overlay Zone

By far the greatest tool available to preserve the appearance of historic structures is the Historic District Overlay Zone (Ordinance RO-43-86) added in 1986. This ordinance established the Historic Preservation Commission, which has been given the power to designate sites of local significance and the authority to review exterior historic sites and buildings changes and to issue certificates of appropriateness. At the present time, the Overlay Zone includes German Valley Historic District, Middle Valley Historic District, Schooley's Mountain Historic District, the Neighbour House and the Flocktown Schoolhouse. Other districts, sites, and landmarks will be added as additional research on Washington's historic sites is completed.

Morris County Master Plan - Historic Preservation Element

A historic preservation element was prepared by the Morris County Planning Board and is summarized herein. The plan makes the following introductory statement regarding architecturally significant structures in the Township:

"Washington Township is even richer in 18th and 19th century stone architecture than is Montville, due its settlement by German emigrants. Many of the houses listed are not of great significance individually, but collectively they form an unusually rich picture of rural settlement patterns. (page 190)

The plan then identifies 37 historically and architecturally significant structures in Washington Township.

The County plan further explains that while it is possible to achieve historic preservation in Morris County, the trend is toward growth and expansion. It is cautioned that past errors be avoided - careless development, uninformed land use decisions and archaic transportation policies. Recommendations are made concerning actions on the municipal, county, state and federal levels.

The County plan recommends that local governments must formally incorporate preservation goals in official master plans and in the day-to-day functioning of its various departments and agencies. Local historical societies must turn their attention from documentation to active preservation by providing expertise to local government. The County Historic Plan Element also made recommendations for County, State and Federal government action.

National Register Properties in Washington Township

Historic areas and sites in Washington Township that are listed in the National Register include the Flocktown Schoolhouse, German Valley, Middle Valley and Schooley's Mountain Historic Districts. In addition, "Stone Houses and Outbuildings, " are also listed on the New Jersey Register of Historic Places.

The following New Jersey and National Registers of Historic Places listings include properties and historic districts in Washington Township for which a formal action was taken by the State Historic Preservation Officer or designee. The listings are current through the end of 2002, and the HPO will update these listings on a periodic basis to reflect ongoing additions and corrections.

The listings itemize the buildings, structures, sites, objects, and districts listed on the New Jersey Register of Historic Places (SR) and the National Register of Historic Places (NR). They also include resources that have received Certifications of Eligibility (COE), opinions of eligibility from the State Historic Preservation Officer (SHPO Opinion), or Determinations of Eligibility (DOE)

from the Keeper of the National Register. These properties and historic districts all meet the New Jersey and National Register criteria for significance in American history, archaeology, architecture, engineering or culture, and possess integrity of location, design, setting, materials, workmanship, feeling and association. Properties that have been entered on the New Jersey and/or National Registers of Historic Places are listed by their historic names, which may be different from their current names. Properties that have SHPO Opinions or DOE's are listed by their historic name, when known.

**NJDEP – Historic Preservation Office New Jersey and National
Registers of Historic Sites (Last Update: 2/13/2003)
Washington Township, Morris County**

Anthony-Corwin Farm

244 West Mill Road

SR: 3/9/1992

NR: 5/1/1992 (NR Reference #: 92000371)

(Stone Houses and Outbuildings of Washington Township MPS)

Craft-Clausen House

170 Fairmont Road

SR: 3/9/1992

NR: 5/1/1992 (NR Reference #: 92000372)

(Stone Houses and Outbuildings of Washington Township MPS)

Fairmont Historic District

CR 517 and 512; Farmersville, Saw Mill, Hollow Brook, Wildwood, Fox Hill, and Beacon Light Roads

SR: 10/23/1996

NR: 12/20/1996 (NR Reference #: 96001470)

See Main Entry / Filed Location: Hunterdon County, Tewksbury Township

Fleming Prehistoric Site (28-Mr-236)

SHPO Opinion: 7/31/1991

(Block 33, Lot 71)

Flock-Stephens Farmstead

244 Flocktown Road

SR: 3/9/1992

NR: 5/1/1992 (NR Reference #: 92000373)

(Stone Houses and Outbuildings of Washington Township MPS)

Flocktown Schoolhouse

Flocktown and Naughtright roads

SR: 9/13/1982

NR: 12/2/1982 (NR Reference #: 82001046)

German Valley Historic District

Portions of Fairview, East Maple and West Maple avenues; Main Street;

Fairmount, East Mill and West Mill roads, Long Valley

SR: 12/19/1977

NR: 7/14/1983 (NR Reference #: 83001606)

Former German Valley Schoolhouse

6 Fairview Avenue

COE: 4/19/2000

Middle Valley Historic District

West Mill Road, Middle Valley Road, and Beacon Hill Road
SHPO Opinion: 6/29/1989
SR: 12/15/1989
NR: 9/25/1990 (NR Reference #: 89002353)

Jacob Wise Neighbor House

143 West Mill Road
SR: 1/14/1991; NR: 2/22/1991 (NR Reference #: 91000111)

Leonard Neighbor Farmstead

177 West Mill Road
SR: 3/9/1992
NR: 5/1/1992 (NR Reference #: 92000374)
(Stone Houses and Outbuildings of Washington Township MPS)

Pottersville Village Historic District

County Route 512, Hill Street, and McCann Mill Road, Black River and Hacklebarney roads
SR: 8/9/1990
NR: 9/18/1990 (NR Reference #: 90001475)
See Main Entry / Filed Location: Hunterdon County, Tewksbury Township

Rarick-Kellihan House

358 Fairview Avenue
SR: 3/9/1992
NR: 5/1/1992 (NR Reference #: 92000375)
(Stone Houses and Outbuildings of Washington Township MPS)

Roadbed of the High Bridge Division of the Central Railroad of New Jersey

SHPO Opinion: 1/5/1990
(Previous SHPO Opinion 6/29/89)
See Main Entry / Filed Location: Morris County, Mount Olive Township

Schooley's Mountain Presbyterian Church

COE: 1/12/1996

Schooley's Mountain Historic District

Schooley's Mountain, Pleasant Grove, and Flocktown roads, and Heath Lane
SR: 4/17/1991
NR: 6/14/1991 (NR Reference #: 91000677)

Sharpenstine Farmstead

98 East Mill Road
SR: 3/9/1992
NR: 5/1/1992 (NR Reference #: 92000376)
(Stone Houses and Outbuildings of Washington Township MPS)

Stone Houses and Outbuildings of Washington Township MPDF

SR: 3/9/1992; NR: 5/1/1992

Trimmer-Dufford Farmstead

186 West Mill Road

SR: 3/9/1992
NR: 5/1/1992 (NR Reference #: 92000377)
(Stone Houses and Outbuildings of Washington Township MPS)

Union Stone Church (Ruin)

Fairview Avenue
SHPO Opinion: 2/20/1980; DOE: 4/3/1980

The Flocktown Schoolhouse, built in the third quarter of the 19th century, is the best preserved school of its period in Washington Township and features a particularly pristine interior. The school is an effective illustration of the local implementation of the then prevailing educational philosophy, in the last half of the 19th century. Practical and economical, the one room schoolhouse was especially well suited to small agrarian-based school districts. Used until 1929, Flocktown School also shows the longevity and popularity of the one room schoolhouse in rural New Jersey.

German Valley was settled in the mid-1700's by Dutch and German families. The early industrial age further increased population in German Valley. These early inhabitants were generally farmers and small businessmen ready to provide the food-stuffs and products necessary for living in and around the villages. Because of their indirect dependence on iron, however, German Valley suffered when, in the 1890's, the iron business collapsed when new technological methods were developed and huge lodes of ore were discovered in western Pennsylvania. As a result, German Valley regressed to its agricultural based economy. It developed very slowly in the first half of the 20th century.

The most significant event occurred during World War 1, when in response to the National fervor against anything German, the village changed its name to Long Valley; a title it still possesses.

Today, Long Valley (or German Valley) continues to project the character and integrity of a community dating back to the mid 19th-early 20th century, save an occasional lapse into the present via service stations and modern commercial structures.

The agricultural heritage of the village is memorialized in two surviving stone barns and the prominence of farmland proximate to Long Valley. Also, a stone schoolhouse still stands as part of the German Valley Historic District and serves as a museum.

Plan for Historic Preservation

The historic heritage of Washington Township is still visible today with many structures that date back to the 1700's and early 1800's. Three historic districts have been included in the Historic District Overlay Zone - the German Valley Historic District, and the Middle Valley Historic District, Schooley's Mountain Historic District. As was noted in the background study, there are other individual sites and areas located in the Township that have historic significance. They are identified on Map 17, and listed on Table 28.

In 1987 the Township Planning Board adopted a Long Valley plan which provided background information and analyzed alternatives regarding the future development and restoration within the German Valley Historic District. A summary of that plan follows:

The study specifically concerns the target area of the German Valley Historic District located in the southern side of the South Branch of the Raritan River. This area comprises approximately thirty acres and contains forty-seven buildings; twenty-two of which are principal buildings, the remaining are accessory buildings.

The plan proposes that improvements be made to public way; that overhead utilities be hidden, that brick sidewalks be installed throughout and that special street signs and furniture be used in the district. A recommendation was made for additional off-street parking located so as to give easy access to the greatest number of the commercial establishments and services located in the target area. Off-street parking should not threaten historic resources. The stone arch bridge spanning the south branch of the Raritan River should be given special consideration when planning for the design of the vehicular circulation patterns. It is recommended that a specialized engineering study be undertaken to determine if there are any structural weaknesses within the bridge.

It is further recommended that actions be taken by the private sector in order to preserve and maintain a pattern of economic and social change that does not threaten the integrity of this historic areas. For example, a walking tour is suggested as a joint public and private effort to heighten awareness of this historic district. Tour brochures should be available to the general public at local businesses and in the Municipal Building. Other recommendations are the establishment of a nonprofit organization to help guide the development within the historic district and the rehabilitation of existing structures. Lastly, the plan called for zoning changes and creation of facade easements.

The Washington Township Historic Preservation Commission functions to review development in the historic district as well as development in or near other recognized historic sites and will help implement the recommendations of the historic district plan. Some of the policies of this plan are as follows:

A. Preserve Local Architectural Identity - Farmsteads and Out-Buildings.

One very important task facing historic preservationists in Washington Township is the identification and safekeeping of farmsteads tied to the agricultural history of the Township. While dwelling houses often remain, even when properties are developed, out buildings such as barns, chicken coops, corn cribs, tractor sheds, privies, smoke houses, spring houses, and out kitchens to name a few, are eliminated. These ancillary buildings, often limited in scope for adaptive reuse, are disappearing at an alarming rate. Often these out buildings define clearly the lifestyle and activities of the farmstead and community to which they belong. Washington Township is addressing this problem by participating in the State Farmland/Preservation Program, creating an Agricultural Overlay Zone and implementing a Rural Open Space Cluster Ordinance. All three programs have the potential to protect National Register eligible properties. Currently,

several National Register properties from the "Early Stone Agricultural of Washington Township" nomination are also in the Farmland Preservation Program.

B. Promote Income Incentive.

The "Bed and Breakfast" ordinance is in effect in Washington Township continuing a long-standing tradition of guest houses found in and around Schooley's Mountain during the nineteenth century. B&B's are restricted to local Historic Overlay Zone districts and properties, enabling owners the option of an income producing business from their home. B&B's also encourage adaptive reuse, especially for larger, harder to maintain homes and larger tracts such as farmsteads where both property and outbuildings are being maintained.

C. Creative Adaptive Reuse. Abandonment of historic properties is one of the greatest threats to a building. Adaptive reuse is essential in historic communities. Modern uses, sympathetically joined with the retention of salient historical features of the building/property, will ensure its very life. The HPC welcomes and encourages creativity in the adaptive reuse planning by an applicant.

D. Retain Appropriate Historic Roadways. The circulation element of a community can impact greatly on historic districts, individual sites, and on National Register eligible properties. Implementing 'rural, historic roadways' that specifically retain features found within i.e. narrow roads, unpaved roads, single lane and/or architecturally significant bridges and mature trees, would increase the Township's commitment to historic preservation.

E. Residential and Non-Residential Architectural Oversight. Recognizing the effect of increasing development pressure and sprawling development patterns that tend to destroy the farm economy, and fracture the historic and scenic character of the countryside, this plan recommends an expanded German Valley Historic District Overlay Designation. German Valley is an unusually well preserved historic area in New Jersey. The protection and preservation of the agricultural landscape, historic structures, scenic views of the valley outside of the existing village historic district and enhancement of gateways to the District, all assume a high local priority. Development and redevelopment within the Township's Historic Districts will significantly affect the quality and character of the historic sites and the character of the Districts. Architectural review under the provisions of the Historic Preservation Overlay Zone is recommended to ensure that community character is protected and enhanced as land uses change and existing land uses are redeveloped.

Recommendations

The 1988 & 1995 Master Plan included recommendations proposed to implement the goals and objectives of the Historic Preservation Plan. The recommendations are repeated and supplemented here as follows:

1. Subdivision Applications:
 - Encourage maintaining original structures.
 - Encourage saving landscape details, including rock walls.
 - Buffer zones around historical sites, where appropriate and possible.
 - Vistas and lines of sight should be preserved.
 - Landscaping should be in keeping with historic structures or historic ways of landscaping.
 - Road widening in historic district or in front of historic properties should be done in a way to preserve front yards.
 - Investigate potential prehistoric and/or historic resources in a project site.
2. Site Plan Applications:
 - Adaptive reuse should be encouraged.
 - Special consideration should be given to: landscape, parking, signs, lighting, facade materials and use of structure to ensure the plan is harmonious with existing historic sites and buildings.
 - Consider effects on attendant archaeological resources.
3. Preserve historically significant industrial sites such as mine site and lime kilns; also bridges, open fields, hedgerows, farmsteads, cemeteries (private and church), ruins, large trees, archaeological resources, and scenic views.
4. Preservation Commission to maintain memberships in appropriate State and National organizations. Maintain certified local government status.
5. Recognize bed and breakfast use may be valid adaptive reuse for historic structures for Register or Register eligible buildings.
6. Encourage tax exemption and/or abatement ordinance for local historic landmarks when restoration is extensive and approved by the Preservation Commission.
7. Adopt local historic road designation (see Circulation Plan).
8. Recognize that the views from the gateways of the community (East and West Mill Roads, Route 24), establish the character of the community, and are vital assets which must be preserved.
9. Designate an expanded German Valley Historic District in accordance with the boundaries identified in the 1999 Hunton Report, including the non-residential properties situated on the southerly side of East Mill Road east of the Historic District, as shown on the map entitled German Valley Historic District, Proposed Expanded Boundaries, dated October 2002.

X. Farmland Preservation Plan Element

Washington Township adopted the Farmland Preservation Plan Element of the Master Plan on April 26, 2000 (appended to this section). The plan was prepared in accordance with paragraph (13) of Section 19 of P.L. 1975, c.291 (C.40:55D-28(13)), which provides for

“a farmland preservation plan element, which shall include: an inventory of farm properties and a map illustrating significant areas of agricultural land; a statement showing that municipal ordinances support and promote agriculture as a business; and a plan for preserving as much farmland as possible in the short term by leveraging monies made available by P.L. 1000, c. 152(C.13:8C-1 et al.) through a variety of mechanisms including, but not limited to, utilizing option agreements, installment purchases, and encouraging donations of permanent development easements.”

At the time of adoption of the Farmland Preservation Plan Element, Washington Township reported over 2,500 acres of the Township's 28,864 acres as preserved farmland. The goals and objectives, and strategies identified in the adopted 2002 Farmland Preservation Plan remain appropriate to Washington Township's farmland preservation goals and objectives.

The April 2000 Farmland Preservation Plan targeted the Black River Project Area located in the southeasterly portion of the Township as its priority for farmland preservation. Since that time, the Township has expanded the target area to include the Long Valley Project Area, which is where the highest concentration of preserved farmland exists in Washington Township. The attached map entitled “Morris County Agriculture Development Board Planning Incentive Grant Project Areas” identifies preserved farms, pending applications, farms targeted for preservation and farm assessed lands in Washington Township. The Township's project areas are also delineated on the map.

Washington Township and the Morris County Agriculture Development Board with the assistance of the State Agriculture Development Committee have implemented the farmland preservation recommendations and strategies that were adopted in the 2000 Farmland Preservation Plan. The result is that there are now 45 preserved farms in Washington Township totaling 3,328 acres of land (see table entitled Morris County Agriculture Development Board list of Permanently Preserved Farms – Washington Township, dated October 1, 2003). This expanded the amount of preserved farmland by approximately 800 acres in just three years. The Morris County Agriculture Development Board reports an additional 551.5 acres of pending farmland preservation projects currently active in Washington Township in 2003.

2002 tax assessment records identify a total of 9,083 acres of farm assessed land in Washington Township (July 2002), which represents more than 30% of the Township's land mass. Adding the amount of preserved farmland to all farm assessed land yields a total of 12,411 acres of agricultural land in the municipality, or approximately 43% of the

all land in Washington Township. Farm assessed land that has not been preserved is under the greatest threat of development of all land in the Township, particularly in light of the heightened regional pressure exerted on Washington Township's land base for new residential development opportunities.

Washington Township places a high priority on farmland preservation, and maintaining the viability of agriculture as an industry and a way of life. Protecting the Township's remaining agricultural resources is critical to achieving these farmland preservation objectives. This land use priority is advanced through policies and strategies identified in the Land Use Plan, Conservation Plan and Economic Plan Element of the Master Plan, which also recognize the importance of farmland as regional resource. The Township will have to continue to aggressively implement the strategies of the Master Plan to protect its farmland base and prevent the conversion of this precious resource to nonagricultural uses.

The adopted Farmland Preservation Plan element of the Master Plan identifies a series of policies and strategies for farmland preservation that work in concert with other elements of the Master Plan. These policies and strategies have achieved great success to date. This master plan recommends the implementation of land use, conservation resource and economic development strategies that are designed to work in concert with the farmland preservation plan to permanently protect Washington Township's farmland resources that are under threat of development, and maintain the viability of agriculture.

XI. Housing Element and Fair Share Plan

Washington Township's adopted Housing Element and Fair Share Plan was originally certified by the Council on Affordable Housing (COAH) on February 16, 1988. Washington Township received interim substantive certification on March 14, 1994. Washington Township's first round obligation was 149 that the Township planned to address through new construction.

Washington Township adopted a housing element and fair share plan addressing its 12-year cumulative obligation (1987-1999) on February 13, 1995 and petitioned for substantive certification on February 22, 1995. Washington Township Housing Element and Fair Share Plan received substantive certification from the Council on February 7, 1996. The Housing Plan Element was subsequently amended in September of 1998, and again in March 22, 2000 to permit the Township to undertake a write down/buy down program to assist in meeting its constitutional affordable housing obligation.

In December of 2001, Washington Township applied to the COAH to extend its substantive certification, which was to expire in February of 2002. Washington Township's substantive certification was extended by on January 9, 2002, which provides for an extension for up to one year after the effective date of COAH's third round regulations. COAH has proposed new regulations. The new regulations may be adopted after December 6, 2003, but it is anticipated that the rules will be adopted sometime in early 2004. The Township intends to adopt a housing element and fair share plan addressing the municipal third round obligation on or before the date the extended substantive certification will expire.

XII. Implementation Plan / Master Plan Recommendations

Land Use Plan:

- Disturbance of land with slopes of 30 percent or greater is not permitted (this is a current standard).
- Limited grading only (no structures, roads or driveways) is permitted in areas with slopes of 25 percent to less than 30 percent. This grading and disturbance is for such items as side slopes for roads, or grading for structures which are themselves not located in slope restricted areas.
- A requirement for an approved grading plan for all activities in areas of 15% to less than 25% slope (this is a current standard).
- A 1,000-sq. ft./lot steep slope cumulative exception should be added to the ordinance for disturbance of isolated steep slopes where activities are limited by ordinance.
- Wetland and transition area requirements, or stream encroachment regulations, of the NJDEP regulate development in proximity to wetlands and surface water. Such regulations sometimes result in the unwanted effect of providing access to areas that should remain undeveloped. Permitted development densities should be reduced and mandatory clustering provisions should be amended so that reduced lot sizes are required when wetland crossing, stream encroachment and floodplain development can be avoided.
- Stream and surface water setbacks should be increased from all watercourses that are currently in effect where no wetlands are involved to provide the maximum protection possible for stream corridors and surface water quality throughout the Township.
- There should be a minimum improvable area for each single-family residential lot created. That is a contiguous area within the required lot setbacks, and unencumbered by wetlands, transition areas, stream corridors, floodplains, open waters and restricted steep slopes. The Planning Board should reexamine the current standard of 7,500-sq. ft. minimum improvable lot area based upon its effectiveness in protecting environmental constraints, as improvable lot area is defined in the ordinance.
- The maximum intensity of development in non-residential zones is adequately regulated by the floor area ratio (F.A.R.) restrictions, setbacks, lot coverage, and maximum height regulations.
- Ordinance standards should be established and implemented for architectural design of new development to maintain a desirable visual environment, encourage creative development techniques, protect and enhance the Township's rural ambiance and enhance historic settlements.
- The multi-family zones density restrictions should be based on the number of dwelling units per gross acre. That gross acreage should be the land which is devoted to the residential use.
- Multi-family zones which include a component set-aside for low and moderate income households should exclude from gross acreage areas of wetlands, transition areas, floodplains, stream corridors and slopes in excess of 15 percent, as allowed in COAH's regulations.

- Maintain a ridge protection ordinance, which prohibits development/disturbance within a specified number of feet from a ridgeline. The intent of such an ordinance is to protect the pristine view of the mountains from the valley areas in and around the Township, and to minimize the potential for erosion, sedimentation and ensure the survival of treelines and vegetation in Ridgeline areas.
- Maintain the limestone protection ordinance which requires an investigation program of the geologic conditions in certain areas of the Township when development applications are submitted. This Master Plan recognizes that there are valuable water resources in the community which are in need of protection. There is also the potential for geological conditions such as faults, voids, and sinkhole formation which could pose public health and safety concerns. The limestone protection ordinance establishes an overlay zone that corresponds to those areas of the Township suspected to have, or known to have limestone, carbonate rock formations. The ordinance details site investigation requirements, and requirements for proposed engineering solutions, measures or alternatives if warranted.
- Establish a series of rural conservation design guidelines to form the basis for ordinance standards, as outlined below:
 - Locate construction to preserve the better quality soils for agriculture
 - Encourage construction on the edge of the fields and orient driveways along hedgerows and the edge of woodlands to minimize intrusion on agricultural lands
 - Encourage road design and layout to conform to the topography
 - Preserve prime woodlands and hedgerows
 - Encourage planted buffers using native species arranged to resemble existing woodland patterns
 - Locate new development to maintain significant views and vistas and the landscape's rural character
 - Encourage common driveways; particularly on wooded, or sloped terrain to minimize interruptions to traffic flow
- Recommended Zoning Techniques – The Land Use Plan combines several conservation subdivision approaches to address the Township’s Agricultural retention and natural resource conservation objectives. Conventional suburban subdivisions have been eliminated, as Washington seeks to prevent the wholesale conversion of the Resource Conservation District to suburban residential development. Recommended alternatives are prioritized based on their ability to meet conservation and agricultural retention objectives, with residential densities designed to encourage techniques most effective in meeting local goals, such as:

Conventional subdivision

- 20 acres/unit

Open Lands Subdivision

- 10 acre/unit density
- 80,000-sq. ft. minimum lot area
- 75% open lands with deed restriction against further subdivision for non-agricultural purposes

- 2/3 of the open lands to include priority farmland soils and/or mature woodlands

Cluster Subdivision

- 10 acre/unit density
- 80,000-sq. ft. minimum lot area
- 75% farmland/woodland open space with deed restriction against further subdivision for non agriculture, woodland or conservation resource management purposes
- 2/3 of the open lands to include priority farmland soils and/or mature woodlands

Lot Averaging

- 10-acre/unit density
- 80,000-sq. ft. minimum lot area
- 50% of lots created between 80,000-sq. ft. and 120,000-sq. ft. in area
- Establish an “R-1-T” Single-Family Residential/Transitional District for the R-1 District located at the intersection of Newburgh Road and former Route 24, to permit a narrow range of nonresidential conditional uses for those R-1 properties developed residentially, but located adjacent to the OR/I and the R-MDU Districts.
- In the OR/I District in Long Valley, it is recommended that the Township establish a zoning overlay to permit the development of age-restricted housing to redevelop the now defunct Welsh Farms facility, which is served by the public sewer system and includes high-yielding potable wells on site.

Circulation Plan:

- Road #1 - The Long Valley bypass around the Village of Long Valley remains a very important traffic and circulation improvement for the community and it is the primary recommended roadway improvement of this plan.
- Road #2 (formerly Road #5 in 1995 Circ. Plan) -The local road (William Way) which was constructed as part of a subdivision should be considered for connection to West Springtown Road, as was planned in the prior Master Plan.
- Road #3 (formerly shown as #14 in 1995 Circ. Plan) – This roadway is proposed as a potential connection between Drakestown Road and Naughtright Road. This connection would improve circulation when the new elementary school is constructed along Naughtright Road.
- A historic design theme should be developed by the Township identifying specific standards to guide the design and construction of future road improvements undertaken in the Township, whether undertaken by public agency or private entity.
- Develop a Sidewalk Plan to supplement the Circulation Plan. The plan should identify a comprehensive network of sidewalks, pedestrian paths and bicycle routes to link residential areas with local points within the community such as Long Valley Village, Schooley's Mountain Park, Rock Spring Park, the Library, Palmer Park and other parks and the schools.
- The Township should investigate the feasibility and demand for a commuter park/ride facility on Bartley Road near the easterly municipal boundary.

Community Facilities Plan:

- Emergency Services 5-year Plan – Cost saving advantages can be shared with regional towns, by projecting and /or sharing in equipment purchases, training requirements and knowledge of available equipment. Township needs should be considered in a “regional” light, as Washington Township and surrounding communities depend on mutual aid to meet emergency service needs.
- Township should acquire land for a community center, which may include a community pool with facilities for cultural activities, such as a theatre. The minimum site requirements are 15 – 20 acres of unconstrained land and the facility should be approximately 30,000 – 40,000-sq. ft. A location in the Valley, near the middle school and the downtown has been identified as the preferred location in for this facility. Washington Township owns development rights on a site adjacent to the middle school, which may be an appropriate location for this facility.
- With the 2003 passage of the schools bond referendum, school capacity deficits will be eliminated and the delivery of K-8 education improved in the community.
- Overcrowding of the District’s two high schools is the result of capacity deficits within the West Morris Regional High School District. The possibility of building a new school to address capacity deficits in the District has given way to current plans, which will be the subject of a bond referendum in March 2004. The Board of Education has made provisions to address the immediate enrollment growth for the next two years by adding classrooms to both high schools. To accommodate enrollments in the next five to ten years, adding on to existing facilities may be necessary.
- An immediate need exists to connect the West Morris Central High School to the Washington Township Municipal Utilities Authority centralized wastewater treatment facility in Long Valley to replace the outdated on-site septic system, which needs to be replaced due to capacity constraints.
- Growth has slowed dramatically in recent years due to conservation zoning strategies that have been implemented by Washington Township, which are focused on farmland and open space preservation. This decrease in growth from the “boom” years of the 1980’s and 1990’s may reduce the need for more school expansion in the future if the school-age population levels off.
- The Office of Emergency Management reports that efforts are underway to institute a process whereby all Washington Township websites (i.e. schools, library, fire, police, etc) will have a single button showing current emergency status, that will link all those sites to the OEM web page in the event of an emergency to provide directions and/or instructions for how residents should act in response to the emergency.

Utility Services Plan:

- It is recommended that the Township investigate inter-municipal arrangements, where possible, to accept wastewater flow from growth areas currently in need of wastewater treatment. Under these conditions, it will be important that only existing developed areas and areas planned for growth will be permitted to connect to collection lines.

- Identify well head protection areas and sources of potential contamination to groundwater within those areas assume a high priority. It is recommended that the HMUA and WTMUA undertake a comprehensive well head protection program delineating well head protection areas for all wells and identifying strategies for protecting these areas and emergency response procedures to respond to a potential contamination event.

Open Space and Recreation Plan:

- Aggressively expand the supply of passive open space and active recreation parkland in the Township;
- Provide for the active recreation needs of the Township residents of all ages;
- Diversify the type of active recreation facilities available to Township residents;
- Protect and preserve the remaining environmentally sensitive lands in conjunction with farmland in the Township;
- Protect and preserve the large contiguous tracts of forested land that contribute to a diversified ecosystem and the protection of surface and ground water quality;
- Protect and preserve Washington's unique landscape, historic properties and viewsheds that establish Washington's essential character; and
- Establish a recreation complex including an indoor community recreation facility and outdoor community pool in a central location in the Township.
- Adopt this Open Space and Recreation Plan, include it as an element in the Township's Master Plan and submit it to NJDEP Green Acres Program for a consistency determination with the Green Acres Incentive Planning Program.
- Prioritize acquisition targets in consultation with the Open Space Committee. Decide whether properties can be preserved by acquisition of fee or easement or whether some other action may be taken or pursued, i.e. donation.
- Begin a dialogue with adjoining municipalities to coordinate open space preservation across municipal boundaries.
- Update the list of properties 10 acres or larger to target as potential acquisitions.
- Implement mandatory clustering for parcels over 40 acres. Draft and implement trees preservation ordinance.

Interim to five years:

- Create an historic scenic overlay district to preserve the viewshed.
- Pursue acceptance into and become designated a "Crossroads of the American Revolution" municipality.
- Work in partnership with Watershed Management Areas's 1 and 8 to preserve critical areas.
- Educate the owners of large private land holdings and the residents of Washington Township of the importance of preserving environmentally critical areas of their land and encourage protection.

Conservation Plan:

The following activities are recommended to protect farmland soils and agricultural activities and preserve the ecological function of agricultural areas.

- Implement strategies to retain large contiguous areas of farmland and promote the long-term viability of continued agriculture, such as mandatory clustering and open lands zoning to concentrate the loss of farmland to non-agricultural use areas and retain large contiguous areas of farmland.
- Continue to vigorously pursue farmland preservation through County and State easement purchase programs. Utilize alternative means of protecting agricultural areas including easement donation and acquisition, purchase of development rights, direct easement purchase, and other creative strategies to preserve as much farmland as possible and the Township's prized agricultural base.
- Establish standards for agricultural buffers to limit potential impacts between agricultural activity and non-residential land uses.
- Encourage agricultural activities that keep land open and preserve the natural hydrologic cycle of groundwater recharge to maintain groundwater supplies and the availability of water for agriculture.
- Establish impervious coverage limits for agricultural land uses that respect the needs of agriculture, but maximize groundwater recharge and limit stormwater runoff volumes entering streams and watercourses.
- Permitted residential densities should be reexamined to determine whether the resulting open land set aside through mandatory clustering are sufficient to maintain viable agricultural opportunities in areas containing important farmland soils.
- Required open space/open lands set-asides should be increased to preserve as much viable agricultural land as possible.

The following activities have been identified to protect groundwater aquifers and ground water quality and quantity in the Township.

- Protect aquifer and groundwater recharge areas and prevent contamination of ground water resources to maintain safe drinking water supplies.
- Protect groundwater quality and quantity through the proper management of aquifer recharge areas, wetlands and their transition areas and limestone and fractured bedrock groundwater aquifers.
- Reduce permitted residential densities to limit the potential for water quality impairment and to maximize groundwater recharge capacity.

The following activities are identified to prevent groundwater contamination in the Township.

- Map wellhead protection areas for public and private wells and establish a Township-wide wellhead protection program with wellhead protection standards to prevent contamination of wellhead areas.
- Target areas around groundwater contaminated sites for open space protection.
- Reduce permitted residential densities in groundwater contaminated areas, and establish noncontiguous clustering as a development technique to provide a mechanism to direct development away from groundwater contaminated areas.

In order to mitigate potential impacts to the Township's surface waters, the following management approaches are recommended:

- Implement innovative strategies to protect water quality to limit the impact of stormwater runoff on floodplains, watercourses, streams and rivers, and maximize groundwater recharge.
- Encourage the use of creative stormwater management techniques and secure an exception from the Residential Site Improvement Standards, if necessary, to implement local stormwater management standards that are more stringent than currently required by State law to protect the Township’s high quality waterways and downstream water quality, which is vital to the general welfare of the residents of the region.
- Preserve and protect the high quality trout production and trout maintenance waterways in the Township from point and non-point source pollution. Wherever appropriate, require Best Management Practices (BMP’s) such as, but not limited to:
 - Buffering
 - Created wetlands
 - Multistage stormwater treatment systems
 - Drywell infiltration systems for groundwater recharge
 - Extended basins
 - Bioretention plantings in basins
- Implement the adopted greenway system that protects environmentally sensitive features by placing conservation easements over floodplain areas, stream corridors, wetland and their transition areas.
- Reduce permitted residential density and impervious coverage standards to minimize potential negative impact to surface waters from non-point pollution.

The following strategies are proposed to protect forested critical habitat and woodland areas.

- A woodland conservation ordinance should be adopted to minimize the loss of critical forest habitat.
- “Keystone forests” should be identified including mesic and upland forests, mature forests and wooded areas that provide linkage and connectivity among protected forests and environmentally sensitive land features. Keystone forests should be protected and maintained as a continuous network of diverse forest habitat throughout the Township.
- Performance standards should be established limiting the extent of forest removal, based upon forest type. Priority should include forested slopes, critical habitat for threatened and endangered species, 100 year floodplains, wetlands, stream corridors and slopes 15% or greater.
- Standards should be established to maintain 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 forest conditions (i.e. 300’ or greater).
- Development should minimize the disturbance of critical forest habitat.
- Reduce permitted residential density and increase required open space/open lands set asides to limit loss of woodlands and forests and to promote the retention of critical forest habitat.

The following activities are identified to protect and preserve these species.

- Implement the adopted greenway system that protects and unifies environmentally sensitive features by providing conservation easements over floodplain areas, stream corridors, steep slopes, ridgelines and wetlands and their transition areas.
- Protect, critical habitat including woodland and grassland areas, unique habitat and threatened and endangered species habitat areas through the placement of these areas in conservation easement.
- Prepare a threatened and endangered species and declining species study of the Township by coordinating community efforts and State data sources to develop an inventory of species to be protected and strategies for maintaining essential habitat.
- Consideration should be given to the reduction of permitted residential densities to promote the maintenance and preservation of critical habitats.
- Utilize zoning strategies and techniques such as clustering, lot size averaging, non-contiguous clustering and open lands zoning to offer a range of development options for the maintenance and protection of interconnected natural lands, air and water systems, critical habitat, particularly threatened and endangered and declining species habitat areas, and large contiguous areas that support biological diversity.
- Wherever possible, limit disturbance and development of forests, meadows, grassland areas, steep slopes, ridgelines, scenic vistas and views, streams and their corridors, groundwater aquifers and recharge areas, wetlands and swampy areas, unique landscapes, and agricultural areas.
- Require mitigation measures such as reforestation, meadow restoration, natural hedgerow treatments, and context sensitive buffering and landscaping to limit impacts to these areas resulting from development.
- Establish and maintain reduced land use densities and intensities, which respect the capacity of the environment to sustain development and the natural resource conservation and environmental protection objectives of this plan.

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

- Review and revise, if necessary, standards that relate the intensity of development to the slope gradient.
- Develop standards that limit tree removal and soil disturbance on steep slopes.
- Avoid the disturbance of steep slopes and protect these areas through the placement of conservation easements on these areas at the time of subdivision.

Protect the unique scenic attributes that establish Washington Township's essential character through the following actions.

- Identify and protect the unique views and vistas that are intrinsically linked to the rural and historic landscape, including, but not limited to important roadside viewsheds and scenic vistas for the protection of these features.
- Protect scenic views and vistas through the careful placement of new development, and require mitigation where practical when scenic views and vistas are to be compromised by new development.
- Protect scenic views and vistas through the placement of these areas in conservation easements at the time of subdivision or whenever development is approved.

- Adopt a comprehensive scenic mountain, ridgeline, hillside and steep slope ordinance to protect Washington’s values distant views of these land features.
- Consideration should be given to reducing permitted densities on steep slope, hillside and ridgeline areas to protect these features from degradation and compromise by development.

Mitigate air pollution and promote energy conservation include the following:

- Arrange development in compact forms to minimize energy consumption and retain existing wooded areas and large contiguous areas, by utilizing development techniques such as clustering, lot size averaging.
 - Encourage multi-use development forms in locations such as commercial districts and centers that will maximize utilization of the land and reduce reliance on the automobile.
 - Encourage pedestrian and public transit and linkages wherever practical and encourage ridesharing and alternative transportation systems (buses, car and van pooling, bicycling, and walking).
 - Reduce the need for vehicular trips by facilitating better interconnections among residential, commercial, office, and recreational uses.
 - Encourage energy conservation through subdivision design, building design, building orientation, and the evaluation of microclimate conditions such as solar access and wind direction.
 - Design bikeways, pedestrian walkways and other routes to maximize opportunities for non-motorized travel in existing and new development.
 - Recommend landscaping standards that provide buildings with maximum solar access, shading, and wind protection.
 - Fully implement the Township’s recycling ordinance as it pertains to all solid waste generating land uses in the community. Review and revise the Township’s recycling ordinance as necessary to ensure that a workable long-term recycling program can be established in the Township of Washington. .

Municipal Environmental Specialist

- Create the position of Environmental Specialist

Economic Plan:

Economic Plan recommendations have been formulated in consideration of the findings of the Master Plan, when viewed in the context of the Master Plan in its entirety.

1. Areas zoned for non-residential office-research use should be encouraged for that development.
2. Appropriate home occupations should be permitted where they do not impact residential character of the property and neighborhood.
3. The Long Valley and Northwest economic development zones in the Township should remain the commercial and employment centers of the community.

4. Traffic congestion in downtown may be relieved if the planned Long Valley bypass is constructed. Bypass planning should be aimed at protecting and invigorating commercial activity and encouraging tourism downtown, as well as improving traffic circulation around downtown.
5. Age-restricted housing is a high value land use that will diversify the type of housing available to township residents and may serve to relieve dependence on the single-family dwellings for fiscal stability. This type of land use should be encouraged where it can be appropriately accommodated with available water, sewer and circulation infrastructure.
6. Traditional forms of agriculture, particularly those forms of agriculture that may encourage tourism, should be promoted. New forms of agriculture that are compatible with adjoining land uses should be encouraged. A review of land use ordinance provisions should be undertaken to determine whether the local approval process can be streamlined for agricultural uses.
7. Investigate whether a special category of limited commercial-home occupation uses that are compatible with agriculture and residential use should be permitted on farms to permit farmers to supplement farm income and thereby help sustain agriculture as a way of life in the Township.
8. Mixed-use residential & permitted nonresidential uses should be encouraged and permitted in the C-1 Zone.
9. Diversify permitted uses in the Township's nonresidential zones, including and with particular attention to permitting residential use in the C-1 Zone, and flexible commercial/office/industrial permitted uses in the Township's OR and OR/I zones.
10. Evaluate the potential for permitting limited non-residential development that is compatible with residential and agricultural use, when proposed in conjunction with farmland and open space preservation.
11. Commercial uses that encourage tourism and are compatible with the Township's rural historic community character and adjoining land uses should be encouraged. A review of land use ordinance provisions should be undertaken to determine whether the local approval process may be streamlined to facilitate the establishment of such commercial uses.

Historic Preservation Plan - Recommendations

1. Subdivision Applications:
 - Encourage maintaining original structures.
 - Encourage saving landscape details, including rock walls.
 - Buffer zones around historical sites, where appropriate and possible.
 - Vistas and lines of sight should be preserved.
 - Landscaping should be in keeping with historic structures or historic ways of landscaping.
 - Road widening in historic district or in front of historic properties should be done in a way to preserve front yards.
 - Investigate potential prehistoric and/or historic resources in a project site.
2. Site Plan Applications:
 - Adaptive reuse should be encouraged.

-Special consideration should be given to: landscape, parking, signs, lighting, facade materials and use of structure to ensure the plan is harmonious with existing historic sites and buildings.

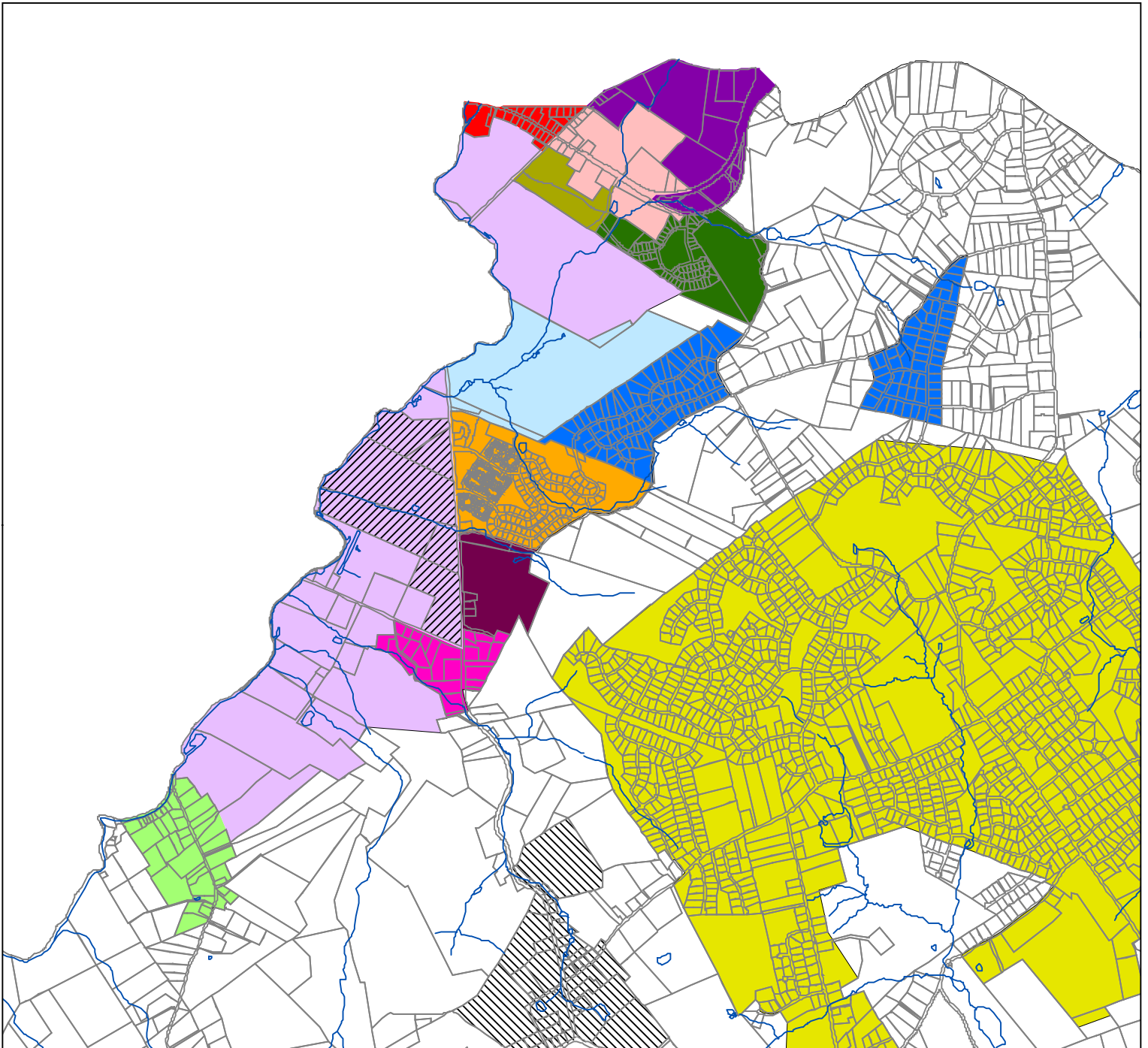
-Consider effects on attendant archaeological resources.

3. Preserve historically significant industrial sites such as mine site and lime kilns; also bridges, open fields, hedgerows, farmsteads, cemeteries (private and church), ruins, large trees, archaeological resources, and scenic views.
4. Preservation Commission to maintain memberships in appropriate State and National organizations. Maintain certified local government status.
5. Recognize bed and breakfast use may be valid adaptive reuse for historic structures for Register or Register eligible buildings.
6. Encourage tax exemption and/or abatement ordinance for local historic landmarks when restoration is extensive and approved by the Preservation Commission.
7. Adopt local historic road designation (see Circulation Plan).
8. Recognize that the views from the gateways of the community (East and West Mill Roads, Route 24), establish the character of the community, and are vital assets which must be preserved.
9. Designate an expanded German Valley Historic District in accordance with the boundaries identified in the 1999 Hunton Report, including the non-residential properties situated on the southerly side of East Mill Road east of the Historic District, as shown on the map entitled German Valley Historic District, Proposed Expanded Boundaries, dated October 2002.

I. Land Use Plan - Inset A

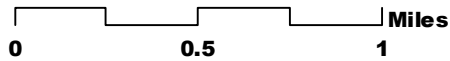
**Washington Township
Morris County, New Jersey**

December 2003



Legend

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|------|---------|--------|
| C-1 | PUD/R-2 | R-MDU |
| C-2 | R-1 | RCH |
| GC/R | R-1-T | RCH-SC |
| H | R-1/R-2 | SCHO |
| OR | R-20 | |
| OR/I | RCD | |



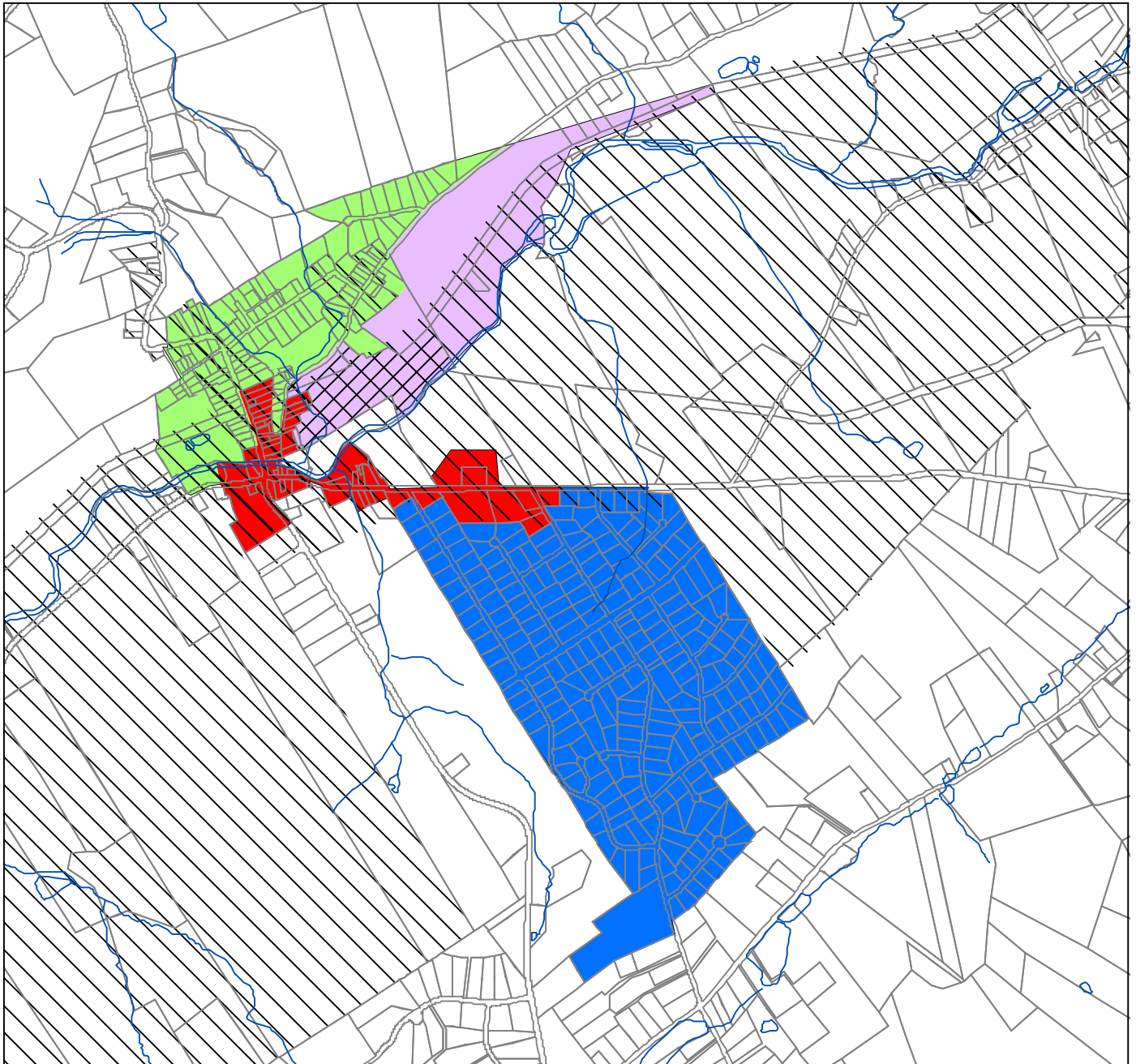
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Morris County Planning and Development
Banisch Associates, Inc.

BANISCH
ASSOCIATES, INC.
Planning and Design










I. Land Use Plan - Inset B

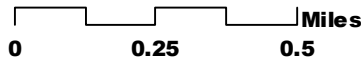
Washington Township
Morris County, New Jersey

December 2003



Legend

 C-1	 PUD/R-2	 R-MDU
 C-2	 R-1	 RCH
 GC/R	 R-1-T	 RCH-SC
 H	 R-1/R-2	 SCHO
 OR	 R-20	
 OR/I	 RCD	



Data Sources:
Morris County Planning and Development
Banisch Associates, Inc.

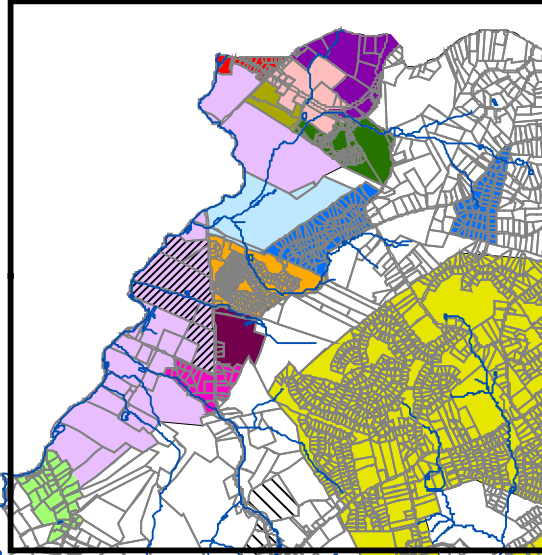
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ASSOCIATES, INC.
Planning and Design

I. Land Use Plan

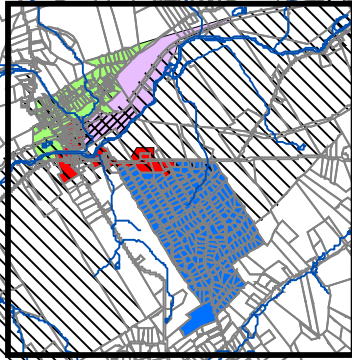
Washington Township
Morris County, New Jersey

December 2003


See Inset Map A

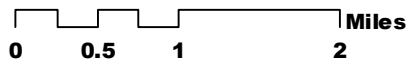


See Inset Map B



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|--|---|
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|  C-2 |  R-1/R-2 |
|  GC/R |  R-20 |
|  H |  RCD |
|  OR |  R-MDU |
|  OR/I |  RCH |
|  PUD/R-2 |  RCH-SC |
|  R-1 |  SCHO |



Data Sources:

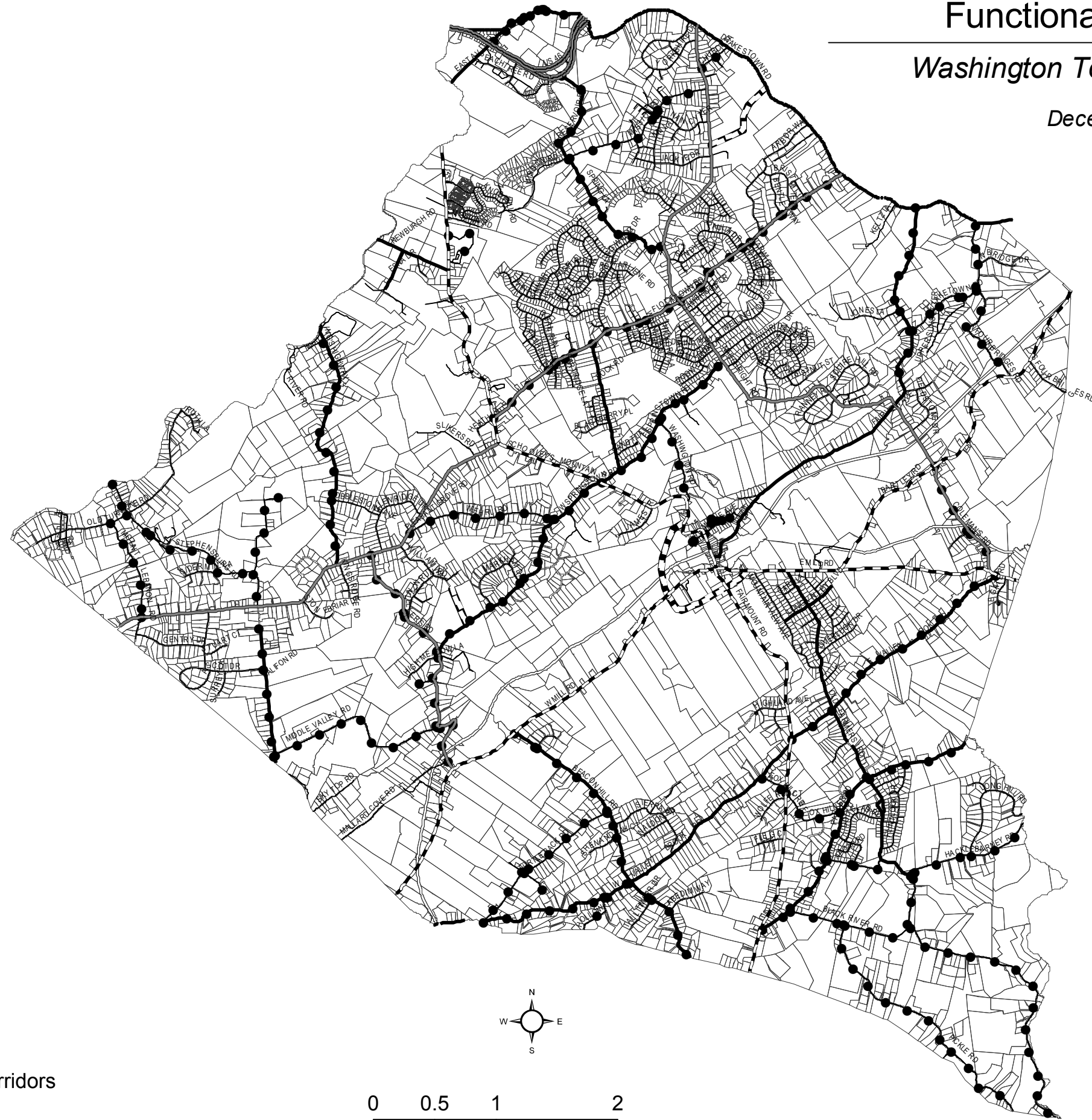
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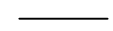
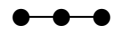

II. Circulation Plan Functional Classification

Washington Township, Morris County

December 2003



Legend

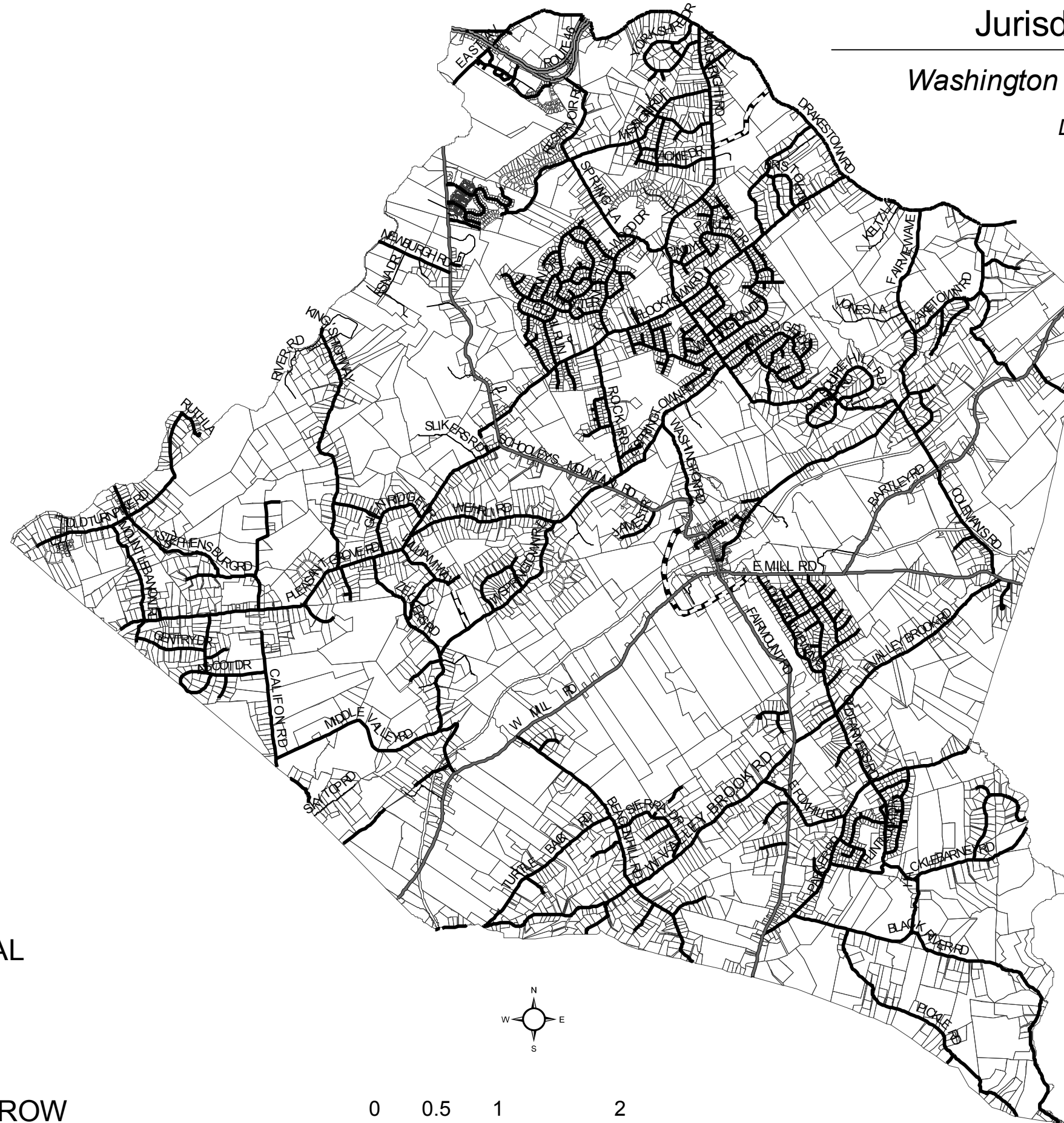
-  Major Arterial
-  Minor Arterials
-  Primary Collectors
-  Collector
-  Local Roads
-  Rural Historic Scenic Corridors
-  Proposed ROW

Data Sources:
GIS Section of the
Morris County Dept. of Planning & Development




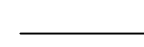


II. Circulation Plan Jurisdiction of Roads

Washington Township, Morris County

December 2003



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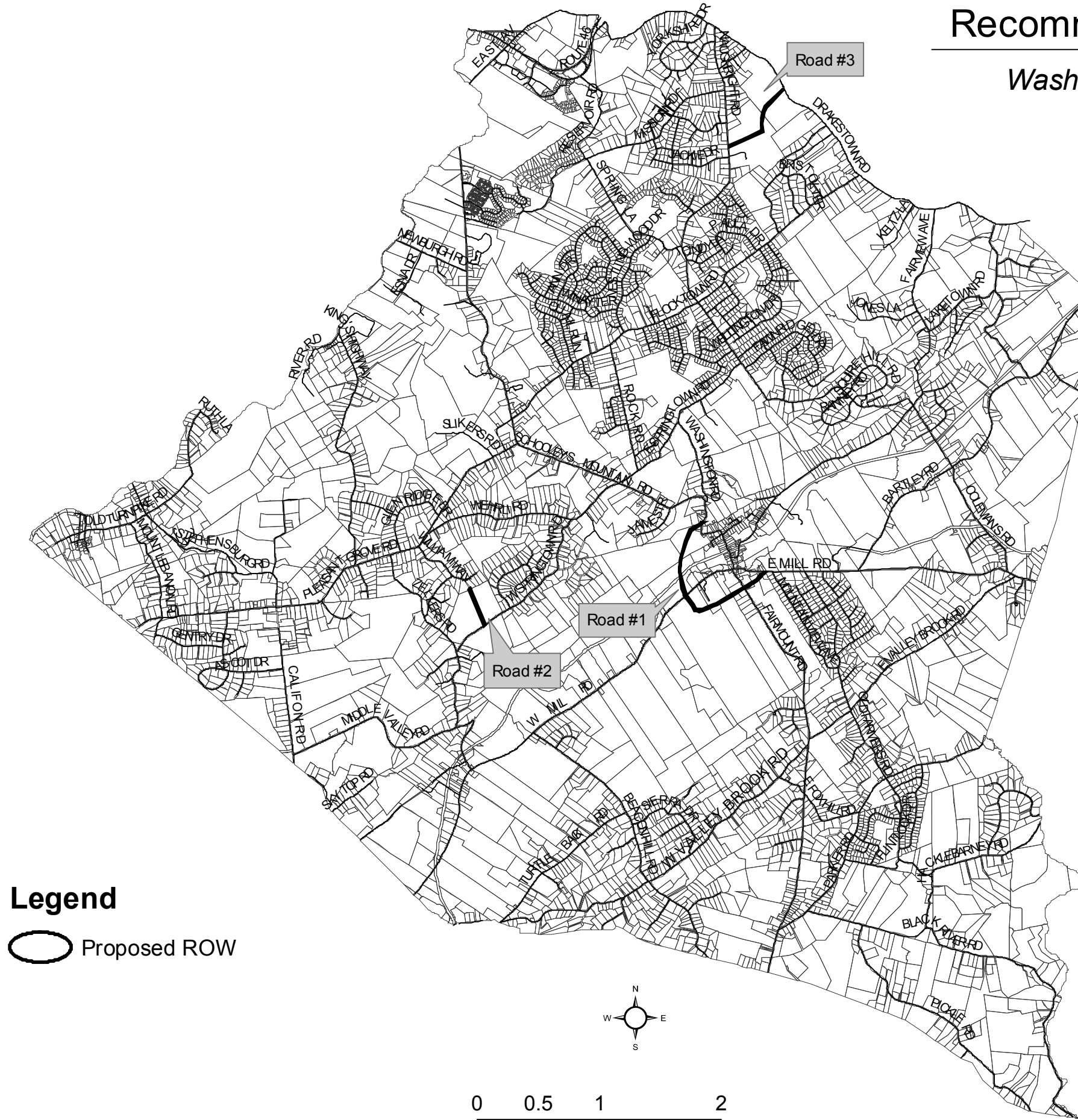
-  FEDERAL
-  COUNTY
-  MUNICIPAL
-  PRIVATE
-  RAMP
-  Proposed ROW

Data Sources:
GIS Section of the
Morris County Dept. of Planning & Development

II. Circulation Plan Recommended Road Improvements

Washington Township, Morris County

December 2003



Legend

 Proposed ROW

Data Sources:
GIS Section of the
Morris County Dept. of Planning & Development

III. Community Facilities Plan

Washington Township, Morris County

December 2003



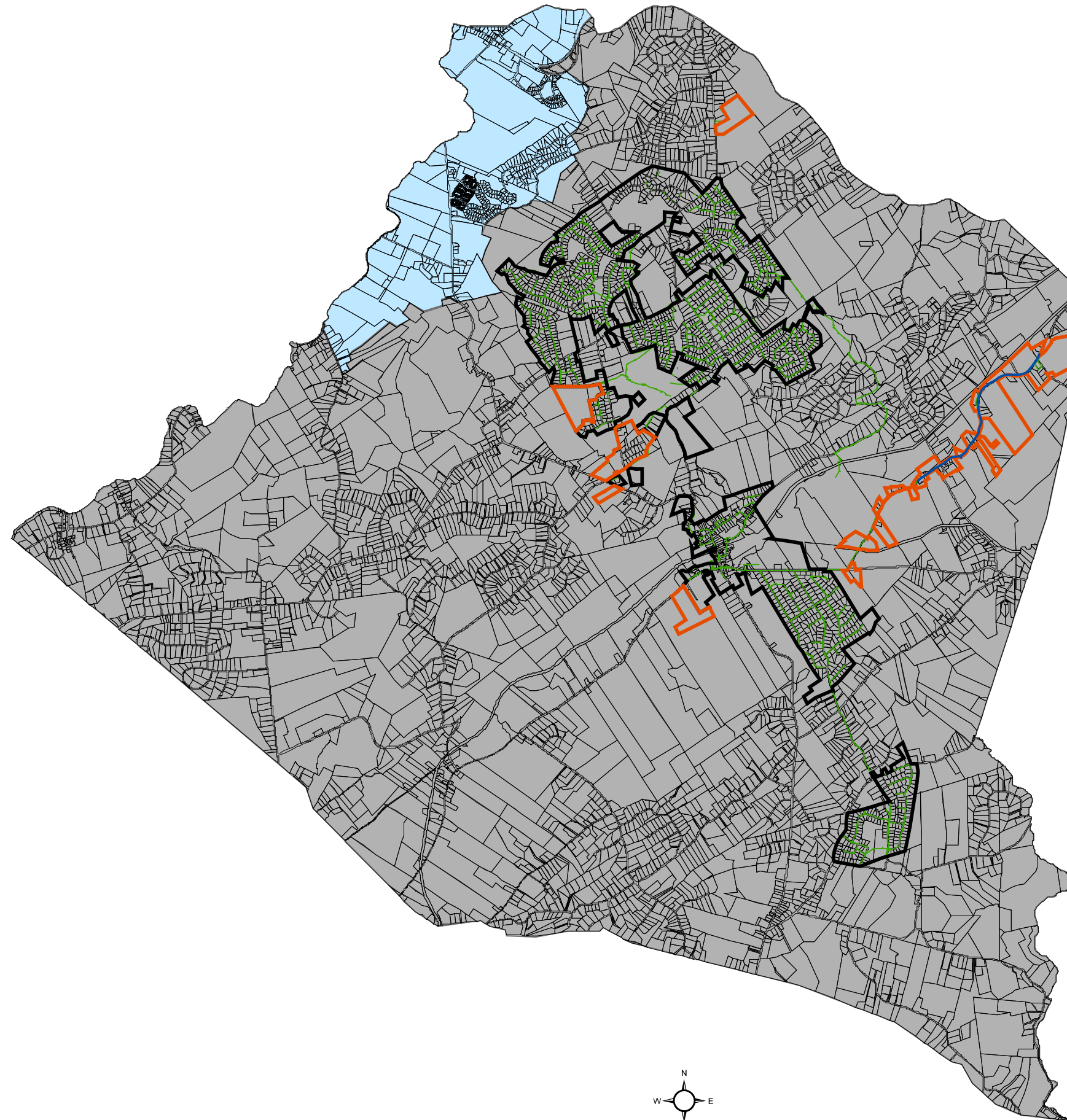
Existing Community Facilities	
ID	Name
	<i>Emergency Services</i>
1	Police Station
2	Schooley's Mountain Protection Assoc
3	Long Valley Fire Company
4	Fairmount Fire Company
5	Long Valley First Aid Squad
6	Flocktown Road First Aid Squad
	<i>Municipal</i>
7	Public Works Department
8	Recreation Department
9	Washington Township Municipal Building
10	Public Library and Senior Center
	<i>School</i>
11	Flocktown/Kossmann School
12	Old Farmers Road School
13	Long Valley Middle School
14	West Morris High School
	<i>Proposed Community Facilities</i>
A	Future Elementary School
B	Future Fire House/First Aid Squad (approx. location)
C	Potential Site-Community Recreation Facility

Data Sources:
GIS Section of the
Morris County Dept. of Planning and Development

IV. Utility Service Plan

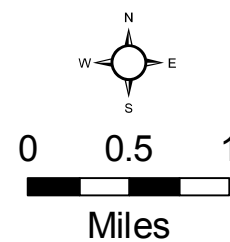
Washington Township, Morris County

December 8, 2003



Legend

-  Proposed Sewer Lines
-  Existing Sewer Service Lines
-  Proposed Sewer Service Areas
-  Existing Sewer Service Areas
-  Washington Township Municipal Utilities Authority
-  Hackettstown Municipal Utilities Authority

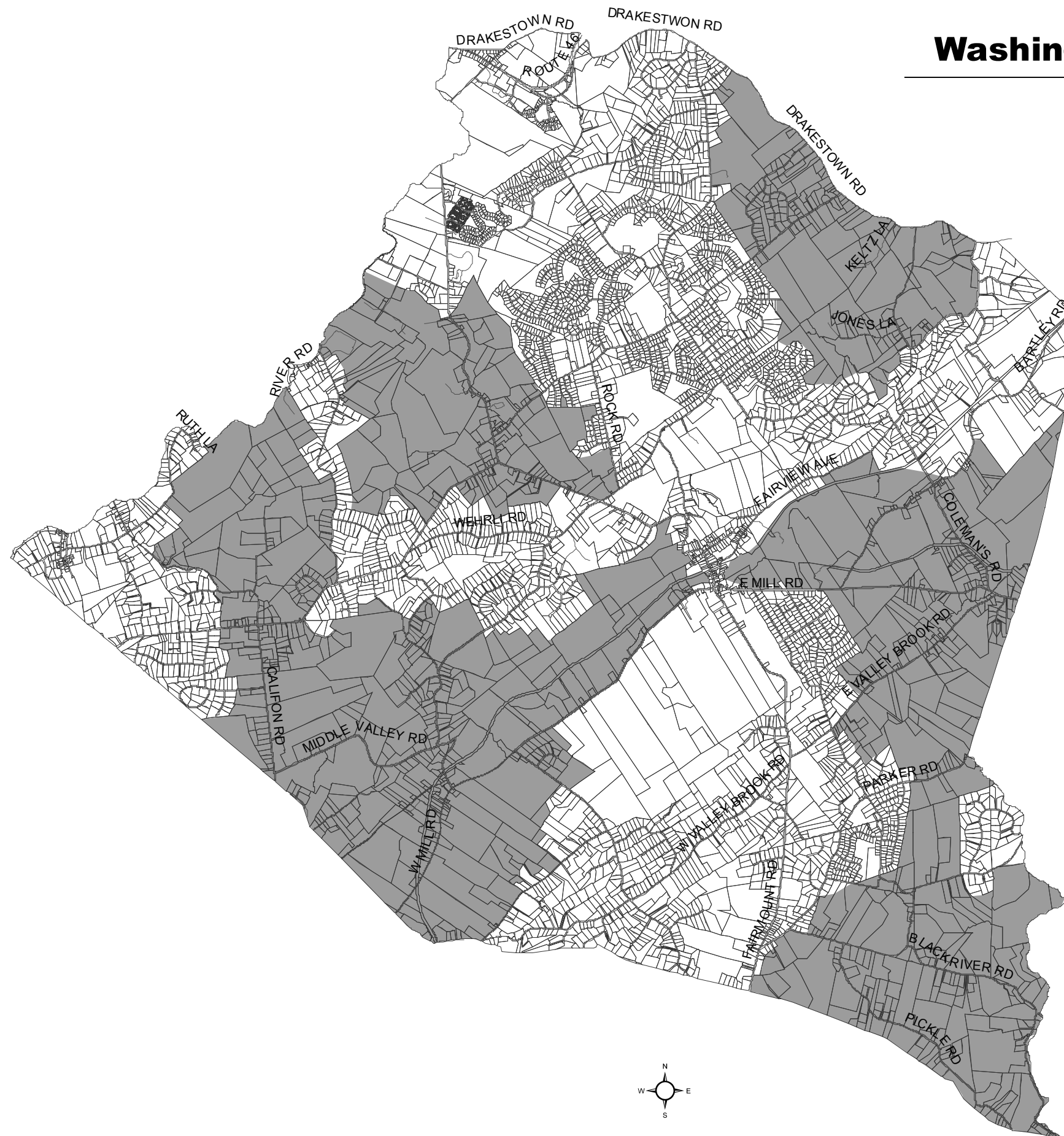


Data Sources:
Morris County Planning and Development
Costic and Bogan


V. Greenway Plan Map

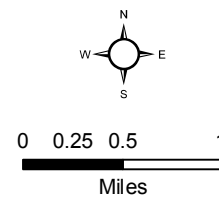
Washington Township, Morris County

December 8, 2003



Legend

 Greenways



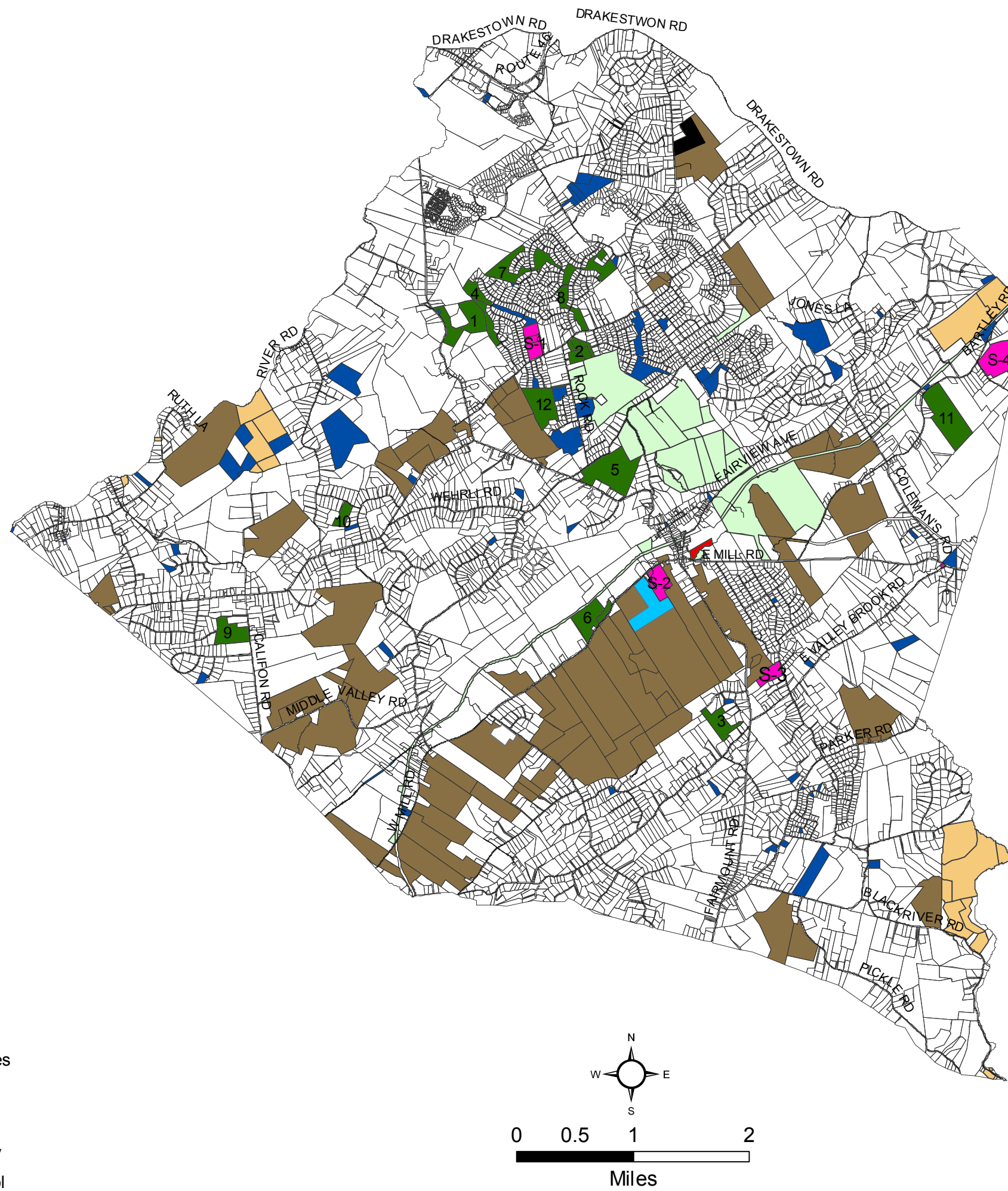
Data Sources:
GIS Section of the
Morris County Dept. of Planning & Development
Township of Washington Engineer

BANISCH
ASSOCIATES, INC.
Planning and Design

V. Recreation and Open Space Plan

Washington Township, Morris County

December 2003



Legend

- Municipal Parks
- Morris County Parks
- NJDEP
- Schools
- Municipally-Owned Properties
- Preserved Farms
- Washington Land Trust
- Proposed Recreation Facility
- Proposed Elementary School

Municipally Owned				
ID #	Site	Total Acres	Block	Lot
1	Cataract Park	50.16	20	51 & 49
2	Koehler Pond	24.8	23	18, 18.05, 18.06, 18.07, 18.07
3	Parker Acres	25.1	34	7
4	Quail Run	24.1	20; 20.15	21; 1
5	Rock Spring Park	73.9	24	7
6	Scott Park	38.6	33	64.01 & 63
7	Spring Acres	42	20.02 & 20	1 & 78
8	Wooded Valley East	46.68	20.10; 20.04; 20.08; 20.10	1.02; 1; 9; 33
9	Califon Fields	31.6	50.02	23
10	Cobblestone Field	11.5	30.02	47.04
11	Palmer Park	69.1	18	28
12	Falcon Fields	45	22	3.03

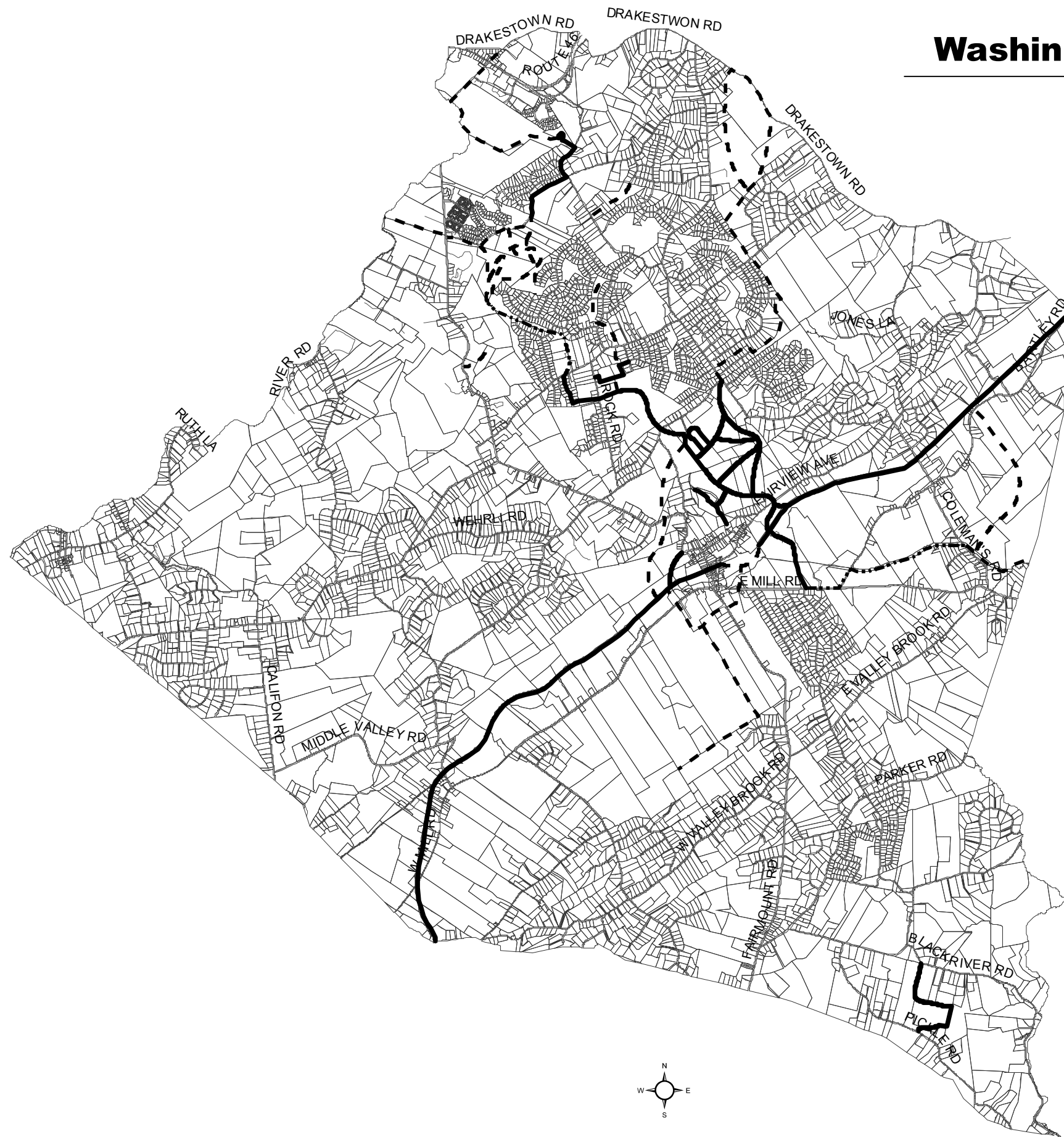
Schools				
S-1	Flocktown Road and Kossman School	12.6	20.11	21-23
S-2	Long Valley Middle School	25.2	34	49
S-3	Old Farmers Road School	14.4	35	3.01
S-4	West Morris Central Regional High School	40	17	18, 9

Data Sources:
GIS Section of the
Morris County Dept. of Planning & Development

V. Trail System Map




Washington Township, Morris County

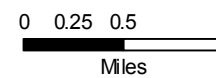
June 9th, 1999
Amended March 2005



Legend

Trails

-  Existing and Recent Trail Addition
-  Future Trail Extensions Planned
-  Trail Development in Progress

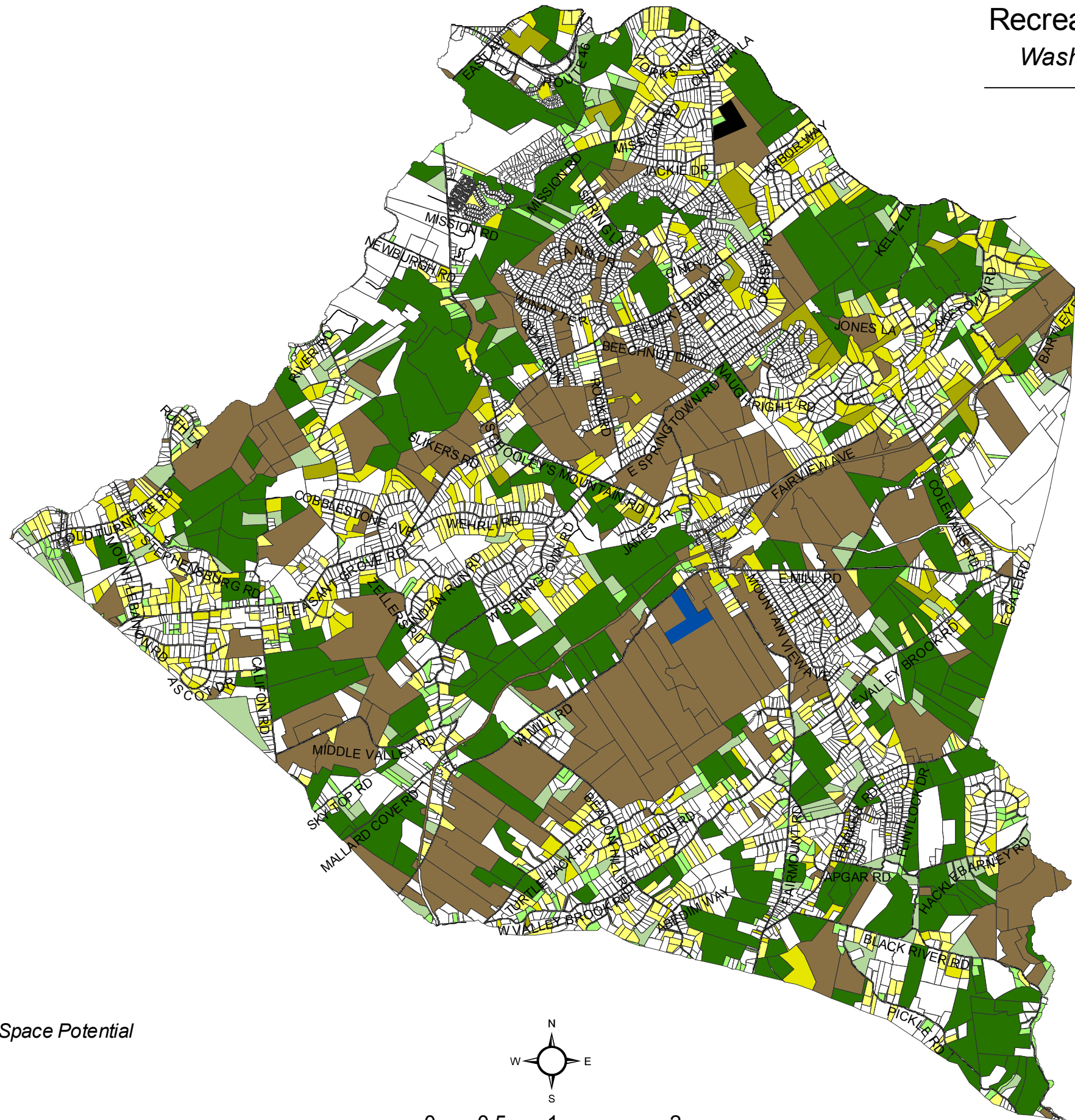


Data Sources:
GIS Section of the
Morris County Dept. of Planning & Development
Township of Washington Engineer

V. Proposed and Potential Recreation and Open Space Areas

Washington Township, Morris County

December 2003



Legend

Existing Open Space and Preserved Lands

Proposed Elementary School

Proposed Recreation Facility

Proposed Open Space/Parkland

Under 5 Acres

Between 5 & 10 Acres

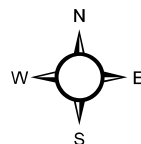
Over 10 Acres

Developed/Partially Developed with Open Space Potential

Between 3 and 5 Acres

Between 5 and 10 Acres

Over 10 Acres

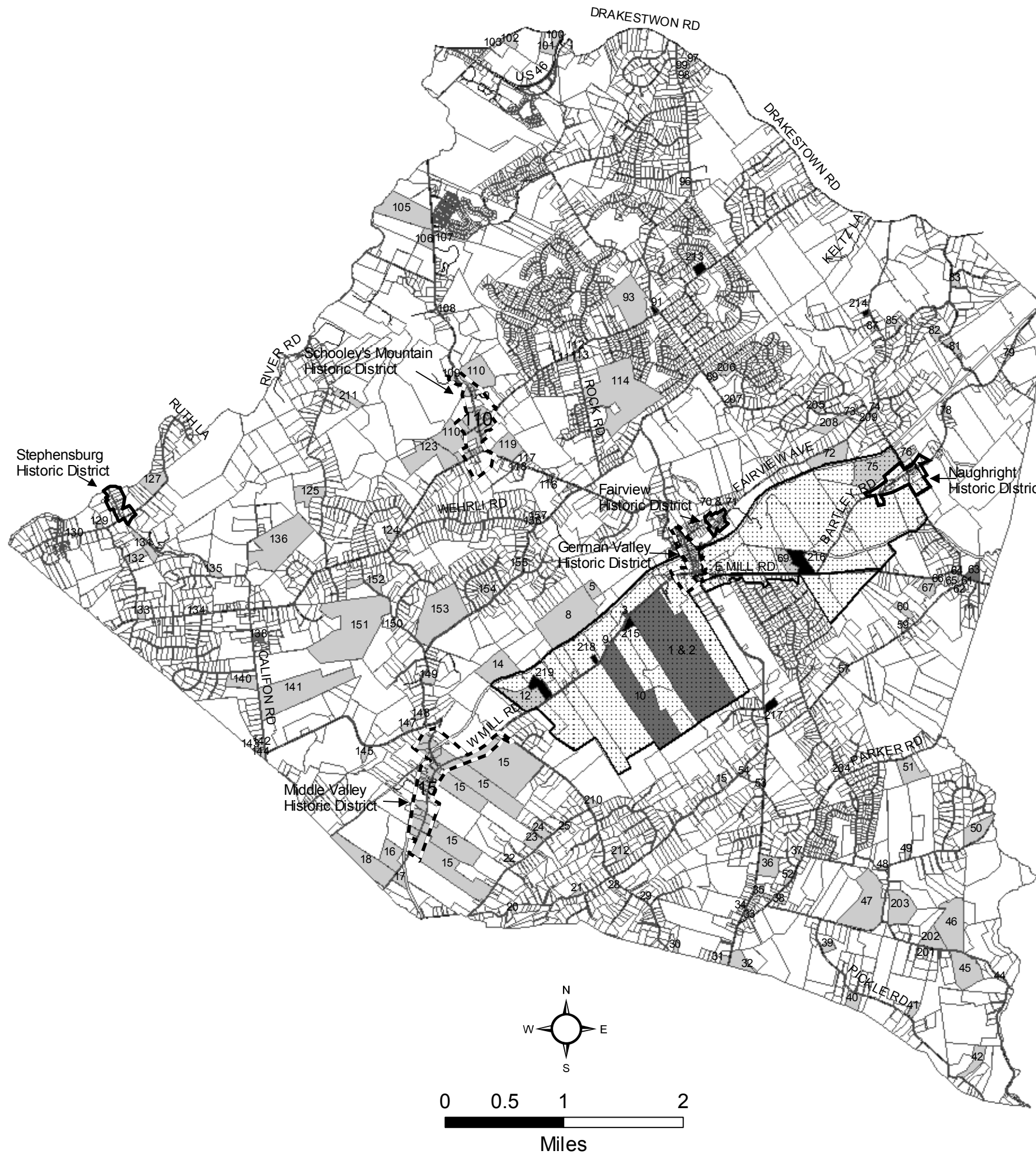


Data Sources:
GIS Section of the
Morris County Dept. of Planning & Development

IX. Historic Preservation Plan

Washington Township, Morris County

December 2003



- ### Legend
- National/State Register Listed Site 
 - County Significance 
 - Municipal Significance 
 - Other Historic Districts 
 - National/State Historic Register District 
 - Proposed German Valley Historic District Expansion 

Data Sources:
GIS Section of the
Morris County Dept. of Planning & Development

Natural Resource Inventory
Township of Washington
Morris County, NJ

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Prepared by the Washington Township Planning Board
43 Schooley’s Mountain Road, Long Valley NJ

Executive Summary

Washington Township is home to some of the most significant natural resources in Morris County. From agriculturally productive soils, to Trout Production streams and rivers, to habitat for State and federally listed threatened and endangered species, Washington's landscape is a rich mosaic of resource interlaced among a variety of areas.

Many of the regulations in the Township's ordinances are very effective at reducing threats to the environment. The Land Development Ordinance (LDO) deals with floodplain development and stream corridor protection, protection of steep slope areas and protection of farmland. However, additional ordinances may be necessary to adequately protect the wealth of natural resources bestowed upon the citizens of Washington Township to achieve conservation objectives. For example, one area that is not dealt with currently in the LDO is the regulation of woodlands and critical habitat management that should guide new development in the community. Through the LDO, the Township should fashion regulations designed to protect these natural resources.

Perhaps the most effective means to promote the goal of conservation of critical environmental resources is through public education and the fostering of stewardship values. The land and water features that establish the essential character and sense of place of Washington Township are coincident with and defined by the natural resources that are present and the cultural landscape that has shaped the community over time. The Township is a haven for recreation in nature and a variety of opportunities that are uniquely suited and intrinsic to the landscape and quality of life Washington's citizens enjoy. No one knows this better than the person that lives in the Township.

By educating the public about the unique resources that are present, sense of place can be nurtured and promoted. Residents of the community can take ownership of the resources that they enjoy and take pride in making sure they are there for others to enjoy in the future. Education also brings residents into the process of developing planning policies for the Township and raises awareness of what their community leaders are doing to protect the community to address concerns they may have. This is crucial with respect to development and the preservation of natural resources. Even development that conforms to the standards of the LDO can still give people the impression that development is ruining the environment. That is why public education is a vital part of any effort to promote conservation benefits and preservation of the environment.

This natural resources inventory has been compiled by the Planning Board to document the environmental and land use characteristics of the community and educate Washington's citizens on the important issues confronting the Township. Through education, the Planning Board hopes to ensure that the essential character of Washington Township survives the challenges of the future and the persistent regional growth development pressures that threaten to forever alter its destiny. Through careful, well-reasoned and balanced land use policies and regulations, the prized landscape that defines Washington Township can be protected for today's residents and future generations to come.

Introduction

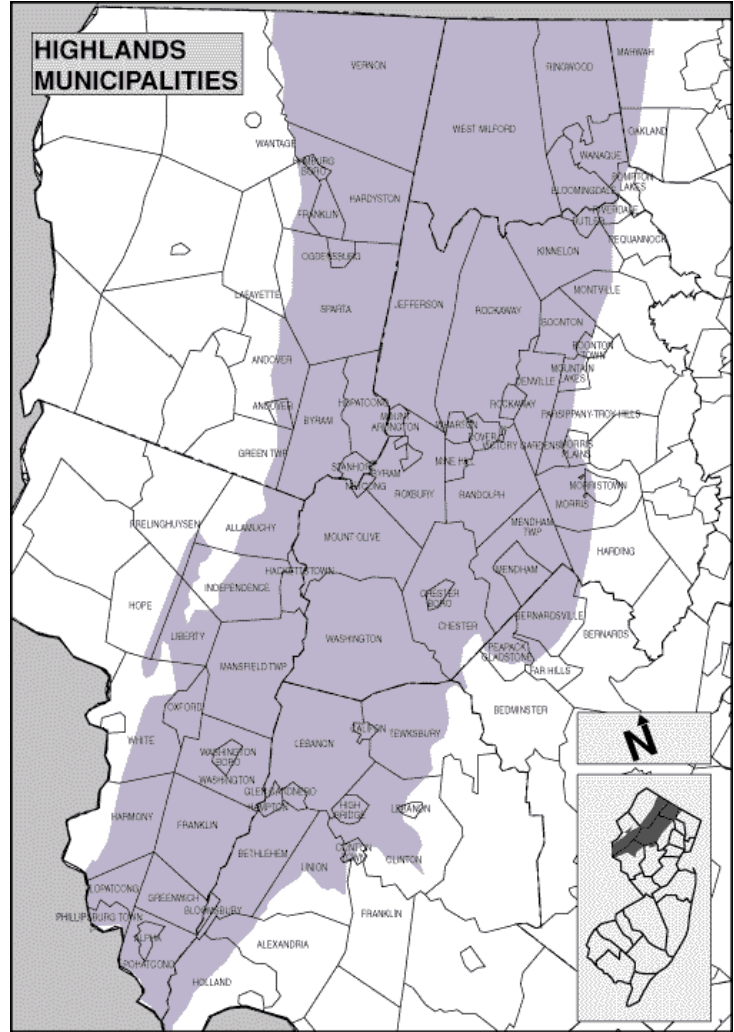
Washington Township is located in southern Morris County, bordering both Hunterdon and Warren Counties. Located in the New Jersey Highlands, a special resource area in the New Jersey State Development and Redevelopment Plan, it is a community with unique natural and scenic resources.

Washington Township is comprised of rolling hills, both forested and farmed, as well as steep slopes which lead to the plateau atop Schooleys Mountain. This plateau provides a vantage point for some of the most spectacular views in Morris County; views of the surrounding agricultural community, views of sprawling forests and views of traditional villages and hamlets that make up the countryside. It is these scenes and elements that are the subject of development pressure as well as preservation initiatives. For it is this land that is most desirable for both development and preservation.

Purpose and Objectives

The Natural Resource Inventory (NRI) is a planning study that identifies, quantifies and describes the environmental resources present in a community. Through the presentation of mapping and accompanying narrative, the reader is given a sense of the elements of a community that comprise the natural resource base as well as the issues that surround them. Many of the natural resources identified are worthy of preservation efforts, some are worthy of simple highlighting and others are indicators of larger issues that require further study.

Geographic Information System (GIS) digital data has simplified the tasks of identifying, quantifying and describing particular resources that a community may have. Multiple layers of data can be viewed together within the context of a base map, providing both a comprehensive means and framework to analyze individual resources along with their role and importance in the overall ecosystem. In this fashion, both mutually exclusive and synergistic relationships amongst natural resources can be defined and explored. GIS has been used extensively in the preparation of this NRI.



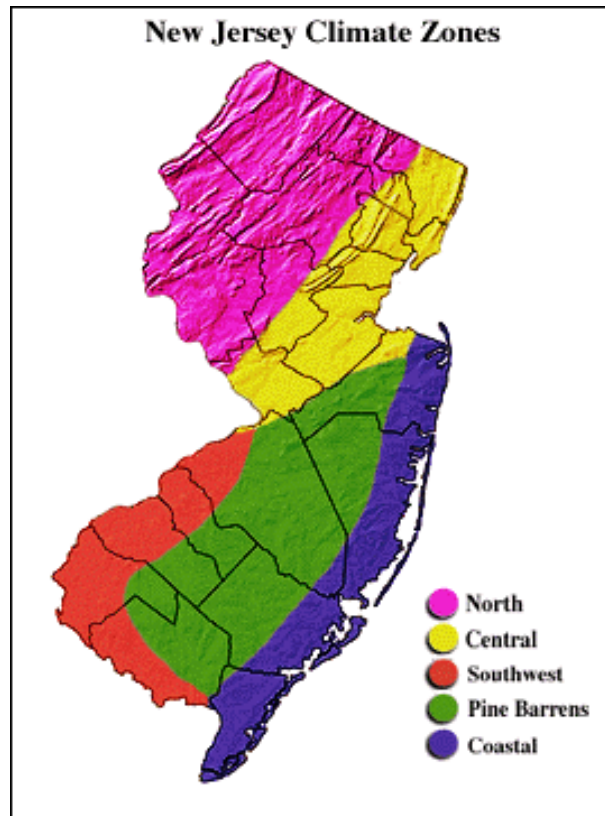
Identification, quantification and description are the beginning phases of analysis for the preparation of the NRI. Many of the natural resources and factors that are present play a unique role in planning and community development, leading to the second role of the NRI; to describe the part that each natural resource plays in overall planning and community development.

The NRI is often the preliminary step in preparing for a master plan or conservation plan update. It is these documents that will draw on the information and assessment that the NRI provides and spell out goals, objectives and recommendations on policies required in order to protect the resources present in a community.

Climate

Washington Township is in the northern climate zone of New Jersey, comprised mainly of the northwestern quarter of the state and encompassing municipalities that are situated in the Appalachian Uplands. This area of the state is generally not influenced by the Atlantic Ocean, except in periods of east winds, and can therefore be categorized as having a continental type of climate. Prevailing winds are from the southwest in the summer and from the northwest in the winter. Generally, January is the coldest month with an average temperature of 25.3 degrees Fahrenheit and July is the warmest with an average temperature of 70.3 degrees Fahrenheit.

The continental type of climate means that Washington Township generally has colder temperatures and greater snowfall in winter, with a greater average annual precipitation overall as compared to the areas south and east. The average temperature in winter months ranges from 25.3 to 36.8 degrees Fahrenheit, about 10 degrees colder than coastal areas. Snowfall amounts average 36.5 inches annually, with 44 inches of precipitation throughout the year. Spring and summer months tend to experience temperatures consistent with those found in the rest of the state, averaging between 57 and 70 degrees Fahrenheit.



The overall weather pattern of the Township is influenced greatly by the highlands and mountains, where cloud formation and precipitation is greatly enhanced by orographic effects. With the passage of cold weather fronts, air rises over the mountains, forcing moisture to condense and form clouds, often times accompanied by precipitation. The northern climate zone experiences about twice as many thunderstorms in the spring and

summer months, as compared to the central, southerly and coastal zones, since the stabilizing effects of the Atlantic Ocean are not an influence.

The difference between the continental and coastal climate types also has profound effects on length of growing season, characterized by the dates of first and last killing frost. Varying within the region as well as from year to year, the growing season can be as short as 148 days to as long as 214 days. Areas within the northern climate zone have experienced killing frosts as early as September and as late as June.

Land Cover

Washington Township is characterized by a predominance of forested land cover, with 11,599 acres comprising 40.4% of the community. A majority of these forested areas are found in higher elevations, mostly over 600 feet above sea level. Figure 1 shows three distinct bands of forest, running from the northeast to the southwest border of the Township.

Urban or developed land makes up the next largest category of land cover, with 6,851 developed acres in the Township comprising 23.8% of the land area. Urban land is mostly made up of residential, commercial and industrial development, but is also characterized by utility and transportation facilities such as railroads and gas or electric easements. The urban landform is found interspersed throughout the Township, with more dense concentrations in the northern third.

Agriculture and wetlands make up a majority of the remaining land cover found in the Township, at 5,719 acres (19.9%) and 4,226 acres (14.7%) respectively. A majority of the agricultural operations are found in the Raritan River valley at the foot of Schooleys Mountain, where forested areas were cleared to expose the most viable agricultural soils (see Figure 5). Other agricultural operations exist outside of the fertile valley, mixed with the forested and developed areas. The ridge which forms the face of Schooleys Mountain acts as a separator between large contiguous farmland and other enclaves. A majority of the larger parcels north of the ridge on the plateau are generally wooded with soils of limited agricultural viability.

Wetland areas are found throughout the Township, however most are primarily on the plateau of Schooleys Mountain. Many of these wetlands coincide with forested areas, together forming the headwaters to many of the small tributary streams that flow into the Musconetcong, Lamington and South Branch of the Raritan rivers. There are also wetlands found along the corridors of these rivers, however, the wetlands along the Raritan River in the central portion of the Township are the most extensive.

Barren Land and Water make up the remaining 1.2% of the Township's acreage at 168 and 170 acres each. Barren land is generally lots that are in the process of being constructed at the time of interpretation or lands supporting quarry operations. The most significant piece of barren land is the Cleveland Industries site, located in the central portion of the Township on the eastern border with Chester Township. Water is

comprised mostly of lakes and does not represent the acreage of streams and rivers. There are a few lakes present in the Township dispersed randomly throughout the landscape.

Figure 2 depicts the land use/land cover of the Township in a more detailed fashion, expanding on the 6 general categories above. This breakdown details the types of forest, wetland, urban and agricultural land detailed in Figure 1 (barren and water are not further enumerated). The main points highlighted in Figure 2 are:

- A majority of the forestland in the Township is deciduous
- A majority of the wetlands are deciduous wooded
- Residential development is characterized as mostly rural and low density
- Commercial and industrial development occur along major road corridors and at crossroads

Geology

Geologic formation in this region of the state is what largely contributes to it being called the Highlands. The Highlands is characterized by the Reading Prong, a lithological unit that is a southwest extension of the Berkshire and Housatonic Highlands of New England. The Highlands is composed mostly of undifferentiated Precambrian gneisses. Many of the lower valleys in the highlands, like the Raritan River valley, have narrow bands of quartzite interspersed, as shown in Figure 3.

What follows is a detailed description of the geologic units found on Figure 3, in their proper lithological order and by the geologic time period of origin. These geologic descriptions have been gathered directly from the New Jersey Geological Survey CD Series, CD 00-1. This is considered to be the most up to date mapping from the Survey and provides the best information available.

Kittatinny Valley Sequence

Omb Bushkill Member (Middle Ordovician) (Drake and Epstein, 1967) - Interbedded medium- to darkgray, thinly laminated to thick-bedded shale and slate and less abundant medium-gray to brownish-gray, laminated to thin-bedded siltstone. To the southwest, fine-grained, thin dolomite lenses occur near base. Complete turbidite sequences (Bouma, 1962) occur locally, but basal cutout sequences (Tbcde, Tcde or Tde) dominate. Conformable lower contact is placed at top of highest shaly limestone; elsewhere, lower contact is commonly strain slipped. Correlates with graptolite *Climacograptus bicornis* to *Corynoides americanus* zones of Riva (1969, 1974) (Parris and Cruikshank, 1992). Thickness ranges from 1,250 m (4,100 ft) in Delaware River Valley to 457 m (1,500 ft) at New York State line.

Oj Jacksonburg Limestone (Middle Ordovician) (Kümmel, 1908; Miller, 1937) - Upper part is medium- to dark-gray, laminated to thin-bedded shaly limestone and less abundant medium-gray arenaceous limestone containing quartz-sand lenses. Upper part

thin to absent to northeast. Lower part is interbedded medium- to dark-gray, fine- to medium-grained, very thin to medium-bedded fossiliferous limestone and minor medium- to thick-bedded dolomite-cobble conglomerate having a limestone matrix.

Unconformable on Beekmantown Group and conformable on the discontinuous sequence at Wantage in the Paulins Kill area. Contains conodonts of North American midcontinent province from *Phragmodus undatus* to *Aphelognathus shatzeri* zones of Sweet and Bergstrom (1986). Thickness ranges from 41 to 244m (135-800 ft).

Ow Sequence at Wantage (Middle Ordovician) (Monteverde and Herman, 1989) – Restricted, discontinuous sequence of interbedded limestone, dolomite, conglomerate, siltstone, and shale. Upper part is medium-yellowish-brown- to olive-gray-weathering, medium- to dark-gray, very fine to fine-grained, laminated to massive limestone and dolomite that grade down into underlying clastic rocks of lower part. Upper part locally absent. Lower part ranges from grayish-red, medium-gray, pale-brown, and greenishgray to pale-green mudstone and siltstone containing disseminated subangular to subrounded chert gravel, quartz-sand lenses, and chert-pebble conglomerate. Lower contact unconformable. Thickness ranges from 0 to 46 m (0-150 ft).

Beekmantown Group (Lower Ordovician) (Clarke and Schuchert, 1980)

Obu Upper part - Locally preserved upper beds are light- to medium-gray- to yellowish-gray-weathering, medium-light- to medium-gray, aphanitic to medium-grained, thin- to thick-bedded, locally laminated, slightly fetid dolomite. Medium-dark to dark-gray, fine-grained, medium-bedded, sparsely fossiliferous limestone lenses occur locally. Lower beds are medium-dark- to dark-gray, medium- to coarse-grained, mottled surface weathering, medium- to thick-bedded, strongly fetid dolomite that contains pods and lenses of dark-gray to black chert. Cauliflower-textured black chert beds of variable thickness occur locally. Gradational lower contact is placed at top of laminated to thin-bedded dolomite of the lower part (**Obl**) of the Beekmantown Group. Contains conodonts high in the *Rossodus manitouensis* zone to low zone D of the North American midcontinent province as used by Sweet and Bergstrom (1986). Upper beds are included in Epler Formation; lower beds are included in Rickenbach Dolomite of Drake and Lyttle (1985) and Drake and others (1985); entire upper part (**Obu**) is Ontelaunee Formation of Markewicz and Dalton (1977). Thickness ranges from 0 to 244 m (0-800 ft).

Obl Lower part - Very thin to thick-bedded, interbedded dolomite and minor limestone. Upper beds are light-olive-gray to dark-gray, fine- to medium-grained, thin- to thick-bedded dolomite. Middle part is olivegray-, light-brown-, or dark-yellowish-orange-weathering, dark-gray, aphanitic to fine-grained, laminated to medium-bedded dolomite and light-gray to light-bluish-gray-weathering, medium-dark- to dark-gray, fine-grained, thin- to medium-bedded limestone, that is characterized by mottling with reticulate dolomite and light-olive-gray to grayish-orange, dolomitic shale laminae surrounding limestone lenses. Limestone grades laterally and down section into medium-gray, fine-grained dolomite. Lower beds consist of medium-light- to dark-gray, aphanitic to coarse-grained, laminated to medium-bedded, locally slightly fetid dolomite having thin black chert beds, quartz-sand laminae, and oolites. Lenses of light-gray, very coarse

to coarse-grained dolomite and floating quartz sand grains and quartz-sand stringers at base of sequence. Lower contact placed at top of distinctive medium-gray quartzite. Contains conodonts of *Cordylodus proavus* to *Rossodus manitouensis* zones of North American Midcontinent province as used by Sweet and Bergstrom (1986). Unit **Obl** forms Stonehenge Formation of Drake and Lyttle (1985) and Drake and others (1985), upper and middle beds are included in Epler Formation, and lower beds are in Rickenbach Dolomite of Markewicz and Dalton (1977). Unit is about 183 m (600 ft) thick.

OCa Allentown Dolomite (Lower Ordovician and Upper Cambrian) (Wherry, 1909)

– Very thin to very thick bedded dolomite containing minor orthoquartzite and shale. Upper part is medium-light- to medium-dark-gray, fine- to medium-grained, locally coarse-grained, medium- to very thick bedded dolomite. Floating quartz sand grains and two sequences of medium-light- to very light gray, thin-bedded quartzite and discontinuous, dark-gray chert lenses occur directly below upper contact. Rhythmically bedded lower dolomite beds alternate between light and dark gray weathering, medium and very light gray, fine and medium grained, and thin and medium bedded, which are interbedded with shaly dolomite. Ripple marks, crossbeds, edgewise conglomerate, mud cracks, oolites, and algal stromatolites occur throughout unit, but more typically in lower part. Shaly dolomite increases downward toward lower conformable contact with the Leithsville Formation. Oldest beds contain trilobite fauna of early Late Cambrian age; younger beds contain latest Cambrian fauna (Howell, 1945; Howell and others, 1950). Thickness about 580 m (1,900 ft).

CI Leithsville Formation (Middle to Lower Cambrian) (Wherry, 1909)

- Thin- to thick-bedded dolomite containing subordinate siliciclastic rocks. Upper part is medium- to medium-dark-gray, fine- to mediumgrained, pitted, friable, mottled and massive dolomite. Middle part is medium-gray, stylolitic, fine-grained, thin- to medium-bedded dolomite that is interbedded with shaly dolomite and, less commonly, varicolored quartz sandstone, siltstone, and shale. Lower part is medium-gray, medium-grained, medium-bedded dolomite containing quartz-sand grains in stringers and lenses near the contact with the Hardyston Quartzite. Archaeocyathids of Early Cambrian age suggest an intraformational disconformity separating rocks of Middle and Early Cambrian age (Palmer and Rozanov, 1976). Thickness approximately 305 m (1,000 ft).

Ch Hardyston Quartzite (Lower Cambrian) (Wolff and Brooks, 1898) - Medium- to light-gray, fine- to coarse-grained, medium- to thick-bedded quartzite, arkosic sandstone and dolomitic sandstone. Basal pebble to cobble conglomerate typically contains clasts of local basement affinities. Contains fragments of the trilobite *Olenellus thompsoni* of Early Cambrian age. Thickness approximately 0.5 to 62 m (1.6-200 ft).

Byram Intrusive Suite (Middle Proterozoic) (Drake, 1984)

Ybh Hornblende granite - Pinkish-gray- to medium-buff-weathering, pinkish-white or light-pinkish-gray, medium- to coarse-grained, gneissoid to indistinctly foliated granite and sparse granite gneiss composed principally of microcline microperthite, quartz,

oligoclase, and hornblende. Some phases are quartz syenite or quartz monzonite. Includes small bodies of pegmatite and amphibolite not shown on map. UPb age approximately 1,090 Ma (Drake and others, 1991b).

Ybs Hornblende syenite – Tan- to buff-weathering, pinkish-gray or greenish-gray, medium- to coarsegrained, gneissoid syenite and lesser amounts of quartz syenite containing microcline microperthite, oligoclase, quartz, and hornblende. Some phases are monzonite or monzodiorite.

Yba Microperthite alaskite – Pink- to buff-weathering, light-pinkish-gray or pinkish-white, medium- to coarse-grained, gneissoid to indistinctly foliated granite composed principally of microcline microperthite, quartz and oligoclase. Includes small bodies of amphibolite not shown on map.

Lake Hopatcong Intrusive Suite (Middle Proterozoic) (Drake and Volckert, 1991)

Ypg Pyroxene granite – Gray- to buff- or white-weathering, greenish-gray, medium- to coarse-grained, massive, gneissoid to indistinctly foliated granite containing mesoperthite to microantiperthite, quartz, oligoclase, and clinopyroxene. Common accessory minerals include titanite, magnetite, apatite, and trace amounts of pyrite. Some phases are monzonite, quartz monzodiorite, or granodiorite. Locally includes small bodies of amphibolite not shown on map.

Yps Pyroxene syenite – Gray- to buff- or tan-weathering, greenish-gray, medium- to coarse-grained, massive, indistinctly foliated syenite composed of mesoperthite to microantiperthite, oligoclase and clinopyroxene. Contains sparse amounts of quartz, titanite, magnetite, and trace amounts of pyrite.

Ypa Pyroxene alaskite - Light-gray- or tan-weathering, greenish-buff to light-pinkish-gray, medium- to coarse-grained, massive, moderately foliated granite composed of mesoperthite to microantiperthite, oligoclase, and quartz. Common accessory minerals are clinopyroxene, titanite and magnetite. Locally includes small bodies of amphibolite not shown on map.

Metasedimentary Rocks (Middle Proterozoic)

Yk Potassium-feldspar gneiss - Light-gray- to pinkish-buff-weathering, pinkish-white to light-pinkishgray, fine- to medium-grained, moderately foliated gneiss and lesser amounts of granofels composed of quartz, microcline, microcline microperthite and local accessory amounts of biotite, garnet, sillimanite, and opaque minerals.

Yb Biotite-quartz-feldspar gneiss - Gray-weathering, locally rusty, gray to tan or greenish-gray, fine- to medium-coarse-grained, moderately layered and foliated gneiss that is variable in texture and composition. Composed of oligoclase, microcline microperthite, quartz, and biotite. Locally contains garnet, graphite, sillimanite, and opaque minerals.

Yp Pyroxene gneiss – White- to tan-weathering, greenish-gray, fine- to medium-grained, well-layered gneiss containing oligoclase, clinopyroxene, variable amounts of quartz, and trace amounts of opaque minerals and titanite. Some phases contain scapolite and calcite. Commonly interlayered with pyroxene amphibolite or marble.

Yq Quartzite - Light-gray, medium-grained, massive- to well-layered, vitreous, partly feldspathic quartzite having sparse flakes of graphite. Associated with potassium-feldspar gneiss (**Yk**), biotite-quartz-feldspar gneiss (**Yb**), pyroxene gneiss (**Yp**), Franklin Marble (**Yf**), and pyroxene-epidote gneiss (**Ype**).

Losee Metamorphic Suite (Middle Proterozoic) (Drake, 1984)

Ylo Quartz-oligoclase gneiss – White-weathering, light-greenish-gray, medium- to coarse-grained, moderately layered to indistinctly foliated gneiss and lesser amounts of granofels composed of quartz, oligoclase or andesine, and, locally, biotite, hornblende and (or) clinopyroxene. Contains thin amphibolite layers.

Ylb Biotite-quartz-oligoclase gneiss – White- to light-gray-weathering, light- to medium-gray or greenish-gray, fine- to coarse-grained, massive to moderately well layered, foliated gneiss composed of oligoclase or andesine, quartz, biotite, and, locally, garnet. Commonly interlayered with amphibolite.

Rocks of Uncertain Origin (Middle Proterozoic)

Yh Hypersthene-quartz-plagioclase gneiss – Gray- to tan-weathering, greenish-gray to greenishbrown, medium-grained, moderately well layered and foliated, greasy-lustered gneiss of charnockitic affinity composed of andesine or oligoclase, quartz, clinopyroxene, hornblende, hypersthene, and sparse amounts of biotite. Commonly interlayered with amphibolite and mafic-rich quartz-plagioclase gneiss.

Yd Diorite – Gray- to tan-weathering, greenish-gray to brownish-gray, medium- to coarse-grained, greasy-lustered, massive diorite containing andesine or oligoclase, clinopyroxene, hornblende, hypersthene, and sparse amounts of biotite and magnetite. Amphibolite layers common.

Ymg Monazite gneiss - Buff-weathering, light-greenish-gray to greenish-buff, fine- to medium-grained, moderately well-foliated, well-lineated gneiss composed of microcline microperthite, quartz, oligoclase, biotite, and monazite. Accessory minerals include hornblende, zircon and opaque minerals. Mapped in Fox Hill Range area.

Yma Microantiperthite alaskite – White-weathering, locally rusty, light-greenish-gray medium- to coarse-grained, gneissic granite and alaskite containing microantiperthite, quartz, oligoclase, and sparse amounts of hornblende, clinopyroxene, biotite, and magnetite.

Geology and lithology are the main determining factors in groundwater yields and suitability as recharge areas. The Morris County Municipal Utilities Authority studied a number of areas for potential groundwater resources. A portion of two of these study areas were within Washington Township. Generally, studies showed that the areas depicted in Figure 4 are “*important potential ground water sources*”. The study indicated that the sand and gravel buried valley fill deposits had the potential of being a high producing aquifer, consistent with formations in the South Branch River valley and the Musconetcong River valley.

The Land Oriented Reference Data System (LORDS) report of 1974, published by the New Jersey Geological Survey and NJDEP, also identified potentially high recharge rates for some of the formations in Washington Township. Specifically, the LORDS report showed that the Kittatinny Limestone formations, specifically the Leithsville Formation, had the potential to recharge 350,000 gallons per day per square mile in a normal year and 225,000 gallons per day per square mile in a dry year. Jacksonburg Limestone and many of the other formations in the Kittatinny Valley Sequence are listed as having recharge rates of 300,000 gallons per day per square mile for normal years and 200,000 gallons per day per square mile in dry years. A number of other weathered Precambrian formations present in the Township experience similar recharge rates to the Kittatinny Valley Sequence.

The importance of identifying these potential aquifers and recharge areas is two-fold. The first is to review criteria for development and insure that they are compatible with the need to protect the areas that overlay these formations. *If development occurs at a density that is relatively low and impervious surfaces are reduced, the area will remain viable for aquifer recharge.* The second is to continue to pursue land preservation in order to limit future development potential and *preserve this regionally valuable resource.*

Soils

The United States Department of Agriculture, Natural Resource Conservation Service, has described four soil associations, at least 27 soil series and at least 46 soil phases in the Township of Washington. The four soil associations include the Califon-Annandale-Cokesbury, the Edneyville-Parker-Califon, the Parker-Edneyville and the Parsippany-Landsdowne-Watchung. All four of these soil associations were formed in old glacial deposits or in material weathered from bedrock. They are dominantly loamy and deeply weathered, having more clay in the subsoil than in the surface layer or substratum. These associations are typically found on the uplands and in valleys. The general characteristics of these three associations are described below.

Califon-Annandale-Cokesbury Association

The soils of this association formed in deeply weathered loamy glacial till, derived mainly from granitic gneiss. Bedrock is generally found at a depth greater than 10 feet in most areas. This association is well suited to general farming, dairy farming and most

community development. It is also well suited to open space activities and to wildlife habitat supporting extensive areas of woodland.

The minor soils of this association are in the Parker, Edneyville and Bartley series. Califon and Cokesbury soils are mainly found in depressions and waterways but are also present in seepage areas at the base of slopes. They are moderately well drained to poorly drained with a fragipan (a seemingly cemented layer low in organic matter and clay but high in silt and fine sand) layer in the lower part of the subsoil. This fragipan layer is the major contributing factor to poor drainage. The Califon and Cokesbury soils are also subject to the hazard of erosion on strong slopes.

Edneyville-Parker-Califon Association

The soils of this association formed in granitic material that was weathered in place or transported a short distance and redeposited in waterways. Bedrock is mainly found at a depth greater than 10 feet, but can outcrop on strong slopes. This association is split in terms of suitability for farming and community development. Well drained and excessively drained soils are limited by coarse fragments, steep slopes and the hazard of erosion, while the gently sloping soils are well suited to most farming and community development. Strongly sloping soils in this association are not suited to farming and community development but are well suited to open space and wildlife habitat.

The minor soils in the association are in the Annandale, Cokesbury, Bartley and Califon (friable subsoils variant) series. Edneyville and Parker soils are found on the tops and sides of ridges. Both are gently sloping to steep, but the Edneyville soils are well drained while the Parker soils are very gravelly and excessively drained. The Califon soils of this association are found in depressions, drainage ways and seepage areas and can be moderately well drained to somewhat poorly drained, with a fragipan layer in the lower part of the profile.

Parker-Edneyville Association

The soils in this association formed in gravelly to extremely stony material that was weathered in place from bedrock. Bedrock can be as shallow as four feet but is typically found at a depth greater than 10 feet. Most of the soils in this association are woodland, although some small areas have been cleared for pasture. Soils in this association are limited for farming and community development by steep slopes, stoniness and rock outcrops. They are, however, suited to open space activities and to watershed protection.

The minor soils in the association are in the Califon, Cokesbury, Netcong and Bartley series. Parker and Edneyville soils are found on the tops and sides of ridges. Parker soils are steep and excessively drained and are very gravelly. Edneyville soils are steep and well drained.

Bartley-Turbotville-Cokesbury Association

The soils in this association were formed in deeply weathered glacial till or colluvium of mixed mineralogy, derived largely from granitic gneiss. Bedrock is generally found at a

depth greater than 10 feet. While the soils in this association are limited by inadequate drainage, they are among the best in the county for farming. With the exception of the Cokesbury soils (poor drainage), the association is suitable for community development. Most of the association is in crops and pasture, but small poorly drained soils found along streams are generally woodland.

The minor soils in this association are in the Edneyville, Califon and Washington series. Also included in the association are alluvial and alluvial wet soils. Bartley soils are on terraces adjacent to floodplains. They are gently to strongly sloping and moderately well drained. They have a fragipan layer in the lower part of the subsoil. Turbotville and Cokesbury soils are in drainageways and depressions and also have a fragipan layer in the subsoil.

The following discussion describes the various factors that are related to soils, including farmland capability, septic suitability, depth to seasonal high water and depth to bedrock. All of these factors affect the environment and community development and their enumeration will help guide policy as it relates to both.

Figure 5 depicts the farmland capability of the soils in Washington Township, with better than 55% of the soils being of significant agricultural value. The following descriptions of prime farmlands, soils of statewide importance and unique farmland are taken from the “New Jersey Important Farmlands Inventory”, prepared by the State Agriculture Development Committee in 1990. Farmland of local importance is not included in this description, as they 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.

Unique Farmland –Unique farmlands are those soils that are being used for special crops, mainly peat and muck.

Overall, prime soils account for the largest percentage of soils in the Township at 40.4%. Statewide important soils comprise 15.8% of the soils, with unique farmland soils accounting for a mere 0.35%. Prime soils are farmed extensively in the belt of preserved

farms southeast of County Route 513 and in the southeastern corner of the Township. A majority of the prime farmland atop Schooleys Mountain, however, has been converted to residential development.

Agriculturally productive soils are a finite resource that once converted to developed uses, are unlikely to be recuperated for agricultural use. In addition, agricultural soils and the farming that they support are part of the fabric of the Township and lend to its unique character. Agriculture and the development pattern associated with it defines part of the rural character of the Township, lending to the country appeal that is prized by residents as well as visitors. This is apparent in Long and Middle valley along County Route 513, where a belt of preserved farms defines the essential character of this part of the Township.

Figure 6 categorizes the soils in the Township based on their ability to dispose of effluent on-site utilizing a septic system. Better than 50% of soils in Washington have severe limitations for on-site disposal of effluent and are found throughout the Township. Factors that contribute to the presence of severe limitations include seasonal high water at depths of 0 to 4 feet, perched water tables, extreme stoniness, slopes between 15% and 25%, slow permeability in the subsoil, rapid permeability through the soil profile and frequent flooding. Severe limitations, as categorized by the USDA in the Morris County Soil Survey, indicate that soil properties are so unfavorable and difficult to overcome that soil reclamation, special design and intensive maintenance will likely be required. Often the costs of corrective measures are exorbitant and even if used, could create problems in the future due to the nature of the limitations. Engineers will promise a system designed to overcome these limitations, however, this is not an assurance that a proper routine maintenance plan will be followed by the homeowner.

Soils with moderate limitations for septic disposal comprise 33.8% of soils and are found scattered throughout Schooleys Mountain and the southeastern corner of the Township. Moderate limitations are considered unfavorable, but with careful planning, design and management may be overcome. Engineering practice can often easily address unfavorable conditions, but homeowner maintenance is once again the key to successful mitigation of potential problems. Factors that contribute to moderate limitations include slope, hazard of groundwater pollution, bedrock at depths of 4 to 10, soils that are very stony, rapid permeability and slow permeability in the fragipan layer.

Soils with slight limitations make up only 11.9% of those found in the Township. Slight limitations indicate that factors are minor and easily overcome. Soils of this classification generally have water tables at a depth greater than 4 to 5 feet, bedrock at depths greater than 5 or 6 feet and good permeability (not too fast, not too slow). In Washington Township, these soils are found along the Musconetcong and Raritan rivers and in pockets in the southeastern corner.

In 1999, the New Jersey Department of Environmental Protection (NJDEP) authored and the legislature adopted *Standards for Subsurface Sewage Disposal Systems*, part of the State of New Jersey Administrative Code, 7:9A. These new standards for septic systems

were meant to update the standards that had been adopted in 1990, based on the evolution of engineering practice and the ability to design more efficient systems. The adoption of the new standards in 1999 sought to limit the installation of septic systems where public sewer was reasonably available, to protect potable water supplies and therefore human health, to insure the proper siting and installation of septic systems and to limit groundwater pollution from improperly functioning systems. (The NJDEP Subchapter 8 Water Quality Management Planning Rule amendments were invalidated by the Court in April 2002, on the basis of a procedural deficiency in their adoption. The substance of the amendments were not overturned by the Court. The DEP has indicated that the same rule will be readopted in conformance with procedural requirements in the near future.)

The mapping that is presented in Figure 6 represents the classification of soils from the *Soil Survey of Morris County*. As part of the new groundwater quality standards, new classifications were instituted, but only with respect to the type of system that may be required in order to overcome the inherent limitations of certain soils in New Jersey. The application of these standards is meant to be based on specific site investigation through on-site percolation testing and soil profile determination. Often times, a prospective developer will not want to go through this cost prior to purchase of land. However, soil percolation tests are needed to carefully manage the Township's natural resource objectives on a case-by-case basis so that development is arranged to protect priority areas. In general, and for planning purposes, the Soil Survey may be used in order to gain a general sense of the potential limitations that a property may present.

Once detailed site investigation begins, the standards for septic installation contained in the new standards govern the type of system that is necessary in order to overcome limitations of soil for safe disposal of effluent. Appendix D in N.J.A.C. 7:9A outlines the soils of New Jersey based on suitability classes and the depths of potential limiting zones that could be identified under detailed investigation. Typical limitations include fractured or excessively coarse substrata, massive rock or hydraulically restrictive substrata, hydraulically restrictive horizon or permeable substratum, excessively coarse horizon and regional and perched zones of saturation. "Perched zone of saturation" means a zone of saturation which occurs immediately above a hydraulically restrictive horizon and which is underlain by permeable horizons or substrata which are not permanently or seasonally saturated. "Regional zone of saturation" means a zone of saturation which extends vertically without interruption below the depth of soil borings and profile pits.

In any of the above events, the depth of the type of limiting zone is what determines the type of system that must be used. The types of systems include conventional, soil replacement, mound or mounded soil replacement. Seven feet is required from finished grade to the bottom of the zone of treatment, and a four foot zone of disposal consisting of permeable soil or fractured rock substrata is required. This means that generally speaking, a depth to bedrock of greater than 10 feet and a depth to seasonal high water of greater than 7 feet is required for the installation of a conventional septic system under the new regulations. This provides background for the next two sections on bedrock and seasonal high water.

Figure 7 depicts depth to seasonal high water for the soils found in the Washington Township. Depth to seasonal high water indicates the highest level below the surface that groundwater reaches in most years, typically occurring between December and April. Depth to seasonal high water is important in determining limitations for development. Potential impacts from a shallow depth to seasonal high water include flooding of basements, weakening of foundations and serious limitations for on-site disposal of effluent. Shallow seasonal high water tables, while presenting limitations for development, also support diverse plant and wildlife communities. Therefore, these factors are a good determinant for lands which deserve protection in order to limit destruction of property and fostering of diverse plant and animal communities that may support critical habitat for threatened and endangered species.

Of the soils in the Washington, 17.1% have generally shallow depths to seasonal high water. This category is comprised of soils ranging from 0 to 1.5 feet. A majority of the soils in this category are located along the Raritan River valley, where the most fertile farmland is. Most notable in Figure 7 are the soils located along the Raritan River and those that are atop Schooleys Mountain. These seasonally high water tables support wetland systems associated with the river system as well as the deciduous wooded wetlands that make up the headwaters for numerous streams.

Shallow depth to seasonal high water presents numerous limitations for development, most notably installation and maintenance of septic systems. Even with soil replacement and other engineering measures, septic systems placed in high water tables have the potential to pollute groundwater. And as most of the soils with shallow depths to seasonal high water are located around streams, there is also the potential for surface water contamination in periods of flooding. If a system is maintained improperly and ceases to function, effluent from the leach field that rises to the surface can be carried off in surface water. Even in times when flooding is not prevalent, a failing septic system with surface contamination can be introduced into surface water by runoff.

A fair number of the soils in the Township, 15.1%, have variable tendencies, ranging in depth from 0.5 to 4 feet. These soils, however, may be more inclined to have shallow depths to seasonal high water. A majority of the soils with variable tendencies are found on Schooleys Mountain, with a limited number around the Raritan River and in the southeastern corner of the Township. Soils with variable tendencies are difficult to categorize in terms of limitations, as in certain periods they don't exhibit tendencies that could severely limit community development activities. The soils in this category are most likely better categorized as having shallow depths in wet years and moderate depths in dry years.

A majority of the soils in the Township, 53.5%, have generally deep depths to seasonal high water at greater than 4 and even greater than 10 feet. While these soil types are found throughout Washington, there are large contiguous areas in the southeastern corner of the Township that are categorized as such. Most of the soils with deep depths to seasonal high water coincide with agriculturally productive soils of prime classification and are currently in agricultural production. The soils in this category are least

susceptible to potential problems related to development and any of the minor limitations that may be present can be overcome.

A mere 5.2% of the soils in Washington are classified as having moderate depth to seasonal high water. These soils generally exhibit depths of 2.5 to 5 feet to seasonal high water. Moderate depths to seasonal high water present difficulties in the installation of septic systems as well as the installation of foundations.

Figure 8 depicts the depth to bedrock for soils found in the Township. A vast majority of these soils have deep depths to bedrock, comprising 79.2% of all soils. Depth to bedrock is one of the many components that determine suitability for septic disposal of effluent, indicating the amount of soil that is present in the profile. The depth (profile) of the soil has a direct relationship on its ability to process effluent effectively, as soils remove the nitrates and other organic compounds present in human waste. The more soil present, the better its processing capabilities. Depth to bedrock also influences other community development factors such as septic system installation, road construction, basement and foundation construction, landscaping and drainage. The soils that are classified as being deep generally exhibit characteristic depths to bedrock that are greater than 6 and often time greater than 10 feet.

None of the soils in the Township are classified as having shallow depth to bedrock, however, 18.3% of soils exhibit variable tendencies. Of these, 6.7% are too variable to estimate. Soils that are classified as variable exhibit a range of depth to bedrock between 3.5 to 10 feet. Those on the shallower end of the spectrum could be seen as having moderate depths, but since the high end of the potential range approaches 10 feet, it is difficult to classify them as such. The mapping presented in Figure 8 is meant to indicate general ranges of depth to bedrock and only site specific investigation should be applied to regulatory measures.

The United States Department of Agriculture, Natural Resources Conservation Service rates soils based on their potential for erosion by wind and water. This is referred to as the “Highly Erodible Lands” class. For Washington Township, all of the soils are rated not highly erodible for wind and are therefore not mapped. They are, however, rated for erodibility by water, which is depicted in Figure 9.

Of the soils in Washington, 5,574 acres or 19.4% are rated as “Highly Erodible Lands” in the Soil Survey of Morris County. This indicates that the soil will erode when exposed to water, such as heavy rain or surface water runoff. A comparison of the location of “Highly Erodible Lands” and the steep slope mapping in Figure 15 shows that most all of the “Highly Erodible Lands” are in the areas of slope greater than 15%. A soil classified as “Highly Erodible Lands” almost always has a slope greater than 12%. Most of the soils in this category are of the Edneyville and Parker Series, some with rock outcroppings. This suggests that disturbance of these soils should be avoided and the underlying slopes regulated sufficiently to minimize soil loss and potential surface water quality impairment and maximize groundwater and aquifer recharge.

Of the remaining soils in the Township, 68.6% or 19,661 acres are categorized as “Potentially Highly Erodible”. This indicates these soils do not have the component of slope that “Highly Erodible Lands” do, but do have similar texture and surface properties and will experience erosion from heavy rain and swift moving surface water. Only 7.4% or 2,112 acres are classified as “Not Highly Erodible”. This class is primarily comprised of the Califon and Annandale series, as well as many of the soils found along the banks of the South Branch of the Raritan River.

Surface Water

Surface waters represent opportunities for recreation and the enjoyment of nature for Washington Township residents as well as visitors. The river and stream system and their associated wetlands provide habitat for native populations of spawning trout as well as habitat for other amphibians, birds and wildlife. Additionally, these water resources can be enjoyed by hikers, those with canoes and other small boats, bird watchers and many others.

The South Branch of the Raritan River is the principle surface water body in the Township, ultimately receiving the flow of streams draining 56.4% of the Township. The other major receiving surface water bodies are the Musconetcong, draining 24.8% of the Township and the Lamington River, draining 18.8% of the Township. The South Branch of the Raritan River is located in the central portion of Washington, flowing from the northeast to the southwest and meandering along Mill Road. The Musconetcong River forms that Township’s northwestern boundary with Warren County and the Lamington River and its tributaries form the Township’s southeastern border with Chester Township. Overall, there are 58.51 miles of streams and rivers located with the Township’s borders, draining approximately 43 sub watershed areas. The surface waters of Washington are depicted on Figure 10.

The tributaries to the three main rivers in the Township make up approximately 53% of the surface waters in Washington. These tributaries are Bungalow Brook, Cataract Brook, Drakes Brook, Electric Brook, Herzog Brook, Mine Brook, Rinehart Brook, Rockaway Creek, Schooleys Mountain Brook, Stephensburg Brook, Stony Brook, Tanners Brook and Trout Brook. The South Branch of the Raritan River accounts for 29.8% of the surface water flowing in Washington Township, with 17.44 miles. The Musconetcong accounts for 11% at 6.4 miles and the Lamington River comprises 4.2% or 2.44 miles. Table 1 lists the surface waters in the Township and their length and percentage of total mileage.

Table 1
Surface Waters

Name	Length(miles)	Percentage
Un-coded tributary (Catarack?)	0.70	1.2
Bungalow Brook	2.53	4.3
Drakes Brook	0.55	0.9
Electric Brook	4.28	7.3
Herzog Brook	0.8	1.4
Mine Brook	4.89	8.4
Rinehart Brook	2.59	4.4
Rockaway Creek	0.93	1.6
Schooleys Mountain Brook	2.92	5.0
Stephensburg Brook	2.28	3.9
Stony Brook	4.83	8.3
Tanners Brook	3.51	6.0
Trout Brook	1.42	2.4
Lamington River	2.44	4.2
Musconetcong River	6.4	11.0
South Branch of the Raritan River	17.44	29.8
Total	58.51	100.0

Surface Water Quality

In 1998, the New Jersey Department of Environmental Protection (NJDEP), Division of Environmental Planning, adopted new Surface Water Quality Standards,(N.J.A.C 7:9B). With these new standards, NJDEP has applied several different classifications to the surface waters that are present in the Township. These designations relate to the current quality of the water body, as well as a variety of uses and maintenance standards that will ensure its perpetuity as such. The classifications are depicted on Figure 11 and the uses are enumerated in the following discussion. (Note: text appearing in italics is directly excerpted from the standards)

Washington Township has within its borders miles of high quality waters. These are streams and rivers that are classified as FW2-TP (C1), or Trout Production Waters, and are depicted on Figure 11. These include the entire South Branch of the Raritan River, portions of the Musconetcong River and portions of the Lamington River. Many of their tributaries are also classified as high quality waters.

The “FW2” portion of the FW2-TP (C1) designation *means the general surface water classification applied to those fresh waters that are not designated as FW1 or Pinelands Waters. As a frame of reference, "FW1" means those fresh waters, as designated in N.J.A.C. 7:9B-1.15(h) Table 6, that are to be maintained in their natural state of quality*

(set aside for posterity) and not subjected to any man-made wastewater discharges or increases in runoff from anthropogenic activities. These waters are set aside for posterity because of their clarity, color, scenic setting, other characteristic or aesthetic value, unique ecological significance, exceptional recreational significance, exceptional water supply significance, or exceptional fisheries resource(s). The possible uses described for FW2 waters include:

1. Maintenance, migration and propagation of the natural and established biota;
2. Primary and secondary contact recreation;
3. Industrial and agricultural water supply;
4. Public potable water supply after conventional filtration treatment (a series of processes including filtration, flocculation, coagulation, and sedimentation, resulting in substantial particulate removal but no consistent removal of chemical constituents) and disinfection; and
5. Any other reasonable uses.

The TP portion of the designation FW2-TP (C1) denotes Trout Production status. Trout Production indicates that a waterway may support populations of native reproducing trout, provided that enabling environmental characteristics are sufficiently protected and managed. This indicates the need to implement appropriate development and environmental regulations to ensure the long-term viability of these surface water bodies as a pristine water source.

The (C1) portion of the FW2-TP (C1) status indicates a Category 1 anti-degradation policy, as follows: *“Category One Waters shall be protected from any measurable changes (including calculable or predicted changes) to the existing water quality. Water quality characteristics that are generally worse than the water quality criteria, except as due to natural conditions, shall be improved to maintain or provide for the designated uses where this can be accomplished without adverse impacts on organisms, communities or ecosystems of concern. Therefore, these waters are protected from changes in water quality.”* They are considered to possess exceptional aesthetic, ecological, recreational, and/or fishing value. Planning policies related to these waterways should respond to the need to preserve these values or to reestablish them in any instances where they have been lost.

A number of streams and rivers in the Township are classified as FW2-TM(C2). The TM denotes Trout Maintenance status, whereby a water body supports populations of trout, although none reproduce in those waters. The C2 indicates a Category 2 anti-degradation policy, as follows: *“For Category Two Waters, water quality characteristics that are generally better than, or equal to, the water quality standards shall be maintained within a range of quality that shall protect the existing/designated uses, as determined by studies acceptable to the Department, relating existing/designated uses to water quality. Where such studies are not available or are inconclusive, water quality shall be protected from changes that might be detrimental to the attainment of the designated uses or*

maintenance of the existing uses. Water quality characteristics that are generally worse than the water quality criteria shall be improved to meet the water quality criteria.”

Trout Production and Trout Maintenance differ from a planning perspective, as they carry different anti-degradation policies. Since Trout Production carries the C1 designation, the high quality of these waters must be maintained, and “shall be protected from any measurable changes” (NJDEP, 1998). The policy pertaining to Trout Maintenance waterways, carrying a C2 designation, is slightly less restrictive, requiring that they “shall be protected from changes that might be detrimental to the attainment of the designated uses or maintenance of the existing uses.” Nevertheless, it is noted that the Division of Water Resources classification of the streams and rivers in the Township are clearly intended to promote careful conservation; application of the anti-degradation policy may even imply restrictive use of, and restrictive development around, Trout Production waters located in Washington.

The Surface Water Quality Standards adopted in 1998 also established strict guidelines for the presence of numerous contaminants, both man made and naturally occurring. Included in these categories are items such as fecal coliform, enterococci, dissolved oxygen, floating colloidal solids, petroleum hydrocarbons, phosphorus, suspended solids, total dissolved solids, sulfates and taste and odor producing substances. Also important, especially to areas of trout maintenance and trout production, are alterations to temperature and the addition of toxic substances.

There are only two tributaries in the Township of Washington that are designated FW2-NT (C2). These are Drakes Brook, in the northeastern corner of the Township and Tanners Brook, which runs parallel to the South Branch of the Raritan River but drains to the Lamington River. These waters carry the Non-Trout (NT) designation, meaning they are surface waters which cannot support trout populations. They are, however, subject to the Category 2 anti-degradation policy of the Surface Water Quality Standards and are therefore afforded some protection. A common misconception is that waterways carrying the TP (trout production) and TM (trout maintenance) designations should be scrutinized for planning purposes, applying stricter standards pertaining to development practices. And while this is entirely appropriate, all surface waters, regardless of designation, should be afforded the same consideration if critical habitat is to be protected and a diversity of species is to be encouraged.

Figure 11 also indicates theoretical buffers that would be required on the Trout Production and Trout Maintenance streams and rivers within the Township in accordance with State regulations. Trout Production streams and rivers are considered “exceptional resource value” waterways. In addition, any wetland that drains into a Trout Production stream or river is also considered to be of “exceptional resource value”. This means they are afforded a 150 foot transition area under the Freshwater Wetlands Protection Act Rules adopted in 2001.

Trout Maintenance streams and rivers are also afforded some amount of protection under State regulations. Trout Maintenance streams are considered to be waterways of

“intermediate resource value” and require a 50 foot transition area. Wetlands draining to a Trout Maintenance waterway are also afforded this same protection and are designated as of “intermediate resource value”, thereby receiving a 50 foot buffer. These transition areas serve to buffer sensitive wetlands, providing some filtration of pollutants and providing space between human activities and wildlife.

The protection of these lands through the Surface Water Quality Standards and the Freshwater Wetlands Protection Act Rules have far reaching impacts on land use in the Township. As depicted in Figure 11, buffers stretch out into the properties surrounding many of the wetlands on Schooleys Mountain, the South Branch river valley and the Musconetcong river valley. These buffers impact landowners and serve to organize development away from resources to be protected under the anti-degradation policies in the State regulations. They will also, however, promote the protection of the valuable water resources of the Township and the State.

Enhanced storm water quality treatment systems and practices such as bioretention basins or extended detention basins to create a shallow marsh that may yield far higher pollutant removal efficiencies while blending into the natural surroundings. Another appropriate strategy is to protect the riparian woodland canopies that effectively regulate water temperatures in watercourses that support trout propagation and trout habitat. Enhanced stream corridor buffering may be indicated based upon a variety of physical characteristics and management objectives. A 1989 study published by Cook College, Watershed management Strategies for New Jersey presents recommendations for buffering of up to 200’ for sediment control, nutrient pollutant removal and stream temperature control. Additionally a buffer of up to 300’ may be indicated for wildlife habitat protection.

Sub watersheds

Sub watershed boundaries reflect the drainage basins of smaller and intermittent streams in the in the Township. Knowledge of these drainage basins is especially important since the basins will implicitly define the area from which contamination found in their respective surface water bodies originates. Accurate knowledge of the drainage basins is an important consideration from a land use perspective, if the Township’s goals of maintaining high water quality in particular drainage basins are to be achieved.

The sub-watershed boundaries for the Township are depicted on Figure 12. Washington is divided into 43 sub-watershed areas, draining to three main rivers with 10 smaller tributaries. This divides the Township into three distinct watershed areas for the Musconetcong, Lamington and Raritan rivers.

The Musconetcong River sub-watersheds drain off of Schooley’s Mountain, flowing to the northwest. Tributaries to the Musconetcong include Mine Brook, Bungalow Brook and Stephensburg Brook. As stated previously, all of these are high quality waters with Trout Production or Trout Maintenance status.

The Lamington River sub-watersheds drain to the southeast off of Fox Hill Range. Tributaries to the Lamington in the southeastern corner of the Township include Rockaway Creek, Rinehart Brook and Tanners Brook. Only Tanners Brook is not a Trout Production waterway.

The South Branch of the Raritan River has the most extensive drainage area in Washington Township, draining approximately 16,200 acres. The tributaries to the South Branch in the central portion of Washington include Stony Brook, Drakes Brook and the Electric Brook. All the surface waters that drain to the South Branch with the exception of Drakes Brook are Trout Production waters.

Most all of the sub-watersheds depicted in Figure 12 deserve special consideration with respect to planning policies related to surface water. These sub-watersheds drain directly into Category 1 Trout Production and Category 2 Trout Maintenance surface waters. It would be reasonable for the Township to fashion stricter storm water management guidelines for development occurring in these areas. This could include use of water quality and bio-retention basins, reduction in the amount of paved surfaces and decreasing density of development.

Stricter standards provide a means to maintain the high quality of surface waters in the Township. A public information campaign designed to raise awareness of these standards and their implications would be a logical step as well. Many people feel a sense of stewardship when they know that the land they have is special, which includes much of the land in Washington Township.

Wetlands

Wetland habitats generally occur between well-drained upland areas that rarely receive floodwater and low-lying, permanently flooded waters of lakes or streams. Wetlands characteristically include swamps, bogs, marshes and bottomland areas. Although they usually lie along rivers and lakes, wetlands may occur on slopes where they are associated with groundwater seeps. Wetlands depicted on Figure 13 are taken from the New Jersey Department of Environmental Protection's Land Use/Land Cover information from 1995. Wetlands were photo-interpreted from Color Infrared aerial photography.

The importance of wetlands is multi-faceted, particularly as they serve as aquifer recharge areas and as areas that trap and filter pollutants through natural bio-chemical processes. The filtering capabilities of wetlands are particularly useful along the trout production and trout maintenance waters of the Township. Wetlands here may serve as a buffer to harmful non-point source pollutants. Wetlands also serve as headwaters to many of the tributary streams that are within Washington.

The NJDEP wetland mapping in Figure 13 indicates that 4,226.47 acres of wetlands exist in the Township of Washington. The predominant wetland type is deciduous wooded, comprising just over 79% of the total wetlands at 3,348 acres. The wetlands found along

the South Branch of the Raritan are mixed; mostly deciduous wooded wetlands, but with a mix of deciduous shrubby and herbaceous wetlands. This bodes well for the continuation of trout production and maintenance waters in this area, as a buffer is set up affording some protection from development. Additionally, the wooded areas along stream and river corridors also offer protection from temperature fluctuations.

The other significant deciduous wooded wetlands are found atop Schooleys Mountain. These wetlands are significant habitat and aquifer recharge areas, also acting as headwaters to tributaries that feed into the Musconetcong and South Branch rivers.

Nine wetland types are identified in Figure 13, including herbaceous, coniferous wooded, deciduous shrubby, successional, disturbed, managed, agricultural and wetland right of way. The table below lists the wetlands by type and the acreage and percentage of each found within the Township.

**Table 2
Wetland Types**

Type	Acres	Percentage
Agricultural Wetlands	278.54	6.6
Coniferous Wooded Wetlands	19.15	0.5
Deciduous Shrubby Wetlands	281.47	6.7
Successional Wetlands	18.31	0.4
Deciduous Wooded Wetlands	3,348.11	79.2
Herbaceous Wetlands	157.72	3.7
Disturbed Wetlands	49.23	1.2
Managed Wetlands	60.82	1.4
Wetland Right of Way	13.13	0.3
Total	4,226.47	100.0

Most of the wetlands that are found in Washington are designated as Palustrine and are typically described as marshy, boggy or swampy. The types of Palustrine wetlands in the Township are further defined according to the dominant types of vegetation found in each, or according to the form and composition of the substrate material of each wetland. The Palustrine Forested Broad Leaf Deciduous wetland, for example, is at least 50% forested and forested predominately with deciduous trees having broad leaves, such as oak or maple.

The other classifications of palustrine wetlands include emergent, open water and scrub/shrub broad leaved deciduous. The open water classification refers to wetland areas that appear wet, as in a ponded area. The emergent designation means that most of the characteristic vegetation is rooted in shallow water. Small trees and shrubs dominate the scrub/shrub type of wetland.

Although State regulations afford a fair amount of protection for wetlands, it is prudent to consider additional environmental resource protection strategies that can build upon these State protections. More and more, the importance of wetlands in flood control and water quality is becoming known. The importance for careful management of wetlands and their environs was highlighted by Hurricane Floyd in 1999, which destroyed millions of dollars worth of property and even claimed lives. It is careful planning and consideration that can avoid loss from disasters such as Hurricane Floyd in the future.

FEMA Flood zones

The Federal Emergency Management Agency (FEMA) maps the 100-year floodplain that occurs along all of the streams and rivers in the Township, as depicted on Figure 14. This mapping is done in order to provide information to homeowners, floodplain managers, engineers and flood insurance providers on the risk associated with dwellings and structures as it pertains to flooding.

Washington Township participates in the National Flood Insurance Program (NFIP), whereby the Township adopted standards regarding development in the floodplain. A Flood Hazard Study was completed for the Township in 1983, initiating their participation in the Program. Washington Township has implemented development regulations to prohibit or limit development in the floodplain in order to reduce the risk of damage occurring due to flooding, thereby protecting public safety. When a structure that was in the floodplain prior to the Township joining NFIP applies for a building permit for substantial improvement (greater than 50% of the market value), the Township will require the structure to come into compliance with the development regulations as they pertain to floodplains. This usually means that the structure would have to be raised above the predicted level of a flood. Homeowners that have flood insurance may be eligible for up to \$20,000 to help defray the costs of this requirement. The Township and County have also condemned property in the floodplain in order to eliminate the potential for damage due to flooding.

FEMA strongly recommends that all persons within a special flood hazard area shown on the Flood Insurance Rate Maps (FIRM) purchase flood insurance. They also recommend that even those not directly in a flood hazard area purchase insurance, as flood damage can occur outside the flood hazard areas as well.

The flood plain along the South Branch of the Raritan River occurs in variable spans, as small as 300 and as large as 1500 feet in width. The flood plain along the Mine Brook in the northwestern corner of the Township is also extensive, at some points spanning 1,000 feet from one side of the brook to the other. This is due to the relatively large upstream area that drains to Mine Brook and its proximity to the Musconetcong River. The 100-year floodplain for the other brooks in the Township are comparatively limited, and average 100 to 200 feet from side to side.

The mapping of the 100-year floodplain that occurred through FIRM is essential, due to the hazard of flood associated with these areas. Clearly the extent of the 100-year flood

plain imposes severe limitations on development and a sound policy is to prohibit development throughout these mapped areas, as the Township generally tries to do. Figure 14 depicts the general location of the 100 Year and 500 Year floodplain as indicated by the Federal Emergency Management Agency data.

Steep Slopes

The underlying geology and rivers and streams had much to do with the formation of the current landform in Washington Township. Most of the land in the Township is on relatively flat ground, with steep slopes occurring in the transition areas between the river valleys and the higher elevations of Schooleys Mountain, Fox Hill Range and Hacklebarney, near the Lamington River. This is apparent in Figure 15, which depicts slopes that are greater than 15% in the Township and surrounding area.

The steep slopes of Washington occur in four distinct bands, representing transition areas of the landscape. The general topography of the Township is depicted on Figure 15. The first transition is from Schooleys Mountain to the Musconetcong River valley in the northwestern part of the Township. Many of the slopes in this area are greater than 30%. The second transition is from Schooleys Mountain to the South Branch River valley. This transition is more abrupt than that to the Musconetcong, appearing as a more defined ridge with great elevation changes in a small distance. Certain areas of the ridge experience 400 feet of vertical change in just 1,000 feet, with slope greater than 40%.

The third area of transition occurs from the South Branch river valley to the Fox Hill Range. Most of the steep slopes in this area are to the west of Tanners Brook and most of the slopes here are between 15% and 25%. There is another valley between the Fox Hill Range and the Lamington River valley, where the fourth area of steep slopes occurs in the Township. Many of the slopes in the southeastern corner of Washington along the Lamington River are greater than 25%. Here slopes commonly exceed 50% running down to the banks of the Lamington.

Steep slopes have a number of implications on community development and the environment. Slopes in excess of 25% present serious limitations for development, often times requiring extensive and costly engineering and construction. Development on slopes in excess of 15% presents implications pertaining to degradation of the environment, if not properly managed. Since most slopes occur in and around the banks of streams and rivers, clearing these areas for development creates the potential for erosion and stream sedimentation. With many of the steep slopes in the Township occurring near the banks of rivers and streams, concurrent with high quality Trout Production and Trout Maintenance streams, protection of steep slope areas becomes more critical. The clearing of trees and vegetation that stabilizes the slope not only causes erosion and sedimentation problems, it can also contribute to increased water temperatures in streams and rivers.

Due to the concurrence of high quality surface waters and steep slopes, continuation of regulatory measures through the Land Development Ordinance is paramount to the

protection of water quality in Trout Production and Trout Maintenance waterways. A steward program should also be initiated in order to alert landowners to the importance of these considerations when undertaking activities on their land. A regulatory framework should be maintained to limit clearing in these areas. Limiting clearing of vegetation on slopes greater than 15% assures that steep faces will not be subject to erosion and carry sediment to streams and rivers. Vegetative buffers should be required and maintained through the land development ordinance, establishing areas to slow potential sedimentation, filtering it from water prior to reaching streams and rivers.

Forested Areas

Including wooded wetlands, Washington Township has over 15,000 acres of forested areas. This is just over 50% of the total acreage of the Township, representing a fairly significant portion of land cover. An overwhelming part, 10,294 acres or 67.5%, is deciduous forest. Combined with deciduous wooded wetlands, over 90% of the forested areas in Washington are deciduous in nature. Table 3 below lists the forest types depicted on Figure 17 and the percentage that each type represents.

**Table 3
Forest Types**

Forest Type	Acres	Percentage
Brush Covered Field	817.59	5.4
Coniferous Forest	83.49	0.5
Coniferous Wooded Wetlands	19.15	0.1
Deciduous Forest	10,294.77	67.5
Deciduous Wooded Wetlands	3,627.83	23.8
Mixed Forest	309.99	2.0
Mixed Wooded Wetlands	1.75	0.0
Plantation	93.20	0.6
Total	15,247.76	100.0

The forested areas of Washington Township play a vital role in many ecosystem functions, including the following:

- Habitat for threatened and endangered species
- Regulate stream temperatures to support Trout Production and Trout Maintenance of streams and rivers
- Stabilization of steep slopes and reduction of erosion and sedimentation
- Wooded wetlands act as headwaters to tributary streams of the Lamington, South Branch and Musconetcong rivers
- Conversion of CO₂ to oxygen
- Dissipate heat and provide shade
- Regulate building temperatures and reduce reliance on heating and cooling systems

- Reduce pollution
- Reduce noise pollution
- Provide privacy and screening
- Enhanced groundwater recharge capacities

"The net cooling effect of a young, healthy tree is equivalent to ten room-size air conditioners operating 20 hours a day." -U.S. Department of Agriculture

"Trees can boost the market value of your home by an average of 6 or 7 percent." -Dr. Lowell Ponte

"Landscaping, especially with trees, can increase property values as much as 20 percent." -Management Information Services/ICMA

"One acre of forest absorbs six tons of carbon dioxide and puts out four tons of oxygen. This is enough to meet the annual needs of 18 people." -U.S. Department of Agriculture

"There are about 60-to 200- million spaces along our city streets where trees could be planted. This translates to the potential to absorb 33 million more tons of CO2 every year, and saving \$4 billion in energy costs." -National Wildlife Federation

"Trees properly placed around buildings can reduce air conditioning needs by 30 percent and can save 20 - 50 percent in energy used for heating." -USDA Forest Service

"Trees can be a stimulus to economic development, attracting new business and tourism. Commercial retail areas are more attractive to shoppers, apartments rent more quickly, tenants stay longer, and space in a wooded setting is more valuable to sell or rent." -The National Arbor Day Foundation

"Shade from trees could save up to \$175 per year (per structure) in air conditioning costs." -Dr. Lowell Ponte

"Healthy, mature trees add an average of 10 percent to a property's value." -USDA Forest Service

"The planting of trees means improved water quality, resulting in less runoff and erosion. This allows more recharging of the ground water supply. Wooded areas help prevent the transport of sediment and chemicals into streams." -USDA Forest Service

"In laboratory research, visual exposure to settings with trees has produced significant recovery from stress within five minutes, as indicated by changes in blood pressure and muscle tension." -Dr. Roger S. Ulrich Texas A&M University

The benefits of trees are fairly well documented, fostering a healthier environment for humans and animals while simultaneously providing economic benefits. Therefore it is important for the Township to continue to encourage the preservation and wise use of

forest resources within Washington. This can be achieved through the development review process, establishing strong limits of clearing and making tree and forest preservation a known priority of the Planning Board. However, woodland clearing on large wooded tracts should be limited to ensure that forest health is maintained and the benefits that accrue to other natural resources, such as protection of critical habitat are assured.

Many communities have instituted a permitting process for individual landowners who wish to cut down trees, requiring an application that allows a regulatory board or agency insight into tree cutting activities. Often times, this is unpopular with residents if it adds an unnecessary level of bureaucracy. Another approach may recognize legitimate reasons for tree removal such as for residential site amenities including garages, pools, tennis courts, etc., while instituting a regulatory framework for large parcels with critical habitat woodland resources. Given public sentiment on measures such as tree cutting ordinances, the best approach is often a public education campaign that explains the benefits of trees and how they are a vital part of the ecosystem and establishing provisions allowing a modest amount of tree clearing without a permit requirement. Given the high quality of many of the ecosystems in the Township, an overall approach promoting stewardship of all resources is likely the best way to address the need to regulate critical habitat environment. This should include the preparation of a tree conservation plan that seeks to manage critical forest habitat and promote forest health while protecting landowner rights.

Agricultural Lands

Washington Township has just under 7,000 acres of land that can be categorized as agricultural in nature, as depicted in Figure 18. This represents about 25% of the Township's total land area. The other three categories depicted in Figure 17 represent liberal interpretation of the NJDEP land use/land cover data from 1995. Agricultural wetlands are often areas that are actively farmed and not necessarily wetlands in the usual sense. Most times they would not be identified as wetlands in field delineation and therefore are usually better categorized as agricultural land. The brush covered field category could be interpreted two ways. The first is as an agricultural field that has not been actively farmed for more than two years and is now undergoing the early stages of succession. It could, however, with minor attention, be returned to active production rather quickly. The second potential interpretation is as an agricultural field that has been converted to part of a residence now undergoing the early stages of succession. In this case, it is likely that it will be untouched and continue the trend toward a forested area. The plantation category presented in Figure 18 is indicative of nursery crop production. This is recognized as a form of agriculture, although not conforming to the traditional definition that comes to the mind of most people when they hear the term agriculture.

A majority of land that is truly agricultural in nature is found in the valley of the South Branch of the Raritan River. A belt of rich agricultural soils is present on the floor of the valley, representing some of the most productive soils in the County (Soil Survey of Morris County, USDA NRCS). There are, however, other areas of agriculture spread

throughout the Township, although not in as great a concentration as found in the valley. The other concentrations are located east of the Fox Hill Range in the southeast corner of the Township and then in smaller pockets on Schooleys Mountain. The Musconetcong River valley also has very fertile soils and is home to agricultural operations. These other agricultural areas are a significant resource in the community that should be protected where possible. The Township should preserve agricultural areas wherever possible, particularly when the conversion of farmland to a non-agricultural use is proposed. The township's mandatory clustering ordinance that requires the set aside of at least 50% of a parcel of land when subdivided, is designed to protect agricultural areas. This ordinance should be reexamined periodically to ensure that areas set aside are maximizing farmland retention.

Wildlife and Critical Habitat

In 1993, the New Jersey Department of Environmental Protection Endangered and Non-game Species Program (ENSP) initiated a move to a landscape level approach for endangered species protection. With suburbanization and development occurring in all areas of the State, an increasing amount of habitat that could potentially support threatened and endangered species was being lost daily.

In order to address habitat loss, ENSP needed to grasp the extent and suitability of remaining resources in the State. To accomplish this, they partnered with the Center for Remote Sensing and Spatial Analysis (CRSSA) at Cook College, Rutgers University. Utilizing Landsat Thematic Mapper satellite imagery, CRSSA mapped land cover for the entire State of New Jersey, broken down into 20 different habitat/land cover types. After generalized cover types were classified, detailed methodologies were developed to address the habitat suitability issues for each focus category, including beach/dunes, emergent landscapes, forested wetlands, forested areas and grasslands.

After reclassifying data based on standards developed for each category, the habitat data was intersected or combined with the Natural Heritage Program's Biological Conservation Database (BCD). This database is a Geographic Information System (GIS) coverage that provides information on the sighting of threatened and endangered species, based on the field work of ENSP scientists and sightings reported by members of the public. It is the most comprehensive data available in digital form on the location of threatened and endangered species.

The combination of these two data sets resulted in the data that is depicted in Figures 19 and 20. The Landscapes Program data provides users with scientifically sound, peer-reviewed information on the location of critical habitat based on the conservation status of the species that are present. Habitats are ranked on a scale of 1 to 5, based on the following criteria:

Table 4
NJ Landscapes Program Ranking System

Rank	Indication
1	Suitable habitat, no special concern, threatened or endangered species sighted
2	Habitat patch with species of special concern present
3	Habitat patch with State threatened species present
4	Habitat patch with State endangered species present
5	Habitat patch with Federal threatened or endangered species present

Washington Township is rich in habitat that is suitable to support populations of threatened and endangered species. In fact, there isn't much of the Township that isn't suited as habitat for threatened and endangered species. Four of the five Landscapes Project categories are represented in the Township including forested wetland, emergent, forest and grassland habitat. Most of these habitat types have documented presence of State threatened and endangered species. Species include the wood turtle, bog turtle, barred owl, timber rattlesnake and the Cooper's hawk.

Schooleys Mountain contains significant amounts of contiguous forest habitat with the presence of State endangered species documented. The forested areas here stretch north and south of the Township and are part of the vast contiguous forest resources that characterize the Highlands region. Schooleys Mountain also possesses grassland habitat with documented State threatened and endangered species. This combination, along with the Trout Production and Trout Maintenance streams, defines the importance of the need for preservation initiatives in this area.

The same is true for the Hacklebarney area in the southeastern corner of the Township. The steep slopes in the area of the Lamington River valley are forested and contain State threatened and endangered species. Hacklebarney State Park makes up about half of this forested area, assuring that it will be preserved for the future and remain intact, continuing to provide habitat.

The South Branch River valley is home to many State threatened and endangered as well as federally listed threatened and endangered species. The agricultural activities in the valley are particularly well suited to the provision of grassland habitat for nesting and migrating birds. This is represented fairly well on Figure 19. Also shown are two patches of habitat with federally listed threatened and endangered species. The first sits just below the ridgeline northeast of the river along Mill Road. The second is in the southwest corner of the valley, just below the ridgeline adjacent to Mill Road. This grassland habitat extends into Lebanon Township in Hunterdon County and is most likely home to a bird species.

The farmland of the Musconetcong valley also contains habitat that contains State threatened species. As mentioned previously, some agricultural activities, especially the production of hay and other grain crops, is uniquely compatible with the needs of bird species. Often the times of year that harvesting takes place occurs after birds have completed their reproductive cycles and continued with migration.

Figure 20 depicts the forested wetland and emergent habitat that was identified through the New Jersey Landscapes Program. Much of the forested wetland habitat present on Schooleys Mountain is only suitable to the presence of threatened and endangered species, with only limited sightings of state threatened species in confined patches. The same holds true for the Fox Hill Range near Tanners Brook. The South Branch River valley, though, is a different story altogether.

Close inspection of Figure 20 shows that the South Branch has vast amounts of habitat with federally listed threatened and endangered species. The section north of Long Valley has both forested wetland and emergent habitat. The same is true for the stretch just north of Lebanon Township. The remaining habitat depicted along the South Branch is home to State threatened species. This data alone indicates the need to fashion strict preservation based guidelines for the South Branch pertaining to the protection of critical resources, the arrangement of development and strict standards limiting clearing and requiring enhanced storm water management. In combination with the Trout Production status of the waterway, the South Branch represents one of the most pristine waters in the Township.

The Landscapes Program data was intended to aid municipalities, County and State governments, conservation agencies and citizens in determining the extent of critical habitat within their respective jurisdictions and communities. After identifying critical habitat, a variety of means can be employed to protect it, including the following:

- Prioritizing open space acquisitions based on the presence of habitat for threatened and endangered species
- Adopting regulations aimed at protecting critical habitat
- Adopting management policies for open space that are consistent with protection of critical habitat
- Permitting flexibility in development techniques that can accommodate the protection of critical habitat
- Promoting land stewardship practices that are consistent with the protection of critical habitat

Groundwater Contamination¹

Figure 21 depicts the New Jersey Department of Environmental Protection data for the Currently Known Extent (CKE) of ground water pollution for Washington Township. CKE areas are geographically defined areas within which the local ground water resources are known to be compromised because the water quality exceeds drinking water and ground water quality standards for specific contaminants. Historically, a number of the CKEs have also been identified as Well Restriction Areas (WRAs). The regulatory authority for developing CKEs is in N.J.A.C. 7:1J, entitled Processing of Damage Claims Pursuant to the Spill Compensation and Control Act. CKEs are used by NJDEP staff, water purveyors, and local officials to make decisions concerning appropriate treatment and/or replacement of contaminated drinking water supplies.

The CKE areas, as shown, are intended to provide information to the public about contaminated ground water areas in the state. Unless precautionary measures are taken to protect potable users, well installation should be avoided. This information is made available so informed decisions can be made on well location, design, or treatment before wells are proposed, permitted, and installed.

NJDEP is currently engaged in the reassessment and investigation of existing CKEs; however, it is important to note that CKEs are approximations of the actual aerial extent of ground water contamination and the boundaries presented here may change over time as new information is developed. At this time, the records of the CKEs do not include a list of the specific ground water contaminants. Also, it should be noted that CKE areas might overlap with other CKEs and Classification Exception Areas (CEAs). Revisions and additions will be used to update the CKE database as new information is received and processed.

In Washington Township, there are two known groundwater contamination sources. The first is the Combe Fill South Landfill in Chester Township, with a generalized extent of approximately 2,900 acres. The second is the Cleveland Industrial Center, with a generalized extent of 3,200 acres. These two known extents overlap each other in the vicinity of Black River Road.

Known Contaminated Sites²

Figure 22 shows the Known Contaminated Sites (KCS) List for Washington Township, dated 2001. KCS are those sites and properties within the state where contamination of soil or ground water has been identified or where there has been, or there is suspected to

¹ *NJDEP Currently Known Extent of Groundwater Contamination (CKE) for New Jersey*, New Jersey Department of Environmental Protection (NJDEP), Site Remediation Program (SRP), John Defina (ed.), 12/15/2001

² *NJDEP Known Contaminated Site List, 2001*, Department of Environmental Protection (NJDEP), Division of Publicly Funded Site Remediation, Site Remediation Program (SRP), John Defina (ed.), 11/13/2001

have been, a discharge of contamination. This list of Known Contaminated Sites may include sites where remediation is either currently under way, required but not yet initiated or has been completed. It is important to note that some of the cases listed may have been fully remediated and should no longer be listed as known contaminated sites. Additionally new contaminated sites have been identified since the creation of this list and are not included here.

Sites identified in the Known Contaminated Sites in New Jersey report can undergo a variety of activities, ranging from relatively simple "cut and scrape" removals to highly complex remedial activities. The sites included in this data-set are handled under various regulatory programs administered by the NJDEP's Site Remediation Program, including the following state and federal statutes:

I. State

1. Brownfield and Contaminated Site Remediation Act
2. Industrial Site Recovery Act
3. Solid Waste Management Act
4. Spill Compensation & Control Act
5. Underground Storage of Hazardous Substances Act
6. Water Pollution Control Act

II. Federal

1. Comprehensive Environmental Response, Compensation and Liability Act
2. Superfund Amendments and Reauthorization Act
3. Resource Conservation and Recovery Act Corrective Action Program

III . A site can be regulated under more than one of these regulatory programs.

1. As a result, more than one case can be associated with a site.
2. A case is an administrative designation based on the regulatory authority under which an entire contaminated site or area of concern is being addressed.
3. Sites with complex contamination issues can have several cases to address various sources of pollution found.
4. A site and each associated case(s) is classified as either active, when the site is assigned to a specific remedial program area, or pending, when the site has yet to be assigned to a specific remedial program area.

As a public service, the Site Remediation Program administers the Site Information Program that offers general information on known contaminated sites to prospective homebuyers and sellers, real estate agents, environmental and legal professionals, lending institutions and other governmental agencies. The program also makes referrals to appropriate contacts and provides detailed information about Superfund and other high-profile sites. Summary descriptions from the annually produced Publicly Funded Cleanups Site Status Report are available and the reports for the Cleveland Industrial and Combe Fill South Landfill are appended to the end of this section.

A person should not use this data on the Known Contaminated Sites in New Jersey as a sole source when conducting a due diligence investigation into whether or not a particular site is contaminated. If a site of interest is not listed, it does not alleviate a prospective purchaser from performing a due diligence search.