

Crosswicks Creek/Doctors Creek Watershed Greenway Plan



Crosswicks Creek/Doctors Creek Watershed Regional Greenway
Planning Group
and
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Prepared For:

Crosswicks Creek Doctors Creek Regional Greenway Planning Group
Allentown Borough
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Upper Freehold Township
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EXECUTIVE SUMMARY

Introduction

The Crosswicks Creek/Doctors Creek Watershed Greenway Plan is focused on three primary objectives: to protect water quality, to preserve historic vistas and sites, and to develop a system of trails. Crosswicks Creek is located in central New Jersey near Trenton in parts of four counties: Mercer, Monmouth, Ocean, and Burlington. It includes parts or all of fifteen municipalities: Allentown Borough, Hamilton Township, Millstone Township, Plumsted Township, Washington Township, Upper Freehold Township, Bordentown City, Bordentown Township, Trenton City, New Hanover Township, North Hanover Township, Chesterfield Township, Wrightstown Boro, Springfield Township, and Jackson Township.

The Crosswicks Creek/Doctors Creek Greenway Plan resulted from the efforts of the Crosswicks Creek/Doctors Creek Regional Greenway Planning Group (Greenway Group), which consist of representatives from Allentown Borough, Hamilton Township, Upper Freehold Township, Washington Township, Millstone Township, and Plumsted Township.

A greenway plan can be a useful planning tool for land preservation. A greenway is generally considered linear open space that connects points of interest. A greenway can be used for recreation, transportation, or preservation and can include publicly and privately owned land. Greenways that allow public access can provide an opportunity for people to interact with the outdoors. By having an approved greenway plan, municipalities are able to make smarter decisions about land use.

Crosswicks Creek Watershed

The Crosswicks Creek Watershed (which includes the Doctors Creek Watershed) covers 146 square miles and has many tributaries. The Doctors Creek, which flows through Millstone Township, Upper Freehold Township, Allentown Borough, and Hamilton Township, is a major tributary of Crosswicks Creek. Crosswicks Creek itself is a valuable natural resource that provides habitat for a variety of wildlife. The Creek drains into the Delaware River near the Hamilton-Trenton-Bordentown Marsh, which is recognized for its diverse habitat types. The marsh is home to a myriad of different plant and animal species. For this reason, the water quality of Crosswicks Creek and its tributaries is important to the health of the Hamilton-Trenton-Bordentown Marsh and to the plants and animals that the marsh supports. In order to address the protection of water quality, an emphasis was placed on identifying opportunities to protect riparian corridors.



The Crosswicks Creek/Doctors Creek Watershed has a rich history. Many of the skirmishes leading to the Battle of Monmouth during the Revolutionary War occurred in

the Crosswicks Creek/Doctors Creek Watershed. Many of these areas still remain as they may have been during the Revolutionary War. In addition to the Revolutionary War sites, the watershed is home to a number of other historically significant sites. Native American artifacts have been found along Crosswicks Creek. Fossils have also been found in the watershed. At least one house in the watershed was part of the Underground Railroad. The historical character of the watershed is still present in many places throughout the watershed. New Egypt was once known for its boarding houses, many of which are still standing, although they are no longer used as boarding houses. The Main Streets of Allentown and New Egypt maintain the same small town character that they have had for generations. The watershed is spotted with old churches, farms, and mills. Many of the communities in the watershed developed originally around mills. The town centers and the agricultural areas provide historic vistas, which are threatened by development.



The Planning Process

The planning process began with the formation of the Crosswicks Creek/Doctors Creek Watershed Regional Greenway Planning Group (the Greenway Group) and with the receipt of New Jersey Department of Environmental Protection grant funds. At the time of the grant award, six municipalities had agreed to join the Greenway Group: Hamilton Township, Allentown Borough, Washington Township, Millstone Township, Upper Freehold Township, and Plumsted Township. Each of these municipalities contributed funds to supply a match for the New Jersey Department of Environmental Protection grant. The combined resources of the participating municipalities made this project a “regional” planning effort from the start.

Meetings were conducted once a month to facilitate the planning process and identify important plan elements. General information and data was gathered from a variety of sources to develop the greenway plan.

During this project, priorities were developed to protect water quality. These priorities included protecting riparian areas (the areas near streams), steep slopes, and headwater areas and managing stormwater. Steep slopes of particular concern have been identified for priority protection.

Greenway Group members and representatives from local historical societies, including the Allentown-Upper Freehold Historical Society and the New Egypt Historical Society, identified some of the most significant historic sites and vistas in the watershed. These historic sites have been incorporated into this plan to encourage the protection of these sites.

Trails are an important recreational resource in any community, particularly in densely developed communities like those found in the Crosswicks Creek Watershed. There are already some trails in and near the watershed. Potential trail locations were identified during this project. As development plans are presented, municipalities can ask developers to incorporate trails into their plans. By having potential trail locations

identified, efforts can be focused on these locations and additional trails can be developed with this plan in mind.

Conclusions

Development is a major threat to the cultural and environmental resources of the Crosswicks Creek Watershed. In order to meet the goals of the project, the following objectives need to be met.

- Stream corridors need to be conserved.
- Headwater streams located in Fort Dix, Jackson Township, and Millstone Township need to be protected.
- Stormwater management efforts should be initiated.
- Culturally and environmentally significant waterbodies should be protected and restored.
- Historical sites, vistas, and views should be protected.
- Scenic vistas and views should be protected.
- Recreational trails should be created.
- Trails should be developed using appropriate and environmentally-sensitive materials.

Greenway Plan Recommendations

Specific recommendations are presented in this plan. These recommendations include the following:

- Stream corridors should be protected by conserving a 35-foot or greater buffer and by protecting steep slopes from development. Municipalities should adopt a riparian buffer ordinance.
- Fort Dix Military Reservation, Bordentown City, Bordentown Township, and Jackson Township need to be invited to participate in the implementation of this plan.
- Headwater areas need to be conserved in their natural state. As needed, restoration efforts should be conducted in Fort Dix to improve the quality of the headwater streams.
- Municipalities in the watershed should implement the new NPDES Phase II permit regulations as soon as possible.
- New development plans should be reviewed for their effect on stormwater quantity (peak flow and volume) and quality.
- Environmental ordinances should be adopted by the municipalities. These new ordinances should include Steep Slopes and Stormwater Management.
- New zones should be created in the municipal zoning ordinances, such as a water quality protection zone (which would include floodplain protection, wetland protection, and riparian buffer protection).
- Options for improving Oakford Lake should be evaluated. Though dredging is expensive, it is an effective way to improve the water quality and aesthetic appeal of Oakford Lake. In addition to removing sediment, dredging will remove nutrients, such as nitrogen and phosphorus, which contribute to algae blooms and aquatic weed growth.

- Historic Preservation and Historic Vista Protection ordinances should be adopted by municipalities. These ordinances should include design criteria for lessening the visual impact of new developments.
- Municipalities should negotiate with developers to acquire easements, particularly for areas that are included in this greenway plan and areas that are environmentally-sensitive, such as wetlands.
- A feasibility study should be performed to identify the specific location of proposed trails and historic markers.

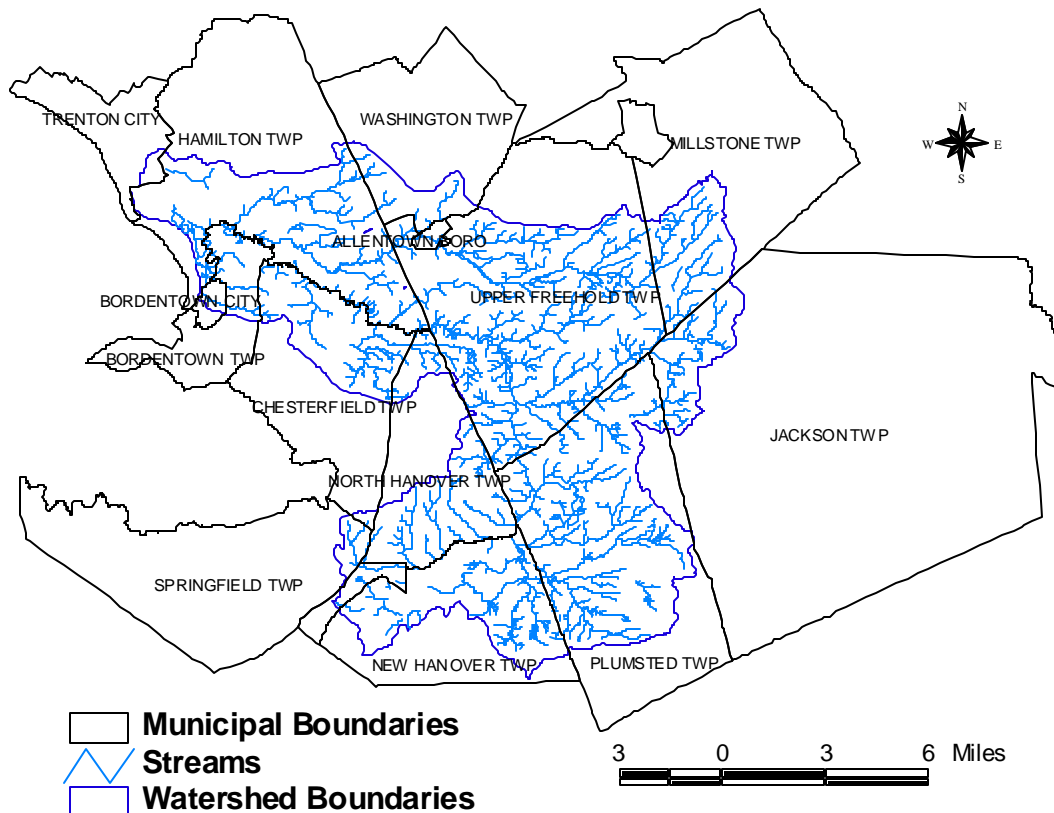
Acknowledgements

This plan is the result of a collaboration of effort from a number of people. Thanks go out to all those who helped to make this plan possible by providing time, information, and maps. Environmental Commission members attended monthly meetings. The Monmouth County Parks Department provided valuable input into the plan. County and municipal governments provided GIS data which was critical for the development of the greenway. Special thanks are given to:

- Betsy Poinsett - Allentown Environmental Commission
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- John Fabiano - Allentown-Upper Freehold Historical Society
- Merrilee Torres - Burlington County GIS
- Suzanne McCarthy - Delaware Valley Regional Planning Commission
- Steve Hammell - Delaware Valley Regional Planning Commission
- Haig Kasabach - Hamilton Township Environmental Commission
- Clark Gilman - Hamilton Township Environmental Commission
- Allen Schectel - Hamilton Township Planning
- Sanyogita Chavan - Hamilton Township Planning
- Robert Poppert - Hamilton Township Planning
- Leon Weitz - Hamilton Township Planning
- Kathleen Sar - Mercer County GIS
- Sylvia Hadad - Millstone Township Environmental Commission
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- Kate Fullerton - Washington Township Planning

CHAPTER 1 - INTRODUCTION

In September 2001, the Crosswicks Creek/Doctors Creek Watershed Regional Greenway Planning Group (Greenway Group) was formed to develop a greenway plan for the Crosswicks Creek/Doctors Creek Watershed. The group received a grant from the New Jersey Department of Environmental Protection Office of Environmental Services to fund the greenway plan. The grant was administered by the Borough of Allentown and the Allentown Environmental Commission. The group is currently made up of representatives from Hamilton Township, Millstone Township, Washington Township, Upper Freehold Township, Allentown Borough, and Plumsted Township. The study area for this plan, presented in Map 1, is the Crosswicks Creek Watershed, which includes the Doctors Creek Watershed. In the upcoming years, the group is hoping to expand to include representatives from all of the municipalities in the watershed.



Map 1 - Project Study Area

The Crosswicks Creek/Doctors Creek Watershed greenway plan is intended to provide direction for communities as they increase their open space. The main objectives of the Greenway Plan are to protect water quality, develop a system of trails, and preserve historic and scenic vistas, views, and sites. The scope of the project focused on the portions of the watershed that had municipal representatives. The Greenway Group members identified potential trail locations and historic areas during the course of the project.

Greenways

Greenways are generally considered linear open space that connects to parks and other points of interest. They can provide recreational opportunities, wildlife value, water quality benefits, transportation, and connections to points of interest. Greenways that allow public access can provide an opportunity for people to interact with the outdoors. Trails are often associated with greenways, but greenways do not have to incorporate any type of recreation. They can be used solely for environmental benefits.

At the start of this project, it was believed that a greenways plan was an appropriate way to address all three of the goals of the project: protecting water quality benefits, preserving historic and scenic sites and vistas, and developing a system of trails. Crosswicks Creek is the primary focal point of this plan, and for that reason, a watershed scale has been used as the study area.

The Planning Process

The Allentown Borough Environmental Commission led the project initially, and Allentown Borough acts as the sponsor for the New Jersey Department of Environmental Protection grant. Prior to applying for the grant, the Allentown Environmental Commission contacted several of the Environmental Commissions from other municipalities in the watershed. Efforts were made to get as many of the municipalities involved as possible. By taking a regional approach to the greenways plan, the participating municipalities were able to combine their resources. Each municipality that agreed to participate in the project contributed to the grant match. The result of this collaboration was the Crosswicks Creek/Doctors Creek Watershed Regional Greenway Planning Group. The group includes, as mentioned previously, Hamilton Township, Allentown Borough, Upper Freehold Township, Washington Township, Plumsted Township, and Millstone Township. Each municipality has at least two representatives.

During the project, the Greenway Group met once a month to discuss the greenway plan. Planners and landscape architects from the Monmouth County Park System and the Monmouth County Planning Board attended some of the meetings and provided valuable input into the plan. In addition, various members of other municipal committees attended the meetings. Greenway Group members, most of whom are members of their municipalities' Environmental Commissions, reported back to their municipalities about the progress of the project. Public information meetings were held in Upper Freehold Township and Hamilton Township at the beginning of the project to inform the public about the project. A public meeting was held at the end of the project to present the draft greenway plan to the public and allow the community to comment on the plan. It is intended that the Greenway Plan be adopted by the municipalities as part of their municipal Comprehensive Master Plans.

Throughout the duration of the project, background information about existing environmental resources, existing environmental conditions, historically significant sites and vistas, existing open space, and proposed open space was collected from a variety of sources, including municipal and county plans.

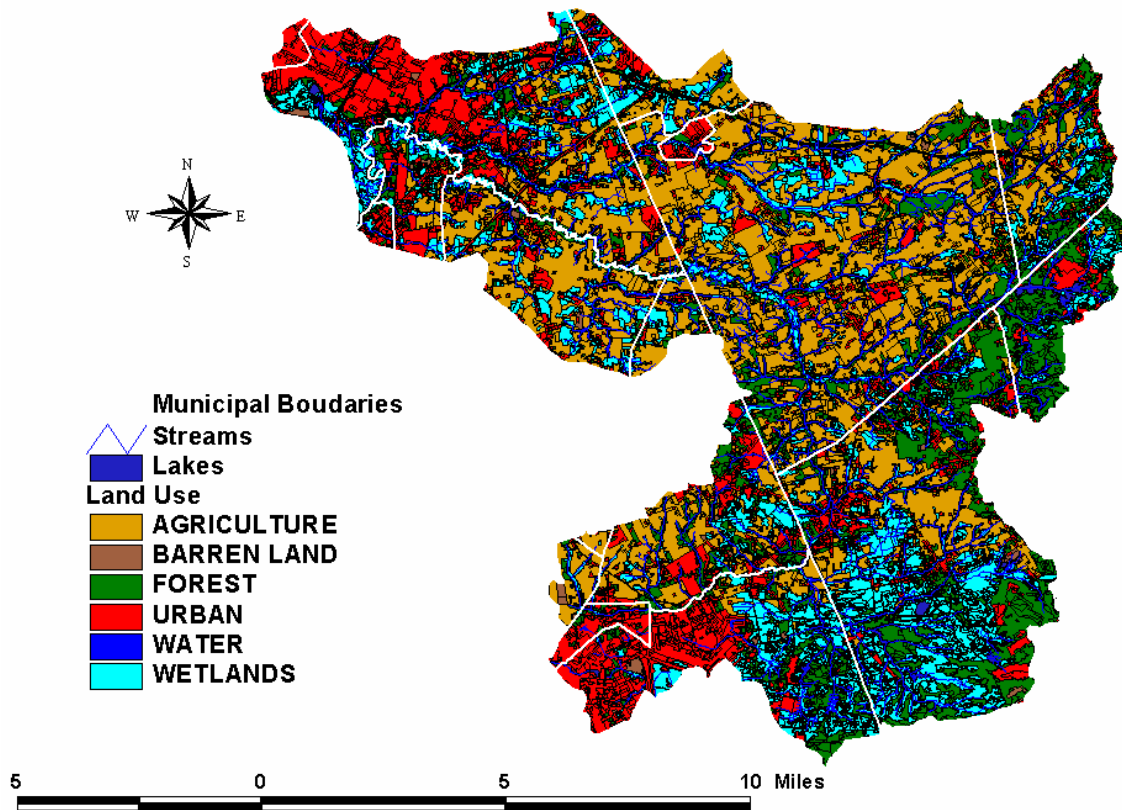
The maps associated with this plan were developed using data from municipalities, counties, and the state. All of the maps created for this project were done in a Geographic Information Systems program called ArcView, which is an ESRI product. This software allows the user to create layers of digital, geographical data to create maps that display a variety of different kinds of information. Getting this digital data required a great deal of coordination with different agencies, organizations, and firms. Once base maps were created, new data, such as the location of proposed trails, were added to the maps. Larger versions of the maps in this plan can be found at the back of this plan.

CHAPTER 2 - WATERSHED CHARACTERISTICS

Land use is an important factor to address when protecting water quality. Local land use decisions can make a large impact on water quality. Crosswicks Creek has a variety of land uses. The primary land uses are residential, agricultural, commercial, and industrial. Ownership is mostly private; however, there has been a great deal of success throughout the watershed in acquiring farmland preservation easements. There are several large tracts of county-owned parkland.

The capital of New Jersey, Trenton, is located to the west of the Crosswicks Creek Watershed. In fact, a small part of the watershed is located in Trenton City. The watershed becomes increasingly developed towards Trenton. The land use in the Crosswicks Creek Watershed is presented in Map 2. Hamilton Township is primarily medium- to high-density residential and commercial. Allentown is primarily medium- to high-density residential with some commercial properties along Main Street (Route 524) and Church Street (Route 526). Millstone is primarily agriculture and forest. Pockets of new residential development are occurring throughout the municipality, particularly on agricultural land. The portion of Washington Township located in the Crosswicks Creek Watershed is primarily agricultural and residential with some industrial properties. Upper Freehold is primarily agriculture with residential land throughout the municipality. Like Millstone, Upper Freehold is experiencing increased residential development on agricultural land. Plumsted is primarily agriculture and residential with some commercial properties in New Egypt and along Evergreen Road and Route 528. Plumsted also has increased residential development on agricultural land. Fort Dix Military Reservation occupies the southern half of Plumsted Township. Fort Dix has a high proportion of wetlands. Many of these wetlands have been used as cranberry bogs. A large portion of the headwaters of Crosswicks Creek are located in the Fort Dix and McGuire Military Bases.

The major population centers include Hamilton Township, Allentown Borough, New Egypt, and Crosswicks. The proximity of Trenton to the Crosswicks Creek Watershed makes Trenton an important center for employment.



Map 2 - Crosswicks Creek Land Use
 Source: 1995/97 Data from the New Jersey DEP

Major Transportation Corridors

Major roadways allow people easy access to shopping, housing, and employment throughout the watershed. Development often follows the creation or expansion of new roads. Many of the major roadways in the watershed start in and near Trenton.

Interstate 195, which runs east to west through Hamilton, Washington, Millstone, and Upper Freehold, is one of the major roads through the watershed. This road is used heavily by beachgoers. Interstate 295 runs north to south through Hamilton. The New Jersey Turnpike runs parallel to Route 130 and goes through Hamilton and Washington. The Turnpike is one of the primary roadways used by people traveling between Boston and Washington, D.C. There is an exit for the Turnpike at the I-195 intersection.

An eastern bypass is being constructed to the east of Allentown. This bypass will link Upper Freehold to Interstate 195. A western bypass is being considered to redirect traffic that currently passes through Allentown to get to Interstate 195. This bypass would take traffic from the south-west around Allentown to meet Interstate 195 north of Allentown.

In addition to the larger roadways, there are several important smaller roadways throughout the watershed. For instance, U.S. Route 130, which runs northeast to southwest and goes through Hamilton and Washington, connects to Interstate 195,

Interstate 295, and State Route 206. U.S. Route 130 is an important transportation corridor for commuter traffic, because it connects to several large roadways. State Route 33 runs east and west through Hamilton and connects to Interstate 295. County Routes 524, 528, 539, 537, and 526 are used frequently for local traffic in and around the watershed. Some of the residential and commercial development within the watershed has been around these local routes.

A light rail has been constructed to connect Trenton to Camden. The light rail crosses the watershed at the Hamilton-Trenton-Bordentown Marsh in Bordentown City. There will be a station stop in Bordentown City.

Historic and Recreational Resources

There are a number of valued regional resources in and around the Crosswicks Creek Watershed, including recreational opportunities, wildlife habitat, historic sites, and regional character.

Regional Resources

There are several large parks and preserves in and around the watershed. This includes the Hamilton-Trenton-Bordentown Marsh, which is located primarily in Hamilton Township. The Hamilton-Trenton-Bordentown Marsh is a 1,250 acre tidal freshwater marsh near the confluence of the Delaware River and Crosswicks Creek. The Hamilton-Trenton-Bordentown Marsh provides habitat for a broad range of plants and animals. The Delaware and Raritan Canal State Park is a 67-mile recreational corridor along the Delaware and Raritan Canal. The Assunpink Wildlife Management Area is a 5,700 acre wildlife management area with recreational opportunities. Only a very small portion of the Assunpink Wildlife Management Area is located in the watershed, but it serves as an important point of interest for the greenway plan. Colliers Mill is a 2,519 acre Wildlife Management Area located in Ocean County. As with the Assunpink Wildlife Management Area, most of the Colliers Mill Wildlife Management Area is located outside of the watershed, but it is another important point of interest in terms of the greenway plan.

In addition to the recreational and natural resources in the region, there are a number of important historical resources. The Crosswicks Creek Watershed was a backdrop for many of the Revolutionary War battles and skirmishes. The Battle of Monmouth occurred in 1778 in Manalapan/Freehold, New Jersey, which is approximately 15 miles from Allentown. Although the Battle of Monmouth occurred outside of the watershed, many of the events that led up to this battle occurred along Crosswicks Creek and throughout the Crosswicks Creek Watershed. Several families living in the watershed during the Revolutionary War actively participated in the war. The legacy left by the Revolutionary War has given the communities in the watershed a deep sense of pride in their history.

Watershed Resources



Within the watershed, there are a number of significant recreational and historical resources. Table 1 lists some of these resources by municipality. The recreational resources include municipal and county parks. The historical resources include privately-owned and publicly owned properties. All of the parks and historic sites listed in Table 1 were considered during the greenway plan development, especially those parks and historic sites which are publicly owned.

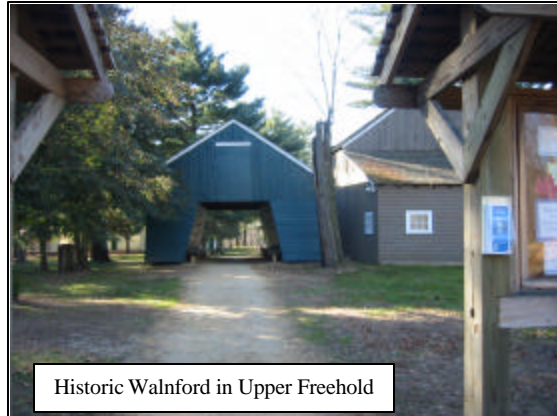
Several of these local parks and historic sites were used as focal points in the greenway plan, including the Hamilton-Trenton-Bordentown Marsh, Historic Walnford-Crosswicks Creek Park, Clayton Park, the New Egypt Ravine, and Heritage Park. The historic sites and vistas are presented in Map 3.

The Hamilton-Trenton-Bordentown Marsh, owned primarily by Mercer County, is a 1,250 acre tidal marsh near the confluence of the Delaware River and Crosswicks Creek. The Hamilton-Trenton-Bordentown Marsh, which is located mostly in Hamilton Township and Bordentown City, provides habitat for a broad range of plants and animals and it provides recreational opportunities for hiking and canoeing. The marsh is the northern most freshwater tidal wetland in the Delaware River Watershed. The C. C. Abbott Farm National Historic Landmark is located in Hamilton Township next to the Hamilton-Trenton-Bordentown Marsh. Native American artifacts dating back to 400 BC to 900 AD have been found at this site.

Several historic homes in the watershed are of significant importance. The Watson House in Hamilton Township is the oldest house in Mercer County having been built in 1708. The Middleton House in North Crosswicks (Hamilton) is the most well documented Underground Railroad site in New Jersey. Bow Hill Mansion and Pierson Mansion are noteworthy historic homes in Hamilton Township. The Wittenborn House in Washington Township also provides a focal point in the watershed. The Burlington Path which is a historic trail that was used by Washington's troops during the Revolutionary War crosses the watershed in Upper Freehold and Bordentown. County Route 537 overlaps with the historic Burlington Path.

Table 1. Historic and Recreational Resources by Municipality		
Municipality	Site Name	Ownership
Hamilton Township	C. C. Abbott Farmstead	County
	Gropps Lake	Municipal
	Hamilton-Trenton-Bordentown Marsh	Municipal, State, County, Private
	Hamilton Veterans Park	Municipal
	Middleton House	Private
	Roebing Park – Watson House	County
	Synder Memorial Field	Municipal
	Switlik Park	Municipal
Allentown Borough	Allentown Historic District	Various
	Grist Mill	Private
	Conines Mill Pond (Allentown Lake)	
	Heritage Park	Municipal
	Lakeview/Dr. Farmer Park	Municipal
	Pete Sensi Park	Municipal
Upper Freehold Township	Arneystown Historic District	Various
	Clayton Park	County
	Byron Johnson Recreational Park	Municipal
	Emleys Hill Church	Private
	Mark Harbourt Soccer Complex	Municipal
	Imlaystown Historic District	Various
	Imlaystown Lake	
	Lenhart-Lahaway Hill	
	Red Valley Lake	
	Salter’s Mill	Private
Walnford - Crosswicks Creek Park	County	
Plumsted Township	Colliers Mill Wildlife Management Area	State
	Goff Farm	County
	Historic Boarding Houses (Mill House, Meadowbrook House, and Cedar Brook House)	Private
	New Egypt Center	Various
	New Egypt Ravine	Private
	Oakford Lake	
	Plumsted Township Recreational Park	Municipal
Millstone Township	Bowman’s Tannery	Private
	Clarksburg Cemetery	Private
	Clarksburg Historic District	Various
	Clarksburg Inn	Private
	Clarksburg Schoolhouse	Municipal
	Methodist Episcopal Church of Clarksburg	Private
Washington Township	Camden-Amboy Rail Line	
	Indian Run Property	County
	Robbinsville Center	Various
	Robbinsville Train Station	
	Washington Township Park	Municipal
	Wittenborn House (Allen-Imlay Plantation)	Private

Historic Walnford - Crosswicks Creek Park, owned by Monmouth County, is located in Upper Freehold Township. The park centers on Historic Walnford, which was a 36-acre mill village. Some of the village still exists, including a grist mill (circa 1872), which sits alongside Crosswicks Creek, the Waln House (circa 1773), a carriage house (circa 1879), and various farm structures. The park itself is 1,098 acres and is located along Crosswicks Creek. Most of the land adjacent to Crosswicks Creek in Upper Freehold is part of the Crosswicks Creek Park.



Historic Walnford in Upper Freehold



Clayton Park

Clayton Park is a wooded park owned by Monmouth County and located in Upper Freehold. This park provides recreational trails for hiking and biking.

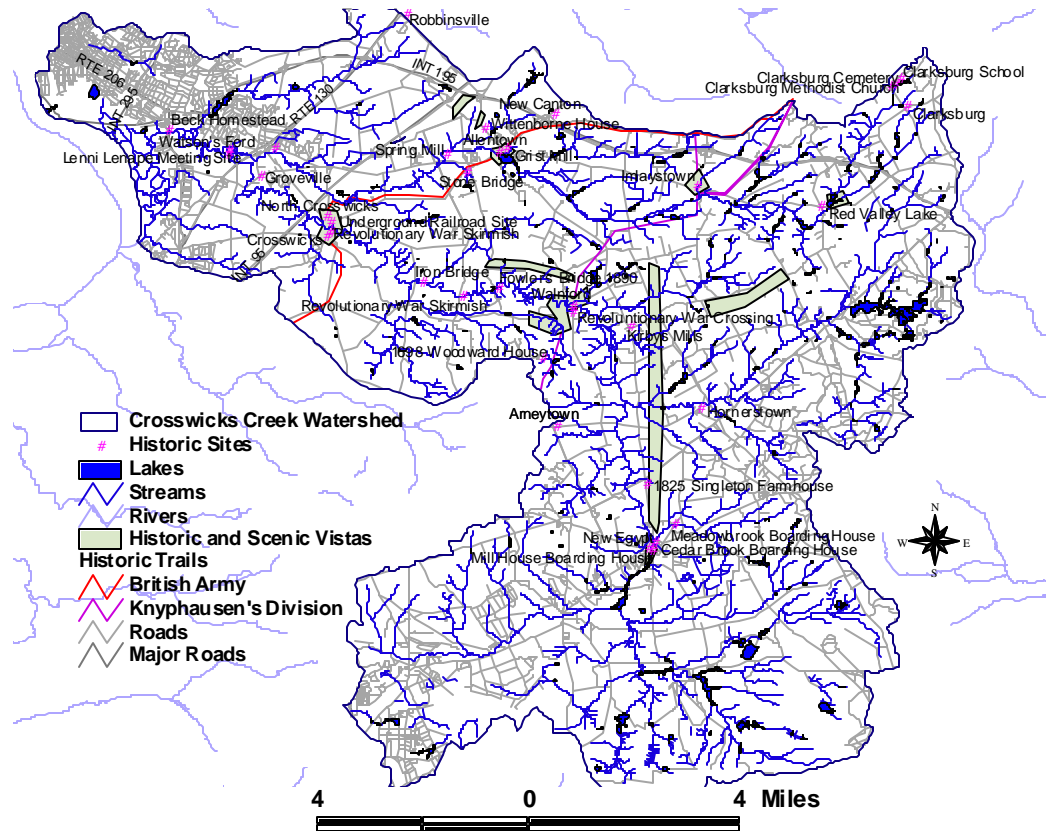
The New Egypt Ravine is located along the Crosswicks Creek in Plumsted Township on several privately-owned lots, primarily residential. There are some public access areas along the creek for canoes.

The Bordentown Bluffs in Bordentown are known as a Lenni-Lenape site and as a particularly scenic natural area.

Heritage Park is a municipal park located in and owned by Allentown Borough. The park is located near the center of the Borough along the Doctors Creek and Indian Run. The park provides recreational opportunities for hiking and canoeing. One of the trailheads is located near Conines Mill Pond (Allentown Lake), which is considered an aesthetic focal point within the Borough.



Heritage Park in Allentown



Map 3 – Historic Sites and Vistas

Scenic Roads

Many of the roads in the watershed are considered scenic. The views from these scenic roads are representative of the character of the region or are aesthetically pleasing. Most of the scenic roads in the Crosswicks Creek Watershed are near agricultural, wooded, or historic areas. Protecting these scenic roads means protecting the land around the roads. In many cases, the land on either side of a road is privately owned. There are many ways that the land around scenic roads can be protected, including conservation easements, wooded buffers and screens, and land acquisition.



The following table lists the scenic roads in the Crosswicks Creek Watershed.

<u>Monmouth County</u> (identified in the Monmouth County Scenic Roadway Plan)		
Route	Local Road Name	Municipality
Route 27	Holmes Mill Road	Upper Freehold
Route 27	Burlington Path	Upper Freehold
Route 27	Arneytown-Hornerstown Road	Upper Freehold
Route 27	Main Street	Upper Freehold
Route 43	Imlaystown-Hightstown Road	Upper Freehold
Route 43	Davis Station Road	Upper Freehold
Route 43	Imlaystown Road	Upper Freehold
Route 524/539	S. Main Street	Allentown
Route 524/539	N. Main Street	Allentown
Route 524	Old York Road	Upper Freehold
Route 524	New Canton-Stone Tavern Road	Upper Freehold
Route 524	Stage Coach Road	Millstone
Route 526	Waker Street	Allentown
Route 526	Allentown-Red Valley Road	Upper Freehold
Route 537	Main Street	Upper Freehold
Route 539	High Street	Allentown
Route 539	Allentown-Davis Station Road	Upper Freehold
Route 539	Old York Road	Upper Freehold
Route 571	Rising Sun Tavern Road	Millstone



<u>Ocean County</u>		
Route	Local Road Name	Municipality
Route 27	Evergreen Road	Plumsted
Route 528	Main Street	Plumsted
	Long Swamp Road	Plumsted
	Brindletown Road	Plumsted
	Front Street	Plumsted
Route 640	Archertown Road	Plumsted

<u>Mercer County</u>		
Route	Local Road Name	Municipality
Route 524	Yardville-Allentown Road	Hamilton
	Old York Road	Hamilton

Current Environmental Conditions

Crosswicks Creek has a 146 square-mile watershed. Its largest tributary is the Doctors Creek. Other tributaries include Lahaway Creek, Buck Brook, Indian Run, Culvert Pond Run, Buckhole Creek, Edges Brook, Ivanhoe Brook, Jumping Brook, Mile Hollow Brook, Long Bog Run, Negro Run, North Run, Thornton Creek, and South Run. There are several lakes and ponds in the watershed including Imlaystown Lake, Red Valley Lake, Conines Mill Pond (Allentown Lake), Brindle Lake, Prospertown Lake, Oakford Lake, Cookstown Pond, and Gropp Lake.

According to the NJ Office of the State Climatologist at Rutgers University, the annual precipitation (based on data from 1971-2000) is 46.77 inches at Freehold, NJ and is 47.68 inches at Hightstown, NJ.

Geology

The Crosswicks Creek Watershed overlays several geological formations. The watershed is located mostly in the Coastal Plain Province. The geological formations are, from west to east, the Potomac group, Magothy Formation, Merchantville Formation, Woodbury Clay, Englishtown Formation, Marshalltown Formation, Wenonah Formation, Mount Laurel Sand, Vincentown Formation, Composite Confining Unit, and Kirkwood Formation. The aquifers associated with these formations include, from west to east, the Potomac-Raritan-Magothy aquifer system, Englishtown aquifer system, Wenonah – Mount Laurel aquifer, a Composite Confining Unit which includes the Red Bank aquifer, the Vincentown aquifer, and the Piney Point aquifer, and the Kirkwood – Cohansey aquifer system. The Potomac-Raritan-Magothy aquifer is a major aquifer system that is unconfined where it crops out and confined where it is below other formations. The Englishtown aquifer system is a major aquifer system. The Marshalltown – Wenonah confining unit is a leaky confining unit. Wenonah – Mount Laurel aquifer is a major aquifer. The Red Bank aquifer is considered a minor aquifer that yields small amounts of water. The Vincentown aquifer yields small to moderate amounts of water. The Kirkwood-Cohansey aquifer system is a major aquifer system that is unconfined. Unconfined aquifers are more susceptible to contamination than confined aquifers. Maps of these geological formations can be acquired through the New Jersey Geological Survey.

Slopes

Steep slopes exist throughout the watershed. Steep slopes of particular concern include the banks of Crosswicks Creek near Crosswicks Village, the banks of Doctors Creek near the cemetery in North Crosswicks, the banks of North Run in Springfield near Springfield Meeting House Road, the banks of Doctors Creek in Allentown, the banks of Pleasant Run near Extonville, the banks of Miry Run between Crosswicks Creek and Cream Ridge, the banks of Crosswicks Creek in Burlington County, the banks of Crosswicks Creek in Upper Freehold, the banks of several unnamed tributaries of Crosswicks Creek in Upper Freehold, the banks of Long Bog Run in Upper Freehold, the banks of Lahaway Creek near confluence with Long Bog Run, the banks of Lahaway Creek near its

headwater areas, the Bordentown Bluffs on the Crosswicks Creek in Bordentown Township, and the banks of Crosswicks Creek in Plumsted downstream of Oakford Lake.

Soils

The Crosswicks Creek Watershed is made up of the following soil associations: Keyport-Donlonton; Freehold-Holmdel-Adelphia; Woodstown-Sassafras; Lakehurst-Lakewood-Evesboro; Shrewsbury-Collington-Tinton; Manhawkin-Atison-Berryland; Sassafras-Dragston; Aura; and Galestown-Evesboro. The types of soils in the watershed have had some impact on the location of different types of land use. For example, the Berryland series of soils, which is part of the Manhawkin-Atison-Berryland association, is appropriate for cranberry bogs because it has depressional areas and very poorly drained soil with a layer of organic matter. The characteristics of the soils in the watershed are described below. The specific locations of these soil associations can be found by looking at the Burlington County Soil Survey, the Mercer County Soil Survey, the Monmouth County Soil Survey, and the Ocean County Soil Survey.

- The Keyport-Donlonton association is characterized by level to steep slopes and moderately well-drained to somewhat well drained soils with slow permeability and a clay-loam subsoil. This association is found in the portion of the watershed located in Chesterfield and Bordentown Townships in Burlington County. This soil association has a moderate to high erosion potential.
- The Freehold-Holmdel-Adelphia association is characterized by level to steep slopes, well-drained to somewhat poorly drained soils with moderate to slow permeability and a fine sandy loam to sandy clay loam subsoil. This association is located in Chesterfield, Bordentown, and New Hanover Townships. This soil association has a moderate erosion potential.
- The Woodstown-Sassafras association is characterized by nearly level to gentle slopes and moderately well-drained to well-drained soils with moderately slow permeability and a fine, sandy loam subsoil. This association is located in Chesterfield and Bordentown Townships. This soil association has a moderate erosion potential.
- The Lakehurst-Lakewood-Evesboro association is characterized by level to steep slopes and somewhat poorly drained to excessively drained soils with rapid to moderately rapid permeability and sandy subsoils. This association is located in Plumsted and Jackson Townships. This soil association has a low to moderate erosion potential.
- The Shrewsbury-Collington-Tinton association is characterized by level to steep slopes and well-drained soils with a sandy-clay loam subsoil. This association is located in Plumsted Township in Ocean County. This soil associate has a low erosion potential.
- The Manhawkin-Atison-Berryland association is characterized by level slopes and very poorly drained to poorly drained soil with a sand subsoil. This

association is located in Plumsted Township. This soil associate has a low erosion potential.

- The Sassafras-Dragston association is characterized by level to moderate slopes and well-drained to somewhat poorly drained soils with a loamy subsoil. These associations are located in Hamilton and Washington Townships. This soil association has a moderate erosion potential.
- The Aura association is characterized by gentle to moderate slopes and well-drained soils. This association is located in Washington Township. This soil association has a moderate erosion potential.
- The Galestown-Evesboro association is characterized by level to gentle slopes and deep, excessively drained soils with sand subsoils. This association is located in Hamilton Township in Mercer County. This soil association has a low erosion potential.

The riparian areas along Crosswicks Creek are made up of Shrewsbury fine sandy loam, Humaquepts (frequently flooded), Collington fine sandy loam on 5 to 10 percent slopes, Marsh tidal, Keyport loam on 15 to 25 percent slopes, Alluvial land, Freehold fine sandy loam on 15 to 25 percent slopes, and Sassafras sandy clay loam on severely eroded 5 to 10 percent slopes. The soils located on steep slopes are of particular importance because of their erosion potential.

Water Quality

Like much of New Jersey, the Crosswicks Creek Watershed has some water quality problems. Fortunately, large amounts of the stream corridors have remained in their natural conditions. Protecting these riparian corridors is important for the protection of water quality.

Man-made lakes often become eutrophic over time, because nutrients that would otherwise be delivered to an estuary settle to the lake bottom. A eutrophic



lake is a lake which has an excessive amount of nutrients. The excessive amount of nutrients leads to increased plant growth, such as algae and macrophytes (aquatic weeds), and a number of water quality problems. In developed areas, the process of eutrophication is accelerated by stormwater runoff and point source discharges. Stormwater runoff and point source discharges can also have a dramatic impact on the water quality of streams. In addition to nutrients,

stormwater runoff can carry sediment, toxins, oil, grease, and heavy metals. These contaminants can impair the in-stream habitat and the aesthetic quality of a stream. The increased volume associated with stormwater and with point source discharges, such as

wastewater treatment plant effluent, can cause streambank erosion and bed scour (bed scour refers to the removal of small pebbles and rocks from the stream bottom). Protecting riparian corridors can protect streams and lakes from some of this stormwater runoff. Direct point source discharges are monitored by the New Jersey Department of Environmental Protection. Stricter regulations may be the best way to protect streams and lakes from the effects of point source discharges.

Some lakes and streams in the watershed have been identified as having water quality problems. In the 2002 Integrated List of Waterbodies, Imlaystown Lake was identified as eutrophic. New Jersey Department of Environmental Protection Division of Watershed Management identified Imlaystown Lake as a lake which needs a Total Maximum Daily Load (TMDL) for phosphorus.



Dam at Imlaystown Lake



Oakford Lake

Oakford Lake in New Egypt has been a priority for residents of Plumsted for many years. The lake has experienced excessive plant growth during summer months. At one time, the lake had been used for boating and residents would like to be able to use it for that purpose again.

Conines Mill Pond (Allentown Lake) in Allentown has been dredged in the past to remove accumulated sediment and to improve the aesthetic value of the lake. Like Oakford Lake, Conines Mill Pond had excessive plant growth.



Conines Mill Pond

Over the years, the US Geological Survey and the New Jersey Department of Environmental Protection have collected water quality data at a few stations throughout the watershed. Crosswicks Creek at Groveville Road and the Doctors Creek at Allentown were identified in the 2002 Integrated List of Waterbodies as fecal coliform-impaired stream segments. TMDLs are now being developed for both of these stream segments. Fecal coliform can come from failing septic systems, failing wastewater treatment plants, and animal waste (domestic and wild animals). The Doctors Creek is currently designated a C-1 stream.

The headwater streams of the Crosswicks Creek and Doctors Creek are located primarily in Fort Dix Military Reservation, Jackson Township, and Millstone Township. Much of the headwater streams in Jackson and Millstone Townships have vegetated buffers. There are several cranberry bogs near the headwater streams in Fort Dix. Permanent protection of these headwater streams is critical for the protection of water quality. The benefits of protecting headwater streams include sediment control, nutrient control, flood control, and water supply for downstream areas. In general, the major threats to headwater streams include channelization, removal of vegetation, point source discharges, livestock operations, and stormwater runoff. All of these activities can have

detrimental impacts to headwater streams and will cause degradation of downstream water quality.

Non-point Source Pollution

Non-point source pollution is generally considered any pollution which does not have a discrete source. In other words, non-point source pollution is usually related to stormwater runoff and soil erosion. Sources of non-point source pollution in the watershed includes runoff from impervious surfaces, such as runoff from parking lots, fertilizer from lawns, runoff from agricultural areas, malfunctioning septic systems, poor erosion and sediment control practices at construction sites, and streambank erosion.

The New Jersey Department of Environmental Protection has implemented the new Municipal Stormwater Regulation Program as part of the New Jersey Pollution Discharge Elimination System (NJPDES) permit requirements. This program has two permits for municipalities, a Tier A Municipal Stormwater Permit and a Tier B Municipal Stormwater Permit. The more densely populated municipalities were assigned to Tier A. The Tier A Permits require that municipalities develop a stormwater pollution prevention plan, announce the requirements to the public through a formal public notice, adopt a stormwater management plan, adopt a stormwater control ordinance, enforce residential site improvement standards, ensure that long-term Best Management Practices (BMPs) are operating properly and are maintained, ensure that new storm drains are in compliance, develop a local public education program, ensure the proper disposal of waste, map outfall pipes, reduce sediment transport through maintenance and retrofit activities, and develop an employee training program. There are nine municipalities in the watershed that will need a Tier A Municipal Stormwater Permit, including:

- Bordentown City
- Bordentown Township
- Chesterfield Township
- Hamilton Township
- Washington Township
- Allentown Borough
- Millstone Township
- Jackson Township
- Trenton City

The Tier B Permit is less involved than the Tier A Permit, but still requires that municipalities develop a stormwater management plan, adopt a stormwater control ordinance, enforce stormwater management standards, ensure the operation and maintenance of BMPs, design new storm drain inlets to meet the new standards, and develop a public education program. Municipalities in the watershed that will be required to complete a Tier B Municipal Stormwater Permit are:

- New Hanover Township
- North Hanover Township
- Springfield Township
- Wrightstown Borough

- Upper Freehold Township
- Plumsted Township

Although this permitting process will be labor-intensive, the ultimate result will be a reduction in nonpoint source pollution entering waterbodies, a reduction in streambank erosion, and a general improvement in water quality.

Point Source Pollution

Point source pollution comes from the discharge of treated effluent from municipal and industrial wastewater treatment plants. There are 13 wastewater treatment plants and in the watershed including:

- Hamilton Township Sewage Treatment Plant
- Ocean Spray Cranberries, Inc.
- Garden State Water Company
- Allentown Sewage Treatment Plant
- Bordentown Sewage Authority
- Allentown Borough Water Plant
- California Villa Mobile Home
- Wrightstown MUA
- McGuire Air Force Base
- Fort Dix Military Reservation
- Hanover Mobile Home Park
- Plumsted Township School District
- Bordentown City Water Department

Wildlife Habitat and Vegetation

The Crosswicks Creek Watershed, especially at the Hamilton-Trenton-Bordentown Marsh, is a haven for birds and other wildlife. The marsh and the protected areas surrounding the marsh provide habitat for great blue herons, green herons, great egrets, cliff swallows, tree swallows, bank swallows, bald eagles, pied-billed grebes, northern harriers, peregrine falcons, American bitterns, black-crowned night herons, ospreys, red-shouldered hawks, barred owls, bobolinks, mergansers, cormorants, and wood ducks. Several species of turtles can also be found in the marsh including, eastern painted turtles, eastern snapping turtles, and red-bellied turtles. A variety of fish can be found in the marsh including perch, pickerel, shiners, killifish, sticklebacks, catfish, carp, bass, and muskellunge.

Some of the birds found throughout the watershed include American bittern, swamp sparrow, song sparrow, rufous-sided towhee, mallard duck, green heron, white-eyed vireo, black duck, wood duck, broad-winged hawk, turkey vulture, marsh hawk, red-tailed hawk, sparrow hawk, ruffed grouse, bobwhite, ring-necked pheasant, magnolia warbler, American woodcock, rock dove, mourning dove, screech owl, great horned owl, whippoorwill, common nighthawk, chimney swift, ruby-throated hummingbird, belted kingfisher, yellow-shafted flicker, hairy woodpecker, downy woodpecker, eastern kingbird, great crested flycatcher, eastern phoebe, bank swallow, purple martin, blue jay, common crow, black-capped chickadee, white breasted nuthatch, tufted titmouse, white-

throated sparrow, white-eyed vireo, ovenbird, cedar waxwing, yellowthroat, red-eyed vireo, American redstart, house sparrow, eastern meadowlark, red-winged blackbird, yellow warbler, Baltimore oriole, common grackle, Cape May warbler, brown-headed cowbird, black-throated blue warbler, scarlet tanager, cardinal, chestnut-sided warbler, eastern wood peewee, rose-breasted grosbeak, barn owl, indigo bunting, and purple finch.

Mammals found in the watershed include muskrat, masked shrew, short-tailed shrew, gray squirrel, chipmunk, woodchuck, white footed mouse, opossum, white-tailed deer, raccoon, striped skunk, beaver, and red fox.

Reptiles found in the watershed include eastern mud turtle, eastern painted turtle, eastern box turtle, wood turtle, common snapper, northern water snake, northern brown snake, and eastern ribbon snake.

Amphibians found in the watershed include Jefferson salamander, northern dusky salamander, marbled salamander, spotted salamander, eastern redbacked salamander, red spotted newt, northern gray tree frog, northern leopard frog, green frog, spring peeper, wood frog, American toad, and eastern spadefoot.

Most of the natural stream corridors are forested. Some of the riparian areas are dominated by wetland plants and others are dominated by upland plants. Most of the forested wetlands in the watershed are dominated by red maple. Other plants found in the wetland areas are sweetgum, silver maple, pin oak, willow oak, white oak, green ash, white ash, boxelder, red mulberry, yellow birch, paper birch, river birch, spicebush, arrowwood viburnum, swamp azalea, sweet pepperbush, poison ivy, honeysuckle, skunk cabbage, sensitive fern, cinnamon fern, ostrich fern, and sedges. The upland plant communities in the watershed are characterized by American beech, balsam poplar, red oak, white oak, sassafras, pignut hickory, shagbark hickory, mockernut hickory, yellow poplar, goldenrod, green briar, wild rose, wild grape, Queen Anne's lace, and Indian hemp. Protecting the diversity of plants and animals found in the watershed involves protecting a variety of habitats. Although protecting plant and wildlife habitats is not one of the goals of the project, it was considered during the development of the greenway plan.

A number of endangered and threatened species may be found in the Crosswicks Creek Watershed, including bald eagle, bog turtle, and swamp pink.

Existing Greenways

Currently, there are only a couple of greenways in the watershed. Several greenways have been proposed throughout and near the watershed. Existing greenways include the Delaware and Raritan Canal State Park and the Crosswicks Creek Park. The Delaware and Raritan Canal State Park is a 67-mile recreational corridor along the Delaware and Raritan Canal. Crosswicks Creek Park is owned by Monmouth County and is located in Upper Freehold Township. The 1,098-acre park is located along Crosswicks Creek. The Crosswicks Creek Park forms a greenway along a substantial part of Crosswicks Creek in Upper Freehold. Monmouth County is planning to expand this park as opportunities for land acquisition become available.

Existing Open Space

The Crosswicks Creek/Doctors Creek Watershed currently has a significant amount of open space. Some of this open space is located along stream corridors. Hamilton Township and Mercer County have acquired a large amount of land along Crosswicks Creek and Doctors Creek. Additional open space in Hamilton includes the Hamilton-Trenton-Bordentown Marsh, Veterans Park, Roebling Park, CC Abbott Farmstead, the Locust Hill easement, and the CYO easement. Within the watershed, Washington Township has its Washington Community Park. Upper Freehold has a large amount of county-owned land including the Historic Walnford-Crosswicks Creek Park and Clayton Park. Upper Freehold also has a couple of municipal parks including Byron Johnson Recreational Field and Mark Harbourt Soccer Fields. Allentown has Heritage Park, located along Doctors Creek, and Pete Sensi Park, located on Conines Mill Pond (Allentown Lake). Plumsted has the Colliers Mill Wildlife Management Area, most of which is located outside of the watershed, Goff Farm, and the Plumsted Township Recreational Park.

CHAPTER 3 - CURRENT GREENWAY AND OPEN SPACE EFFORTS

Many of the municipalities in the watershed have adopted open space plans either as stand alone documents or as elements in their Master Plans. All of the counties in the watershed are actively planning open space and are guided by existing county open space plans. In addition, some of the municipalities have adopted natural resource inventories and historic preservation plans. The relevant plans have been summarized below. Whenever possible, the open space plans were incorporated into this plan, specifically, the locations of trails and historic sites and vistas.

Burlington County

The goals of the *Burlington County Parks and Open Space Master Plan* (2002) are: 1) to create a County parks system that expands public access to diverse, passive recreational facilities; 2) to aggressively protect the County's significant natural resources; 3) to preserve and enhance the culture and heritage of Burlington County; 4) to coordinate park system development and open space preservation with compatible growth, preservation, and recreation initiatives; and 5) to develop the Delaware River Heritage Trail, which starts in Bordentown City and moves south along the Delaware River, as part of the D&R Greenway.

Mercer County

The *Mercer County Open Space and Recreation Plan* (updated and revised in 1999) proposes to expand Roebling Memorial Park to provide connections to the City of Trenton and the D&R Canal, to extend the Assunpink Greenway (Assunpink Wildlife Management Area is a state-owned facility) along the creek into Trenton, to develop a linear park along Crosswicks Creek, and to purchase the development rights of valuable farmland. The Plan outlines six goals: 1) to preserve adequate County open space for the future, 2) to balance the provision of open space with other land uses, 3) to maintain ecologically strong communities for the people of Mercer County, 4) to develop a portion of the County's open space for active and passive recreation, 5) to balance passive and active open space development with other land uses, and 6) to maintain and protect the natural environment when developing open space.

The *Mercer County Historic Preservation Plan* (Draft 2001) focuses on the following primary goals:

- 1) To support preservation and to promote the rehabilitation and adaptive reuse of County-owned historic resources,
- 2) To encourage historic preservation and rehabilitation of historic resources throughout Mercer County by government, nonprofit organizations, private property owners, and all those interested in maintaining and protecting Mercer County's significant heritage, and
- 3) To provide a basis for current and future County historic preservation efforts.

The *Mercer County Historic Preservation Plan* identifies the major threats to historic sites in Mercer County as incompatible development, transportation improvements, and demolition by neglect. The plan identifies several historic sites that are located in the Crosswicks Creek/Doctors Creek watershed, including the Isaac Watson House in Roebling Park, which is a county-owned property on the Historic Register, the C.C. Abbott Farmstead in the Hamilton-Trenton-Bordentown Marsh, the John Abbott II House in Veterans Park, the Bordentown Waterworks/White Horse Circle Prehistoric Site, the Crosswicks Creek Railroad Bridge, the Camden & Amboy Railroad Line, and the Gropps Lake Prehistoric Site. The plan identifies two historic Mercer County bridges that are located within the Crosswicks Creek Watershed including, the Groveville – Allentown Road Bridge over Doctors Creek, which is a steel truss and timber bridge that is being moved to the Princeton Battlefield and the Iron Bridge Road bridge over Crosswicks Creek.

Hamilton Township

The goals of the *Hamilton Township Open Space Plan* are to: “address the diverse interests expressed by Township residents and officials... accommodate projected population growth... and make best use of the considerable natural resources of the Township.” At the time the plan was written, Hamilton Township had 21 Township-owned parks equaling 522 developed park acres. The plan recommends acquiring approximately 250 acres of land for passive and active recreational uses. This includes protecting 20 miles of stream corridors within the Township boundaries. The Township has 258 acres of state-owned open space, 441 acres of county-owned land, 522 acres of Township-owned developed parks, 1,546 acres of Township-owned or deed restricted greenbelt, farmland, or open space land, and 882 acres of preserved farmland. The plan recommends that the Township develop 423 acres for recreational uses and 500 acres for the development of a greenway along streams. The plan identifies specific lots that the Township should acquire for recreation and farmland preservation. Since the Open Space Plan was adopted, Hamilton Township has successfully acquired additional land for open space.

Washington Township

The goals of the *Washington Township Master Plan* are to: 1) “protect the rural character, the rural quality of life, and the cultural heritage of the Township,” 2) “encourage office and retail uses to locate in a pattern of compact nodes in the Township,” 3) “connect centers, neighborhoods and other destinations” by improving the transportation network and by creating “appropriate edges, barriers and buffers to distinguish agricultural lands from developing areas,” 4) “ensure that investment in infrastructure supports a sustainable pattern of land use which builds on past public investment in roads, schools, utilities and public open space,” and 5) “encourage a sense of “one community” throughout the Township, where all the separate areas and neighborhoods feel connected to the Township, and where the designs of individual homes, businesses, and shops promote their connections to each other and to their adjacent neighborhoods.” The Washington Township Master Plan includes an Open Space Plan, a Farmland

Preservation Plan, a Conservation Plan, a Circulation Plan, and a Historic Preservation Plan. Each of these specific plans incorporates the goals of the Master Plan.

Washington Township has several Township-owned and County-owned parks, but the Washington Township Community Park is the only one located within the Crosswicks Creek Watershed. Part of the Assunpink Wildlife Management Area is located within the Township boundaries; however, it is located outside of the Crosswicks Creek Watershed. Despite its location outside of the Crosswicks Creek Watershed, the Assunpink Wildlife Management Area can serve as an important regional open space resource.

Washington Township is planning to develop a system of “mini parks” for recreation in new developments. The Township is planning to create a trail system, which would ideally include a pedestrian bridge over Route 130 near the municipal complex. Most of this trail system is located outside the watershed along the Camden–Amboy Railroad right-of-way near Miry Run and the Assunpink Creek. The trail would link Windsor and Robbinsville, and could be connected to Hightstown and Bordentown.

The *Washington Township Circulation Plan*, which is part of the Master Plan, recommends the development of a system of short trails to link developments. This recommendation is in keeping with the idea of “one community” expressed in the goals. The Circulation Plan recommends a 33-foot right-of-way on either side of a trail to provide buffering between the trail and adjacent land uses.

The *Historic Preservation Plan* recommends reusing existing historic buildings, encouraging new developments to be consistent with the traditional village character, looking for opportunities to protect high priority structures during the thorough review of proposed developments, supporting agricultural business, preserving historic structures, maximizing funds for acquisition, placing historic markers at the location of lost significant artifacts and landmarks, adopting ordinances for preserving historic landmarks, and using historic and cultural resources as economic assets.

The *Washington Township Conservation Plan* recommends that slopes greater than 10% be left in their natural condition. The Conservation Plan also recommends that uses that are vulnerable to flooding should be located outside of the Flood Hazard Areas. Whenever possible, Flood Hazard Areas should be acquired as open space. The Conservation Plan recommends a minimum stream buffer of 65 feet on each side of the stream. In cases where the possibility of sedimentation is likely or nutrients will be applied, a buffer of 150 feet is suggested.

The Master Plan identifies the following resources as possible sources of funding: NJ Department of Environmental Protection Green Acres Program, Open Space Trust Fund Taxes, Municipal Bonds and Capital Improvement Programs, and Private Initiative and Development. The Township has already passed a five cent tax for open space acquisition and Mercer County has an approved tax for the acquisition of significant land.

Monmouth County

Monmouth County has produced a number of planning documents. One which is of particular interest for this plan is the *Monmouth County Scenic Roadway Plan*, which identifies six scenic roadway landscape patterns. They are: an allee of trees (a single formal row of trees), a canopied road (mature trees alongside the road), filtered vegetative patterns (trees and shrubs growing close to the road), spatial landscape sequences (combination of field and forest), ornamental landscape, and a landscape panorama (an overlook or an expansive, unobstructed view). The plan identifies specific scenic roadways. These roadways have been incorporated into the Crosswicks Creek/Doctors Creek Greenway Plan and are listed in the Scenic Roads section of this plan.

The *Monmouth County Park, Recreation, and Open Space Plan* (1991, amended in 1998) is particularly relevant for the Crosswicks Creek/Doctors Creek Watershed Greenway Plan. The goals of the *Monmouth County Park, Recreation, and Open Space Plan* are: to “preserve open space in sufficient quantities, as determined by analysis and use of established standards, to create a diverse and comprehensive system of open space throughout Monmouth County” and to “locate and preserve remaining examples of our natural environment as open space in an effort to maintain natural resources, wildlife, environmentally sensitive areas, etc. of Monmouth County for future generations.” The plan identifies several linear parks that should be included as part of the county park system. The County Park System focuses in part on developing linear parks, which are defined in the addendum as “elongated and usually continuous strips of land or water under public control.” In determining appropriate places for linear parks, the Park System evaluated the size, accessibility, and development capability of each site.

The following parks have been proposed or have been started by the Monmouth County Park System and are relevant to the Crosswicks Creek/Doctors Creek Watershed Greenway Plan. This includes the Crosswicks Creek Linear Park, which follows the Crosswicks Creek from the Burlington/Mercer County border to the Ocean County border. Completing the Crosswicks Creek Linear Park will result in a largely undisturbed stream corridor and habitat and stream valley protection. The park plan complements other efforts throughout the watershed. The Doctors Creek Linear Park goes from the Mercer County border in Upper Freehold to Red Valley in Millstone. The park will link Heritage Park in Allentown to Imlaystown Lake at Clayton Park. This park would protect valuable habitat and the stream valley. This park would also link the historic districts of Allentown and Imlaystown. The Lahaway Creek Linear Park will follow Lahaway Creek from Crosswicks Creek to the Ocean County border. This park will protect endangered species habitat and will be largely undisturbed. This park could be linked to Prospertown Lake Wildlife Management Area in Ocean County. Long Pond Brook Linear Park would follow the stream from Crosswicks Creek to the Old Union Railroad Park in Upper Freehold. This park would provide a connection between the Crosswicks Creek Park and the Old Union Railroad. This park would also protect valuable habitat. The Miry Run Linear Park would connect the Crosswicks Creek Park to Clayton Park and the Old Union Railroad. The Negro Run Linear Park would connect the Conines Mill Pond (Allentown Lake) to the GPU Energy ROW Linear Park in Upper Freehold. Red Valley Linear Park is an alternate option if the Doctors Creek Linear Park is not completed. The Rocky Brook Linear Park will follow the brook from the headwaters in Millstone to the

Middlesex County border. This park would provide water quality benefits by protecting a headwater area. Connections could be made to this park, which would link the trails in the Crosswicks Creek Watershed to Manalapan. Witches Hollow Linear Park is will connect Millstone to the Assunpink. Connections could be made between the Witches Hollow Linear Park and the Doctors Creek Linear Park.

Allentown Borough

The *Allentown Borough Natural Resource Inventory* (NRI) (2003) is intended “to locate significant remaining environmental resources throughout Allentown Borough, to identify all cultural and historical resources in the Borough with an updated and comprehensive environmental planning tool to protect remaining resources by integrating existing Borough protection efforts, recent scientific information, and the most current Geographic Information Systems (GIS) maps available from Federal, State, and county agencies”. According to the NRI, Allentown Borough contains valuable cultural and environmental resources. Some of these resources are not receiving as much protection as they should, such as the Doctors Creek stream corridor. There are 35 acres of “critical forested wetland habitat.” The Plan describes the Doctors Creek as a “unique wildlife habitat and a significant watershed/floodplain resource.” Conines Mill Pond is recognized as a Monmouth County Unique Area and is a state Wildlife Sanctuary. According to the NRI, there are significant slopes along the southeastern bank of Doctors Creek, south of the Indian Run Reservoir, and surrounding Conines Mill Pond (Allentown Lake). The NRI reports that there are no “known threatened or endangered flora or fauna in Allentown Borough.” The NRI recommends that Allentown Borough revise the Master Plan, set aside funds for protecting natural and cultural resources, strengthen zoning and development regulations, participate in regional planning, implement a tree and shrub planting program, evaluate potential growth, seek Green Acres funding for resource protection activities particularly land acquisition, adopt a steep slope ordinance, and preserve the historic greenbelt.

The perception of the Historic Preservation Review Commission and the Environmental Commission of the Allentown Historic Greenbelt is those open space areas adjacent to the Borough which give Allentown, a "village center in its historic setting", its sense of place. These areas are located in the Borough of Allentown as well as in the adjacent municipalities including Hamilton, Upper Freehold, and Washington Townships. The greenbelt includes those open space areas (both public and private) associated with stream corridors, adjacent to public parks, and scenic/historic vistas as seen from public roads. Certain portions of the Allentown Greenbelt have been the scene of Revolutionary War encampments as well as a major Native American village. Allentown desires to work with surrounding townships to create the Greenbelt.

The objectives of the *Allentown Master Plan* (1978 and reevaluated in 1997) are to guide development, preserve the small town character, “avoid undue fiscal burdens,” “preserve land for future open space,” generate commercial viability, have a “reasonable residential land use mix,” and improve access to open space. The plan recommends that the stream corridors of the Doctors Creek and Indian Run be protected.

Millstone Township

Millstone Township adopted a Master Plan in 2002, which included the 2001 *Open Space Plan*. The *Millstone Township Master Plan* identifies opportunities for increasing Township open space and priorities for historic preservation. Millstone has 463 acres of municipal open space, 652 acres of county open space, and 1,559 acres of state land. The plan recommends that the Township acquire three hundred acres of land for active and passive recreational uses. Of the 300 acres, 20 acres should be developed for a community park. In addition to acquiring an “additional three hundred acres of land for public access, development, enjoyment and dedication as community park and recreation areas”, the plan aims to: “preserve as much viable agricultural base as possible within the next five to ten years,” preserve critical natural areas, develop community parks, put parks near residential areas and provide safe access, cooperate with state and county agencies to develop a greenway, promote the use of school lands for recreation, improve water quality, maintain a stable source of funds for open space and farmland preservation, conserve the rural character of the Township, and encourage farmers to participate in farmland preservation programs. The plan identifies high priority farmland preservation areas. The plan identifies specific locations for future parks and recreation areas. Two of the proposed parks are located in the Crosswicks Creek Watershed and both are located on Route 526. One of the proposed parks is 283.2 acres and is located on Route 526 near Red Valley Lake. The second proposed park is 40.2 acres and is located on Route 526 north of Carr’s Tavern. The plan proposes a greenway from Clayton Park in Upper Freehold to Perrineville Lake and eventually to Monmouth Battlefield State Park. This greenway includes a loop that follows the Doctors Creek to Clarksburg and continues northwest to meet the greenway to Monmouth Battlefield State Park. The plan also illustrates a bridle path system that is being implemented currently.

In its Master Plan, Millstone identified historical and cultural landmarks. The Landmarks were determined based on the following criteria:

1. “The landmark is associated with events that have made a significant contribution to the broad patterns of local, state, or national history,
2. “The landmark is associated with lives of persons significant in the past; or
3. “The landmark embodies the distinctive characteristics of a type or method of construction, or it represents the work of a master, or it possesses high artistic values, or it represents a significant and distinguishable entity whose components may lack individual distinction; or
4. “The landmark has yielded, or may be likely to yield, information important in prehistory or history; or
5. The landmark exhibits scenic, historic, architectural, or cultural features which make a unique contribution to the townscape of Millstone.”

The *Historic Preservation Plan Element* in the Master Plan identifies Clarksburg Village as a historic district. Millstone Township is hoping to receive a Capital Preservation Grant and Historic Site Management Grant from the Garden State Historic Trust Fund to preserve, restore, and rehabilitate the historic landmarks within the Township. Some of the identified landmarks are located within the Crosswicks Creek/Doctors Creek Watershed, including Clarksburg Village, Clarksburg M. E. Church, Clarksburg School, and several historic residences. The Plan recommends that Millstone Township review

developments to ensure that landmarks are protected, add a landmark designation and criteria to the zoning ordinance, support historic sites that qualify for the National Register of Historic Places, document Township history, sponsor community education programs focusing on historic landmarks, and look for opportunities to incorporate historic sites into trails and greenway plans.

Upper Freehold Township

The *Upper Freehold Open Space and Recreation Plan*, which was adopted in 2000, states that the Township does not expect to increase in population due to farmland preservation efforts, limited sewer lines, and zoning for rural density. The goals of the Open Space and Recreation Plan are to outline an action plan for increasing open space. The guiding concepts of the Plan include working with organizations and agencies to acquire land and easements along streams corridors, supporting the development of rail-to-trail projects, protecting water quality through the acquisitions of environmentally sensitive land, and working with agencies and organizations to coordinate open space efforts and acquire scenic vistas along the Interstate 195 corridor. The Byron Johnson Park is a 22-acre active recreation park. There are a total of 4,578 municipal, state, and county-owned open space acres within Upper Freehold Township. The state open space includes the Assunpink Wildlife Management Area, which is located almost entirely in the Assunpink Creek Watershed outside of the Crosswicks Creek Watershed. According to the needs analysis in the plan, Upper Freehold does not need to provide additional open space; however, the Township is focusing on protecting rural character and natural resources through acquisitions and easements.

The goals of the *Upper Freehold Farmland Preservation Plan* are to acquire development easements on farms and coordinate farmland preservation efforts with adjoining municipalities. The strategies recommended in the Upper Freehold Preservation Plan include: increasing the farmland preservation/open space tax rate, using bonds to increase farmland preservation/open space funds, using municipal appropriations to purchase development rights, encouraging municipal and non-profit organizations to participate in the development of easement programs, and coordinating with state agencies to get open space funding for farmland preservation.

The trails committee is working with the township planner on a more detailed trails network for the township. The Vistas committee is focusing on identifying and preserving scenic and historic views within the township. Upper Freehold also has a stream corridor ordinance to protect riparian areas within the municipality.

Ocean County

The *Ocean County Master Plan* identifies several planning goals. The first goal is to: “continue coordinated and consistent County-wide policies to preserve, maintain and enhance the County’s natural resources and encourage the adoption of similar policies by municipalities and state and federal agencies.” This goal will be achieved by protecting water quality, preserving wetlands, preserving flood hazard areas, encouraging legislation that focuses on hazardous waste disposal, protecting environmentally sensitive areas, and protecting air quality. The second goal is to: “Continue to provide a coordinated

management program to control the spatial development of the County by directing new growth to environmentally suitable areas which can be provided with essential infrastructure and support facilities.” The objectives of this goal include: identifying suitable land for development, promoting the retention of agricultural land, encouraging participation in farmland preservation programs, providing technical assistance to county and municipal agencies, and promoting the development of recreational facilities and open space. The third goal is to “promote the provision of a broad range of housing opportunities for all income levels and household types by encouraging the maintenance or rehabilitation of the existing housing stock and through the construction of new housing units.” The fourth goal of the plan is to “promote the development of an improved and balanced, multi-model transportation system which integrates the highway system with bus, rail, air and waterborne transport systems.” The fifth goal of the plan is to “continue to develop a cohesive identity for Ocean County through the preservation of historical, cultural and natural features by drawing on the unique community identities of constituent municipalities.” The sixth goal of the plan is to “continue the economic development efforts of the County to reduce unemployment, provide year-round employment opportunities and enhance the tax base by encouraging compatible industrial and commercial operations to locate or expand in Ocean County.” The seventh goal of the plan is to “achieve a balanced, responsive, effective and efficient human resources program within the County through the coordination, integration and improvement of public and private health, welfare and social programs.” The final goal of the plan is to “continue a coordinated and consistent program of capital improvements and public services required to meet the needs of existing and future County residents.”

The *Ocean County Master Plan* (1988) references the Ocean County Areawide Water Quality Management Plan’s Surface Water Quality Assessment Addendum, which found that Crosswicks Creek in Plumsted exceeded county averages. This was attributed to urban runoff, Oakford Lake eutrophication, and agricultural runoff. Plumsted lies on the Kirkwood formation and the Vincentown formation. These aquifers are used to provide potable water to residents throughout the county. The Kirkwood Formation is vulnerable to contamination because it is located near the surface and is unconfined. The plan identifies three hazardous waste sites in Plumsted Township: Goose Farm, Spence Farm, and Pijak Farm.

Plumsted Township

The Conservation Element of the Plumsted Township Master Plan focuses on the environment and natural resources, recreation and open space, agricultural land, and rural character and historic preservation. The plan identifies two major goals regarding the environment and natural resources: promoting the preservation of natural resources and environmentally sensitive areas and considering the environment and public health impacts of air, water, and noise pollution. The goals regarding recreation and open space are: upgrading existing recreational facilities, creating new recreational facilities, acquiring land for open space, and linking Township open space to other publicly owned land. The goals regarding agricultural land are to: preserve farmland and create open space buffers between farms and developments. The plan encourages the use of planning techniques aimed at preserving rural and historic characteristics.

The plans summarized above illustrate a regional interest in protecting the cultural and environmental resources of the area. There is clearly an interest in investing in open space for recreation and resource protection. The concept of coordinating with municipal and county governments was reiterated in many of the plans. It is clear from reviewing these plans that there is a consistent understanding that the resources in the Crosswicks Creek Watershed and its surrounding areas are precious and worth protecting. This consistency should translate into regional support for this plan and make the implementation of this plan easier, because there is already a stated need for open space and resource protection.

Proposed Greenways and Trails

As the municipal and county plans indicate, there has been interest in pursuing various greenway projects. The following greenways have been proposed by municipalities and counties.

- Missing Link Greenway would connect all of the existing open space from the Assunpink Wildlife Management Area through Washington Township.
- Trenton Assunpink Greenway would connect Trenton to the Assunpink Creek in Hamilton.
- Delaware River Heritage Trail is a National Park Service initiative. The trail would be a 50-mile loop trail (25 miles in New Jersey) through parts of New Jersey and Pennsylvania. The trail which is planned to follow the Delaware River would link Trenton to Palmyra. Only the northern most portions of this trail will be located in the watershed, but it may be an important asset in future efforts. A towpath is being constructed to connect the Delaware River Heritage Trail with D & R Canal State Park.
- Camden-Amboy Rail Trail will connect Washington Township to Bordentown Township. The trail will run alongside the Miry Run and the Assunpink Creek, which are in the Assunpink Creek Watershed. It will link Windsor, Robbinsville, Hightstown, and Bordentown. This rail trail would cross through Crosswicks Creek Watershed along the old Camden-Amboy railroad bed.
- “Capital to Coast” Trail is a State project, which will eventually connect the Battle of Trenton area to the Princeton Battlefield Park, Washington Crossing State Park, Monmouth Battlefield, and the Morristown National Historic Park. The trail will pass through the Assunpink Wildlife Management Area.
- Cape May to High Point Trail is expected to be a 220 mile bicycle route with a network of spurs extending out from the main route. The trail will start at the High Point Monument in High Point State Park in Somerset County and will end at Cape May Point State Park in Cape May County. The trail will pass through Morris County, Somerset County, Middlesex County, Mercer County, Monmouth County, Ocean County, Burlington County, and Atlantic County. Along the way the route will go through the Assunpink Wildlife Management Area, Allentown Borough, and New Egypt. Spurs may be developed to D & R Canal State Park, Historic Walnford, Imlaystown Wildlife Management Area, and several proposed rail trails.
- Hamilton’s Crosswicks Creek Linear Park will follow Crosswicks Creek across the Township. Easements have been secured for most of the length of the

Crosswicks Creek through Hamilton. The trail will be used predominantly for pedestrian use.

These greenways have been incorporated into the Crosswicks Creek/Doctors Creek Watershed Greenway Plan. Connections to these proposed greenways are described in the Opportunities and Priorities section of this plan.

CHAPTER 4 - RECOMMENDED GREENWAY PLAN

The goals of the Crosswicks Creek/Doctors Creek Watershed Regional Greenway Planning Group (Greenway Group) are to promote the protection of water quality, connect points of interest for conservation and recreation, and preserve historic sites and vistas. Efforts should be focused on acquiring land or conserving land through easements along Crosswicks Creek and its tributaries. The specific location of the greenway can change based on opportunities for land acquisition and conservation easements.

Water Quality Priorities

▪ **Protect Stream Corridors**

The first water quality priority is to protect stream corridors through easements or fee simple acquisition. Ideally, the greenway will include a 50 to 75-foot riparian buffer along all of the stream corridors in the watershed. The minimum buffer along all stream corridors should be 35-50 feet for water quality benefits; however, wider buffers provide more resource protection benefits. A 200-ft buffer is needed to provide wildlife habitat benefits. A buffer of at least 50 feet should be protected if recreational trails are planned. Most trails and paths should be 8 to 10 feet wide and there should be a buffer on both sides of the trail. Steep slopes require widening the riparian buffers. Where steep slopes exist beyond the riparian buffer, the entire floodplain should be evaluated for protection. Land should be protected until the slope is less than 15 percent. The steepest slopes along Doctors Creek and Crosswicks Creek are high priority areas for protection.

▪ **Protect Headwaters**

As with most watersheds, the headwater portions are very important for the water quality of downstream portions of a stream. Protecting the headwaters of Crosswicks Creek and Doctors Creek is a high priority. The headwaters of Crosswicks Creek are primarily in the Fort Dix Military Reservation and Jackson Township. The headwaters of the Doctors Creek are located in Millstone Township. Efforts need to be made to involve Fort Dix in the protection of the water quality of Crosswicks Creek.

▪ **Protect Culturally and Environmentally Significant Waterbodies**

Several of the waterbodies in the watershed are important elements of the local character. Oakford Lake in New Egypt is a priority for water quality improvements. The lake is a focal point for New Egypt and the poor aesthetics of this eutrophic lake detract from its value. Imlaystown Lake is also a high priority for protection. Protecting Imlaystown Lake involves improving the effectiveness of sewage treatment for the buildings surrounding the lake. There are efforts being made to fund a community septic system. Conines Mill Pond (Allentown Lake) should be protected as an important focal point in Allentown Borough. The Hamilton-Trenton-Bordentown Marsh should be protected. Efforts should be made to acquire the entire marsh area. Wetlands provide water quality benefits and wildlife habitat. All of the wetlands in the watershed should be protected.

▪ **Manage Stormwater Runoff**

The excessive water quantity that is often associated with stormwater runoff can cause serious water quality problems. The volume and velocity of stormwater runoff can increase streambank erosion problems and impair in-stream habitat. Stormwater also transports pollutants to streams and other waterbodies. Reducing stormwater runoff is necessary for the protection of water quality. In addition to reducing stormwater runoff, proactive measures should be taken to prevent increases in stormwater runoff as a result of development. The new NJPDES stormwater regulations outline the role municipalities play in stormwater management. All of the municipalities in the watershed are required to apply for a municipal stormwater management permit.

Historic Vista Priorities

As can be seen in the historic vistas map and in other parts of this plan, there are a number of historic vistas and scenic roads. Some of the priority locations are the Burlington Path, the Allentown Historic Greenbelt, Imlaystown Historic District, New Egypt Historic District, and several historic homes in the watershed.



Protecting scenic or historic vistas could involve land preservation in areas around the site, possibly in conjunction with surrounding communities. Communities should consider the affects of development on the character of historic sites, both within in their towns and adjacent communities, when reviewing and approving development applications and should look for opportunities to preserve open space around the historic sites as part of any developments that are approved.

▪ **Protect Historic Sites and Villages**

Imlaystown is a high priority for protection as a historic village. The most critical threat to Imlaystown is neglect. Septic system failure has forced residents to leave and has caused this charming village to fall into disrepair. Current efforts to develop a community septic system in Imlaystown should be supported, because, in addition to providing water quality benefits, the improved treatment of wastewater will allow residents and businesses to move back to Imlaystown. Efforts should be made to encourage the revitalization of this village. Crosswicks Center, New Egypt Center, and Allentown Center should be protected as historic town centers. Specific sites that are high priorities include the Mill at Imlaystown, the Grist Mill in Allentown, the Wittenborn House in Washington, and the Middleton House in North Crosswicks (Hamilton).

▪ **Protect Historic and Scenic Views and Vistas**

Protecting the rural character of the watershed is a high priority. Some of the areas that are of particular interest include the Burlington Path and the New Egypt Ravine. The New Egypt Ravine is an important environmental resource. It also provides unique scenery. In addition, the scenic roads identified in the Scenic Roads section of this plan should be protected. The view of the Bordentown Bluffs should be protected as both an important natural feature and as a his toric Lenni-Lenape site.

▪ **Incorporate Historic and Scenic Sites, Vistas, and Views into Trail Efforts**

Incorporating historic and scenic sites and vistas can add a great deal of value to a trail. Historic Walnford should be connected to the Heritage Park and to the Hamilton Linear Park Trail. The Heritage Park to Historic Walnford Trail should pass the Grist Mill in Allentown. The Revolutionary War Paths shown on the Historic Sites and Vistas map should be incorporated into the trail system. Many of the trails pass by historic sites and vistas. Markers should be placed at historic sites to educate the public about the history of the watershed and give additional value to the trail.

Trail Priorities

Trails can be used for a variety of purposes, such as recreation, exercise, transportation, and access to other areas or trails. Short trails can be used for transportation to shops and services or to work, for exercise, and as linkages to other paths. Long trails can be used for hiking, biking, horseback riding, and rollerblading. Trails used for biking and rollerblading should be 10 feet wide, especially if the trails will require maintenance vehicles to travel on them. Trails can also be used to provide a safe way for children to get to school. Incorporating schools into a trail plan may provide an opportunity for funding as the State government becomes more interested in funding safe walking trails for students.

▪ **Develop a System of Trails**

Recreational trails are an important part of this plan. The following trails and trail connections are recommended.

- The Indian Run Trail would connect the Washington Community Park to Allentown's Heritage Park. The trail would follow Indian Run.
- The Indian Run Trail would be connected to the proposed Washington Township trail network.
- Heritage Park to Walnford Trail would connect with the Indian Run Trail in Heritage Park with Walnford. This trail would follow Breza and Ellisdale Roads to Walnford passing through the Harbourt Soccer Complex and Byron Johnson Park on its way to Historic Walnford – Crosswicks Creek Park. The trail would be intended for bicyclists and pedestrians. If the proposed westerly bypass around Allentown is completed, the planned trail will serve as a pedestrian and bicycle connection via a pedestrian/bicycle bridge to the Heritage Green and Four Seasons developments from the regional school and park complex and downtown Allentown.
- The Crosswicks Creek Linear Park will follow Crosswicks Creek through Hamilton. Hamilton Township already owns a large proportion of the stream corridor and additional land has been set aside using conservation easements. This trail is already being laid out. The trail will include several boat launches for canoe use. Much of the stream corridor through Hamilton is made up of wetlands. For this reason, boardwalks and other pervious materials will be used. This trail will be intended primarily for hiking and canoeing. Connections should be made from nearby neighborhoods to the Linear Park to increase access.
- The Linear Park will be connected to the walking trails in the Hamilton-Trenton-Bordentown Marsh.

- The Linear Park to Walnford Trail will connect the Linear Park Trail in Hamilton to Walnford in Upper Freehold. This trail follows along roads in places and needs to be made safe for pedestrians.
- Millstone Bridle Trails are a network of official and unofficial trails that will be used for horseback riding. Easements should be pursued for all of the proposed trails.
- Upper Freehold Connector trails will connect Clayton Park to Assunpink, Prospertown Lake, and the Monmouth County Rail Trail and Walnford Park to the Monmouth County Rail Trail.
- The New Egypt to Colliers Mill Trail will pass by Goff Farm and a couple of U-Pick farms.
- The United Jersey Railroad, also known as the Camden-Amboy Railroad, could be used as a possible rail trail between Windsor and Robbinsville in Washington Township. The trail could be extended to Hightstown and Bordentown City. The Railroad is listed on the National Historic Registry.
- The Monmouth County Rail Trail will go through Upper Freehold and can be continued into Plumsted.

- **Create Trails for Different Users**

Trails can be designed for a variety of users. Some trail locations are more appropriate for one type of user over another. Efforts should be made to accommodate different kinds of trails users during the design of each trail segment. The users that are most likely to take advantage of the proposed trails include bicyclists, pedestrians, horse back riders, and canoeists.

- **Connect to Existing Trail Networks**

The new trails should make connections to existing trails and provide opportunities for new trails. Links should be made to nearby neighborhoods.

- **Connect to Points of Interest**

The trail system should connect points of interest, such as historic sites, village centers, and recreational parks. The trail system should connect to village centers in order to provide trail users with access to restaurants and other facilities and to make the village centers more visible to the general public.

- **Create Safe Access to Trails**

Safe access is an important part of any trail. Some of the proposed trails involve crossing roads and walking along roads. Every effort should be made to provide safe access to trails and to provide the user with a sense of safety on the trail.

- **Incorporate Historic and Scenic Vistas, Views, and Sites into Trails**

The numerous historic and scenic sites and vistas should be incorporated into the trails whenever possible. Markers should be placed at historic sites along trails.

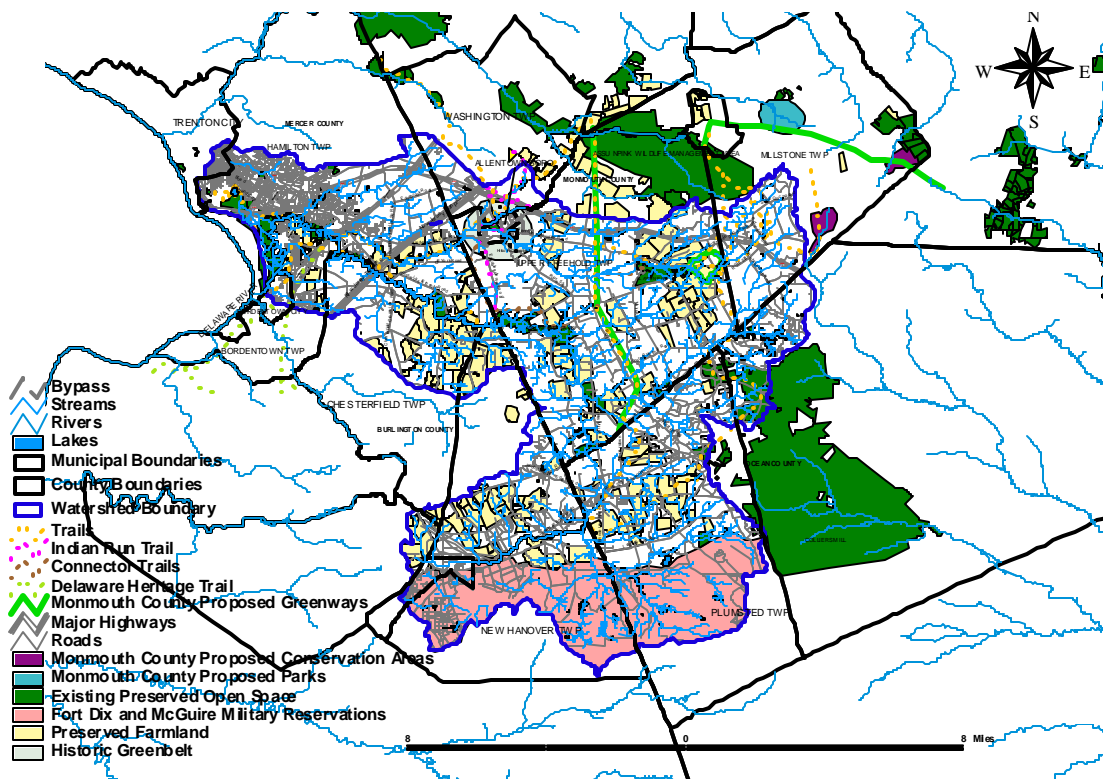
- **Use Appropriate Materials for Trails**

There are a number of different types of materials that can be used for a trail. The materials chosen should be appropriate for the site. Environmentally-sensitive areas should be given special care during the design and construction phase. In general, paved

trails and sidewalks can be 4 feet wide if they are used intermittently, but should be 5 feet wide if they receive more frequent use.

The Greenway Map

As can be seen in the official greenway map, the Crosswicks Creek/Doctors Creek Watershed Greenway encompasses a great deal of land. The proposed greenway uses existing and proposed open space, existing and proposed preserved farmland, and riparian corridors in the watershed. At points, the greenway extends out of the watershed to connect with important points of interest such as the Assunpink Wildlife Management Area and Colliers Mill Wildlife Management Area. A larger version of this map can be found at the end of this document.



Map 4 – Proposed Greenway Map

CHAPTER 5 - CONCLUSIONS

The Crosswicks Creek/Doctors Creek Watershed is home to many valuable historic, scenic, and recreational resources. While the watershed still has vegetated stream corridors, historic sites, and scenic views, much of the area is not protected. Protecting and conserving the resources in the watershed is a major concern for the communities within the watershed. For this reason, this greenway plan has been developed.

This greenway plan is focused on three goals: to protect water quality, to preserve historic vistas and sites, and to develop a system of trails. As a result of the background information gathered during this project, the following conclusions have been made:

- Stream corridors need to be protected through easements, acquisition, and ordinances.
- The headwater streams located in Fort Dix, Jackson Township, and Millstone Township need to be protected from activities that degrade water quality, such as stormwater runoff and removal of vegetation.
- Stormwater management efforts should be initiated in accordance with the new NJPDES requirements.
- Culturally and environmentally significant waterbodies should be protected and restored.
- Historic sites, vistas, and views should be protected.
- Scenic vistas and views should be protected.
- Recreational trails should be created and connected to existing points of interest and trail networks.
- Trails should be developed using appropriate and environmentally-sensitive materials.

As can be seen in the Open Space Plans, Master Plans, and Historic Preservation Plans of the counties and municipalities in the watershed, there is regional interest in addressing the goals of this project. In order to make this greenway a reality, the municipalities within the watershed need to make a commitment to protect the existing environmental and cultural resources and to enhance recreational opportunities by adopting this plan and taking steps to implement it.

CHAPTER 6 - IMPLEMENTATION

The next phase of this project is to begin implementing the plan. Implementation of this plan would be by the voluntary participation of private property owners working with a local municipal, county, and/or state government or non-profit organization. This plan is intended to be a conceptual plan that will guide future open space, environmental protection, and recreational activities. The first step towards implementing the plan should be to get municipalities to adopt this plan and incorporate the plan into their municipal code. The second step towards implementing the plan is to get funding for and develop a feasibility study to determine the exact location of the proposed trails and historic markers. The third step is to get funding to implement the specific recommendations in this plan, including planting vegetative buffers in riparian corridors and installing trails and historic markers.

The objectives of each goal are outlined below. Implementing these objectives is important in order to achieve the goals of the project.

Goal 1:

- *To protect water quality*
 - The primary objective for this goal is to protect riparian areas through conservation easements, fee simple purchases, and development right purchases. The riparian areas that should be considered first are:
 - Steep slopes
 - Headwater areas
 - Whenever development is proposed near a stream, the municipality should try to acquire the land along the stream.
 - Significant waterbodies should be protected through stormwater management, sediment removal, nutrient removal, and zoning. Currently, the highest priority waterbodies are:
 - Oakford Lake
 - Imlaystown Lake
 - Conines Mill Pond (Allentown Lake)
 - Hamilton-Trenton-Bordentown Marsh
 - In addition to acquiring and conserving land, it is necessary to improve zoning, so that municipalities have more tools for protecting water quality.
 - Water Quality Protection Zone should be created for protecting floodplain areas, riparian areas, wetlands, headwater streams, aquifer recharge areas, and wellheads.
 - Ordinances can be adopted to protect specific resources. Model Ordinances for steep slopes and riparian corridors can be found in the Appendix.
 - Steep Slopes
 - Riparian Corridor
 - Stormwater Management

- Although acquiring and conserving land through easements is the only way to ensure protection, this is not always possible. Municipalities and counties should encourage private landowners to vegetate a minimum of 35 feet of land adjacent to streams.
- Municipalities in the watershed should implement the new NPDES Phase II permit regulations as soon as possible.
- Municipalities should encourage, through zoning and ordinances, the implementation of low impact development concepts in new developments.
- Municipalities should negotiate with developers to acquire environmentally sensitive land.
- Public education about water quality protection should be conducted.

Goal 2:

- *To preserve historic and scenic sites and vistas*
 - The historic and scenic sites and vistas make up an important part of the regional character of the watershed. The highest priorities for this goal are:
 - Imlaystown
 - New Egypt Ravine
 - Wittenborn House in Washington
 - Revolutionary War Paths, including Burlington Path
 - Allentown Historic Greenbelt
 - Middleton House in North Crosswicks (Hamilton)
 - Zoning districts should be adopted for historic areas and scenic vistas to provide some protection and to specify design criteria for development in a historic district or scenic vista district.
 - Protecting historic and scenic vistas can be a challenging goal in light of increasing development pressure in the region. One strategy for minimizing the impact of development on a scenic or historic view is to mask the development with vegetative buffers. A buffer of plants along a road or between uses can provide a screen to the development. Another strategy is to encourage low impact development concepts for all new developments.
 - Historic markers should be installed to educate the public about historically significant spots.
 - Development plans should be reviewed to ensure that historically significant sites are not damaged or destroyed.
 - Historic Commissions should be developed in all of the municipalities in the watershed.

Goal 3:

- *To develop a trail system that connects points of interest*
 - The following trails should be created:
 - Indian Run Trail to connect the Washington Township Community Park to the Heritage Park in Allentown

- Users: Pedestrians and Bicyclists
 - Heritage Park to Walnford
 - Users: Pedestrians and Bicyclists
 - Hamilton's Crosswicks Creek Linear Park Trail in Hamilton
 - Users: Canoeists and Pedestrians
 - Connections from the Crosswicks Creek Linear Park Trail to nearby neighborhoods
 - Users: Pedestrians and Canoeists
 - The Linear Park to the walking trails in the Hamilton-Trenton-Bordentown Marsh.
 - Users: Pedestrians
 - The Linear Park to Walnford Trail
 - Users: Pedestrians
 - Millstone Bridle Trails
 - Users: Horseback riders
 - New Egypt to Colliers Mill Trail
 - Users: Bicyclists
 - Camden-Amboy Rail Trail
 - Users: Pedestrians, Bicyclists
 - Monmouth County Rail Trail
 - Users: Pedestrians, Bicyclists
 - Cape May to High Point Trail
 - Users: Bicyclists
 - Delaware River Heritage Trail
 - Users: Pedestrians, Bicyclists
- Participation in regional efforts and the proposed rail trails should continue.
 - Materials that are appropriate for different types of uses and different site conditions should be used.
 - Asphalt
 - Gravel
 - Stone
 - Sand
 - Woodchips
 - Graded dirt
 - Boardwalks
 - Safe access to trails should be provided
 - The following areas are focal points in the watershed. Many of these areas provide unique opportunities to enjoy historic or scenic places. Trail connections should be made between them.
 - Walnford
 - Assunpink
 - Colliers Mills
 - Hamilton-Trenton-Bordentown Marsh
 - Clayton Park
 - Allentown Center
 - New Egypt Center

- Crosswicks Center
- Different kinds of trails should be developed to cater to different kinds of users.
 - Canoe trails
 - Paved walking and biking trails
 - Nature trails
 - Unpaved walking trails
 - Horse trails
 - Handicap access
- Open space easements should be required for all new developments; municipalities should use these easements to expand the trail system.
- New developments should be required to provide access to proposed trails by installing paths along roads or by putting aside land for open space. Trees should be planted on either side of the paths to screen new developments.

Increased Involvement

In order for this plan to work effectively, more agencies and organizations need to get involved. Every agency and organization brings different resources and stakeholders to the table. The new partners should include community groups, municipalities, and government agencies. The community groups that should be involved are the Delaware and Raritan Greenway (D & R Greenway), Friends for the Hamilton Trenton Bordentown Marsh, and the Crosswicks Creek Watershed Association. The municipalities that should be involved are Bordentown City, Bordentown Township, Chesterfield Township, North Hanover Township, New Hanover Township, Wrightstown Borough, and Jackson Township. These municipalities should gather the type of information presented in this plan and add it to the plan as addendums. There are several agencies that should be involved in the project, including Burlington County Planning, Mercer County Planning, and Ocean County Planning, US Army – Fort Dix and McGuire, the National Park Service, and Rutgers, The State University. Monmouth County Planning Department and the Monmouth County Park System were involved with the development of this greenway plan. Burlington, Mercer, and Ocean Counties provided data for the development of maps, but had limited involvement in the development of the greenway plan. These agencies need to be involved in the implementation of the plan. It is critical that the Fort Dix Military Reservation be involved in the implementation of the water quality objectives outlined in the plan. Large portions of Crosswicks Creek headwaters are located on the military reservation. Fort Dix needs to be involved in order for water quality improvements to be made in the headwater areas. The National Park Service is interested in getting involved in the area to investigate Crosswicks Creek for possible Wild and Scenic Rivers Designation. Designating Crosswicks Creek a Wild and Scenic River may provide resources for the watershed that will make implementing the greenway plan more feasible. Local colleges can provide excellent resources. The local community colleges may be able to provide help with trail installation and outreach.

Responsibilities

Municipal Environmental Commissions will be responsible for encouraging their local governments to adopt this plan and to implement it. Some of the trails proposed in this plan have been proposed in municipal and county open space and recreation plans. The rail trail through Upper Freehold is part of a Monmouth County initiative. Monmouth County should maintain the lead on this project. Hamilton Township and Mercer County should work together to develop the Crosswicks Creek Linear Park. Monmouth County should be responsible for developing a roadside bicycle trail along Breza Road to Walnford. Municipalities should be responsible for getting easements for their bridle trails.

APPENDICES

LIST OF LOCAL CONTACTS

- Allentown Borough
8 North Main Street
Allentown, NJ 08501

- Burlington County Department of Natural Resources
PO Box 6000
Mt Holly, NJ 08060
(856) 642-3850

- Delaware and Raritan Greenway
327 Canal Road
Princeton, NJ 08540
www.delrargreenway.org

- Delaware River Basin Commission
PO Box 7360
West Trenton, NJ 08628-0360
www.state.nj.us/drbc/

- Delaware RiverKeeper Network
www.delawariverkeeper.org

- Delaware Valley Regional Planning Commission
The Bourse Building
8th Floor
111 S. Independence Mall East
Philadelphia, PA 19106
www.dvrpc.org

- Friends of the New Jersey Railroad and Transportation Museum
PO Box 8301
Trenton, NJ 08650

- Friends for the Hamilton Trenton Bordentown Marsh
www.marsh-friends.org

- Friends of Washington Township
3812 Quakerbridge Road
Hamilton, NJ 08619

- Hamilton Preservation Commission
Hamilton Township Police Department
1270 Whitehorse – Mercer Road
Hamilton, NJ 08619
Historical Society of Hamilton
PO Box 1776

Hamilton, NJ 08020

- Hamilton Township
2090 Greenwood Avenue
PO Box 00150
Hamilton, NJ 08650
www.hamiltonnj.com
- National Park Service – National Wild and Scenic Rivers Program
200 Chestnut Street, 3rd Floor
Philadelphia, PA 19106
- New Jersey Daughters of the American Revolution
151 Westcott Avenue
Trenton, NJ 08610-2062
- New Jersey Department of Environmental Protection – Green Acres Program
501 East State Street
Station Plaza Building 5, Ground Floor
Trenton, NJ
www.nj.gov/dep/greenacres
- New Jersey Department of Environmental Protection – Stormwater Management Program
501 East State Street
Station Plaza Building 5, Ground Floor
Trenton, NJ
- Mercer County Planning Division
McDade Administration Building
640 South Broad Street
P.O. Box 8068
Trenton, NJ 08650-0068
www.mercercounty.org/planning/
- Millstone Township
215 Millstone Road
P.O. Box 240
Perrineville, N.J. 08535
www.millstone.nj.us
- Millstone Trailblazers
www.millstonetrailblazers.com
- Monmouth County GIS
3000 Kozloski Road
Freehold, NJ 07728
www.visitmonmouth.com/gis

- Monmouth County Park System
 805 Newman Springs Road
 Lincroft, NJ 07738-1695
www.monmouthcountyparks.com

- Monmouth County Planning Board
 One Main Street
 Freehold, NJ 07728
 (732) 431-7460
www.monmouthplanning.com

- Ocean County Department of Planning
 129 Hooper Ave.
 PO Box 2191
 Toms River, NJ 08754-2191
www.co.ocean.nj.us/planning/

- Plumsted Township
 P.O. Box 398
 New Egypt, NJ 08533
www.plumsted.org

- Upper Freehold Township
 314 Route 539
 P.O. Box 89
 Cream Ridge, NJ 08514
www.uftnj.com

- Washington Township
 1117 Route 130
 Robbinsville, NJ 08691
<http://washington-twp.org>

- Washington Township Historic Preservation Subcommittee
 Washington Township department of Planning and Zoning
 1117 Route 130 North
 Robbinsville, NJ 088691

List of Grant Opportunities for Funding

Monmouth County Park System
Acquisition and Design Office
Open Space Grant Program
805 Newman Springs Road
Lincroft, NJ 07738
(732) 842-4000

- Monmouth County Municipal Open Space Grant Program – helps fund land acquisition and development for parks, recreation, and open space purposes

The National Trust for Historic Preservation
Northeast Field Office
PO Box 18889
Philadelphia, PA 19119
215-991-5578
www.nthp.org

- Funds preservation activities including architectural services, education and interpretation, planning, and marketing.

New Jersey Department of Environmental Protection – Green Acres Program and Stormwater Management Program
501 East State Street, 1st Floor
PO Box 412
Trenton, NJ 08625-0412
(609) 984-0500

- Funding for open space – matching funds for acquisition
- Individual grants for implementing the NJPDES regulations

New Jersey Environmental Infrastructure Trust
PO Box 440
Trenton, NJ 08625
(609) 219-8600

- Low interest loans open space projects that provide water quality benefits

New Jersey Historic Preservation Office
Certified Local Government Programs
Division of Parks and Forestry, Department of Environmental Protection
PO Box 404
Trenton, NJ 08625
(609) 292-2023

- Provides funds and technical assistance for preservation at the local level

The New Jersey Historical Commission
PO Box 305
Trenton, NJ 08625
(609) 292-6062

www.newjerseyhistory.org

- Provides funds and consultation to historical organizations for preservation and education

New Jersey Historic Trust

PO Box 404

Trenton, NJ 08625

(609) 984-0473

www.njht.org

- Historic Preservation Revolving Loan Grant – low-interest loans for preservation, rehabilitation, and acquisition of registered historic sites. Nonprofit organizations and municipalities are eligible
- Historic Preservation Matching Grants Program – funding for preservation activities. Nonprofit organizations, municipalities, and county governments are eligible
- Emergency Grant and Loan Program - funding for preservation activities. Nonprofit organizations, municipalities, and county governments are eligible
- New Jersey Legacies – program for property donations and preservation easements
- Preservation Easement Program

State Agricultural Development Council

John Fitch Plaza

PO Box 330

Trenton, NJ 08625

(609) 984-2504

- Farmland Preservation Program
- Farm Link – matches farm owners with individuals looking for farmland to farm

United States Department of Agriculture, NJ NRCS

NRCS Service Center

Freehold Service Center

303 West Main Street

Freehold, NJ 07728-4832

(732) 462-0075

- Environmental Quality Incentives Program – cost sharing program for farmers using agricultural Best Management Practices
- Farm*A*Syst – educational information about agricultural BMPs for farmers
www.nj.nrcs.usda.gov/partnerships/farmasyst/

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Watt, Martha K., Kane, Allen C., Charles, Emmanuel G., Storck, Donald A. Hydrology of the unconfined aquifer system, Rancocas Creek area: Rancocas, Crosswicks, Assunpink, Blacks, and Crafts Creek Basins, New Jersey, 1996. US Geological Survey Water-Resources Investigations Report 02-4280.

List of Planning Tools

Land Acquisition and Easements

Land acquisition is the most effective planning tool for long term protection of cultural and environmental resources. Land acquisition can be an expensive tool for protection. Following are some options that can be used to protect land permanently.

- Fee Simple Purchases – the purchase of land by a public entity or land trust.
- Conservation Easements – a recorded agreement that stays with the deed from owner to owner. Purchased, donated, or negotiated easements may qualify for tax deductions. Conservation easements can be used to protect passive open space, scenic vistas, or limited public access. Conservation easements often require some supervision to ensure that the terms of the easement are being kept.
- Bargain Sale – allows the buyer to purchase land from an owner for less than market value. The current market value is determined by an independent appraisal. The buyer and seller agree a purchase price that is less than the market price.
- Installment Sale – involves the owner agreeing to receive payments on the property over a period of years.
- Donation – charitable gifts that do not require any financial reimbursement.
- Reserved Life Estate or Remainder Interest – allows the owners to continue to live on their property after they have donated it.
- Bequest – a donation of land that will be given after the owner’s death.

Zoning

When used properly, zoning can be a very effective tool for protecting cultural and environmental resources as well as guiding development in a way that is appropriate for the community. Following are a list of zoning districts that can be incorporated into municipal Zoning ordinances to protect resources and the community character that municipalities value.

Historic Village – Residential

Historic Village – Commercial

Historic Village – Mixed Uses

Forest District

Water Quality Protection District – includes floodplain protection, wellhead protection, wetland protection, aquifer recharge protection, streambank protection, lakeshore protection

Model Ordinances

Ordinances can be an effective way for municipalities to guide development and protect resources. Following are three model ordinances including a model “Stream Corridor Ordinance”, a model “Steep Slopes Ordinance”, and a model “Historic Vista Protection Ordinance”.

Riparian Buffer Ordinance. *This model ordinance is intended to provide a foundation for the riparian buffer ordinances that should be adopted by the municipalities in the Crosswicks Creek/Doctors Creek Watershed. This ordinance is based on an ordinance developed by the Montgomery County Planning Commission in Pennsylvania.*

1. LEGISLATIVE INTENT

In recognition of the fact that natural features contribute to the welfare of residents, the following regulations have been enacted to provide reasonable controls governing the restoration, conservation, disturbance, and management of existing riparian buffers for all perennial and intermittent streams and all lakes and ponds in the municipality by establishing designated Riparian Buffer Conservation Zones. For the purposes of this ordinance the following definitions shall apply:

- **Stream** - a natural watercourse containing flowing water for at least part of the year.
- **Perennial stream** - a stream that flows continuously throughout the year in most years.
- **Intermittent stream** - a stream with a drainage area of 50 acres or greater.

In addition, the specific purposes and intent of this article are to:

- A. Reduce the amount of nutrients, sediment, organic matter, pesticides, and other harmful substances that reach watercourses, wetlands, subsurface, and surface water bodies by using scientifically-proven processes including filtration, deposition, absorption, adsorption, plant uptake, biodegradation, denitrification and by improving infiltration, encouraging sheet flow, and stabilizing concentrated flows.
- B. Improve and maintain the safety, reliability and adequacy of the water supply for domestic, agricultural, commercial, industrial, and recreational uses along with sustaining diverse populations of aquatic flora and fauna.
- C. Regulate the land use, siting, and engineering of all development to be consistent with the intent and objectives of this ordinance, accepted conservation practices, and to work within the carrying capacity of existing natural resources.
- D. Assist in the implementation of pertinent state laws concerning erosion and sediment control practices.
- E. Conserve the natural features important to land and water resources (e.g., headwater areas, groundwater recharge zones, floodway, floodplain, springs, streams, wetlands, woodlands, prime wildlife habitats) and other features constituting high recreational value or containing amenities that exist on developed and undeveloped land.
- F. Work with floodplain, steep slope, and other ordinances that regulate environmentally sensitive areas to minimize hazards to life, property, and riparian features.

- G. Conserve natural, scenic, and recreational areas within and adjacent to riparian areas for the community's benefit.

2. DEFINITIONS, ESTABLISHMENT, AND WIDTH DETERMINATION OF THE RIPARIAN BUFFER CONSERVATION ZONE

- A. Definition - The Riparian Buffer Conservation Zone is defined as:

Areas surrounding municipally designated surface water bodies, including creeks, lakes, and intermittent watercourses that intercept surface water runoff, wastewater, subsurface flow, and/or deep groundwater flows from upland sources and function to remove or buffer the effects of associated nutrients, sediment, organic matter, pesticides, or other pollutants prior to entry into surface waters. This area may also provide wildlife habitat, control water temperature, attenuate flood flow, and provide opportunities for passive recreation. This buffer area may or may not contain trees and other native vegetation at the time of ordinance enactment.

- B. Establishment

1. The establishment of the Riparian Buffer Conservation Zone applies to the following areas which are identified on the municipal zoning map:
 - a. Lands adjacent to municipally designated streams within the municipality.
 - b. Lands adjacent to municipally designated intermittent water courses within the municipality.
 - c. Lands at the margins of municipally designated lakes.
2. The measurement of the Riparian Buffer Conservation Zone shall extend a minimum of 75 feet from each defined edge of an identified watercourse or surface water body at bankfull flow or level, or shall equal the extent of the 100 year floodplain, whichever is greater. The District will consist of two distinct zones designated as:
 - a. Zone One: This zone will begin at each edge of an identified waterway (which can include wetlands and intermittent watercourses) and occupy a margin of land with a minimum width of 25 feet measured horizontally on a line perpendicular to the edge of water at bankfull flow.
 - i. Where steep slopes (in excess of 15 percent) are located within 25 feet of a municipally designated watercourse, Zone One shall extend the entire distance of this sloped area.
 - ii. If the distance of this sloped area is greater than 75 feet, there will be no requirement for the establishment of Zone Two. If the distance is less than 75 feet, the width of Zone Two will be adjusted so that the total buffer width (Zone One and Zone Two) will be a maximum of 75 feet.

- b. Zone Two: This zone will begin at the outer edge of Zone One and occupy a minimum width of 50 feet in addition to Zone One.
 - i. Where the 100-year floodplain extends greater than 75 feet from the waterway, Zone One shall remain a minimum of 25 feet wide, and Zone Two shall extend from the outer edge of Zone One to the outer edge of the 100-year floodplain.
 - ii. Width Determination. The developer, applicant, or designated representative shall be responsible for the initial width determination of the riparian buffer and identifying this area on any plan that is submitted to the municipality for subdivision, land development, or other improvements that require plan submissions or permits. This initial determination shall be subject to review and approval by the municipal engineer, governing body, or its appointed representative.

3. USES PERMITTED IN THE RIPARIAN BUFFER CONSERVATION ZONE

The following uses are permitted, either by right or after review and approval by the municipality in the Riparian Buffer Conservation Zone. However, within any buffer, no construction, development, use, activity, or encroachment shall be permitted unless the activity is described in the Riparian Buffer Management Plan, as outlined in Section 8 (A) (1).

A. Zone One

1. Uses Permitted by Right

Open space uses that are primarily passive in character shall be permitted to extend into the area defined as Zone One, including:

- a. Wildlife sanctuaries, nature preserves, forest preserves, fishing areas, passive areas of public and private parklands, and reforestation in compliance with the guidelines of the Riparian Buffer Management Plan.
 - b. Streambank stabilization in compliance with the guidelines of the Riparian Buffer Management Plan.
- ##### **2. Uses Requiring Municipal Review and Approval**
- a. Buffer crossings by farm vehicles and livestock, recreational trails, roads, railroads, centralized sewer and/ or water lines, and public utility transmission lines, and public utility transmission lines provided that any disturbance is offset by buffer improvements identified in the Riparian Buffer Management Plan.

B. Zone Two

1. Uses Permitted by Right

The following uses which are primarily passive in character, shall be permitted by right to extend into the area defined as Zone Two:

- a. Open space uses including wildlife sanctuaries, nature preserves, forest preserves, passive areas of public and private parklands, and recreational trails.
 - b. Reforestation in compliance with the guidelines of the Riparian Buffer Management Plan.
 - c. Agricultural uses existing at the time of adoption of this ordinance.
2. Uses Requiring Municipal Review and Approval
- a. New agricultural uses.
 - b. Buffer crossings by farm vehicles and livestock, roads, railroads, centralized sewer and/or water lines, and public utility transmission lines provided that any disturbance is at a minimum, offset by buffer improvements identified in the Riparian Buffer Management Plan.
 - c. Centralized sewer and/or water lines and public utility transmission lines running along the buffer, provided that any disturbance is, at a minimum, offset by buffer improvements identified in the Riparian Buffer Management Plan. These lines shall be located as far from Zone One as practical.
 - d. Selective cutting of trees when removal is consistent with approved standards in the Riparian Buffer Management Plan.
 - e. Areas such as camps, campgrounds, picnic areas and golf courses. Active recreation areas such as ballfields, playgrounds, and courts provided these uses are designed in a manner that will not permit concentrated flow.
 - f. Naturalized stormwater basins in compliance with the guidelines in the Riparian Buffer Management Plan. The entire basin shall be located a minimum of 50 feet from the defined edge of identified watercourses.

4. USES SPECIFICALLY PROHIBITED IN THE RIPARIAN BUFFER CONSERVATION ZONE

Any use or activity not authorized within Section 3 shall be prohibited within the Riparian Buffer Conservation Zone. By way of example, the following activities and facilities are specifically prohibited:

- A. Clear-cutting of trees and other vegetation.
- B. Selective cutting of trees and/or the clearing of other vegetation within Zone One, except where such clearing is necessary to prepare land for a use permitted under Section 3.A. and where the effects of these actions are mitigated by revegetation, as specified under Section 8.
- C. Selective cutting of trees and/or the clearing of other vegetation within Zone Two, except where such clearing is necessary to prepare land for a use permitted by Section 3.B. and where the effects of these actions are mitigated by revegetation, as specified under Section 8.
- D. Removal of trees in excess of selective cutting, except where such removal is necessary as a means to eliminate dead, diseased, or hazardous tree stands that jeopardize public safety or as part of a reforestation project, provided that the removal is in compliance with a Riparian Buffer Management Plan approved by the municipal engineer, governing body, or its appointed representative.
- E. Removal or disturbance of vegetation in a manner that is inconsistent with erosion control and buffer protection.
- F. Storage of any hazardous or noxious materials.
- G. Use of fertilizers, pesticides, herbicides, and/or other chemicals in excess of prescribed industry standards or the recommendations of the County Conservation District.
- H. Roads or driveways, except where permitted as buffer crossings in compliance with Sections 3.A.2.(a) or 3.B.2.(b).
- I. Motor or wheeled vehicle traffic in any area not designed to accommodate adequately the type and volume.
- J. Parking lots.
- K. Subsurface sewage disposal areas.

5. BOUNDARY INTERPRETATION AND APPEALS PROCEDURE

- A. When a landowner or applicant disputes the Zone (One or Two) boundaries of the riparian buffer or the defined edge of a watercourse, surface water body, the landowner or applicant shall submit evidence to the municipality that describes the boundary, presents the landowner or applicant's proposed boundary, and presents all justification for the proposed boundary change.
- B. The municipal engineer, governing body or appointed representative shall evaluate all material submitted and shall make a written determination within 45 days, a copy of which shall be submitted to (*the governing body, municipal planning board*), and landowner or applicant.
- C. Any party aggrieved by any such determination or other decision or determination under this section may appeal to the (*municipality*) under the provisions this ordinance. The party contesting the location of the district boundary shall have the burden of proof in case of any such appeal.

6. INSPECTION OF RIPARIAN BUFFER CONSERVATION ZONE

- A. Lands within or adjacent to an identified Riparian Buffer Conservation Zone

will be inspected by the municipal representative when:

1. A subdivision or land development plan is submitted.
 2. A building permit is requested.
 3. A change or resumption of nonconforming use is proposed.
- B. The district may also be inspected periodically by the municipal representatives for compliance with an approved restoration plan, excessive or potentially problematic erosion or at any time when the presence of an unauthorized activity or structure is brought to the attention of municipal officials.

7. MANAGEMENT OF THE RIPARIAN BUFFER CONSERVATION ZONE

- A. Riparian Buffer Management Plan - Within any municipally identified buffer area, no construction, development, use, activity, or encroachment shall be permitted unless the effects of such development are accompanied by implementation of an approved Riparian Buffer Management Plan, as specified within the Subdivision and Land Development Ordinance.
1. The landowner or developer shall submit to the municipal engineer, governing body, or its appointed representative, a Riparian Buffer Management Plan prepared by a landscape architect, professional engineer or other qualified professional which fully evaluates the effects of any proposed uses on the Riparian Buffer Conservation Zone. The Riparian Buffer Management Plan shall identify the existing conditions (vegetation, 100-year floodplain, soils, slopes, etc.), all proposed activities, and all proposed management techniques, including any measures necessary to offset disturbances to the Riparian Buffer Conservation Zone. The plan shall be approved by the municipal engineer, governing body, or appointed representative as part of the subdivision and land development process.

Steep Slope Ordinance. *This model ordinance is intended to provide a foundation for steep slope ordinances developed in municipalities in the Crosswicks Creek/Doctors Creek Watershed.*

1. PURPOSE

The purpose of this ordinance is to regulate the intensity of use in areas of steeply sloping terrain in order to limit soil loss, erosion, excessive stormwater runoff, and the degradation of surface water and to maintain the natural topography and drainage patterns of land.

2. APPLICABILITY

This ordinance shall be applicable to any subdivision, site plan, or land disturbance application located in the municipality as defined in the Subdivision and Land Development Ordinance or any project defined by the Soil Erosion and Sediment Control Act. Land disturbance for the purpose of this ordinance shall mean any activity involving the clearing, cutting, excavation, grading, filling, storing, or transporting of land or any other activity which causes land to be exposed to the danger of erosion.

3. REQUIREMENTS

- A. On slopes of 25% or greater, no development, regrading, or stripping of vegetation shall be permitted. Any disturbance for roadway crossings or utility construction in areas of 25% slopes or greater are considered variance conditions and the applicant must affirmatively demonstrate that the roadway or utility improvements are necessary in the sloped area. The sloped area to be developed, regraded, or stripped of vegetation shall be drawn on the development plans for each individual lot.
- B. The maximum disturbance allowed in slope areas between 20.0% to 24.9% shall be 20%.
- C. The maximum disturbance allowed in slope areas between 10.0% and 19.9% shall be 40%.
- D. The maximum disturbance allowed in slope areas between 0 to 9.9% may be 100%.
- E. Site design and grading on slopes greater than 15% shall provide the minimum disruption of view corridors and scenic vistas and shall preserve significant natural topographic features to the greatest extent possible.
- F. Steep Slope disturbance of an area less than _____ square feet shall be permitted on any parcel.

4. SITE PLAN REQUIREMENTS

For all earth moving activities on slopes of 15% or greater, the Applicant shall

submit a site plan prepared by a Professional Engineer. The site plan submitted shall be reviewed by the Municipal Engineer. The Municipal Engineer shall determine if the site plan as submitted is complete and in conformance with the ordinance requirements. The Municipal Engineer shall recommend acceptance or rejection of the plan or may require that the applicant comply with specific conditions in order for the plan to merit acceptance. The Applicant's site plan as prepared by a Professional Engineer will include at a minimum the following:

- A. Slopes in classes of 0-9.9%, 10-24.9% and greater than 25% based on two foot (2') contour analyzed on ten foot (10') vertical intervals.
- B. Location of all waterbodies including but not limited to streams, lakes, and wetlands.
- C. Existing natural and topographic features.
- D. Location of all proposed and existing buildings and streets.
- E. Location of all existing vegetation including meadow, forest, and scrub lands broken down by those areas of vegetation which will be removed as well as vegetation to be preserved; specifications for revegetation shall also be included.
- F. Specific methods which will be utilized to control soil erosion and sedimentation, soil loss, and excessive stormwater runoff both during and after construction.
- G. A statement and description of the stability of the soils on site and the appropriateness of the construction method proposed.
- H. Hydrology, drainage, and flooding analysis to include a statement on the effect of the proposed development upon water bodies or wetlands in the vicinity of the project.
- I. A statement describing the underlying geology attesting to the stability of the site.
- J. Calculations of the area of proposed disturbance of each slope class on each proposed lot as well as within any proposed road right-of-way.
- K. Grading plan for the construction site and all access routes.

The site plan submitted shall be reviewed by the municipal engineer. The municipal engineer shall accept or reject the plan as submitted or may require that specific conditions be complied with in order for the plan to meet approval.

No building permit shall be issued and no grading or site clearing shall occur until a site plan including all of the above items has been reviewed and approved by the municipality.

5. PERFORMANCE STANDARDS

All development plans which propose development on steep slopes shall conform to the following performance standards:

- A. Lands to be preserved in 100 percent open space due to the presence of steep slopes may be offered for dedication to the municipality, a private land trust,

or a non-profit agency in order to preserve and maintain the area in its natural state.

- B. The use of conservation easements on steep slopes shall be encouraged to preserve the area in perpetuity.

6. EXEMPTIONS

Land development plans which were approved prior to the adoption date of this ordinance shall be exempt from these requirements.

7. COMPATIBILITY WITH OTHER PERMIT AND ORDINANCE REQUIREMENTS

Development approvals issued pursuant to this ordinance are to be considered an integral part of development approvals under the subdivision and site plan review process and do not relieve the applicant of the responsibility to secure required permits or approvals for activities regulated by other applicable codes, rules, acts or ordinances. In their interpretation and application, the provisions of this ordinance shall be held to be the minimum requirements for the promotion of the public health, safety, general welfare, and the protection of water quality.

8. SEVERABILITY

If the provisions of any part of this ordinance shall be judged invalid by a court of competent jurisdiction, such order of judgment shall not affect or invalidate the remainder of this ordinance.

Historic Preservation Ordinance. *This model ordinance is intended to provide a foundation for historic preservation ordinances adopted in municipalities in the Crosswicks Creek/Doctors Creek Watershed. This model ordinance is based on the Spruce Hill Historic District: Philadelphia Historic Preservation Ordinance.*

(1) Declaration of Public Policy and Purposes:

(a) It is hereby declared as a matter of public policy that the preservation and protection of buildings, structures, sites, objects, and districts of historic, architectural, cultural, archaeological, educational, and aesthetic merit are public necessities and are in the interests of the health, prosperity, and welfare of the people of the Crosswicks Creek/Doctors Creek Watershed.

(b) The purposes of this section are to:

(.1) preserve buildings, structures, sites and objects which are important to the education, culture, traditions and economic values of the region.

(.2) establish historic districts to assure that the character of such districts is retained and enhanced;

(.3) encourage the restoration and rehabilitation of buildings, structures, sites, and objects which are designated as historic or which are located within and contribute to the character of districts designated as historic without displacing elderly, long-term, and other residents living within those districts;

(.4) afford interested persons, historical societies, and organizations the opportunity to acquire or to arrange for the preservation of historic buildings, structures, sites, and objects which are designated individually or which contribute to the character of historic districts;

(.5) strengthen the economy of the region by enhancing the region's attractiveness to tourists and by stabilizing and improving property values; and,

(.6) foster civic pride in the architectural, historical, cultural, and educational accomplishments of the region.

(2) Definitions. The following words and phrases shall have the meaning ascribed to them in this section:

(a) Alter or alteration. A change in the appearance of a building, structure, site, or object which is not otherwise covered by the definition of demolition, or any other change for which a permit is required under municipal code. Alteration includes the reroofing, cleaning or painting of a building, structure, or object.

(b) Building. A structure, its site and appurtenances created to shelter any form of human activity.

(c) Commission. The municipal or regional historical commission charged with regulating this ordinance.

(d) Construct or construction. The erection of a new building, structure, or object upon an undeveloped site.

(e) Contributing building, structure, site or object. A building, structure, site, or object within a district that reflects the historical or architectural character of the district as defined in the Commission's designation.

(f) Demolition or demolish. The razing or destruction, whether entirely or in significant part, of a building, structure, site, or object. Demolition includes the removal of a building, structure, or object from its site or the removal or destruction of the facade or surface.

(g) Design. Exterior features including mass, height, appearance, and the texture, color, nature, and composition of materials.

(h) District. A geographically definable area possessing a significant concentration, linkage, or continuity of buildings, structures, sites, or objects united by past events, plan, or physical development. A district may comprise an individual site or individual elements separated geographically but linked by association, plan, design, or history.

(i) Historic building. A building or complex of buildings and site which is designated historic by the Commission.

(j) Historic district, object, site or structure. A district, object, site, or structure which is designated by the Commission pursuant to this section.

(k) Object. A material thing of functional, aesthetic, cultural, historic, or scientific value that may be, by nature or design, movable yet related to a specific setting or environment.

(l) Site. The location of a significant event, a prehistoric or historic occupation or activity, or a building or structure, whether standing, ruined, or vanished, where the location itself maintains, historical, cultural, or archaeological value regardless of the value of any existing structure.

(m) Structure. A work made up of interdependent and interrelated parts in a definite pattern of organization constructed by man and affixed to real property.

(3) *The Commission.* The members of the Historical Commission shall be appointed by the governing body representing the municipality and shall be made up of persons

learned in the historic traditions of the municipality and interested in the preservation of the historic character of the municipality.

(4) Powers and Duties of the Commission. The powers and duties of the Municipal Historical Commission shall be as follows:

- (a) Designate as historic those buildings, structures, sites, and objects which the Commission determines, pursuant to the criteria set forth in Subsection (5) of this Section, are significant to the municipality;
- (b) Delineate the boundaries of and designate as historic those districts which the Commission determines, pursuant to the criteria set forth in Subsection (5) of this Section, are significant to the City;
- (c) Prepare and maintain or cause to be prepared and maintained a comprehensive inventory of historic buildings, structures, sites, objects, and districts;
- (d) Review and act upon all applications for permits to alter or demolish historic buildings, structures, sites or objects; to alter or demolish buildings, structures, sites, or objects located within historic districts, and to review and comment upon all applications for permits to construct buildings, structures, or objects within historic districts as provided in this section;
- (e) Make recommendations to the governing body concerning the use of grants, gifts and budgetary appropriations to promote the preservation of buildings, structures, site, objects, or districts of historic importance to the municipality;
- (f) Make recommendations to the governing body that the municipality purchase any building, structure, site, or object of historic significance where private preservation is not feasible, or that the municipality acquire facade easements, development rights, or any other property interest that would promote historic preservation;
- (g) Increase public awareness of the value of architectural, cultural, and historic preservation;
- (h) Adopt rules of procedure and regulations and establish such committees as the Commission deems necessary for the conduct of its business;
- (i) Keep minutes and records of all proceedings, including records of public meetings during which proposed historic designations are considered.

(5) Criteria for Designation. A building, complex of buildings, structure, site, object, or district may be designated for preservation if it:

- (a) Has significant character, interest or value as part of the development, heritage, or cultural characteristics of the municipality, State, or Nation or is associated with the life of a person significant in the past; or,
- (b) Is associated with an event of importance to the history of the municipality, State, or Nation; or,
- (c) Reflects the environment in an era characterized by a distinctive architectural style; or,
- (d) Embodies distinguishing characteristics of an architectural style or engineering specimen; or,
- (e) Is the work of a designer, architect, landscape architect, or designer, or engineer whose work has significantly influenced the historical, architectural, economic, social, or cultural development of the municipality, State, or Nation; or,
- (f) Contains elements of design, detail, materials, or craftsmanship which represent a significant innovation; or,
- (g) Is part of or related to a square, park, or other distinctive area which should be preserved according to an historic, cultural, or architectural motif; or,
- (h) Owing to its unique location or singular physical characteristic, represents an established and familiar visual feature of the neighborhood, community, or municipality; or,
- (i) Has yielded, or may be likely to yield, information important in pre-history or history; or
- (j) Exemplifies the cultural, political, economic, social, or historical heritage of the community.

(6) Public Notice and Meeting

- (a) At least thirty (30) days before holding a public meeting to consider the proposed designation of a building, structure, site, or object as historic, the Commission shall send notice to the owner of the property proposed for designation. Such notice shall indicate the date, time and place of the public meeting at which the Commission will consider the proposed designation. Notice shall be sent to the registered owner's last known address as the same appears in the municipal real estate tax records and sent to the "Owner" at the street address of the property in question.
- (b) At least sixty (60) days before holding a public meeting to consider the

proposed designation of a district as historic, the Commission shall send written notice of the proposed designation to the owners of each building, structure, site, or object within the proposed district. The notice shall indicate the date, time, and place of the public meeting at which the Commission will consider the proposed designation. Notice shall be sent to the registered owner's last known address as it appears in the municipal real estate tax records and sent to the "Owner" at the street address of the property in question. The Commission shall publish notice of the proposed designation of a district as historic in a newspaper having general circulation within the municipality at least sixty (60) days before the Commission holds a public meeting to consider the proposed designation. The Commission shall post notice of the proposed designation at locations within the proposed district at least sixty (60) days before the public meeting to consider the proposed designation.

(c) Any interested party may present testimony or documentary evidence regarding the proposed designation of a building, structure, site, object, or district at the public meeting of the Commission.

(d) During the sixty days prior to a Commission hearing on designation of a particular historic district, the Planning Commission shall review and comment on creation of the district and transmit its comments to the Historical Commission to assist the Commission in making its determination.

(e) The Commission shall send written notice of the designation as historic of a building, structure, site, object, or district to the owners of each separately designated building, structure, site, or object and to the owners of each building, structure, site, or object within a district designated historic, which shall include reason for the designation. Notice shall be sent to the registered owner's last known address as the same appears in the municipal real estate tax records and sent to the "Owner" at the street and address of the property in question. The Commission shall send written notice of historic designation to any person appearing at the public hearing who requests notification.

(f) Any designation of a building, structure, site, object, or district as historic may be amended or rescinded in the same manner as is specified for designation.

(g) The Commission shall compile a register of buildings, structures, sites, objects, and districts designated as historic by the Commission which shall be available for public inspection in the municipal office.

(7) Permits:

(a) Unless a permit is first obtained from the municipality, no person shall alter or demolish an historic building, structure, site or object, or alter, demolish, or construct any building, structure, site, or object within an historic district.

(b) When a person applies for a permit to demolish an historic building, structure, site, or object or a building, structure, site or object located within an historic district, the Department shall post, within seven (7) days, notice indicating that the owner has applied for a permit to demolish the property; that the property is historic or is located within an historic district; that the application has been forwarded to the Commission for review. The notice shall be posted on each street frontage of the premises with which the notice is concerned and shall be clearly visible to the public. Posting of a notice shall not be required in the event of an emergency which requires immediate action to protect the health or safety of the public. No person shall remove the notice unless the permit is denied or the owner notifies the municipality that he will not demolish the property.

(c) Before the municipality may issue a permit to alter or demolish an historic building, structure, site, or object, or to alter, demolish, or construct a building, structure, site or object within an historic district, the permit application shall be forwarded to the Commission for its review.

(d) The Commission's scope of review of applications for permits for construction, as defined herein, shall be limited to a forty-five (45) day period of comment.

(e) At the time that a permit application is filed with the municipality for alteration, demolition, or construction subject to the Commission's review, the applicant shall submit to the Commission the plans and specifications of the proposed work, including the plans and specifications for any construction proposed after demolition and such other information as the Commission may reasonably require to exercise its duties and responsibilities under this section.

(f) In any instance where there is a claim that a building, structure, site, or object cannot be used for any purpose for which it is or may be reasonably adapted, or where a permit application for alteration, or demolition is based, in whole or in part, on financial hardship, the owner shall submit, by affidavit, the following information to the Commission:

(.1) amount paid for the property, date of purchase, and party from whom purchased, including a description of the relationship, whether business or familial, if any, between the owner and the person from whom the property was purchased;

(.2) assessed value of the land and improvements thereon according to the most recent assessment;

(.3) financial information for the previous two (2) years which shall include, as a minimum, annual gross income from the property, itemized operating and maintenance expenses, real estate taxes, annual debt service, annual cash flow, the amount of depreciation taken for federal income tax purposes, and other federal income tax deductions produced;

(.4) all appraisals obtained by the owner in connection with his purchase or financing of the property, or during his ownership of the property;

(.5) all listings of the property for sale or rent, price asked, and offers received, if any;

(.6) any consideration by the owner as to profitable, adaptive uses for the property;

(.7) the Commission may further require the owner to conduct, at the owner's expense, evaluations or studies, as are reasonably necessary in the opinion of the Commission, to determine whether the building, structure, site, or object has or may have alternate uses consistent with preservation.

(g) Within sixty (60) days after receipt by the Commission of a permit application, the Commission shall determine whether or not it has any objection to the proposed alteration or demolition.

(.1) where the Commission has no objection, the municipality shall grant the permit subject to the requirements of any applicable provisions of the municipal code and regulations and subject to any conditions of the Commission pursuant to the subsection (7)(i).

(.2) where the Commission has an objection, the municipality shall deny the permit.

(.3) where the Commission acts to postpone the proposed alteration or demolition pursuant to subsection (7)(h) of this Section, the municipality shall defer action on the permit application pending a final determination by the Commission approving or disapproving the application. Before taking any action, the Commission shall afford the owner an opportunity to appear before the Commission to offer any evidence the owner desires to present concerning the proposed alteration or demolition. The Commission shall inform the owner in writing of the reasons for its action.

(h) Where the Commission has determined that the purpose of this section may best be achieved by postponing the alteration or demolition of any building, structure, site, or object subject to its review, the Commission may, by resolution, defer action on a permit application for a designated period not to exceed six months from the date of the resolution. During the time that action on a permit application is deferred, the Commission shall consult with the owner, civic groups, public and private agencies, and interested parties to ascertain what may be done by the municipality or others to preserve the building, structure, site, or object which is the subject of the permit application. When appropriate, the

Commission shall make recommendations to the governing body.

(i) The Commission may require that a permit for the alteration or demolition of any building, structure, site, or object subject to its review be issued subject to such conditions as may reasonably advance the purposes of this section. The municipality shall incorporate all such requirements of the Commission into the permit at the time of issuance. In cases where the Commission, pursuant to subsection (7)(j) of this section, agrees to the demolition of an historic building, structure, site or object, or of a building, structure, site, or object located within an historic district which contributes, in the Commission's opinion, to the character of the district, the Commission may require that the historic building, structure, site, or object be recorded, at the owner's expense, according to the documentation standards of the Historic American Buildings Survey and the Historic American Engineering Record (HABS/HAER) for deposit with the Commission.

(j) No permit shall be issued for the demolition of an historic building, structure, site or object, or of a building, structure, site, or object located within an historic district which contributes, in the Commission's opinion, to the character of the district, unless the Commission finds that issuance of the permit is necessary in the public interest, or unless the Commission finds that the building, structure, site, or object cannot be used for any purpose for which it is or may be reasonably adapted. In order to show that building, structure, site, or object cannot be used for any purpose for which it is or may be reasonably adapted, the owner must demonstrate that the sale of the property is impracticable, that commercial rental cannot provide a reasonable rate of return and that other potential uses of the property are foreclosed.

(k) In making its determination as to the appropriateness of proposed alterations, demolition, or construction, the Commission shall consider the following:

(.1) the purposes of this section;

(.2) the historical, architectural, or aesthetic significance of the building, structure, site, or object;

(.3) the effect of the proposed work on the building, structure, site, or object and its appurtenances;

(.4) the compatibility of the proposed work with the character of the historic district or with the character of its site, including the effect of the proposed work on the neighboring structures, the surroundings, and the streetscape; and,

(.5) the design of the proposed work.

(.6) in addition to the above, the Commission may be guided in evaluating proposals for alteration or construction by the Secretary of the Interior's

“Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings” or similar criteria.

(.7) in specific cases as will not be contrary to the public interest, where, owing to special conditions, a literal enforcement of the provisions of this ordinance would result in unnecessary hardship so that the spirit of this ordinance shall be observed and substantial justice done, subject to such terms and conditions as the Commission may decide, the Commission shall by a majority vote grant an exemption from the requirements of this ordinance.

(l) The municipality shall not issue any permit for the demolition, alteration, or construction of any building, structure, site, or object which is being considered by the Commission for designation as historic or which is located within a district being considered by the Commission for designation as historic where the permit application is filed on or after the date that notices of proposed designation have been mailed, except that the municipality may issue a permit if the Commission has approved the application or has not taken final action on designation and more than ninety (90) days have elapsed from the date the permit application was filed with the Commission. Where the Commission takes final action on designation within the time allotted herein, any permit application on file with the municipality shall be deemed to have been filed after the date of the Commission's action for purposes of this section.

(8) Performance of Work and Maintenance:

(a) The municipality shall, upon the request of the Commission, examine the buildings, structures, sites, and objects designated as historic by the Commission and report to the Commission on their physical condition.

(b) All work performed pursuant to the issuance of a permit for the alteration or demolition of a building, structure, site, or object subject to the Commission's review shall conform to the requirements of such permit. It shall be the duty of the municipality to inspect from time to time any work performed pursuant to such permit in order to ensure compliance. In the event that work is not being performed in accordance with the permit requirements, the municipality shall issue a stop work order and all work shall cease until the work is brought into conformity with the requirements of the permit.

(c) The exterior of every historic building, structure and object and of every building, structure and object located within an historic district shall be kept in good repair as shall the interior portions of such buildings, structures, and objects, neglect of which may cause or tend to cause the exterior to deteriorate, decay,

become damaged, or otherwise fall into a state of disrepair.

(d) The provisions of this ordinance shall not be construed to prevent the ordinary maintenance or repair of any building, structure, site, or object where such work does not require a permit by law and where the purpose and effect of such work is to correct any deterioration or decay of, or damage to, a building, structure, site, or object and to restore the same to its condition prior to the occurrence of such deterioration, decay, or damage.

(9) Enforcement:

(a) The municipality is authorized to promulgate regulations necessary to perform its duties under this Section.

(b) The municipality may issue orders directing compliance with the requirements of this Section. An order shall be served upon the owners or person determined by the municipality to be violating the requirements of this Section. If the person served is not the owner of the property where the violation is deemed to exist or to have occurred, a copy of the order shall be sent to the last known address of the registered owner and a copy shall be posted on the property. Where the owner's address is unknown, a copy of the order shall be posted on the property.

(c) Any person who violates a requirement of this Section or fails to obey an order issued by the municipality shall be subject to legal action.

(d) Any person who alters or demolishes a building, structure, site or object in violation of the provisions of this ordinance or in violation of any conditions or requirements specified in a permit shall be required to restore the building, structure, site or object involved to its appearance prior to the violation. Such restoration shall be in addition to and not in lieu of any penalty or remedy available under the Code or any other applicable law.

(10) Appeals. Any person aggrieved by the issuance or denial of any permit reviewed by the Commission may appeal such action to the municipal governing body. Such appeal must be filed within fifteen (15) days of the date of receipt of notification of the Commission's action. The governing body shall give written notice of any such appeal to the Commission within three (3) days of the filing of the appeal.

List of Maps

- Land Use
- Historic Sites and Vistas and Existing Open Space
- Natural Resources and Municipal Boundaries
- Slope
- Geology
- Proposed Greenway
- Proposed Greenway – Insert 1
- Proposed Greenway – Insert 2
- Proposed Greenway – Insert 3