

TRAILS PLAN

for

Township of Roxbury County of Morris

Connecting Roxbury's communities by foot and bicycle



Compiled by



Morris Land Conservancy
a nonprofit land trust

with the



Township of Roxbury
Trails Committee

December 2005

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Produced by:

*Morris Land Conservancy's Partners for Greener Communities Team:
"Partnering with Communities to Preserve Natural Treasures"*

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Roxbury Township Recreation Committee

Roxbury Township Open Space Committee

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Table of Contents

	Page
Executive Summary	
Vision Statement – Roxbury Township Trails Committee	3
Description of Roxbury Township’s Landscape	5
Goals and Objectives of the Trail Program	7
Open Space Inventory and Municipal Trails	11
Regional and Local Trail Networks	15
Trail Development: Areas I, II and III	19
Trail Design, Construction and Management	27
Action Program and Recommendations	37
Land Acquisition Recommendations	39
Funding Sources for Trail Development	41
Trail Partners	46
References	51

Index

Proposed changes to Trails Plan

Maps

Roxbury Trails Map
Detailed Schematics – Areas I, II and III

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Executive Summary

The intention of the Roxbury Township Trails Plan is to identify existing local and regional trail systems and offer a design for an interconnected trail system within the Township to connect neighborhoods to local parks, schools, and cultural centers. A community of over 23,000 people in a town of 22 square miles, Roxbury Township is steeped in history, rich in beautiful natural areas, and fortunate to have ensured over the last ten years the permanent preservation of over 1,000 acres of land throughout the community.

In 1993 Roxbury residents overwhelmingly supported the passage of a referendum to establish a local Open Space Trust Fund to be used to purchase land for conservation and recreation in the Township. In 1994 the Township Council established this dedicated Trust Fund at a rate of \$0.02 per \$100 of assessed property value. The Township has purchased land in partnership with local nonprofit organizations (such as Morris Land Conservancy), Morris County Open Space and Farmland Preservation Trust Fund, the Morris County Municipal Utilities Authority, and New Jersey Green Acres.

As a natural outgrowth of this successful open space preservation program, the Township has declared its intent to open these preserved lands for its residents through a system of trails and pathways. This network of trails is envisioned for non-motorized use and is designed to connect neighborhoods with schools, parks, historic sites, shopping areas, and regional trail systems. This Trails Plan will guide the development of safe, comprehensive, and enjoyable recreational trails for residents both within and outside of Roxbury Township.

The Trails Plan includes a comprehensive description of regional trails, trail organizations, types of trails, methods of construction, and a detailed calendar of funding sources for trail development. Patriots' Path, the West Morris Greenway, Morris Canal Greenway, Highlands Trail, and Randolph Township Trails all lead into Roxbury Township. Mapping for this Plan includes locations of where these trails enter Roxbury and how Roxbury can extend these pathways into its own neighborhoods. The Plan also identifies sections of the trail network that can be completed within 24 months of the adoption of this Plan by the governing body. An inventory of targeted land acquisitions is also identified for further review by the Roxbury Township governing body to link existing and proposed trails in the Township.

All mapping for this Plan is done in Arcview 9, a GIS software system, compatible with the Township's mapping software. This plan will provide a blueprint of proposed trails which, when approved, will be incorporated as an element of the Township Master Plan. It will act as a guide for incorporation of proposed trails within the township. It will also enable Township planners and engineers to study potential development applications and recreational designs for inclusion of the trail system into their proposals for eventual development and establishment.

Excellent resources for the Township include the Morris County Park Commission, Morris Trails Conservancy and New York New Jersey Trails Conference. These organizations are actively involved in the acquisition, development and stewardship of trails in and around Roxbury Township.

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Vision Statement – Roxbury Township Trails Committee

Just over 1,000 acres of land have been preserved as open space in Roxbury Township in the last ten years.

~

As stewards, we understand the need to guide appropriate use of public lands.

As residents, we appreciate the sense of well being provided by community parks and forests.

As residents, we enjoy outdoor recreation.

~

We envision a diverse non-motorized multi-use trails network that will connect neighborhoods to recreation, schools, preserved land, historic areas, and other regional trail networks. Roxbury Trails will encourage the public to enjoy the community's resources in a way that is appropriate and respectful of the environment.

We plan to educate the public and gain the assistance, support, and participation of the community. Minimizing costs, seeking partnerships and donations, and capturing grant monies will be critical to implementation of the program.

We hope to foster greater appreciation and concern for our natural and historic resources, as well as our recreational facilities. We believe Roxbury Trails will provide all residents who participate, with a healthier, more optimistic outlook, and a greater sense of pride in our community.

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Description of Roxbury Township's Landscape

The Township of Roxbury is set in the rolling hills of the Highlands region in western Morris County. Kenvil, Landing, Ledgewood, Berkshire Valley, Port Morris and Succasunna are the six local communities within the Township. Roxbury is home to numerous natural, cultural, and recreational resources including Horseshoe Lake, the Morris Canal, Roxbury Historic District and Berkshire Valley Wildlife Management Area. State, county and municipal parks protect many of these resources and provide outdoor recreation opportunities for local and regional residents.

The underlying bedrock and geologic history of the region are largely responsible for the availability of water in Roxbury. The presence of limestone in the eastern section of the Township has given rise to many of the surface waterbodies and the groundwater aquifer. As the Wisconsin Glacier receded a humid climate enabled rivers and streams to erode these limestone deposits.¹

Today these waterbodies include Lake Musconetcong and Lake Hopatcong, located along the northern edge of Roxbury. These offer swimming, fishing, boating and ice-skating and are part of Hopatcong State Park. The Rockaway River and Lamington River are located in the northern and eastern borders of the Township, respectively. The Alamatong Wellfields are located in southeastern corner of the Township and are a source of drinking water for 35,000 residents in ten western Morris County towns, including Roxbury Township.

The largest tract of forested land in Roxbury is the Berkshire Valley Wildlife Management Area. Managed by the New Jersey Department of Environmental Protection - Division of Fish and Wildlife, recreational activities include hiking, off-road bicycling, cross-country skiing, hunting, fishing, birdwatching and nature study. There are also many acres of municipally owned forested land including Morris Canal Park, Veterans' Park and Mooney Mountain Park. In addition to recreation opportunities these lands provide habitat for wildlife, mitigate flooding during periods of heavy rainfall and balance development.

Wetlands, although they do not occupy a large percentage of Roxbury's total land area, are a significant natural resource for the Township due to their functions in the hydrologic cycle. They act as a filter for water as it percolates through their sediment and into aquifers. This process ensures contaminants remain in closed areas where they can be broken down by bacteria or absorbed by organic matter. Wetlands also help to reduce flooding by holding large volumes of water during periods of heavy rain. This works to reduce property damage and protects rivers and lakes from erosion.

¹ Robert Catlin and Associates, A Natural Resource Inventory for the Roxbury Township Environmental Commission. (Denville: Catlin, 1975) pg 10.

² NJ Department of Labor and Workforce Development. Census 2000 Data for New Jersey. <http://www.wnjin.net/OneStopCareerCenter/LaborMarketInformation/lmi25/>. Accessed: May 18, 2005.

Today Roxbury is home to 23,227 residents who live in 8,171 households and apartments throughout the Township². Roxbury Township's development was spurred with the opening of the Morris Canal in 1831. The Canal was a catalyst for investment in the area as businesses opened to provide goods and services for the Canal. Due to technological advances in transportation, the Canal was abandoned in the early 20th century. By this time the Township had become a growing community of homes with the establishment of a burgeoning commercial center.

Residents use a large network of municipal, county and state roadways to travel within Roxbury and to locations throughout the region. The three most significant of these roadways are Route 10, Route 46 and Interstate 80, all of which run in an east-west direction. The majority of the commercial development in Roxbury occurs along Route 10 and Route 46 and this serves as a regional shopping destination. Interstate 80 and two freight railroad lines provide businesses and manufacturing companies access to neighboring communities and distant markets.

In the period between 1990 and 2000 residential development increased by 26%¹. This growth has resulted in a corresponding increase in the population of 17%² during the same period. It has been projected that population of Roxbury will rise to 26,069 by the year 2010. To balance this growth, municipal leaders have worked to purchase and protect over 1,000 acres of natural lands over the past ten years. More than 25% of the Township is designated as public and quasi-public use.³ Recently preserved lands include the Emmans Road Greenway, the expansion of Kiwanis Park, Lines Farm and the Triple Lakes Greenway extending into neighboring Mine Hill and Randolph Township.

¹ NJ Department of Labor and Workforce Development. "Census 2000 Data for New Jersey" & "Census 1990 Data for New Jersey." <http://www.wnjin.net/OneStopCareerCenter/LaborMarketInformation/lmi25/>. Accessed: May 18, 2005.

² NJ Department of Labor and Workforce Development. "Census 2000 Data for New Jersey" & "Census 1990 Data for New Jersey." <http://www.wnjin.net/OneStopCareerCenter/LaborMarketInformation/lmi25/>. Accessed: May 18, 2005.

³ Township of Roxbury Homepage. www.roxburynj.us/index.asp?SID+226. Accessed: June 3, 2005.

Goals and Objectives of the Trail Plan

The development, design and construction of recreational trails involves input from the local community. The development of the Trails Plan and the governing body's commitment to the Plan will ensure the successful establishment of the trail system. The following goals and objectives of the Trails Plan are based upon the vision of the Trails Committee, objectives of the governing body, and comments from residents who attended the April public workshop on the Trails Plan.

Trail Planning

To create a plan and map that will serve as a blue print over the long term, for development of a trail network throughout Roxbury Township, at minimum cost to taxpayers.

Trail Development

To create a network of trails and pathways accessible to a variety of pedestrian and non-motorized vehicle users that will link the users with schools, recreation facilities, parks and other places of public assembly, areas of scenic beauty, areas of historic and cultural importance, and other regional trail networks.

To provide methods for the protection of environmentally sensitive areas and thoughtful stewardship of public lands in the township so they may enhance the quality of life for the citizens of Roxbury through the generations.

Trail Grants

To include in the Plan, a comprehensive description of all available funding opportunities for trail planning, engineering, development, education, acquisition and maintenance.

To provide this data in a format that is user friendly and provides monthly timelines for authorization and composition of grant applications.

To take maximum advantage of grant opportunities and provide as much funding as possible from outside sources for implementation of this plan.

Partnerships

To develop within this Plan a comprehensive, list of potential partners for trail funding, development, acquisition and management.

To develop a stable organization that will seek out partners and funding and assist in trail planning, development, maintenance and education activities.

To promote interest, both individual and corporate, in assisting in the funding, implementation and development of the Roxbury Trails network.

Education

In all initiatives, Roxbury Trails will attempt to incorporate some form of community education. Educational efforts will emphasize:

- Respect for natural resources and protection of special or fragile ecosystems.
- The important contribution of green-space to quality of life.
- The important role of historic places in our community and the need to preserve them.

Trail Mapping

Creation of a Roxbury Trails Map that will identify areas throughout the Township of Roxbury where existing trails will be marked and new trails and connectors could be built for a variety of pedestrian and non-motorized vehicular modes of travel.

- To include a classification system to differentiate between the types of pedestrian and non-motorized modes that will be allowed;
- To identify all opportunities to make the system handicap accessible to all areas where it is practical to do so;
- To identify parcels for acquisition that represent critical links in the development of an adequate and comprehensive trail network

Plan Approval and Endorsement

To have the Trails Plan approved and accepted by the Township Council, by the Planning Board as part of the Master Plan, by the Recreation Committee as an extension to the future / proposed Recreation Master Plan, by the Environmental Commission, and by the Open Space Committee.

- To allow the Planning Board to require ingress/egress easements for pedestrian and/or non-motorized trails at submission of site plans and subdivisions, when development is within the path of a trail indicated on the Roxbury Trails Map.
- To allow the Planning Board to require the construction of the pedestrian and/or non-motorized trail at submission of site plan and subdivision, when development is within the path of the Roxbury Trails Map.
- To require pedestrian and non-motorized circulation trails within any capital improvement project that would be within the path of the Roxbury Trails map.

Public Workshop – April 28, 2005

The Roxbury Township Trails Committee hosted a public workshop on April 28, 2005 at the Roxbury Township Municipal Building. The purpose of the meeting was for the Trails Committee and Morris Land Conservancy to discuss the Trails Plan and to receive comments and ideas from residents. Municipal groups represented at the meeting included the Township Council, Open Space Committee, Planning Board, Historic Advisory Committee and Board of Adjustment. The presenters asked the audience to provide their opinions on issues such as trail design, trail surface type, trail uses, trail locations and which destination points within Roxbury the trail network should link. Residents were also encouraged to express any concerns they may have on the trail design. Overall, residents who attended the workshop expressed support for the trails plan. Input from this workshop was carefully considered and where possible, implemented as part of the plan.

Residents expressed a preference for a mixture of single and multi-use trails and an interest in trails that accommodate the following activities:

- Walking/hiking (there was an interest in creating challenging trails);
- Bicycling; and
- Equestrian use.

Trail surfaces range from dirt to concrete. The appropriate surface type depends on variables including ground conditions, grade and future uses. Residents expressed a preference for packed dirt trails.

Trails are effective community connectors that can create links between many different destination points within and outside of a community. Residents expressed preferences in providing links to the following destination points:

- Horseshoe Lake as the hub;
- Existing open space/parks;
- Schools;
- Historic sites;
- Shopping areas;
- Morris County Park Commission's West Morris Greenway and Patriots' Path; and
- Links across roadways with improved crosswalks.

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Open Space Inventory and Municipal Trails

There are many different types of trail uses however there are only two types of trails: single-use and multi-use trails.¹ Trails exist on practically every type of terrain and can assume varying degrees of difficulty. The type of use a trail will experience influences trail dimensions, surface type, location and grade. However if the location of a future trail is fixed then all of the aforementioned factors will be influenced accordingly.

Trail Uses

- Foot travel (walking, running or hiking)
- Bicycling (mountain biking and standard bicycling)
- Handicapped travel where applicable

This inventory refers to all municipal, county and state owned parks and open spaces areas within Roxbury that will be linked by the trail network. Each park area and open space listing indicates the type of trail, use and surface. *These are shown on the accompanying Trails Map.*

Municipal

Parks and open spaces with existing trails

Horseshoe Lake Athletic Complex - Eyland Avenue

Features: Trails, athletic fields, swimming, volleyball, indoor/outdoor basketball, volleyball, Teen center, soccer, football, Township sponsored events, parking

Trail Type: Multi-use

Trail Use: walking, bicycling, handicapped access

Surface Type: paved

Ledgewood Park – Canal Street

Features: Trails, fishing, parking

Trail Type: single

Trail Use: walking/hiking

Surface Type: pervious

Morris Canal Park – Canal Street

Features: Morris Canal (inclined plane), trails, parking

Trail Type: single

Trail Use: walking/hiking

Surface Type: pervious

¹ The Morris Trails Conservancy. Trails and Trail Systems: Design Considerations and Resources in Morris County. (New Jersey).

Parks and open space without trails, proposed trail additions:

Brookside Park – Righter Road

Currently there are no trails

Features: Passive recreation

Proposed trail:

Trail Type: multi-use

Trail Use: walking/hiking

Surface Type: pervious

Condit Road Parcel – Condit Road

Currently there are no trails

Features: Passive recreation

Proposed trail:

Trail Type: multi-use

Trail Use: walking/hiking, bicycling

Surface Type: pervious

Emmans Road Park – Emmans Road

Currently there are no trails

Features: Athletic fields including soccer, softball, baseball and parking

Proposed trail:

Trail Type: multi-use

Trail Use: walking/hiking, handicapped

Surface Type: paved

Emmans Greenway – Emmans Road

Currently there are no trails

Features: passive recreation

Proposed trail:

Trail Type: multi-use

Trail Use: walking, handicap access, bicycling

Surface Type: paved

Kiwanis Park – Eyland Avenue

Currently there are no trails

Features: lighted baseball field, lighted tennis courts, playground

Proposed trail:

Trail Type: multi-use

Trail Use: walking/hiking, bicycling

Surface Type: pervious

Veterans' Park – Mountain Road

Features: Trails (unmarked)

Proposed trails:

Trail Type: multi

Trail Use: walking/hiking, bicycling

Surface Type: pervious

Mooney Farm Park – Mooney Road

Currently there are no trails

Features: none

Proposed trail:

Trail Type: single

Trail Use: walking/hiking

Surface Type: pervious

Mooney Mountain Park – Mooney Road

Currently there are no trails

Features: basketball court, playground area, fishing in Conklin Pond

Proposed trail:

Trail Type: single

Trail Use: walking/hiking

Surface Type: pervious

Roxbury Knolls Park – Mooney Road

Currently there are no trails

Features: passive recreation

Proposed trail:

Trail Type: single

Trail Use: walking/hiking, bicycling

Surface Type: pervious

Succasunna Park – South Hillside Avenue

Features: Athletic fields, baseball, parking lot

Currently there are no trails

Proposed trail:

Trail Type: multi-use

Trail Use: walking/hiking, bicycling

Surface Type: pervious

Berkshire Valley Park – Mill Road

Features: Athletic fields: lacrosse, softball, baseball, tennis and playground

Currently there are no trails or proposed trails

Port Morris Park – River Road

Features: Athletic fields: basketball, baseball and playground

Currently there are no trails or proposed trails

Shore Hills Park – Mount Arlington Boulevard
Features: playground
Currently there are no trails or proposed trails

Regional Trails

West Morris Greenway

Proposed trail:

Trail is proposed by the Morris County Park Commission and will run north to south along Roxbury's eastern border

Morris Canal Greenway

Proposed Greenway:

The Greenway is proposed by the Canal Society of New Jersey and highlight the historic Morris Canal line across Morris County. The Canal Society is establishing a trail, markers and educational materials along the Greenway.

State

Berkshire Valley Wildlife Management Area

Features: trails, hunting, parking and fishing

Trail Type: multi-use

Trail Use: walking, off-road bicycling, cross-country skiing

Surface Type: wood road (packed dirt)

Located within Roxbury, Jefferson and Mount Arlington, this 1,893 acre wildlife area is managed by NJDEP Division of Fish and Wildlife. It offers two parking lots, both located in Roxbury Township.¹

Hopatcong State Park

Features: swimming, picnicking, basketball, playgrounds, boating

Currently there are no marked trails

¹ Township of Roxbury Homepage. www.state.nj.us/dep/fgw/pdf/wmamaps/berkshire_valley.pdf. Accessed: June 3, 2005.

Regional Trails and Local Trail Networks

Roxbury Trails will link with other municipal and regional trails. These connections provide access to neighboring communities and parks. Regional trails located in and around Roxbury Township are shown on the *Trail Map* included within this Plan. The following list is an inventory of these regional trail systems.

Regional Trail Systems

Appalachian Trail

The Appalachian Trail enters New Jersey at the Delaware Water Gap and continues north along the eastern edge of the Kittatinny Mountains until reaching High Point State Park where the trail turns east and continues to Abram S. Hewitt State Forest in West Milford Township from this point it turns north into New York State.

The Appalachian Trail provides access to the following public open spaces in northern New Jersey: Abram S. Hewitt State Forest, Pequannock Watershed, Ramapo Mountains, Ringwood State Park, Wawayanda State Park, Wyanokie Mountains (Norvin Green State Park). In northwestern New Jersey it reaches: the Kittatinny Mountains, Delaware Water Gap National Recreation Area, Appalachian Mountain Club Mohican Outdoor Center in Blirstown, Worthington and Stokes State Forest and High Point State Park. The Appalachian Trail does not intersect with any other trails listed under *Regional Trail Systems*. However the northern terminus of the Sussex Branch Trail is in Branchville Borough, which is 3 miles to the east of the Appalachian Trail in Stokes State Forest.

Highlands Trail

The Highlands Trail is a project that links the Hudson River north of Bear Mountain with the Delaware River and travels by connecting through Sussex, Morris, Warren and Hunderton Counties. When complete, the trail will link the full length of the Highlands, a 150-mile footpath network for more than 1.1 million acres of this distinct physiographic province. The Highlands Trail network will enable one to hike from almost any park or forest in the region to another. This trail can be accessed by following the Morris Canal Greenway west into Allamuchy Mountain State Park where the trail network in the Park provides access.

Farny Highlands Trail Network

The Farny Highlands Trail Network is a greenway that links large undeveloped areas including a state park and natural area, two wildlife management areas, watershed land, county and municipal parks and private lands. The Farny Highlands Trail Network will consist of 50 miles of hiking trails and will connect with the 150-mile Highlands Trail. The trails that are included in the Farny Highlands are: Four Birds Trail, Splitrock Loop Trail and Beaver Brook Trail. The Trail is identified on the Trails Map Proposal.

Sussex Branch Trail

The 21.2 mile Sussex Branch Trail begins at Waterloo Road in Byram Township and continues north through Allamuchy Mountain State Park to the 3,348-acre Kittatinny Valley State Park in Andover Township where many hiking and mountain bicycling trails exist. From there the trail continues in a northwesterly direction to Branchville Township in Sussex County. The trail intersects the 26-mile Paulinskill Trail at Warbasse Junction in Lafayette Township. Access for Roxbury residents can be gained by following the Morris Canal Greenway to Waterloo Road in Mount Olive Township and Byram Township.

Kittatinny Mountain Trail System

The Sussex Branch Trail located in Netcong, Byram, Newton, Lafayette, Branchville, Augusta and Andover also provides access to an extensive trail network within the Kittatinny State Park, known as the Kittatinny Mountain Trail System.

Paulinskill Valley Trail

The 26-mile Paulinskill Valley Trail runs from Sparta Junction to Columbia in Knowlton Township, Warren County. The Trail passes through Swartswood State Park, a 2,272-acre park with over five miles of trails and the 1,888-acre Paulinskill Lake Wildlife Management Area both of which are in Hampton Township. The best connection to the trail via Roxbury is from the Sussex Branch Trail.

Liberty Water Gap Trail

The aim of the Liberty Water Gap Trail is to create a continuous corridor from Liberty State Park in Jersey City to the Delaware Water Gap. The 100-mile route connects the Paulinskill Valley Trail with the Sussex Branch Trail in Newton then follows Patriots' Path in Morris County to the Lenape Trail in Essex County. The Lenape Trail ends in Jersey City at Liberty State Park.

Access via Roxbury Trails can be gained through a link along the Chester Branch Railroad, which runs along the eastern border of the Township, south into the Black River Wildlife Management Area. This Trail will provide hikers many opportunities to link with local trail networks as well as other regional trails.

Morris County Park Commission

There are currently fifty miles of Patriots' Path throughout Morris County. The path links national, county and municipal parks, two environmental education centers, three cultural centers and historic sites. The Traction Line Trail in Morris Township and the Columbia and Gillette Trails both of which are in Washington Township are a part of this county trail system as well.

Access for Roxbury residents can be gained by following the West Morris Greenway (Chester Branch Railroad) south into the Black River Wildlife Management Area. The West Morris Greenway follows the Lamington River and enters the Black River Wildlife Management Area south of Ironia Road near where the borders of Roxbury, Chester and Randolph Townships meet.

NJDEP State Park

Hopatcong State Park

Nine miles in length and covered by 2,500 acres of freshwater, Lake Hopatcong is the focal point of the park. Hopatcong State Park is at the southwest end of the lake and is a popular spot for fishing, boating, and swimming. The 107-acres of the park located in Landing does not have hiking trails.

NJDEP Wildlife Management Areas (WMA)

Black River WMA

Patriots' Path runs through the 3,042-acre Black River WMA in a northeast-southwest direction for approximately 3 miles. This section of the trail is a multi-use trail. After three miles the Path follows the Black River south where it is designated as a single-use trail. This extension of Patriots' Path continues south to the Morris and Somerset County borders, passing Kay Environmental Center and Bamboo Brook Outdoor Educational Center along the way. Residents can access the Black River WMA via the West Morris Greenway.

Berkshire Valley WMA

There are many unmarked trails and dirt roads that wind throughout the 1,893-acre Berkshire Valley WMA. The Farny Highlands Trail passes through the eastern side of the WMA and connects with the Highlands Trail to the north in Jefferson Township. The West Morris Greenway will provide linkage to the WMA for residents as it follows the Chester Branch Railroad right-of-way north along the eastern border of the Township.

Regional Trails within Roxbury Township

West Morris Greenway

The West Morris Greenway is a regional trail initiative led by the Morris County Park Commission. The goal of the Greenway is to provide a trail link from Patriots' Path in Chester Township to the historic Newfoundland Train Station on the Morris and Passaic County border. This will be accomplished by following the Chester Branch railroad right-of-way north from the Black River WMA along the eastern border of Roxbury. Before reaching Interstate 80 the rail line turns east into Wharton Borough where the Greenway will continue through Hugh Force County Park into Rockaway Township where it will meet a proposed extension of the Farny Highlands Trail.

Morris Canal Greenway

The Morris Canal Greenway highlights the historic line of the Morris Canal as it extends across Morris County. The Canal's route coursed through parts of five counties including Warren, Sussex, Morris, Passaic and Essex, covering 103 miles. The Canal enters Roxbury from Hugh Force County Park in Wharton Borough and continues in a southwesterly direction through Kenvil, across the West Morris Greenway, and into Succasunna. Once in Succasunna the Canal parallels Route 46, passes through Morris Canal Park, and continuing northward to Lake Hopatcong where a feeder canal provides access to the Lake. Residents can access the Greenway in Morris Canal Park where one of thirteen planes can be seen. Also, the Canal Society of New Jersey is working to preserve the historic Silas Riggs property, which contains one of the first sections of the

Canal to be built. The property will feature hiking trails and a restored portion of the Canal. The property is located on historic Main Street.

Municipal Trail Systems

Jefferson Township

No municipal trail system currently exists. There are plans to construct a trail around the lake at Camp Jefferson.

Chester Township

Chester Township's trail network is south of Chester Borough and east of Route 206. The Evans Family Preserve is comprised of 110 acres and contains numerous trails. The Township recently acquired the Telecordia Property along Dover Chester Road, which is adjacent to the Evans Family Preserve and is 113 acres. The Township is currently working on extending trails into the Telecordia Property.

Mount Olive Township

There are several unmarked trails within the 267-acre Turkey Brook Park, which is located on the north side of Flanders Road approximately two miles east of Budd Lake. The Township is currently working to expand their trail network.

Randolph Township

The Township maintains a 16-mile trail network that links community parks, schools, neighborhoods, town hall, the senior center and the Township Public Library. The county and municipal parks connected to the Randolph Trails system include James Andrews County Park, and Heistein, Brundage, Freedom and Hidden Valley municipal parks. Hedden County Park in both Randolph and Mine Hill Townships also contains trails. Randolph Trails system is located on roads as well as forested property which affords both bicyclists and hikers opportunities to use the trail on paved and non-paved surfaces. Trailheads are located at many of the parks and on Sussex Turnpike, Millbrook Avenue and Radtke Road. Roxbury residents can access the trail network on Dover Chester Road via Righter Road, Park Avenue and Pleasant Hill Road.

Byram Township

The Township contains approximately 10-miles of trails which include portions of the Sussex Branch, Lubbers Run Trail, Highlands Trails, Byram Bicycle Path as well as a trail system in Allamuchy State Park. The Byram trail network is accessed by following the West Morris Greenway to the Farny Highlands Trail and connecting with the Highlands Trail in Jefferson Township. The Highlands Trail runs south through Hopatcong Borough into Byram. Residents can also take Route 602 north past Hopatcong State Park to Waterloo Drive where there is a trailhead for the Sussex Branch Trail.

Trail Development – Areas I, II and III

The development and construction of Roxbury Trails is envisioned in three stages. This section details each Area, providing the geographical boundaries and destination points that will be established. Potential trail partners are also discussed. Each Area is depicted on the accompanying *Trails Map*. Area I is shown in red, Area II in orange and Area III in lavender. Schematic *Maps* for the three Areas are included within this Plan as well.

Area I – Alamatong Extension

Area I connects to Patriots' Path through the Alamatong Wellfields north to Horseshoe Lake. This is the anchor for the Morris County Park Commission's West Morris Greenway. The establishment of this trail will provide residents in Succasunna access to regional open space and trails within the Black River Wildlife Management Area and Randolph Township. This trail is colored red on the *Roxbury Trails Map*.

The Horseshoe Lake Recreation Complex is a hub for athletic activities and outdoor recreation. There is a half-mile multi-use trail around the Imagination Station Playground facility as well as a 1.7 mile bike path which circles the complex. There are athletic fields, basketball courts, a teen center, volleyball courts and a pavilion. The Area I - Alamatong Extension will have a high level of visibility and accessibility for local residents.

Access through the Alamatong Wellfield will need to be accomplished with the support of the Morris County Municipal Utilities Authority. An access agreement will be required as there are several public drinking water wells near the proposed trail corridor. This trail will follow the former Chester Branch railroad line. Neighboring Randolph Township supports the establishment of this trail and will link their trails into the spur through the Alamatong Wellfield if constructed.

In order to establish Area I the Trails Committee will work, with governing body approval, with various partners including:

- Roxbury Department of Public Works (DPW) - to assist with erecting and securing trail signs and bicycle lane markers on roadways where the trails are located.
- Roxbury Engineering and Planning Departments – for the engineering and planning work associated with the trail design.
- Roxbury Recreation Department – The Recreation Department is a partner in the design and establishment of Roxbury Trails, the Township's Recreation Center is located at Horseshoe Lake.
- Morris County Park Commission – The Alamatong Extension is aligned with the Park Commission's proposed West Morris Greenway and connects into the County's Patriots' Path.

- Morris County Municipal Utilities Authority (MCMUA) – The MCMUA owns and manages the Alamatong Wellfields. Their consent is necessary for trail access.
- Rails-to-Trails Conservancy – the Alamatong Extension is aligned with the Chester Branch rail right-of-way.
- Randolph Township - Randolph is interested in creating trail connections into Roxbury’s trail network. The Engineering Department also has a great deal of experience with constructing trails on forested land and roadways.
- Chester Township – The Township will benefit by being able to link with the Roxbury trail network.
- NJDEP Division of Fish and Wildlife – Fish and Wildlife manages the Black River Wildlife Management Area which has an extensive trail network winding through the wildlife area.

There are a number of costs associated with developing this Area. The use of Trails Committee volunteers, resident volunteers from Roxbury and Randolph Townships and support from New York – New Jersey Trails Conference and Morris Trails Conservancy will help to defray labor costs for the construction and stewardship of the Alamatong Extension of the Roxbury Trails.

Area II – Succasunna to Mooney Mountain

Area II of Roxbury Trails is divided into two sub Areas known as Area IIa and Area IIb. The overall purpose of Area II is to develop the trail network within the communities of Succasunna, Ledgewood and Mooney Mountain; or the section of Roxbury located south of Route 10 and Route 46. These trails are represented in orange on the Roxbury Trails Map. This Area contains the largest number of trail miles and acres of municipally owned open space of the three Areas. These trails will serve the greatest number of residents and will link many of the community destination sites identified by residents at the public workshop.

Area IIa – Succasunna Trails

Area IIa consists of all trails located within Roxbury south of the High Bridge Branch rail right-of-way, which is identified on the *Roxbury Trails Map*, and Route 10. These trails will be multi-use and will traverse municipal parkland, Board of Education property, travel along roadways and privately held land. Any trail access through private property will be handled by the Township Council.

The destination points for Area IIa include Eisenhower Middle School, Roxbury High School, Jefferson Elementary School, Horseshoe Lake, Brookside Park, Condit Road Parcel, Succasunna Park, Kiwanis Park, Eyland Woods, Lines Farm, Walden Park and the Roxbury Mall on Route 10.

In order to link these destination points in such a densely developed section of the Township it may be necessary to locate a portion of the trails along the municipal

roadways. Roadway signage and bike lane stripes maybe added in order to increase awareness and safety for trail users. The links on roadways are appropriate for the use of bicycles, in-line skates and skateboards. (*See: Trail Design Construction and Management section for design and safety considerations for improving roadways intended for trail use.*)

Within 24 months of the adoption of this Plan by the governing body the Trails Committee will work to establish a trail loop that begins at Horseshoe Lake. This trail will cross Eyland Ave. onto Roxbury High School's property and continue through the Condit Road Parcel across Eyland Ave to Midland Park before proceeding north across Righter Rd. onto the Horseshoe Lake Athletic Complex property. This section of Area IIa is located entirely on public property and can be developed within a shorter period of time than the remaining portions of Area IIa. This loop is delineated on the Roxbury Township Trail Map.

In order to establish Area IIa the Trails Committee can work with various partners including:

- Roxbury Department of Public Works - to assist with erecting and securing trail signs and bicycle lane stripes and other safety features on roadways the trails are located.
- Roxbury Engineering and Planning Departments – for the engineering and planning work associated with the trail design.
- Morris County Department of Planning, Development and Technology - to discuss improved pedestrian crosswalk infrastructure when the Righter Road and Hillside Avenue intersection is redeveloped.
- Private landowners – outreach efforts must be made in order to gain consent for trail access across private properties.
- Board of Education - to gain consent for trail access across school property located on Bryant Drive, across from the Horseshoe Lake Athletic Complex.
- Chamber of Commerce – to gain support from local businesses located in Roxbury Mall.
- Morris County Park Commission – Area IIa connects directly into the West Morris Greenway, a MCPC regional trail initiative.
- Canal Society of New Jersey – the Morris Canal Greenway is located within Area II, which can bring increased awareness and support for the preservation of the Morris Canal.
- Rails-to-Trails Conservancy – the High Bridge Branch rail right-of-way is an active rail line however, if and when it is abandoned, it will serve as a potential location for a rail trail.
- Morris Area Freewheelers – the majority of the trails in Area IIa will be located on municipal roads that are suitable for bicycling. This organization supports local and regional bicycling in New Jersey.
- This Area places a portion of Roxbury Trails along municipal roadways. In order to clearly indicate the presence of trails or bicycle lanes on roadways, and to increase safety, proper road signage will be required. Costs associated with safety

improvement projects such as lane striping may be necessary to improve safety. For those trails located on parkland, the installation of impervious surfaces, such as asphalt or soil cement, may create greater continuity in surface between roadway and non-roadway trails. The addition of impervious surface trails can be covered by funding from one of the grants listed in the *Calendar of Grants* section.

Area IIb - Ledgewood and Mooney Mountain

Area IIb includes trails north of the High Bridge Branch rail right-of-way, south of Route 46 and west of Route 10. These trails represent Roxbury's longest contiguous section of trails due to large tracts of municipal open space. Area IIb will consist of both single and multi-use trails located on municipal and private property, and along existing roadways.

This section of the Roxbury Trails links many municipal parks including Ledgewood Park, Morris Canal Park, Mooney Farm Park, Mooney Mountain Park, Roxbury Knolls Park, Veterans Park, Emmans Road Park, Emmans Greenway and Morris Canal Greenway. Area IIb winds across forested land in Morris Canal Park, Veterans Park and Mooney Mountain Park that serve as wildlife habitat. Trails in these parks offer opportunities for nature study, birdwatching and a quiet respite.

This section also links with the Morris Canal Greenway, which follows the historic line of the Morris Canal across Morris County. Morris Canal Park contains the remains of an inclined plane. The Morris Canal Greenway offers connectivity to neighboring municipal trails in Byram Township as well as the Highlands and Sussex Branch Trails.

There are two trail links across private property in Area IIb. The first is located on the Verizon property, which links the Mooney Farm Park property with Veterans Park. The Township is pursuing an access easement agreement with Verizon to establish a trail across this property. The second link across private property occurs between Emmans Greenway and Emmans Road Park. A trail easement across this property will allow continuity of flow.

The Emmans Greenway property offers an opportunity for the installation of a handicap accessible trail due to its central location in the Township, flat surface, and size. A half-mile loop trail with an impervious surface such as asphalt or concrete would accommodate wheel chairs and walkers. Additionally, the property's proximity to Emmans Road Park will provide parking for increased accessibility. The *Trail Design, Construction and Management* section of this Plan offers information on trail construction for handicapped accessibility.

The Preservation Area of the Highlands Water Protection and Planning Act extends into Roxbury from Mount Olive and encompasses all of Area IIb except for Emmans Greenway and Emmans Road Park. The metes and bounds of the Preservation

Area in the Township are as follows: northerly on State Highway 206 to its intersection with Mountain Road; thence southerly and easterly on Mountain Road to its intersection with Mooney Road; thence northerly on Mooney Road to its intersection with U.S. Highway 46; thence easterly and southerly on U.S. Highway 46 to its intersection with Main Street and the Morris Canal Park boundary; thence southerly on the Morris Canal Park boundary to its intersection with Mountain Road; thence northeasterly on Mountain Road to its intersection with Emmans Road; thence southerly and westerly on Emmans Road to its intersection with the Conrail right of way south of Drake's Brook; thence southerly and westerly on Conrail right of way to its intersection with State Highway 206.¹ The regulations that govern trail construction are found in the *Trail Design, Construction and Management* section of the Act.

Within 24 months of the adoption of this Plan by the governing body the Trails Committee will work to establish trail loops in Morris Canal Park and Veterans Park. These loops, with the exception of a small portion of trail in Morris Canal Park, will be located on preexisting trails and dirt-roadways located entirely on municipal property. For these reasons, the Trails Committee believes these loops can be developed more quickly with fewer resources than remaining sections of Area IIB. These loops are delineated on the Roxbury Township Trail Map.

In order to establish Area IIB the Trails Committee at the direction of the Township Council can work with various partners including:

- Roxbury Department of Public Works - to assist with erecting and securing trail signs and bicycle lane markers on roadways the trails are located.
- Roxbury Engineering and Planning Departments – for the engineering and planning work associated with the trail design.
- Private landowners – outreach efforts must be made in order to gain consent for trail access across private properties.
- Canal Society of New Jersey – the Morris Canal Greenway is located within Area II, which can bring increased awareness and support for the preservation of the Morris Canal.
- Rails-to-Trails Conservancy – the High Bridge Branch rail right-of-way is an active rail line however if and when it is abandoned it will serve as a potential location for a rail trail.
- International Mountain Bike Association (IMBA) – there is potential for mountain bike trails in parks such as Morris Canal Park and Veterans Park. IMBA’s New Jersey state coordinator can provide support for trail design, development and stewardship.
- NJDEP Division of Parks and Forestry – The Morris Canal Greenway provides a link to Hopatcong State Park. The Division of Parks and Forestry assist in establishing and promoting this link.

¹ New Jersey Legislature: http://www.njleg.state.nj.us/2004/Bills/A3000/2635_R1.PDF
Accessed: June 1, 2005.

Area III – Triple Lakes to Berkshire Valley

Area III extends north from Horseshoe Lake along the West Morris Greenway into Berkshire Valley Wildlife Management Area (WMA). Trails in this section may include trails on the Hercules Powder Company property, a connection to the Lincoln/Roosevelt Schools and trails located within Berkshire Valley WMA. This Area will provide trail access for those who live in Kenvil and Berkshire Valley. All trails in Area III are colored lavender on the *Roxbury Trails Map*.

The West Morris Greenway, a multi-use trail, is the foundation for Area III as it connects all of the destination points and trails within this section. The Greenway begins at the northern end of the Alamatong Extension in Area I at Horseshoe Lake and extends north along the Chester Branch railroad right-of way. The Greenway intersects the Morris Canal Greenway at the intersection of Dell Avenue and Berkshire Valley Road. At this point the Greenway continues north to West Dewey Avenue where it turns east and continues into Hugh Force County Park in Wharton Borough. In Wharton the Greenway will follow North Main Street under Interstate 80 into Rockaway Township to Mount Hope Park. In Mount Hope Park the Greenway will connect with the proposed southern section of the Farny Highlands Trail loop. This connection continues north along the eastern border of Picatinny Arsenal, through Newark Watershed property to the historic Newfoundland Train Station. Currently there is no connection between the station and the Highlands Trail to the north in West Milford, Passaic County. To connect to the Highlands trail, hikers must continue south on the Farny Highlands loop to Mahlon Dickerson Reservation.

In addition to regional connectivity, the West Morris Greenway provides two important links within Roxbury. The first is the Hercules Powder Company's property, which would provide trail access to a number of residents who live on the western side of the Hercules property north of Route 46. The second link is with the Berkshire Valley WMA and the community of Berkshire Valley. Residents in Berkshire Valley and Kenvil will be able to access the multi-use trails inside the WMA and trails within Area I and II via the West Morris Greenway. The WMA offers many established multi-use trails and recreation activities such as hunting, fishing and birdwatching.

In order to establish Area III the Trails Committee can work with various partners including (contact information can be found in the Roxbury Trails Partners section):

- Roxbury Department of Public Works - to assist with erecting and securing trail signs and bicycle lane markers on roadways where the trails are located.
- Roxbury Engineering and Planning Departments – for the engineering and planning work associated with the trail design.
- Hercules Powder Company – Their consent in the form of an access agreement is required to establish a trail on their property.
- Morris County Park Commission – Area III incorporates the West Morris Greenway and seeks to establish MCPC regional trail connection proposals.

- Canal Society of New Jersey – the Morris Canal Greenway crosses the West Morris Greenway. This intersection can bring increased awareness and support for the preservation of the Morris Canal.
- NJDEP Division of Fish and Wildlife – The Berkshire Valley Wildlife Management Area is managed by the Division of Fish and Wildlife, the knowledge and expertise of the park managers regarding recreation and stewardship will be helpful for the Trails Committee.
- New York – New Jersey Trail Conference – Area III provides regional connectivity to Trail Conference’s proposed Farny Highlands loop trail.
- Morris Trail Conservancy – The Conservancy is committed to the development and stewardship of trails in Morris County.
- Rails-to-Trails Conservancy – the Conservancy can assist and support the conversion of the rail line to a rail trail.
- Bike New Jersey – the trails in Area III are multi-use and compatible with bicycles and mountain bikes.
- Mine Hill Township – There is potential for connectivity to trails in Hedden County Park in Mine Hill.
- Randolph Township – Randolph is interested in creating trail connections into Roxbury’s trail network. The Engineering Department also has a great deal of experience with constructing trails on forested land and roadways.
- Mount Arlington Borough – There is potential to create links between Landing in Roxbury and Berkshire Valley WMA.
- Wharton Borough – Hugh Force Park is located in Wharton, the proposed location of the West Morris Greenway as it leaves Roxbury and continues into Rockaway.
- Jefferson Township – home to Minisink County Park and Mahlon Dickerson Reservation, Roxbury Trails could provide a regional connection to trails within these natural areas and with trails located within Berkshire Valley WMA which extend into Jefferson.

Public support and partnerships with Morris County Park Commission, Morris Trails Conservancy, New York-New Jersey Trails Conference, and neighboring communities will work to create this link to Roxbury Trails.

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Trail Design, Construction and Management

The groundwork of trail construction begins once the use, surface type and purpose is decided and the location is identified on a map. These factors will influence how and where a trail is built therefore it is important that they are realistic and will serve the intended users. Although trails do not always have to accommodate everyone, all trails will be greatly enhanced by signage, which provides objective information about trail conditions. This section provides an introduction to trail design, construction and management and addresses critical issues such as water management, security, handicap access and permits.

Trail Scouting¹

- The main objectives of scouting a trail are to:
 - Verify control points (places of entry and exit) to determine if the mapped route is feasible.
 - Find the best alignment that fits all objectives
 - Identify natural features to enhance the user's experience
 - Validate that the route is reasonable to construct and maintain
- The trail locator must scout a property to find the best route to investigate the presence of the following features:
 - Gaps or passes
 - Stream crossings
 - Rock outcrops
 - Known areas to avoid (threatened and endangered species, poor soils)
 - Known features to include (scenic overlook, historic site).
- There are a number of tools the trail locator will need in order to accurately mark the route as it meanders between control points. Some of these tools are more necessary than others, however a working knowledge of maps and compass reading is important:
 - clinometer, compass, altimeter, flagging of different colors, wire or wood stakes, roll-up pocket surveyor's pole, permanent marker to make notes on the flagging, field book, probe to check soil depth to bedrock, maps, and perhaps a GPS (global positioning system) unit.
- Scouting a trail is best done with two people. One person can walk ahead of the other and look out for obstacles and the best possible route while the other records all data collected using various tools. This individual can also “flag” the trail route.

Trail Development Expenses

The following list details potential costs for materials and permits, which maybe required for trail development:

¹ United States Department of Transportation.
<http://www.fhwa.dot.gov/environment/fspubs/00232839/toc.htm> Accessed: June 1, 2005.

- Trail design
- Trail signs and markers
- Trail surface materials
- Roadways improvements for bicycles such as bike lane striping, asphalt bicycle stickers and storm drain covers compatible with bicycle tires.
- Wooden gates when trails begin along and cross roadways
- Privacy fences when trails are located close to homes
- Construction tools and equipment
- Surface materials and professional labor as needed
- Expenses associated with a New Jersey Department of Environmental Protection Freshwater Wetlands General Permit (*See: Permit section below*)

Designing Trails

- Should blend into natural surroundings by maintaining continuity and regularity in the way it traverses the land.
- Cultural and historic features add dimensions to a trail design.
- Trail design is a balance between beauty and function.
- Best time of year to conduct a trail layout is during the spring and fall, when the leaves are off the trees and the ground is clear of ice and snow. It is also beneficial to check a trail location throughout the year, to see if it possesses any drainage problems.
- Parking facilities should be carefully planned along with trails.
- Use vegetation in trail design: to channel and contain hiker traffic, to retard trail erosion, to protect from the weather, to buffer and insulate hiking activities, to provide building material, to use as indications of soil characteristics.

Formats for Trail Design

- Loop- popular for day-use trails because it enables easy access and parking.
- Line- simplest and most common. Connects two points: trailhead and destination.
- Horseshoe- valuable especially in areas with public transportation.

Multi-use Path Width (on developed land where users include walkers, bicyclists and handicapped)

- The width of the multi-use trail affects pedestrian usability and the types of users who can use the path.
- The tread of the path should be at least eight to ten feet wide.
- This type of path will need to be paved to accommodate all potential users

Trail Surface Type¹

- Surface types are gauged by their firmness, stability and slip resistance
 - Firmness: the degree to which the surface resists deformation by indentation when someone walks or wheels across it.

¹ USDOT. Designing Sidewalks and Trails for Access Part II of II. Best Practices and Design Guide. September 2001.

- Stability: the degree to which a surface remains unchanged by contaminants by or applies force.
- Slip resistance: based on the frictional force necessary to allow someone to travel across the surface without slipping.
- All trails should be firm and stable.
- Examples of trail surfaces with their corresponding firmness, stability and slip resistance include:
 - Asphalt: firm, stable, slip resistant
 - Concrete: firm, stable, slip resistant
 - Boardwalk: firm, stable, slip resistant
 - Stone cylinders for crossing watered areas: firm, stable, slip resistant
 - Soil with stabilizer (soil cement): firm, stable, slip resistant
 - Packed soil without stabilizer: firm, stable, not slip resistant
 - Soil with high organic content: soft, stable, slip resistant
 - Crushed rock with stabilizer: firm, stable, slip resistant
 - Pea gravel: soft, unstable, not slip resistant
 - Sand: soft, unstable, not slip resistant
- The tool used for determining firmness and stability is known as a rotational penetrometer. It measures surface firmness by pressing an indenter into the surface with a specified amount of force and records the amount of displacement. Stability is measured by rotating the indenter back and forth while the force is applied and then records the amount of displacement.

Trail Intersection with Roadway¹

- Trail should intersect the street at a 90-degree angle to increase visibility of pedestrians for motorists.
- Increase trail width at the intersection to reduce user conflicts.
- Provide signage for both motorists and pedestrians to ensure awareness of the intersection and a reduction in speed.
 - Signs, both on the road and the trail, should clearly indicate whether motorists or trail users have the right of way.
- Provide a visible crosswalk across the intersection to increase trail user and motorist awareness and safety.
- Use curb ramps as required and include detectable warnings to ensure that trail users with vision impairments are aware of the street.
- Curb ramps should be as wide as the average width of the trail. They should also have a number of other characteristics:
 - A level maneuvering area or landing at the top of the curb ramp
 - Clearly identify the boundary between the bottom of the curb ramp and the street with a detectable warning.
 - Provide adequate drainage to prevent the accumulation of water or debris on or at the bottom of the ramp.

¹ USDOT. Designing Sidewalks and Trails for Access Part II of II. Best Practices and Design Guide. September 2001.

Environmental Considerations in Trail Design

- Soil Characteristics- trails needs to be located on soils that are capable of withstanding the amount of anticipated use without eroding or becoming wet and muddy. **Compaction** is a problem and occurs when the surface horizons of the soil compact into a cement-like hardness due to plant mortality caused by hikers. The compacted surface loses its pore space and its ability to absorb surface water. **Surface Erosion** is another problem, which leaves loose stones, gravel and tree roots after the stabilizing sand and silt particles have been removed by water. This then causes poor footing for the hiker causing the hiker to walk along the edge of the trail, further killing plants and compacting the soil.
- In determining the best location for a trail, one should consider:
 - Soil wetness: areas with very poorly drained soils should be avoided.
 - Soil Texture: loam soils with a mixture of sands, clay, and silt will resist erosion and compaction most successfully and absorb a high level of rainfall.
 - Soil Structure: Hardpans are hard, compacted soil horizons that are generally impervious to the downward movement of water and makes trails wet and susceptible to damage.
 - Soil Depth: Shallow soils are heavy and saturated with water, which leads to erosion when walked upon.
- Trail Design to minimize erosion¹
 - Minimize amount of ground area that is disturbed especially in areas over a 5% grade. Trails on steep slopes should be narrow.
 - When designing the trail, plot the trail course on grades equal or less than 5%.
 - Natural drainage patterns should not be altered.
 - A number of techniques can be used to manage water run-off on a trail including:
 - Planting native plants to absorb water, very useful in large areas where the soil has been disturbed.
 - Sediment barriers: bales of hay, silt fencing, retaining walls and filter strips. These tools trap sediment and prevent an area down slope from becoming over-silted which negatively impacts plant as well as wetlands and waterbodies.
 - Property drainage will carry the water either over the trail, under the trail, or will intercept the water before it crosses the trail.
 - Surface runoff intercepted by erosion-control measures must be collected by drainageways and discharged in stabilized areas or sediment basins.
 - Cross-drainage techniques such as swales, culverts, water bars and deflectors should be utilized to divert water off of the trail as soon as possible.

¹ New Hampshire Division of Parks and Recreation. Best Management Practices for Erosion Control During Trail Maintenance and Construction. 2004.

- *Swale*: a depression constructed across a slope above and in conjunction with an earthen berm. A swale is appropriate where runoff might create erosion problems running across a trail. On slopes which have a trail grade less than 10%.
- *Culvert*: a metal, plastic, cement or wood pipe placed under a trail to permit crossing an intermittent or active stream.
- *Water bar*: a rock, earthen or log barrier angled to divert water off a trail. In general, the greater the slope and the higher the velocity or volume of water, the greater the need for waterbars as opposed to other drainage techniques.
- *Deflectors*: rubber belting fastened to treated timbers which are placed in the ground to deflect water off a trail. Areas appropriate for this tool are where low water volume is expected and heavily traveled trails where mountain bikes are expected
- Observe the trail during a rainstorm to more accurately determine the need for these tools.
- When crossing shallow pools or areas that are consistently wet, stepping-stones are appropriate. This is especially necessary in areas where hikers steps widen the path as they move to avoid wet areas.
- When crossing deep water, bridges are necessary or raised boardwalks to cross extended areas of water or wetlands.

Trail Maintenance

- *Adopt-a-Trail Program* this program will work to connect local volunteers to specific trails for stewardship purposes. These volunteers will accomplish all necessary maintenance work that does not require heavy equipment, on a regular basis to ensure the trails remain usable and safe. Prior to opening a trail the Trails Committee will work to identify a steward for that trail.
- *Regular clearing* is one of the most important jobs for maintaining established trails.
- *Standardizing* is a technique of clearing brush next to a trail to put it into standard condition (adequate height and width)
 - Standard width varies with vegetation and terrain but a 4 to 6 foot clearance is standard in most cases. Standard height is normally 8 feet or as high as one can reach.

Trail Signs¹

- Paint blazing – most common, durable, and inexpensive
 - Blazes are simply marks on a tree made with a distinct color of paint. Typically they are 6 inches by 3 inches and occur at intervals of 100 yards or more frequently if the trail features many turns and is subject to vegetative overgrowth.

¹ USDOT. <http://www.fhwa.dot.gov/environment/fspubs/00232839/toc.htm> Accessed: June 1, 2005.

- Signs – essential component, many different types of signs. Trailheads should be posted with signs that provide a map and other trail connections with trail name, distance, color of blazes used to mark trail along its course and potential danger. Nearby roads and landmarks are also useful to help orient and prevent the individual from becoming lost.
- Multi-use trails signs at trailheads should indicate which uses are permitted.
- Cairns and Posts – treeless areas sometimes require cairns (constructed rock piles). In the absence of rocks, posts can be used.
- Signs need to be standardized and easily accepted and recognized by all users of the trails.

Handicap Accessibility and Trail Design

The Americans with Disabilities Act (ADA) requires that trails are accessible however it does not provide guidelines for construction. The Regulatory Negotiation Committee on Accessibility Guidelines for Outdoor Developed Areas conducted a national forum that began on June 1997 and concluded on July 1999 with a report¹, which includes ADA Accessibility Guidelines for trails, outdoor recreational access routes, beach access routes, and picnic and camping facilities. The Committee's guidelines are undergoing a regulatory assessment by The Access Board, an independent federal agency responsible for developing minimum accessibility guidelines under the ADA. Once The Access Board completes its assessment, which is expected in 2005, the federal Office of Management and Budget will conduct a review. Finally, the proposed guidelines will be published in the Federal Register with an invitation for public comment over a 90-day period.²

The proposed ADA accessibility guidelines apply to those trails, which are designed and constructed for pedestrian use. These guidelines are not applicable to trails primarily designed and constructed for recreational use by equestrians, mountain bicyclists, snowmobile users, or off-highway vehicle users, even if pedestrians may occasionally use the same trails. However, a multi-use trail specifically designed and designated for hiking and bicycling would be considered a pedestrian trail. The proposed guidelines apply only to areas of newly designed or newly constructed and altered portions of existing trails.

Under the proposed ADA guidelines, an accessible recreation pedestrian trail would meet the following minimum technical provisions:

- Clear tread width: 36 inch minimum
- Tread Obstacles: two inch high maximum (up to three inches high where running and cross slopes are 5% or less)
- Cross Slope: 5% maximum
- Running slope (trail grade) meets one or more of the following:
 - 5% or less for any distance.
 - up to 8.33% for 200 feet maximum; Resting intervals no more than 200 feet apart.
 - up to 10% for 30 feet maximum; Resting intervals 30 feet.
 - up to 12.5% for 10 feet maximum; Resting intervals 10 feet.
- No more than 30% of the total trail length may exceed a running slope of 8.33%.
- Passing Space: provided at least every 1000 feet where trail width is less than 60 inches
- Signs: shall be provided indicating the length of the accessible trail segment.

¹ Regulatory Negotiation Committee on Accessibility Guidelines for Outdoor Developed Areas (report)
<http://www.access-board.gov/outdoor/outdoor-rec-rpt.htm>

² American Trails: <http://www.americantrails.org/resources/accessible/ADASummFeb00.html>

Departures from specific accessibility guidelines are permitted for any portion of the trail where compliance would:

- Cause substantial harm to cultural, historic, religious, or significant natural features or characteristics;
- Substantially alter the nature of the setting or the purpose;
- Require construction methods or materials that are prohibited by Federal, State, or local regulations or statutes;
- Not be feasible due to terrain or the prevailing construction practices.¹

Trail Construction in the Highlands Preservation Area

The following information regarding trail construction in the Highlands Preservation Area is taken verbatim from NJDEP *Special Adopted Rules: N.J.A.C. 7:38*². These rules are intended to clarify the land use regulations established by the Highland Water Protection and Planning Act. These rules will be in place until the Highlands Council completes the Highlands Master Plan due no later than June 2006. Before the Trails Committee can begin construction on trail in the Preservation Area the Committee must submit a *Highlands Applicability and Water Quality Management Plan (WQMP) Consistency Determination Application Form (Highlands Applicability Determination)*.³

The rules that pertain the construction of non-impervious trails in the Highlands Preservation Area are as follow:

(a) The following projects or activities are exempt from the requirements of this chapter, but are required to comply with all other Federal, state and local requirements that may apply to the proposed project:

(8) The construction or extension of trails with non-impervious surfaces on publicly owned lands or on privately owned lands where a conservation or recreational use easement has been established and filed with the deed for the lots on which the easement exists;

(Bike Lanes on Roads in the Highlands Preservation Area)

(9) The routine maintenance and operations, rehabilitation, preservation, reconstruction, or repair of transportation or infrastructure systems by a State entity or local government unit, provided that the activity is consistent with the goals and purposes of the Highlands Act, and does not result in the construction of any new through-capacity travel lanes.

(10) The construction of transportation safety projects and bicycle and pedestrian facilities by a State entity or local government unit, provided that the activity does not result in the construction of any new through-capacity travel lanes;

¹ American Trails: <http://www.americantrails.org/resources/accessible/ADASummFeb00.html>

² NJDEP: http://www.state.nj.us/dep/rules/adoptions/njac7_38_20050509.pdf

³ NJDEP: <http://www.state.nj.us/dep/highlands/consistency.pdf>

The construction of transportation safety projects and bicycle and pedestrian facilities by a State entity or local government unit provided the construction does not:

- i. Create a new travel lane or increase the length of an existing travel lane by more than 2,640 linear feet, not including tapers;
- ii. Result in a cumulative increase in impervious surface of one acre or more; or
- iii. Involve the ultimate disturbance of two or more acres of land;

Permits

In order to construct trails throughout the Township the Trails Committee will need to obtain municipal and state permits. The need for a construction permit depends on the location and surface type of the trail. For example a trail with an impervious surface will require a municipal permit. NJDEP requires a permit for trails in wetland areas and an applicability determination form for trails in the Highlands Preservation Area. Two of these permits will incur fees and need to be considered as part of the total construction cost of a trail.

The following two permits issued by the New Jersey Department of Environmental Protection can be found on the provided websites.

- **Freshwater Wetlands General Permit Authorization**
General permit 17 is specific to trails and boardwalks
This permit costs \$500 and the review process typically last 90 days.
<http://www.state.nj.us/dep/landuse/forms/index.html#fww>
- **Highlands Applicability and Water Quality Management Plan (WQMP) Consistency Determination Application Form (Highlands Applicability Determination)**
This permit costs \$100 and the review process typically lasts 90 days.
<http://www.state.nj.us/dep/highlands/consistency.pdf>

Security

The need for trail security and policing typically stems from the use of off-road vehicles (ORV), such as ATVs and dirt bikes, on public hiking trails. Trail networks also require policing in case of emergencies such as when a user becomes lost or injured. A partnership between the Trails Committee and local police and emergency response teams will work to mitigate security related issues as they develop.

The neighboring community of Randolph Township maintains 16-miles of trails across 2,000 acres of open space. The Randolph Township Police Department utilizes both a multi-use motorcycle and a Ford Ranger pick-up truck to patrol the trails network. The pick-up truck allows the patrolmen to cross trail-bridges and remove hikers who have become incapacitated. The Township also utilizes a trail marking system that incorporates a colored marker with a number. Therefore if an individual requires assistance their location on the trail network can be pinpointed more accurately and the responding rescue team can enter the trail network at the best possible location.

ORVs pose a serious threat to the safety of trail users and cause substantial environmental degradation. ORV use on trails leads to erosion, which facilitates the destruction of a trail. The following list identifies various methods for addressing illegal ORV use on public lands:

- Conduct an education outreach to inform residents that ORV use is prohibited on municipal property. Provide locations in the region where they are permitted.
- Establish a municipal ordinance that prohibits the use of ORVs on municipal property and levies severe fines against those who are apprehended.
- Require ORV owners to register their vehicles with the Township and implement a vehicle identification system.
- Urge trail users to call the police when they observe ORV use on municipal property. This is accomplished by posting advisories that cite the municipal ordinance and provide police and emergency medical team phone numbers.
- Provide resources to report incidents to the Township police and Trails Committee. For example, provide forms at trailheads and on the Township website that provide space to record the location, date, time of the incident.
- Access barriers: in some cases the placement of boulders, gates or metal posts will prevent ORVs from accessing trails.
- Placement of motion activated cameras

Trail users at times become disoriented or injured, which may result in the need of an emergency response team. In order to reduce the potential of users becoming lost the Trails Committee can develop and distribute trail maps that identify trails, their names and the location relative to significant landmarks in the Township. These maps can be posted and distributed at trailheads. The Township police department and local emergency response team should also be made aware of the trail network as well as points of risk to trail users. In order to facilitate their response time in emergencies points of entry for their vehicles and equipment can be identified as well as environmental features that pose a risk to their work.

Action Program and Recommendations

The Action Program recommends projects the Trails Committee can pursue to implement the Trail Plan. The action bullets for the first-year following the adoption of the Plan are considered most urgent. Two and Three-year action bullets focus on land preservation and trail development, which require more planning. Five-year action bullets address broad issues that are oriented with long-term goals of the Plan.

First Year -

- Adopt the Trails Plan as an Element of the Master Plan.
- Once the Plan is adopted by the planning board a standing Trails Committee should be established.
- The Trails Committee will identify an individual to track the grants calendar and work with manager's office prepare and submit applications according to each grant administrator's requirements.
- Enlist the assistance of the Morris County Park Commission to design and implement Area I, the Patriots' Path Extension.
- Establish a system for communication and review with the Planning Board for possible trails easements on private properties as development applications are submitted.
- Meet with the Morris County Department of Planning, Development and Technology to discuss improved pedestrian infrastructure at the intersection of Righter Road and Hillside Avenue.
- Develop a partnership with the Morris County Municipal Utilities Authority, Morris County Park Commission and Randolph Township to discuss trail access within the Alamatong Wellfields.
- Assist governing body and Open Space Committee, as requested, with any proposed land acquisitions which may enhance Trail plan.

Within Two Years –

- Develop a management and ongoing maintenance schedule with the Department of Public Works once trails begin to be established.
- Examine and update municipal ordinances regarding the use of public property to ensure they prohibit the use of off-road vehicles on Roxbury Trails.
- Develop the Patriots' Path Extension Area I and the trail loops identified in Areas IIa and IIb. These trail loops include the Horseshoe Lake-Condit-Midland Park loop and the Morris Canal Park and Veterans Park loops identified on the Trail Map and discussed in *Trail Development: Areas I, II and III*.
- Establish a stewardship and monitoring program with local volunteer organizations and neighborhood groups to protect and maintain trail infrastructure.

Within Three Years -

- With the Engineer and Planning office, ensure the Roxbury Trails network link to and expand the existing sidewalk network in the Township.
- Work with the New Jersey Department of Transportation to improve pedestrian-crossing infrastructure at the intersection of Route 10 and Eyland Avenue.
- Meet with Open Space Committee to choose properties for acquisition that satisfy both committees goals and apply to Green Acres and Morris County Open Space and Farmland Preservation Trust for funding.
- Contact private landowners whose property is located in Area II and III to discuss trail access on their property.
- Apply for grants for the construction of a pedestrian bridge over the High Bridge Branch Rail Line to link Area IIa and Area IIb.
- Contact the Hercules Powder Company to discuss trail access on their property.
- Meet with Division of Fish and Wildlife to discuss trail network extension into the Berkshire Valley WMA and to map existing trails on the Roxbury Trails Map.
- Partner with Canal Society of New Jersey to establish and preserve the Morris Canal Greenway as a permanent trail within Roxbury.
- Meet with neighboring towns to design and establish trail connections.
- Continue to submit an application yearly to the appropriate funding sources for land acquisition and trail development associated with the design and establishment of Roxbury Trails.
- Establish a handicapped accessible trail in the Township.
- Produce a trail map and users guide for Roxbury Trails to be distributed at local parks and along trail heads.

Within Five Years

- Apply for grants for the construction of a pedestrian bridge over Interstate 80.
- Contact the New Jersey Department of Transportation to discuss the possibility of improving pedestrian access through the Sussex Avenue and Route 10 underpass.
- Contact private landowners whose property is located in Areas II and III to discuss trail access on their property.
- Investigate the use of rail lines in the Township and determine whether any are abandoned, if so work to convert rail line to a rail trail.
- Construct trail heads at local parks and street locations where appropriate.
- Establish a structure for review, oversight, and management for the stewardship and expansion of the Roxbury Trails.
- Meet yearly with neighboring towns and park managers to ensure maximum utilization and flexibility of trail design and use.
- Create a network of neighborhoods “friends groups” for the local residents and trails users for the different sections of the trails.
- Continue to regularly update the Roxbury Trails Plan, associated maps and users guide for the Roxbury Trails network.

Land Acquisition Recommendations

The following table is based on properties identified for acquisition on the adopted Roxbury Open Space Map. These properties also appear on the Roxbury Trails Map, however not all of the properties on the map are included in the table. Only those properties, which provide reasonable trail connectivity are listed. The properties are categorized by their respective Area. The Alamatong Wellfield property owned by Morris County Municipal Utility Authority is the only property identified for trail access that does not appear on the list. This is because parcels that contain the Patriots' Path Extension are located in Randolph Township.

Land Acquisition Recommendation

Block	Lot	Property Location	Acreege	Prop Class	Owner	Owner Address	Owner City, State	Owner ZIP
Area IIa								
102	54	160 PLEASANT HILL RD	6	1	LEUZARDER, MARK P & KLUSKA, T&C	319 PLEASANT HILL RD	FLANDERS, NJ	07836
401	34	TOBY DRIVE - REAR	6.79	1	ZANDELL, SEYMOUR	648 OLD DOVER RD	MORRIS PLAINS, NJ	07950
2902	1	DALLAND RD	2.35	1	CHOPRA, RAJINDAR PAUL	20 CONSTITUTION AVE	SUCCASUNNA, NJ	07876
4102	2	260 EMMANS RD	7.12	3B	SSC HOLDING COMPANY	575 MAIN ST APT 7C	CHATHAM, NJ	07928
Area IIb								
5601	2	194 EMMANS RD	1	3A	DITARANTO, JAMES & CYNTHIA	194 EMMANS RD	FLANDERS, NJ	07836
5601	3	186 EMMANS RD	1	3A	BLANCHARD, JOHN & SHIRLEY	186 EMMANS RD	FLANDERS, N J	07836
5601	11	152 EMMANS RD	1	3A	NILSEN, CARL J & SHARON A	152 EMMANS RD	FLANDERS, NJ	07836
5901	1	136A EMMANS RD	26	1	CASTELLANA, PHYLLIS	409 RT 10	WHIPPANY, NJ	07981
9202	23	218 MOUNTAIN RD	15	2	MEHRING, WARREN L/KAREN W	218 MOUNTAIN RD	FLANDERS, NJ	07836
Area III								
2201	1	CHESLER TERR, REAR	23.8	1	HOLLAND MANUFACTURING COMPANY	PO BOX 404	SUCCASUNNA, NJ	07876
2501	1	RAILROAD AVE	49.5	1	COUNTY CONCRETE CORP	P O BOX F	KENVIL, NJ	07847
4002	5	32 HERCULES RD	13.75	2	HERCULES INC %TAX DIVISION	1313 N MARKET ST	WILMINGTON, DE	19894
6802	11	BERKSHIRE VALLEY RD	2.03	1	HERCULES INC %TAX DIVISION	1313 N MARKET ST	WILMINGTON, DE	19894
8801	14	MT ARLINGTON RD	44.98	1	MONJER CORP	4 BERINGER RD	DEAL, NJ	07723
8901	2.01	15 SALMON LANE, LEDGE	7.5	1	SALMON BROS INC	15 SALMON LANE	LEDGEWOOD, NJ	07852
8901	2.02	15 SALMON LANE, LEDGE	3.68	3A	ROCKBOUND, LLC	22 SALMON LANE	LEDGEWOOD, NJ	07852
11001	1	LAKESIDE BLVD	55.31	3B	KINGSLAND ASSOC%PRESIDENT	PO BOX 136	LANDING, NJ	07850
13201	13	HOWARD BLVD REAR	26.9	1	DANTE, DORF	126 SPEEDWELL AVENUE	MORRISTOWN, NJ	07960

Funding Sources for Trail Development

The following two tables provide a guide for resources available to the Roxbury Township Trails Committee as they work to accomplish their trails goals. These tables detail information on possible preservation partners, potential sources of funding for trail development and construction, and a calendar of activities necessary for the different funding agencies.

Trail Design and Construction - Funding Sources

Grant Title	Grant Source	Grant Description	Eligible Applicants	Evaluation Factors	Amount Funded	Contact	Additional Comments
National Recreational Trails Program	New Jersey Department of Environmental Protection	Provides monies for maintenance and restoration of existing trails; development and rehabilitation of trailside and trailhead facilities and trail linkages for trails (e.g., parking, signage, shelters, sanitary facilities); purchase and lease of trail construction and maintenance equipment; construction of new trails in existing parks or in new right of way; for motorized use only, acquisition of easement and fee simple title to property for trails.	Public agencies at the federal, state, county, and municipal level, nonprofit organizations, and Friends of a Park group.	Trail is in the NJ Trails Plan; longer trails or connector trails are desired; trail connects population or recreational centers; proposal is innovative; proposal provides disabled access; trail provides for more than one activity; project will restore trail; project is a partnership; proposal is critical for erosion control, enhancement of natural features; compatibility with landscape; and scenic location.	Maximum grant award of \$25,000 for non-motorized projects. In 2004, approximately \$528,033 was granted to recreational trails projects. (Projects are funded on an 80% federal share and 20% matching share basis. Matching share can be in-kind.)	Larry Miller, Coordinator NJDEP, Division of Parks and Forestry Office of Natural Lands Management PO Box 404 Trenton, NJ 08625-0404 (609) 984-1339 larry.miller@dep.state.nj.us http://www.state.nj.us/dep/parksandforests/natural/njtrails.html	Projects must begin within two years of approval date and grantees have three years after notification of award to complete their projects. Notifications sent out July-August of following year. Applications are due December 15.
Transportation Equity Act (TEA-21) - Transportation Enhancement Fund	New Jersey Department of Transportation	Provides monies for projects that are designed to foster more livable communities, enhance the travel experience, and support new transportation investment partnerships. The Program focuses on transportation projects that will preserve and protect environmental and cultural resources, and help to promote alternative modes of transportation.	Any municipal or county government, nonprofit organization, or State agency.	Transportation related; readiness for construction/implementation; maintenance commitment; supplemental funds; user impact; regional or community benefits; element of a larger plan; timing/urgency; economic/tourism benefit; value as a cultural/historic resource; community support.	Funds from this program do not require a match, however, projects with supplemental funding will score higher in that criteria. Program authorizes over \$200 billion to improve Nation's transportation infrastructure. There is no standard maximum award, however, project must be worth at least \$250,000.	Joe Jagiatkowski Roxbury Corporate Center 200 Stierli Court Mount Arlington, NJ 07856 (973) 770-5070/5068 http://www.fhwa.dot.gov/tea21/index.htm	Application must show that Transportation Enhancement funds in combination with committed or obligated funds from other sources cover 100% of the project cost. All selected projects must receive Federal authorization for construction within two years of the announcement. Bicycle Transportation and Pedestrian Walkways Program, Surface Transportation Program, and Congestion Mitigation and Air Quality Program are all available through this fund. Applications are due April 10.
Environmental Services Program	New Jersey Department of Environmental Protection	The Environmental Services Program (ESP) is a matching grants program that provides financial assistance to local governments for environmental projects. ESP grant monies may be used to fund the following projects: environmental resource inventories; brownfields redevelopment planning; smart growth and sustainable communities planning; beach monitoring and management projects; environmental trail designs; lake rehabilitation studies; stream and water quality testing; wellhead delineation; surveys of threatened and endangered species; environmental education programs; community outreach initiatives; designing or implementing projects that initiate and/or expand sustainable communities. In addition, ESP grants may be used to fund an incomplete phase of an environmental project in progress – from scoping and planning to project development and implementation.	Any "local environmental agency", such as a municipal environmental commission, a joint environmental commission, a county environmental commission, or a soil conservation district. The commission must be official, having been established by a municipal ordinance prepared in accordance with the state law governing the formation of municipal environmental commissions (N.J.S.A. 40:56A et seq.).	Local government and community support; regional value; regulatory assistance; compliance with State Plan; definitive protection strategy; public awareness; urban needs.	A local environmental agency may apply for a matching grant ranging from \$1,000 to \$2,500. The environmental agency must have the financial support of the local governing body to match the amount of its grant request. The Department will reimburse the local agency for fifty percent (50%) of the total project cost or \$2,500 – whichever is less. The source of matching funds may be outside the local government's budget provided that the matching funds are transferred and dedicated specifically for the local agency's project.	Joe Rogers New Jersey Dept of Environmental Protection Office of Local Government Assistance Environmental Services Program P.O. Box 402 Trenton, NJ 08625-0402 Phone: (609) 984-0828 Fax: (609) 633-2102 http://www.state.nj.us/dep/esp/	The grantee will be reimbursed for its share of the grant project costs after the work products and financial documentation have been submitted and approved. The amount of payment will be based on the costs documented by receipts, invoices, payment vouchers and cancelled checks. If the project is completed under the budgeted amount, the costs will be divided between the State and the local agency. If the project runs over budget, the State will only reimburse the grantee up to the grant amount initially agreed upon. Applications are due December 1.
Green Acres Local Government Assistance - Land Acquisition and Park Development	New Jersey Department of Environmental Protection	The Green Acres Program assists municipalities and counties in the acquisition of open space for recreation and conservation purposes, and the development of outdoor recreation facilities. Eligible land acquisition projects include, but are not limited to, the purchase of natural areas, historic sites, conservation areas water bodies, and open space for active or passive recreation purposes. Funding assistance is also available for park development projects that result in increased public use and enjoyment of outdoor recreation areas. Recreational facilities that may be funded include, but are not limited to, facilities that provide boating, fishing, swimming, outdoor games and sports, biking, picnicking, camping, or nature interpretation.	Municipalities, counties and nonprofit organizations.	Addresses specific local open space and recreation facility needs; the amount of public input and support during the planning process; consistency of the proposal with existing state and local planning objectives; project quality; clear precise project narrative.	Program funding comes from the Garden State Preservation Trust, supplemented by varying awards from federal programs such as the Land and Water Conservation Fund.	Cathy Elliot-Shaw (Rec.Dev.) Green Acres Program 501 East State Street, 1st Floor P.O. Box 412 Trenton, NJ 08625-0412 Phone: (609) 984-0500 Fax: (609) 984-0608 www.nj.gov/dep/greenacres	For development projects to be eligible, the local government unit must own the land or have a 25 year irrevocable lease or use agreement (which must be reviewed and approved by Green Acres in advance, if possible). All proposals must reflect established needs as identified in New Jersey's 2003 Statewide Comprehensive Outdoor Recreation Plan. A summary of the Plan is available upon request. Applications are accepted throughout the year in different funding rounds, typically February 15 and August 15..
Transportation and Community and System Preservation Pilot Program	US Department of Transportation - Federal Highway Administration	This program is a comprehensive initiative of research and grants to investigate the relationships between transportation and community and system preservation and private sector-based initiatives. Planning assistance under the TCSP is intended to provide financial resources to States and communities to explore integrating their transportation programs with community preservation and environmental activities. Grants will be awarded for planning activities that will achieve this integration, meet the purposes of the program described above and are innovative. This may include, for example, public and private involvement activities; improving conditions for bicycling and walking; better and safer operation of existing roads, signals and transit systems; development of new types of transportation financing and land-use alternatives; development of new programs and tools to measure success; and the creation of new planning tools and policies necessary to implement TCSP-related initiatives.	States, local governments, and metropolitan planning organizations.	Improve the efficiency of the transportation system; reduce the impacts of transportation on the environment; reduce the need for costly future public infrastructure; ensure efficient access to jobs; services and centers of trade; encourage private sector development patterns.	A total of \$120 million was authorized for this program for FY's 1999-2003. The TCSP Federal share is 100%. Actual TCSP Program funding levels can vary based on Congress' annual appropriations. Although activities are eligible for full federal funding, applicants are encouraged to demonstrate the commitment of non-Federal resources. <i>Future funding is still under discussion.</i>	Kenneth Petty TCSP Program Manager Office of Planning Phone: (202) 366-6654 Fax: (202) 493-2198 kenneth.petty@fhwa.dot.gov http://www.fhwa.dot.gov/tcsp/pi_tcsp.htm	Every proposal receiving planning and implementation grant funds must annually report on the status of the project and the degree to which the project is achieving stated goals and objectives.

Trail Design and Construction Funding - Funding Sources

Grant Title	Grant Source	Grant Description	Eligible Applicants	Evaluation Factors	Amount Funded	Contact	Additional Comments
Local Aid and Economic Development Program (Municipal Aid, Local Bikeway, Safe Streets to Schools, Transit Village and Centers of Place Programs)	New Jersey Department of Transportation	The New Jersey Department of Transportation is committed to advancing traditional and non-traditional projects that enhance safety, renew the aging infrastructure and support new transportation opportunities. The Transportation Trust Fund has provided the opportunity for State assistance to local governments for the funding of road, bridge, and other transportation projects. These projects may include: road repairs; construction of bikeways or walkways; signage; streetscape improvements; pedestrian safety and improvements.	States, counties, and municipalities	Must maintain and improve New Jersey's transportation infrastructure.	In the municipal aid program, funds are appropriated by the Legislature for municipalities in each county based on a formula contained in legislation. The State pays 75% of the funds at the time of bid approval and the remainder on a reimbursement basis after acceptance by the municipality and the State of the work completed. Based on the current proposed fiscal year 2006 Capital Program, \$78.5 million will be available for municipalities statewide. Program levels are subject to change before approval by Legislature.	Joe Jagniatkowski Roxbury Corporate Center 200 Sierli Court Mount Arlington, NJ 07856 (973) 770-5070/5068 http://www.state.nj.us/transportation/business/localaid/	Each program application will be evaluated independently, allowing municipalities to receive funding in more than one category. A separate application must be completed for each program you are applying for. Application due by April 15.
Smart Growth Planning Assistance Grants Program	Association of New Jersey Environmental Commissions (ANJEC)	The Smart Growth Program provides grants to help municipalities with the process of comprehensive planning to create livable and environmentally sustainable communities. Examples of suitable projects include: natural resource inventories (NRI); open space plans and preservation programs; master plan conservation elements; brownfields or revitalization plans that include new open space; bicycle/pedestrian network plans; critical areas protection ordinances; regional plans to protect common resources (greenways, etc.); and other local land use planning.	Municipalities that have a functioning environmental commission, established by an ordinance.	Grant projects must include a process for involvement of the environmental commission in both the planning and execution phases and promote balanced land use. Each proposal must also include specific activities for public participation and public outreach such as press releases, articles, surveys, public meetings and exhibits. Products of project must work towards protecting natural resources and towards the goal of the State Plan.	Over the past three years, the program contributed more than \$500,000 toward 46 local planning projects involving 45 municipalities. ANJEC will award 1-to-1 matching reimbursement grants of up to \$20,000. A municipality may provide up to 50% of its match through in-kind services, such as professional staff, elected officials, administrative staff, etc.	Association of NJ Environmental Commissions Kerry Miller Phone: (973) 539-7547 Fax: (973) 539-7713 kmiller@anjec.org www.anjec.org	Grantee municipalities have one year to complete their projects, and must submit quarterly progress reports to ANJEC. To obtain reimbursement, a town will need to complete all project tasks, provide a copy of the finished grant product to ANJEC, and submit a final report that summarizes the project and documents expenditure of all funds. Typically, application deadline is April 1.
Kodak American Greenways Awards Program	Eastman Kodak Company, The Conservation Fund, and the National Geographic Society	Provides small grants to stimulate the planning and design of greenways in communities throughout America. Grants may be used for activities such as: mapping, ecological assessments, surveying, conferences, and design activities; developing brochures, interpretative displays, audio-visual productions or public opinion surveys; hiring consultants, incorporating land trusts, building a foot bridge, planning a bike path, or other creative projects. In general, grants can be used for all appropriate expenses needed to complete a greenway project including planning, technical assistance, legal and other costs. Grants may not be used for academic research, general institutional support, lobbying, or political activities.	Awards will primarily go to local, regional, or statewide nonprofit organizations. Public agencies may also apply, however, community organizations will receive preference.	Projects are selected according to the following criteria: importance of the project to local greenway development efforts; demonstrated community support for the project; extent to which the grant will result in matching funds or other support from public or private sources; likelihood of tangible results; capacity of the organization to complete the project.	The maximum grant is \$2,500. However, most grants range from \$500 to \$1,500.	American Greenways Program Coordinator 1800 North Kent Street, Suite 1120 Arlington, Virginia 22209-2156 Phone: (703) 525-6300 Fax: (703) 525-4610 greenways@conservationfund.org http://www.conservationfund.org/?article=2372	Applications will only be accepted online. Materials complementing the online application must be sent through the mail in one packet. Online applications and related hard copy materials must be received by June 1. Applications or supplementary materials received after June 1, will not be considered. A postmark from June 1 will not be sufficient.
Land and Water Conservation Fund	US Department of the Interior - National Park Service	This program provides matching grants to States and local governments for the acquisition and development of public outdoor recreation areas and facilities. The program is intended to create and maintain a nationwide legacy of high quality recreation areas and facilities and to stimulate non-federal investments in the protection and maintenance of recreation resources across the United States. Over 37,000 grants to states and localities have been approved under the LWCF grants program for acquisition, development and planning of outdoor recreation opportunities in the United States.	State and local governments.	Grant projects must assist in accomplishing the overall purpose of the LCWF program; relate to statewide comprehensive outdoor recreation plan; have the ability to match grant award; provide recreation uses more appropriately administered by a public agency rather than a private enterprise; provide for adequate operation and management of the proposed project acre. (All grant applications submitted must be in accord with the more specific priorities listed in its state's action plan.)	All states receive individual allocations of grant funds based on a national formula. Applicants must be able to match funding amount. Since the inception of the program in 1965, annual appropriations to the Fund have ranged from a high of \$369 million in 1979 to four years of zero funding between 1996 and 1999. For FY 2005, New Jersey has an appropriation of \$2,439,085.	N.J. Green Acres Program Dept. of Environmental Protection Trenton, NJ 08625-0412 Phone: (609) 984-0535 http://www.nps.gov/ncrc/programs/lwcf/	Since 1972, the County of Morris has received more than \$3,042,717 in grant monies from this program. The benefits of the Land and Water Conservation Fund extend beyond park and recreation facility construction and open space acquisition. The Fund also plays a major stewardship role, ensuring the integrity and recreational quality of Fund-assisted parks and conservation lands, now and for future generations.

Trail Design and Construction - Funding Calendar

	January	February	March	April	May	June	July	August	September	October	November	December
NJDEP - National Recreational Trails Program						Committee to research sites for new trail construction or maintenance/restoration work.	Meet with municipal engineer to discuss and develop possible project areas and schematic drawing.	Request grant application packet.	Receive grant application packet. Call NJDEP if packet not received. Begin gathering necessary maps, permits, and other necessary documentation for project application.	Present grant application to township council for review and comment. Prepare draft grant application.	Present draft grant application to township council for review and comments.	Application due December 15. Exact due date is subject to change from year to year.
NJDOT - Transportation Equity Act (TEA-21) - Transportation Enhancement Fund	Receive grant application packet. Call NJDOT if packet not received.	Present grant application to township council for review and comment. Prepare draft grant application.	Present draft grant application to township council for review and comments. Obtain resolution of endorsement from appropriate governing body to include in application.	Application due before 4:00 PM on April 10. Exact due date is subject to change from year to year. (Submit ten copies).		Committee to research possible projects and project areas.	Meet with municipal engineer to discuss and develop possible project areas and schematic drawing. NJDOT requires the use of licensed professionals in the design and construction of the projects.		Meet with township council to discuss proposed project ideas and areas.	Begin researching and obtaining all necessary environmental and construction permits required for project for inclusion in application. <i>After application submission</i> -Applicants will be notified if their proposal has been selected and invited to a meeting with DOT staff to learn more about the Implementation and Authorization Process.		Request grant application packet. Prepare project schedule with dates to start and complete each phase of work for attachment to application.
NJDEP - Environmental Services Program	Applicant will receive notification that complete application has been received.		Decisions announced March 15.			Committee to research sites for new trail construction or for projects that initiate and/or expand the community in a sustainable way.	Meet with municipal engineer to discuss and develop possible project areas and schematic drawing.	Download grant application packet from internet.	Request certified copy (sealed by the municipal clerk) of the ordinance creating the environmental commission and a letter of commitment from the governing body stating that if the grant is awarded, matching funds would be made available (both to be attached to the application).	Present grant application to township council for review and comment. Prepare draft grant application and project proposal.	Present draft grant application and project proposal to township council for review and comments.	Application due December 1. Exact due date is subject to change from year to year.
Green Acres Local Government Assistance - Land Acquisition and Park Development		Applications for spring funding round due on February 15.					Committee to research possible project ideas and sites.	Download grant application packet from internet. Meet with municipal engineer to discuss and develop possible project areas and schematic drawing.	Begin gathering necessary maps, permits, and other necessary documentation for project application.		Present grant application to township council for review and comment.	Present draft grant application to township council for review and comments.
Transportation and Community and System Preservation Pilot Program (Due to uncertainty of funding, no calendar or application deadline has been provided.)	Contact FHWA to find out if the program will be funded for the current year.	Committee to research sites for development of new trails and bikeways or sites that need maintenance and restoration of existing trails and bikeways.	Meet with municipal engineer to discuss and develop possible project areas and schematic drawing.									

Trail Design and Construction - Funding Calendar

	January	February	March	April	May	June	July	August	September	October	November	December
Local Aid and Economic Development Program (Municipal Aid, Local Bikeway, Safe Streets to Schools, Transit Village and Centers of Place Programs)	Download application packet from internet website (SA-96 form, location map, and accompanying forms for specific program you are applying for must be completed).	Present grant application to township council for review and comment. Prepare draft grant application.	Present draft grant application to township council for review and comments.	Application due by April 15. Exact due date is subject to change from year to year.			Committee to research possible projects and project areas.		Meet with municipal engineer to discuss and develop possible project areas and schematic drawing.			Finalize project(s) for grant application.
Smart Growth Planning Grants Program - ANJEC	Compile one-year work plan of schedule of tasks and individuals who will complete them and obtain letter of support from environmental commission/open space committee.(will be included in application). Download grant application packet from internet site.	Present grant application to township council for review and comment. Prepare draft grant application.	Present draft grant application to township council for enabling resolution.	Application due April 1. (Submit two copies).	Successful applicants will be notified of their award.				Committee to research possible projects (plan, report, study, ordinance, etc.)		Meet with town council to discuss possible grant projects.	Identify a project team, consultant, and other key individuals (will be included in application).
Kodak American Greenways Awards Program	Present project ideas to township council for discussion.		Application period begins. Download application from internet.	Present draft grant application to township council for review and comments.	Submit application online and mail accompanying materials (ensure that all application materials will be received by June 1).	Application period ends. Applications are due on June 1.		Grant notifications will be made by mail in early August.				Committee to research possible projects. Meet with engineer to formulate plans.
Land and Water Conservation Fund (Due to uncertainty of funding, no calendar or application deadline has been provided.)	Contact LWCF to find out if the program will be funded for the current year.	Committee to research sites for development of new trails and bikeways or sites that need maintenance and restoration of existing trails and bikeways.	Meet with municipal engineer to discuss and develop possible project areas and schematic drawing.									

Trails Partners

A successful trails system results from creating a network of engaged residents, park managers, recreation groups, supportive neighboring towns and local nonprofit organizations. Trails are regional in nature and surrounding communities hold similar interests in accessing parks and natural areas. The first step in this process has taken place with the preservation of over 1,000 acres of land in Roxbury Township. With the close connection between neighborhoods and parks, the establishment of a trails system will give residents access to the beautiful outdoor resources that is within walking distance of their backyards.

Below is a list of potential partners Roxbury Township Trails Committee can call upon to assist in their efforts to establish and construct the Roxbury Trails.

NJDEP, Green Acres Program.

Green Acres administers the Planning Incentive program, which provides grants to municipalities for open space acquisition and preservation and loans for recreation facility development. Roxbury Township is enrolled in the Planning Incentive program.

New Jersey Green Acres Program / P.O. Box 412 / Trenton, New Jersey 08625-0412 / www.state.nj.us/dep/greenacres / Phone: 609.984.0608 /
Contact: Lisa Stern, Team Leader

NJDEP, Division of Fish and Wildlife.

The NJ Division of Fish and Wildlife is dedicated to the protection, management and wise use of New Jersey's fish and wildlife resources. This Division of NJDEP manages the Berkshire Valley Wildlife Management Area located within the Township and Black River WMA in neighboring Chester and Randolph Townships.

NJ Division of Fish and Wildlife / PO Box 400 / Trenton, NJ 08625 / www.state.nj.us/dep/fgw

NJDEP, Division of Parks and Forestry.

The Parks and Forestry Division oversee 39 parks, 11 forests, and 3 recreation areas throughout the state. They run and operate Hopatcong State Park in the Township.

P.O. Box 412 / Trenton, NJ 08625-0412 / <http://www.nj.gov/dep/parksandforests/index.html/> / Phone: 1.800.843.6420 or 609.984.0370
Contact: Helen

NJ Department of Transportation.

The New Jersey Department of Transportation has established funding, through the Transportation Equity Act for the 21st Century, to maintain and enhance New Jersey's transportation system and improve the quality of life. The program focuses on projects that will preserve and protect our environmental and cultural resources and help to

promote alternative modes of transportation. Projects include land acquisition, bikeway and trail construction, historic preservation, and environmental mitigation to address water pollution and scenic or historic highway programs.

Division of Local Aid and Development / NJ Department of Transportation / 1035 Parkway Avenue / P.O. Box 600 / Trenton, NJ 08625
Contact: Joe Jagniatkowski

Morris County Park Commission.

Morris County Park Commission owns and manages Patriot's Path. They also developed the vision and design for the West Morris Greenway, located within the Township. The Park Commission has the resources and expertise for trail design and development.

53 East Hanover Avenue/ P.O. Box 1295 / Morristown, NJ 07962-1295 / Phone: 973.326.7600 / Email: info@parks.morris.nj.us / http://parks.morris.nj.us/temp_index.htm
Contact: David Helmer, Executive Director

Morris County Department of Planning, Development, Technology.

This Department is composed of four programs. These are: Community Development, Farmland Preservation, Planning, and Transportation Management. It also administers the annual Morris County Open Space and Farmland Preservation Trust Fund Grants. This department is developing a bike and pedestrian system throughout the County. The Planning Department has provided grants to the Township for the acquisition of open space.

30 Schuyler Place / Morristown, NJ / Phone: 973.829.8120 / www.morrispreservation.org
Contact: Walter P. Krich Jr., Director

Morris County Municipal Utilities Authority.

Morris County Municipal Utilities Authority manages the Alamatong Wellfield, a source of public drinking water for 35,000 residents in ten towns in western Morris County.

300 Mendham Road, P.O. Box 370, Mendham NJ 07945 / Phone: 973-285-8383/
<http://www.mcmua.com/>
Contact: Glenn Schweizer, Executive Director

New York –New Jersey Trail Conference.

The NY-NJ Trail Conference is an organization dedicated to creating and maintaining safe hiking trails in the New York and New Jersey area. Currently, there are approximately 85 environmental and hiking organizations partnered with the NY-NJ Trail Conference along with 10,000 individual hikers. From 1920 until the present, the NY-NJ Trail Conference maintains over 1,500 miles of safe hiking trails throughout the two states. This includes the Highlands Trail.

NY-NJ Trail Conference / 156 Ramapo Valley Road (Route 202) / Mahwah, NJ 07438 / 201.512.9348 / www.nynjtc.org / Email: info@nynjtc.org

Morris Land Conservancy.

Founded in 1981, Morris Land Conservancy is a non-profit, member-supported organization dedicated to preserving and permanently protecting open space lands in northern New Jersey. The Conservancy assisted Roxbury Township in the production of its Trails Plan, and serves as its open space advisor for its land preservation program.

Morris Land Conservancy / 19 Boonton Avenue / Boonton, NJ 07005 / Phone: 973.541.1010 / Fax: 973.541.1131 / <http://www.morrislandconservancy.org> / Email: info@morrislandconservancy.org /

Morris Trails Conservancy.

The Morris Trails Conservancy is a nonprofit educational organization, which began in 1979 as the Friends of Patriots Path, whose mission was to protect the Whippany River between Mendham and East Hanover. In 1998, the organization changed its name and broadened its mission to promoting trails throughout Morris County. Comprised of a diverse range of trail users, the Conservancy advocates for the development, maintenance, and intelligent use of trails for active and passive recreation and offers activities to introduce trail systems to members and others.

Morris Trails Conservancy / P.O. Box 1295 / Morristown, NJ 07960 / mtc@parks.morris.nj.us

International Mountain Bike Association

IMBA advocates and supports mountain biking by offering classes literatures and training workshops on mountain bike trail design, construction and management.

IMBA / 207 Canyon - Suite 301 / Boulder, CO 80302 / Telephone: 888-442-4642 www.imba.com / New Jersey representative: Jay Jones / E-mail: JARTread@aol.com Telephone: 856-546-7175

Morris Area Freewheelers

A member supported club that promotes bicycling in northern New Jersey. The Freewheelers host rides a varying length every Saturday and Sunday from April through November.

Membership Coordinators, John and Chris Barnett. E-mail addresses are jbarnet7@optonline.net for John and cbarnet7@optonline.net for Chris. Telephone: John and Chris 973-316-0360

Canal Society of New Jersey

The Canal Society of New Jersey is a member supported nonprofit organization that was established in 1969. The Society fosters the preservation of the heritage of New Jersey's tow historic towpath canals – the Morris Canal and the Delaware & Raritan Canal. The

Canal Society of New Jersey is working with Roxbury Township to preserve the historic Riggs property in the Township.

Canal Society of New Jersey / P.O. Box 737 / Morristown, NJ 07963-0737 / <http://www.canalsocietynj.org/>

Rails-to-Trails Conservancy

This national conservation organization focuses its efforts on converting old railroad beds into trails. Rails to Trails feel that using old railroad bed for trails will be beneficial to smart growth and conservation efforts.

Rails to Trails Conservancy / 1100 17th Street, 10th Floor, NW / Washington, D.C. 20036 / Phone: 202-331-9696 / www.railstrails.org

Mine Hill Township

10 Baker Street / Mine Hill, NJ / 07803 / Phone: 973-366-9031

Randolph Township

502 Millbrook Avenue / Randolph, NJ / 07869 / Phone: 973-989-7100

Mount Arlington Borough

419 Howard Boulevard / Mt. Arlington, NJ / 07856 / Phone: 973-398-6832

- **Recreation Commission**
John Song, Chair

Wharton Borough

10 Robert Street / Wharton, NJ / 07885, NJ / 07885 / Phone: 973-361-8444

Jefferson Township

1033 Weldon Road / Lake Hopatcong, NJ / 07849 / Phone: 973-208-6100

Roxbury Township Departments and Committees:

- **Roxbury Parks and Recreation Department**
72 Eyland Avenue / Succasunna, NJ / 07876 / Phone: 973-448-2015 /
Director: Dave Steirli
- **Roxbury Township Historic Advisory Committee**
1715 Route 46 / Ledgewood, NJ / 07852 / Richard Cramond, Chair
- **Roxbury Township Historical Society**
Margaret Cushing, President
- **Roxbury Township Environmental Commission**
1715 Route 46 / Ledgewood, NJ / 07852 / Tricia Fragale, Chair
- **Roxbury Township Open Space Committee**
1715 Route 46 / Ledgewood, NJ / 07852 / Michael Daley, Chair
- **Roxbury Township Kiwanis**
- **Roxbury Township Rotary**
- **Roxbury High School**

- Environmental Club
- Key Club
- Senior Class

Boy and Girl Scouts

Patriots' Path Council #358, BSA
1170 Route 22 / Mountainside, NJ / 07092
908-654-9191

References

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<http://www.americantrails.org/resources/accessible/ADASummFeb00.html> Accessed: May 24, 2005.

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New Jersey Department of Environmental Protection.

http://www.state.nj.us/dep/rules/adoptions/njac7_38_20050509.pdf Accessed: May 11, 2005.

New Jersey Department of Labor and Workforce Development. “Census 2000 Data for New Jersey” & “Census 1990 Data for New Jersey.”

<http://www.wnjin.net/OneStopCareerCenter/LaborMarketInformation/lmi25/>. Accessed: May 18, 2005.

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Robert Catlin and Associates, A Natural Resource Inventory for Roxbury Township. (Denville: Catlin, 1975).

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United States Department of Transportation. “Designing Sidewalks and Trails for Access Part II of II: Best Practices Design Guide.”

September 2001.

Proposed amendments for the Trails Plan of the Township of Roxbury

The following proposed amendments were recorded following approval of the Trails Plan by the Roxbury Township Council. These amendments can be applied to the Plan once the Township Planning Board approves the Plan and amends it to the Township Master Plan.

Executive Summary

5th paragraph currently reads:

It will also enable Township planners and engineers to study potential development applications and recreational designs for inclusion of the trail system into their proposals for eventual development and establishment.

Change to:

It will also enable Township planners to require that the Trails Plan is considered when studying potential development applications and recreational designs for inclusion of the trails system into their proposals for eventual development and establishment.

Regional Trails and Local Trail Networks

Indicate which trail or trail systems referenced in this section are built, incomplete or not built

Trail Development – Areas I, II and III

Page 19

Insert the following bullet under Area I:

- County of Morris owns a railbed needed behind Horseshoe Lake Athletic Complex south of Route 10, Township should seek ownership of that portion of the rail right-of-way.

Action Program and Recommendations

Page 37

Insert the following bullets for each timeframe:

First Year

- Forward copy of plan to Open Space Committee Chair with an extra copy of the chart on page 40.

Within Two Years

- Governing body should establish a system to accept donations of land for the trails system.

Within Five Years

- Chester Branch railroad right-of-way not abandoned, seek abandonment and ownership from the county.