

Upper Neshaminy Creek Trail Feasibility Study

June 2014

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The preparation of this study was financed in part through funds made available by the Delaware Valley Regional Planning Commission from a grant by the William Penn Foundation. The contents do not necessarily reflect the review or policies of the Delaware Valley Regional Planning Commission or the William Penn Foundation and neither assumes liability for its contents or use.

Project No. 11-47-480.

ACKNOWLEDGEMENTS

The Bucks County Planning Commission gratefully acknowledges and extends thanks to members of the Steering Committee and all who have contributed their insight and knowledge to this study including the support staff of the municipalities, and to the many trails planning professionals that provided valuable time and resources to the development of this plan. Their contributions are greatly appreciated.

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EXECUTIVE SUMMARY

The County of Bucks is in the early phases of planning for the development of a recreational trail system in the Neshaminy Creek corridor. The portion of the corridor evaluated by this study, also known as the Upper Neshaminy Creek, generally runs from northwest to southeast, beginning at the headwaters of the Neshaminy Creek where the West Branch and North Branch meet at Twin Streams Park on the border of Chalfont Borough and New Britain Township and ending at the confluence of the Neshaminy and Little Neshaminy creeks, also known as the Forks of the Neshaminy, in Rushland. The corridor includes floodplain and riparian areas and is characterized by wetlands, farm fields, forested areas, and generally steep, vegetated slopes. The majority of the lands within the corridor are owned by the public.

Map 1 – Upper Neshaminy Creek Trail Project Area



The idea for a linear park along the Neshaminy Creek goes back to 1955 when the Bucks County Parks Board recommended the creation of a linear park system along various stream valleys in the County including the Neshaminy Creek. Both the 1974 *Bucks County Park Plan* and the 1986 *Bucks County Park and Recreation Plan* encouraged the establishment of a link park extending the full length of the Neshaminy Creek. Additionally, the Neshaminy Creek greenway was identified as a proposed greenway in the Delaware Valley Regional Planning Commission’s Long Range Plan, *Destination 2030* and in the *Bucks County Open Space and Greenways Plan* (2011). The greenway has also been identified as a proposed bicycle path in the *Bucks County Bicycle Plan* (2012) and is part of The Circuit, a proposed 750 mile system of trails throughout the greater Philadelphia region.

The *Upper Neshaminy Creek Trail Feasibility Study* was initiated to further evaluate the feasibility of the trail recommended by these previous planning studies. Funding for this study was provided by a grant from the William Penn Foundation and administered by the Delaware Valley Regional Planning Commission. As part of the planning process, the Upper Neshaminy Creek Trail Feasibility Steering Committee was established to help direct the production of the project and will be an important resource for moving the trail forward. The Steering Committee consisted of stakeholders and representatives representing the municipalities along the proposed trail route, as well as representatives from various recreational user groups. In addition to the insight provided by the steering committee, input was derived through a public involvement process that included meetings with stakeholders, two public workshops, presentations to various citizen committees, and posting of the draft study for public comment on the Bucks County website. Additionally, several newspaper articles provided information on the project.

The *Upper Neshaminy Creek Trail Feasibility Study* evaluates existing conditions, connections to nearby destinations, available public lands, existing trail sections, conservation easements, and other opportunities and constraints. The study considers a series of alternatives and possible trail alignments, and presents an opinion of probable construction costs for different alignment scenarios.

Construction of a regional trail along the Upper Neshaminy Creek corridor is feasible, although there are several challenges for implementing the project that will need to be addressed: The opportunities and constraints identified and discussed in this study are as follows:

- Opportunities:
 - Many residents along the proposed project corridor support the development of a multi-use trail to serve as a community transportation and recreation resource.
 - The trail will increase access for residents of Bucks County to the natural areas along the creek.
 - Development of the trail may provide increased access for emergency vehicles.
 - The location of the trail is within close proximity to several schools and would provide outdoor educational opportunities.
 - The trail will provide connection to public transportation.
 - The trail will connect to existing trail systems including the Doylestown Community Bike and Hike trail system and the Route 202 Parkway trail.
 - There are extensive opportunities, via connector trails, to provide connectivity to adjacent residential developments.
- Constraints
 - There are protected natural resources and wildlife habitat within the corridor that will need to be mitigated as part of the development process.
 - In several areas of the corridor, construction of boardwalks will be required to minimize impacts to the wetland. These costs will need to be considered.
 - Similarly, the proposed trail alignment will require several large-span bridges which add to the costs of the proposed trail.

- Due to very steep slopes, constraints associated with already existing preserved land, and the desire to maintain tree cover to the extent possible, the last segment of the trail extending from Dark Hollow Road to Sackettsford Road will be a combination of on-road and off-road sections. Specifically, pedestrians such as hikers, walkers and joggers, will need to be on-road along Dark Hollow Road for approximately 0.7 miles. These same users will then be on-road again along Wilkinson Road from Walton Road to Sackettsford Road, a distance of 0.7 miles. Similarly, bicyclists along this segment will be on-road a total of 1.5 miles.
- Although the majority of properties along the trail corridor are owned either by the County or local municipalities, there are several properties where the acquisition of trail easements will be required.

The Upper Neshaminy Creek Trail is envisioned as a non-motorized, multi-use trail serving as the spine of the county’s developing trails network. The trail will be approximately 15.0 miles in length. Anticipated trail use activities include walking, hiking, running, birding, and bicycling. An additional trail area adjacent to the primary trail will accommodate equestrian usage. The trail can also serve as a water trail, with improved canoe, kayak, tubing and fishing access along the creek.

The Upper Neshaminy Creek Trail will generally have a smooth surface designed to accommodate pedestrians, bicyclists, wheelchair users, and strollers. Where possible, the trail will be accessible for maintenance, police, and fire and emergency vehicles. The paved surface of the multi-use trail will generally be a minimum of 10 feet wide and constructed to meet ADA guidelines for accessibility. Due to natural resource or other limitations, certain sections of the trail will be on-road.

The study evaluates and assesses the trail by seven segments, with the range of estimated total costs for each segment being as follows:

Table 1 – Upper Neshaminy Creek Primary Trail Segments

Segment	Segment Boundaries	Miles	Total Estimated Costs
1	Twin Streams Park to Route 202 Parkway Trail	3.0	\$ 2,326,410
2	Route 202 Parkway Trail to Central Park (Existing Trails)	3.4	\$ 900
3	Central Park to Easton Road / Barn Plaza Theater	0.8	\$ 1,683,990
4	Easton Road / Barn Plaza Theater to Valley Road	1.7	\$ 3,801,985
5	Valley Road to Mill Road	1.5	\$ 2,220,196
6	Mill Road to Dark Hollow Road	1.6	\$ 1,949,715
7	Dark Hollow Road to Sackettsford Road	3.0	\$ 1,352,563
Total		15.0	\$13,335,759

Note: Costs cited are exclusive of alternative routes and connector trails and reflect only those costs associated with the primary trail.

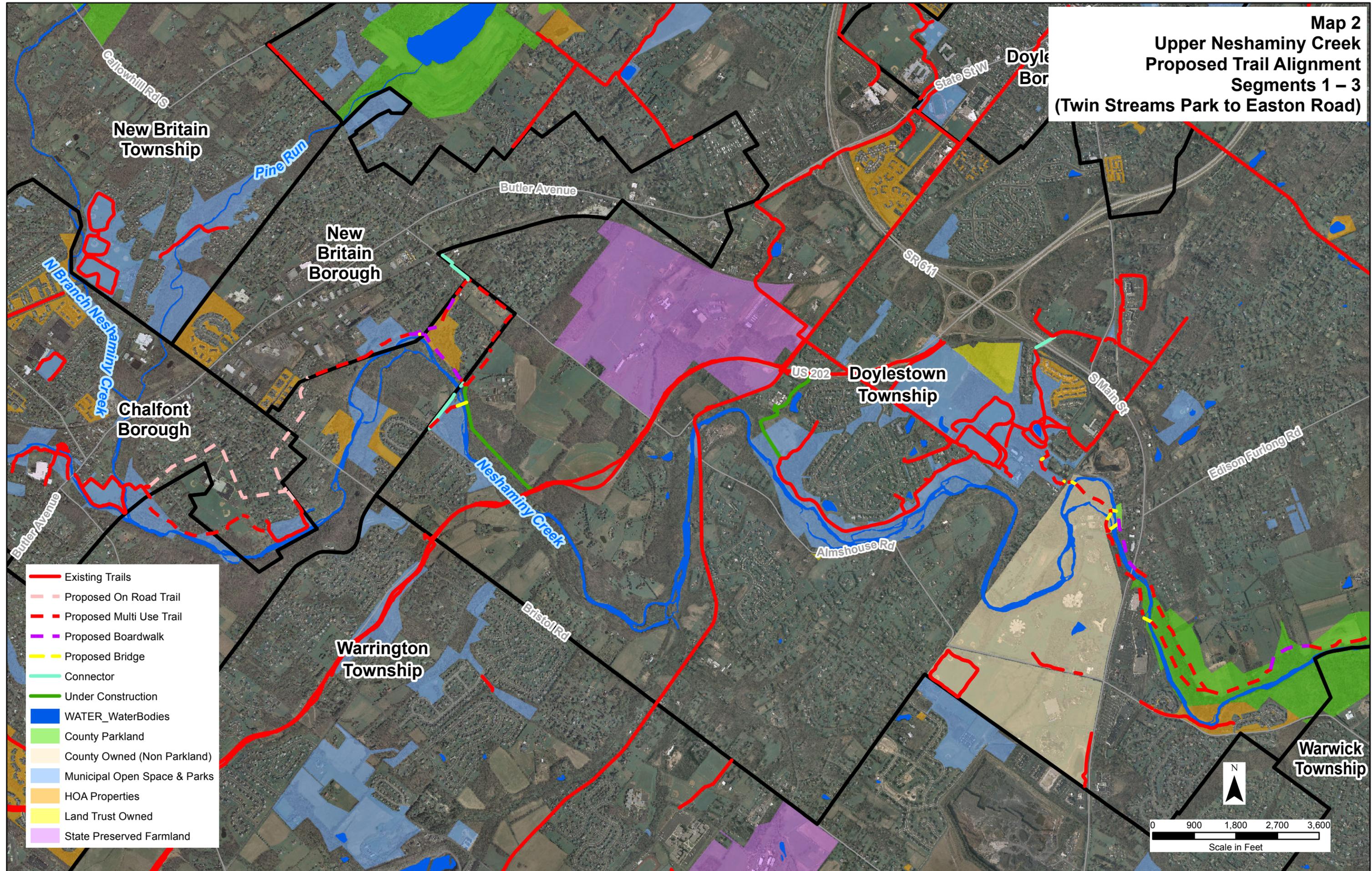
The study establishes specific implementation strategies relative to the recommended phasing of construction of the various segments; outlines alternative organization structures to oversee the development, operation and maintenance of the trail; identifies specific maintenance tasks associated with the trail; discusses the need to ensure the safety of the trail from both the user and trail operator perspectives; and outlines potential funding sources for financing the construction and ongoing maintenance of the trail; and provides recommendations for future actions including:

- **Establishment of Non-Profit Partnership:** Because the proposed trail alignment spans two boroughs and five townships, creating the Upper Neshaminy Creek trail will require a sustained and coordinated effort. Establishment of a “Friends of the Neshaminy Creek Trail” non-profit organization consisting of key stakeholders, municipal representatives, and other interested parties can contribute to advancing the project and assist in accomplishing many of the recommendations and next steps outlined in this study.

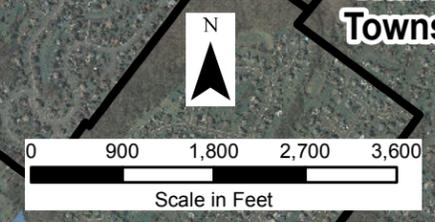
- **Fundraising and grant writing:** To advance the project to the next stages, funding will be required. There are a variety of funding sources available for projects of this nature, and all available opportunities should be pursued. Again, a non-profit partnership can assist in both the grant writing process, and other fundraising activities.
- **Establishment of a maintenance endowment:** Successful trails require ongoing maintenance. Establishing a fund at the beginning of a trail project will help sustain the effort in the future. This is another area in which the skills and talents of a non-profit trail partnership group can be utilized.
- **Securing the Right-of-way:** In addition to establishing a partnership for overseeing the development of the trail, and securing funding for the construction and ongoing maintenance of the trail, a process of sharing information with municipal officials relative to those parcels for which easements are needed, should be established so that as development plans are presented, any required easements can be secured as part of the development process.

The maps on the following pages highlight the proposed route of the Upper Neshaminy Creek Trail and its connections to the growing trail network.

Map 2
Upper Neshaminy Creek
Proposed Trail Alignment
Segments 1 – 3
(Twin Streams Park to Easton Road)



- Existing Trails
- Proposed On Road Trail
- Proposed Multi Use Trail
- Proposed Boardwalk
- Proposed Bridge
- Connector
- Under Construction
- WATER_WaterBodies
- County Parkland
- County Owned (Non Parkland)
- Municipal Open Space & Parks
- HOA Properties
- Land Trust Owned
- State Preserved Farmland



Map 3
Upper Neshaminy Creek
Proposed Trail Alignment
Segments 4 – 7
(Easton Road to Sackettsford Road)

Doylestown Township

Buckingham Township

Wrightstown Township

Warwick Township

Northampton Township

Neshaminy Creek

Fish Creek

Little Neshaminy Creek

S Main St

Edison Furlong Rd

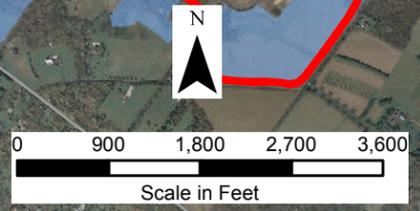
Swamp Rd

Almshouse Rd

SR-263

SR611

- Existing Trails
- Proposed On Road Trail
- Proposed Multi Use Trail
- Proposed Boardwalk
- Proposed Bridge
- Connector
- WATER_WaterBodies
- County Parkland
- County Owned (Non Parkland)
- Municipal Open Space & Parks
- HOA Properties
- Land Trust Owned
- State Preserved Farmland
- Other Preserved Farmland



INTRODUCTION

PROJECT SCOPE

The Upper Neshaminy Creek Trail project is a project designed to create a multi-use trail facility along the Neshaminy Creek, from the headwaters of the Neshaminy Creek where the West Branch and North Branch meet at Twin Streams Park on the border of Chalfont Borough and New Britain Township, and ending at the confluence of the Neshaminy and Little Neshaminy Creeks, also known as the Forks of the Neshaminy, in Rushland. The project area spans across two boroughs and five townships. The length of the primary proposed trail is approximately 15.0 miles. An additional 3.7 miles of connector trails would provide connections to neighborhoods and public transportation facilities. The trail will encourage non-motorized means of travel and provide opportunities for both education and recreation. For these reasons, the Upper Neshaminy Creek Trail is a high priority for the County, meeting goals and needs stated in previous planning documents.

PREVIOUS PLANNING

The Neshaminy Creek has been the subject of numerous planning studies. Planning documents incorporated into this study are summarized below:

- *Bucks County Bicycle Master Plan (2012)* - Identified the Neshaminy Creek Greenway as a major spine of the countywide bicycle network.
- *Connect the Circuit (2012)* - Identified the Neshaminy Creek as a key linkage in the regional trails network.
- *Bucks County Open Space and Greenways Plan (2011)* and *Bucks County Comprehensive Plan (2011)* identified the Neshaminy Creek as a multi-use greenway.
- *Delaware Valley Regional Planning Commission - Destination 2030 Plan (2006)* - Identified 100 greenspace corridors across the Delaware Valley region, fourteen of which, including the Neshaminy Creek Greenway, are located in Bucks County.
- *GreenSpace Alliance - Regional Open Space Priorities Report (2004)* - Identified the Forks of the Neshaminy as a Focal Area for Recreation, the Neshaminy Creek Trail as a Recreational Priority and the Neshaminy Headwaters as an Open Space Priority Land.
- *Upper and Middle Neshaminy Creek Watershed River Conservation Plan (2003)* - Recommended improving existing recreation areas and creating stream access areas.
- *Neshaminy Creek Watershed River Conservation Plan (1997)* - Recommended improving public access to the Neshaminy Creek.
- *Bucks County Park & Recreation Plan (1986)* - Reaffirms commitment to linear park system.
- *Bucks County Park Plan (1974)* - Reaffirms commitment to linear park system.
- Bucks County Parks Board (1955) - Recommended creation of a linear park system along various stream valleys in the County including the Neshaminy Creek.

These previous planning efforts serve as the basis of support for the establishment of a trail system along the Upper Neshaminy Creek. This study is designed to further the recommendations contained in these previous planning efforts.

The *Upper Neshaminy Creek Trail Feasibility Study* investigates the opportunities and constraints affecting the proposed trail alignment and provides recommendations for proceeding with the subsequent phases of implementation. Additionally, the study recommends appropriate management and maintenance entities, as well as funding sources for construction and maintenance. The construction phase is sequenced and cost estimates have been developed for each segment of the trail.

Map 4 – Upper Neshaminy Creek Trail Project Area



PROJECT PARTNERS

The Upper Neshaminy Creek Trail project has benefitted from the talent and skills of the project’s many partners. These partners have generously provided their time and technical expertise to the project through participation on the Trail Feasibility Study Steering Committee. Steering Committee members included:

- Andrew Hamilton
- John Ives
- Marilyn Jacobson
- Tom Kelso
- Ann McCauley
- Ellen Phillips
- Dan Sharapan
- Bucks County Bicycle Advisory Task Force
- Buckingham Township Park & Recreation Commission
- Chalfont Borough Council Member
- Doylestown Community Bike and Hike Committee
- Bucks County Audubon Society
- Pennsylvania Equine Council Member
- Warwick Township Parks & Recreation

In addition to the members of the Trail Steering Committee other partners providing time and expertise include Robert Thomas - Campbell Thomas & Co, the Doylestown Bike and Hike Committee, Stephanie Mason - Doylestown Township Manager, Jeffrey Marshall - President, Heritage Conservancy, David Clifford - Montgomery County Planning Commission, and Jeff Knowles - Regional Adviser, Pennsylvania Department of Conservation and Natural Resources.

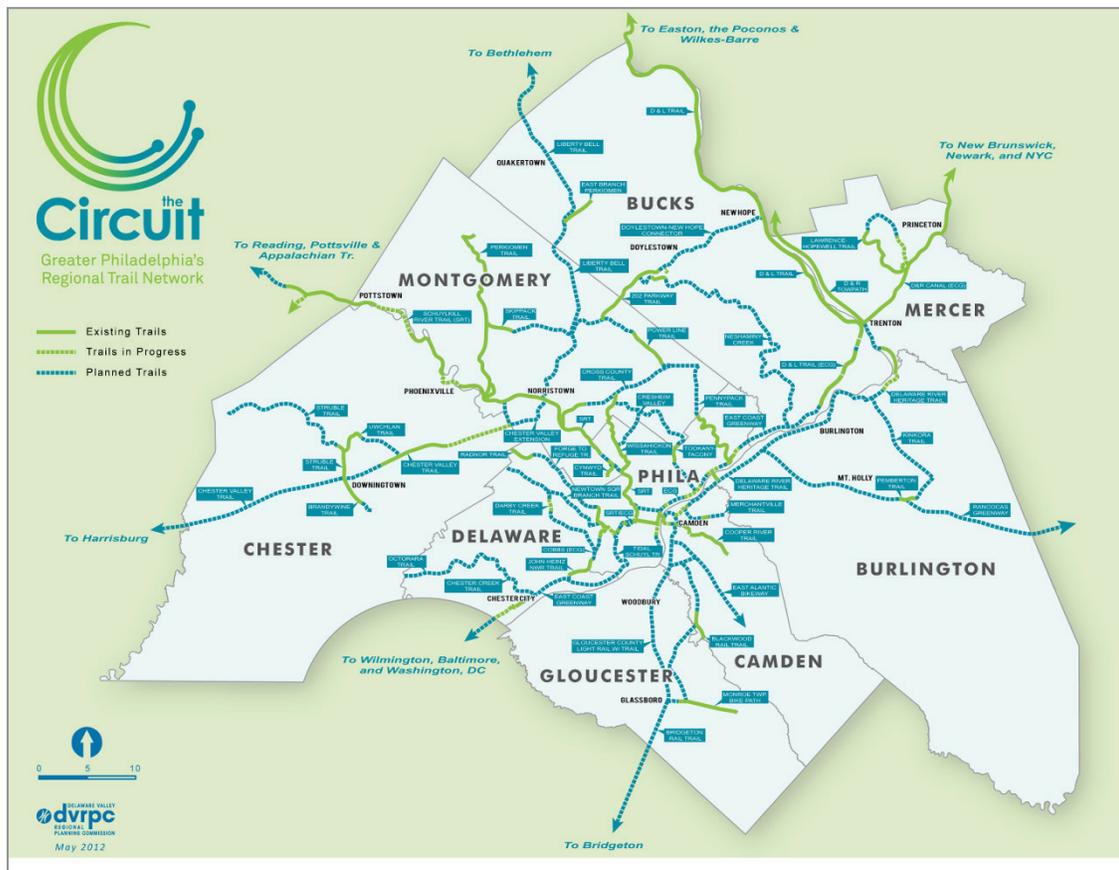
We also want to express our appreciation to the property owners, residents, and other interested citizens who attended the public workshops, reviewed the draft document, and provided useful information and helpful observations.

Funding for this study has generously been provided by a grant from the William Penn Foundation, administered by the Delaware Valley Regional Planning Commission.

REGIONAL CONTEXT

The main stem of the Neshaminy Creek extends from its headwaters at the confluence of the West Branch and North Branch of the creek and extends for 33 miles to its eventual confluence with the Delaware River in Bensalem Township. The watershed associated with the creek is the largest in the County. Along its length, the main stem of the creek passes through 15 municipalities, two state parks, two county parks, and eight municipal parks. Because of its central location and length, and ability to connect to much of the county's population, the proposed trail along the Neshaminy Creek is envisioned as serving as the spine of the County's developing trail system. This trail, including the Upper Neshaminy Creek segment, was identified as a primary trail segment as part of The Circuit, a 750-mile network of trails connecting the greater Philadelphia region (www.ConnectTheCircuit.org).

Map 5 – The Circuit



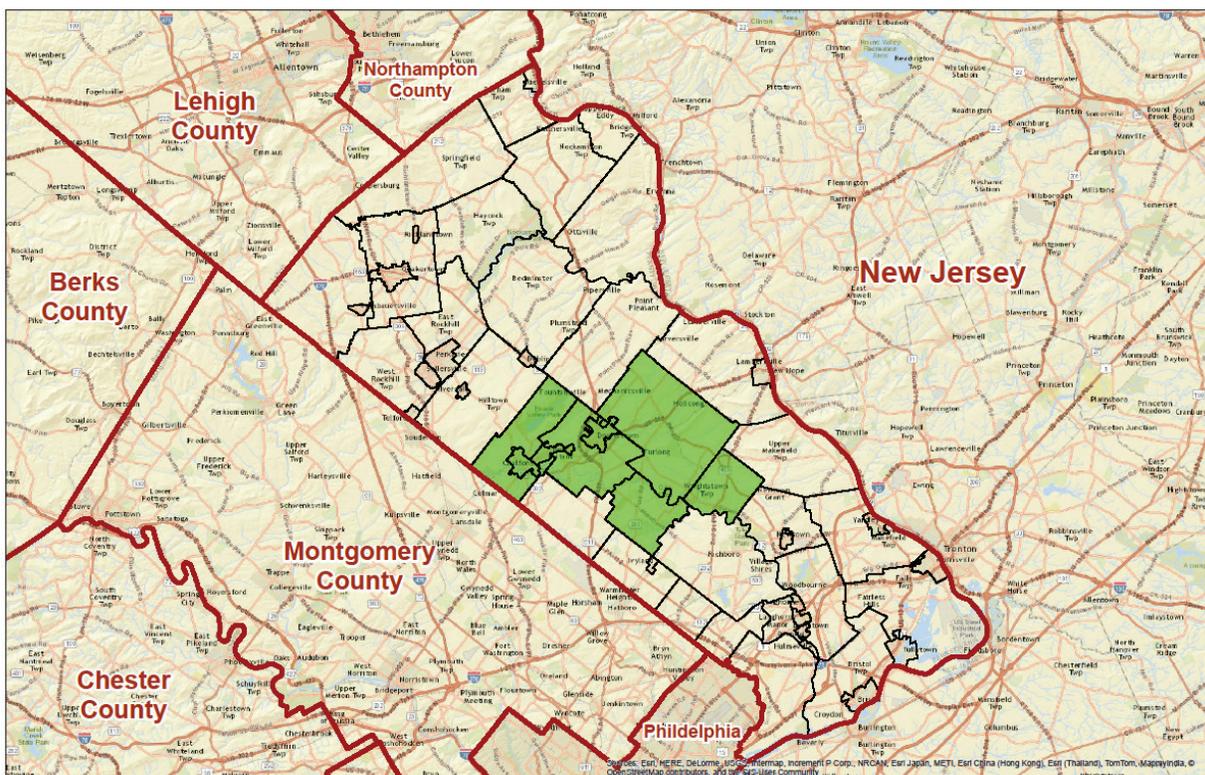
The upper stretch of the Neshaminy Creek, also known as the “Upper Neshaminy”, extends from the headwaters to the Forks of the Neshaminy and traverses seven municipalities:

- Buckingham Township
- Chalfont Borough
- Doylestown Township
- New Britain Borough
- New Britain Township
- Warwick Township
- Wrightstown Township

This stretch includes Dark Hollow Park which was dedicated in 1989 after the county purchased acreage and easements to assist in flood control along the Neshaminy Creek.

Along its length, the Upper Neshaminy is an interesting mix of suburban development, farmland, and historic boroughs and villages. The area is crisscrossed by a number of major roadways including U.S. Route 202, and State Routes 152 (Limekiln Pike), 263 (York Road), 313 (Swamp Road) and 611 (Easton Road). The area is served by public transportation with the SEPTA Lansdale-Doylestown Regional Rail train line having three train stations on this line and the SEPTA Route 55 Bus route having numerous stops along its primary route of Easton Road.

Map 6 – Upper Neshaminy Creek Project Area Regional Perspective



The area also benefits from the efforts of the Doylestown Community Bike and Hike Committee which has been in existence for over 20 years and has been working diligently over that period to develop a system of walking and biking trails in the area. More recently, the communities of New Britain Township and New Britain and Chalfont boroughs have begun similar efforts to develop trail systems in their communities.

The proposed Upper Neshaminy Creek Trail will connect to this extensive system, as well as to the Route 202 Parkway Trail which connects into Montgomery County. Once completed, the entire Neshaminy Creek trail will also provide connections to the greater region via connections to the East Coast Greenway Trail.

BENEFITS OF THE TRAIL

Creation of the Upper Neshaminy Creek Trail will provide recreational, environmental, quality-of-life and economic benefits including:

Recreational Benefits

- Provides an off-road link by a multi-use trail to seven communities: Chalfont and New Britain boroughs and Buckingham, Doylestown, New Britain, Warwick and Wrightstown townships.
- Links communities with the existing Route 202 Parkway Trail and the extensive Doylestown Community Bike and Hike system of trails and the developing Tri-Municipal trail system.
- Provides connections to Montgomery County via the Route 202 Parkway Trail connection.
- Offers safe walking and biking routes to various schools and institutions close to the trail, i.e. Unami Middle School, Delaware Valley College, Paul Kutz Elementary School, Bridge Valley Elementary School and Middle Bucks Institute of Technology.
- Provides access to various historic sites including Chalfont Borough Historic District and Eight Arch Bridge.
- Provides increased access to the creek for fishing and water-based recreation.
- Offers opportunities for nature study and bird watching.

Environmental Benefits

- Encourages removal of invasive plants.
- Provides the opportunity to improve stormwater management, re-establish and rehabilitate riparian buffers along the creek and conduct streambank restoration.
- Provides opportunities for environmental education programs at schools in the area.
- Gives citizens the choice to either walk or bike, reducing the need to drive.
- Reinforces the sense of a watershed to users of the trail.
- Provides opportunities for job training programs and youth groups that could result from ongoing maintenance and stewardship tasks.
- Provides public access points to relatively inaccessible sections of the Neshaminy Creek enabling easier environmental monitoring of the creek.

Quality of Life Benefits

- Encourages physical activity to improve the health and welfare of users of the trail.
- Inspires local residents to participate in the ongoing maintenance of the trail and create a sense of community.

- Allows for the opportunity to use a bicycle as an alternative transportation mode to access employment centers and other community facilities, while also connecting to public transportation.

Economic Benefits

- Routing the trail close to historic boroughs and commercial centers will prove to be of benefit to both businesses and trail users. Businesses provide trail amenities to trail users in the form of restaurants and shops, thus bringing in a new source of income to help grow current businesses and create opportunity for the development of new ones.

PROJECTED USES

The Upper Neshaminy Creek Trail will appeal to a broad spectrum of users, and will initially focus primarily on recreational users including anglers, runners, bicyclists, cross-country skiers, water trail users and pedestrians. Given its proximity to several schools including Unami Middle School, Paul Kutz, Bridge Valley and Warwick elementary schools, and the Middle Bucks Institute of Technology, the Trail is also designed to provide a safe route to encourage students to bicycle and walk to school. The eventual development of a trail along the entire length of the Neshaminy Creek will also serve as a commuter route for those interested in commuting to work by bicycle. The fully completed Neshaminy Creek Trail is further envisioned as a strategic element for increasing heritage tourism and economic development in the project area and the region.



Footpath along Neshaminy Creek near Mill Road

Trail users will vary by trail type, as well as by age, by experience, and by when they are using the trail and with whom they may be traveling. Individuals may fall into multiple categories at different times of day or different times in their lives. These diverse users share common interests in the following areas:

- **Safety** - The trail system should be safe for all users, and to the extent possible, provide alternatives to traveling along and across roadways.
- **Easy to Use** - The system should be user-friendly, with signage, maps and wayfinding information.
- **Well Maintained** - The system should be maintained with surfaces that are smooth and free of debris and litter.

In addition to these common interests, individual trail user groups also have specific concerns, including:

- **Pedestrians** - Prefer a smooth walking surface, benches and shades for resting, and connections to nearby residential areas for easy access and frequent use over short distances.
- **Runners** - Often prefer soft shoulders as an alternative to running on asphalt or concrete.
- **Bicyclists** - Include users with a variety of skill levels, from children and seniors who ride more slowly, to highly skilled cyclists capable of sustaining higher speeds, to mountain bicyclists who may use the trail for access to more rugged single track trails. All require smooth, firm surfaces and slightly greater height clearances as compared to pedestrians.

- **Disabled** - People with mobility impairments require smooth, firm, ADA compliant pathways, with rest areas on steep grades, maximum 2 percent cross slopes, barrier-free facilities, and accessibility information at trailheads.
- **Equestrians** - Concerned with multiple-use conflicts, especially with bicyclists, since horses can react suddenly to them. They are able to ride on 'natural' surfaces with minimal maintenance, and require adequate height clearances.
- **Cross-Country Skiers** - Includes both skating and track skiers and snowshoe users, all of whom require different groomed surfaces.
- **Water Trail Users** - Canoeists, kayakers and tubers are all potential users of the trail and will require places to enter and exit the creek safely and safety information regarding seasonal flood conditions. In addition, potential conflicts with anglers can also arise.
- **Birdwatchers** - Areas for stepping off the main trail should be provided to minimize potential conflicts with higher-speed users such as bicyclists.

STUDY GOALS AND OBJECTIVES

The purpose of this study is to assess the feasibility of developing a multi-use trail linking Doylestown, Buckingham, and Warwick townships along the northern stretch of the Neshaminy Creek Greenway. As the study progressed, meetings were held with the Steering Committee and workshops were held to engage the public in sharing information and ideas. Through these meetings and workshops the following objectives for the study were established:

- Assess the potential for connecting to existing trails, parks and recreational areas along the project corridor.
- Evaluate various alternative trail routes, trailhead locations, and the potential for establishing loop trails along the project corridor.
- Develop a conceptual trail plan that takes advantage of the natural, scenic, and historical and cultural features in the area.
- Provide recommendations for trail safety, maintenance, operations and accessibility.
- Identify priorities for trail segment development.
- Provide an overview of right-of-way acquisition methods.
- Identify resources needed to move the study to the implementation phase.

STUDY ORGANIZATION

The *Upper Neshaminy Creek Trail Feasibility Study* contains the following sections:

- **Introduction:** Background information for the study, previous planning studies, a discussion of community support and partners, and a discussion of public input to the planning process.
- **Existing Conditions:** An inventory and analysis section and contains an overview of conditions and key features in the trail corridor including:
 - Location of key natural features including steep slopes, water features, woodlands, and natural areas
 - Discussion of land use and land ownership along the trail corridor
 - Identification of existing utilities, easements and rights-of-way

- Identification of historic resources that would serve as points of interest along the trail.
- **Proposed Trail Plan:** An overview of trail design standards; elements specific to the Upper Neshaminy Creek Trail including trail signage, surfaces, and widths; examples of similar trail systems; the proposed trail alignment; identification of easements needed; and an opinion of probable costs for developing the Upper Neshaminy Creek Trail.
- **Implementation Strategies:** Strategies related to the development and implementation of the trail including recommended construction phasing; trail operation, management and maintenance; security and risk management measures; an overview of potential funding sources; and recommendations for future action.

STUDY METHODOLOGY

The study is based upon the previous studies identified earlier, synthesized with an assessment of current conditions based on field surveys and aerial photography, and input received from the public participation workshops.

Assessment of Existing Conditions

Existing conditions were identified through the use of high-resolution aerial photographs. This information was supplemented and updated by field observation work conducted from May 2013 through February 2014. Information on rights-of-way was obtained from municipal engineering records and the Pennsylvania Department of Transportation. Property ownership records were obtained from the Bucks County Board of Assessment.

Public Participation

The public participation component of the study was critical to the success of the *Upper Neshaminy Creek Trail Feasibility Study*. The objectives of the public participation process included:

- Encouraging an exchange of ideas amongst stakeholders
- Building consensus to help minimize future conflict and project delays
- Promoting early involvement by stakeholders and other community members to help develop support for the proposed trail
- Identification of a trail system that can be implemented based on the identification of issues and opportunities and weighing of trade-offs

Key components of the public participation process included:

- Establishment of a Study Steering Committee
- Public planning workshops
- Interviews with municipal officials and other key stakeholders.

The steering committee was comprised of major stakeholders in the trail project area including municipal representatives and representatives from various recreational user groups. The committee met twice during the study process: February 26, 2013 and September 19, 2013.

In addition to the steering committee meetings, two public workshops were held during the process on April 3, 2013 and January 31, 2014. Presentations were made to the Doylestown Community Bike and Hike Committee on September 17, 2013 and the Doylestown Township Board of Supervisors on February 4, 2014.



January 31, 2014 Public Meeting

Further direct outreach with key individuals and organizations resulted in meetings and communications with the following:

- Stephanie Mason Doylestown Township, Manager
- Jeffrey Marshall Heritage Conservancy, President
- Chris Stanford, PE Baker Engineering

Following the public workshop on January 31, 2014, the presentation from the workshop was posted on the Bucks County website at <http://www.buckscounty.org/government/CommunityServices/PlanningCommission>.

In addition to the public workshops, several newspaper articles featured updates about the feasibility study. Finally, press releases were sent out announcing the availability of the draft version of the study for public comment on the Bucks County Planning Commission website.

Details about the public participation process are found in Appendix A.

EXISTING CONDITIONS

The *Upper Neshaminy Creek Trail Feasibility Study* begins with an examination of current conditions within the proposed trail corridor including:

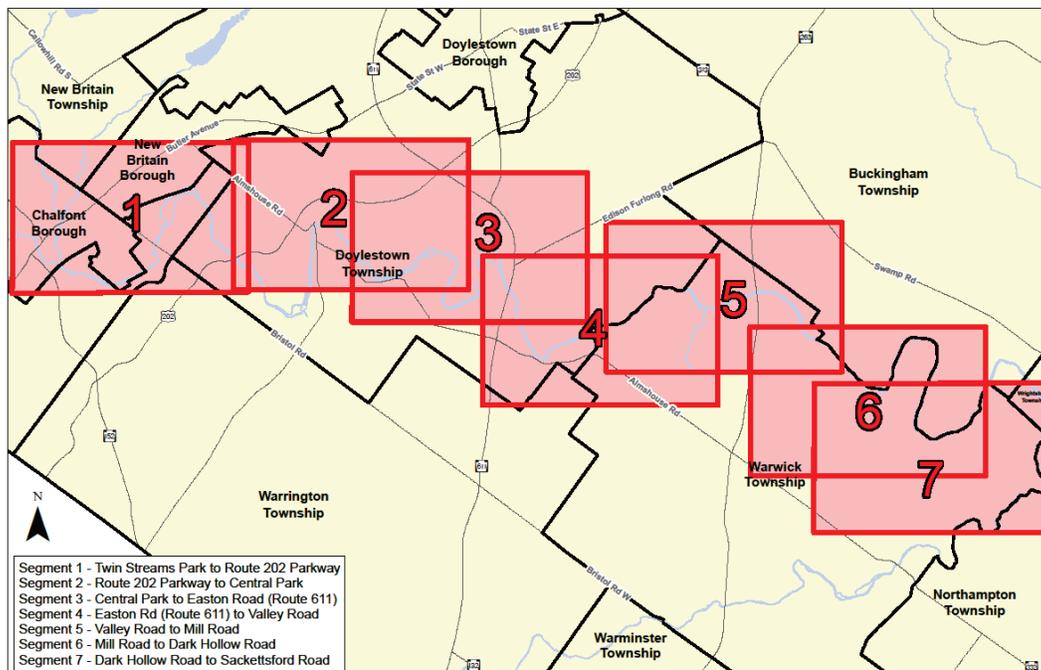
- Natural Features
- Land Use and Ownership
- Historic Sites
- Parks, Trails and Transportation
- Utilities, Easements and Rights-of-way

The study area is situated in the central portion of Bucks County and includes the floodplain and riparian areas adjacent to the Neshaminy Creek. The watershed associated with the creek is the largest in the County encompassing approximately 235 square miles. The watershed has served as a source of both ground and surface water supply, as well as the recipient of wastewater effluent from wastewater treatment plants serving many thousands of residents in Bucks and Montgomery Counties.

The main stem of the Neshaminy Creek begins at Twin Streams Park on the border of Chalfont Borough and New Britain Township at the confluence of the West Branch and North Branch of the Neshaminy Creek. The headwaters of the West Branch are in Hatfield Township, Montgomery County, while the headwaters of the North Branch are in Buckingham Township, east of Route 413. A dammed section of the North Branch forms Lake Galena, a recreation area.

One of the interesting attributes of the Neshaminy Creek as a trail corridor is the changing character of the creek and the environments through which the creek flows. For presentation and analysis purposes, the *Upper Neshaminy Creek Trail Feasibility Study* divides the creek into seven different segments winding downstream which take into account the changing character of the creek.

Map 7 – Upper Neshaminy Creek Trail Segments



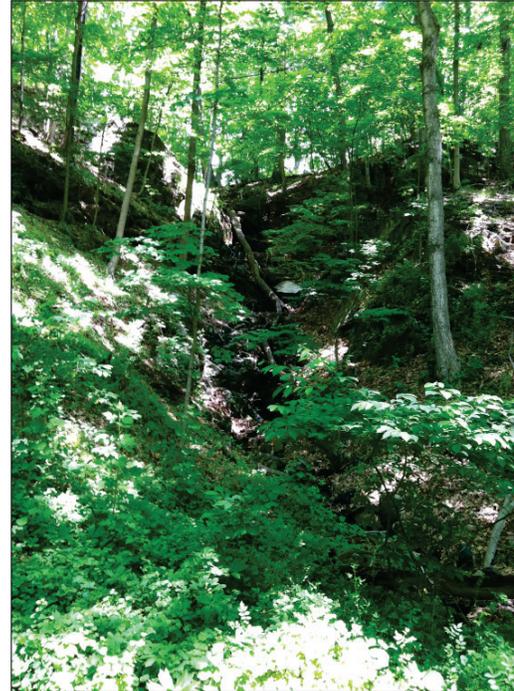
NATURAL FEATURES

The project study area and proposed trail corridor are located within the Neshaminy Creek Conservation Landscape identified in the *Bucks County, Pennsylvania Natural Areas Inventory Update* (2011) and possesses a wealth of natural features including the Forks of the Neshaminy, Dark Hollow County Park and Neshaminy Creek Woods. Neshaminy Creek provides refuge for hundreds of species of birds, mammals, fish, reptiles, amphibians, and invertebrates including threatened and endangered species.

Physiography and Topography

The Upper Neshaminy Creek lies within the Piedmont Uplands Physiographic Province. A physiographic province is the expression of bedrock at the surface of the land. The study area consists of gently rolling hills and fertile valleys that are characteristic of the Piedmont, meaning “foot of the mountains.” Within the study area, the areas north of Butler Avenue generally contain more gently sloping land. South of Butler Avenue the topography is more diverse, with land elevations from 200 to 350 feet.

Although elevations are not great in the Piedmont, changes in elevation, and therefore steeply sloped areas, can occur in the deeply incised stream valleys which have been cut over the years. The steepest slopes are found near Warwick and Buckingham township lines. The geological history and variability is often revealed in the attractive, even dramatic rock outcroppings which are exposed in the Neshaminy Creek’s stream valleys. Although steep slopes are found throughout the project areas, areas with particular concentrations of steep slopes include:

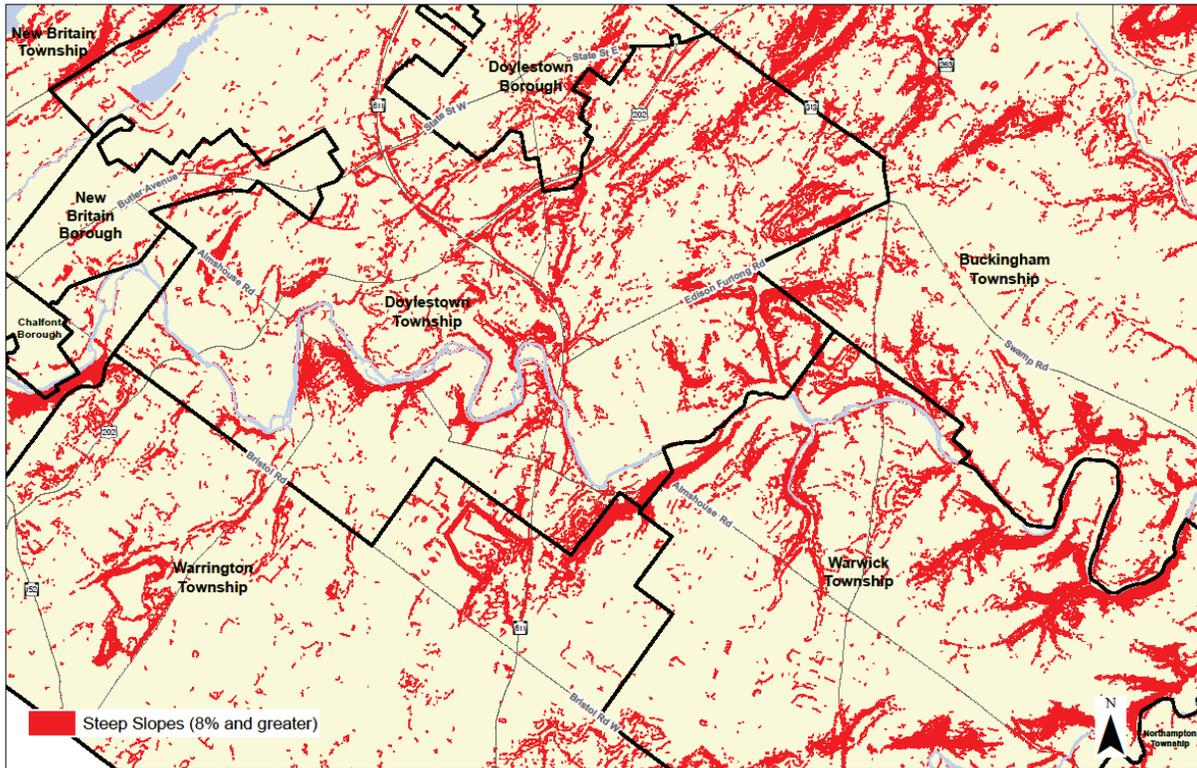


Steep slopes near York and Bridge Valley roads

- Segment 1: South side of Neshaminy Creek from Butler Avenue to Bristol Road
- Segment 3: South side of Neshaminy Creek from Turk Road to Bucks County Public Safety Training Center
- Segment 4: West and south sides of the Neshaminy Creek from Easton Road to Fish Creek stream valley and on the north side of the Neshaminy Creek in the stream valley areas leading down from Pebble Hill Road
- Segment 5: Along the northern side of the Neshaminy Creek from Bridge Valley at Furlong development to intersection of Lower Mountain Road and Sugar Bottom Road
- Segment 6: Along both sides of the creek, particularly within the PECO corridor,
- Segment 7: Contains the greatest presence of steep slopes, particularly along both sides of Dark Hollow and Hill roads.

The placement of trail facilities in these areas requires careful planning and consideration of these slopes.

Map 8 – Steep Slopes



Surface Water

The Neshaminy is the largest watershed in Bucks County. Pennsylvania has implemented a program to protect high quality waters since 1968. This program consists of three tiers of protection: Existing Uses, such as warm or cold water fisheries; High Quality Waters, those that have been found to have water quality better than necessary to protect existing uses; and Exceptional Value Waters, waters having the best or unique water quality as compared to other streams in Pennsylvania. The main stem of the Neshaminy Creek in the project area is classified as Existing Uses - trout-stocked fishery, migratory fishes (TSF-MF). Based on this classification, surface water quality must be preserved such that the streams maintain this designated use.

The Neshaminy Creek and its tributaries are major conduits for water treatment plant effluent. There are four major municipal sewage treatment plants in Bucks County and more in Montgomery County that discharge effluent into the Neshaminy. In addition, there are numerous industrial and stormwater discharge points in the greater watershed. Flow in many reaches of the Neshaminy Creek can be more than 90 percent effluent during periods when base flow is low. Because of the effluent overload, the Environmental Protection Agency (EPA) has found the main stem of the Neshaminy Creek to be “impaired” under Section 303(d) of the Clean Water Act.

Floodplains

Floodplains are delineated by the Federal Emergency Management Agency (FEMA) and consist of areas that are subject to periodic flooding from storms. FEMA defines the 100-year flood as a storm event that has a 1 percent chance of happening in any year over a 100-year span. Floodplains serve primarily to protect the creek and provide critical stormwater management and flood control functions by accommodating floodwater during periods of heavy precipitation. Floodplains intercept and reduce unmanaged sheet flow runoff from uplands and temporarily store out-of-bank flows as stormwater runoff volume increases. Floodplains also recharge aquifers, serve as wildlife habitats, and provide opportunities for recreation, including trails. In most municipalities, recreational uses, including trails, are one of the few uses typically permitted within the floodplain.

Map 9 – FEMA 100 Year Floodplain



Floodplains are also an important consideration in the design of bike paths and trails. Much of the proposed Upper Neshaminy Creek Trail is near floodplains and stream corridors which present both negative and positive influences to trail design. A floodplain curtails the use of a trail when it is inundated by water and can increase trail maintenance with mud, debris or washout during a flood occurrence. Conversely, trails are well suited to stream corridors as flood damage to a trail is minor compared to above ground structures. Floodplains are usually left in a natural vegetative state, which provides an enhanced environment for trail users, and a large variety of plants and animals congregate along stream corridors because of the availability of water, food and habitat.



Floodplain along Neshaminy Creek

Specific to the Upper Neshaminy Creek Trail, one of the questions received at the public workshops was whether pervious pavement could be utilized. Unfortunately, the use of pervious pavement is not practical for wooded or flood-prone areas due to sediment and leaf-litter filling the porous voids of the pavement. In addition, much of the underlying soil types in the proposed trail corridor are not well draining which would limit the effectiveness of any pervious pavement. The width of the floodplain along the Upper Neshaminy Creek ranges from approximately 200 to 1,400 feet wide and is widest in areas where the creek bends and in confluence areas with tributaries to the creek. Some areas with the widest floodplain by trail segment include:

- Segment 1: Headwaters at Twin Stream Park and south of Wilma Quinlan Nature Preserve
- Segment 2: Triangular area bounded by Lower State Road, Almshouse Road and Radcliff Drive
- Segment 3: Area bounded by Turk Road, Quarry Road and Easton Road
- Segment 4: Confluence of Neshaminy Creek and tributary coming down from Pebble Hill Road near Valley Road
- Segment 5: Bend in the creek near Almshouse Road and area bounded by Valley Road, York Road and Mountain Laurel Drive
- Segment 6: Area near Dark Hollow Road in Buckingham Township where the creek reverses direction from a northeasterly flow to a southwesterly flow
- Segment 7: Confluence of Upper Neshaminy Creek with Little Neshaminy Creek

Wetlands

Wetlands include areas that are 1) saturated for most of the year, 2) contain plants typical of saturated soils, and 3) experience surface ponding, flooding and flow. Significant wetland areas are found along the Upper Neshaminy Creek, its tributaries and ponds. Wetlands are extremely important to the health of rivers and streams in the following ways:

- Improve water quality by acting as filter, removing metals, nutrients, toxins and other pollutants;
- Provide fish and wildlife habitat;
- Assist in flood control by storing flood waters and decreasing the amount and velocity of flow;
- Facilitate groundwater discharge and recharge;
- Wetland plants decrease the rate of streambank erosion by anchoring the soil with their roots; and
- Provide recreational and aesthetic value.

The National Wetlands Inventory (NWI) Map indicates the estimated locations of protected wetlands over one acre in size. NWI maps are produced by the U.S. Fish & Wildlife Service using aerial flyovers. A formal delineation will be necessary to identify all wetlands prior to any proposed disturbances.

Generally, wetlands should be avoided in trail development. If wetlands cannot be completely avoided, boardwalk-type walkways and pedestrian footbridges should be utilized to protect the wetlands from human disturbance.

Map 10 – Wetlands



Vegetation

The Upper Neshaminy Creek project corridor is characterized by forests of sycamore, river birch, silver maple, pin oak, box-elder, ash and red maple. Protecting vegetated areas is important from a natural resource perspective as woodlands and plant communities provide diversity to the landscape and provide visual interest and beauty. Woodlands also stabilize slopes, provide habitat for shelter, nesting, and food for wildlife, and provide critical habitat for many interior forest birds. Specific woodland areas of interest in the project corridor include:



- Segment 1: Sandwiched between the creek on the north and Upper State Road on the south, is an extensive north-facing steeply sloped forested area.
- Segment 4: Many large hardwoods are present as are rare plant species including walking fern, maidenhair spleenwort, and Canadian yew.
- Segment 5: Moss, ferns, and lichens can be found along with evergreens and mature hardwoods, and viburnum, spice bush, elderberry and mountain laurel.
- Segment 6: Forested slopes contain red oak, silver maple, tuliptree, sycamore and river birch.

Aquatic plants can also be found in back waters and slow-moving stretches of the creek including spatterdock, water star-grass, waterweed, ribbon pondweed, floating pondweed, water-starwort, brook pimpernel and lizard's-tail.

Reptiles and Amphibians

As indicated in the *Bucks County, Pennsylvania, Natural Areas Inventory Update* (2011), the Neshaminy Creek Conservation Landscape has a greater diversity of reptile and amphibians than any other area in the county including eight species each of salamanders, frogs and toads, and turtles plus one lizard and six kinds of snakes. Slow-moving sections of the creek provide excellent turtle habitat.

A PNDI (Pennsylvania Natural Diversity Inventory) record search was completed to identify any threatened and endangered or special concern species and resources within the project area. PA Department of Conservation and Natural Resources listed one species as *Special Concern Species*. The PA Fish and Boat Commission listed one species as *Threatened*. The PNDI search is an initial indication of presence of a species of conservation concern. Further site specific review is necessary to identify potential impacts.

HISTORIC SITES

Historic features and sites are often destination points in a trail system. The following historic sites are located near or close to the proposed Upper Neshaminy Creek Trail and are listed on the National Register of Historic Places.

- **Pine Valley Covered Bridge** – Built in 1842 of native hemlock and pine, the bridge is also known as "Iron Hill Bridge". The bridge crosses Pine Run Creek, which was named after the hardy neighboring pine trees.
- **Chalfont Historic District** – An example of the central industrial/commercial districts typical of Pennsylvania towns of the late 19th century. The historic district contains examples of vernacular residential architecture from the late 1800's, neoclassic revival buildings, gothic revival, and Victorian structures. The district's location between the Neshaminy Creek and the North Branch of the Neshaminy Creek encouraged the establishment of early mills and industry along the banks of the creeks.
- **Morgan James Homestead** – Originally built circa 1783, the homestead consisted of a two-story Federal Period fieldstone house, an attached outside kitchen and smokehouse, and a bank barn. The James family exerted an important influence on the early history and development of New Britain Township with William James, grandfather of Morgan James, signing the petition which established the township in 1723.
- **Fordhook / Burpee Farm** – This 60-acre farm includes a variety of structures including a fieldstone main house, barn, spring house, and ice house dating to the mid-to-late eighteenth century. Additional structures include a carriage house from 1868, an additional farmhouse building thought to have served as a combination summer kitchen, bakehouse and smokehouse. The site also includes a cottage, a 2½ story frame seed house and extensive greenhouses added when the farm was purchased by W. Atlee Burpee, founder of Burpee Seed Company, in 1888.
- **Bridge Valley (Eight Arch) Bridge** – The historic Eight Arch Bridge, built in 1803, is the last remaining eight arch bridge in Pennsylvania. A hand-laid stone and mortar 218 foot long structure with distinctive and graceful arches, the bridge is now owned and maintained by the Warwick Township Historical Society.

PARKS, TRAILS AND TRANSPORTATION

Providing connections to parks, recreational and open space areas, as well as existing trails within the project area, is one of the primary goals and objectives of the Upper Neshaminy Creek Trail. These open space areas offer recreational, scenic, and education opportunities that enhance a trail user’s outdoor experience. A total of 42 public, private and school recreational sites and open space areas are located in the Upper Neshaminy Creek Trail corridor. Additionally, recognizing that the trail will also serve as part of a larger transportation network, providing connections to public transportation, was also considered important. These various connections by trail segments are outlined below:

Table 2 – Parks, Trails, Open Space and Public Transportation

	Public Parks	Private Recreational Sites	School Recreational Sites	Open Space Areas	Trails	Public Transportation
Segment 1	<ul style="list-style-type: none"> • Krupp Park • Kelly Park • Twin Streams Park • Blue Jay Park • Wilma Quinlan Nature Preserve 	<ul style="list-style-type: none"> • Brittany Glen • Creekwood • Bridge Creek • Wyndham 	<ul style="list-style-type: none"> • Unami Middle School 		<ul style="list-style-type: none"> • Lenape Lane Trail 	<ul style="list-style-type: none"> • New Britain SEPTA Regional Rail Station
Segment 2	<ul style="list-style-type: none"> • Valley Road Parking Area 			<ul style="list-style-type: none"> • Doylestown Lea • Doylestown Crossing 	<ul style="list-style-type: none"> • Route 202 Parkway Trail 	
Segment 3	<ul style="list-style-type: none"> • Central Park • Triangle Park 		<ul style="list-style-type: none"> • Kutz Elementary School 	<ul style="list-style-type: none"> • Doylestown Station 	<ul style="list-style-type: none"> • Doylestown Community Bike and Hike system 	<ul style="list-style-type: none"> • SEPTA Bus Route 55
Segment 4	<ul style="list-style-type: none"> • Dark Hollow County Park • Guinea Lane Park 	<ul style="list-style-type: none"> • Heritage Center • Villages at Buckingham • Bridge Valley 	<ul style="list-style-type: none"> • Bridge Valley Elementary 	<ul style="list-style-type: none"> • Bridge Valley at Furlong • Estates at Warwick Lea • Warwick Woods 		
Segment 5	<ul style="list-style-type: none"> • Dark Hollow County Park 	<ul style="list-style-type: none"> • Bucks Club • Diamond Ridge Camps • Country Club Knoll • Warwick Greene • Deer Run Estates / Courts • Mill Ridge 		<ul style="list-style-type: none"> • Creekwood 	<ul style="list-style-type: none"> • Mill Road Powerline Trail 	
Segment 6	<ul style="list-style-type: none"> • Jamison Hunt • Hampton Chase 			<ul style="list-style-type: none"> • Estates at Dark Hollow 	<ul style="list-style-type: none"> • Estates at Dark Hollow 	
Segment 7				<ul style="list-style-type: none"> • Ridings of Warwick 	<ul style="list-style-type: none"> • Ridings of Warwick 	

LAND USE AND OWNERSHIP

Land Use

Just as an inventory of natural resources and parks and open space paints a picture, a review of land use was developed using data from the Bucks County Board of Assessment office. The land use map indicates the general coverages of land uses and provides a snapshot of an area’s character and physical surroundings. In cases where assessment codes did not correspond with land use categories used for planning, aerial photographs and municipal records were used to determine the true nature of the land use. The ten land use categories shown on the existing land use maps include:

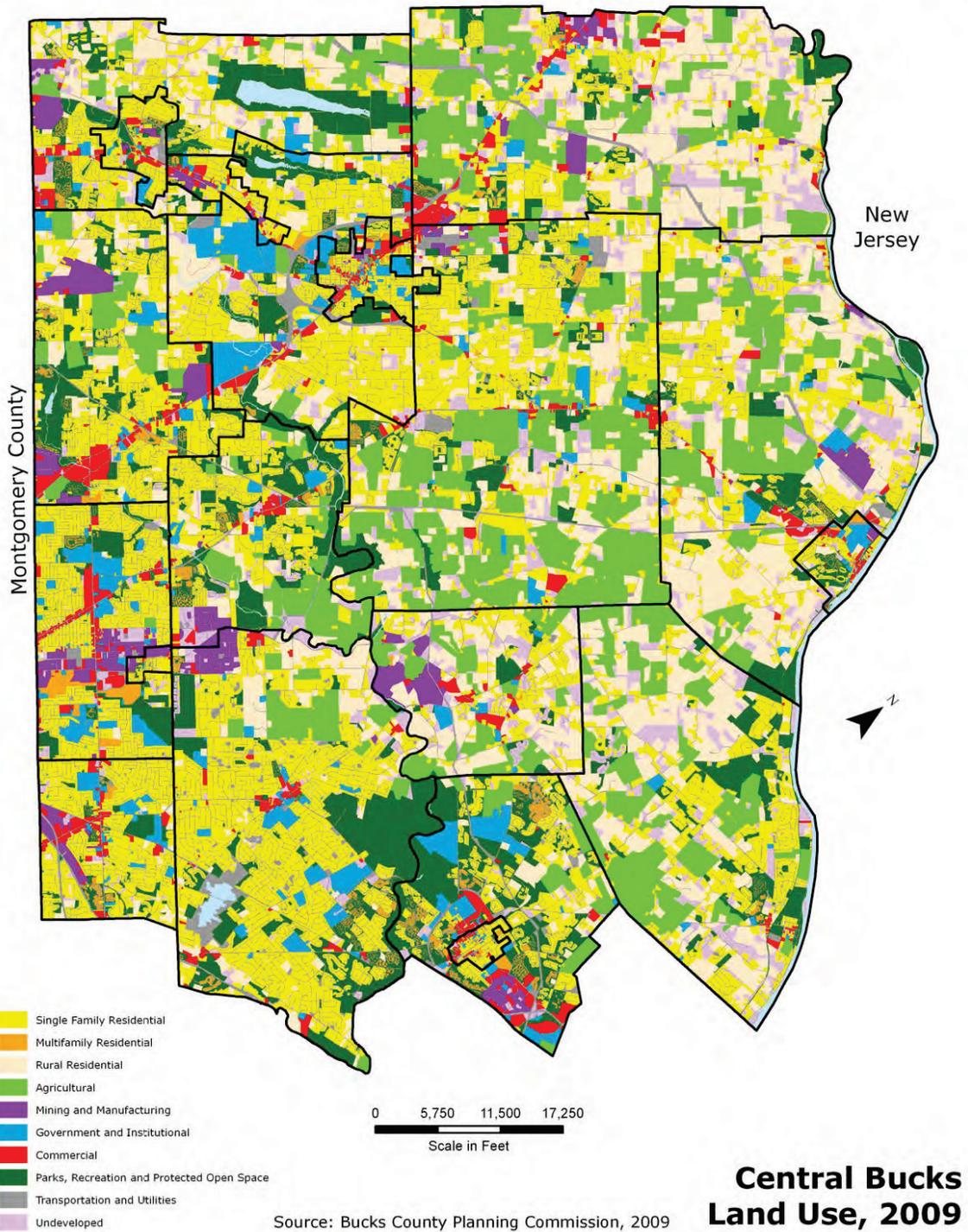
- Single-Family Residential
- Multifamily Residential
- Rural Residential¹
- Agricultural
- Mining and Manufacturing
- Government and Institutional
- Commercial
- Parks, Recreation, and Protected Open Space
- Transportation and Utilities
- Undeveloped

Although the Upper Neshaminy Creek Trail begins and ends in public parkland, and is contained within public parkland for most its length, there are a diversity of land uses along the corridor as represented on Map 11.

- Segment 1: This is the most diverse segment in terms of land use featuring parkland including Twin Streams, Blue Jay and Quinlan Nature Preserve, governmental and institutional such as Unami Middle School, single-family residential, some limited manufacturing, and transportation and utilities in the form of the Chalfont-New Britain Township Sewage Authority.
- Segment 2: This segment is characterized by transportation and utilities (Chalfont-New Britain Township Sewage Authority) and institutional (Delaware Valley College) to the north side of the Route 202 Parkway and residential to the south. Although Delaware Valley College is classified as institutional, much of the land is agricultural in nature.
- Segment 3: This segment is composed to a large extent by Central Park. However, as you move east toward Easton Road, the land use is more diverse with government and institutional uses to the south side in the form of Bucks County government operations, and a quarry, some residential, a small park (Bridge Point), and commercial land uses to the north side of the creek. Of note, this segment also includes county-owned land which is leased to the Bucks County Fish & Game. As a members only club including facilities for rifle, pistol, archery, and trap shooting, the club activities present a conflict relative to trail facilities.
- Segments 4 - 6: These segments are composed exclusively of parkland as these three segments are part of the county-owned Dark Hollow Park. Just outside of the park to the north the land uses are a mix of agricultural and single-family and rural residential. To the south side of the creek, this same mix occurs, although there is a concentration of multifamily residential where York Road crosses over the Neshaminy Creek. Two PECO powerline corridors are also in this area.
- Segment 7: This segment is characterized by a mix of single-family residential and agricultural land uses, including the Gemmill campus of Delaware Valley College, as well as some undeveloped land owing to the very steep slopes in this area.

¹ The same as single-family residential except dwellings are on lots that are 5 acres or more (but do not qualify as agricultural).

Map 11 – Central Bucks County Land Use



Land Ownership

The issue of land ownership is critical in determining the feasibility of a proposed trails system. The size of parcels, number of owners to be considered, and the costs to acquire easements are often among the most important considerations in trail development. A trail will be more easily developed if the number of easements to be acquired is minimized. Trail maintenance is also a challenge when trails traverse private property. In much of the Upper Neshaminy Creek project area, the land is currently owned by either the county, local municipalities, or land conservancies. Homeowners associations also own various parcels along the proposed trail corridor. Primary landowners by segment include:

Table 3 – Primary Landowners by Segment

Segment 1	Segment 2	Segment 3	Segment 4	Segment 5	Segment 6	Segment 7
Government						
Chalfont Borough		Bucks County	Bucks County	Bucks County	Bucks County	Bucks County
New Britain Township		Doylestown Township			Warwick Township	
New Britain Borough						
Transportation & Utilities						
Chalfont-New Britain Sewage Authority	Pennsylvania Department of Transportation			PECO		PECO
Educational						
Central Bucks School District	Delaware Valley College			Middle Bucks Institute of Technology		Delaware Valley College
Homeowners Associations						
Bridge Creek HOA				Bridge Valley HOA		
Creekwood HOA				County Club Knoll HOA		
Land Conservancies						
				Heritage Conservancy	Heritage Conservancy	Heritage Conservancy
Other						
						K&D Growers

UTILITIES AND EASEMENTS

Utilities

The primary utilities in the Upper Neshaminy Creek Trail project area consist of wastewater treatment plants and PECO powerline corridors. The two separate wastewater treatment plants include the Chalfont-New Britain Township Sewage Authority treatment plant located between the Route 202 Parkway and Upper State Road and another plant owned by Bucks County Water & Sewer Authority located along the banks of the creek near the bend in the creek off of Almshouse Road. Doylestown Township has already obtained an easement for establishing a trail paralleling the creek on the Chalfont-New Britain Township Sewage Authority property.



PECO Corridor adjacent to Neshaminy Creek showing wetlands in foreground and slope in distance



Cross County PECO Corridor as viewed from end of trail running along powerline adjacent to Mill Road

The first PECO powerline corridor extends northeasterly across the county from its entry point into the county near the intersection of Folly and County Line roads in Warrington Township to its exit at the Delaware River between Route 202 to the north and New Hope Borough to the south.

The second PECO powerline corridor branches off of the powerline corridor described above near the intersection of Sugar Bottom and Mill roads, briefly parallels the Upper Neshaminy Creek, then continuing in a southerly direction toward the Little Neshaminy Creek. Specific to the Upper Neshaminy Creek project area, the cross-county powerline corridor could potentially serve as a route for the trail. However, the powerline corridor that parallels the creek is located in a wetland area, and further along toward Dark Hollow Road is an area with very steep slopes.

Easements

As mentioned previously, much of the land within the Upper Neshaminy Creek Trail project area is publically held land which minimizes the need for easements; however, in some cases easements will be required. Some of these easements, such as the one on the Chalfont-New Britain Township Sewage Authority property, have already been acquired. In addition, there are other easements already in place in the project area that would allow for the development of a trail. Some of these were acquired by the municipalities as part of the implementation of their local trails plans while others were negotiated as part of acquiring a conservation easement on the property. In other cases, easements already in place may have certain provisions limiting the width, type of trail surface, and users allowed on the trail. In some cases these existing easement provisions may need to be revised if the current property is willing to consider doing so.

In some cases, easement provisions may prohibit trails. This is the situation with farmland preserved under the Pennsylvania Agricultural Conservation Easement Purchase Program. Easements secured using funding under this program do not allow the conversion of land which has been devoted primarily to agricultural use to another primary use. The rationale for this restriction is based on 1) a desire to preserve as much productive agricultural farmland as possible, 2) concerns regarding food security and 3) farms are privately-owned businesses with a variety of activities taking place, which may present safety concerns. Because of this provision, trails often have to be routed around parcels preserved under this program, including the Upper Neshaminy Creek Trail as there are several parcels preserved under this program in the project area.

To assist in the protection of many of the existing resource features, trail construction on Federal lands, or lands where Federal funds are involved, must conform to laws such as the National Environmental Policy Act (NEPA), the National Historic Preservation Act (NHPA), and the Endangered Species Act (ESA). Although the proposed trail route for the Upper Neshaminy Creek was designed to mitigate the impact to these resources, permitting based on a more detailed analysis at the final design stage will be required to minimize adverse effects.

UPPER NESHAMINY CREEK TRAIL PLAN

TRAIL DESIGN STANDARDS

The Upper Neshaminy Creek Trail is designed to comply with various standards and guidelines for the design of trails and bicycle facilities including:

- American Association of State Highway and Transportation Officials (AASHTO) Guide for the Planning, Design, and Operation of Bicycle Facilities
- ADA Accessibility Guidelines for Buildings and Facilities (ADAAG)
- ADA Standards for Accessible Design
- Federal Access Board Accessibility Guidelines for Outdoor Developed Areas (AGODA)
- Public Right of Way Accessibility Guidelines (PROWAG)
- Manual on Uniform Traffic Control Devices (MUTCD)
- Pennsylvania Trail Design & Development Principles

Bucks County has developed Trail Design Standards that will apply to all future trails, pedestrian and bicycle facilities developed by the county including the following types of trails:

Table 4 – Types of Trails

Trail Type	Description of Trail Type
Hiking Trails	Trails designed to provide hikers, joggers and walkers the opportunity to experience and interact with nature with minimal disturbance from other trail users. As these trails are not designed to accommodate wheeled traffic, these are most often natural surface trails.
Pedestrian Facilities in the Public Right-of-Way	<p>These facilities include:</p> <ul style="list-style-type: none"> ▫ Trails in the public right-of-way where the right-of-way is not wide enough to accommodate a multi-use trail ▫ Sidewalks that are widened or retrofitted to accommodate more than one pedestrian user group at a time <p>In both cases, the intent is to provide a safe, two-way shared use area for pedestrians where a multi-use path cannot be accommodated. Although these would typically exclude wheeled traffic in most cases, there may be instances in which it is necessary to allow for wheeled traffic as well.</p>
Multi-use / Shared-Use Trails	A trail that permits more than one user group including joggers, walkers, hikers, bicyclists, to occupy the trail at the same time. As the trail is designed to accommodate multiple users including wheeled traffic, these trails would most often be constructed of a hard paved or compacted cinder surface.
On-Road Bicycle Facilities	<p>This type of trail consists of the creation or designation of the following:</p> <ul style="list-style-type: none"> ▫ Bicycle Lane - A dedicated portion of the roadway that has been designated by striping, signage, and pavement markings for the exclusive use of bicyclists. ▫ On-road Bicycle Route - A shared right-of-way on roadways designated with appropriate information signs to help encourage use and warn motorists that bicycles may be present in the roadway.

The differentiation between these trail types, and the accompanying trail design standards, are designed to:

- Promote consistency of standards and guidelines across the county trail network.
- Increase user safety, comfort and convenience.

- Promote universal access, where possible, to users with a broad range of skill levels and abilities, including children, older adults and people with disabilities.
- Minimize impact to sensitive natural resources.
- Increase the ease of long-term trail and facility maintenance by recommending the use of materials and construction practices appropriate for the trail being developed.

The standards outlined in Table 5 were derived from multiple sources and are intended to allow for flexibility in design, appropriate to the location, site-specific environmental conditions, and expected users. However, the guidelines are not intended to be engineering specifications or replace existing mandatory or advisory state and federal standards, nor the exercise of engineering judgment by licensed professionals.

Table 5 – Bucks County Trail Standards

	Trail Width (Min)	Shoulder Width each side (Min)	Trail Surface		Trail Running Slope		Trail Cross Slope		Vertical Clearance (Min)	Other
			Desired	Acceptable	Min	Max	Min	Max		
Hiking Trail										
Hiking Trail	6 feet *	-	Compacted Gravel	Compacted Earth / Natural Surface	0%	12.5%	2%	5%	8 feet	Trailhead Signage
Pedestrian Facilities in Right-of-Way										
Sidewalk	5 feet	2 feet	Concrete	Asphalt	1%	2%	1%	2%	8 feet ***	Wayfinding Signage
Trail	8 feet	2 feet	Asphalt	Asphalt	1%	2%	1%	2%	8 feet ***	Wayfinding Signage
Multi-Use										
Multi-Use Trail	10 feet	2 feet	Asphalt	Cinder	1%	5%**	1%	2%	8 feet ***	Trailhead and Wayfinding Signage
Boardwalk	10 feet	-	Concrete	Wood / Synthetic	1%	5%	1%	2%	8 feet ***	3" edge protection for boardwalks 30" or less above grade / 42" handrails for 30"+ above grade
On-Road Bike Facilities										
Bicycle Lane	5 - 6 feet	6 - 8 feet	Asphalt	Asphalt	-	-	-	-	10 feet	MUTCD ² : Pavement Markings and R3-17 Bike Lane sign
On-Road	-	-	Asphalt	Asphalt	-	-	-	-	10 feet	MUTCD: Shared Lane Markings and W6-101 Share the Lane sign
On-Road Pedestrian Facilities (To be minimized where possible)										
On-Road	-	-	Asphalt	Asphalt	-	-	-	-	-	MUTCD: R9-1 Walk on Left Facing Traffic sign

* Anything less than 5 feet requires a passing space at intervals no less than 1,000 feet

** Following variances are allowable: 8.3% maximum for distances up to 200 feet / 10% maximum for distances up to 30 feet / 12.5% maximum for up to 10 feet

***Minimum clearance overpasses: 10

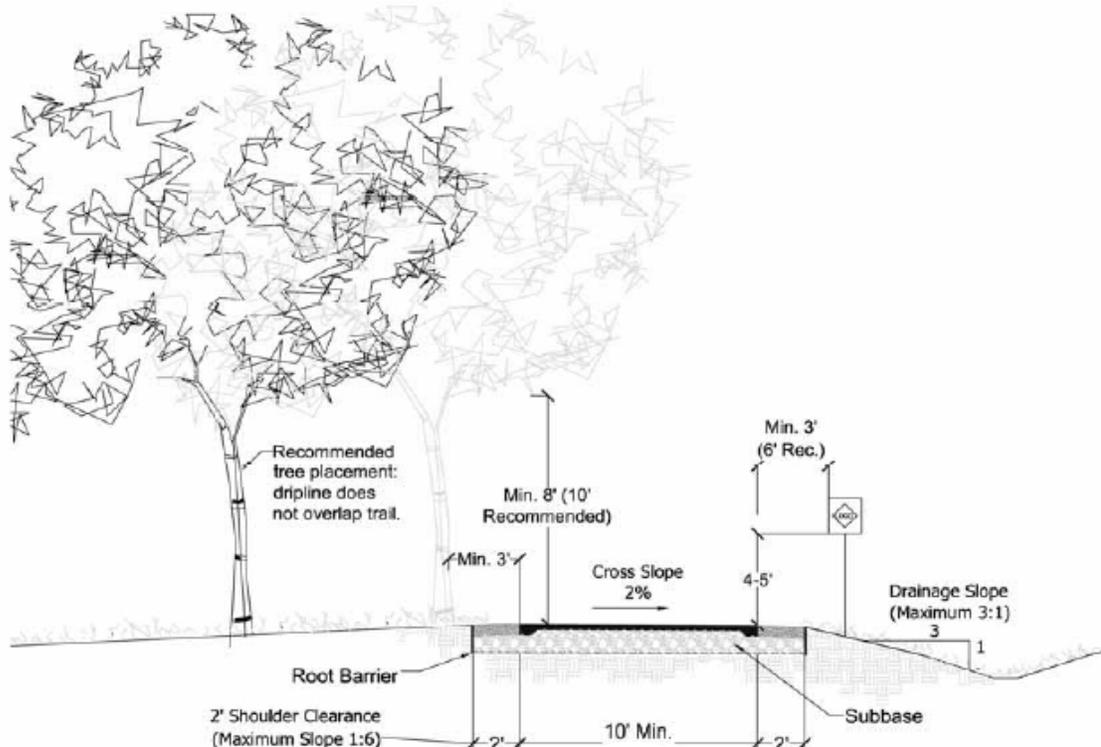
² Manual on Uniform Traffic Control Devices - U.S. Department of Transportation - Federal Highway Administration

UPPER NESHAMINY CREEK TRAIL DESIGN ELEMENTS

Trail Surface, Width, Slope and Vertical Clearance

The Upper Neshaminy Creek Trail will be designed as a 10-foot wide, paved, multi-use recreational trail where possible. Standards for a two-way shared use path are 10 feet in width with a 2-foot wide graded shoulder [with maximum slope of 1:6], on either side of the trail. Therefore, the trail surface area alone should be 14 feet in width, plus a 3 to 6-foot buffer or grading area on either side of the trail. Bridges and any required boardwalk sections will also have a travel width of 10 feet.

The recommended typical design cross-section is shown below. This design would be modified to fit various environmental conditions that are encountered. Additionally, off-road sections of the trail will be designed with adequate clearance and load-bearing capacity to support emergency vehicles.



TRAIL SAFETY SIGNAGE

Although the trail system is designed to minimize the extent to which users will be on-road, there may be sections where the trail will need to utilize existing streets or roadways which carry low volumes of motor vehicle traffic. In these situations, the *Manual on Uniform Traffic Control Devices* recommends a combination of signage and on-road pavement markings to help improve pedestrian safety.

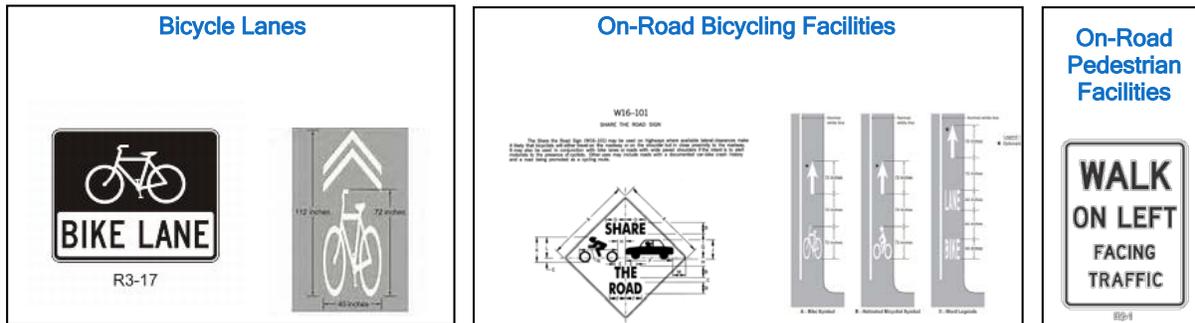
Pedestrians in Roadway: Section 2B.50 of the *Manual on Uniform Traffic Control Devices* recommends signage to help improve pedestrian safety on roadways with no adjacent sidewalks or shoulders.

Bicyclists in Roadway: The regulations and signage requirement vary dependent upon the speed limit of the road:

- **Roads with a speed limit of greater than 35 miles per hour:** Section 9B.18 of the *Manual on Uniform Traffic Control Devices* specifies that Share the Road signs should be used on roadways with a speed limit above 35 mph where there is a need to warn motorists to watch for bicyclists traveling along the roadway.
- **Roads with a speed limit 35 miles per hour or less:** Section 9C.07 Shared Lane Marking specifies the parameters for the use of Shared Lane Markings, also known as Bike Sharrows. Specifically, Shared Lane Markings may be used to:
 - Assist bicyclists with lateral positioning in lanes that are too narrow for a motor vehicle and a bicycle to travel side by side within the same traffic lane;
 - Alert road users of the lateral location bicyclists are likely to occupy within the traveled way;
 - Encourage safe passing of bicyclists by motorists; and
 - Reduce the incidence of wrong-way bicycling.

Examples of the recommended pavement markings and signage are shown below.

Manual on Uniform Traffic Control Devices - Pavement Markings and Signage



In addition to signage and pavement markings being used to alert motorists of the existence of trail users within or adjacent to the roadway, Rectangular Rapid Flashing Beacons (RRFBs) and clearly marked crosswalks will be used anytime the trail crosses a roadway where the crosswalk approach is not controlled by a yield sign, stop sign, or traffic-control signal; or at a crosswalk at a roundabout.



Trail Informational Signage

The trail system will also be designed to incorporate additional signage such as wayfinding and trailhead signage. To comply with Americans with Disabilities Act accessibility requirements, trailhead signage will incorporate the following information:

- Length of the trail or trail segment
- Surface type
- Typical and minimum tread width
- Typical and maximum trail grade / running slope
- Typical and maximum cross slope

Emergency Signage

To improve emergency response to trail incidents, it is recommended that the Upper Neshaminy Creek trail also incorporate an Emergency Locator System. This system would place signage markers with unique location identifiers at every eighth of a mile. These assigned geographic coordinates would allow emergency crews, such as the Bucks County Department of Emergency Communications, to easily determine the best route for reaching the emergency.



Parking Areas / Trailheads

Trailhead parking areas will provide points of access for trail users. These access points will not only accommodate people from the immediate area, but those who have traveled farther to use the trail. Although a number of residents will likely walk or bike to the trail from their homes, it can be anticipated that many people will also choose to drive. Each of the parking options discussed below in the Trail Alignment section will need to be further explored as part of the Design Phase when more detailed survey information is available in order to further assess lot size, feasibility, practicality, and permeability and safety issues.

Boardwalks and Bridges

Site characteristics, property ownership and other constraints within the Upper Neshaminy Creek Trail project area may require that the trail cross the creek or be constructed within wetland areas. Where the trail alignment crosses through the floodplain, much of the trail will be elevated and will occasionally cross the creek channel. The selection of construction methods will need to consider how the water surface elevations vary along the Neshaminy Creek. Construction of bridge and boardwalk facilities within the floodway may impact surface water levels if these structures impede flow within the trail corridor. The proposed design should minimize blockage of flows within the floodplain and should recognize the potential for debris to accumulate on the upstream face of bridge sections. Similar to the Wissahickon Green Ribbon Trail, it is recommended that bridges be placed above the flood elevation.

Bridges and boardwalks can be surfaced with a variety of materials including timber or timber-plastic composites, concrete or steel. The main factors driving the frequent use of timber are its low initial cost, the perception that it is more suitable to natural environments, and the comparative simplicity of timber construction in sensitive environments, given its light weight and ease of fabrication. The disadvantage of timber is that it is susceptible to deterioration from exposure to the environment, even when pressure treated, and that timbers may be slippery in wet or merely damp conditions.

Physical Barriers

In certain areas, physical barriers such as wood rail fencing, dense shrubbery, or other type of physical barrier may need to be installed along the trail to prevent users from traversing the side slopes. Typically this barrier should be installed along the top of slope to protect trail users. In general, the greater the height of the drop-off, the greater the need for protection. According to AASHTO guidelines, the fence should be set at a height of 3.5 feet (42 inches). Rub-rails are recommended at a height of approximately 3-feet from grade to prevent snagging of handlebars. All fences should be smooth and free of protruding objects such as bolts.

Trail Furnishings

Trail furnishings will enhance the comfort and enjoyment of trail users. These amenities could include benches; picnic tables and shelters; trash receptacles; bike racks; information kiosks; educational signage; fishing piers; and canoe/kayak launch facilities. Primary considerations for recommending amenities and other trailside items should include:

- Appropriateness
- Functionality
- Attractiveness of design
- Durability
- Maintenance requirements
- Cost

EXAMPLES OF SIMILAR TRAIL SYSTEMS

The Wissahickon Creek Trail, also known as the Green Ribbon Trail, is a similar trail system to what is proposed for the Upper Neshaminy Creek Trail. This trail is 20 miles in length and features a combination of both paved asphalt trail at its lower end, with natural surface or hard cinder surfaces at its northern end due to environmental concerns.



Wissahickon Green Ribbon Trail

The Pennypack Trail is a 10-mile paved asphalt trail running along the banks of the Pennypack Creek within the City of Philadelphia. The trail also continues into Montgomery County where the trail surface is crushed stone.



Pennypack Trail

Additional trails that are similar in nature, with the exception of different trail surfaces and other trail components, include the Perkiomen Trail (21 miles) and the Delaware Canal Towpath Trail.

TRAIL ALIGNMENT

The proposed trail alignment was submitted to the Steering Committee for their review and comment and was also presented to the public as part of the public participation process. The proposed alignment represents the consensus of these various groups.

As stated previously, key factors considered in developing the proposed alignment included:

- Provide connectivity to adjacent neighborhoods, commercial areas, park and recreational sites, schools, and existing trail networks.
- To the extent possible, limit the impact to natural resource features.
- Ensure the safety of all trail users.
- Design the trail to minimize future maintenance requirements.
- Comply with ADA guidelines to the fullest extent possible.

Following is a segment-by-segment analysis that provides a detailed discussion of each trail segment.

SEGMENT 1: TWIN STREAMS PARK TO ROUTE 202 PARKWAY TRAIL - 3.0 MILES

At its northern end, the trail begins in Twin Streams Park at the confluence of the West and North Branches of the Neshaminy Creek. The trail connects to the Chalfont Historic District and the Chalfont SEPTA Regional Rail Station. The parking lot at Twin Streams Park would serve as the trailhead location for this end of the trail.

Exiting Twin Streams Park, the trail will cross the North Branch Neshaminy Creek utilizing the existing bridge into Blue Jay Park. The trail will follow the Neshaminy Creek on property owned by New Britain Township, behind the houses located along Blue Jay Road until reaching the Unami Middle School property.



*Twin Streams Park
Confluence of West and North Branch of Neshaminy*



*Bridge connecting
Twin Streams Park
to Blue Jay Park*

The trail will cross the Unami Middle School property, potentially making use of the existing service road running between the two ball fields. At the eastern edge of the property, the trail will follow the top of the stormwater basin and exit the school property to connect to the existing trail behind the houses located along Lenape Lane. The crossing of the Unami Middle School property would require an easement. This current trail, which is too narrow to accommodate multiple user groups simultaneously, would be widened to 10 feet. The trail will follow the path of the existing trail, exiting onto Lenape Lane / Forrest Drive.

As an alternative, bicyclists and other users could make use of the existing street network exiting Blue Jay Park onto Cardinal Road, then turning right onto Moyer Road, following Moyer Road to Forrest Drive. Moyer Road currently has bike sharrows located along it; however, these would need to be repainted and new bike sharrows added to Cardinal Road.

In both situations, from the intersection of Moyer Road and Lenape Lane / Forrest Drive, the trail will be located on-road as there are no existing sidewalk facilities along Forrest Drive. At the intersection of Forrest Drive and Bristol Road, the trail will cross Bristol Road over to Green Valley Way. Bristol Road is a state-owned road which will require the involvement of the Pennsylvania Department of Transportation in designing this crossing to ensure compliance with safety regulations.



*Proposed location of trail behind
houses on Blue Jay Road*



*Unami Middle School
looking east*

After crossing Bristol Road into New Britain Township, the trail will follow Green Valley Way, which contains existing sidewalks, until the open space area located past the last house on the right-hand side of the road. From here the trail will turn northeasterly, paralleling the boundary between New Britain Township and New Britain Borough, and crossing three private properties, all requiring easements, to reach Wilma Quinlan Nature Preserve.

Within the Wilma Quinlan Nature Preserve are a variety of existing hiking trails. To accommodate multiple user groups, and be in compliance with ADA accessibility guidelines, one of the existing trails would need to be upgraded. While a 10-foot wide asphalt trail will ensure continuity with adjacent trail segments, the final design can be modified and alternative approaches evaluated, if necessary.

Exiting the nature preserve at the point at which the Neshaminy Creek makes a sharp right turn, the trail will enter onto two private properties. New Britain Borough has already negotiated easements with these two properties to allow for the construction of a trail on these properties, the only caveat being that the trail width in these areas would be limited to 8 feet. From this point, there are two potential alignments for the trail, both of which would require a bridge over Cooks Run:

- **Option A - Creek Alignment**

The recommended routing option is to continue the trail along the eastern side of the creek to connect with Upper State Road. This option is preferred as it is both more direct and in closer alignment with the creek as compared to Option B. Additionally, there is an existing clearing that could potentially be used for the trail alignment, therefore limiting the number of trees that would have to be removed.

Upon reaching Upper State Road, the trail will cross Upper State Road and connect with the trail currently under development on the Chalfont-New Britain Municipal Authority property which will connect to the Route 202 Parkway Trail just east of the Neshaminy Creek Bridge.

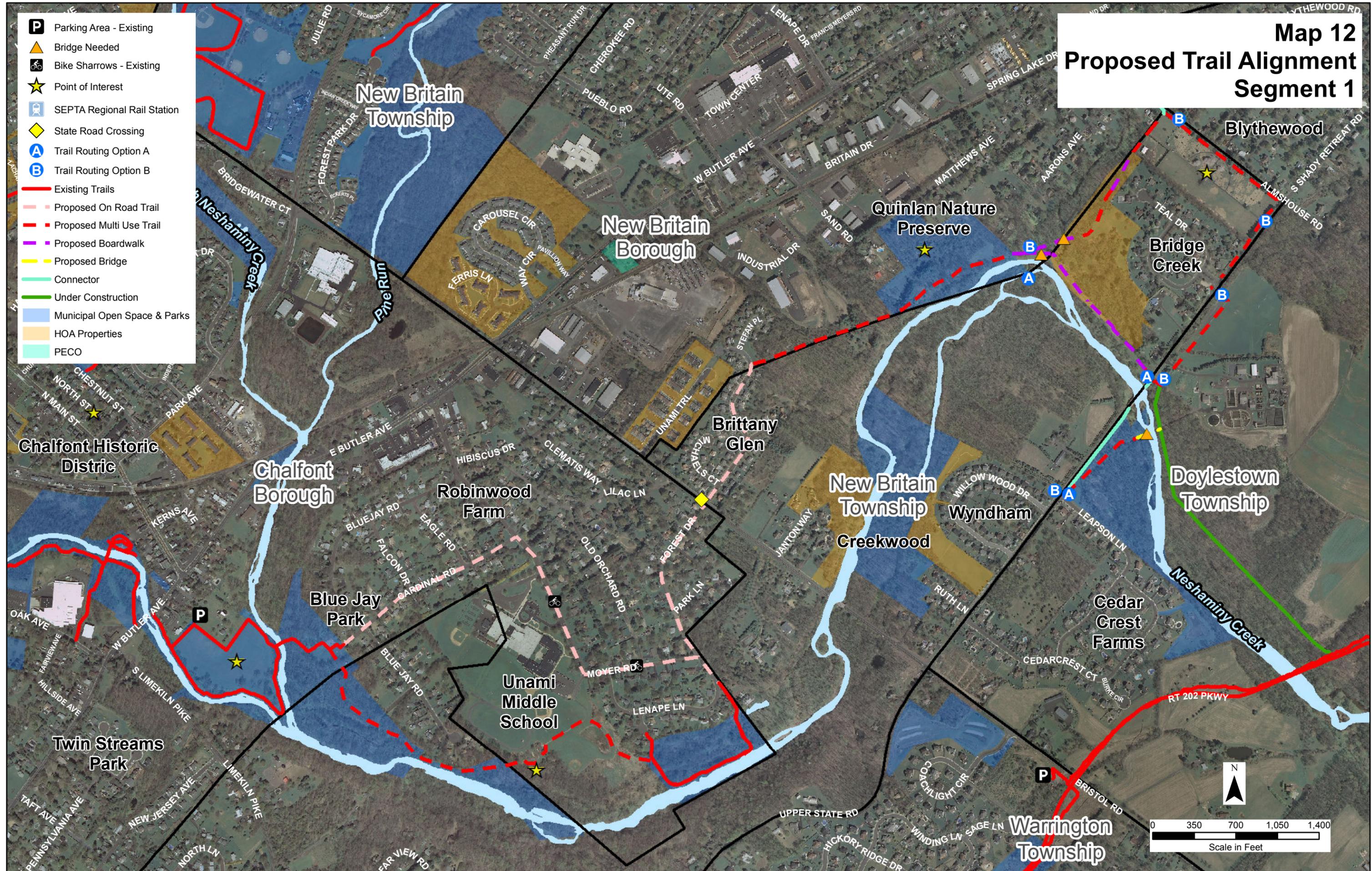
Although more direct, this option would be more expensive as a portion of the trail will need to be a boardwalk due to its close proximity to the creek and location in the floodplain. Additionally, this alignment would require easements from the Bridge Creek Homeowners Association as well as the private property owner on Upper State Road.

- **Option B - Beulah Cemetery**

The alternative alignment would require more easements but would provide a more direct link to the New Britain SEPTA Regional Rail station. This alignment would run parallel to Cooks Creek and Aarons Avenue on property owned by the Bridge Creek Homeowners Association, for which an easement would be needed. Sections of the trail on the HOA property would need to be a boardwalk due to wet conditions in this area.

Map 12 Proposed Trail Alignment Segment 1

- Parking Area - Existing
- Bridge Needed
- Bike Sharrows - Existing
- Point of Interest
- SEPTA Regional Rail Station
- State Road Crossing
- Trail Routing Option A
- Trail Routing Option B
- Existing Trails
- Proposed On Road Trail
- Proposed Multi Use Trail
- Proposed Boardwalk
- Proposed Bridge
- Connector
- Under Construction
- Municipal Open Space & Parks
- HOA Properties
- PECO



The trail will enter the Beulah Cemetery property and make use of the existing road network within the cemetery. An easement has already been negotiated for the use of the cemetery property. Upon wrapping around the Beulah Cemetery property to Upper State Road, the trail will cross four private properties, all of which would require easements. One of these properties faces Upper State Road. The other three properties are located on Teal Drive with their backyards along Upper State Road. The trail will cross Teal Drive, and then cross Upper State Road adjacent to the driveway leading into the parking lot area for the soccer fields located on the Chalfont-New Britain Municipal Authority property. A new trail will be built between the parking lot and the soccer fields to connect to the trail currently being developed running parallel to the Neshaminy Creek, which will then connect to the Route 202 Parkway Trail.



Upper State Road crossing at Teal Drive



Beulah Cemetery

CONNECTOR TRAILS

New Britain SEPTA Regional Rail station (0.15 miles)

As connectivity to public transportation was one of the goals of the proposed trail, a connection to the New Britain SEPTA Regional Rail station is recommended. This connector trail will cross four private properties located along the western side of South Tamenend Avenue, cross South Tamenend Avenue at its intersection with Aarons Avenue, then cross one private property located on the eastern side to connect into the regional rail station. Easement negotiations would be required to implement this connection.

Wyndham and Cedar Crest Farms (0.2 miles)

The second connector trail in Segment 1 would provide a connection to the Wyndham and Cedar Crest Farm subdivisions located off of Upper State Road. Although Cedar Crest Farms is adjacent to the Route 202 Parkway Trail, there is currently no way to access the trail due to very high and steep banks along the trail. For this connector, two alternatives are available:

- **Option A - Upper State Road**

This proposed alignment would consist of constructing a trail along the right-of-way on the southern side of Upper State Road from its intersection with Leapson Lane. The trail will end at the existing bridge over the Neshaminy Creek and make use of the existing sidewalk on the bridge to access the trail located on the Chalfont-New Britain Municipal Authority. This is the more cost efficient of the two options as it makes use of the existing bridge over the Neshaminy Creek.

- **Option B - Doylestown Township property and new Neshaminy Creek bridge**

This option also begins at the intersection of Leapson Lane and Upper State Road. From this intersection the trail will cross property owned by Doylestown Township, and will then require a large-span bridge over the Neshaminy Creek to access the trail on the Chalfont-New Britain Municipal Authority property. Dependent on a final determination regarding the presence of wetlands in this area, there is the possibility that this trail will need to be a boardwalk, thereby adding to the overall expense. Due to the expense involved with Option B, Option A is the recommended alignment for this connector trail.

SEGMENT 2: ROUTE 202 PARKWAY TRAIL (NESHAMINY CREEK TO CENTRAL PARK) - 3.4 MILES

Segment 2 of the trail will utilize the existing Route 202 Parkway Trail from the bridge over the Neshaminy Creek to the Lower State Road and Wells Road intersections. This segment of the trail already exists and therefore the cost is limited to the addition of some signage identifying it as part of the Neshaminy Creek Trail.

At its western end, the trail will connect to the trail under development on the Chalfont-New Britain Municipal Authority property just east of the Route 202 Parkway bridge over the Neshaminy Creek. The trail will then continue to the intersection of Lower State Road and Route 202 Parkway. From this intersection, trail users have three routes to choose from to reach the continuation of the trail in Central Park in Doylestown Township:

- **Option A - Neamand Tract**

Trail users would continue on the Route 202 Parkway Trail to just past the intersection with Lower State Road where they will connect to a trail that will be developed by the developer as part of the redevelopment of the former White Eagle Laboratory property located on Lower State Road.

This trail will wind its way through this redevelopment site and connect to the Neamand Tract and the existing trail behind the Doylestown Lea and Doylestown Crossing developments eventually crossing Wells Road into Central Park near its intersection with Windsor Way. As the current crossing in this area is narrow, it will need to be widened to accommodate the wider trail being proposed.

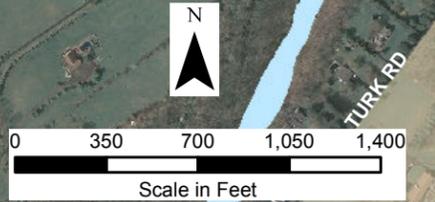
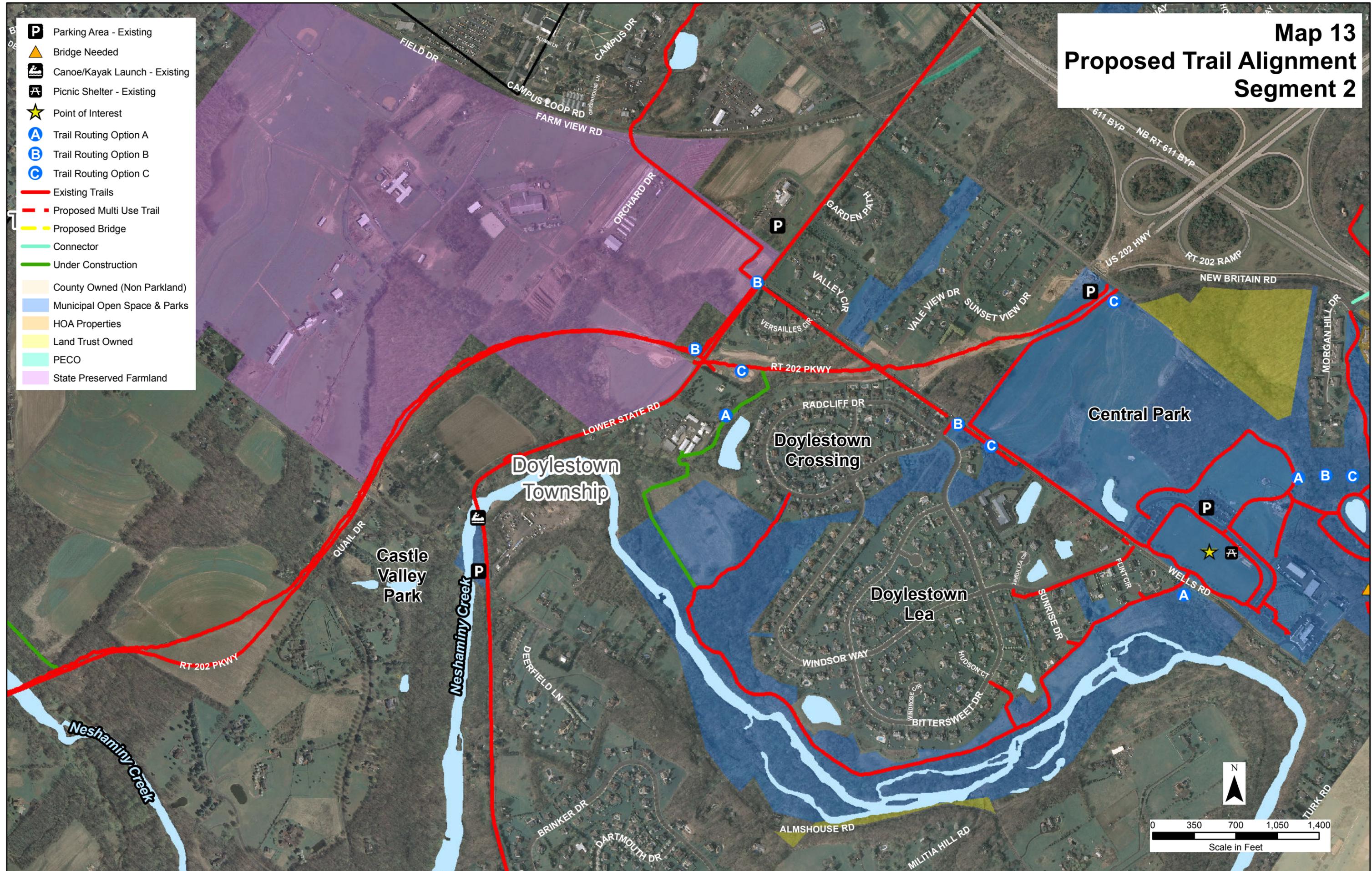
- **Option B - Lower State Road to Wells Road**

Trail users following this route would turn left off of the Route 202 Parkway Trail onto the trail located along the western side of Lower State Road and continue on this trail to the intersection of Lower State Road and Wells Road. Trailhead parking is available at the Delaware Valley College Farm Market.

Trail users would cross Lower State Road and access the trail along the southern side of Wells Road for 0.5 miles until the trail ends at which point trail users would cross Wells Road to connect to the trail on the northern side of Wells Road which continues to Central Park.

Map 13 Proposed Trail Alignment Segment 2

- Parking Area - Existing
- Bridge Needed
- Canoe/Kayak Launch - Existing
- Picnic Shelter - Existing
- Point of Interest
- Trail Routing Option A
- Trail Routing Option B
- Trail Routing Option C
- Existing Trails
- Proposed Multi Use Trail
- Proposed Bridge
- Connector
- Under Construction
- County Owned (Non Parkland)
- Municipal Open Space & Parks
- HOA Properties
- Land Trust Owned
- PECO
- State Preserved Farmland



- **Option C - Route 202 Parkway Trail**

Users of this route would continue to the terminating point of the Route 202 Parkway Trail at New Britain Road where there is trailhead parking available. In this same area is a trail located on Doylestown Township property that runs along the western boundary of Central Park. Users would follow this trail to its connection with the existing trail along the northern side of Wells Road and follow this trail into Central Park.



Route 202 Parkway Trail



Route 202 Parkway Trail at Lower State Road



Existing Trail in Doylestown Lea



Wells Road Crossing – Option A (requires widening)

All three options converge at the Kids Castle located in Central Park where the trail then continues to the stormwater basin located behind the houses on Cornerstone Court in the Doylestown Station development where the trail continues onto Segment 3.

SEGMENT 3: CENTRAL PARK TO BARN PLAZA SHOPPING CENTER (EASTON ROAD) - 0.8 MILES

This segment of the trail will begin at the stormwater basin located on Doylestown Township property. The trail will remain on township-owned property that extends to Turk Road. This is a heavily wooded area with fairly steep creek banks and slopes associated with the tributary to the Neshaminy Creek that runs through this area. This tributary will require two bridge crossings, one shortly after exiting Central Park, and the other along Turk Road, as the current bridge is not wide enough to accommodate the trail.

Developing the alignment for the next section of the trail proved to be challenging due to a variety of concerns including:

- Presence of Bucks County Fish and Game property that is leased from Bucks County.
- Heavy quarry truck traffic along Quarry Road.

- Other county land uses including the Public Safety Training Center and the Department of Corrections facilities.
- Steep slopes and lack of public land ownership along the southern side of the creek.

Based on a combination of these factors, the only feasible, albeit expensive option, was to cross Turk Road onto county-owned property, then cross the Neshaminy Creek with a large-span bridge to access the island located at the bend in the creek near the intersection of Quarry Road and Turk Road.

Beginning at the stormwater basin, the trail remains on township-owned property down to Turk Road. This is a heavily wooded section with some steep slope conditions. There is a tributary to the Neshaminy Creek that would require two bridge crossings, one at the beginning of this section of trail, and the other at Turk Road as the existing bridge on Turk Road is not wide enough to accommodate trail users.



Wooded area between Central Park and Turk Road

Crossing the tributary in this location is necessary to help minimize potential safety conflicts with the adjacent Woodswalk Archery area located on land leased by the Bucks County Fish and Game Association. The Woodswalk area remains south of this tributary and fronts onto Turk Road. Measures to address safety concerns are discussed in more detail in the Security, Liability and Risk Management section of this study.

Crossing Turk Road, the trail will continue on county-owned land located on the eastern side of Turk Road and southern side of Quarry Road. To the extent possible, while also considering the span of bridge required, the trail and approach to the bridge over the creek should be placed as far as possible away from the tributary to the Neshaminy Creek to provide further buffering between the trail and the Woodswalk Archery Target area.



Turk Road Crossing looking north toward Quarry Road and Kutz Elementary School



Woodswalk Archery Area showing Neshaminy Creek in background

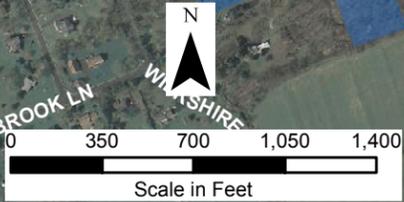
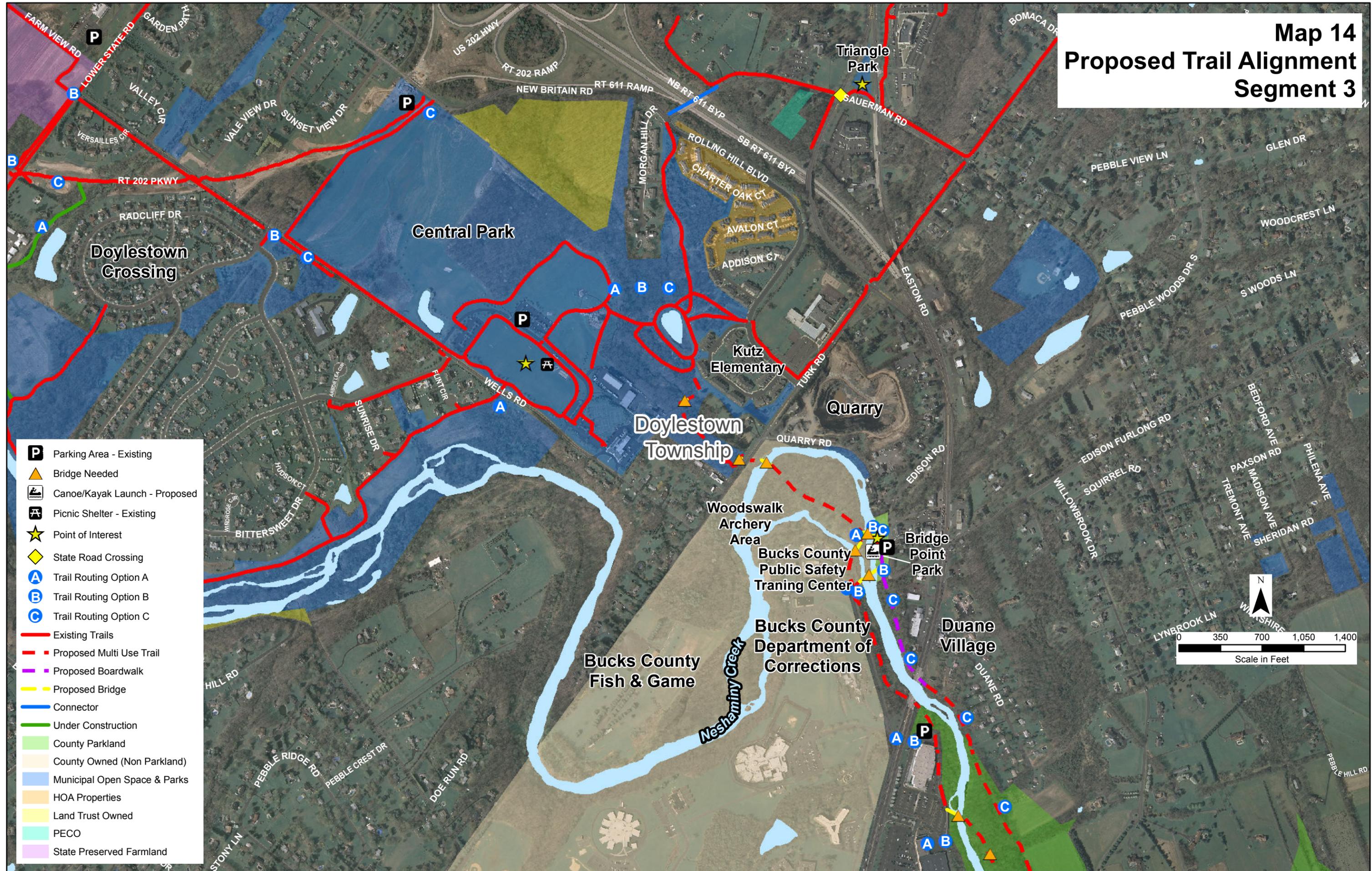


General area of proposed bridge crossing

Once on the island the trail will continue easterly toward Easton Road. Although the entire island is within the floodplain, there are also delineated wetlands found along the southern side of the island which should be avoided.

Map 14 Proposed Trail Alignment Segment 3

- P** Parking Area - Existing
-  Bridge Needed
-  Canoe/Kayak Launch - Proposed
-  Picnic Shelter - Existing
-  Point of Interest
-  State Road Crossing
- A** Trail Routing Option A
- B** Trail Routing Option B
- C** Trail Routing Option C
-  Existing Trails
-  Proposed Multi Use Trail
-  Proposed Boardwalk
-  Proposed Bridge
-  Connector
-  Under Construction
-  County Parkland
-  County Owned (Non Parkland)
-  Municipal Open Space & Parks
-  HOA Properties
-  Land Trust Owned
-  PECO
-  State Preserved Farmland



As the trail approaches the eastern side of the island, there are three potential trail routes that were explored. Of these, Option A is the recommended trail routing as it minimizes both the number of bridges and easements required.

- **Option A - Public Safety Training Center adjacency to Old Edison Road**

This trail route would take users across the creek separating the island from the Public Safety Training Center. Once off the island, the trail will run between the Public Safety Training Center and the creek coming out near where Edison Road previously turned right and crossed the creek to connect with Edison Furlong Road. The trail will continue along the western side of the Neshaminy Creek on county-owned land, cross under Easton Road (Route 611) and connect to trailhead parking located at the northern end of the Barn Plaza Shopping Center and Theater. The shopping center may require an easement for use of this parking lot.



Option A - Trail Area with Public Safety Training Center in background

- **Option B - Bridge Point Park, Neshaminy Creek crossing to Old Edison Road**

Under this proposed alignment, the trail will exit the east side of the island via a bridge into Bridge Point Park. The trail will cross back over the creek to align with the proposed route of Option A which extended the trail in the narrow strip of county-owned land between Old Edison Road and the western edge of the creek. Although this alignment offers the advantage of connecting into Bridge Point Park and its associated trailhead parking area, it is the most expensive routing option due to two bridges being required versus the one bridge under Option A.



Option B Trail Area with Bridge Point Park in background

An additional option would be to build a connector bridge over the Neshaminy Creek off the primary trail route described in Option A that would provide a connection to Bridge Point Park. Although there are limited residential neighborhoods in the Edison Village area surrounding Bridge Point Park, the bridge would provide some additional connectivity to the commercial areas located along Easton Road north of the creek.

- **Option C - Bridge Point Park to Duane Village**

In contrast to Options A and B which continue the trail on the western side of the Neshaminy Creek, Option C initially follows the same route as Option B with a bridge into Bridge Point Park. However, unlike Option B which then crossed back across the creek, Option C would remain on the eastern side of the creek and cross under the northern end of the Easton Road (Route 611) bridge.

Although in the next segment of the trail, Segment 4, the trail will eventually be located on the eastern side of the creek, the proposed alignment of Route C is not ideal as it would require easements across the backyards of several properties located on Duane Road in the Duane Village development off of Easton Road. Additionally, although the county owns the land along the east side of the creek, it is very narrow in places and might not allow for the placement of the trail adjacent to the creek. While there is privately-owned land available behind the shopping center and gas station, these would necessitate trail easements, as well as identification of a way to get the trail back down so that it could go under Easton Road (Route 611) since the trail cannot cross Easton Road at this location.

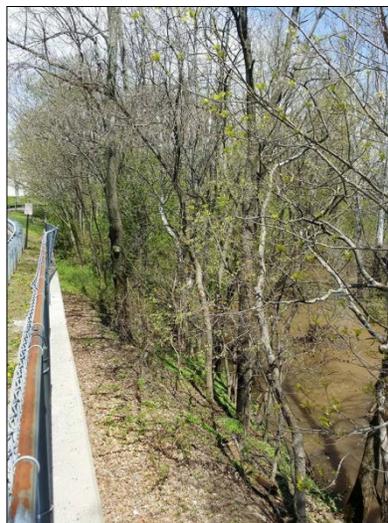
SEGMENT 4: BARN PLAZA SHOPPING CENTER (EASTON ROAD) TO VALLEY ROAD TRAILHEAD - 1.7 MILES

The trail alignment at the start of Segment 4 varies depending on the alignment route selected in Segment 3 with Options A and B from Segment 3 continuing along the western side of the creek, under the Easton Road (Route 611) bridge and connecting to the trailhead parking behind the Barn Plaza Theater. Option C, as outlined in the discussion of Segment 3, follows the eastern bank of the creek beginning at Bridge Point Park on the other side of Route 611. As mentioned previously, the preferred alignment is Option A or B as Option C would have greater impact to adjacent property owners. Additionally, alignments A and B provide connection to the SEPTA Route 55 Bus which runs along Easton Road.

After the trail crosses under the Easton Road (Route 611) bridge on the western side of the creek, the trail will parallel the service drive located behind the Barn Plaza Theater. After approximately 600 feet, near the end of the service drive, the trail will shift to the left and cling to the base of the retaining wall supporting the parking area between the theater and the shopping center. This would require that a separate smaller retaining wall be built in this section to support the trail and that guard rails be added for trail user safety. Another possibility that could be explored further at the engineering and design stage is for an elevated walkway to be built that would cantilever off the existing retaining wall. This section of the trail will require an easement from the owner of the Barn Plaza Theater.



Trail area between the service drive around the Barn Plaza Theater and the Neshaminy Creek

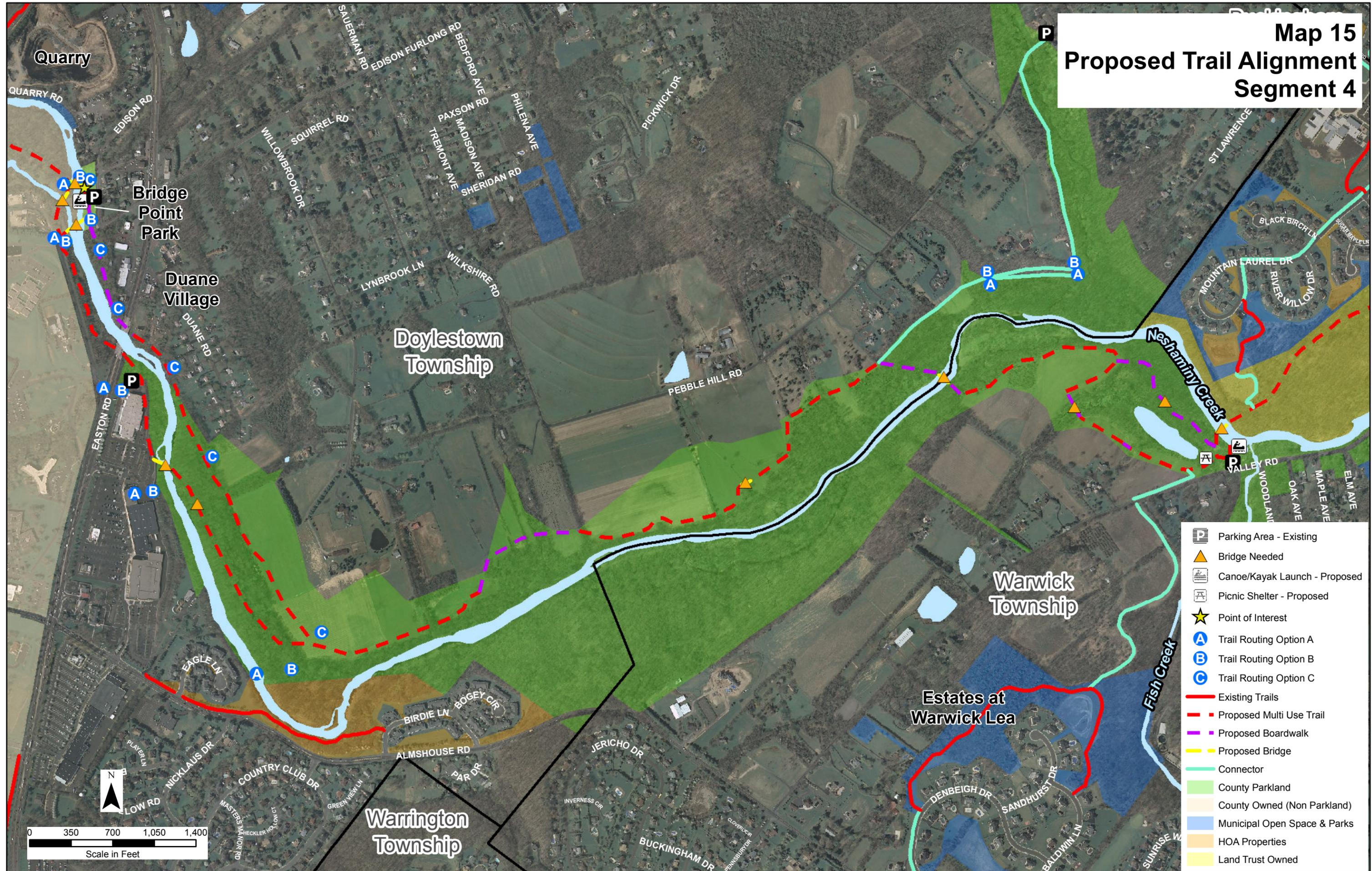


Area for trail placement viewed from above looking toward the Barn Plaza Theater



Trail placement area and approximate location of bridge for creek crossing

Map 15 Proposed Trail Alignment Segment 4



- Parking Area - Existing
- Bridge Needed
- Canoe/Kayak Launch - Proposed
- Picnic Shelter - Proposed
- Point of Interest
- Trail Routing Option A
- Trail Routing Option B
- Trail Routing Option C
- Existing Trails
- Proposed Multi Use Trail
- Proposed Boardwalk
- Proposed Bridge
- Connector
- County Parkland
- County Owned (Non Parkland)
- Municipal Open Space & Parks
- HOA Properties
- Land Trust Owned

0 350 700 1,050 1,400
Scale in Feet



An assessment was made of the potential to keep the trail on county-owned land on the western side of the creek as opposed to the proposed alignment. As this area of the proposed trail is subject to fairly recurrent flooding, accompanied by high floodwaters, this option was determined to not be feasible.

After following the retaining wall for approximately 200 feet, the trail will cross the Neshaminy Creek to be on the eastern side of the creek. The reason the trail will cross at this point is due to:

- Limited amounts of county owned land remaining;
- Presence of a wastewater treatment plant behind the shopping center approximately 1,000 feet downstream from the proposed crossing area; and
- Need to eventually cross the creek as there isn't enough room for a trail to be placed along the back of homes located on Eagle Lane near the leftward bend in the creek.

As Map 16 for Segment 4 shows, the trail alignment for Options A and B would be kept near the creek versus moving it further east. This is due to the presence of some very wet areas as you move easterly associated with frequent flooding.

There are higher spots located on both sides of this wet area which are slightly higher in elevation where the trail could be located. A network of hiking trails already exists in this area.

As shown on Map 16, the different alignments for Options A, B, and Option C eventually become the same alignment at the easterly bend in the Neshaminy Creek as it approaches Almshouse Road. From the bend in the creek, the trail also would turn to the east and following a path that roughly parallels the Neshaminy Creek and Pebble Hill Road.

Along this route, the trail will traverse a variety of different landscapes including farm fields, wooded areas, and a Christmas tree farm. As the topography in this area is a gentle slope from Pebble Hill Road down to the creek, there are several wet areas along this alignment that would require drainage improvements and the use of a boardwalk. As evidenced by the presence of tree stands, hunting occurs in this area.

Map 16 – Detail of Segment 4 Trail Alignment



After approximately one mile, the trail will head in a southeasterly direction toward the proposed trailhead and proposed county park facility at Valley Road. This turn roughly mirrors the flow of the creek in this area. Based on the presence of wet soils in this area, another length of boardwalk trail will be necessary in this section as well as an additional bridge crossing. As the trail crosses over the creek it will be leaving Doylestown Township and entering Warwick Township, although continuing to remain on county-owned land.



Hiking trails along east side of Neshaminy Creek

After crossing over the creek, the trail will follow the edge of a farm field in the area so as to minimize the impact to any farming activities that may be taking place on the property and then cut through a wooded section to loop around the western and southern sides of the pond located here, and eventually to the Valley Road trailhead location. The county owns the land in this area and, pending available funding, a park could be established here featuring a walking trail around the pond, an ADA accessible fishing pier, a picnic shelter, information kiosk, and a canoe / kayak launch site among other amenities.



Scenic vistas along proposed trail alignment

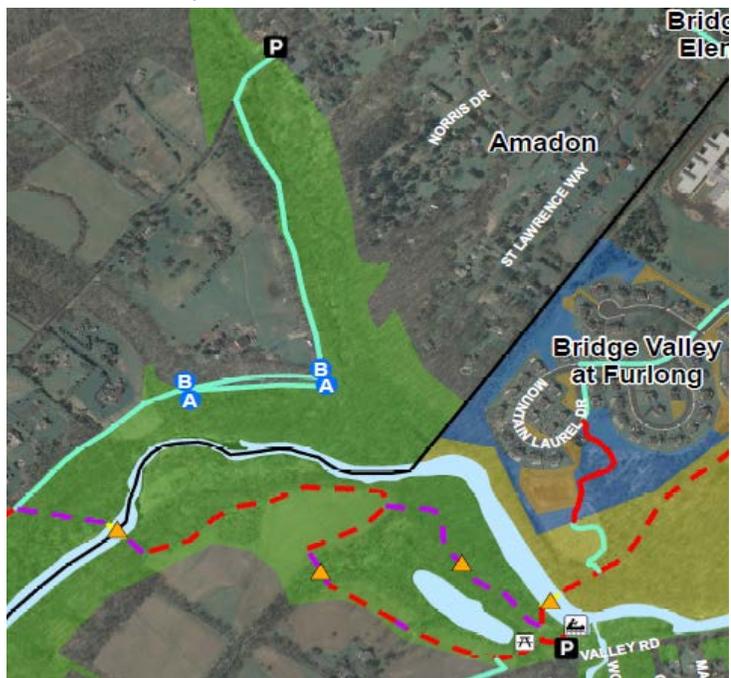
CONNECTOR TRAILS

Pebble Hill Road (0.8 miles)

There is an opportunity to provide a connector trail leading up to Pebble Hill Road from the main trail. The primary advantage of this connector trail is that it would provide an additional trailhead location, particularly for residents in the vicinity of Pebble Hill and Sugar Bottom Roads. An easement would potentially need to be negotiated with the existing daycare center, Kinder Works, located at the trailhead location to allow the use of their parking lot on the weekends when they are closed.

The Pebble Hill Road connector trail will veer off of the primary trail where the primary trail turns to the southeast as shown in Map 17. The initial 1100-foot segment of the connector trail will remain close to the northern property line of the county-owned property. After the initial section, there are two possible alignments for the next section of the connector trail. Option A would have the trail remain on county-owned land, but would require the use of a boardwalk due to the very wet soil conditions in this area due to it being the confluence of the Neshaminy Creek and the tributary leading down from Pebble Hill Road. The other alternative, Option B, would require two trail easements, but would place the trail on higher ground and therefore avoid the use of the more expensive boardwalk. Both are viable alignments.

Map 17 – Pebble Hill Road Connector Trail



After approximately 825 feet, both alignments would turn due north and parallel the tributary routing along its western side up to Pebble Hill Road. Upon reaching Pebble Hill Road the trail will be on road along Pebble Hill Road for approximately 350 feet to access the trailhead parking lot at Kinder Works.

Valley Road South Connector Trail (1.4 miles)

Estates of Warwick Lea, Bucks County Country Club, Mountain View, Warwick Woods, Guinea Lane Park

The Valley Road South connector trail will provide connections to Guinea Lane Park and four developments located in Warwick Township. The recommended alignment, going from the Valley Road trailhead parking area to Guinea Lane is as follows:

- Exit the Valley Road trailhead and proposed park and head southwesterly on private property along the north side of Valley Road for approximately 550 feet. An easement would need to be negotiated with this property owner.
- Cross Valley Road just west of the 4th driveway on the southern side of Valley Road after leaving the Valley Road trailhead. There is a narrow strip of trees separating this driveway from the adjacent farm fields.

Map 18 – Valley Road South Connector Trail



- The trail will follow the edge of the farm fields, eventually entering the woods at the southwest corner of the field, to connect to the existing trail around a stormwater basin located in the Estates of Warwick Lea development. An existing easement on this property provides a trail easement paralleling Fish Creek. However, an analysis of the area required to continue the trail to Valley Road following this alignment revealed several obstacles including the need to acquire additional trail easements and natural resource constraints on the county-owned property on the southern side of Valley Road where the trail will cross. Based on this field analysis, the existing easement would need to be modified to allow the trail to follow the edge of the farm field versus its current placement.
- The trail will then follow the trail to the right within the Estates of Warwick Lea, eventually connecting to Denbeigh Drive. Upon reaching Denbeigh Drive, trail users would divide into two user groups with bicyclists using the road and other trail users using the existing sidewalk.

Upon reaching the signalized interchange at Almshouse Road, bicyclists would cross and use Guinea Lane where new bike sharrows would be required, while other trail users would use the existing sidewalk along the southeast side of Guinea Lane until reaching Guinea Lane Park which contains its own system of trails. The sidewalk continues past Guinea Lane Park, providing connections to developments in Warwick Township.

SEGMENT 5: VALLEY ROAD TRAILHEAD TO MILL ROAD - 1.5 MILES

Segment 5 of the trail begins at the Valley Road trailhead and would require a large span bridge over the Neshaminy Creek. Once over the creek, the trail will exit county-owned land and onto land owned by Heritage Conservancy, who has indicated a willingness to grant a trail easement. This parcel, which is located almost entirely in the floodplain, is heavily wooded and, along its northern boundary with the Bridge Valley at Furlong development, contains very steep and rocky outcroppings. Due to the underlying wet soil conditions in this area, additional excavation, geotextile stabilization and drainage improvements will be needed.



Heritage Conservancy Property at Valley and York roads

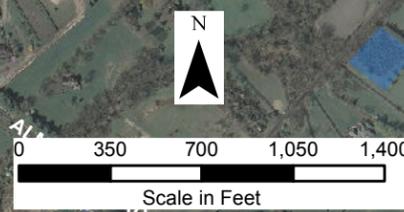
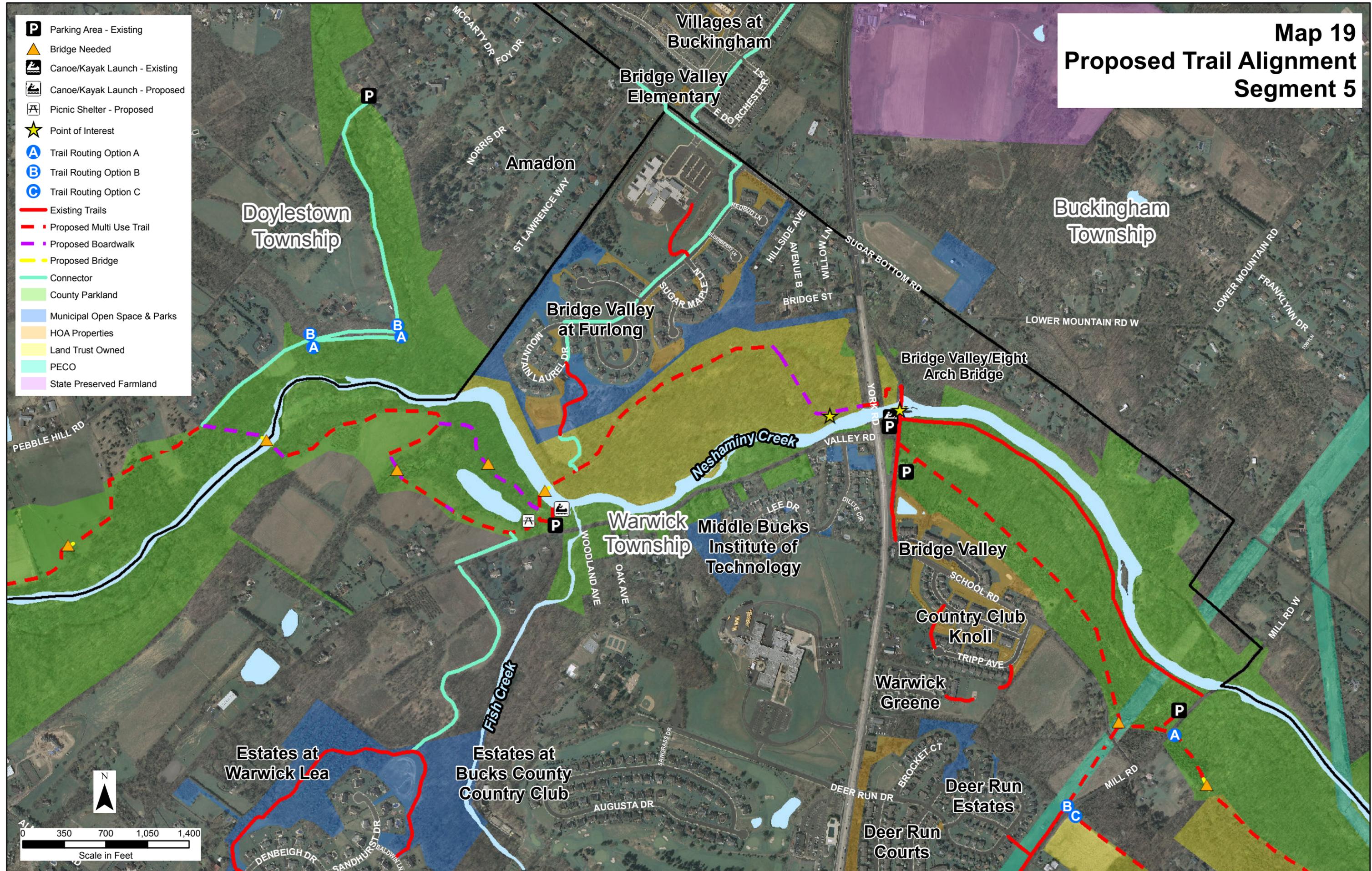
Buckingham Township Connector Trail (1.4 miles)

Shortly after crossing the Neshaminy Creek onto the Heritage Conservancy owned property, a connector trail is proposed that would lead to the Bridge Valley at Furlong development located in Warwick Township and the Villages at Buckingham and Heritage Center developments located in Buckingham Township.

The connector trail would begin approximately 250 feet on the left after crossing the creek, and then continue approximately 500 feet on the Heritage Conservancy property, before connecting to an existing dead-end trail on open space owned by Warwick Township and extending down from Mountain Laurel Drive.

Map 19 Proposed Trail Alignment Segment 5

- P** Parking Area - Existing
- Bridge Needed
- Canoe/Kayak Launch - Existing
- Canoe/Kayak Launch - Proposed
- Picnic Shelter - Proposed
- Point of Interest
- A** Trail Routing Option A
- B** Trail Routing Option B
- C** Trail Routing Option C
- Existing Trails
- Proposed Multi Use Trail
- Proposed Boardwalk
- Proposed Bridge
- Connector
- County Parkland
- Municipal Open Space & Parks
- HOA Properties
- Land Trust Owned
- PECO
- State Preserved Farmland



Upon reaching Mountain Laurel Drive, the trail will make use of the roadway and existing sidewalks in this development until it reaches the crosswalk in front of Bridge Valley Elementary School located on Sugar Bottom Road. Making use of the existing crosswalk, the trail will cross Sugar Bottom Road, and via the existing sidewalks and road network within the Villages at Buckingham and Heritage Center developments, provide an on-road/sidewalk connection to these neighborhoods. If the existing flashing light at the intersection of Heritage Center Drive and York Road were to be converted to a fully operational light, then the trail could also connect to the trail system in the Devonshire Estates development.



Sugar Bottom Road crossing



Villages at Buckingham



Crossing from Villages at Buckingham into Heritage Center

Returning to the primary trail route, to minimize the impact to resources on this property, the proposed primary trail alignment will be at the base of the rock outcroppings, separating the Bridge Valley at Furlong development from the Heritage Conservancy property. During the field work, the potential for placing the trail along the top of the ridge separating these properties was investigated. However, this alignment was determined to be not feasible due to:

- Steepness of the slopes in the area, with a vertical elevation change of about 70 feet occurring over a 175 foot horizontal distance, or approximately a 40-degree slope.
- Presence of several ravines along this stretch which would require multiple bridges to span the ravines.

As the trail approaches York Road (Route 263), the trail will turn to the south toward the creek, and then left toward the York Road bridge. As this segment of trail crosses some wetland areas, the trail section in this area will need to be an elevated boardwalk.

The trail will pass under the York Road (Route 263) bridge, continuing onto another property owned by Heritage Conservancy. This parcel is located between the existing York Road bridge and the historic Eight Arch Memorial Bridge owned by the Warwick Township Historical Society. During the design phase, consideration will need to be given as to how to transition the trail up to the surface of the Eight Arch bridge as the parcel is fairly small with some degree of slope. Additionally, the bridge abutments are fairly high.



Eight Arch Bridge abutment

The trail will cross the Eight Arch Bridge, for which an easement will be needed, to cross to the southern side of the Neshaminy Creek. There are two trailhead parking areas in this area, one adjacent to the creek which also serves as a canoe and kayak launch site, and the other at the Big Brothers Big Sisters facility.

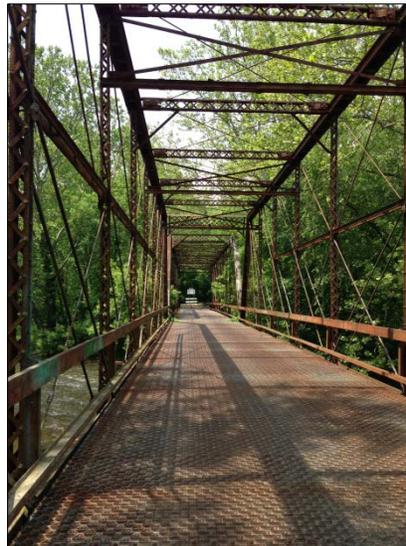
From the Big Brothers Big Sisters facility, the trail will continue easterly on county-owned property, roughly paralleling School Road, until the trail reaches a tributary to the Neshaminy Creek within the PECO powerline corridor. There is currently a break in the tree line along this section where the trail could be placed in order to minimize the removal of trees. A bridge would be needed to cross the tributary and an easement acquired from PECO.



Eight Arch Bridge

Upon crossing the tributary to the Neshaminy Creek, the trail will split into two different sections, with the section to the left providing access to the trailhead located at the existing parking lot on Mill Road, and onto the routing for Option A for Segment 6 of the trail. The section of trail to the right would continue within the PECO corridor, have an at-grade crossing of School Road, then continue again within the PECO corridor to connect to the existing trail which runs along Mill Road providing access to several communities located between Mill Road and York Road. This section of the trail will also be the starting point for Options B and C of the trail in Segment 6. Regardless of which trail alignment option is chosen for Segment 6, both the trail connecting to the Mill Road trailhead and the connection to the PECO powerline trail along Mill Road would be constructed.

As part of the public input process, interest was expressed in creating a connection to the Middle Bucks Institute of Technology. This connection will be made via the existing trail along Mill Road, and through the street and sidewalks of the Deer Run Estates and Warwick Greene developments, crossing York Road at the intersection with Augusta Court. This intersection is scheduled to be upgraded to a signalized intersection as part of the ongoing improvements to the Route 263 corridor.



Mill Road Bridge over Neshaminy Creek

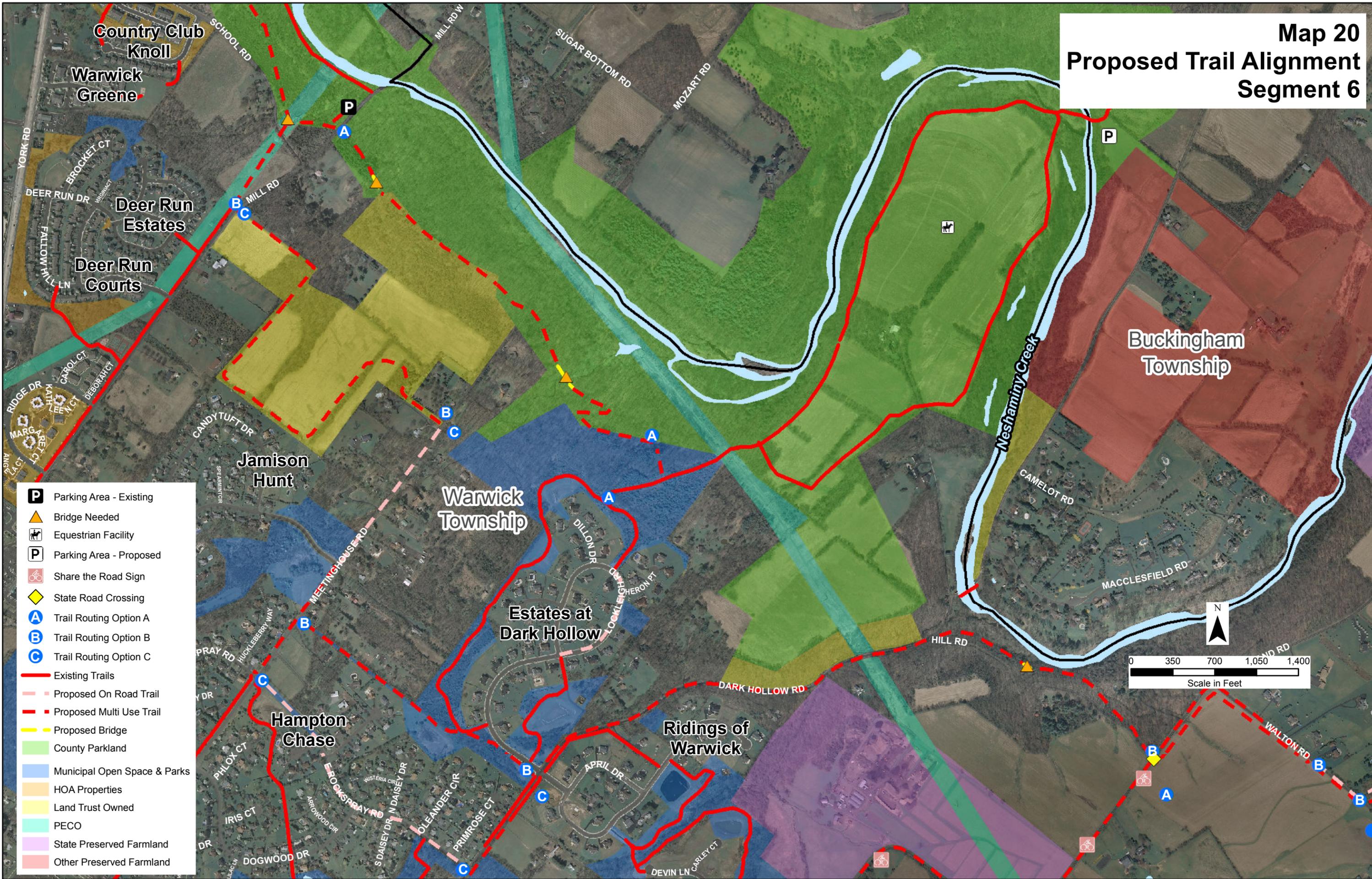


End of existing trail along Mill Road within PECO powerline corridor

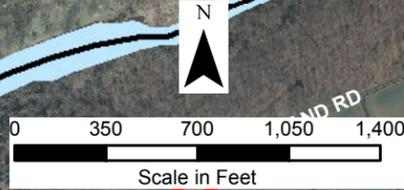
SEGMENT 6 -MILL ROAD TO DARK HOLLOW ROAD - 1.6 MILES

Segment 6 of the Upper Neshaminy Creek trail begins at the Mill Road trailhead. As discussed in the trail alignment section for Segment 5, the proposed alignment for Segment 6 has a variety of potential alternatives as shown on Map 20.

Map 20 Proposed Trail Alignment Segment 6



- P** Parking Area - Existing
- ▲** Bridge Needed
- Equestrian Facility
- P** Parking Area - Proposed
- Share the Road Sign
- State Road Crossing
- A** Trail Routing Option A
- B** Trail Routing Option B
- C** Trail Routing Option C
- Existing Trails
- Proposed On Road Trail
- Proposed Multi Use Trail
- Proposed Bridge
- County Parkland
- Municipal Open Space & Parks
- HOA Properties
- Land Trust Owned
- PECO
- State Preserved Farmland
- Other Preserved Farmland



- **Option A - County, Heritage Conservancy and Warwick Township properties**

The preferred alignment for Segment 6 starts near the Mill Road parking lot and then crosses Mill Road onto county-owned land. After approximately 500 feet, and a 150-foot bridge, the trail will cross onto property owned by Heritage Conservancy. Although the county-owned property continues, field observations indicated that it was very wet in most areas which would necessitate the use of a boardwalk. However, by moving the property slightly uphill onto property owned by Heritage Conservancy, the additional expense of a boardwalk can be eliminated. The trail will continue for approximately 1,250 feet along the property line between the county-owned and Heritage Conservancy-owned property, an easement being needed from Heritage Conservancy, before crossing back onto county-owned land.



Basin and trail in Estates at Dark Hollow

The trail will continue approximately 650 feet through a heavily wooded area, intersecting with a tributary stream valley with steep slopes along its banks, cross a 200-foot long bridge before requiring a switchback trail to ascend 60 vertical feet over a horizontal distance of approximately 220 feet. A switchback is a trail up a steep hill or mountain that is like a zig-zag pattern instead of a straight trail. The zig-zag pattern protects the hill and the trail from excessive erosion. Trails that go straight up and down steep hills are subject to erosion which turn the trail into gullies because water moves faster down steep straight-aways and it hollows out the trail and washes all the soil and vegetation downhill.



Tributary stream valley

At the top of the switchback, the trail will enter onto property owned by Warwick Township as part of the Estates at Dark Hollow development. The trail will then connect into the existing multi-use trail as part of that development. Signage placed at the intersection of the new trail and the existing trail will direct trail users to the left as this portion of the neighborhood trail passes behind fewer private homes. Upon reaching Lockleigh Road, bicyclists will make use of the road and other trail users the existing sidewalk for approximately 1,000 feet until converging again at the trail leading off of Lockleigh Road, proceeding around the basin, eventually connecting to the intersection of Dark Hollow and Lockleigh roads.



PECO powerline corridor

As part of the field work conducted, the possibility of placing the trail closer to, and parallel with, the creek within the PECO powerline corridor was discussed. However, this alignment had two major challenges associated with it that resulted in this alignment being determined non-feasible:

- Wetlands within the PECO corridor;
 - Once out of the wetlands, there is a very steep hill with a significant drop off on each side associated with erosion due to the straight downhill nature of this hill. The hill ascends 100 feet vertically over a distance of approximately 450 feet horizontally, approximately a 22-degree slope.
- **Options B and C- Mill Road, Heritage Conservancy, Meetinghouse Road**

Alignment options B and C for Segment 6 follow the same routing for most of their lengths so they are being presented together. Both of these trail segments will make use of new trail proposed within the PECO powerline corridor discussed at the end of Segment 5. This trail will extend the existing trail running parallel to Mill Road within the PECO corridor down to and across School Road.

The current trail ends at the point at which Mill Road makes a slight bend to the right. Directly opposite the end of the trail is a driveway. The trail will cross Mill Road to the right of this driveway onto property owned by Heritage Conservancy. Once across Mill Road, the trail will hug the edge of the farm field, and parallel the driveway, following it around as it turns to the right. The driveway will then turn to the left again at which point the trail will continue straight ahead for approximately 1,200 feet running along the edge of the farm field located on the Heritage Conservancy property and behind the properties facing onto Mill Road.

After 1,200 feet, the trail will turn to the left and head in a southeasterly direction for approximately 875 feet, at which it will turn to the northeast and parallel the tree line for approximately 800 feet. To afford more privacy to the two properties and residences located on Meetinghouse Road that the trail will exit between, the trail will take a curving route of 975 feet to access the exit point onto Meetinghouse Road.

This particular section of the trail located on Heritage Conservancy property does contain some potential safety risks. These risks arise from Heritage Conservancy leasing out the land to farmers who in turn allow hunters onto the property to help control damage to the crops stemming from deer who wander up from the wooded areas adjacent to the creek. Strategies for addressing these potential safety risks are outlined in greater detail in the Security, Liability and Risk Management section under Implementation Strategies.



End of Mill Road trail opposite Heritage Conservancy property to right of driveway



Point of exit onto Meetinghouse Road

Alignment Options B and C continue to remain in alignment exiting onto Meetinghouse Road. Once the trail reaches Meetinghouse Road, it will turn right in a southwesterly direction on be an on-road trail section for approximately 1,500 feet until it reaches West Rockspray Road. The on-road section and the inability to incorporate a trail or a sidewalk off-road stems from several factors including:

- Narrow right-of-way along this section of Meetinghouse Road;
- Houses are set close to the road; and
- Steep slopes along the road associated with the tributary stream mentioned in Alignment Option A.

Alignment options B and C continue to remain the same for approximately 525 feet past the intersection of West Rockspray and Meetinghouse roads in the form of a 10-foot wide trail along the northwest side of Meetinghouse Road. At this point, Options B and C diverge.

- **Option B - Basin Access Parcel**

After the first 500 feet of trail under alignment Option B, the trail will cross Meetinghouse Road onto a narrow parcel that extends from Meetinghouse Road to Dark Hollow Road. There is a stormwater basin located behind the homes located at the end of North Daisey Drive. Although it would be potentially possible to access the basin from either Meetinghouse Road or Dark Hollow Road using this parcel, it appears that currently any serving of the basin is done by accessing the basin using the existing multi-use trail as part of the Estates at Dark Hollow.



*Entrances to basin access parcel:
Meetinghouse Road*



Dark Hollow Road

Additionally, this alignment is not an ideal one as:

- The access parcel is only 20 feet wide and at its entrance at Meetinghouse is immediately adjacent to a private residence.
- The trail would run behind several homes in the Jamison Hunt development located on Ironwood Drive, North Daisey Drive, Oleander Circle and Primrose Court.

- **Option C - East Rockspray Road**

This alternative trail alignment would extend the trail along Meetinghouse Road for an additional 575 up to the existing trail located along Meetinghouse Road at the intersection of East Rockspray Road. Although this alignment doesn't have the same privacy concerns as Alignment B, a large portion of this section is on-road without the benefit of adjacent sidewalks.

The trail will follow East Rockspray Road through the Jamison Hunt development to its intersection with Dark Hollow Road. Upon reaching Dark Hollow Road, the trail will cross the road and join to a new trail along the southeast side of Dark Hollow Road connecting to the township-owned trail through the woods leading at the southern end, and the trail behind the two homes on April Drive near the intersection of Lockleigh Road and Dark Hollow Road as part of the Ridings of Warwick development. This is the same terminating point as Options A and B. A 425-foot section of this trail along Dark Hollow Road will require an easement from a private property owner.

Option A is the preferred alignment for several reasons including:

- Although Meetinghouse Road is a low-volume dead end road whose narrowness assists in keeping speeds down, the trail would have to be on-road, thereby limiting the ability of certain user groups to use this section of the trail. Although a small section of Option A along Lockleigh Road is also on-road for bicyclists, there are sidewalks available for other trail users.
- Safety concerns associated with hunting and farming on the Heritage Conservancy owned properties.
- Option A is a more scenic routing since it is in a heavily wooded area closer to the Neshaminy Creek corridor.
- Fewer privacy concerns versus Option B specifically associated with residences backing up to the basin access parcel.
- Eliminates on-road segment on East Rockspray Road associated with Option C.
- In the absence of Alignments B and C, connectivity of the primary trail to residents of the Jamison Hunt and Hampton Chase developments can still be achieved in one of two ways:
 - Street and trail connections leading to the proposed trail along the eastern side of Dark Hollow Road between East Rockspray Road and Lockleigh Road.
 - Connectivity to the Mill Road trail by building a trail on township owned open space approximately bordered by West Rockspray Road to the north, Meetinghouse Road to the east, Almshouse Road to the south, and the Warwick Square Shopping Center to the west. The entrance to this parcel on West Rockspray Road is opposite Jamison Hunt Park. The trail could loop behind the houses located on Magnolia Way, run behind the Warwick Square Shopping Center, eventually exiting from behind the shopping center at the McDonald's.



Trail placement along Meetinghouse Road right-of-



Tail in woods off Dark Hollow



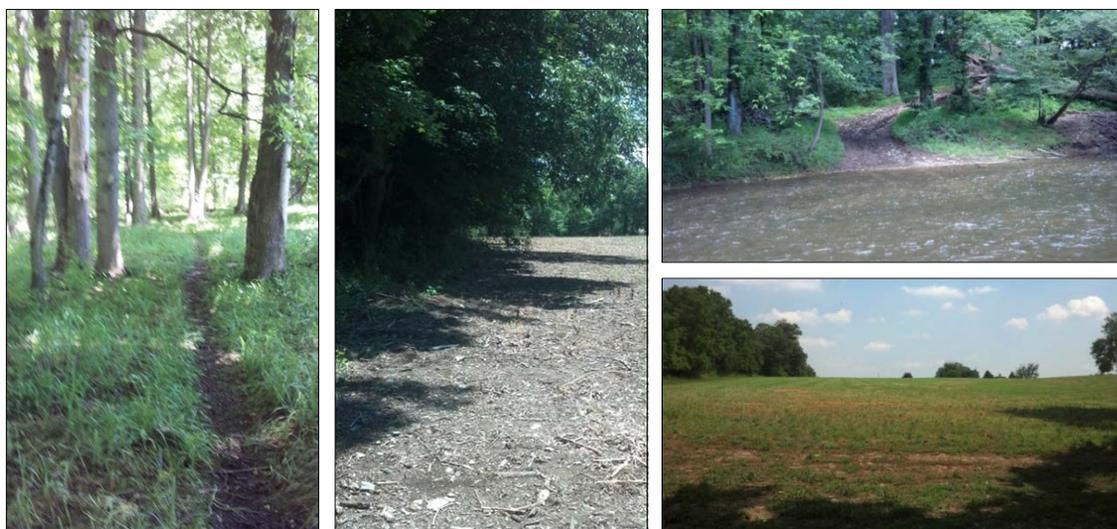
Dark Hollow Road



East Rockspray Road

Dark Hollow Road Equestrian Trails

Part of the Segment 6 trail project area includes a large county-owned property where the Neshaminy Creek bends back on itself reversing its direction of flow from northeast to southwest. Currently on this county-owned parcel are a variety of equestrian trails. As this area is off the primary trail route, which helps avoid conflicts between equestrians and other user groups, this trail plan recommends upgrades to the existing access to this sight off of Dark Hollow Road, approximately 0.5 miles south of its intersection with Swamp Road in Buckingham Township. There is a creek crossing at the bend in the creek that is already being used by equestrians.



Dark Hollow Road Equestrian Area

As indicated in the *Pennsylvania Trail Design & Development Principles - Guidelines for Sustainable, Non-motorized Trails*, horseback riders do not need a wide or highly developed trail; however, they do prefer variety. Water crossings, fallen logs, grade climbs and descents, open areas, and woods, all of which are present on this large county-owned parcel (108+/- acres), create interesting trail dynamics.

SEGMENT 7: DARK HOLLOW ROAD TO SACKETTSFORD ROAD - 1.6 MILES

Segment 7 of the Upper Neshaminy Creek Trail begins at the intersection of Lockleigh and Dark Hollow roads where all three trail alignment options outlined in Segment 6 terminate. Due to a variety of constraints, it is not possible for this entire segment of the trail to be off-road. Some of these constraints include:

- Very steep slopes in the area;
- Presence of state funded preserved agricultural parcels which prevents the placement of trails on the property;
- Deed restrictions associated with how the property has been deeded from one owner to the other over time;
- Current trail easements that restrict the type of trail surface and users allowed to use the trail; and
- Presence of a stream that starts on one side of Dark Hollow Road then traverses to the other side.

Given these various restrictions, bicyclists will initially follow a different trail alignment versus other trail users from Dark Hollow Rd to the intersection of Walton Road and Rushland Road. The primary reason for this is that there are currently properties along the Neshaminy Creek which have agreed to allow trails on the property for the purpose of hiking and nature study, but which forbid biking and horseback riding. These same easement provisions limit the trail width to 6 feet and specify that it must be made of pervious material. Because of these restrictions, there was no alternative but to separate bicyclists from other trail users.

After the initial separation the two user groups will be reunited for the segment of trail extending from the intersection of Rushland Road and Walton Road to the intersection of Sackettsford Road and Wilkinson Road, the terminating point of the Upper Neshaminy Creek Trail.

Bicyclists - Dark Hollow Rd to Walton Road and Rushland Road - 1.9 miles

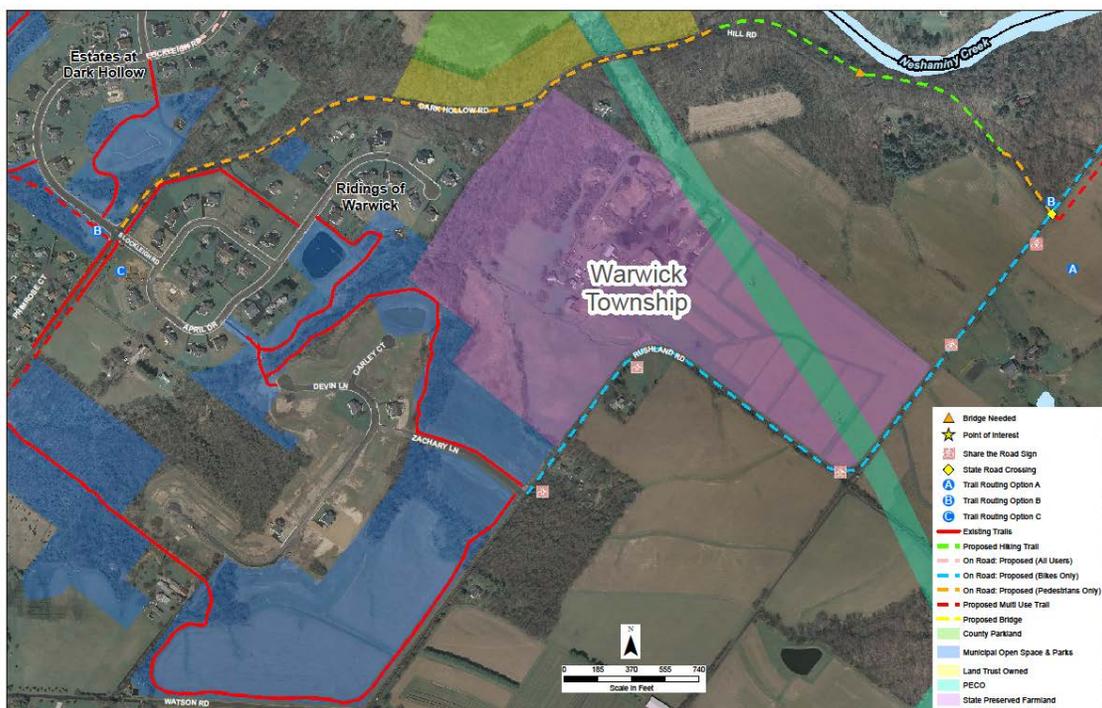
The alignment for bicyclists from Dark Hollow Road to Walton Road is shown below in Map 21. Via extensive signage, bicyclists will be directed to proceed southwest along Dark Hollow Road to the township-owned and maintained trail that is part of the Ridings at Warwick development. This trail will be widened to 10 feet in width to still allow local residents to utilize the trail without encountering conflicts with bicyclists.

This trail proceeds behind a few homes on Devin Lane, separated by a wooded buffer strip, then makes a right turn heading southwesterly toward Watson Lane. Upon reaching Watson Lane, this trail heads east, follows Watson Road as it merges into Rushland Road, and eventually ends at Zachary Lane at the Rushland Road entrance into the Ridings at Warwick development.

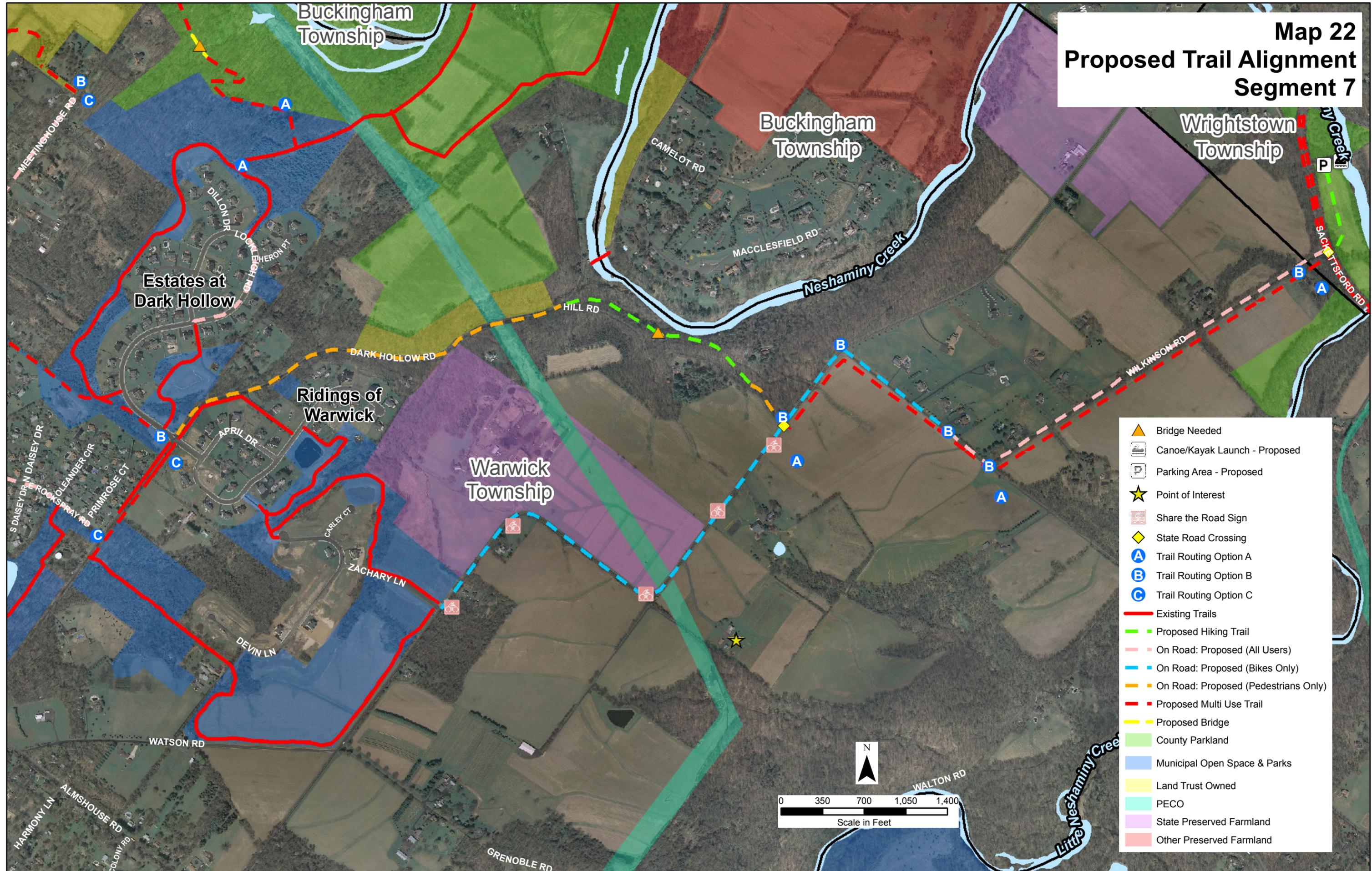


Ridings at Warwick Trail

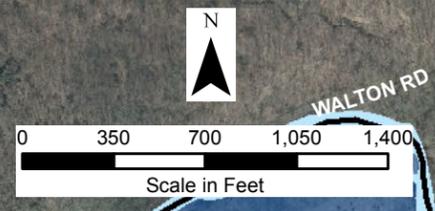
Map 21 – Segment 7 - Bicycle Route: Dark Hollow Road to intersection of Walton Road and Rushland Road



Map 22 Proposed Trail Alignment Segment 7



- Bridge Needed
- Canoe/Kayak Launch - Proposed
- Parking Area - Proposed
- Point of Interest
- Share the Road Sign
- State Road Crossing
- Trail Routing Option A
- Trail Routing Option B
- Trail Routing Option C
- Existing Trails
- Proposed Hiking Trail
- On Road: Proposed (All Users)
- On Road: Proposed (Bikes Only)
- On Road: Proposed (Pedestrians Only)
- Proposed Multi Use Trail
- Proposed Bridge
- County Parkland
- Municipal Open Space & Parks
- Land Trust Owned
- PECO
- State Preserved Farmland
- Other Preserved Farmland



Once the trail within the Ridings of Warwick development ends at Zachary Lane, bicyclists will then be on-road along Rushland Road for 0.8 miles until the intersection of Rushland Road and Walton Road as it intersects with Rushland Road on the left. Share the Road signs will be placed at appropriate intervals to increase awareness of the possibility of bicyclists sharing the roadway.



Wooded buffer along trail in Ridings at Warwick



End of Ridings of Warwick Trail at Zachary Lane

Once the trail as part of the Ridings of Warwick development ends at Zachary Lane, bicyclists will then be on-road along Rushland Road for 0.8 miles until the intersection of Rushland Road and Walton Road as it intersects with Rushland Road on the left. Share the Road signs will be placed at appropriate intervals to increase awareness of the possibility of bicyclists sharing the roadway.

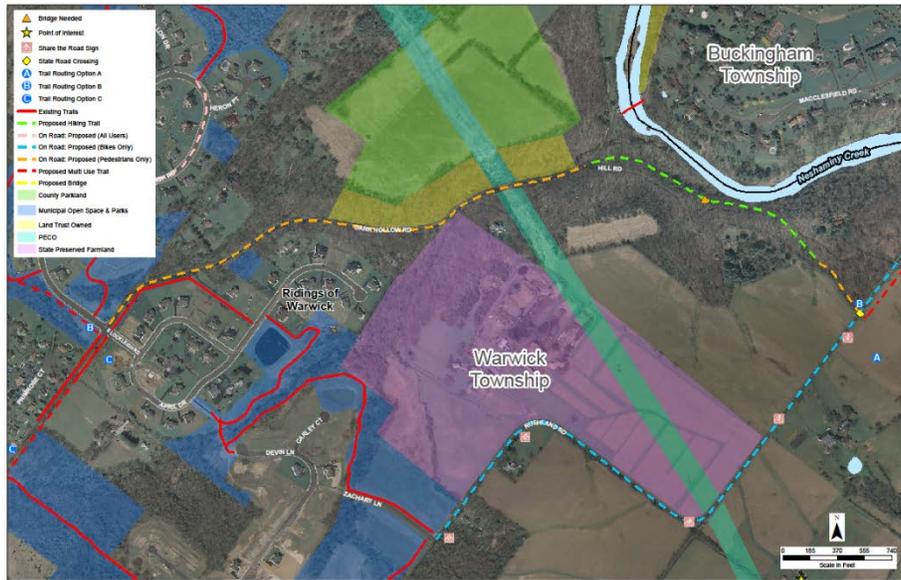


Rushland Road On-Road Route for Bicyclists

Other Trail Users - Dark Hollow Rd to Walton Road and Rushland Road - 1.1 miles

Due to the various constraints mentioned earlier, for non-bicyclists the trail will be on-road along Dark Hollow Road for 0.7 miles to its end near the Dark Hollow Bridge over the Neshaminy Creek. Near the end of Dark Hollow Road, there is a fork in the road with the left branch leading to the Dark Hollow Bridge. The Dark Hollow Bridge leads to Dark Hollow Road in Buckingham Township and provides connectivity to the primary trail for residents living in that area.

Map 23 – Segment 7 - Non-Bicycle Route: Dark Hollow Road to intersection of Walton Road and Rushland Road



Although the township still owns the right-of-way for Walton Road, at the request of nearby residents, the township stopped maintaining the road since it is no longer possible to traverse the entire length of the road except on foot. At each end, the road provides access to one house at each end, in essence acting as a driveway. Since the road may need to be converted to a thru-street again at some point in the future, its former alignment is not available for use for the trail.



Start of Walton Road at Dark Hollow Road



Dark Hollow Road

Instead, at the fork in the road, the trail will enter onto private property to the left of the former Walton Road alignment. There is an existing easement on this property, as well as the next one, on which the trail continues, that allows for a hiking and nature trail, no more than 6 feet in width, and made of a pervious surface. This same easement specifically forbids bicycling and horseback riding on these properties. This is a very steeply sloped area between the creek to the north and the former Walton Road to the south. Trail users will be on this hiking trail for 1/3rd of a mile before reconnecting with Walton Road. A bridge will be needed to cross a tributary located in a ravine leading down to the Neshaminy Creek. Once reconnected with Walton Road, the trail will continue on Walton Road for approximately 425 feet before reaching its intersection with Rushland Road where the bicyclists and other trail users will be rejoined.



Dark Hollow Bridge viewed from Buckingham Township side

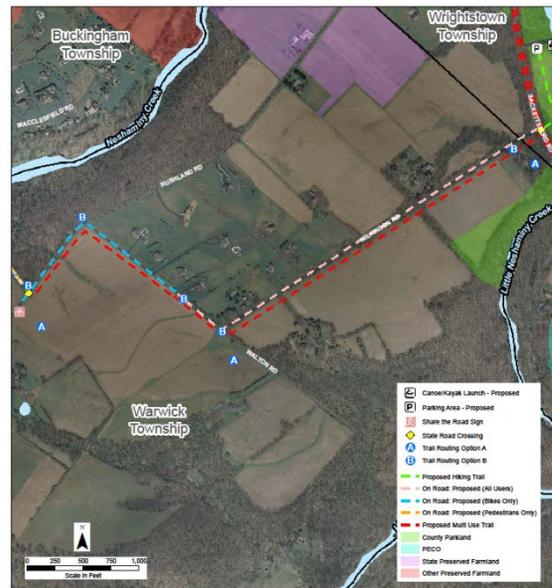
All Users - Walton Road and Rushland Road to Sackettsford Road - 1.1 miles

Once trail users have reached the intersection of Walton Road where it enters Rushland Road on the left as approached from the west, the trail will continue to Sackettsford Road following the alignment shown in Map 24.

The map shows two possible alternatives, Option A (off-road), and Option B (on-road), following the same trail alignment:

- From the intersection of Walton Road and Rushland Road, continue approximately 775 feet / 0.15 miles northeasterly to the intersection of Rushland Road and Walton Road on the right;
- Turn right on Walton Road and head in a southeasterly direction for approximately 1,575 feet / 0.30 miles to the intersection of Walton Road and Wilkinson Road;
- Turn left on Wilkinson Road and head in a northeasterly direction for approximately 3,400 feet / 0.6 miles to its intersection with Sackettsford Road.

Map 24 – Walton Road and Rushland Road to Sackettsford Road



Option A, being entirely off-road, offers a higher degree of safety to trail users, and is therefore the preferred alternative. In contrast to Option A which will require several easements, Option B requires no easements, but is entirely on-road limiting access for some users.



Walton Road with Delaware Valley College property on the right and vehicle turning off of Wilkinson on left



Wilkinson Road viewed from intersection with Walton Road



Wilkinson Road intersection with Sackettsford Road



Intersection of Rushland and Walton/Hill roads



Rushland Road showing houses on Walton Road in the distance



Walton Road with houses on left

As both Rushland Road and Sackettsford Road are state-owned and maintained roads, any use of the road and road crossings will need to be in compliance with their standards and regulations.

As mentioned, Option A would require five new trail easements, four of them for private properties located along the southern side of Wilkinson Road, and one for 500 feet along the western side of Walton Road on property owned by Delaware Valley College. Additionally, although there are existing easement terms for the two private properties at the southwest corner of Rushland and Walton Road, these easements would require revision as the current easement terms require the township to purchase the property prior to allowing the development of a trail on the property.



Forks of the Neshaminy

Upon reaching the intersection of Wilkinson Road and Sackettsford Road, the trail would cross Sackettsford Road and a ramp will take trail users down to the county-owned property at the confluence of the Neshaminy Creek and Little Neshaminy Creek, Forks of the Neshaminy, where a trailhead parking area and canoe and kayak launch site will be located. This is also the terminating point of the Upper Neshaminy Creek Trail and the beginning point for future trails planned along the Little Neshaminy Creek and extended south along the Neshaminy Creek to the Delaware River.

PROPOSED EASEMENTS

Although much of the trail alignment is on publically owned lands, easements for trail construction and maintenance will be needed. Major landowners with whom easements must be negotiated include Central Bucks School District, Bridge Creek Home Owners Association, Kranzco Realty Trust, Heritage Conservancy, PECO, Warwick Township Historical Society, and Delaware Valley College. Acquisition of easements will also be needed from several private owners, particularly in Segment 1 in the Chalfont / New Britain area. A complete list of easements required for construction of the trail is included in Appendix D.

OPINION OF PROBABLE COSTS

Acquisition Costs

Most of the proposed trail alignment is already in public ownership. For these sections, the investment in land acquisition has already been made. However, additional easements will be required to complete the trail. For cost estimating purposes a figure of \$1.60 per square foot was used. This is based on other trail projects in the region. However, these costs may vary based on a variety of factors including the final number of square feet in the easement; survey costs; fair market value; and tax appraisals. Based on the \$1.60 per square-foot estimate and the estimated length and width of easements required, these costs are estimated to be \$593,984.

Design and Engineering Fees

Prior to actual construction, final design and engineering will be required. Based on other trail planning projects, these costs are typically estimated to be 15 percent of the construction costs. For the Upper Neshaminy Creek Trail the design and engineering fees are estimated to be \$1,415,653.

Construction Costs

Opinion of Probable Costs by Segment appears in Appendix B and is summarized in Table 6 below. These budgetary costs are based on an analysis of trail characteristics across each segment of trail. Costs are derived from Gilmore Associates' experience with trails of similar characteristics and are based on current material and labor costs as of the publication of this study. Costs may increase or decrease over time. Additionally, it should be noted that these construction costs include contingencies for potentially higher costs once actual design and engineering drawings are complete.

Table 6 – Estimated Construction Costs by Segment

Segment	Construction Costs	Miles	Cost per Mile
1	\$ 1,849,836	3.0	\$ 616,612
2	\$ 900	3.4	\$ 265
3	\$ 1,496,880	0.8	\$1,871,100
4	\$ 3,358,920	1.7	\$1,975,835
5	\$ 1,852,050	1.5	\$1,234,700
6	\$ 1,669,080	1.6	\$1,043,175
7	\$ 1,098,456	3.0	\$ 366,152
Total	\$11,326,122	15.0	\$ 755,075

Note: Costs cited are exclusive of alternative routes and connector trails and reflect only those costs associated with the primary trail.

Maintenance Costs

Maintenance costs for similar trails in the region generally range from \$6,000 to \$9,000 per mile/per year for similar trails. It is recommended that the entities responsible for trail maintenance use a figure of \$7,500 per mile to estimate maintenance costs during the first year after development. This figure can then be evaluated and adjusted at the end of the first year. This cost can be used for fundraising purposes as well to help solicit volunteer help for maintenance. Based on the approximately 15 miles of the proposed trail route, total annual maintenance costs are estimated to be \$112,500. Table 7 summarizes the various costs by segment.

Table 7 – Costs by Trail Segment

Segment	Miles	Acquisition	Design and Engineering	Construction (Primary Trail Route)	Total	Annual Maintenance
1	3.0	\$245,344	\$ 231,230	\$ 1,849,836	\$ 2,326,410	\$ 22,500
2	3.4	-	-	\$ 900	\$ 900	\$ 25,500
3	0.8	-	\$ 187,110	\$ 1,496,880	\$ 1,683,990	\$ 6,000
4	1.7	\$ 23,200	\$ 419,865	\$ 3,358,920	\$ 3,801,985	\$ 12,750
5	1.5	\$136,640	\$ 231,506	\$ 1,852,050	\$ 2,220,196	\$ 11,250
6	1.6	\$ 72,000	\$ 208,635	\$ 1,669,080	\$ 1,949,715	\$ 12,000
7	3.0	\$116,800	\$ 137,307	\$ 1,098,456	\$ 1,352,563	\$ 22,500
Total	15.0	\$593,984	\$1,415,653	\$11,326,122	\$13,335,759	\$112,500

Connector Trails and Parking Areas

The costs associated with construction of the various connector trails and the parking lot at the Dark Hollow Road equestrian area have been broken out separately. Although these trails and parking areas are highly desirable, they are not part of the primary trail.

Table 8 – Connector Trail Costs

Segment	Description	Length (Miles)	Acquisition	Design and Engineering	Construction	Total
1	SEPTA New Britain Rail Station	0.15	\$23,680	\$17,205	\$137,640	\$178,525
1	Wyndham and Cedar Crest Farms - A Upper State Road	0.2	\$28,800	\$11,653	\$ 93,222	\$133,675
1	Wyndham and Cedar Crest Farms - B Doylestown Township / Neshaminy Creek Bridge	0.2	\$29,920	\$71,143	\$569,142	\$670,205
4	Pebble Hill Road - A	0.8	-	\$53,524	\$428,190	\$481,714
4	Pebble Hill Road - B	0.8	\$24,000	\$46,616	\$372,931	\$443,546
4	Valley Road South	1.4	\$86,400	\$46,418	\$371,340	\$504,158
5	Buckingham Township Connector Trail	1.4	\$15,200	\$ 7,995	\$ 63,960	\$ 87,155
6	Dark Hollow Road Equestrian Area	(Upgrades Needed)	-	\$17,745	\$141,960	\$159,705

IMPLEMENTATION STRATEGIES

RECOMMENDED CONSTRUCTION PHASING

Development of the entire Upper Neshaminy Creek Trail in a single phase, while highly desirable, is unlikely given the easements and permitting required, as well as the substantial costs. Therefore, a phased development approach is recommended. In developing the recommended phasing plan for trail development, the following factors were taken into account:

- The status of current trail development efforts.
- The ability of each segment to serve as a stand-alone trail, i.e. the segment would receive significant usage, even if construction of the remaining segments is delayed.
- The connectivity of the segment to existing trails, adjacent neighborhoods and public transportation in the project area.
- Ownership and the need to acquire easements.
- Construction costs.
- Topographical and natural resource considerations.

Each trail segment was evaluated on each of these criteria and rated as a 0, 5, or 10 in each of the categories and then a total score was calculated. These scores were then used to help determine the trail segment priorities. In reviewing the ratings, it is important to look at the rating/scoring scale for each factor individually. For example, construction costs are evaluated on an inverse scale with those segments having a high estimated construction cost receiving a lower rating. In contrast, connectivity was scored based on segments with a high degree of connectivity receiving higher scores. It should also be noted that Segment 2, extending from the Route 202 Parkway to Central Park in Doylestown Township, is mostly complete and has been excluded from the phasing schedule.

With the exception of the one short connector trail (500 feet) linking Heritage Center and Villages at Buckingham in Buckingham Township, and Bridge Valley at Furlong and Bridge Valley Elementary School in Warwick Township to the primary trail, connector trails are not included in the phasing schedule either. Although connector trails are designed to connect nearby residential areas to the primary trail, they are of lesser importance than the development of the primary trail itself. The exception for the short connector trail mentioned is due to logistical issues associated with getting trail equipment into the area after completion of the initial trail which will consist primarily of boardwalks given the wet conditions in that area. However, in recognition of cost efficiencies, if funding is available, it is recommended that connector trails be constructed at the same time as the primary trail. The results of the evaluation are shown in Table 9.

Table 9 – Trail Segment Feasibility Evaluation Matrix

	Status of Current Trail Development	Ability to act as a stand-alone trail	Connectivity to other trails, adjacent neighborhoods and public transportation	Extent of public ownership/ minimal need for easements	Construction costs	Topographical Challenges and Natural Resource impact	Total Score
	High = 10 Average = 5 Low = 0	High = 10 Average = 5 Low = 0	High = 10 Average = 5 Low = 0	High = 10 Average = 5 Low = 0	High = 0 Average = 5 Low = 10	High = 0 Average = 5 Low = 10	Higher scores reflect higher degree of feasibility
Twin Streams Park to Route 202 Parkway (Segment 1)	10	10	10	5	5	5	45
Dark Hollow Road to Sackettsford Road (Segment 7)	5	5	10	0	5	10	35
Central Park to Easton Road / Barn Plaza (Segment 3)	5	5	10	10	0	5	35
Easton Road / Barn Plaza to Valley Road (Segment 4)	0	10	5	10	0	5	30
Valley Road to Mill Road (Parts of Segment 5)	0	10	5	5	5	0	25
Mill Road to Dark Hollow Road (Part of Segment 6)	0	5	5	10	5	0	25

Recommended construction phasing is as follows:

Phase 1 - Twin Streams Park to Route 202 Parkway (Segment 1) - 3.0 miles

Costs		Cost Drivers	Number Required	Length (Feet)
Acquisition Cost	\$ 245,344	Easements	17	7,690
Design & Engineering Cost	\$ 231,230	Bridges	1	50
Construction Cost	\$1,849,836	Boardwalk	2	250

This trail segment was selected as the top priority based on several factors:

- Easements have already been procured on several properties;
- Demonstrated ability of the municipalities to secure needed funding;
- Some of the sections are already in the design/engineering phase or development stage;
- Limited topographical and natural resource constraints;
- Connectivity to public transportation via the SEPTA New Britain train station;
- Provides connectivity to the Route 202 Parkway Trail and via that trail, connectivity to Montgomery County and the Doylestown Community Bike and Hike System.

Phase 2 - Dark Hollow Road to Sackettsford Road (Segment 7) - 3.0 miles

Costs		Cost Drivers	Number Required	Length (Feet)
Acquisition Cost	\$ 116,800	Easements	5	3,850
Design & Engineering Cost	\$ 137,307	Bridges	1	80
Construction Cost	\$1,098,456	Boardwalk	-	-

This trail segment is recommended for the second phase of development as establishment of the trailhead on county-owned land at Sackettsford Road will anchor the two ends of the Upper Neshaminy Creek Trail, while also serving as the connection to the planned Middle Neshaminy Creek and Little Neshaminy Creek trails.

Phase 3 - Central Park to Easton Road / Barn Plaza (Segment 3) - 0.8 miles

Costs		Cost Drivers	Number Required	Length (Feet)
Acquisition Cost	-	Easements	-	-
Design & Engineering Cost	\$ 187,110	Bridges	4	400
Construction Cost	\$1,496,880	Boardwalk	-	-

Although this segment is to be built almost entirely on land owned by Doylestown Township or Bucks County, this segment presents some of the greatest challenges, and correspondingly higher construction costs, due to the length and number of bridges to be built. However, it ranks high in the phasing priority based on its connection to public transportation (SEPTA Bus Route 55 along Easton Road), connectivity to the Doylestown Community Bike and Hike System, and connectivity to commercial businesses along Easton Road.

Phase 4 - Easton Road (Barn Plaza Theater) to Valley Road (Segment 4) - 1.7 miles

Costs		Cost Drivers	Number Required	Length (Feet)
Acquisition Cost	\$ 23,200	Easements	1	720
Design & Engineering Cost	\$ 419,865	Bridges	4	505
Construction Cost	\$3,358,920	Boardwalk	5	2,100

This is the longest length of trail and stands the greatest potential as serving as a stand-alone trail. Additionally, with the exception of the initial section of trail behind the theater/shopping center, this segment of trail is almost exclusively on county-owned property, therefore limiting the need for easements. Conversely, due to the number of bridges and need for boardwalks, and associated permitting, this is one of the more expensive trail segments. Additionally, it provides limited connectivity to any adjacent neighborhoods or trail systems.

Phase 5 - Valley Road to Mill Road (Segment 5) - 1.5 miles

Includes Buckingham Township Connector Trail

Costs	Primary Trail	Connector	Cost Drivers	Number Required	Length (Feet)
Acquisition Cost	\$ 136,640	\$15,200	Easements	6	5,635
Design & Engineering Cost	\$ 231,506	\$ 7,995	Bridges	2	210
Construction Cost	\$1,852,050	\$63,960	Boardwalk	1	1,050

This segment scored lower in the overall ratings primarily due to the relatively high costs of construction due to the extensive amount of boardwalk required and the need for a large bridge spanning the creek at the trailhead at Valley Road. The boardwalk segment in a wetland area will also require extensive permitting. Additionally, there are a variety of easements to be secured. In its favor, this segment does have the potential to serve as a stand-alone trail segment given that there are existing trailhead parking lots at Valley Road, York Road, and Mill Road.

Phase 6 - Mill Road to Dark Hollow Road (Segment 6) - 1.5 miles

Costs		Cost Drivers	Number Required	Length (Feet)
Acquisition Cost	\$ 72,000	Easements	2	5,850
Design & Engineering Cost	\$ 208,635	Bridges	2	350
Construction Cost	\$1,669,080	Boardwalk	-	-

This final segment presents a high degree of topographical challenge to trail development based on the presence of steep slopes. Additionally, although there is a high degree of public ownership of the trail corridor, the presence of wetlands requires that the trail be placed on private property in some sections, resulting in the need for additional easements.

ORGANIZATION, MANAGEMENT AND MAINTENANCE

Proposed Agency Responsibilities / Organization

Managing the Upper Neshaminy Creek Trail, including all activities undertaken to plan, direct, maintain, fund and advertise, will be a complex task. The proposed trail crosses seven municipalities, Chalfont and New Britain Boroughs and Buckingham, Doylestown, New Britain, Warwick and Wrightstown Township, as part of the Bucks County Trail Network. The complexity is further complicated by the numerous municipal departments and advisory boards, and that sections of the trail utilize already existing trails owned and maintained by various municipalities, as well as PennDOT relative to the Route 202 Parkway Trail. Although the scenario is complex, it is not unusual as many long-distance trail systems are multi-jurisdictional crossing municipal boundaries for broad regional use that citizens desire.

There are various models available for developing, operating and maintaining recreational trails such as municipal, county, non-profit trail groups, land trust/conservancy, as well as those established by Pennsylvania Intergovernmental Cooperation Law including municipal/regional trail authorities and commissions. Each management structure has its strengths and weaknesses depending on the capacity of the participating partners. A myriad of tasks that need to be considered when determining the most effective management structure include project management; acquisition of land or right-of-way or easement; property management; construction funding; maintenance agreements; insurance/risk management; operations; and public relations.

In the Upper Neshaminy Creek Trail project area there are already a variety of trail management and operation structures in place. For example, the Doylestown Community Bike and Hike Committee originally was a collaborative project between Doylestown Township and Doylestown Borough with each municipality contributing to the development of the trail system. Jointly, these two municipalities continue to plan for, develop and maintain the Doylestown Community Bike and Hike system. Subsequently, Chalfont and New Britain Boroughs, and Buckingham, New Britain and Warrington townships also became involved with the Doylestown Community Bike and Hike Committee in terms of planning efforts and in providing collaborative support for funding applications. In contrast, the development of trails within Warwick and Buckingham townships has primarily, to date, been done via requiring developers to provide trails as part of the development process.

In those instances where there has been cooperation in the planning of trails, such as the *Tri-Municipal Master Trail & Greenway Plan*, developed collaboratively for Chalfont and New Britain Boroughs and New Britain Township, each of the municipalities has typically operated individually and autonomously in the development, management, and maintenance of trails within their municipal borders. While that has historically been the case, these municipalities have banded together to enhance their competitiveness for

grant funding since projects across the state that are competitive for grant funding and public support are those that feature multi-municipal and public/private sector support.

A critical next step in the trail implementation process is to clarify and formalize the responsibilities for each trail segment and trail partner. Specific tasks and roles that need to be addressed include:

Development Tasks

- Securing required easements and property acquisition.
- Activities associated with the actual development of the trail including acquiring the necessary funding and permits required, as well as the physical construction of the trail itself.

Maintenance Tasks

- Short-term maintenance requirements including the removal of debris, trash, vegetation and tree maintenance.
- Long-term maintenance requirements including resurfacing the trail, replacement of damaged trail amenities, resurfacing of trailhead parking.

Table 10 below outlines one possible scenario for the development, operation, management and maintenance of the Upper Neshaminy Creek Trail; although none of these entities have committed to these roles:

Table 10 – Trail Development and Maintenance Model

	Trail Operation and Management Tasks for Upper Neshaminy Creek Trail *			
	Development		Maintenance	
Land Ownership	Acquisition	Activities and costs associated with trail development	Short-term Maintenance	Long-term Maintenance
State	County	State	State	State
County	N/A	County	County	County
Municipality	N/A	Municipality / Developers	Municipality	Municipality
Public School District	County / Municipality	County / Municipality	School District	County
Private Property (includes private landowners, land conservancies, homeowners associations)	Municipality / Friends Group	County / Municipality	Private Property Owner / County / Friends group	County
Municipal Authority	County / Municipality	County / Municipality	Municipal Authority	County
PECO	County / Municipality	County / Municipality	County	County
SEPTA	County / Municipality	County / Municipality	County	County
State Road Right-of-way	County / Municipality	County / Municipality	State	County
Municipal Road Right-of-way	County / Municipality	County / Municipality	Municipality	County

* Entity responsible for task is indicated in the cells of the table.

The more specifics on the planning, development, and maintenance and operations of the Upper Neshaminy Creek Trail that can be determined in advance and negotiated in advance, the more successful the development and long-term cooperation will be.

Land Acquisition

Prior to the development of any trail, it is necessary to have control of the land. Much of the Upper Neshaminy Creek Trail will be placed on land already under the ownership of either Bucks County or the municipalities. However, as is typically the case with long, linear trail projects, there are areas where it will be necessary to obtain the rights to use privately-held land. Some of the options for obtaining the rights include:

Easements: This is the most often used technique for acquiring the permission needed for a trail to cross private property. This method is often the most preferred method as it is less costly than acquiring full ownership of the land. Specific to trails, an easement modifies the deed to a property, in perpetuity, to allow the use of a portion of the property for the construction of the trail and permanent use of the trail.

Fee simple purchase: Purchasing the needed land is an alternative to easements. However, fee simple acquisition of the land, owing to potential complications over disagreements regarding the purchase price, questions of ownership, the need for right-of-way plans, can be much more costly and time consuming as compared to easements.

Lease: Similar to easements, a lease agreement can be negotiated authorizing the use of the land for construction of the trail. However, in contrast to easements, leases have a specific time frame associated with them. Although this type of arrangement will allow for construction of the trail, if a private property owner opts not to renew the lease upon its expiration, this may leave a gap in the trail network.

Trail Development

Once the rights to the land for constructing the trail have been secured, there are a myriad of activities associated with the physical construction of the trail itself. These include securing the funding needed to develop the trail, obtaining the required permits, and management of the construction process itself including overseeing the Request-for-Proposal process typically needed for vendor selection, to overseeing the construction itself. Although it would be advantageous to have one entity responsible for managing these various activities to ensure design and construction consistency, these may not always be possible or desirable.

One additional option that should be utilized to the extent possible, and has been utilized effectively to date, is to require that developers construct trails as part of the development process. Currently, most of the municipalities in the Upper Neshaminy Creek Trail project area have ordinance provisions requiring developers to provide trails, sidewalks, or bicycle facilities as part of the development process:

Table 11 – Ordinance Provisions Relative to Trails and Bicycle Facilities

Municipality	Ordinance Section
Buckingham Township	Subdivision and Land Development - Section 9.18.B.1
Chalfont Borough	Subdivision and Land Development - Section 22-705.2
Doylestown Township	Subdivision and Land Development - Section 153-25.C
New Britain Borough	None
New Britain Township	Subdivision and Land Development - Section 22-707.1.A
Warwick Township	Subdivision and Land Development - Section 163-53.D and Zoning Sections 195-16.B.(1).(b).[4], 195-16.B.(1).(c).[4] and 195-16.B.(9).(f).[4]
Wrightstown Township	Subdivision and Land Development - Section 22-539

Maintenance

The quality, condition, and safety of a trail are all essential to the long-term success of the trail. To ensure successful operation of the trail, and to assist in minimizing risk both to trail users and the trail operator, a maintenance plan is necessary. Additionally, a well-designed and executed maintenance program will help to reduce long-term costs by extending the costs of trail components, and will help win the continued support of residents, homeowners, and businesses. This support can also translate into potentially lower operating costs if residents feel pride in the trail and donate volunteer time to assist in its upkeep.

The frequency of the maintenance tasks to be performed will vary based on the type of trail surface, the surrounding landscape character, and the particular segment of trail. One particular area of concern relative to the Upper Neshaminy Creek Trail is the problem of drainage and flooding that may undermine pavement structures over time. Considering these challenges in the design and engineering phase is critical to help mitigate major maintenance expenses in the future.

Important short and long-term maintenance tasks that need to be addressed in the maintenance program are shown in Table 12 below.

Table 12 – Maintenance Tasks and Recommended Schedule

Short-term	Frequency	Long-term	Frequency
Mowing of trailside areas	Minimum of 4 times per year	Seal-coating trail	Every 4 - 5 years
Pruning	Semi-annual	Resurfacing of trailhead parking areas	Every 10 - 12 years
Removal of trees and limbs	Annual unless across path	Resurfacing the trail	Every 10 - 12 years
Signage / gates / bollards / benches maintenance	As needed		
Snow-plowing if the trail is to be plowed	As needed		
Trash removal	Weekly		
Bridge inspection and maintenance	Inspection by professional engineer every two years		
Drainage structures cleaning	Annually		
Graffiti removal	As needed		
Lighting	Monthly		

The county would be responsible for short-term maintenance tasks on county-owned properties and properties on which it holds trail easements such as PECO, SEPTA and private property. For trail sections located on non-county public land, the respective governing agency would assume responsibility for short-term maintenance tasks. The specific tasks to be assumed by each party should be clearly defined in any easement or lease terms. Regardless of who assumes responsibility for the maintenance of the trail, the costs associated with these activities should be incorporated into the budgets of the responsible entity.

SECURITY, LIABILITY AND RISK MANAGEMENT

Trail projects often generate concerns about trail security and liability. These concerns may come from individual property owners, organizations, and municipal, county and state governments. These concerns range from liability concerns associated with trail users injuring themselves to a perception that trails may bring additional crime to an area.

Security

Concerns about crime are typically expressed with most new trail projects. Fortunately over time as new trails have been developed, national studies (e.g., Rails-Trails and Safe Communities, Burke-Gilman Trails Effects on Property Values and Crime) have been conducted to assess the impact the trail has had on crime along the trail corridor. These studies most often indicate that trail projects have positive effects on adjacent neighborhoods. In fact, the rate of crime on suburban trails is usually lower than the national statistics for suburban crime on nearby streets and in homes (Rails-Trails and Safe Communities, 1998). Obviously, any crime committed is undesirable regardless of location, but there is no evidence that trails induce above average crime rates.



The potential for crime can also be addressed in the design and maintenance plan of the trail. Specific recommendations to maximize trail security are:

- Design the trail to allow for access by local law enforcement.
- Manage the trail corridor to eliminate overgrowth immediately adjacent to the trail.
- Provide security lighting and emergency phones at call boxes at trailhead locations.
- Place benches and other amenities at high activity locations with good visual surveillance.
- Create a “Trail Watch Program” involving local residents.

In general, a well-used trail is the best deterrent to crime. Crimes are less likely to be committed if there is a high risk of being seen by other trail users.

Liability

Pennsylvania, like every state in the nation, has a statute that provides a degree of immunity to landowners who make their properties available to the public for free recreational use. Pennsylvania’s Recreational Use of Land and Water Act (RULWA) limits landowners liability for personal injury or property damage if they make their land available to the public for recreation. The purpose of the law is to encourage landowners to allow hikers, fishermen, and other recreational users onto their properties by limiting the traditional duty of care that landowners owe to entrants upon their land. So long as no entrance or use fee is charged, the Act provides that landowners do not have to keep their land safe for recreational users and have no duty to warn of dangerous conditions.

Landowners who permit or invite members of the general public onto their properties for recreational purposes, free of charge, can raise this statute as a defense if they are sued for personal injury or property damage. RULWA does not prevent landowners from being sued; it provides them with an immunity defense to claims that their *negligence* caused the plaintiff’s injury. Negligence is the failure to exercise ordinary care such as a reasonably prudent and careful person under similar circumstances would exercise. Landowners remain liable for willful or malicious failure to guard or warn recreational users of a dangerous condition. The RULWA also protects adjacent landowners as long as they abstain from “willful and wanton misconduct” against trespassers such as recklessly or intentionally creating a hazard. Trail managers minimize liability exposure provided they design and manage the trail in a reasonable manner and do not charge for trail access. For more information, visit <http://conservationtools.org/guides/show/81-Recreational-Use-of-Land-and-Water-Act#ixzz2z3mcuj2g>.

Pennsylvania's governmental immunity statutes, the Tort Claims and Sovereign Immunity Acts, shield municipalities and commonwealth agencies from claims of willful misconduct. Liability may be imposed upon these entities only for their negligent acts.

Risk Management

The Pennsylvania Recreational Use of Land and Water Act and Tort Claims and Sovereign Immunity Act may limit the liability of property owners, trail managers and government entities in the event of a personal injury lawsuit. However, to minimize the possibility of injuries on the trail, risk management strategies should be taken to provide protection in the event of a lawsuit. These include:

- Identify and, to the extent possible, remove hazardous conditions and attractive nuisances during the original construction of the trail.
- Design the trail for safety.
- Conduct public educational and informational programs relative to safe trail usage as it applies to various user groups including bicyclists, dog walkers, in-line skaters, etc.
- Use prominent signage to warn users of potentially dangerous areas. For the Upper Neshaminy Creek Trail, this will be of critical importance in areas where hunting or rifle shooting is known to occur such as in Segment 3 near the Turk Road crossing adjacent to the Bucks County Fish & Game property.
- Regularly inspect the trail and correct any unsafe conditions and keep written records of inspections and maintenance activities performed.
- Prominently post hours of operation and other rules and regulations, along with emergency contact information.
- Develop procedures for handling medical emergencies.

Two safety concerns that needs to be addressed relative to the Upper Neshaminy Creek Trail is the potential for conflicts between hunters and trail users, as well as the proximity of the trail to the Bucks County Fish and Game property on Turk Road.

Hunting

Although many county and municipal properties do not allow for hunting, there may be times when hunters stray inadvertently onto these public grounds. Similarly, some private property owners encourage hunters to access their grounds in order to help mitigate potential problems with deer eating their agricultural crops. To address these potential user conflicts, signage should be placed along the trail and at trailhead locations notifying trail users of this potential. Similarly, safety classes should be offered to help educate trail users and hunters on ways to coexist. To ensure the safety of all users, the trail operators should implement the following precautions:

- Identify hunting season periods.
- Specifically during hunting season, encourage trail users to wear a blaze-orange colored vest, hat or pack cover as these are the same items hunters themselves wear for safety.
- Encourage trail users to educate themselves, and provide signage, indicating when hunters are most active. Although many variables affect this, as a general rule of thumb is that these periods typically coincide with sunrise and sunset.
- Encourage trail users to make noise along the trail, particularly during hunting season to identify themselves to hunters.
- Encourage trail users to protect their dogs with blaze-orange vests.

Bucks County Fish and Game

The Bucks County Fish and Game property includes a Woodswalk area featuring several archery targets. Although the placement of the trail is north of this area and is further separated by a tributary to the Neshaminy Creek, signage and educational efforts should be implemented in this area to help avoid user conflict. Additionally, reorientation of archery targets away from any trail paths and installing tall solid fencing should be considered to help provide an added degree of protection for trail users.

POTENTIAL FUNDING SOURCES

Finding the funding for the design and construction of trail projects can be a challenge, but following is a list of possible funding sources for this project:

Federal Funding Sources

- MAP-21 - Transportation Alternatives Program
- United States Department of the Interior - National Parks Service (NPS)
 - Rivers, Trails and Conservation Assistance (RTCA) Program
- Land and Water Conservation Fund

State Funding Sources

- Pennsylvania Department of Conservation and Natural Resources (PA DCNR)
 - Recreational Trails Program
 - Community Conservation Partnership Program
- Pennsylvania Department of Community and Economic Development (PA DCED)
 - Greenways, Trails and Recreation Program

Local Sources

- Bonds
- Taxes

Private Funding Sources

- PECO Green Region Grants Program
- William Penn Foundation
- Kodak American Greenways Awards
- American Hiking Association - National Trails Fund

A comprehensive list of funding sources is provided in Appendix C of this study.

RECOMMENDATIONS FOR FUTURE ACTION

Development of the Upper Neshaminy Creek Trail depends upon several criteria, the most important being the creation of the management structure involving the citizens and many governmental and other organizations with involvement in the trail. As the trail alignment crosses seven municipalities, county-owned land, and a variety of privately-owned properties, it is critical that a structure be established and determinations made regarding who will be responsible for the various tasks needed to make this trail a reality. The following table summarizes future actions that are critical to the implementation process.

Table 13 – Implementation Tasks

Key Tasks	Responsible Parties
Identify and establish the sponsoring organizational structure to be used for the funding, development, operation and maintenance of the trail.	Bucks County, Friends of Neshaminy Creek, Municipalities, private land owners, Delaware Valley Regional Planning Commission, Bicycle Coalition
Preserve the Right-of-Way for the trail by securing necessary easements and making local planning commissions and municipal leadership aware of trail alignment so they can secure easements and require trail development as part of land development proposals and incorporate the trail into municipal, recreation, and land use plans.	Bucks County, Friends of Neshaminy Creek, Municipalities, Doylestown Community Bike and Hike Committee, Bucks County Recreation Council
Look for “Early Win” / small success projects to help move the project forward	Bucks County, Municipalities, Friends of Neshaminy Creek
Initiate fund-raising and grant writing activities to secure funding for Phase 1 design and engineering	Sponsoring Organization (TBD)
Preliminary and Final Design	Sponsoring Organization (TBD)
Construction	Sponsoring Organization (TBD)
Set up a Maintenance Program and Endowment	Sponsoring Organization (TBD)

APPENDICES

APPENDIX A
Public Participation



APPENDIX A: PUBLIC PARTICIPATION

The Upper Neshaminy Creek Trail Feasibility Study project included several public participation activities to gather public input, opinions and ideas concerning the trail project. The Steering Committee was one element of the public participation process, described in this appendix. Public meetings were also utilized to obtain feedback and input while newspaper articles were also utilized to generate publicity about the proposed trail. Finally, the draft study was posted on the county website for public comment and a press release advertising its availability was distributed to local newspapers and municipalities.

Steering Committee

Two (2) Steering Committee meetings were held during the project to discuss ideas and issues and to review progress of the Feasibility Study. Additionally, Steering Committee members were asked to provide thoughts and comments relative to the final study itself. Steering Committee members included:

- Andrew Hamilton Bucks County Bicycle Advisory Task Force
- John Ives Buckingham Township Park & Recreation Commission
- Marilyn Jacobson Chalfont Borough Councilmember
- Tom Kelso Doylestown Community Hike & Bike Committee
- Ann McCauley Bucks County Audubon Society
- Ellen Phillips Pennsylvania Equine Council Member
- Dan Sharapan Warwick Township Parks & Recreation

Public Meetings

The project included two meetings to engage residents in the trail planning process, described below. The workshops were publicized via a variety of methods including local newspapers, mentions on the County and municipal websites, and flyers distributed to local libraries.

April 3, 2013 Public Workshop

Doylestown Library

The first public workshop was attended by twenty-two (22) residents. This was a workshop type meeting in which attendees were given a handout to complete which asked for information relative to:

- Specific concerns or comments about the proposed trail
- Current trail-related activities they participate in
- Types of uses (bicycling, horseback riding, etc.) they would like to see encouraged / discouraged on the proposed trail
- Preferences relative to trail surfaces based on the attributes of each trail surface type
- Amenities they would like to see incorporated as part of the trail design (signage, park benches, trash receptacles, restroom facilities, etc.)
- Specific points of interest they would like to see the trail connect to.

Attendees were then invited to various tables around the meeting room and asked to mark preferred trail types and locations on larger maps and/or smaller individual maps. A copy of the form and a summary of the meeting comments are included in this appendix.

January 28, 2014 - Public Meeting

Doylestown Library

The second public meeting was a presentation of the proposed trail alignment and was attended by forty-five (45) residents. No significant concerns were raised regarding the proposed trail alignment. The primary input was that people were enthusiastic about the trail and its connections to nearby neighborhoods. Following the public workshop on 31 January 2014, the presentation from the workshop was posted on the Bucks County Planning Commission website at:

<http://www.buckscounty.org/government/CommunityServices/PlanningCommission>

Doylestown Bike & Hike Committee - September 13, 2013

Doylestown Township Municipal Building

A presentation of the proposed trail alignment was made to the Doylestown Bike & Hike Committee on 17 September 2013. Minutes from that meeting can be accessed via the following link:

<http://doylestownpa.iqm2.com/Citizens/FileOpen.aspx?Type=15&ID=1493&Inline=True>

Doylestown Township Board of Supervisors - February 4, 2014

Doylestown Township Municipal Building

A presentation about the trail project and its proposed alignment was made to the Doylestown Township Board of Supervisors on 4 February 2014. Meeting minutes and video can be accessed at the following links:

<http://doylestownpa.iqm2.com/Citizens/FileOpen.aspx?Type=15&ID=1530&Inline=True>

<http://doylestownpa.iqm2.com/Citizens/SplitView.aspx?Mode=Video&MeetingID=1660&MinutesID=1530&FileFormat=pdf&Format=Minutes&MediaFileFormat=wmv>

Public comment period on draft study

The final opportunity for public comment on the study was the posting of the draft study on the Bucks County Planning Commission website. The draft study was available on the website from May 19 - May 30. Press releases regarding the availability of the study were sent to local news agencies as well as to the municipalities in the project area.

Newspaper Articles

In addition to public meetings, a variety of newspaper articles helped generate awareness of, and interest in the Upper Neshaminy Creek Trail Feasibility Study. The dates and publications of these articles are listed below and copies of the articles are included in this appendix.

Dec 11, 2012 The Intelligencer Grants will help Neshaminy Greenway grow

Apr 25, 2013 Bucks County Herald Trail would link Neshaminy Creek Greenway
<http://edition.pagesuite-professional.co.uk/launch.aspx?eid=ea93ef21-cbd0-42f8-934c-7fc847eafbbe>

May 10, 2013 The Intelligencer Should Bucks County's next nature trail go with the flow?
http://www.phillyburbs.com/news/local/should-bucks-county-s-next-nature-trail-go-with-the/article_bc7d9172-b64f-5e31-af15-992078383f16.html

Feb 6, 2014 The Intelligencer Million-dollar homes planned in Doylestown Twp.
http://www.theintell.com/news/local/builder-planning-million-dollar-homes-in-doylestown-township/article_80ca9585-b06f-51a4-9dfb-f2108663480c.html

Apr 21, 2014 The Intelligencer Grant hikes hopes for trails
http://www.theintell.com/news/local/heritage-conservancy-gets-grant-to-create-walkable-region/article_daed98aa-eeb9-52ac-8f6a-2436b283c9e4.html

June 1, 2014 The Intelligencer Study finds central Bucks trail could cost \$13 million
http://www.theintell.com/news/local/study-finds-central-bucks-trail-could-cost-million/article_31e56106-700e-5cbd-9750-675ba402beca.html

**Upper Neshaminy Creek
Trail Feasibility Study**

Community Visioning Workshop

Tuesday, April 23, 2013 7:00 PM - 9:00 PM
Doylestown Library

Welcome to the Community Visioning Workshop for the Upper Neshaminy Creek Trail Feasibility Study. To assist the project team in understanding your personal needs, concerns, ideas, and other thoughts about this proposed trail system, we invite you to visit the three workstations set up around the room, take a copy of the maps, and mark them up with the following information. A member of the project team will be glad to assist you.

1 - What are your destinations? Please mark your origins/destinations with a colored dot as follows:

-  **Institutions (Schools, Libraries, Churches)**
-  **Commercial / Retail / Office**
-  **Parks**
-  **Home**

2- What trail surfaces, and in what areas, would you like to see along the proposed trail?

- RED** **Hard surface trail such as asphalt or concrete**

- PURPLE** **Crushed aggregate or stabilized soils**

- GREEN** **Natural surface such as wood chips or other natural surfaces**

- BLUE** **Boardwalk**

- ORANGE** **Other (Please specify on sheet)**

**Upper Neshaminy Creek - Trail Feasibility Study
Community Visioning Workshop**

Optional Information (Please complete if you would like to be notified of future trail developments:

Name _____ Email _____

Address _____

Concerns about the Proposed Trail:

Please share with us specific comments and/or concerns you have regarding the proposed trail:

Please specify the current trail related activities you participate in (Choose all that apply):

<input type="checkbox"/>	Hiking / Walking	<input type="checkbox"/>	Horseback Riding
<input type="checkbox"/>	Mountain Biking	<input type="checkbox"/>	Running
<input type="checkbox"/>	Road/Recreation Biking	<input type="checkbox"/>	Cross Country Skiing
<input type="checkbox"/>	Canoeing / Kayaking	<input type="checkbox"/>	Snowshoeing
<input type="checkbox"/>	Fishing	<input type="checkbox"/>	Other: (Please specify)
<input type="checkbox"/>	In-line skating		
<input type="checkbox"/>	Bird Watching		

Envisioning the Trail

Trail Usage

Please indicate those activities you would recommend encourage or discourage along the trail:

Activity	Encourage	Neutral	Discourage	Activity	Encourage	Neutral	Discourage
Hiking				Horseback Riding			
Mountain Biking				Running			
Road/Recreation Biking				Cross Country Skiing			
Canoeing / Kayaking				Snowshoeing			
Fishing				Other: (Please specify)			
In-line skating							
Bird Watching							

Trail Surface

Taking into consideration various attributes of the proposed trail including ability to accommodate multiple users, durability, initial installation costs, maintenance costs and requirements, environmental friendliness and other variables, please rank order your **top three** choices for the surface for the proposed trail.

Trail Surface – Summary of Attributes								
Rank (1 High 3 Low) Please choose only 3	Trail Surface	Accommodates a wide variety of users (***** Most to * least)	ADA	Long-term durability	Cost of Installation (\$\$\$\$ High to \$ Low)	Maintenance Costs / Requirements	Can be used in steep slope areas	Environmental Friendliness (**** Very friendly to * Least Friendly)
	Asphalt	*****	Yes	Medium	\$\$\$	Medium	Yes	**
	Concrete	*****	Yes	High	\$\$\$\$	Low	Yes	**
	Crushed Aggregate	****	Can be	Medium	\$\$	Medium	No	*
	Wood Chips	*	No	Low	\$\$	High	No	****
	Stabilized Soils	****	Can be	Medium	\$\$\$	High	Yes	***
	Natural Surface	***	No	Medium	\$	High	Yes	**
	Boardwalk	*****	Yes	High	\$\$\$\$	High	No	**

Trail Amenities

Please indicate the extent to which the following amenities should be incorporated along the trail:

Amenities	Don't want/not needed	No Opinion	Nice to Have	Must Have
Park Benches				
Trash Receptacles				
Emergency Phones				
Trail Signage				
Educational Signage				
Spots away from main trail for getting of the path to enjoy quieter activities				
Docks or other canoe/kayak launches				
Portable Toilets				
Drinking Fountains / Water Pumps				
Other (Please specify)				

Other Questions / Comments regarding the proposed Trail:

Please share with us any local knowledge, specific destination points, sensitive environmental areas, favorite fishing holes, bird watching sports etc. you feel we should be aware of in designing the proposed trail:

Upper Neshaminy Creek – Community Visioning Workshop – April 3, 2013

The initial public meeting / community visioning workshop for the Upper Neshaminy Creek Trail Feasibility Study was held April 3 at 7:00 at the Doylestown Library. A total of 22 residents attended the meeting.

The format of the meeting was an interactive presentation and survey outlining the background and purpose of the study; the specifics of the grant in terms of funding and timing; and a series of trail related topics such as trail usage, trail amenities, trail surfaces, etc. that respondents were asked to provide input on both verbally and through use of the survey form.

Following the presentation, attendees were encouraged to visit the three separate work areas, each featuring a different section of the project area. At these work areas, respondents were asked to identify potential locations for trail head locations, both walk-in/cycle-in and car parking, canoe/kayak access points, and quiet spots for birding and fishing.

The results of the feedback received are presented below:

Survey responses received - 15

Specific Comments and Concerns regarding the proposed trail

Disturbance of significant natural areas

Paved trails in undisturbed stream buffers

Siting new parking on preserved land

Due to steep slopes and a narrow floodplain, a trail is probably not suitable for most of the Neshaminy's floodplain. Flooding will cause a lot of maintenance issues. You should probably focus on staying out of the creek valley and connect local roads so that people can travel by bike without heavy car traffic.

Will the trail follow the path of the Neshaminy exclusively?

Responsibility for maintenance

Conflict resolution for multi-use

Keeping portions as natural as possible

Include County resources / funding (i.e. open space funds) to design and construct this trail. Use County roads & bridges staff to construct portions of the trail.

Very valuable as an opportunity for the community to interact with nature. Improve quality of life and provides means for youth to get to activities on their own.

Upkeep and maintenance

Let's do it – It's a great opportunity

Integrate with various township trails

Have you studied any economic benefits for the township?

Does this trail intersect other trails?

Current trail related activities people participate in

Count	Pct	Activity	Count	Pct	Activity
15	100%	Hiking / Walking	2	13%	Horseback Riding
3	20%	Mountain Biking	4	27%	Running
8	53%	Road/Recreation Biking	7	47%	Cross Country Skiing
8	53%	Canoeing / Kayaking	3	20%	Snowshoeing
6	40%	Fishing	1	7%	Plant & Tree Identification
0	0%	In-line skating			
13	87%	Bird Watching			

Trail activities that people would encourage or discourage along the proposed trail

Activity	Count			Percentage		
	Encourage	Neutral	Discourage	Encourage	Neutral	Discourage
Hiking	15	-	-	100%	-	-
Mountain Biking	3	9	3	20%	60%	20%
Recreational Biking	12	3	-	80%	20%	-
Canoeing / Kayaking	9	6	-	60%	40%	-
Fishing	6	9	-	40%	60%	-
In-line skating	1	7	7	7%	47%	47%
Bird Watching	13	2	-	87%	13%	-
Horseback Riding	3	6	6	20%	40%	40%
Running	11	4	-	73%	27%	-
Cross Country Skiing	9	6	-	60%	40%	-
Snowshoeing	9	6	-	60%	40%	-
Other:						
Hunting/Trapping	-	-	2	-	-	13%

Trail surfaces desired

(Based on 12 responses as 2 surveys didn't rank and 1 included more than 3 choices)

	Number of Votes based on ranking (1 – High to 3 Low)			
	1	2	3	No Votes
Asphalt	5	4	2	2
Concrete	2	1	0	9
Crushed Aggregate	1	1	4	6
Wood Chips	0	1	0	11

Stabilized Soils	1	1	2	8
Natural Surface	3	1	1	7
Boardwalk	1	3	2	6
Other:				
Trail surface should depend upon environmental conditions				

Trail amenities desired

Amenities	Count				Percentage			
	Must Have	Nice to Have	Don't want/not needed	No Opinion	Must Have	Nice to Have	Don't want/not needed	No Opinion
Park Benches	3	10	1	1	20%	67%	7%	7%
Trash Receptacles	10	2	1	2	67%	13%	7%	13%
Emergency Phones	1	4	6	4	7%	27%	40%	27%
Trail Signage	8	6	-	1	53%	40%	-	7%
Educational Signage	2	8	3	2	13%	53%	20%	13%
Spots away from main trail for getting off the path to enjoy quieter activities	2	11	2	-	13%	73%	13%	-
Docks or other canoe/kayak launches	4	6	1	4	27%	40%	7%	27%
Portable Toilets	3	9	2	1	20%	60%	13%	7%
Drinking Fountains / Water Pumps	1	9	3	2	7%	60%	20%	13%
Other (Please specify)								
Hunting			2				13%	
Butterfly Garden		1				7%		
Trail Maps / Info Kiosk	1				7%			
Historic Signage		1				7%		

Other comments:

Could there be at least one small/medium public pavilion with a restroom?

I was an avid user at Perkiomen Trail – excellent model to go from

Trails at Peace Valley are excellent & varied. Use Peace Valley as a model

Would like fishing on creek at Valley Rd including access to nearby pond

There are existing parking lots along the creek off of Valley Rd where people park to fish

Ensure that it connects to Route 202 Parkway and Doylestown Central Park

There was no equestrian represented on committee. Would like multipurpose trail for hikers, bikers and horses.

Trail Routing Options and Locations of Trail Features:

Chalfont to Lower State Rd & 202 Parkway

Trail Routing

- As is currently being planned and developed, Doylestown Township is connecting the existing trail behind the Doylestown Lea subdivision to the intersection of Lower State Rd and the new Route 202 Parkway trail.
- The proposed trail routing will then involve using the Route 202 Parkway trail to connect with a new spur trail leading to Upper State Rd along the east side of the Neshaminy Creek, extending across the Chalfont-New Britain Joint Sewer Authority.
- From this point, the trail routing discussed and supported by most participants involved crossing Upper State Rd near Teal Dr, proceeding along that side of Upper State Rd to Beulah Cemetery where the trail would cross the cemetery property. A desire for a spur trail to connect to the New Britain train station was discussed. The main trail would then follow through the HOA open space area behind Teal Dr/Goldeneye Ct with the intent of connecting into the Wilma Quinlan Nature Preserve. Google Maps shows an existing nature trail, the Beaver Trail, connecting the HOA space to the Quinlan Preserve.
- From the Quinlan Preserve, the trail route discussed would connect into the street and sidewalk network along Stefan Place and Green Valley Way; cross Bristol Rd onto Forrest Drive; connect to Lenape Lane, and the trail located behind the houses on Lenape Lane; proceed north on Moyer Road then left on Cardinal Road where it would connect into Blue Jay and Twin Streams parks.

It was noted that the downside to this trail routing is that much of it would either be on-road or on sidewalks, thereby not meeting the desire for handicap accessibility and/or addressing the need for off-road bicycling facilities.

Trail Features

- Potential canoe/kayak launch sites – Twin Streams Park
- Parking areas – Twin Streams and Blue Jay Parks. It was also noted that a parking lot currently exists at Bristol Rd and its intersection with the Route 202 Parkway Trail

Lower State Rd & 202 Parkway to York Rd

Trail Routing

- Doylestown Township is currently in the process of connecting the trail behind Doylestown Lea to the intersection of Lower State Rd & the Route 202 Parkway Trail. This is the former White Eagle Labs property. The trail will then make use of the trail running behind the Doylestown Lea development to Wells Rd.
- Challenges – Bucks County Fish & Game – Two possible options for getting around this site were discussed:

- Option 1 - Crossing Wells Road into Central Park, going behind the Doylestown Township administration building and onto the open space parcel deeded to the township as part of the Doylestown Station development. From there the trail would cross Turk Rd onto county owned property and run along the western side of the creek near the Bucks County Public Safety Training complex where it would then cross under the Route 611 bridge into Dark Hollow County Park.
- Option 2 - Crossing Wells Road into Central Park, going behind the Doylestown Township administration building and onto the open space parcel deeded to the township as part of the Doylestown Station development. From there the trail would follow a path along the front of Bucks County Fish and Game site on Turk Rd. From there the trail would require a bridge across the Neshaminy to have it continue onto county-owned property leased to Doylestown Township (Turk Park). The trail would then follow the western boundary of this site to the intersection of Almshouse Rd where a trail would be built adjacent to Almshouse Rd to Route 611 where an additional connection would be required to get the trail back to the Neshaminy Creek.

Of these two options, a definite preference was expressed for the first option due to it keeping the trail closer to the creek; it being more scenic, potentially less expensive, and the very steep slope to get the trail along Turk Rd / Turk Park up to Almshouse Rd.

- Additional routing discussions:
 - Some expressed interest in connecting the trail to Edison Park citing the limited available parking
 - No clear preference was expressed for which side of the creek the trail should be located on throughout Dark Hollow Park. However, as the trail approaches York Rd, the consensus seemed to be to have the trail located on the southern side of the creek due to potential connections to Middle Bucks Institute of Technology, which could also be used for trail parking, and a connection, via easements, to the existing trail system as part of the Estates of Warwick Lea subdivision.

Trail Features

- Walk-in trail heads: Pebble Hill Rd, Mountain Laurel Dr, Almshouse Rd as part of existing trail between Birdie & Eagle lanes, Regal Barn Plaza Theater
- Parking areas: Regal Barn Plaza Theater, Shopping Center adjacent to Regal Barn Plaza Theater, existing parking area along Valley Rd near York Rd, Middle Bucks Institute of Technology, Bridge Valley Elementary School
- Fishing sites – Edison Park, pond near existing parking area on Valley Rd

York Rd to Forks of Neshaminy

Trail Routing

- In general, starting at the Eight Arch bridge on York Rd, participants expressed a preference for having the trail located on the southern side of the creek.
- Challenges – Preserved farmland. The presence of this permanently preserved agricultural land, combined with steep slopes in the area, is potentially the greatest challenge to the trail. A few options for circumventing the preserved agricultural land discussed included:
 - Option 1 - Utilizing the PECO corridor, following the PECO corridor down to Rushland Road, then having an on-road connection extending north-easterly along Rushland Rd,

turning southeasterly onto Walton Rd, then turning left and heading easterly along Wilkinson Rd to Sackettsford Rd to the terminus.

- Option 2 - Utilizing the PECO corridor, following the PECO corridor down to Dark Hollow Rd. Follow Dark Hollow Rd easterly, crossing over the Neshaminy utilizing the existing pedestrian bridge, then acquiring easements along the backyards of the homes along Macclesfield Rd, crossing the creek again, acquiring easements along the backyards of the homes located on Wilkinsons Village Court, eventually crossing Rushland Rd again to Sackettsford Rd and the terminus.
- Option 3 – Again, utilizing the PECO corridor, following the powerline corridor but near Meetinghouse Rd, turn left to cross the creek, then follow the northern path of the stream until the creek turns southerly at which point the trail, via easements across several parcels located just north of the preserved agricultural parcels, would parallel Swamp Rd, eventually joining the creek again behind the houses located on Wilkinsons Village Court East where it would then follow the creek down to the terminus.
- Option 4 – The final option identified would also involve the PECO corridor; however, this would be the PECO corridor headed northeasterly, running parallel to Lower Mountain Rd. The trail would follow the PECO corridor to Swamp Rd where the trail would either then be an on-road routing or, if ROW could be acquired or easements obtained, incorporate a multi-use trail along Swamp Rd all the way to the point where Swamp Rd intersects with Rushland Rd. At this intersection, the trail would then right onto Rushland Rd, then left onto Sackettsford to its terminus.

Trail Features

- Walk-in trail heads: Dark Hollow Rd
- Parking areas: Old Sackettsford Road near Rushland Village and Eight Arch bridge
- Canoe/Kayak – Eight Arch bridge, Old Sackettsford Rd where New Hope Ivyland Railroad bridge crosses the creek.

Grants will help Neshaminy Greenway grow

By Christina Kristofic Staff Writer | Posted: Tuesday, December 11, 2012 5:00 am

The decades-old dream of developing a bicycling and walking trail across Bucks County is starting to take shape.

Bucks County has received \$100,000 in state grants to study the feasibility of developing approximately 21 miles of the 33-mile long Neshaminy Greenway.

The greenway would run from Doylestown to the Delaware River, where it would connect with a larger regional trail system called The Circuit. County planners will examine possible paths for the greenway and the costs associated with creating those paths.

The actual construction of the trail is still several years away.

"Is this gonna be done in the next five years? 10 years? 20 years, even? It's a very long-term proposition," said Paul Gordon, an environmental planner with the Bucks County Planning Commission.

"The good news is that we do at least have funding to start (studying) the actual feasibility of doing it and moving it forward," he added.

Bucks County residents and officials first had the idea of developing the Neshaminy Greenway in the 1970s. Gordon said it first appeared in the county's parks and recreation plan in 1986. County residents and officials wanted to develop the trail across the county to connect municipalities and population centers, Gordon said.

There has been a renewed interest in the trail in recent years. Gordon said, "Part of that is a function of the times. People are looking for more recreational activities and to cut their vehicle miles driven."

Some towns already have begun working on their portions of the trail, even though it's not entirely mapped out yet.

Bensalem has acquired about 75 percent of the land that fronts the Neshaminy Creek, said Bensalem councilman Tony Belfield, who chairs the Bucks County Open Space Review Board.

The Bensalem council recently submitted a request to Bucks County for a grant to help it pay for the last piece of Neshaminy Creek frontage needed to complete the trail.

Belfield said Bensalem officials already have completed the planning process for their portion of the Neshaminy Greenway, and they know where they want the trail to go. They've organized several community cleanup days and had residents help remove debris and trash from the Neshaminy Creek's shores.

Connecting residents to the waterways in Bensalem is important, since the waterways serve as Bensalem's boundaries.

"(The water) literally defines us," Belfield said. "These are the obvious routes we have for trail systems and greenways to allow residents to traverse the township without having to get in your car."

Belfield said he hopes to have trails in Bensalem in the next three to four years.

Doylestown Township already has developed some of its portion of the Neshaminy Greenway. Officials included it in their plans for the Doylestown Community Bike and Hike Trail system.

"It made total sense," said township Manager Stephanie Mason.

When the Cutler Group built Doylestown Crossing off Lower State Road about a decade ago, Doylestown Township officials had the developer put a paved walking trail through the property.

Mason said developers Dave DeLuca and Bill Scanlon will continue working on that portion of the trail as they develop the Neamand tract on Lower State Road. The developers also gave several acres to the township to use as a community park.

Township officials plan to connect the trail that runs through Doylestown Crossing and the Neamand tract to the trail that runs along the new Route 202 parkway. Officials plan to put a small kiosk in the area with a map of the trail system for trail users.

Doylestown Township received a grant for \$138,000 from the Delaware Valley Regional Planning Commission in 2009. Officials used it to build a pedestrian bridge along Wells Road and do some design work on a piece of the trail that will run through the Delaware Valley College campus.

Township officials plan to apply to the PECO Green Region program for a \$10,000 grant. If they get it, Mason said, they will use it to improve pedestrian access to open space at Cedar Crest Farms (in the area of Upper State Road) and over the Neshaminy Creek near Upper State Road.

Chalfont, New Britain and New Britain Township also plan to develop the trail, connecting it to the New Britain and Chalfont train stations.

Chatterbox A2	Business D1
Op-ed A10,11	Obituaries D2
Sports B1	Spiritual
Gardener A13	Side D3
Health B7	Classified D4
Dining C2	Puzzle D5
Calendar C4	Horoscope D5
	Police D6

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Arts for the Manor

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BUCKS COUNTY HERALD

THE VOICE OF CENTRAL AND UPPER BUCKS COUNTY
An Independent Newspaper

Volume 11,
Number 29



GORDON NIEBURG

Springtime is for cleaning

Emily Clark, Tyler Tobin and Jen Horner toss leaves and debris to make way for the new Moss Garden at Bowman's Hill Wildflower Preserve. The preserve will hold its annual gala, "Wild About Flowers," Saturday.

Trail would link Neshaminy Creek greenway

Meeting shows possibilities

Brian Mahoney

Imagine yourself as a child, slowly putting puzzle pieces together to illustrate a vast community. Imagine transferring that puzzle-solving skill set into a planning commission meeting.

On April 3, the Doylestown Library hosted a Community Visioning Workshop, organized by the Bucks County Planning Commission. The main speaker, planner Paul Gordon, delivered a thorough slideshow covering topics centered on the Neshaminy Creek Greenway and its history of renovations and territorial updates. Gordon also pitched necessary objectives for a possible recreation trail starting from Chalfont to the Forks of the Neshaminy.

"In 2003 and 2004, the River Conservation Plan recommended the establishment of a trail running along the creek," Gordon said in his timeline orientation.

He highlighted 2005 when the Delaware Valley Regional Planning Commission unveiled a Destination 2030 plan that identified the Neshaminy as both a greenway and a designated part of "the circuit," a regional trail network. In 2012, Bucks County's Bicycle Maps Plan cited the area surrounding the Neshaminy Creek as an ideal spot for future bicycling facilities within the county.

The William Penn Foundation has given the Delaware Valley Regional Planning Commission a

Continued on page A8

Steel trusses may light up the night

Gerry Monigan

Let's face it: The New Hope-Lambertville Bridge is not about to win any beauty contests. In the right light, though

... New Hope Borough Council President Claire Shaw has brainstormed a nifty gimmick that could add a touch of glamour to the utilitarian structure spanning the Delaware River. If its steel trusses were to be lit up at night, the Plain Jane Bridge just might be transformed into a show-stopper.

"It's a vision I've had for a few years," said Shaw, who floated the idea April 16 at the council's monthly meeting and received unanimous, enthusiastic support. "I think uplighting the struts could really make the bridge look beautiful."

The next step is to propose her vision to officials in Lambertville.

"If we both agree it's a good idea, then it would have to be presented at a public meeting," Saw said. "And if the people approved, then we would go to the bridge commission."

Of course, paying for the project would be the biggest problem, but Shaw is hopeful that obstacle can be overcome. New Hope and Lambertville already have a precedent of collaboration: their chambers of commerce have teamed up to create the popular Friday Night Fireworks series, which will be back this summer.

"There are types of lighting that are so inexpensive these days, I really think it could work," Shaw said. "I could even envision the lights changing colors to highlight special occasions."

Shaw said New Hope Mayor Larry Keller has a good rapport with Lambertville Mayor David DelVecchio and could broach the topic within a week. DelVecchio told the Herald he would be open to discussing the concept.

The bridge, with its five stone piers and six steel spans, was built in 1904 after floods damaged two previous, wooden bridges. It cost \$63,818. In 2004, it was refurbished at a cost of \$6.3 million.

It is owned and operated by the Delaware River Joint Toll Bridge Commission, a public agency jointly administered by Pennsylvania and New Jersey that operates seven toll bridges and 13 free bridges. It receives no state or federal tax money.

Count the roses

A pink rose is the symbol for the 32nd annual Bucks County Designer House, which opens this weekend and will run through May 26. The Village Improvement Association, which runs the Designer House, has offered 10 tickets to readers of the Bucks County Herald.



Ten roses are hidden on photographs inside this issue. Count all 10 and report the pages by 4 p.m. Monday, April 29 to be eligible for a raffle to pick the winners. Send page numbers to cpatterson@buckscountyherald.com, mail to P.O. Box 685, Lahaska 18931, or call 215-794-1096 x112. Please include name and hometown. The rose above does not count for the contest.

Weis Market liquor license okayed

Dana M. Eckman

Doylestown supervisors voted 4-1 at their April 16 meeting to approve the inter-municipal transfer of a liquor license from a location in North Hampton Township to a cafe inside the Weis Food Market, at 73 Old Dublin Pike, in the Mercer Square Shopping Center, so beer can be served there.

Supervisor Shawn Touhill was the sole dissenting vote.

No wine or spirits will be sold at the restaurant. Weis Market Stores' representing attorney, Mark Kozar, emphasized their pairing with different types of food.

Weis representatives emphasized that procedures would be in place to keep alcohol out of the hands of minors or intoxicated people. They said the eatery would card everyone using the

magnetic striping on Pennsylvania drivers' licenses.

Kozar said Weis only proposes liquor licenses for some of its stores. Weis took over the space that was once home to Genuardi's about a year ago and they've been operating a sit-down cafe inside the store since opening. The cafe offers prepared foods including fresh rotisserie and fried chicken, entree meals, including meatloaf, turkey, ham and roasted sirloin, to name a few.

Kozar said that all beer purchases would be made at the cafe register, not store registers. And, the benefit of selling beer would be to increase food sales.

"The idea is not to sell beer," Kozar said. "The idea is get people to buy food and go get a six-pack of beer."

Continued on page A8

Doylestown dedicates "Crossroads" marker

Mason Loika

How do you pronounce Lenape?

One hundred people in the heart of Doylestown were assured emphasis belongs on the second syllable during dedication of the Lenape Historical Crossroads Marker on April 6.

As late spring reared its fickle head with clear skies and 60-degree temperatures at the Starbucks parking lot at State and Main streets, the pronunciation uncertainty was taken good-naturedly. Borough dignitaries welcomed native leaders, dancers and drummers at three events honoring Lenape people and their contribution at Doylestown's most recognizable intersection, the "Crossroads," where William Doyle placed his tavern.

Lenapes date back at least to 1000 A.D., according to Stuart Abramson, president and CEO of the Doylestown Historical Society. "The reason we are

Continued on page A8



ALICE MCCORMICK

Four Native Americans bask in the afterglow of the dedication ceremony. From left are Herb Kropnick, Barbara "Bluejay" Michalski, Nokomis Patterson and Kenneth "Stronghorse" Scales.

Crossroads marker honored

Continued from page 1

here," Abramson said, "is to honor the recognition of the Lenapes prior to the time of William Penn ... dedicating a historical marker so that the contributions of the Lenape people will be known to the people of Doylestown on a permanent basis right here at the Crossroads."

"Since many of us here are recent immigrants," Mayor Libby White said, "it is even more fitting that our brothers and sisters should be welcoming us to their ancestral home. We must remember that every now and then. We have much to be thankful now, in any case." The mayor thanked Abramson and the historical society for reminding the town of its native heritage.

White recalled coming here from Kansas, and that her former home state's reputation as part of the Wild West was inaccurate when the "intruders" [pioneers] arrived. She concluded, "It's a great honor to be here to honor our Lenape Indians of Doylestown."

Doylestown Borough Council President Det Ansin spoke about the work of the town's historical society in preserving its heritage. "That heritage is not just the buildings and the architecture of this town. It's about the people of this town."

Abramson introduced Melissa Scott Cornick as someone who "has Lenape blood coursing through her

veins, which makes her uniquely qualified to speak here today."

Cornick then described her 20-year investigative reporting background and said, "The biggest thing that happened today for me was discovering the caves that exist under State and Main streets." The presence of Lenape caves indicate "why this is a Crossroads, why there was water here - all the elements that were needed to have a village here."

Center for Algonquin Culture Director Evan Pritchard described how Route 202 follows the Piedmont Plateau on old Indian trails from Bangor, Maine and Wilmington, Del. He described Lenapes as grandfathers of the Algonquin people.

"The Lenape people were spread to all 50 states - you can look it up - including Hawaii and Mexico and Canada. And so reconstructing the overall history of these people has been quite an adventure for me."

After Abramson detailed the correct pronunciation of "Lenape," Native American Alliance of Bucks County representatives Michalski, Kenneth "Stronghorse" Scales and Nokomis Patterson led prayers and used sage smoke to unveil the historical marker describing Lenape contributions to Doylestown's Crossroads. They were accompanied by the steady beat of native drummers and voices.

Trail would link Neshaminy greenway

Continued from page 1

\$2,000 grant that expires at the end of 2013, thus making Gordon's proactive effort a necessary one for the project.

"We really need to move forward and try to start implementing this open space greenway plan," Gordon insisted. Given the praise for the pristine land that makes up the Neshaminy Creek Greenway, Gordon stated constraints and obstacles of taking the next step. Gordon came back last Wednesday with results of a study he conducted on what residents preferred to have built over the land. From archery ranges, amphitheaters or golf courses, the most popular was a demand for a trail.

A recreational trail (for biking, bird watching, kayaking, among other activities) has been well-received in adjacent areas of the Delaware Canal Towpath Trail along with Montgomery County's Perkiomen Trail and Schuylkill River Trail. Gordon wishes to take the best of those trails and make them work for this proposed trail.

"We are taking into account environmental features, road crossings, creek crossings, wetland areas, whatever has to be addressed ... as much as possible we would like to make the trail ADA (American with Disabilities Act) compliant," Gordon stated.

The surveys handed out may be crucial to envisioning collected

opinions on what is necessary to design a satisfactory trail.

Bucks County Planning Commission members brought large maps that were in different corners of the Pearl S. Buck Conference room to precisely demonstrate three sectors involved: Chalfont to Lower State Road and 202 Parkway, then Lower State Road and 202 Parkway to York Road, and York Road to the Forks of the Neshaminy.

The maps (photographed aerially from Google in 2010) accurately portrayed existing trails, steep slopes, historical/cultural sites, municipal land, agricultural land preservation, PECO locations, HOA open space and Bucks County-owned land.

The planning commission asked participants to sticker potential areas best suited for trail head locations, new or improved kayak-launch points, quiet areas for bird watching or fishing, or lead-ins for biking and walking.

The next step is knowing feedback based on potential sites and resolve links and connections for an appropriate trail design. Wednesday was the initial public meeting.

The entirety of the project, if launched, would be approximately \$75,000.



BRIAN MAHONEY
Paul Gordon, right, discusses a possible plan for the Neshaminy Creek Greenway with a resident.

Doylestown okays liquor license

Continued from page 1

In other business, at the board's request, Township Manager Stephanie Mason took a look at the idea of supervisors' meeting only once a month instead of twice.

The board decided to continue its past policy of meeting twice monthly, but cancel one if warranted.

"It would save on heat and air conditioning and staff time," Mason said. "And if there were an emergency, we could call a special meeting."

Mason reviewed the supervisors' meeting length since last April.

Over the last year, she said, there have been 20 meetings and they have averaged about 45 minutes.

With two meetings a month, she said, one meeting lasts more than an hour, while the other is 20 minutes or less.

Typically, the board doesn't hold a second meeting in July, August, September and November. Otherwise, the supervisors meet on the first and third Tuesday of each month at 7 p.m.

Under the proposal, the supervisors would have met only on the third Tuesday of each month.

The public would be notified of a cancellation via the township's web site and a sign posted on the door of the township building.

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- * Chicken Talk with John Alloway, Bucks County 4-H Poultry Club leader, 11 AM-12 NOON

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Should Bucks County's next nature trail go with the flow?

By James McGinnis Staff writer | Posted: Friday, May 10, 2013 5:30 am

Water never stops for directions. Never worries about traffic. Or complains about the commute.

Should we, on the crowded highways and biways of Bucks County, be envious? Maybe even get with the flow?

On a big board in the cramped office of planner Paul Gordon, Bucks County's creeks and streams appear to make all the right connections. With grant money from the state and regional transportation associations, county planners said they are trying to figure out ways to connect several of these smaller waterways with walking trails that might someday stretch all the way from Doylestown to the Delaware River.

Early stage concept plans illustrate the colorful patchwork of open space and government lands already situated along the banks of the Neshaminy, Mill and Queen Anne creeks.

But it could take decades and millions of dollars to link all these properties.

"Conservatively, we could maybe get something like this done in 10 to 15 years," said Gordon of the county planning commission, gesturing to the many maps. Cost estimates are far down the road. But the economic benefits could be significant, officials said.

In neighboring Montgomery County, the Schuylkill River Trail and the Perkiomen trails were estimated to pump about \$7 million annually into the local economy. The Schuylkill River Heritage Alliance said it surveyed thousands of trail users who spent an estimated \$3.7 million a year on equipment, such as bicycles and shoes, as well as another \$3.6 million on food, beverages and snacks. Trail users spent an average of \$9 per trip, according to the alliance study released in 2010.

In central Bucks, a proposed trail network could run south from Chalfont's Twin Streams Park along a 10-mile course towards Wrightstown where the Neshaminy Creek meets with the Little Neshaminy Creek.

About two thirds of that path was identified as existing government property, protected open space and preserved farms. Stops along the route could include the Wilma Quinlan Nature Preserve, Doylestown Central Park, shops and restaurants along Route 611.

The Lower Bucks trail network would trace a path along the Mill and Queen Anne Creeks through various sections of Levittown. Yet challenges remain with a route that's crisscrossed by the Pennsylvania Turnpike, Route 13, and the Rohm & Haas industrial center.

Mill Creek flows south through sections of Highland Park, Forsythia and Red Rose Gate, Plumbridge and Blue Ridge. Stops along the way include Black Ditch Park, Silver Lake Park and the shores of the Delaware River at Maple Beach.

A second spine of the lower Bucks trail could run along Queen Anne Creek as it passes south from the county-owned Oxford Valley Golf Course through the Levittown sections of Cobalt Ridge and Quincy Hollow.



Creek

The Upper Neshaminy Creek winds through central Bucks. Photo by reporter Jim McGinnis

Bucks County's potential trail network has gained the attention of the Pennsylvania Department of Environmental Protection and Delaware Region Planning Commission.

The Lower Bucks study is funded in-part through a \$45,000 grant from the DEP. The DVRPC chipped in \$60,000 grant for the central Bucks trail study.

Yet interest from local residents has been timid. Fewer than a dozen people attended town hall meetings held April 3 at Doylestown library and April 30 at Silver Lake Park.

The handful of attendees were asked about their vision and wishlist for the trails. A few expressed concerns about horses and hunting, particularly near trails in central Bucks, Gordon said.

"About the only things people didn't want to see on the trails were in-line skaters and horse riding," said Gordon. "There seems to be a conflict of interest with bikes that could scare horses and cleaning up after the horses on the trail."

"The need for emergency phones [on the trails] was not cited and there was no request for night time lighting," Gordon added of the surveys. "People said that at nighttime they just wouldn't be out there."

In the coming weeks, county planners said they will head out on foot, walking the banks of Neshaminy, Mill and Queen Anne creeks. Some areas might be impassable.

"What we've heard from people in numerous studies is that they want more trails," said Gordon. "People welcome things like ballparks, but what they want are long-distance interconnected trails that actually get them from place to place as opposed to just going in a circle around a local park."

Builder planning million-dollar homes in Doylestown Township

By Christopher Ruvo Correspondent | Posted: Thursday, February 6, 2014 12:00 am

Zaveta Custom Homes is working on plans to build six homes in Doylestown Township that could carry million-dollar price tags.

On Tuesday, company owner Richard Zaveta presented a sketch plan to township supervisors that calls for constructing the residences on the so-called Goetzberger Tract -- a 3-acre property on Lower State Road near the YMCA where there's a barn, springhouse, existing residence and former dentist's office.

Preliminary plans call for tearing down the dentist's office and converting the barn and existing residence into houses that likely will exceed 3,000 square feet. Four homes would be constructed - each, like the rebuilt existing structures, served by a two-car garage.

Zaveta referred to the units as twins because the six homes would be grouped in pairs, with a connecting area running between each unit in the separate pairs. The sketch plan shows lush landscaping and homes with elegant stonework.

"I think it's an attractive plan," said Supervisor Shawn Touhill.

Still, Touhill advised Zaveta to get input from the fire department to ensure that the first responders' trucks will be able to turn within the cul-de-sac bulb that's to be part of the proposed development's lone road. Zaveta said the road will be designed to accommodate emergency vehicles.

While the early feedback was positive, Zaveta and his team now have to create formal development plans and gain approval from the township to turn the project into a reality. The process won't happen overnight. To gain approval this year would be ideal but challenging, said Zaveta. That pushes a groundbreaking date into at least 2015.

"It's an exciting project and we're eager to move forward," said Zaveta.

In other news, Paul Gordon of the Bucks County Planning Commission gave supervisors an overview of a plan that calls for creating a new trail network along the Upper Neshaminy Creek through seven municipalities in Central Bucks: Doylestown Township, Warwick, Buckingham, New Britain, New Britain Township, Chalfont and Wrightstown.

Still in development, the plan calls for building a recreational trail for activities like biking that would stretch from the Twin Streams Park in Chalfont to the Forks of the Neshaminy in Wrightstown.

A \$60,000 grant from the Delaware Valley Planning Commission is slated to be used to help pay for the project, for which a final cost has not been determined. It's also unclear when trail construction might begin. Before that can happen, work remains to be done, including formulating engineering plans and securing easements for trail development. Full plan details are here: www.buckscounty.org/government/communityservices/PlanningCommission

Heritage Conservancy gets grant to create walkable region

By Crissa Shoemaker DeBree Staff writer | Posted: Sunday, April 20, 2014 6:00 pm

The Heritage Conservancy has been awarded \$400,000 to further efforts to create a network of hiking and biking trails throughout Bucks County and the Philadelphia region.

The two-year grant from the William Penn Foundation will allow the Doylestown-based nonprofit technical assistance in the creation of the Circuit, a 750-mile network of trails in Bucks, Montgomery, Philadelphia, Delaware and Chester counties in Pennsylvania, and Burlington, Mercer, Camden and Gloucester counties in New Jersey.

“Our expertise has traditionally been in explaining to property owners the benefits of open space, the methods by which open space is preserved, facilitating land acquisition,” said Heritage Conservancy President Jeffrey Marshall. “We are a facilitator.”

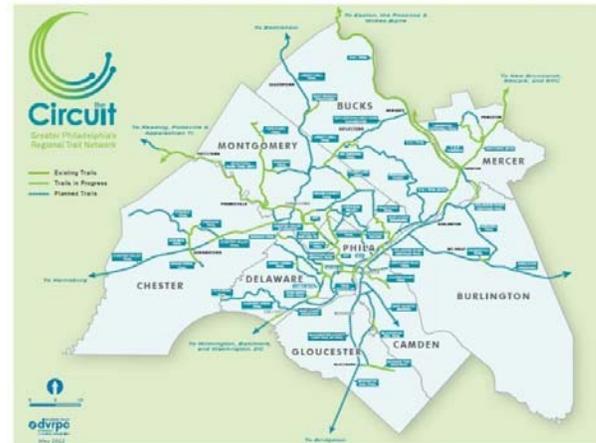
The Circuit has been years in the making, and has years to go before its completion. Only about 250 miles have so far been developed.

In Bucks County, the Circuit includes the already completed Delaware and Lehigh Trail and the 202 Parkway Trail.

But one of the longest trails would be the 33-mile Neshaminy Greenway, which would run from Doylestown to the Delaware River. Part of that greenway in Doylestown Township has already been developed, and Bensalem has performed work on its portion, as well.

Paul Gordon, an environmental planner with the Bucks County Planning Commission, said building walking and biking trails were identified as a priority in the county’s parks and recreation plan years ago. But bringing that to fruition will require funding. The county has received several grants to perform feasibility studies on the Neshaminy Greenway.

“We asked people, what facilities do they want to see more of?” he said. “You name it, we had a list. And consistently, what came to the top was, we want bike trails and multiuse trails. That’s what the people of the county came to us with.”



The Circuit

Courtesy of connectthecircuit.org.

Marshall said the trails represent the next phase in open space conservation.

“We have often said that for 50 years we protected land from people,” he said. “Now we’re trying to protect land for people. Certainly you want to protect the land, but who are you protecting it for? It’s for people to use it and cherish it.”

Study: Central Bucks 15-mile trail could cost \$13 million

By James McGinnis Staff writer | Posted: Sunday, June 1, 2014 5:00 pm

Machete in hand and soaked in bug repellent, Paul Gordon of the Bucks County Planning Commission ventured into a forest of sycamore, river birch and silver maple, walking ferns and maiden-hair spleenwort.

Eight species of salamander, six genera of snake, frogs and toads, turtles and lizards are at home here along the Upper Neshaminy Creek. And in the distance, if one listens closely, there is the roar of wild and ferocious commuters native to Route 611.

The creeks of Central and Lower Bucks County are being charted. The intrepid pioneers are civil engineers and their journey could end in a massive trail network extending from Chalfont to the Delaware River and beyond.

On June 18, the county planning commission is scheduled to present the first of several trail feasibility studies — this one focused on Upper Neshaminy Creek.

The board meeting is scheduled for 10 a.m. and will be at the offices of Today Inc., 1990 Woodbourne Road, Middletown.

The plan for the Upper Neshaminy calls for a 15-mile route through the communities of Buckingham, Chalfont, Doylestown Township, New Britain, New Britain Township, Warwick and Wrightstown.

At least \$13 million would be needed for the initial construction, including \$1.4 million in engineering and design fees and \$594,000 to purchase land easements, though most of the land is publicly held.

Annual maintenance costs are estimated at \$112,500 for a 10-foot wide handicap-accessible asphalt and boardwalk path to be used by hikers, bikers and pedestrians, officials said.

In its study, Gilmore and Associates civil engineers note the many positives of having such a trail. Among them, the designed path links to parks, schools and bus stations, allowing more workers



Creek

The Upper Neshaminy Creek winds through central Bucks. Photo by reporter Jim McGinnis

and students to bike and access mass transit more safely. The trail could also boost the local economy.

In neighboring Montgomery County, the Schuylkill River and Perkiomen trails were estimated to pump about \$7 million annually into the local economy. A study conducted in 2010 by the Schuylkill River Heritage Alliance found trail users spent an average of \$9 per trip.

Still, there will be challenges to Bucks County's trail plan. At least seven areas of the Upper Neshaminy contain steep slopes and several "large-span bridges" and that boardwalks might also be required in protected wetlands, according to the study.

In addition to those hurdles, at least four "major" municipal sewage treatment plants discharge into the creek and "flow in many reaches of the Neshaminy Creek can be more than 90 percent effluent during periods when base flow is low," according to the study.

This is also not the first time officials have tried to build trails along the Neshaminy. Plans for a creekside park date back to 1955. Proposals for a Neshaminy Creek park were included in county plans drafted in 1974 and 1986, officials said.

Separate studies are planned for the lower and middle portions of Neshaminy Creek, stretching from Rushland to Bensalem, Gordon said. Those plans could be completed and released to the public in late 2015.

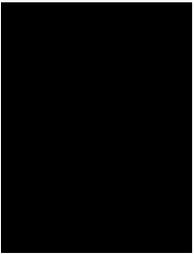
Another trail feasibility study is underway for the Black Ditch, Mill and Queen Anne creeks, which run through Bristol Township, Falls and Middletown. "That study is being done now and should be released at the end of September," Gordon said.

So far, though, no money has been acquired for any of those construction projects, and officials are hesitant to even speculate on a timeline.

"It all depends on the funding," said Gordon, suggesting that the Upper Neshaminy trail could be completed in 10 to 15 years.

Until then, copies of Bucks County's draft plan for the Upper Neshaminy can be found on the planning commission webpage at www.buckscounty.org

APPENIDIX B
Opinion of Probable Costs



COST OPINION WORKSHEET - UPPER NESHAMINY CREEK TRAIL - SEGMENTS 2 & 3

		ON ROAD	OFF ROAD	<div style="display: flex; justify-content: space-between; padding: 2px;"> Ped. Only Trail - 6' Packed Earth Park Trail - 8' Asphalt Multi-Use Trail - 10' Asphalt Asphalt Pavement - Misc. Multi-Use Trail - 10' Concrete Boardwalk Signage - Wayfinding Signage - Warning/Safety Pavement Markings - Crosswalk Curb Cut/ADA Ramp Pavement Markings - Share the Road Drainage Improvements/SWM Traffic Signal - RRFB Structure - Picnic Shelter/Restrooms Structure - Information Kiosk Structure - Bridge Crossing/Ramp Structure - ADA Fishing Pier </div>																	QTY.	UNIT	\$/UNIT	TOTAL COST	NOTES
SEGMENT 2: 202 PARKWAY TRAIL (3.4 Mi.)	2	•		Utilize Existing 202 Parkway Trail & Doylestown Township Trail System																	9	EA	\$100.00	\$900.00	
												SUB-TOTAL - PRIMARY TRAIL ROUTE SEGMENT 2							\$900						
SEGMENT 3: CENTRAL PARK TO EASTON ROAD (.75 Mi.)	3a	•		Doylestown Township Central Park to Bridge Point Park (2,450 LF)																	2,300	LF	\$100.00	\$230,000.00	
																					6	EA	\$100.00	\$600.00	
																					4	EA	\$150.00	\$600.00	Turk Road Pedestrian Crossing
																					100	LF	\$12.00	\$1,200.00	Turk Road Crossing
																					1	EA	\$50,000.00	\$50,000.00	Turk Road Mid-Block Crossing Signals
																					1	EA	\$15,000.00	\$15,000.00	
																					600	SF	\$200.00	\$120,000.00	10' Wide Steel Truss Stream Crossing - 60' Length
	400	SF	\$200.00	\$80,000.00	10' Wide Steel Truss Stream Crossing - 40' Length																				
	1,500	SF	\$200.00	\$300,000.00	10' Wide Steel Truss Stream Crossing - 150' Length - Across Neshaminy Creek to island																				
	3b	•		Bridge Point Park to Easton Road (Route 611) (1,560 LF)																	1,500	LF	\$100.00	\$150,000.00	
											SUB-TOTAL - PRIMARY TRAIL ROUTE SEGMENT 3:							\$1,247,400							
											CONTINGENCY (20%):							\$249,480							
											DESIGN/ENGINEERING (15%):							\$187,110							
											TOTAL - PRIMARY TRAIL ROUTE SEGMENT 3:							\$1,683,990							

COST OPINION WORKSHEET - UPPER NESHAMINY CREEK TRAIL - SEGMENT 6

SEGMENT	TRAIL TYPE	DESCRIPTION	ON ROAD	OFF ROAD	Ped. Only Trail - 6' Packed Earth	Park Trail - 8' Asphalt	Multi-Use Trail - 10' Asphalt	Asphalt Pavement - Misc.	Multi-Use Trail - 10' Concrete Boardwalk	Pedestrian Walkway - 5' Gravel	Signage - Wayfinding	Signage - Warning/Safety	Pavement Markings - Crosswalk	Curb Cut/ADA Ramp	Pavement Markings - Share the Road	Drainage Improvements/SWM	Traffic Signal - RRFB	Structure - Picnic Shelter/Restrooms	Structure - Information Kiosk	Structure - Bridge Crossing/Ramp	Structure - ADA Fishing Pier	QTY.	UNIT	\$/UNIT	TOTAL COST	NOTES				
SEGMENT 6: MILL ROAD TO DARK HOLLOW ROAD (1.6 MI.)	•	•			•																	5,200	LF	\$100.00	\$520,000.00					
						•																				1,840	LF	\$55.00	\$101,200.00	Widen existing 6' trail to 10'
													•													8	EA	\$100.00	\$800.00	
														•												4	EA	\$150.00	\$600.00	Mill Road Crossing
															•											1	EA	\$500.00	\$500.00	Mill Road Crossing
																•										1	EA	\$6,000.00	\$6,000.00	Lockleigh Road
																	•									6	EA	\$300.00	\$1,800.00	Immediately following intersections and 1 per 250 LF.
																		•								1	LS	\$10,000.00	\$10,000.00	Drainage Improvements and Culverts
																			•							1	EA	\$50,000.00	\$50,000.00	Mill Road Mid-Block Crossing
																							•			1,500	SF	\$200.00	\$300,000.00	10' Wide Steel Truss Stream Crossing - 150' Length
																		•			2,000	SF	\$200.00	\$400,000.00	10' Wide Steel Truss Stream Crossing - 200' Length					
																							SUB-TOTAL - PRIMARY TRAIL ROUTE SEGMENT 6:		\$1,390,900					
																							CONTINGENCY (20%):		\$278,180					
																							DESIGN/ENGINEERING (15%):		\$208,635					
																							EASEMENT ACQUISITION:		\$72,000	20' Wide Easement @ \$1.60/s.f.				
																							TOTAL - PRIMARY TRAIL ROUTE SEGMENT 6:		\$1,949,715					

COST OPINION WORKSHEET - UPPER NESHAMINY CREEK TRAIL - SEGMENT 7

ON ROAD	OFF ROAD	Ped. Only Trail - 6' Packed Earth	Rec. Trail - 10' Packed Gravel	Multi-Use Trail - 10' Asphalt	Asphalt Pavement - Misc.	Multi-Use Trail - 10' Concrete Boardwalk	Pedestrian Walkway - 5' Gravel	Signage - Wayfinding	Signage - Warning/Safety	Pavement Markings - Crosswalk	Curb Cut/ADA Ramp	Pavement Markings - Share the Road	Drainage Improvements/SWM	Traffic Signal - RRFB	Structure - Picnic Shelter/Restrooms	Structure - Information Kiosk	Structure - Bridge Crossing/Ramp	Structure - ADA Fishing Pier
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SEGMENT	TRAIL TYPE	DESCRIPTION	ON ROAD	OFF ROAD	Ped. Only Trail - 6' Packed Earth	Rec. Trail - 10' Packed Gravel	Multi-Use Trail - 10' Asphalt	Asphalt Pavement - Misc.	Multi-Use Trail - 10' Concrete Boardwalk	Pedestrian Walkway - 5' Gravel	Signage - Wayfinding	Signage - Warning/Safety	Pavement Markings - Crosswalk	Curb Cut/ADA Ramp	Pavement Markings - Share the Road	Drainage Improvements/SWM	Traffic Signal - RRFB	Structure - Picnic Shelter/Restrooms	Structure - Information Kiosk	Structure - Bridge Crossing/Ramp	Structure - ADA Fishing Pier	QTY.	UNIT	\$/UNIT	TOTAL COST	NOTES		
SEGMENT 7: DARK HOLLOW ROAD TO SACKETTSFORD ROAD (3 MI.)	7a	Dark Hollow Road Crossing																				4	EA	\$150.00	\$600.00	Ped X-ing, Ped Stop		
																							500	L.F.	\$12.00	\$6,000.00	Thermoplast Continental Markings	
	7b	Dark Hollow Road to Rushland Road (Bike Route) (6,000 LF)																					8	EA	\$100.00	\$800.00	Wayfinding/Ped scale STOP signs along existing trails	
	7c	Rushland Road - Zachary Lane to Walton Road (Bike Route) (4,200 LF)																					2	EA	\$100.00	\$200.00		
																							8	EA	\$150.00	\$1,200.00	Share the Road/ Bike/Ped X-ing	
																								150	LF	\$12.00	\$1,800.00	Crossing at Rushland & Walton
																							6	EA	\$300.00	\$1,800.00	3 Eash Side	
	7d	Dark Hollow Road to Rushland Road (Pedestrian Route) (5,900 LF)																					1,800	L.F.	\$20.00	\$36,000.00	Pedestrian Only - No Bikes	
																								2	EA	\$100.00	\$200.00	
																								2	EA	\$150.00	\$300.00	Watch for Peds
	7e	Rushland Road Crossing at Old Walton (Hill) Rd.																						4	EA	\$150.00	\$600.00	Ped X-ing
																								170	L.F.	\$12.00	\$2,040.00	Thermoplast Continental Markings
																								1	EA	\$50,000.00	\$50,000.00	Sackettsford Road Crossing Signal
	7f	Walton Road - Rushland Road to Wilkinson Road (2,300 LF)																						2,300	L.F.	\$100.00	\$230,000.00	Del. Val. College (500')/Heritage Cons. (1800')
																								2	EA	\$100.00	\$200.00	
																								4	EA	\$150.00	\$600.00	Bike/Ped X-ing
																							150	LF	\$12.00	\$1,800.00	Walton Road Crossing	
7g	Walton Road Crossing																					3	EA	\$150.00	\$450.00	Ped X-ing, Ped Stop		
7h	Wilkinson Road - Walton Road to Sackettsford Road (3,400 LF)																						3,350	L.F.	\$100.00	\$335,000.00		
																							2	EA	\$100.00	\$200.00	Directional	
																							2	EA	\$150.00	\$300.00	Ped. Stop	
																						4	EA	\$300.00	\$1,200.00	2 Each Side		
7i	Sackettsford Road Crossing																						4	EA	\$150.00	\$600.00	Ped X-ing	
																							170	L.F.	\$12.00	\$2,040.00	Thermoplast Continental Markings	
																							1	EA	\$50,000.00	\$50,000.00	Sackettsford Road Crossing Signal	
7j	Trailhead at Sackettsford Road																						850	L.F.	\$75.00	\$63,750.00	trail from parking to ramped access	
																								15,000	SF	\$3.50	\$52,500.00	Driveway & Parking Area (20 spaces)
																								2	EA	\$100.00	\$200.00	Wayfinding
																								1	LS	\$10,000.00	\$10,000.00	Stormwater Management
																								1	EA	\$15,000.00	\$15,000.00	Trailhead Info/Map
																							1	LS	\$50,000.00	\$50,000.00	Ramped pedestrian access from Sackettsford Rd.	
SUB-TOTAL - PRIMARY TRAIL ROUTE SEGMENT 7:																										\$915,380		
CONTINGENCY (20%):																										\$183,076		
DESIGN/ENGINEERING (15%):																										\$137,307		
EASEMENT ACQUISITION:																										\$116,800	20' Wide Easement @ \$1.60/s.f.	
TOTAL - PRIMARY TRAIL ROUTE SEGMENT 7:																										\$1,352,563		

COST OPINION WORKSHEET - UPPER NESHAMINY CREEK TRAIL - ALTERNATE TRAIL ALIGNMENTS

SEGMENT	TRAIL TYPE	DESCRIPTION	IMPROVEMENTS														QTY.	UNIT	\$/UNIT	TOTAL COST	NOTES																													
			Ped. Only Trail - 6' Packed Earth	Rec. Trail - 10' Packed Gravel	Multi-Use Trail - 10' Asphalt	Asphalt Pavement - Misc.	Multi-Use Trail - 10' Concrete Boardwalk	Pedestrian Walkway - 5' Gravel	Signage - Wayfinding	Signage - Warning/Safety	Pavement Markings - Crosswalk	Curb Cut/ADA Ramp	Pavement Markings - Share the Road	Drainage Improvements/SWM	Traffic Signal - RRFB	Structure - Picnic Shelter/Restrooms						Structure - Information Kiosk	Structure - Bridge Crossing/Ramp	Structure - ADA Fishing Pier																										
1e	•	OPTION B Beulah Cemetary (3,200 LF)			•																2,390	LF	\$100.00	\$239,000.00																										
																							860	LF	\$140.00	\$120,400.00	8' wide where easement limits width																							
																							6	EA	\$100.00	\$600.00																								
																							2	EA	\$150.00	\$300.00	Upper State Road Crossing																							
																							125	L.F.	\$12.00	\$1,500.00	Teal Drive/Upper State Road Crossing																							
																							3	EA	\$6,000.00	\$18,000.00	Teal Drive/Upper State Road Crossing																							
																							1	EA	\$50,000.00	\$50,000.00	Upper State Road Crossing Signals																							
																				500	SF	\$200.00	\$100,000.00	10' Wide Steel Truss Crossing - 50' Length																										
SUB-TOTAL - ALTERNATE TRAIL ROUTE B - BEULAH CEMETARY																																											\$529,800							
CONTINGENCY (20%):																																												\$105,960						
DESIGN/ENGINEERING (15%):																																												\$79,470						
EASEMENT ACQUISITION:																																												\$72,000	20' Wide Easement @ \$1.60/s.f.					
TOTAL - ALTERNATE TRAIL ROUTE B - BEULAH CEMETARY:																																												\$787,230						
3b	•	OPTION B Bridge Point Park Connection			•																			255	L.F.	\$100.00	\$25,500.00	10' width where possible																						
																									120	LF	\$140.00	\$16,800.00																						
																										6	EA	\$100.00	\$600.00																					
																										2	EA	\$150.00	\$300.00																					
																											1,200	SF	\$200.00	\$240,000.00	10' Wide Steel Truss Stream Crossing - 120' Length																			
																								2,250	SF	\$200.00	\$450,000.00	10' Wide Steel Truss Stream Crossing - 225' Length																						
SUB-TOTAL - ALTERNATE TRAIL ROUTE B - SEGMENT 3b																																													\$733,200					
CONTINGENCY (20%):																																													\$146,640					
DESIGN/ENGINEERING (15%):																																													\$109,980					
TOTAL - ALTERNATE TRAIL ROUTE B - SEGMENT 3b:																																													\$989,820					
3b	•	OPTION C Bridge Point Park to Duane Village			•																			830	L.F.	\$100.00	\$83,000.00																							
																									900	LF	\$140.00	\$126,000.00																						
																										4	EA	\$150.00	\$600.00																					
																											1,200	SF	\$200.00	\$240,000.00	10' Wide Steel Truss Stream Crossing - 120' Length																			
SUB-TOTAL - ALTERNATE TRAIL ROUTE C - SEGMENT 3b																																														\$449,600				
CONTINGENCY (20%):																																														\$89,920				
DESIGN/ENGINEERING (15%):																																														\$67,440				
EASEMENT ACQUISITION:																																														\$50,880	20' Wide Easement @ \$1.60/s.f.			
TOTAL - ALTERNATE TRAIL ROUTE C - SEGMENT 3b:																																														\$657,840				
4a	•	OPTION C Duane Village to Creek Crossing			•																				2,395	LF	\$100.00	\$239,500.00																						
																										4	EA	\$150.00	\$600.00																					
			SUB-TOTAL - ALTERNATE TRAIL ROUTE C - SEGMENT 4a																																														\$240,100	
			CONTINGENCY (20%):																																														\$48,020	
DESIGN/ENGINEERING (15%):																																														\$36,015				
EASEMENT ACQUISITION:																																														\$86,400	20' Wide Easement @ \$1.60/s.f.			
TOTAL - ALTERNATE TRAIL ROUTE C - SEGMENT 4a:																																														\$410,535				

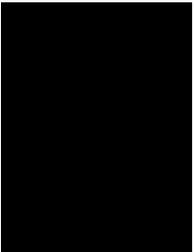
ALTERNATE TRAIL ALIGNMENTS

COST OPINION WORKSHEET - UPPER NESHAMINY CREEK TRAIL - CONNECTOR TRAILS

		ON ROAD	OFF ROAD																											
		Rec. Trail - 10' Packed Gravel	Connector Trail - 8' Asphalt	Multi-Use Trail - 10' Asphalt	Asphalt Pavement - Misc.	Gravel Drive/Parking	Signage - Wayfinding	Signage - Warning/Safety	Pavement Markings - Crosswalk	Curb Cut/ADA Ramp	Pavement Markings - Share the Road	Drainage Improvements/SWM	Traffic Signal - RRFB	Structure - Picnic Shelter/Restrooms	Structure - Information Kiosk	Structure - Bridge Crossing/Ramp	Structure - ADA Fishing Pier													
CONNECTOR TRAILS	4	•	Pebble Hill Road (B)																			3,635	LF	\$85.00	\$308,975.00					
																									6	EA	\$150.00	\$900.00		
																										6	EA	\$150.00	\$900.00	Ped. Stop/Ped/Bike X-ing
				SUB-TOTAL - PEBBLE HILL ROAD (B) CONNECTOR TRAIL																							\$310,775			
	CONTINGENCY (20%):																							\$62,155						
	DESIGN/ENGINEERING (15%):																							\$46,616						
	EASEMENT ACQUISITION:																							\$24,000	20' Wide Easement @ \$1.60/s.f.					
	TOTAL - PEBBLE HILL ROAD (B) CONNECTOR TRAIL:																							\$443,546						
	CONNECTOR TRAILS	4	•	•	Valley Road South																									
SUB-TOTAL - VALLEY ROAD SOUTH CONNECTOR TRAIL																							\$309,450							
CONTINGENCY (20%):																							\$61,890							
DESIGN/ENGINEERING (15%):																							\$46,418							
EASEMENT ACQUISITION:																							\$86,400	20' Wide Easement @ \$1.60/s.f.						
TOTAL - VALLEY ROAD SOUTH CONNECTOR TRAIL:																							\$504,158							
CONNECTOR TRAILS	5	•	Buckingham Township Connector Trail																											
	SUB-TOTAL - BUCKINGHAM TOWNSHIP CONNECTOR TRAIL																							\$53,300						
	CONTINGENCY (20%):																							\$10,660						
	DESIGN/ENGINEERING (15%):																							\$7,995						
	EASEMENT ACQUISITION:																							\$15,200	20' Wide Easement @ \$1.60/s.f.					
	TOTAL - BUCKINGHAM TOWNSHIP CONNECTOR TRAIL:																							\$87,155						
CONNECTOR TRAILS	6	•	Dark Hollow Equestrian Trail Parking Area																											
	SUB-TOTAL - DARK HOLLOW EQUESTRIAN TRAIL PARKING AREA																							\$118,300						
CONTINGENCY (20%):																							\$23,660							
DESIGN/ENGINEERING (15%):																							\$17,745							
TOTAL - DARK HOLLOW EQUESTRIAN TRAIL PARKING AREA:																							\$159,705							

APPENDIX C

Potential Funding Sources



APPENDIX C - POTENTIAL FUNDING SOURCES

The most likely means of implementing the Upper Neshaminy Creek Trail plan identified in this feasibility study is through application to multiple funding sources. Most trails are developed using a combination of public funding from various government levels, private funding, local public forces and volunteer assistance. This appendix provides an overview of some of the potential funding sources for development of the Upper Neshaminy Creek Trail.

Federal Funding

The Federal Government provides funding for transportation projects through various funding programs. These are typically in the form of block grants provided to states through funding formulas and are typically administered through the state or the Delaware Valley Regional Planning Commission.

MAP-21 - Transportation Alternatives Program - For the past two decades, the Surface Transportation Act (SAFETEA-LU) served as the largest single source of funding for the development of bicycle, pedestrian, trail and greenway projects. After the expiration of SAFETEA-LU in March 2012, President Obama signed a new multi-year appropriations bill referred to as MAP-21, or Moving Ahead for Progress in the 21st Century in July 2012. The new act created the Transportation Alternatives Program (TAP) which combines several SAFETEA-LU programs under a single heading, continuing funding for programs and projects defined as transportation alternatives, including:

- on and off-road pedestrian and bicycle facilities;
- community improvement programs;
- recreational trail program projects; and
- safe routes to school projects.

MAP-21 also continues the Surface Transportation Program (STP) and the Congestion Mitigation Air Quality Program (CMAQ) which also supply potential funding for trail improvements.

<http://www.fhwa.dot.gov/map21/guidance/guidetap.cfm>

United States Department of the Interior - National Parks Service (NPS) - Rivers, Trails and Conservation Assistance (RTCA) Program - A National Parks Service program which provides technical assistance to establish and restore greenways, rivers, trails, watersheds and open space.

<http://www.nps.gov/orgs/rtca/apply.htm>

Land and Water Conservation Fund - Created by Congress in 1965, the Land and Water Conservation Fund (LWCF) was a bipartisan commitment to safeguard natural areas, water resources and our cultural heritage, and to provide recreation opportunities to all Americans. The program uses revenues from the depletion of one natural resource - offshore oil and gas - to support the conservation of land and water by using royalties paid by energy companies drilling for oil and gas on the Outer Continental Shelf (OCS) are placing them in the fund for the purpose of creating and protecting national parks, areas around rivers and lakes, national forests, and national wildlife refuges from development, and to provide matching grants for state and local parks and recreation projects.

<http://www.lwcfcoalition.org/about-lwcf.html>

State Funding

The State of Pennsylvania offers multiple funding sources in support of open space, historic and cultural resource preservation, natural resource protection, recreation and park facilities, and greenways implementation. Similar to the federal funding programs, these programs are administered by a variety of different departments. The Pennsylvania Greenways Toolbox's Funding Guide provides additional information about these programs.

Pennsylvania Department of Conservation and Natural Resources (PA DCNR)

Recreational Trails Program - The Pennsylvania Recreational Trails Program (PRT) is an assistance program funded through the U.S. Department of Transportation's Federal Highway Administration (FHWA). FHWA provides funds to states to develop and maintain recreational trails and trail-related facilities for motorized and non-motorized recreational trail uses. The Department of Conservation and Natural Resources (DCNR) has been designated as the state agency responsible for administering this federal program in Pennsylvania.

http://www.dcnr.state.pa.us/cs/groups/public/documents/document/d_001241.pdf

Community Conservation and Partnership Program - Community Recreation and Conservation grants are awarded to municipalities and authorized nonprofit organizations for recreation, park, trail and conservation projects. These include planning for feasibility studies, trail studies, conservation plans, master site development plans, and comprehensive recreation, park and open space and greenway plans; land acquisition for active or passive parks, trails and conservation purposes; and new development and rehabilitation of parks, trails and recreation facilities.

http://www.dcnr.state.pa.us/cs/groups/public/documents/document/D_001230.pdf

Pennsylvania Department of Community and Economic Development (PA DCED)

Greenways, Trails and Recreation Program (GTRP) - Act 13 of 2012 establishes the Marcellus Legacy Fund and allocates funds to the Commonwealth Financing Authority (the "Authority") for planning, acquisition, development, rehabilitation and repair of greenways, recreational trails, open space, parks and beautification projects using the Greenways, Trails and Recreation Program (GTRP).

http://www.newpa.com/sites/default/files/uploads/GreenwaysTrailsRecreation_Guidelines-2014-v2.pdf

Local Funding

In addition to the various grant programs administered by Federal and State governments, there are a number of other government initiatives that can provide funding for implementing trail plans.

Bond Referendums

As evidenced by the success of the Bucks County Open Space Program, bonds are a proven and effective way to finance long-term recreational improvements. A variety of different types of bond options are available to the county and municipalities. Regardless of the type of bond referendum, an education and awareness program should be implemented to increase public and voter support in advance of any vote.

Revenue Bonds - Revenue bonds that are secured by a guarantee of repayment solely from revenues generated from a certain local government activity. The government entity issuing the bond pledges to generate sufficient revenue annually to cover the program's operating costs, plus meet the annual debt service requirements (principal and interest payments).

General Obligation Bonds - Local governments are generally able to issue general obligation bonds that are secured by the full faith and credit of the entity. In this case, the local government issuing the bonds pledges to raise its property taxes, or use any other sources of revenue, to generate sufficient revenues to make the debt service payments on the bonds. A general obligation pledge is stronger than a revenue pledge, which typically translates into a lower interest rate than a revenue bond.

Property Tax and Earned Income Tax - Pennsylvania's Act 153 of 1996, which amended the Pennsylvania Conservation and Land Development Act, expanded the authority of municipalities to fund open space projects through local taxes. Under the Act, two different taxation tools were identified that can be used to purchase development rights or open space lands.

Property Tax - This is a tax charged to real property owners based on a percentage of the assessed property value, not to exceed the millage authorized by voter referendum. Property taxes provide a steady source of revenue. However, because communities are limited in the total level of the millage rate, the use of property taxes to fund open space activities may inhibit the ability of the municipality to raise money for other needed activities.

Earned Income Tax - This is a tax applied only to earned income, not to real estate assets or pensions. Because of this, it may prove to be more acceptable in municipalities with a higher percentage of retired senior citizens. Pennsylvania caps the earned income tax at 1.0 percent. However, Act 153 authorizes voters to approve the levy of an increased earned income tax beyond the 1.0 percent limit, exclusively for the purpose of financing purchases of open space.

Realty Transfer Tax - The realty transfer tax is a tax on the sale of real estate. The maximum levy is 1 percent of the sales price. If both the municipality and school district levy this tax, both must share the 1 percent.

Hotel Tax - The hotel occupancy tax, imposed at the same rate as sales and use tax, applies to room rental charges for periods of less than 30 days by the same person. The purpose of the hotel tax is to increase tourism and economic development in Pennsylvania. The tax supports advertising, development of publications related to tourism, capital and program projects to attract tourists, and in some counties open space conservation, trails and recreation facility improvements. Bucks County supports projects to increase tourism through its hotel tax.

Private Funding Sources

Grant funding is available through many private avenues, most of which have specific agendas. Key to obtaining such funding is a clear match of the project goals to the funding intent. Often, private grants require a non-profit entity [501(c)3] to receive and administer any funds. Frequently, private funding can be used to meet the matching requirements of many public programs which require some amount of local funding as a good faith indication of local support. Finally there are in-kind gifts and cooperative partnerships which permit a right of way through private lands and develop a cooperative agreement for use, maintenance and safety. These can frequently be seen in rails-with-trails as well as trails that use utility rights of way and cooperative maintenance.

PECO Green Region Grants Program - Green Region grants are available to municipalities in amounts up to \$10,000. The grants can be used with other funding sources to cover a wide variety of planning and direct expenses associated with developing and implementing open space programs, including consulting fees, surveys, environmental assessments, habitat improvement, and capital improvements for passive recreation.

<https://www.peco.com/Community/CharitableGiving/GreenRegion/Pages/ApplicationGuidelines.aspx>

William Penn Foundation - The William Penn Foundation's mission is to improve the quality of life in the Greater Philadelphia region through efforts that foster rich cultural expression, strengthen children's futures, and deepen connections to nature and community. In partnership with others, the Foundation works to advance a vital, just, and caring community. The Foundation works to improve the quality of life in the Greater Philadelphia region by advancing dynamic and diverse communities that provide meaningful opportunity.

In 2011, the Foundation provided \$10 million in funding for The Regional Trails Program, administered by the Delaware Valley Regional Planning Commission, with the goal of capitalizing upon opportunities for trail development by providing funding for targeted, priority trail design, construction and planning projects that will promote a truly connected, regional network of multi-use trails with Philadelphia and Camden as its hub. Although the funding for this program provided by William Penn has been depleted, efforts are currently underway to replenish the funding stream via other funding sources.

<http://www.williampenntfoundation.org/GrantmakingOverviewApplicationProcess.aspx>

<http://www.dvrpc.org/RegionalTrailsProgram/>

Kodak American Greenways Awards - The Conservation Fund, in conjunction with the Eastman Kodak Company and the National Geographic Society, provide small grants for the purpose of growing greenways, water trails, trails and natural areas. Funded projects typically advance one of the goals of the program including catalyzing new greenway projects; assisting grassroots greenway organizations; leveraging additional money for conservation and greenway development; and promoting use and enjoyment of greenways.

http://www.conservationfund.org/kodak_awards

American Hiking Association - National Trails Fund - Established by the American Hiking Society in 1998, this national grants program provides funding for establishing, protecting, and maintaining foot trails. Eligible projects include those that:

- Have hikers as the primary constituency
- Secure trail lands, including acquisition of trails and trail corridors
- Will result in visible and substantial ease of access, improved hiker safety and/or avoidance of environmental damage

<http://www.americanhiking.org/our-work/national-trails-fund/>

APPENDIX D
List of Easements Needed
for Trail Completion



APPENDIX D - LIST OF EASEMENTS NEEDED FOR TRAIL COMPLETION

APPENDIX D - Easements Required

Parcel	Owner	Easement Required for:	Routing	Sub-Route	Length (ft)
Segment 1 – Twin Streams Park to Route 202 Parkway Trail					
Primary Trail					
07-009-022-002	Central Bucks School District	10' Asphalt Trail			1,100
07-009-022-002	Central Bucks School District	Use of Existing Service Rd			375
25-001-137	Private	10' Asphalt Trail	A		560
25-005-035-003	Black Oak Properties	10' Asphalt Trail	A		175
25-005-035	Private	10' Asphalt Trail	A		500
26-011-092	Bridge Creek HOA	10' Boardwalk	A	A	825
26-011-090	Private	10' Boardwalk / Asphalt Trail	A	A	475
26-011-092	Bridge Creek HOA	10' Boardwalk / Asphalt Trail	A	B	1,035
26-011-094	Beulah Cemetery	10' Asphalt Trail	A	B	225
26-011-094	Beulah Cemetery	10' Asphalt Trail	A	B	225
26-011-093	Private	8' Asphalt Trail	A	B	125
26-011-157	Private	8' Asphalt Trail	A	B	50
26-011-158	Private	8' Asphalt Trail	A	B	190
26-011-159	Private	8' Asphalt Trail	A	B	30
09-007-010-001	Chalfont-New Britain Joint Sewage Authority	10' Asphalt Trail	A	B	1,030
New Britain SEPTA Regional Rail Station Connector Trail					
25-005-043	Private	10' Asphalt Trail	Connector		250
25-005-044	Private	10' Asphalt Trail	Connector		110
25-005-045	Private	10' Asphalt Trail	Connector		110
09-001-013	Private	10' Asphalt Trail	Connector		300
Wyndham and Cedar Crest Farms Connector Trail					
No Easements Required					

Segment 2 – Route 202 Parkway Trail to Central Park

No easements required

Segment 3 – Central Park to Easton Rd (Route 611)**Primary Trail**

09-019-002	Private	10' Boardwalk	C	455
09-019-001	Private	10' Asphalt Trail	C	265

Segment 4 – Easton Rd (Route 611) to Valley Road**Primary Trail**

09-014-037-002	Kranzco Realty Trust	Use of Parking Lot for trail head parking	A & B	
09-014-037-002	Kranzco Realty Trust	10' Asphalt Trail	A & B	720
09-019-005	Private	10' Asphalt Trail	C	375
09-019-010	Private	10' Asphalt Trail	C	100
09-019-011	Private	10' Asphalt Trail	C	100
09-019-012	Private	10' Asphalt Trail	C	100

Segment 4a – Valley Road (North) Connector Trails**760**

09-022-141-005	Private	10' Asphalt Trail	B	110
09-022-141-001	Private	10' Asphalt Trail	B	650

Segment 4b – Valley Road (South) Connector Trail**550**

51-002-001-001	Private	10' Asphalt Trail		550
51-003-051	Private	Easement Revision Needed to relocate trail easement area to allow for connection to property across the street and to allow for greater than 6' wide width		-

Segment 5 – Valley Rd to Mill Rd**Primary Trail****5,135**

51-010-011-001	Heritage Conservancy	10' Boardwalk / Asphalt Trail		3,400
51-010-011-002	Heritage Conservancy	10' Asphalt Trail		250
51-010-014	Warwick Township Historical	Use of Eight Arch Bridge		500
51-010-026	PECO	10' Asphalt Trail		710
51-010-042	PECO	10' Asphalt Trail		275

Connector Trail to Bridge Valley at Furlong, Villages at Buckingham, Heritage Center**500**

51-010-011-001	Heritage Conservancy	10' Asphalt Trail		500
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Segment 6 – Mill Rd to Dark Hollow Rd

Primary Trail					5,850
51-010-066-010	Heritage Conservancy	10' Asphalt Trail	A		1,250
51-010-066-001	Heritage Conservancy	10' Asphalt Trail	B & C		4,600

Segment 7 – Dark Hollow Rd to Sackettsford Rd

Primary Trail					2,250
51-017-020-003	Private	Easement Revision Needed to eliminate requirement that Warwick Twsp acquire property in order to allow public passive rec use	A		350
51-017-020-004	Private	Easement Revision Needed to eliminate requirement that Warwick Twsp acquire property in order to allow public passive rec use	A		1,400
51-017-021-002	Delaware Valley College	10' Asphalt Trail	A		500
51-017-027	Private	10' Asphalt Trail	A		1,360
51-017-028	Private	10' Asphalt Trail	A		760
51-017-029-001	Private	10' Asphalt Trail	A		840
51-017-029	Private	10' Asphalt Trail	A		390

