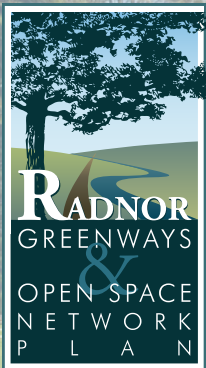






This project was financed in part by a grant from the Community Conservation Partnerships Program, Keystone Recreation, Park and Conservation Fund, under the administration of the Pennsylvania Department of Conservation and Natural Resources, Bureau of Recreation and Conservation.



## Project Committee:

Philip Ahr  
Beverlee Barnes  
Susan Byrne  
Pat Gillan  
Skip Kunda  
Gayla McCluskey  
Stephen Paolantonio  
Anne Poulin  
Cheryl Tumola  
Carolyn Wallis



## Township Contact:

Kevin Kochanski, Director of Community Development



## Project Consultants:

Simone Collins Landscape Architecture  
Planners and Landscape Architects

Traffic Planning & Design  
Transportation Engineers



October 2014



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# 1

## INTRODUCTION

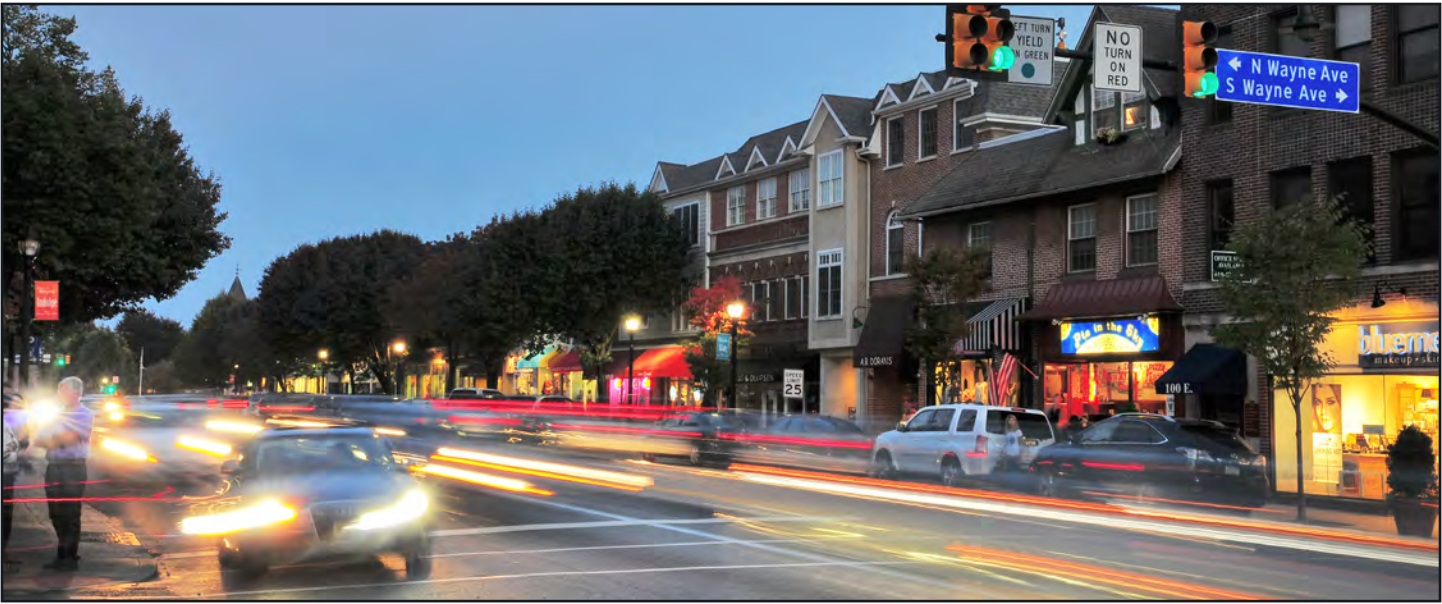


### Study Purpose, Goals, and Objectives

As an effort to update and clarify its approach to Greenways, Trails, and Open Space acquisition, Radnor Township commissioned this township-wide study to develop a comprehensive network of greenways, trails, and bicycle routes that links the community to prominent destinations, including open space preserves and parks.

The Township applied for, and received a grant from the Community Conservation Partnership Program administered by the Pennsylvania Department of Conservation and Natural Resources (DCNR), Bureau of Recreation and Conservation, to prepare the master plan according to DCNR guidelines.







## Open Space and Greenways Network Plan Purpose and Goals

The purpose of the Radnor Township Open Space and Greenways Network Plan is to:

- Review criteria for open space acquisition;
- Develop guidelines that protect, maintain and improve existing greenways, open space, and natural features;
- Develop a greenway and trail network;
- Take advantage of low cost preservation, acquisition, and conservation alternatives, and;
- Qualify for future greenways and open space grant funding from both DCNR and other funding sources.

## Open Space and Greenways Network Plan Objectives

Objectives of the Radnor Township Open Space and Greenways Network Plan include:

- Review the Township's stormwater management and shade tree ordinances as they relate to open space and greenways;
- Inventory current trails and provide recommendations for new trails and linkages;
- Inventory existing greenways, stream corridors, and natural areas;
- Inventory natural and manmade resources ("Green" and "Gray" infrastructure);
- Inventory and analyze existing township parks;

- Inventory historical and cultural assets;
- Review and analyze existing ordinances related to greenways and open space and provide recommendations for amendments;
- Review and update mapping identifying potential regional connections to facilities beyond the Township's boundaries;
- Review criteria for acquiring and selling open space and provide recommendations for amendments.

## Township Background

Radnor Township is located in Delaware County, Pennsylvania within the Philadelphia metropolitan area. The Township is approximately 10 miles west of downtown Philadelphia and has an approximate land area of 13.8 square miles. The Township is governed by a seven member Board of Commissioners with each member representing one of the seven wards that make up the Township.

## Demographics

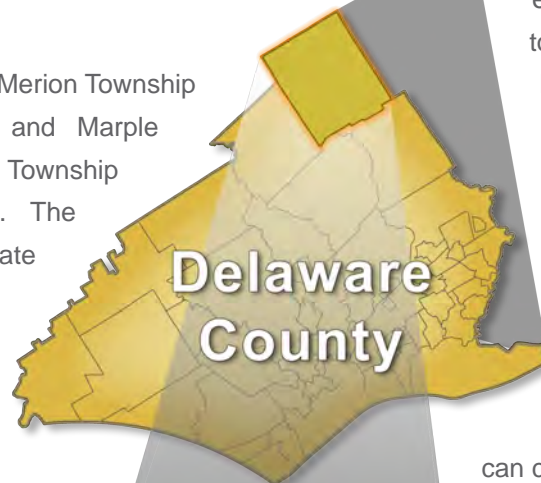
According to the 2010 census, Radnor Township has a population of 31,531 with a density of 2,244.3 inhabitants per square mile. The Township is primarily a densely populated residential suburb with commercial centers located around Lancaster Avenue (SR 30). Much of the remaining land is wooded and agricultural. In 2010, there were 10,347 households with an average household size of 2.65. The median age in the township was 32 years and the median income per household was \$86,812.



## Regional Context

The regional context map shows the relationship between Radnor Township, Delaware County and the State of Pennsylvania. Radnor Township is bordered by Tredyffrin Township and Upper Merion Township to the north, Lower Merion Township to the east, Haverford Township and Marple Township to the south, and Newtown Township and Easttown Township to the west. The Township is bisected by Interstate 476 which connects the Township to Interstate 95 to the south and Interstates 76 and 276 (PA Turnpike) to the north. Lancaster Avenue (Route 30) is the main route east and west through the Township. Lancaster Avenue provides a link to the City of Philadelphia, approximately 10 miles to the east, and west to Downingtown, Lancaster, and York.

Wayne is Radnor Township's major business district providing a variety of shops, cafes restaurants, banks, community services, and other commercial establishments. Because of Wayne's popularity combined with the Township's proximity to Philadelphia and easy access to highways, Radnor Township has become almost completely developed. Additionally the location of the Route 476 corridor through the Township creates a potential obstacle to trail and greenway connections in this area.



## Benefits of Trails, Greenways and Open Space Planning

Trails can provide multiple economic, social, and health benefits to a community. According to a study by The Rails to Trails Conservancy titled Economic Benefits of Trails and Greenways, the economic benefits of trails can include increased property values for properties located near trails. One of the social benefits is that they provide additional locations for community interaction among neighbors and can contribute to an improved quality of life.

Trail facilities can improve the community's general health and well-being through opportunities for resident physical activity. Depression, obesity and diabetes are chronic diseases directly related to the physical inactivity and unhealthy eating habits associated with a sedentary lifestyle. The US Department of Health

and Human Services, Centers for Disease Control and Prevention (CDC) reports that more than one-third (35.7%) of U.S. adults are obese, and the estimated cost of obesity in the United States in 2008 was about \$147 billion. Medical costs were estimated to be \$1,429 higher for the obese









than those of normal weight, in 2006. The 2012 obesity rate for the State of Pennsylvania is 29.1%.

The CDC Guide for Strategies to Increase Physical Activity in the Community indicates that “improved pedestrian infrastructure may promote physical activity by making walking and cycling more appealing, easier, and safer.” For more information on these facts as well as other programs promoting healthy lifestyles by the CDC, please refer to their website: [http://www.cdc.gov/Healthy Living/](http://www.cdc.gov/HealthyLiving/)

The opportunity for physical activity that trails can provide not only fights obesity and related diseases, but has also been shown to result in reduced health care costs, increased work productivity, and increased life expectancy.

Protected Open Space can also have economic benefits according to a 2010 study commissioned by the Greenspace Alliance and Delaware Valley Planning Commission titled Return on Environment, The Economic Value of Protected Open Space in Southeastern Pennsylvania. According to the report, each household in the region saves \$392 per year by open space availability for recreation, exercise, and economic activity associated with protected open space in southeastern Pennsylvania results in more than 6,900 jobs and \$299 million in annual earnings.











# 2

## INVENTORY & ANALYSIS



### Data Collection & Methodology

Data found within this report was compiled from many different sources, including Radnor Township, Delaware Valley Regional Planning Commission, previous planning studies, and field reconnaissance data provided by the consultant.

Geographic Information System (GIS) base map information was used to prepare field maps and preliminary planning documents consisting of the base aerial photography, municipal boundaries, roadways, parcels and other identifying features.

The consultants performed initial field reconnaissance on 10/9/13 to inventory, analyze and document existing conditions. Field data was recorded by the consultant onto the field maps, and photographs were taken of existing site conditions for use in evaluating trail alignment alternatives. Follow-up field verification of proposed alignments was conducted to verify the feasibility of the conceptual trail alignments.





The project was guided by Open Space and Greenways Network Plan committee. The committee provided valuable insight and direction to the consultant for development of the plan. A series of public meetings, study committee meetings, and focus group meetings were held throughout the planning process. These meetings provided additional information and community feedback that contributed to the development of the Radnor Township Open Space and Greenways Network Plan.

Additionally, the committee interviewed key persons in the community who provided feedback and guidance to the planning process.

An 18 question online citizen survey was opened to the public from December to June. The survey received over 460 respondents and the results are discussed later in this section.

The Open Space and Greenways Network Plan will provide the Township with guidance for future greenway and trail acquisition and development, as well as guidance in related areas. It should be noted that a boundary and topographic survey of existing conditions must be prepared for any specific trail sections prior to commencing design development and construction documentation.



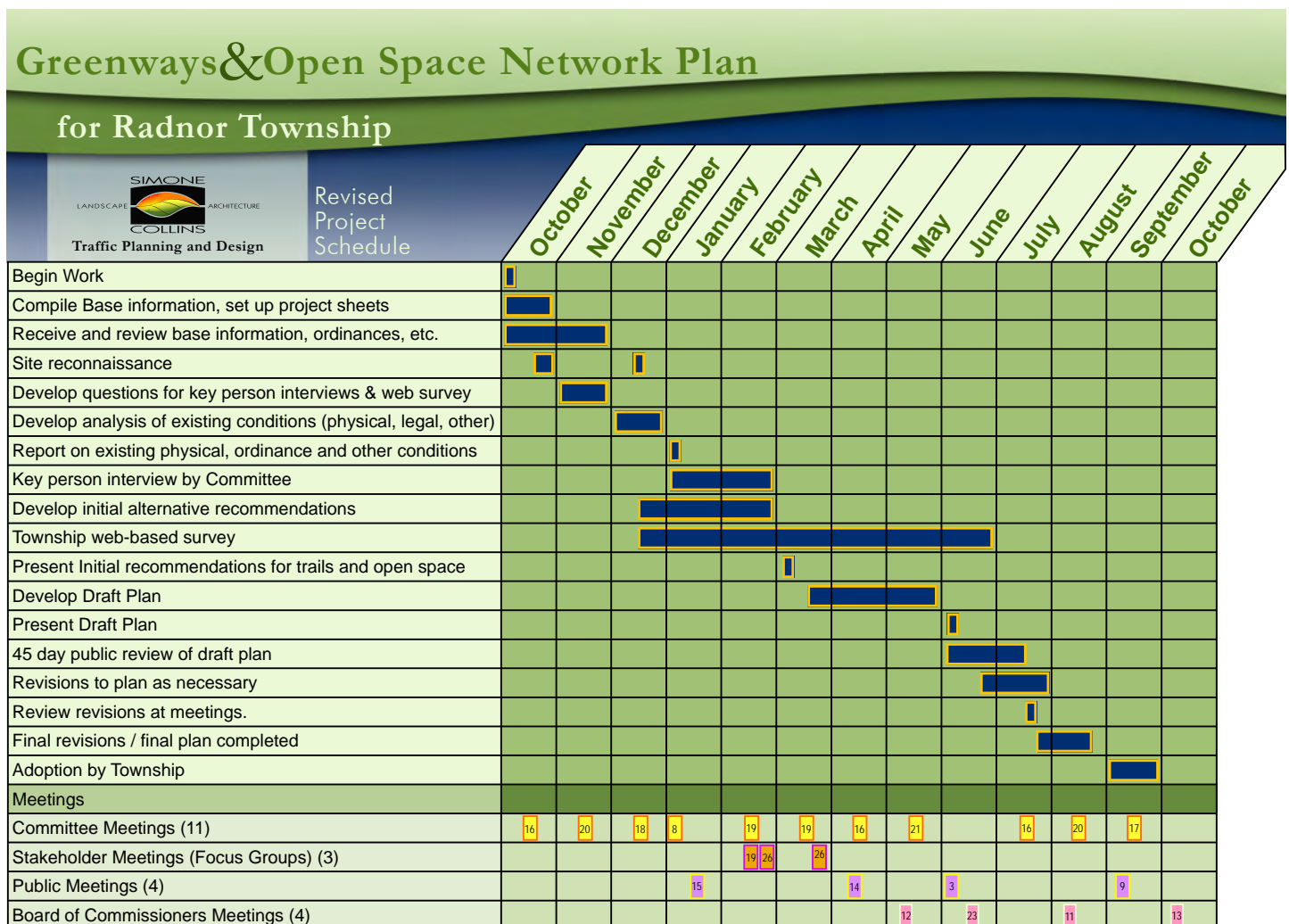
# Public Participation Summary

Public participation is a vital part of the planning process. Public meetings were held to involve the community by soliciting input about existing conditions and desired improvements; keep the community aware of the project status; and to address any comments, questions, or concerns about the project. To the right is a list of the meetings held by the consultants during the development of the Open Space and Greenways Network Plan.

Attendance lists and meeting minutes for these 18 meetings can be found in the appendix of this report.

## Meeting Schedule

Oct. 16, 2013	Committee Meeting #1
Nov. 20	Committee Meeting #2
Dec. 18	Committee Meeting #3
Jan. 8, 2014	Committee Meeting #4
Jan. 15	Public Meeting #1
Feb. 5	Focus Group #1
Feb. 19	Committee Meeting #5
Feb. 26	Focus Group #2
March 5	Focus Group #3
March 19	Committee Meeting #6
April 14	Public Meeting #2
April 16	Committee Meeting #7
May 21	Committee Meeting #8
June 3	Public Meeting #3
July 16	Committee Meeting #9
Aug. 20	Committee Meeting #10
Sept. 9	Public Meeting #4
Sept. 17	Committee Meeting #11







## Public Meetings

Four public meetings were held during the course of the project. Summaries of these meetings are as follows:

### *Jan. 15, 2014—Public Meeting #1*

The first public meeting received 25 attendees from the community. The consultants began the meeting by presenting a general trail planning overview and then discussed existing bicycle routes and trails being considered for this project. The consultants provided an overview of the project scope. Following the presentation by the consultants, the meeting was opened up for public questions and comments. The response from attendees was informative and generally supportive of the project and potential trail and greenway system. All attendees were invited to take an online citizen survey that can be accessed from the Radnor Township website.

The meeting was publicized on the Township website and through several media outlets such as Main Line Times and Radnor Patch. Please see the meeting minutes in the appendix of the report for a summary of the responses solicited from public meeting attendees.

### *April 14, 2014 – Public Meeting #2*

The second public meeting was attended by 13 members of the community. The consultants provided an overview of the project and then gave a general overview of bicycle routes and trail types. The consultants then displayed an initial recommended trail map and described proposed priority trail routes. All attendees were invited to take an online citizen survey that can be accessed from the Radnor Township website. Following the presentation by the planning consultants, the meeting was opened up for public questions and comments. Generally, the feedback from the attendees was supportive. Questions were primarily focused around funding and implementation priorities.



## June 3, 2014 – Public Meeting #3

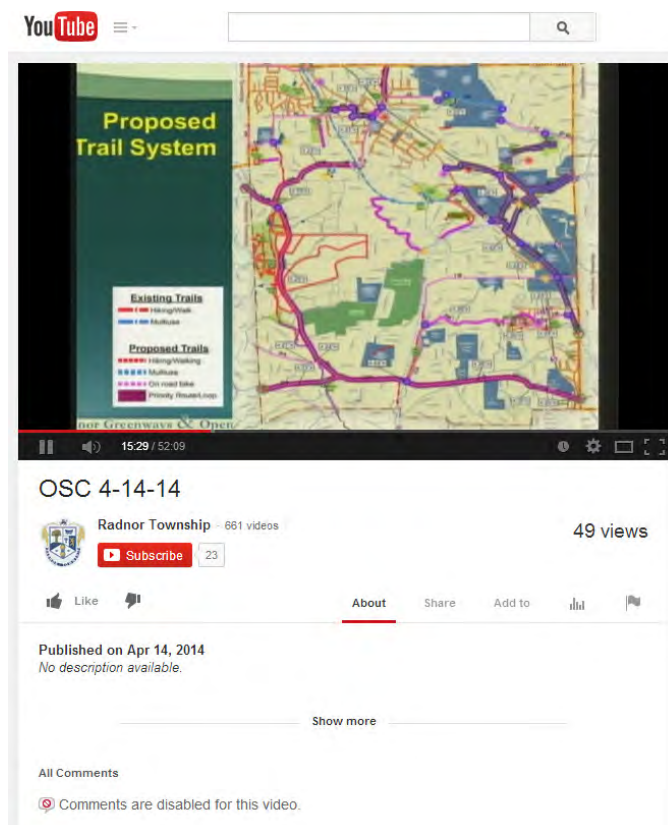
At the third public meeting, the consultants presented the draft plan that included inventory and analysis, proposed trail and greenway alignments, open space recommendations, cost estimates, and potential partners and funding sources. The draft plan will be available for a 45 day public review period.

## Sept. 9, 2014 – Public Meeting #4

Following a 45 day public review period, the fourth public meeting presented the final plan to the public. The final plan incorporated necessary revisions received on the draft plan.



Radnor Township posted all of the public meetings on their web-site and posted videos of the public meetings online.





# Focus Groups

Three focus group meetings were held by the consultants at the Township building. These meetings gathered groups with similar interests in the Township in order to obtain the view points and ideas of these similar constituents for the Open Space & Greenways Network Plan. Approximately 25 invitation letters were mailed for each focus group meeting. The three focus groups held were:

## *Feb. 19—Focus Group #1 Schools and Institutions*

This meeting was attended by 11 representatives of various schools and institutions within the Township. A general overview of the project was presented by the consultants followed by an open discussion period.

## *Feb. 26—Focus Group #2—Conservancies, Land Trusts, and Homeowners Associations*

This focus group was attended by 6 representatives of local homeowner’s associations within Radnor Township. A general overview of the project was presented by the consultants followed by an open discussion period.

## *March 26—Focus Group #3—Businesses, Retail, and Office Parks.*

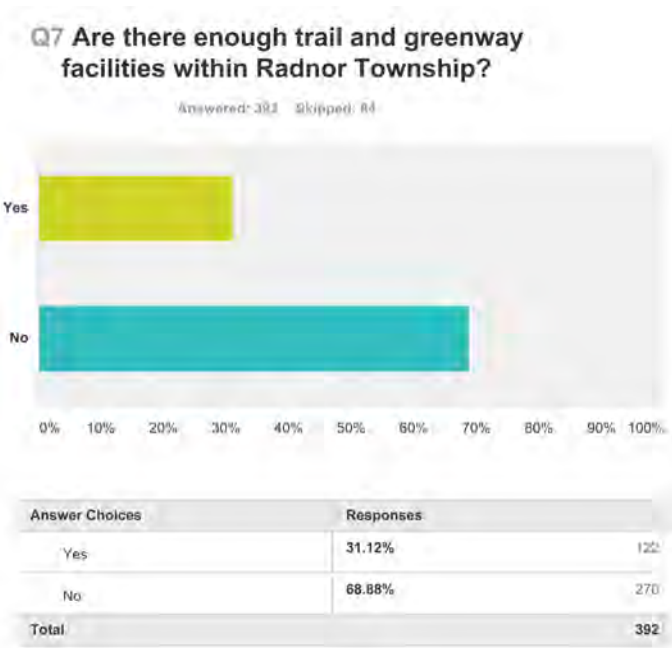
The third focus group was attended 6 representatives of local businesses and real estate developers. A general overview of the project was presented by the consultants followed by an open discussion period.

Meeting minutes and attendance lists for all three of the focus group meetings can be found in the appendix of this report.

# Online Survey

The 18 question online citizen survey was open to the public from December, 2013 to September, 2014 as another means of obtaining comments and input from the community about the Open Space and Greenway Network Plan. The survey received 476 responses. All responses were confidential and were not identified by name. All the survey responses were compiled together and analyzed as a group.

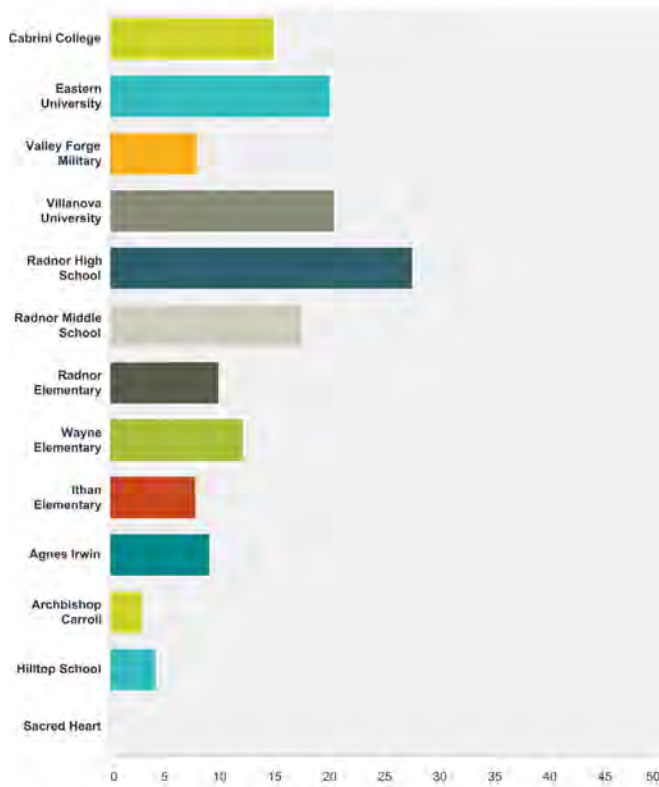
One key finding from survey results is that, of the respondents, 69% felt that there were not currently enough greenway and trail facilities in the Township. Additionally, nearly 84% of the respondents felt that trails and greenways were very important to them. This 84% of the respondents was slightly more than those that thought public parks were very important (82%), This percentage was also more than those that thought natural areas and open space were very important (77%) and more than those that thought recreation facilities were very important (59%).





**Q11 Do you visit any of the following schools for recreation purposes? (Please indicate times per year. Please enter a numerical answer only.)**

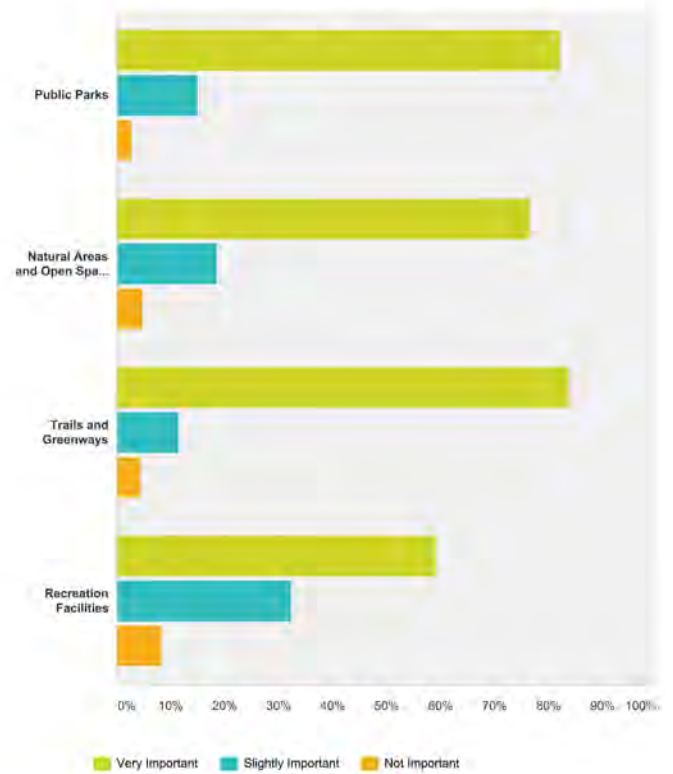
Answered: 235 Skipped: 241



Answer Choices	Average Number	Total Number	Responses
Cabrini College	15	1,391	93
Eastern University	20	1,939	97
Villanova University	20	2,474	121
Radnor High School	28	3,086	134
Radnor Middle School	18	1,596	91
Radnor Elementary	10	873	88
Wayne Elementary	12	1,017	84
Ithan Elementary	8	632	81
Agnes Irwin	9	600	86
Archbishop Carroll	3	188	58
Hilltop School	4	269	65
Sacred Heart	0	2	49
Total Respondents: 235			

**Q14 How important are the following to you?**

Answered: 582 Skipped: 94



	Very Important	Slightly Important	Not Important	Total
Public Parks	82.28% 311	15.08% 57	2.65% 10	378
Natural Areas and Open Space Protection	76.68% 288	18.50% 69	4.83% 18	375
Trails and Greenways	83.99% 320	11.55% 44	4.46% 17	381
Recreation Facilities	59.19% 219	32.43% 120	8.38% 31	370



# Key Person Interviews

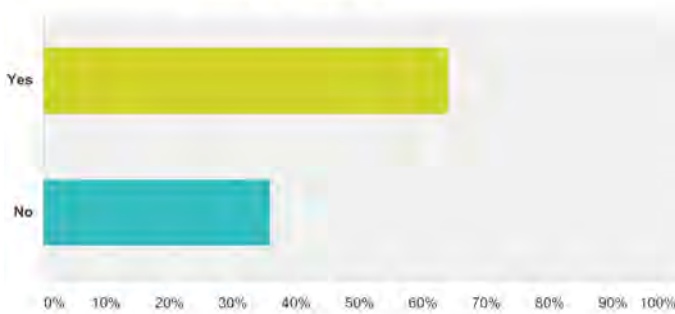
Key person interviews were held by the project committee to obtain information from key individuals selected by the committee. A list of key person interviews is as follows.

- Richard Booker, Township Board of Commissioners
- John Fisher, Township Board of Commissioners
- James Higgins, Esq., Township Board of Commissioners
- Robert Zienkowski, Township Manager
- Steve Beckley, AICP, Delaware County Planning
- Tammy Cohen, Radnor Township Parks & Recreation Board
- William Colarulo, Superintendent of Police
- Amy Kaminski, P.E., Radnor Township Engineer
- Roberta Winters, Radnor League of Women Voters
- Villanova University
- Eastern University

Notes from these interviews can be found in the appendix of this report.

## Q12 Do you walk/jog or bicycle to any of the parks, natural areas, open space, and/or school properties you typically visit?

Answered: 376 Skipped: 106



Answer Choices	Responses
Yes	64.10% 241
No	35.90% 135
Total	376

Another key finding is that respondents of the survey stated that they visit school properties for recreation purposes. The most regularly visited schools were Radnor High School with an average of 28 trips per year, Villanova University with an average of 20 trips per year, and Eastern University (19 trips/year). Also commonly visited are Radnor Middle School (18 trips/year) and Cabrini College (15 trips/year). This indicates that school and institution open space are important destinations for the greenway and trail network.

64% of the respondents also indicated that they currently walk, jog, or bicycle to the parks, open spaces, and schools they visit indicating that there is a need for safe connections to these facilities. This also indicates that more connections could be made to increase this percentage.

Please refer to the complete and detailed survey results found in the appendix of this report.



# Summary of Existing Planning Documents

## *Radnor Township Zoning Ordinance (Chapter 280)*

The Radnor Township Zoning Ordinance provides guidance for site alteration and development within the township including regulations regarding open space, natural resource protection, floodplain conservation, and shade trees. Relevant ordinance sections mentioned below were outlined in a memo to the Board of Commissioners dated 3/5/14. A copy of this memo is found in the appendix of this report.

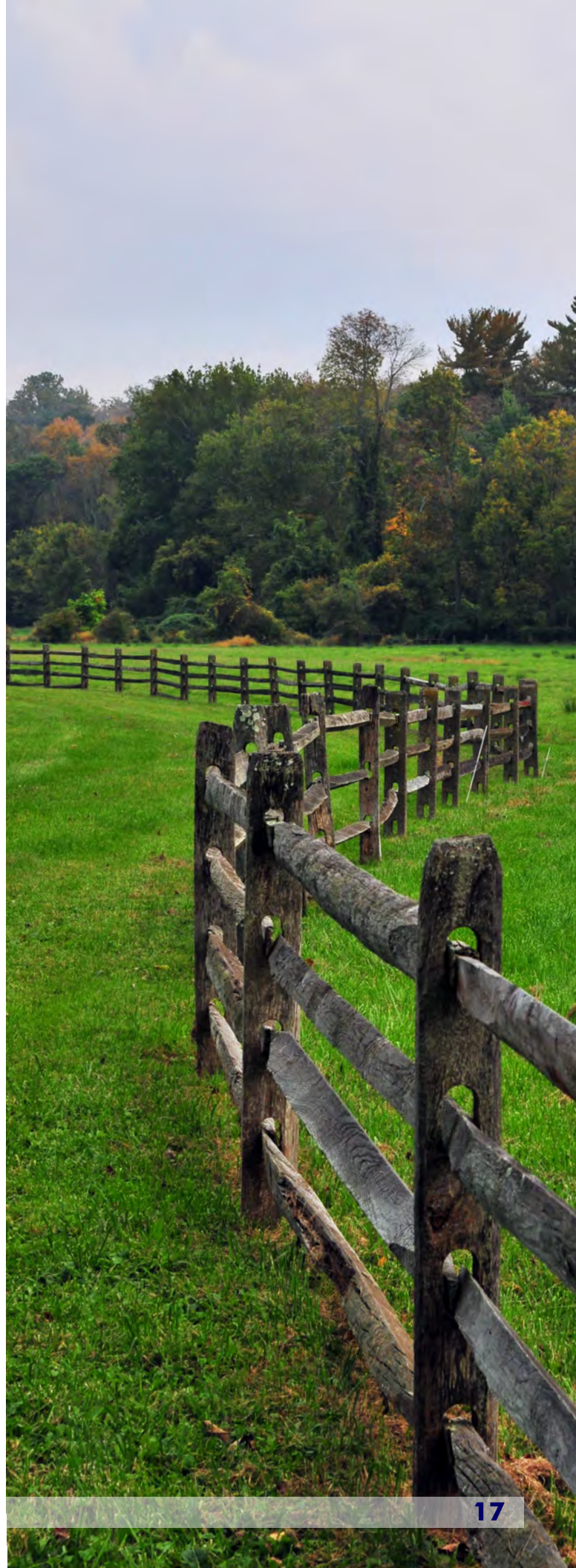
- Definitions (Chapter 280-4) This section currently does not provide a definition for trails or greenways. Suggested definitions for these items is as follows:

Greenways - Corridors of land preserved for recreational use with bicycle or pedestrian access, or no-access greenways designated to protect natural resources.

Multiuse Trail - A path that is physically separated from motorized vehicle traffic by an open space or barrier and either within the highway right-of-way or within an independent right-of-way.

Bikeway - Any road, street, path or way in which some manner is specifically designated for bicycle travel, regardless of whether such facilities are designated for the exclusive use of bicycles or are to be shared with other transportation modes.

Bicycle Route - A roadway or bikeway designated by the jurisdiction having authority, either







with a unique route designation or with “Bicycle Route” signs along which bicycle guide signs may provide directional and distance information. Signs that provide directional, distance, and destination information for cyclists do not necessarily establish a bicycle route.

**Bicycle Lane** - A portion of a roadway which has been designated by pavement markings and, if used, signs, for the preferential or exclusive use of bicyclists.

- **Parks and Open Space GH-OS** (Chapter 280-49.10) regulates parks and open space within the Garrett Hill District. The purpose of this section is to preserve the Garrett Hill Zoning District’s parks for use as low intensity recreation and open space. This section is not directly relevant to this plan.
- **Floodplain Conservation District** (Article XVII) is intended to regulate the erection of structures in areas unfit for development because of periodic flooding, protect public health, protect public safety, prevent downstream damage from increased flood volume and flow rates, and to minimize the financial burden imposed on the community, governmental bodies, and individuals by floods. This section states that recreation uses are permitted uses in the Floodplain Conservation District. However it is not clear if trails are considered a recreation use. This section could be revised to permit trails as a permitted use.
- **Riparian Buffer Conservation District** (Article XVIII A) provides requirements for the establishment, maintenance, and preservation of riparian buffers, to protect streams and ponds in the Township, and to limit surface areas of buildings and structures in these areas. The consultants reviewed the ordinance as it relates to this plan. Several recommendations include:



a. Section 280-89.6 states that *Detached accessory buildings and accessory structures are permitted subject to the requirements of the underlying zoning district; provided, however, that a minimum distance of 10 feet shall apply when such building or accessory structure is located adjacent to any stream bank or pond in the AC Agricultural Conservation or R-1, R-2, R-3, R-4, R-5 Residential Zoning District.* It is recommended that trails be added as an accessory structure. Additionally, it is recommended that a 10' minimum setback be permitted for trails that run parallel to a creek or pond.

b. Section 280-89.6.A. discusses the vegetation management or open space management plan, which provides for the maintenance of streambanks, pond edges, and water quality. It is recommended that the Township develop minimum standards for specific recommended vegetation management practices to protect stream buffers located on private property.

Please see the attached memo dated 4/8/14 in the appendix of this report for additional analysis and recommendations regarding the Riparian Buffer Conservation District Ordinance.

- Density Modification Development (Article XIX) is intended to provide for modification of lot area, yard and use requirements in certain zoning districts in connection with single family residential development. This section is meant to encourage conservation and use of open space, encourage preservation of trees and natural topography, and to encourage attractive arrangements of dwellings that closely relate to the physical characteristics of the site. This ordinance section currently does not include greenways and trails as a suitable use for common open space or within a buffer strip. It is

suggested that these items be added as suitable uses for these situations.

- Lot Averaging (Chapter 280-110) provides regulations to encourage more efficient and economical development patterns, preserve natural features, and more attractive arrangements of homes and open space. This section should be referred to for any future development however it is not directly relevant to this study.
- Slope Controls (Chapter 280-112) controls development of land in areas of steep slopes in order to limit erosion, protect watersheds, prevent land slides and soil subsidence, maintain adequate foliage on hillsides, and protect streams from increase in sediment and pollution. This section should be referred to for any future trail development in the Township to ensure protection of streams and natural resources.
- Conservation of Wetlands (280-115) outlines required procedures for any proposed development on parcels containing wetlands as identified by the National Wetlands Inventory Maps, hydric soil maps, or by on-site investigations. Any future trail development will need to adhere to these regulations.

### *Radnor Township Subdivision and Land Development Ordinance*

- Recreation Area and Open Space (Chapter 255-43) regulates the design of recreation areas and open space within any new subdivision or land development. The ordinance states *that at least one side of the recreation area shall abut a street for a minimum distance of 50 feet for access of emergency and maintenance vehicles.* This access requirement is restrictive and may preclude the inclusion of some open spaces. It is recommended that this be revised to be less





restrictive by deleting the requirement to abut a street. Also it is recommended that this section allow access easements. For additional ordinance recommendations, please see the attached memo dated 3/5/14 found in the appendix of this report.

- Park and Recreational Land and Fee Requirements (255-43.1) This section regulates required recreation land and/or fees for all residential subdivisions of four or more lots/dwellings. The Township should consider developing a fee for trail improvements.

### *2003 Radnor Township Comprehensive Plan*

Approved by the Board of Commissioners in 2003, the Comprehensive Plan updates the previous version

of 1988. Several topics discussed in the plan that are relevant to this report include:

- Environmental and Natural Resources - major objectives of the this section that relate to the Greenways and Open Space Plan are to preserve areas of natural woodlands and to work to preserve Township open spaces.
- Transportation and Circulation - One of the recommendations of this section is that the Township should pursue providing on-road bicycle facilities to enhance bicycle mobility throughout the Township and provide links between other bicycle facilities



and desirable destinations. Additionally, this section recommends that the Township create an Official Map which is also a recommendation of this report.

- Open Space and Recreation - a major recommendation of this section that relates to the Greenways and Open Space Plan is to create non-motorized linkages between recreation and open space facilities and Township residences, businesses and schools and between the facilities themselves. The Greenways and Open Space Plan proposes linkages to achieve this goal.
- Land Use - a recommendation of this section is to preserve as many remaining open spaces in the Township as possible through a full range of direct and indirect open space protection strategies. This Greenways and Open Space Plan makes recommendations regarding the Township's Open Space Acquisition Policy that are intended to help achieve this goal of the Comprehensive Plan.

### ***Radnor Township Shade Tree Ordinance (Chapter 263)***

The Shade Tree Ordinance establishes a Commission that regulates trees within the Township and encourages proper selection, planting, replanting and care. The shade tree commission reviews activities in the Township that include land development/subdivision applications, grading permits, proposed tree removals in commercial districts, proposed removal of a heritage tree, and demolition permits to ensure compliance with shade tree ordinance. The ordinance states that shade trees are required on both sides of new sidewalks, streets, and pedestrian/bicycle paths. It should be made clear in the ordinance that the Shade Tree Commission review the any development plans for new trails to ensure that shade trees are incorporated into the design.

### ***Radnor Township Stormwater Management Ordinance***

The Township Stormwater Management Ordinance regulates stormwater activities within the Township in order to promote public health, safety, and welfare within the municipality by maintaining the natural hydrologic regime and minimizing adverse impacts. This ordinance was reviewed as it relates to riparian buffers.

Section 245-11 Definitions - Several terms in this section could be revised for clarity and consistency with the zoning ordinance. These terms are as follows:

*Buffer – The area of land immediately adjacent to any stream, measured perpendicular to and horizontally from the top-of-bank on both sides of a stream (see Top-of-bank). This should be called “Riparian Buffer” so not to be confused with “Buffer Planting Strip” in the zoning ordinance.*

*Stream Buffer – The land area adjacent to each side of a stream essential to maintaining water quality (see Buffer). This definition could be combined with definition for “raparian buffer”.*

*Top-of-bank – Highest point of elevation in a stream channel cross-section at which a rising water level just begins to flow out of the channel and over the floodplain. The definition for “Riparian Buffer Setback” in the Zoning Ordinance does not mention or define “Top-of-bank”. This term should be included and defined for consistency.*

Section 245-23.G Water Quality Requirements - states that *if a perennial or intermittent stream passes through the site, the applicant shall create a stream buffer agreeing with the Township's Riparian Buffer Ordinance (Article XVIII A, Riparian Buffer Conservation District[2] The buffer area shall be maintained with and encouraged to use appropriate native vegetation (refer to Appendix H of the*





*Pennsylvania Handbook of Best Management Practices for Developing Areas for plant lists). If an existing buffer is legally prescribed (i.e., deed, covenant, easement, etc.) and it exceeds the requirements of this chapter, the existing buffer shall be maintained. To ensure stream buffers are maintained appropriately, it is recommended that the Township develop minimum standards for vegetation management. This section should reference those standards. Please also refer to the memo dated 4/18/14 in the appendix of this report.*

### ***Cresa Property Assessment Report for Radnor Township***

This report, completed in July 2012, provides property assessments for Radnor Township. The report reviewed property files, zoning maps, property restrictions, financial goals and constraints, Township general plans, and property lists to develop a cohesive property report of Township owned lands and easements. The report was reviewed by consultants to confirm Township property ownership.

### ***Radnor Township Open Space Acquisition Evaluation and Documentation Policy***

This document, adopted in January 2012, presents criteria for determination of parcels to consider for open space acquisition by the Township. This document was reviewed and analyzed by the consultants to ensure it is consistent with recommendations in this plan. While the Open Space Evaluation, Acquisition and Documentation Policy generally outlines valid criteria for the transparent determination, several recommendations for enhancement of the policy include:

- The determination of identification of possible open space parcel acquisition should be made via two primary vehicles. The first being the municipality's Comprehensive Plan and second is the municipality's Park, Recreation and Open Space Plan.



These documents are not identified in the selection criteria found in the policy.

- While the criteria states that the Open Space Committee should work with Township Staff, the ordinance does not mention the necessity to work with licensed professionals in making these determinations. We recommend that the any determination of the suitability of parcels for open space use be determined in consultation with a licensed landscape architect or professional engineer.
- Once parcels are identified for acquisition as open space, it is advantageous to designate these parcels as “open space” on the municipality’s Official Map. The Official Map is discussed in further detail in Chapter 4 of this report.
- Ordinance 2013-07 discusses acquisition of parcels, which is appropriate for parks and open space. This Greenways, Trails and Open Space study will result in the identification of both on-road and off-road trail alignments throughout the Township. If ordinance 2013-07 remains as a stand-alone policy document it should be revised to include discussion of identification of trail and greenway easements to implement the recommendations of this plan.

Please see the attached memo in the appendix of this report for the complete analysis and recommendations regarding the Open Space Acquisition Evaluation and Documentation Policy.

### ***PennDOT Design Manual, Part 2, Chapter 16***

Bicycle Facilities—Revised in February, 2013. The design manual presents guidelines and procedures for the design and development of bikeways projects within PennDOT right-of-way or when utilizing State or Federal funds for construction. Other standards for bicycle facility design and development referred to in this manual include:

- PennDOT “Bicycle and Pedestrian Checklist”,
- Association of State Highway and Transportation Officials’ (AASHTO) Guide for the Development of Bicycle Facilities, and;
- Federal Highway Administration’s Manual on Uniform Traffic Control Devices.

### ***2004 Lower Merion Township Pedestrian/Bicycle Network study***

Completed in December 2004 and financed in part by a grant from the Keystone Recreation, Park and Conservation Fund administered by PA Department of Conservation and Natural Resources, this plan gathers information and makes recommendations for a potential bicycle and pedestrian trail system within Lower Merion Township. The proposed trail network maps were reviewed and analyzed to determine whether connections from Radnor Township are feasible. The plan notes several pedestrian sidewalk linkages to Radnor Township. These links are along County Line Road, Lancaster Avenue, Spring Mill Road, and Bryn Mawr Avenue. The routes proposed in this report make connections to these Lower Merion routes at County Line Road and Bryn Mawr Avenue.

### ***2007 Marple Township Comprehensive Plan***

This plan was completed in December 2006 to serve as a planning guide for Township officials. The plan sets forth a vision for future arrangement of land uses, design improvements, and preservation of Township heritage. Mapping from the Comprehensive Plan were reviewed and analyzed to determine whether any connections from Radnor Township are feasible. This plan’s Circulation Map identifies proposed bike routes within Marple Township however none of these routes make connections to Radnor Township.

Existing and planned regional trails within Marple Township were identified from the Philadelphia Regional



“Circuit” Network maps found at <http://connectthecircuit.org>. These trails that link to Radnor Township include the Darby Creek Trail and the Newtown Square Trail.

### *2001 Easttown Township Comprehensive Plan*

Completed in June 2001, this plan was funded in part through a grant from the Vision Partnership Program sponsored by the Chester County Board of Commissioners. The plan provides goals and objectives regarding issues important to Township residents: conservation of natural landscapes and open space, and quality of life issues. The Township Bicycle Routes Map identifies several bicycle connections to Radnor Township. These connections are along Dorset Road, Sugartown Road, Lancaster Avenue, and Conestoga Road. This Radnor Township Greenways and Open Space Plan is proposing to connect to this existing bike route on Dorset Road with a bicycle route.

### *2005 Upper Merion Township Land Use Plan*

Completed in October 2005, this plan inventories existing land use, transportation facilities, community services, and natural features. The plan provides implementation strategies to meet its goals of creating a sustainable environment, improving traffic circulation, improving aesthetic quality along major transportation corridors, and protecting existing residential neighborhoods. The Land Use Plan’s Expected Trail Map identifies several regional trails within the Township. These trails include the Schuylkill River Trail, the Crow Creek Trail, and the Chester Valley Trail. None of these trails directly connect to Radnor Township. A new plan is currently being completed by Upper Merion Township.

### *Strava Global Heatmap*

The Strava Global Heatmap is a website and mobile application that tracks the patterns of runners and bicyclists. Once a user completes a ride or run, the data





is automatically uploaded to Strava. The online Strava Heat Map graphically displays the most popular routes. The website was reviewed for Radnor Township and it was determined that some of the most heavily traveled routes by bicyclists (displayed as red and orange on the map) are Darby Paoli Road, W. Wayne Avenue, Brooke Road, Ithan Avenue, Godfrey Road, and Upper Gulph Road. Some of the more heavily traveled routes by runners include the Radnor Trail, Lancaster Avenue, Ithan Avenue, and generally downtown Wayne and West Wayne. Many of the routes proposed in this plan such as Darby Paoli Road, Ithan Avenue, Brooke Road, Upper Gulph Road and Wayne Avenue coincide with these

popular activity routes identified by Strava. Less used routes appear green in color on the map. Routes not used do not appear in color on the map.

### *Tredyffrin Township Comprehensive Plan & Historic Preservation Plan*

This Comprehensive Plan was completed in 2009 and is intended to serve as a tool to guide future growth and redevelopment in Tredyffrin Township. The Green Routes Network map and Pedestrian and Bicycle Network map were reviewed and analyzed to determine the feasibility for connections from Radnor Township. The plan identifies



Map compiled from Strava.com



three existing pedestrian sidewalk routes connecting to Radnor Township. These routes are located on Old Eagle School Road, Conestoga Road, N. Wayne Avenue, and Sugartown Road. This Radnor Township Greenways and Open Space Plan has proposed to make connections to the existing routes in Tredyffrin Township on N. Wayne Avenue and Sugartown Road.

### *Haverford Township Trail Mapping*

Haverford Township, which lies to the southeast of Radnor Township has a multitude of trails. This trail system includes the Haverford Heritage Trail which is a fourteen mile loop of both on-road and off-road trails that highlight many of the Township's historic sites. Currently none of Haverford Township's existing trails identified in the mapping connect to Radnor Township. More information on existing Haverford Township trails can be found at [www.havtrail.com](http://www.havtrail.com).

### *"The Circuit" Philadelphia Regional Trail Network Map*

Produced by the Delaware Valley Regional Planning Commission in 2012, this map displays existing and planned trails that make up a 750 mile network in the Philadelphia region. The Radnor Trail is included as part of the Circuit. Trails identified as part of the Circuit receive a priority in terms of funding opportunities. New planned and constructed trails are continuously being added to the map. The interactive, up to date version of the map can be found at <http://connectthecircuit.org>.

## Regional Connections

Radnor Township lies in a good position to make future connections to the surrounding region. Radnor is bordered by seven municipalities with each offering some opportunities for connections. Additionally, several regional trails

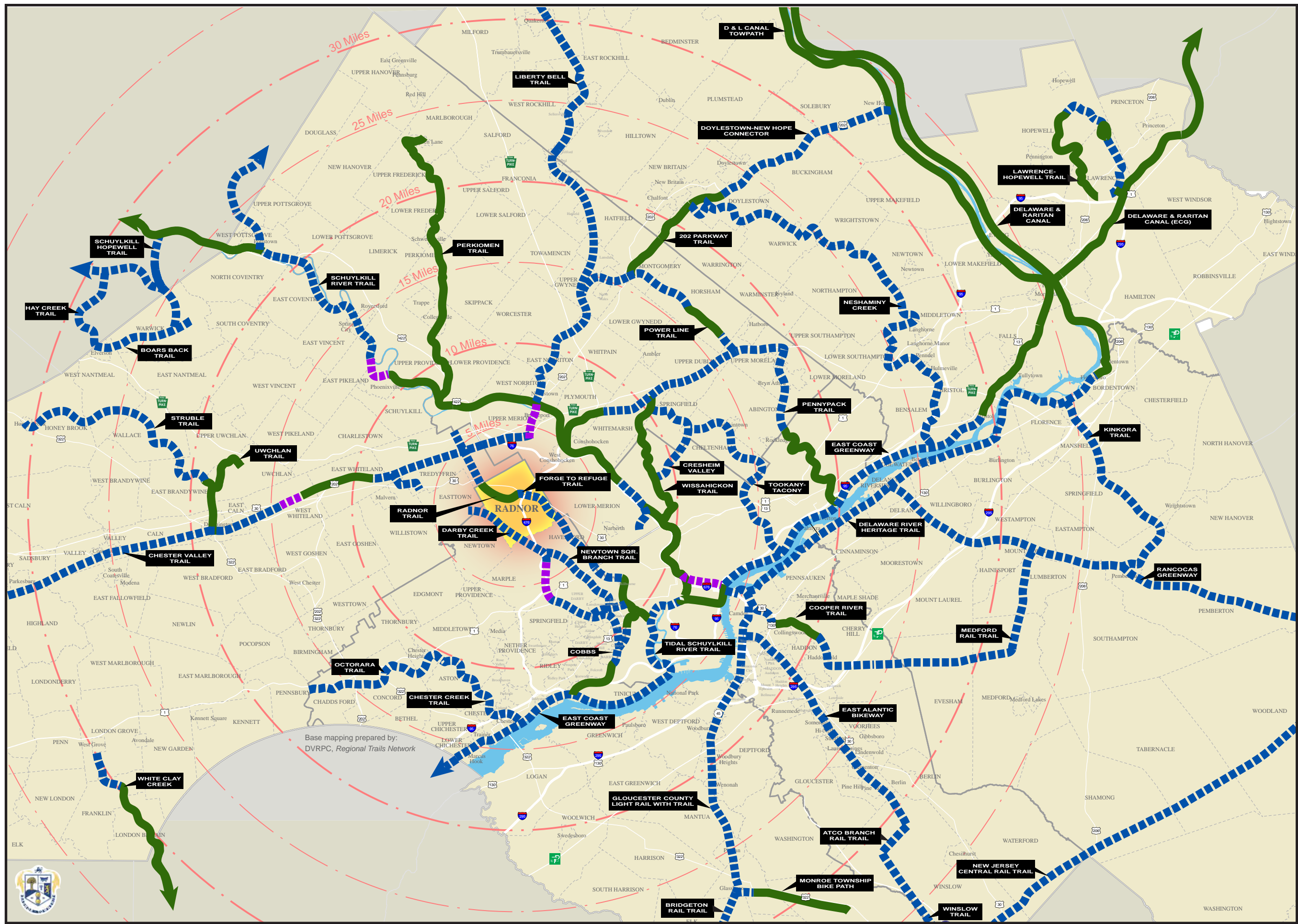
lie within a close proximity. Nearby regional trails include the Chester Valley Trail two miles to the north, the Goshen Trail one mile to the west, and the Schuylkill River Trail two miles to the east.

Several regional trails have also been previously planned by other studies but are not yet constructed. These planned routes include the Darby Creek Greenway and Newtown Square Trail, and the Forge to Refuge Trail. The Forge to Refuge trail is a planned route that is intended to run directly through Radnor Township utilizing the Radnor Trail to connect Valley Forge to the Heinz Wildlife Refuge. The Forge to Refuge Trail will also link to the Chester Valley Trail which has been planned to connect to the Schuylkill River Trail.

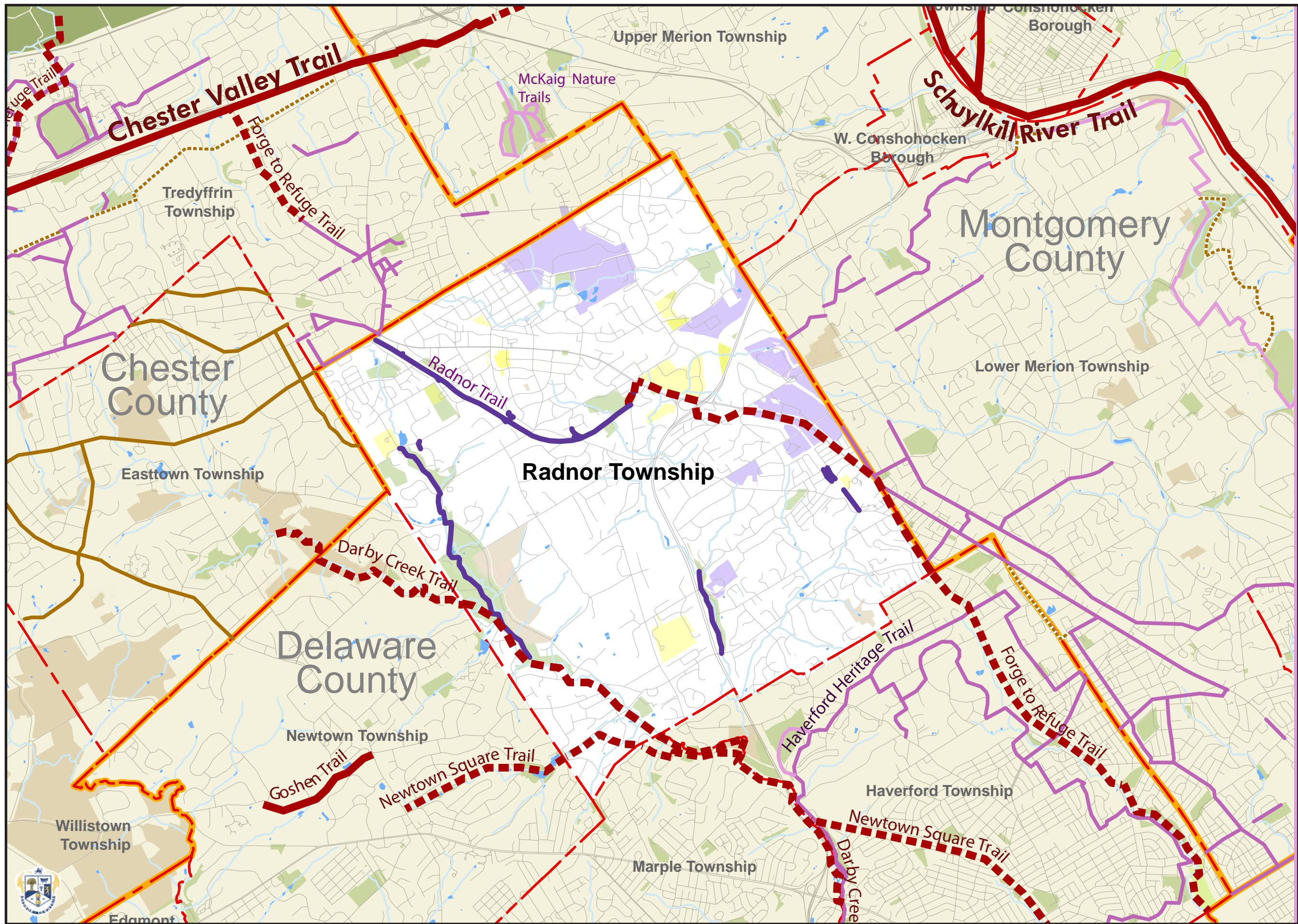
Several local trails exist in the adjoining municipalities. To the south, the Haverford Heritage Trail in Haverford Township is a fourteen mile loop of both on-road and off-road trails that highlight many of the Township's historic sites. Currently the loop does not connect directly to Radnor Township, however several opportunities exist should any of the above mentioned planned trails be constructed. Additionally the Route 476 corridor may present an opportunity to make a connection from Ltham Valley Park. Several pedestrian and bicycle routes exist in Lower Merion Township, Tredyffrin Township, and Easttown Township. The McKaig Nature trails are also approximately three quarters of a mile from Radnor Township in Upper Merion Township.

The trail network proposed later in this report makes connections to Tredyffrin Township, Upper Merion Township, Lower Merion Township, Easttown Township, Newtown Township, and Haverford Township.



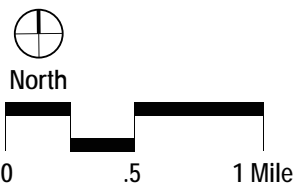






# Regional Trail Connections Planned and Constructed

- Ex. Radnor Trails
- Ex. Local Trails
- Ex. Local Bike Route
- Planned Local Trails
- Ex. Regional Trails
- Planned Regional Trails
- State Lands
- Municipal Lands
- Nonprofit Lands
- Radnor School Dist.
- Private Schools





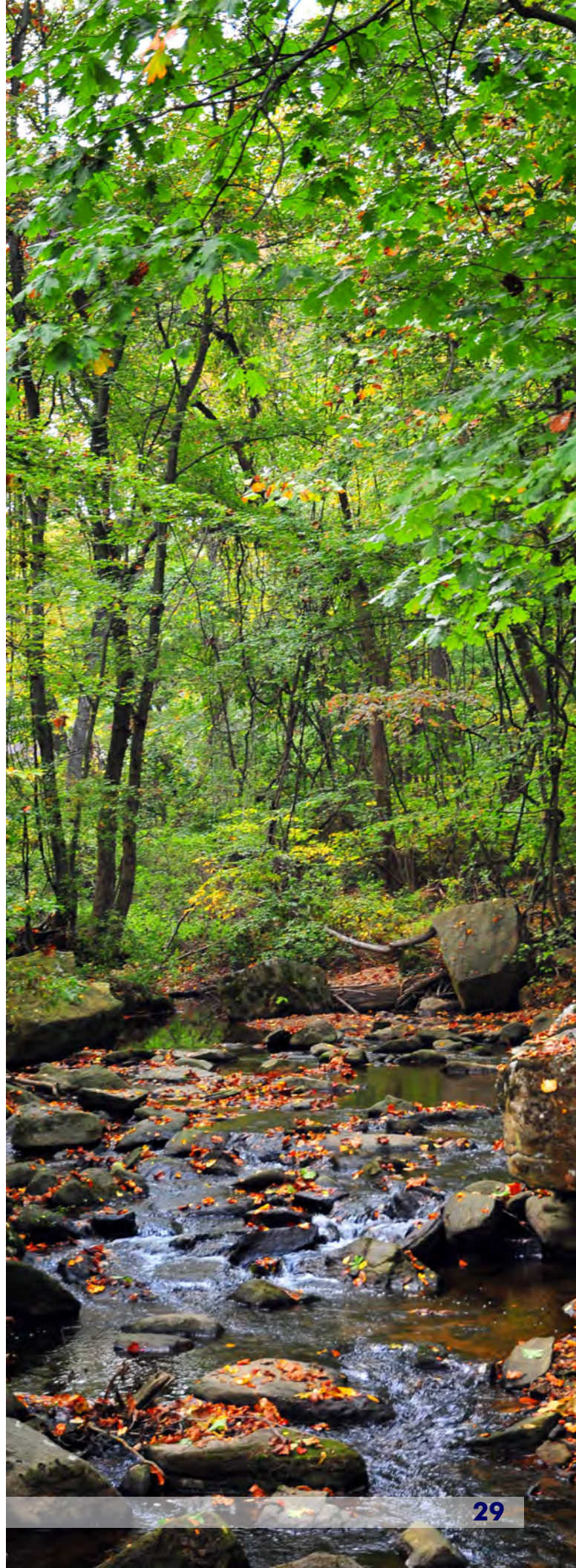
# Natural Resources “Green Infrastructure”

## Hydrology and Natural Areas

Generally the streams within Radnor Township flow in a south and easterly direction. There are two major streams within Radnor: the Darby Creek and Gulph Creek. The Gulph Creek lies in the Schuylkill River regional watershed which covers much of the north and eastern portions of the township. The Gulph Creek flows from Tredyffrin Township which lies to the north of Radnor Township to Upper Merion Township east of Radnor.

The remainder of the Township lies in the Darby Creek regional watershed. The Darby Creek lies to the far western side of the Township oriented in a north—south direction. Within the Darby Creek regional watershed are 18 sub basins in Radnor Township. These sub basins include Little Darby Creek, Ithan Creek North, Ithan Creek South, Hardings Run, Browns Run, Mill Creek, Ramsey Run, Abrahams Run, Julip Run, Wigwam Run, Camp Run, Miles Run, Darby Creek, Foxes Run, Kirks Run, Valley Run, Meadowbrook Run, and Cobbs Creek.

These stream corridors are valuable natural resources that help maintain a healthy environment, create wildlife habitats, and provide recreational opportunities for residents. Because the Township contains a significant number of streams, extreme care should be taken to maintain and enhance these valuable corridors.





## Topography

Generally the Township topography fluctuates between elevation 490 and elevation 200 and runoff flows from the north and northwest to the south and southeast. The highest points of the Township are in the northern and northwestern portions adjacent to Tredyffrin and Easttown Townships. Low points are located along stream corridors within the Township. The lowest points are along the Darby Creek and Ithan Creek adjacent to Haverford and Marple Townships. A majority of the steepest slopes in the Township also exist along stream corridors with flatter slopes located at upland areas away from streams.

## Hydrologic Soil Groups

Soil hydrologic soil groups are a set of classes that reflect the general infiltration rate of soils under maximum conditions of wetness. Soils are classified as either Group A, B, C, or D with Group A being very well drained and Group D being very poorly drained. Most of the Township contains fairly well drained soils with a Group B classification. Poorly drained soils with Group C and D classifications exist primarily along major stream corridors within the Township. Soil classifications will need to be considered for any future trail development and open spaces with well drained soils can provide opportunities for enhanced stormwater management.

## Wooded Lands

Wooded lands within the Township are generally located along stream corridors and in the areas of the Willows, Saw Mill Park, Skunk Hollow, Chew Tract, Young Tract, Goff Tract, Martha Brown Woods, and 5th Ward Park, and Ithan Valley Park. Areas within Cabrini College, Eastern University, Villanova University, and Archbishop Carroll also contain wooded lands. Because much of the Township has been previously developed, every effort should be made to conserve these remaining wooded areas.

## Parks and Open Space

Other green infrastructure within the Township includes parks, open space, trails, golf courses, and Homeowner's Association lands. These locations provide excellent opportunities for trail and greenway connections and are discussed in detail as potential greenway destinations later in this chapter. Please also refer to the Land Use Map and Parks Map found later in this chapter.

## Manmade Resources “Gray Infrastructure”

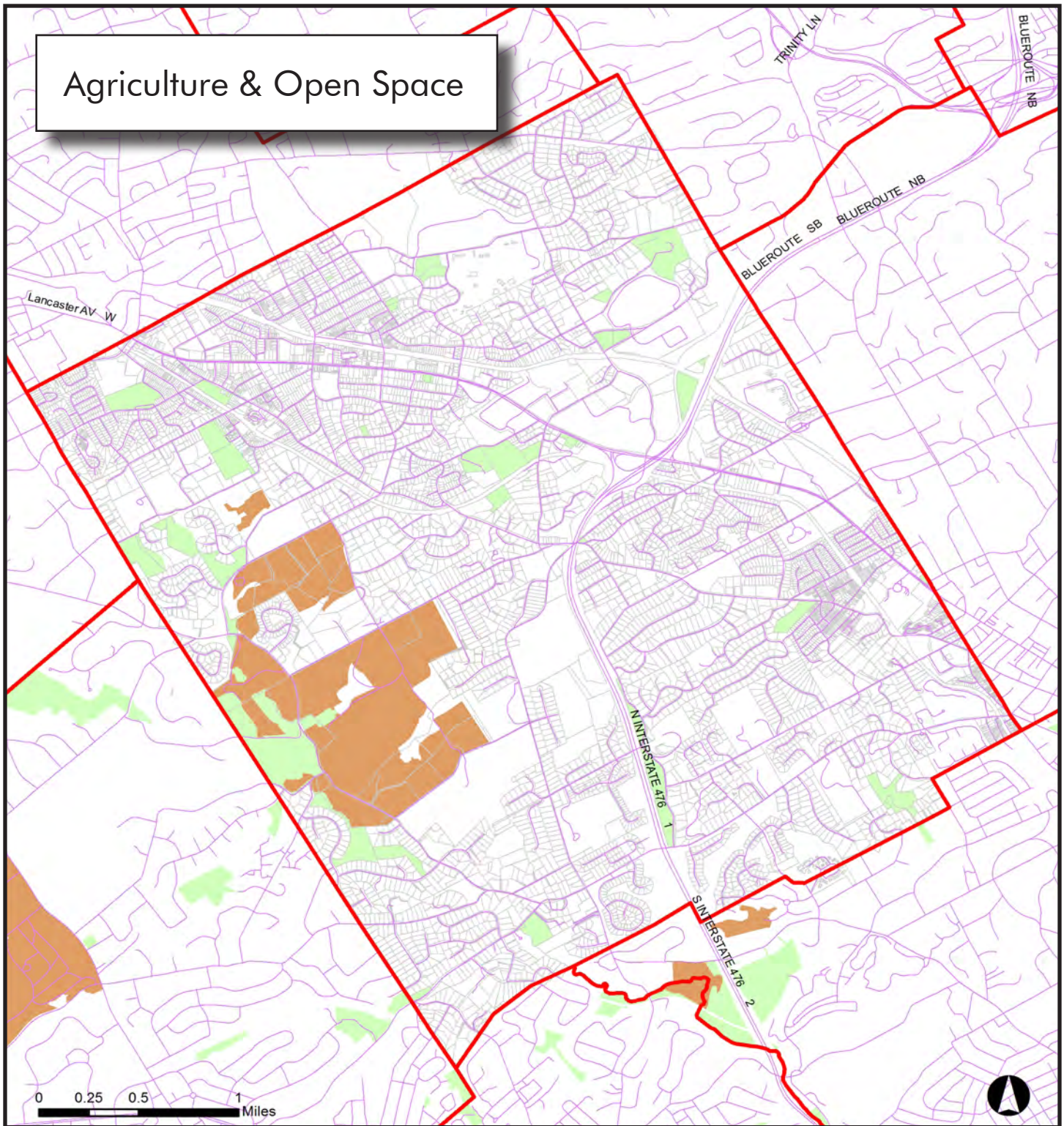
### Land Use

The dominant land use within Radnor Township is single family detached residential. Commercial facilities are primarily clustered around the Lancaster Avenue corridor north of Route 476 while wooded lands are located primarily around stream corridors and Route 476. Other land uses scattered throughout the township include schools and community services, golf courses, agricultural land, and multi-family residential.

### Transportation and Circulation

The heaviest traffic volume in Radnor is found on the Blue Route (SR 476) expressway which cuts through Radnor from Haverford Township (south) to Lower Merion Township (east). The second most heavily traveled route is Lancaster Avenue (SR 30) which is considered an arterial roadway. Other roads with significant volume within the Township include County Line Road, Matsonford Road, Bryn Mawr Avenue, Conestoga Road, Spring Mill Road, and Sproul Road. Spring Mill Road and Sproul Road are considered arterial roadways while the others are major collector roads.

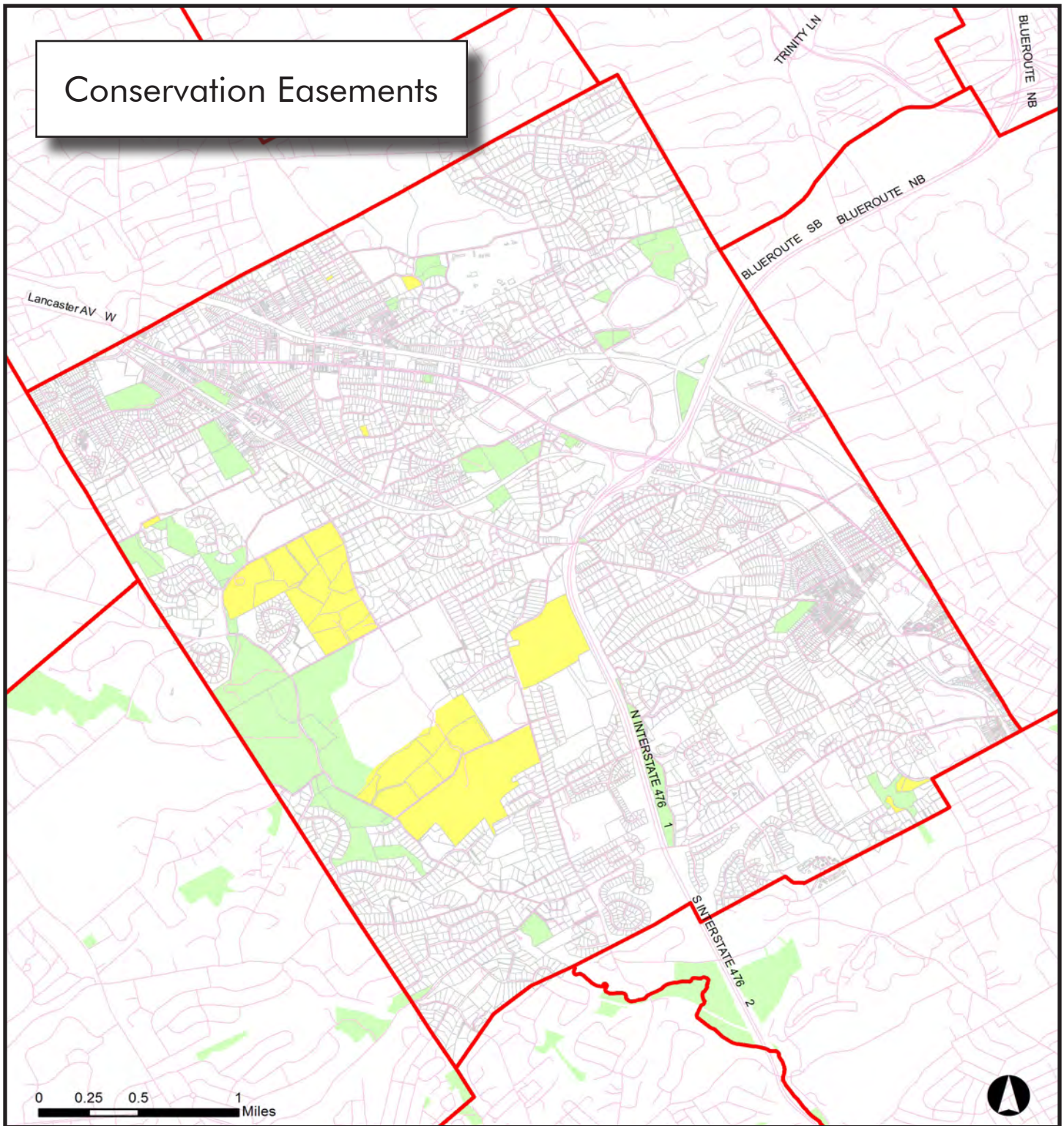




**Legend**

	MunicBdys_delco	<b>LU_Label</b>	
	DVRPC_Centerlines		Agriculture
	Radnor_Parcels		Open Space



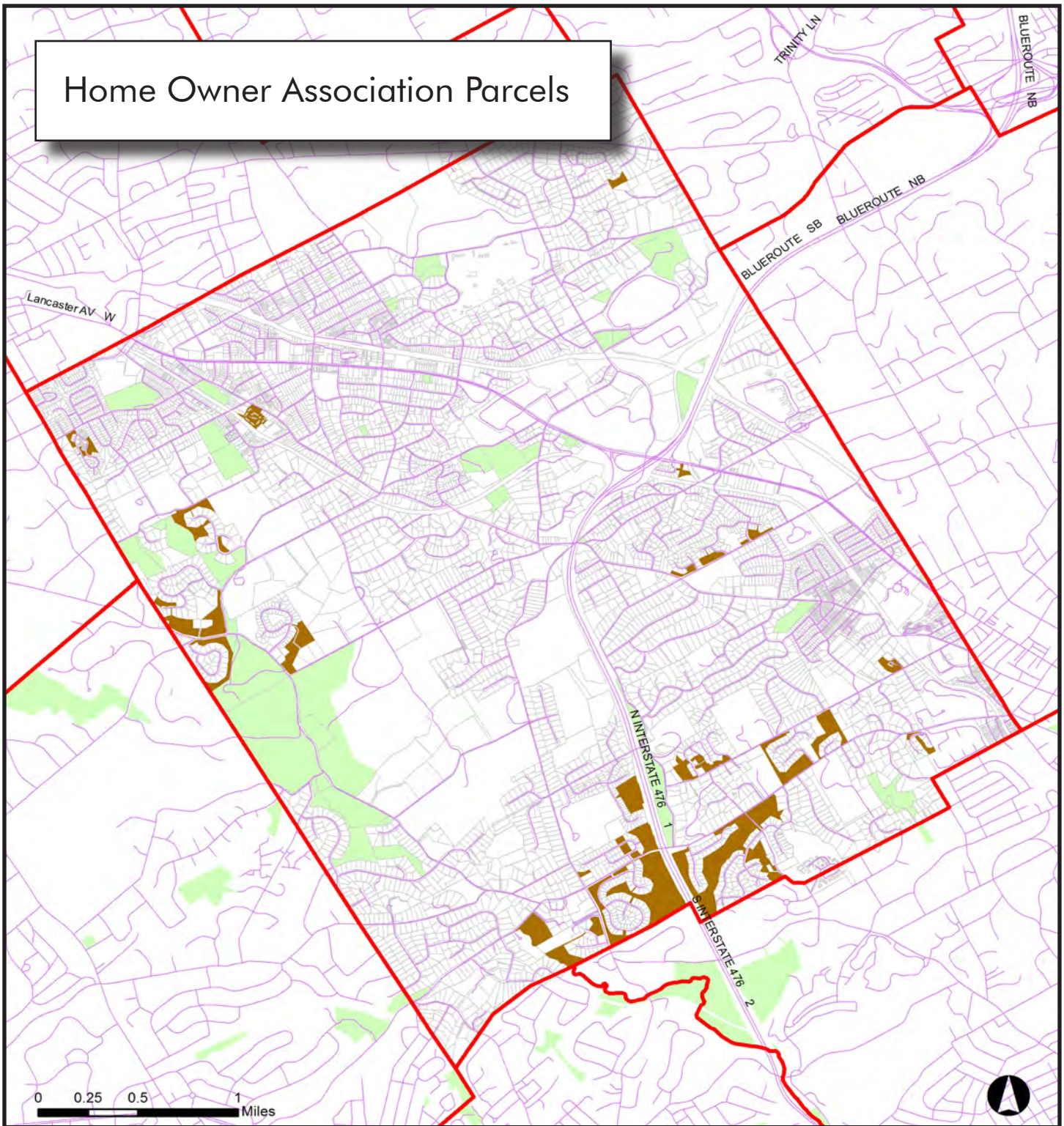


### Legend

- MunicBdys\_delco
- Conservation Easement Parcels
- DVRPC\_Centerlines
- Open Space
- Radnor\_Parcels



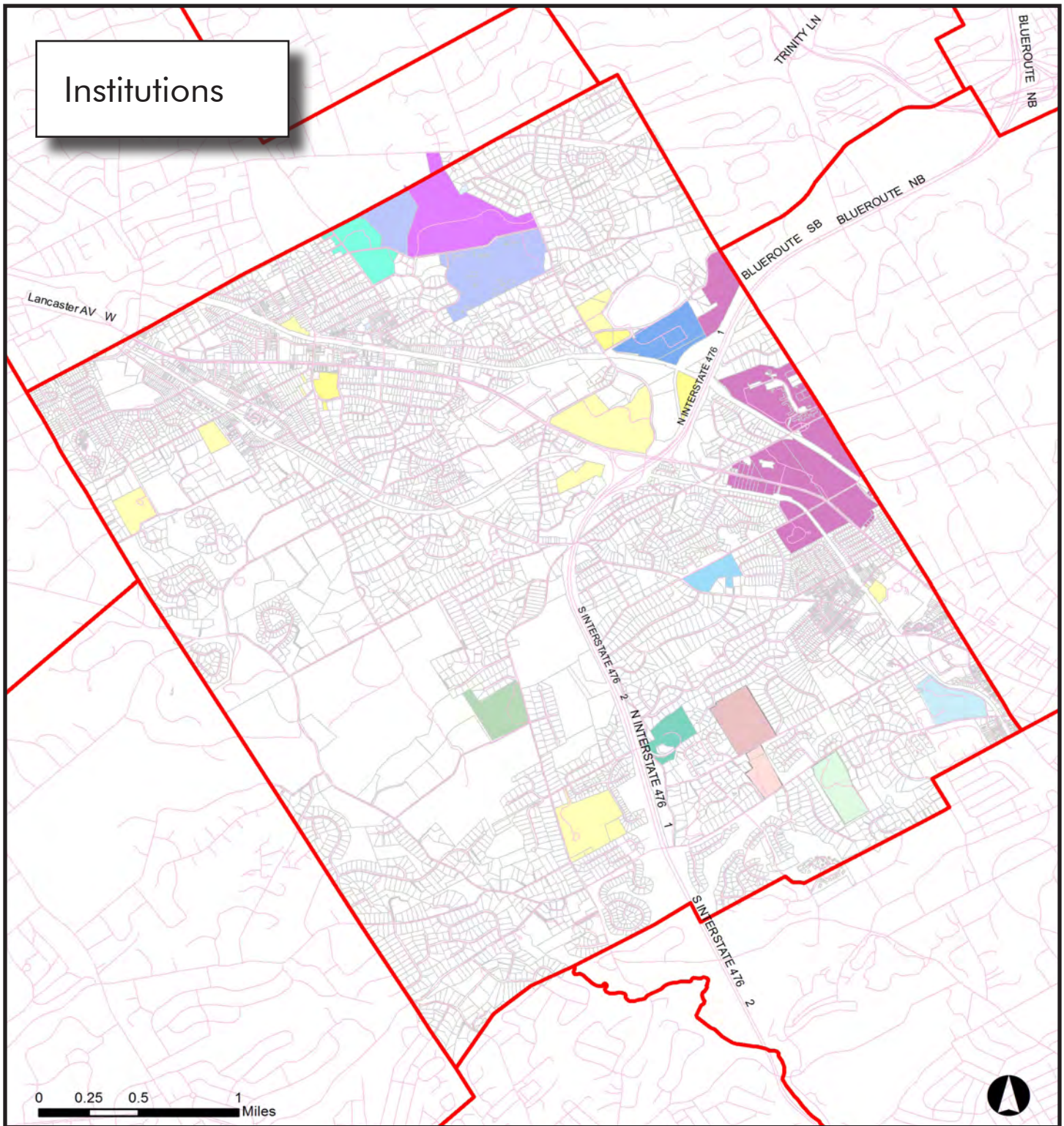
# Home Owner Association Parcels



## Legend

- MunicBdys\_delco
- Radnor Parcels
- HOA Parcels
- Open Space
- DVRPC\_Centerlines



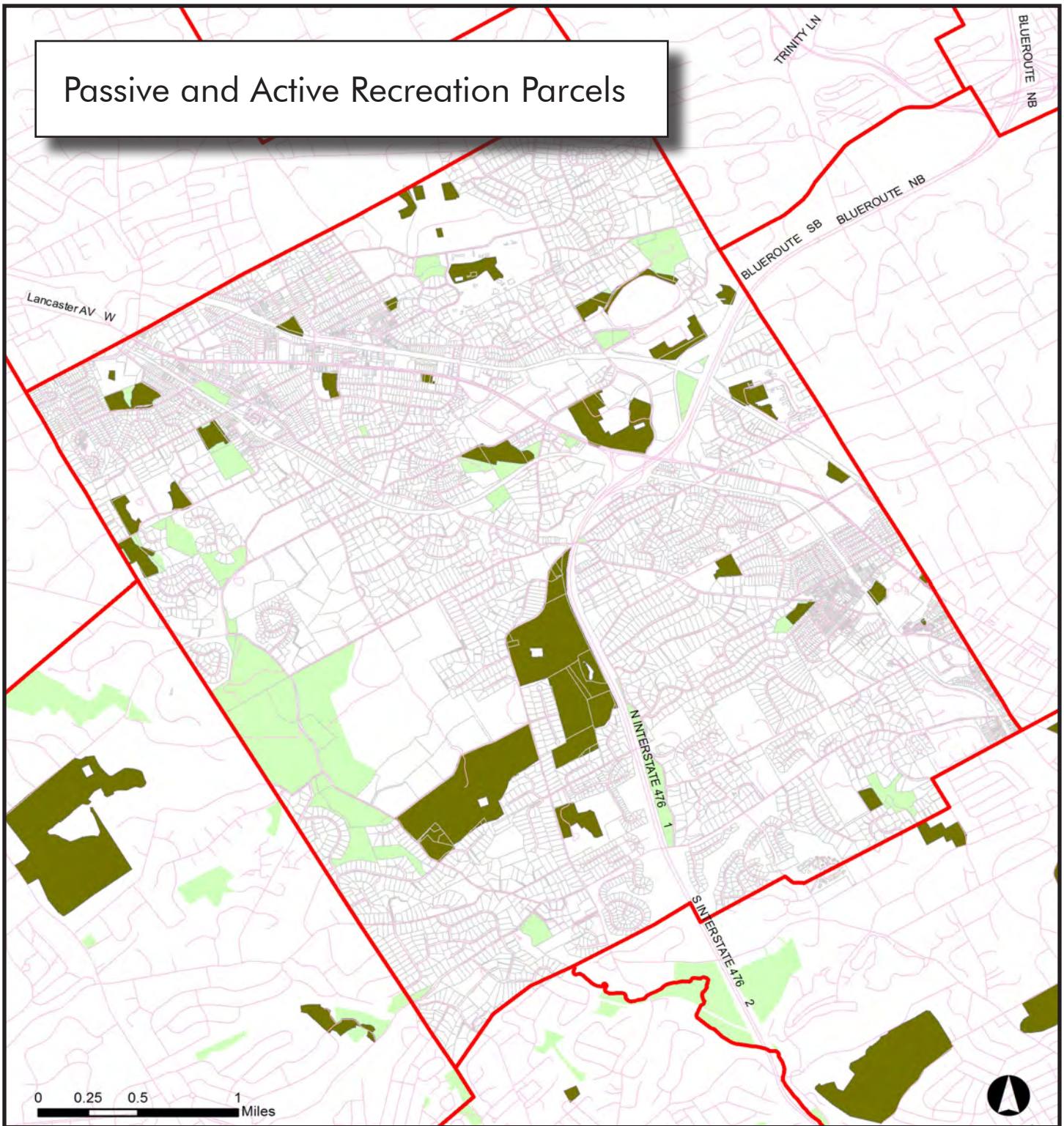


### Legend

MunicBdys_delco	Presbyterian	St Aloysius	Cardinal O'Hara	Cabrini	VFMA
DVRPC_Centerlines	The American College	Sacred Heart	Cabrini	Eastern	Villanova
Radnor_Parcels	St Edmunds	Notre Dame de Namur	Agnes Irwin	Hilltop	Radnor School Dist



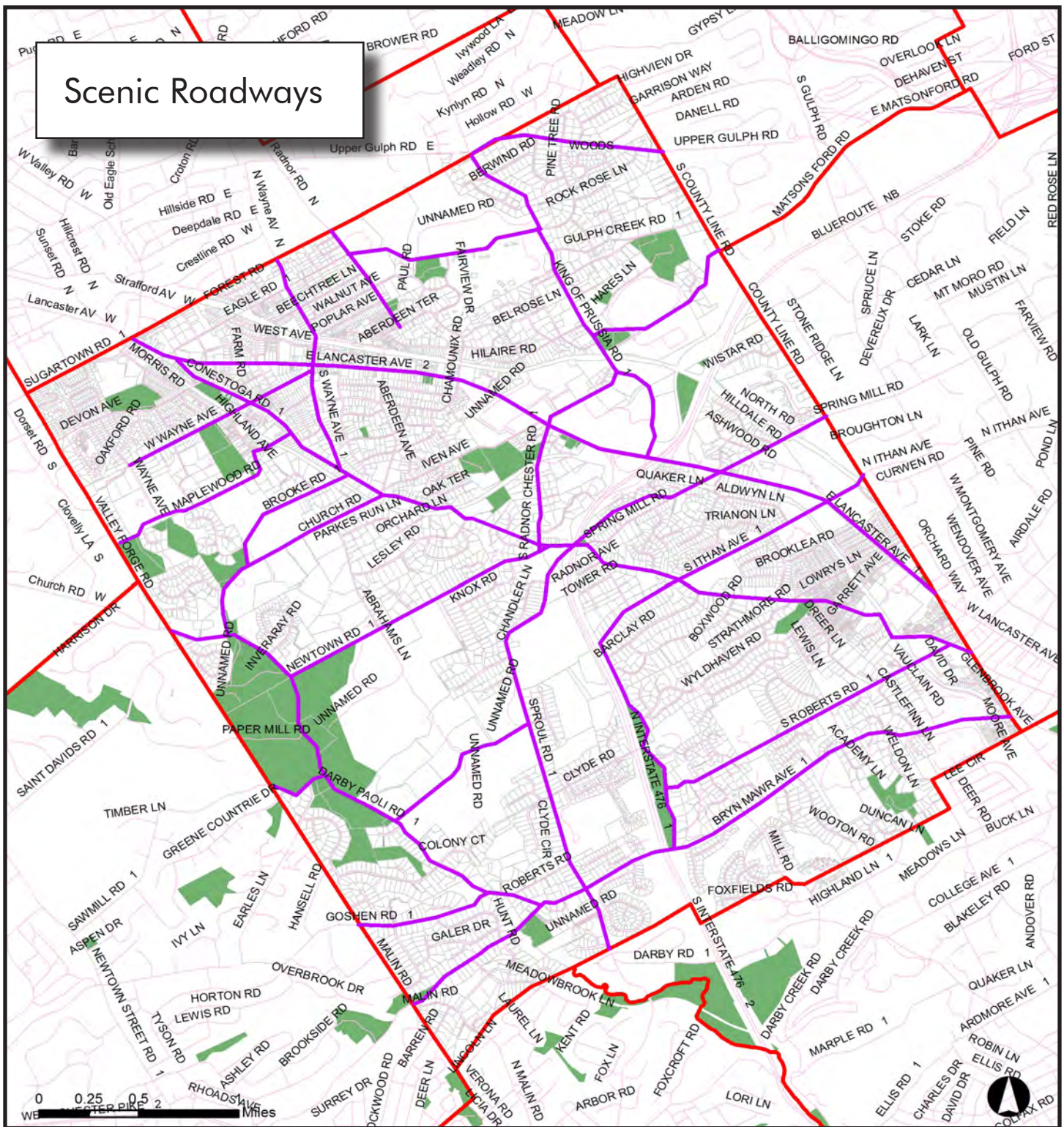
## Passive and Active Recreation Parcels



### Legend

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<span style="border-bottom: 1px solid pink; display: inline-block; width: 20px;"></span>	DVRPC_Centerlines	<span style="display: inline-block; width: 15px; height: 10px; background-color: darkgreen;"></span> Recreation
<span style="border: 1px solid gray; display: inline-block; width: 20px; height: 10px;"></span>	Radnor_Parcels	<span style="display: inline-block; width: 15px; height: 10px; background-color: lightgreen;"></span> Open Space





## Legend

- Scenic Roads
- MunicBdys\_delco
- Radnor\_Parcels
- Open Space
- DVRPC\_Centerlines



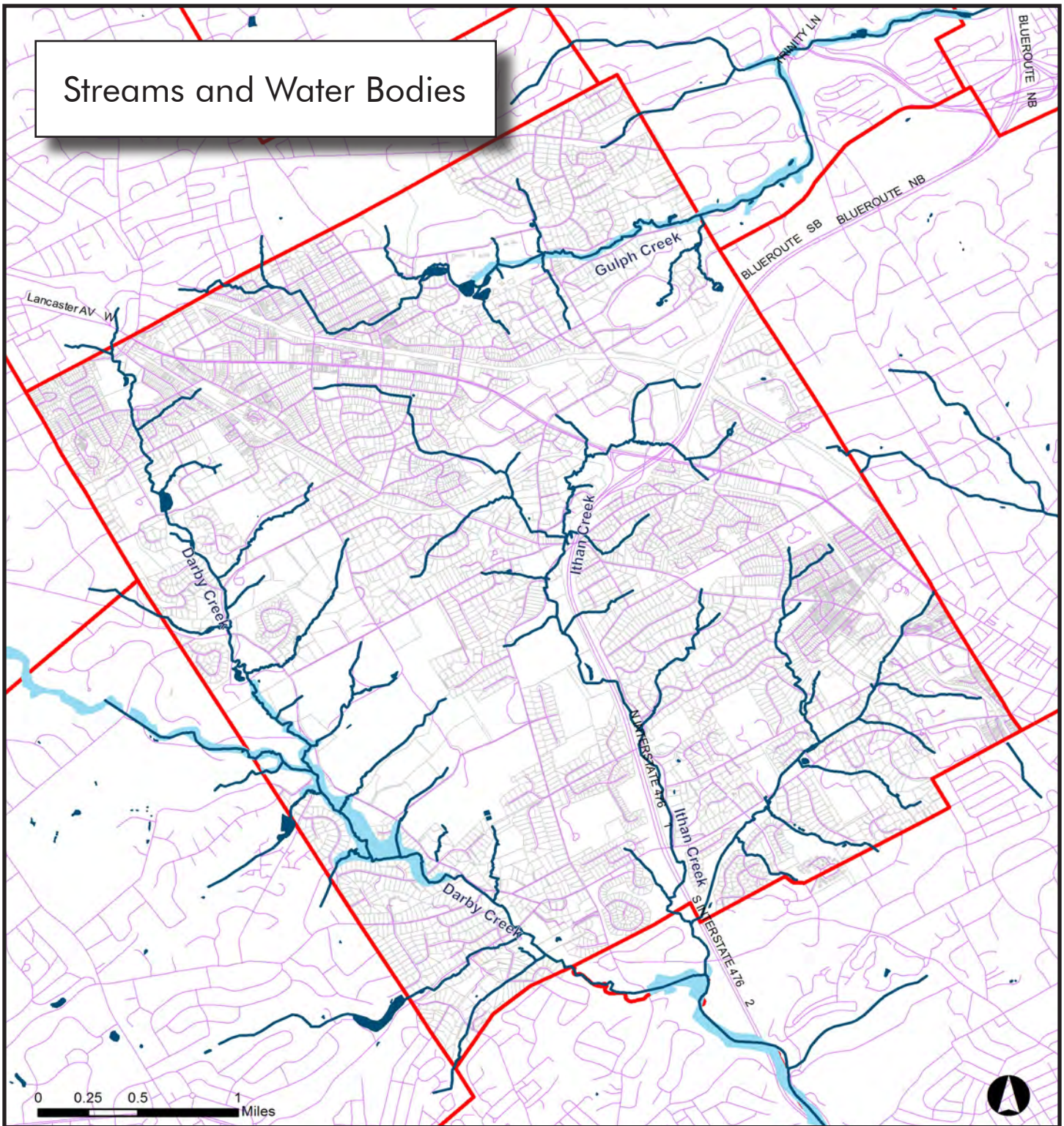


**Legend**

- Municipal Boundary
- Radnor\_Parcels
- Existing Sidewalks
- Open Space
- DVRPC\_Centerlines



## Streams and Water Bodies

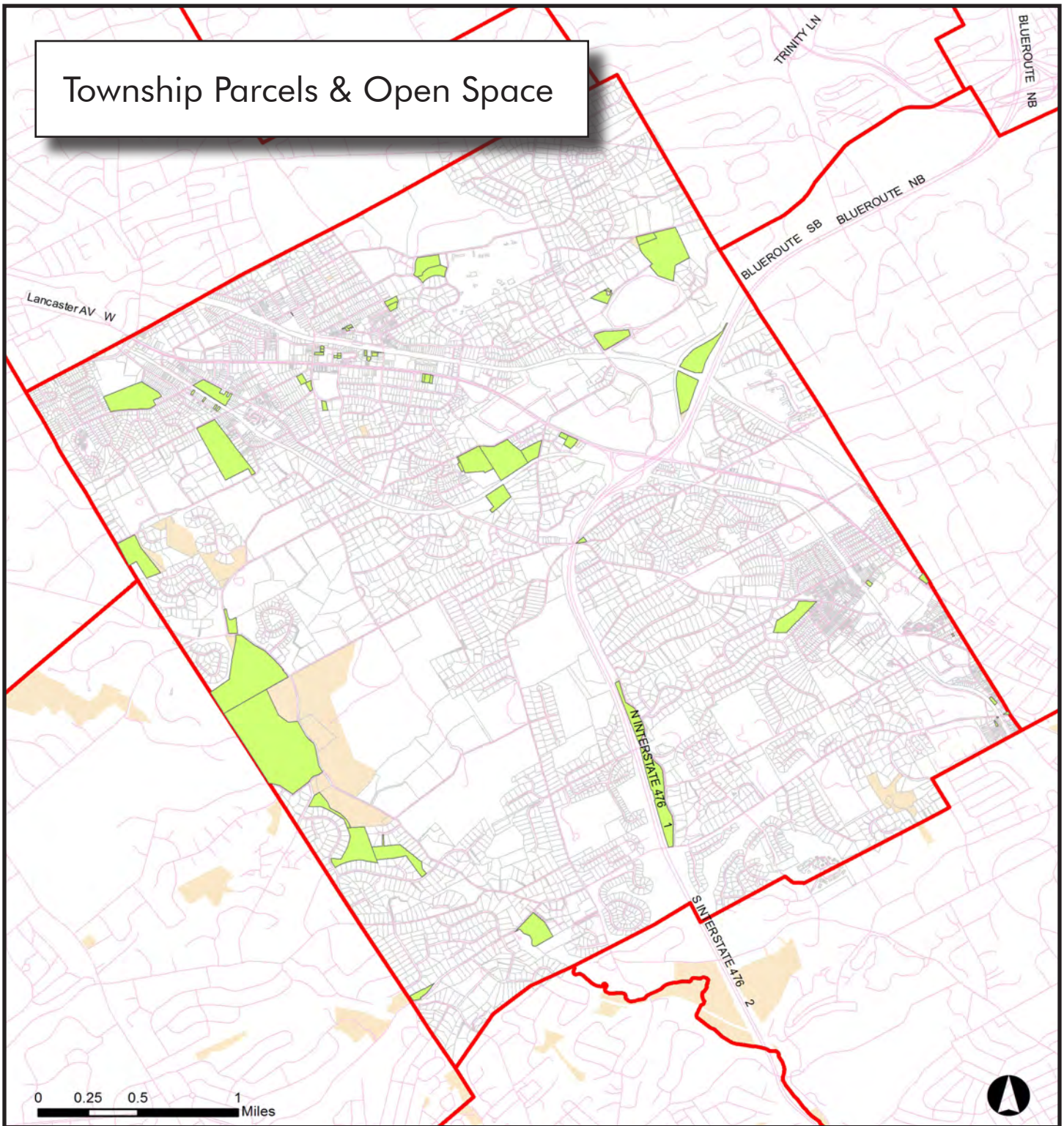


### Legend





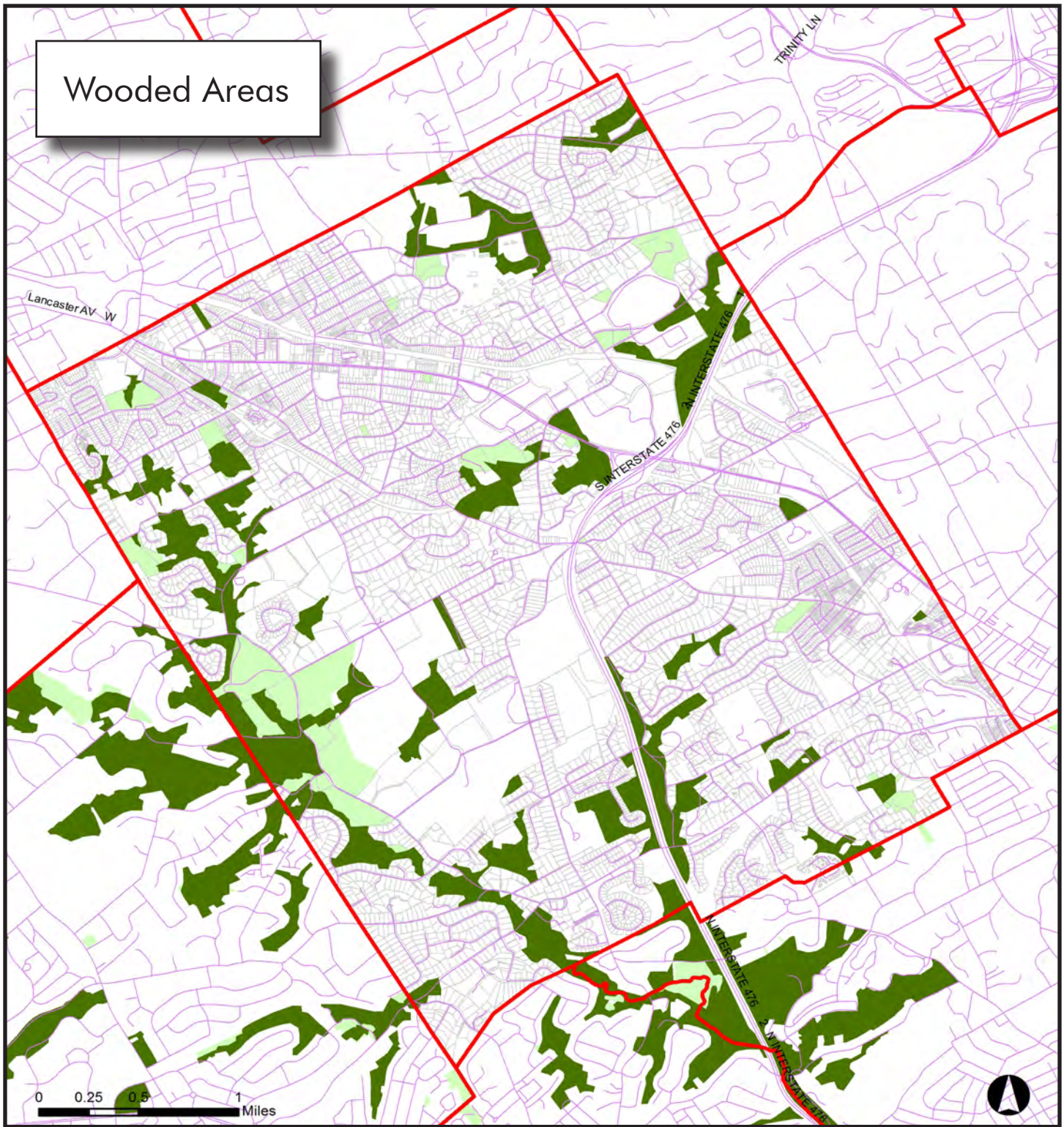
# Township Parcels & Open Space



## Legend

- |   |                   |   |                |
|---|-------------------|---|----------------|
|  | TOWNSHIP_PROP     |  | Radnor_Parcels |
|  | MunicBdys_delco   |  | OS_Delco_2011  |
|  | DVRPC_Centerlines |  | TOWNSHIP_PROP  |





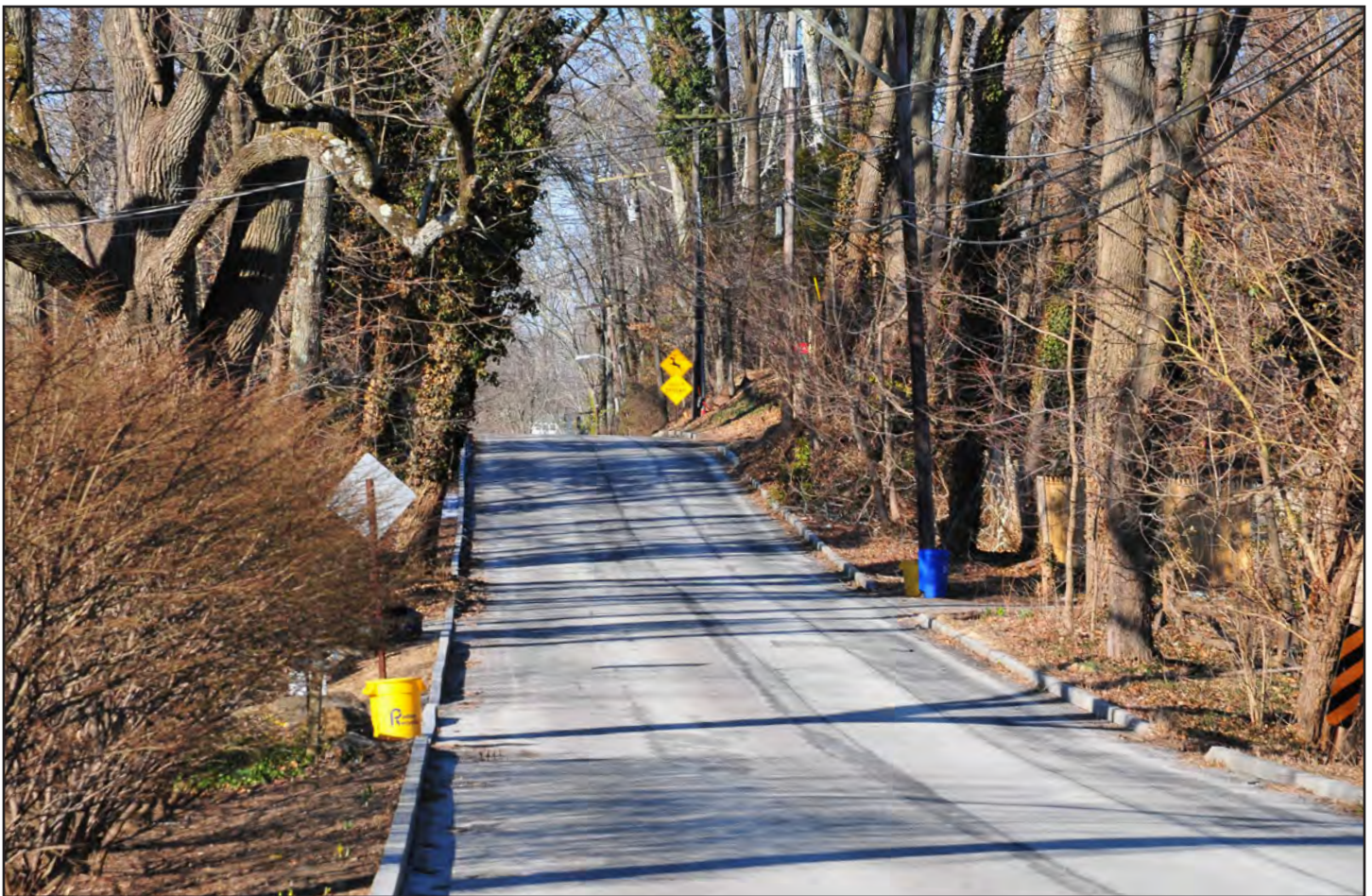
## Legend

<span style="border: 2px solid red; display: inline-block; width: 20px; height: 10px;"></span>	MunicBdys_delco	<b>LU_Label</b>	<span style="display: inline-block; width: 20px; height: 10px; background-color: #90EE90;"></span> Open Space
<span style="border-bottom: 1px solid purple; display: inline-block; width: 20px;"></span>	DVRPC_Centerlines	<span style="display: inline-block; width: 20px; height: 10px; background-color: #006400;"></span> Wooded	
<span style="border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span>	Radnor_Parcels		



Existing pedestrian trails include the Radnor Trail, Brooke Farm Trail, Inverary trails, Willows trails, Skunk Hollow trails, Saw Mill trails, and Ithan Valley Park trails. Several local trails also exist within the Township. Please refer to the existing conditions and opportunities map for existing trail locations. Much of Radnor is developed without sidewalks making pedestrian connections challenging. Existing sidewalks in the Township exist primarily in Wayne, Garrett Hill, and along the Lancaster Avenue corridor.

Scenic roads within the Township were identified in the 1998 Comprehensive Plan. The map on page 36 displays scenic roads as shown in the 2003 comprehensive plan.





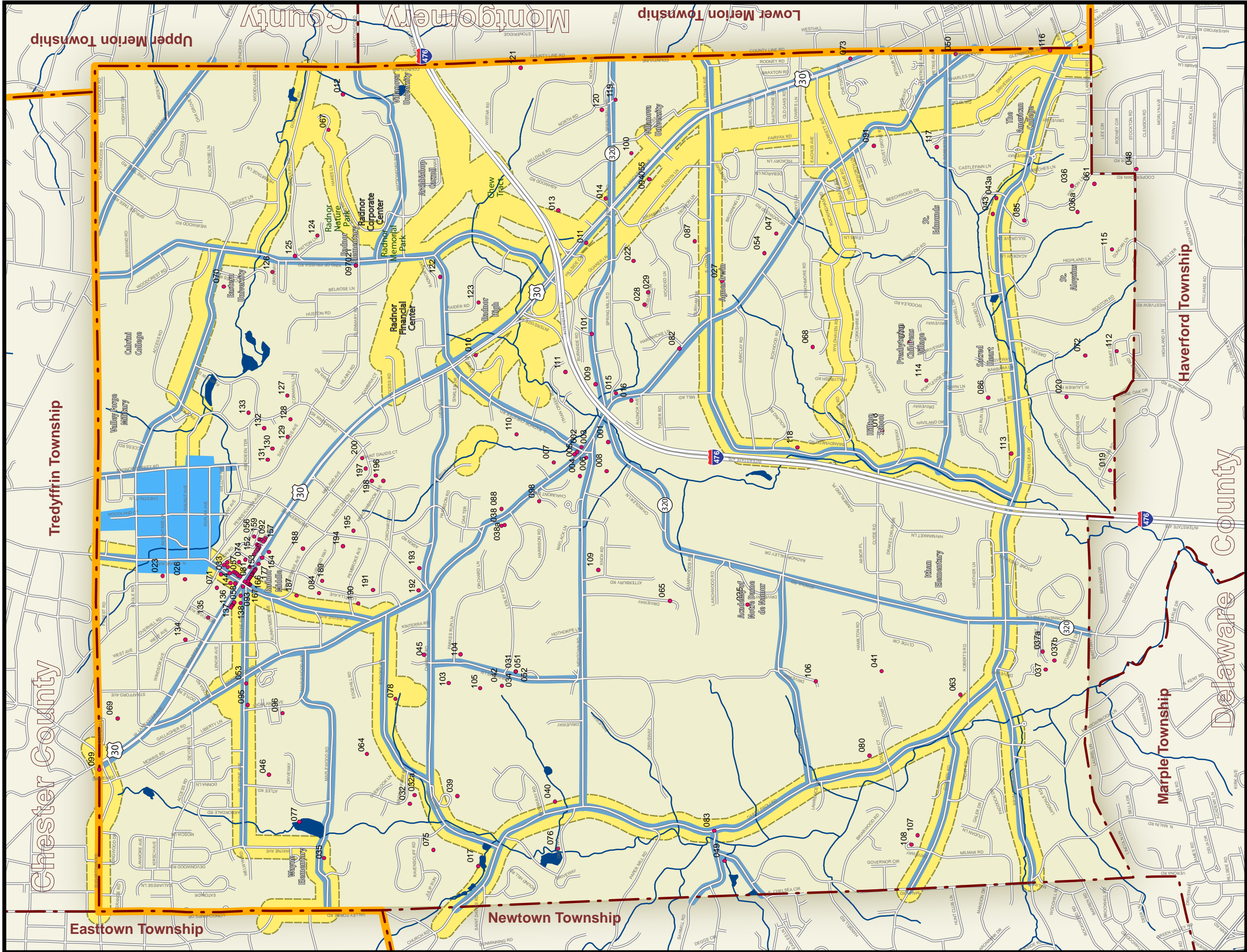


## Historic Resources

The history of Radnor Township dates back to the 1680's. According to the 2003 Comprehensive Plan, Radnor Township has a historic structures inventory that contains 102 listings. These structures are scattered throughout the Township with several dense clusters focused around Wayne and Conestoga Road where some of the earliest Radnor settlements occurred. The trail network proposed in this plan connects to approximately 30 of these historic listings. Several of these connected historic structures include Chanticleer Gardens, Saturday Club, Wayne Nursing Home, and the Wayne Train Station.

*Chanticleer Gardens*







# HISTORIC SITES INVENTORY MAP

## Greenways & Open Space Network Plan

### for Radnor Township



North 0 1000' 2000' 4000'

- Existing Sidewalk
- Municipal Boundary
- County Boundary
- 250' Offset from Trails
- Historic Streets (2003 Comp Plan)
- Wayne Historic District
- Historic Building (2003 Comp Plan)



Highlighted sites within 250” from a proposed alignment. Refer to the map on page 43 for locations.

HPR_	Name	Parcel_num	Owner	St_Number	Street	Zip	City	Num	HPR_	Owner_Addre
001	Radnor Friends Meeting House	3604021351	Radnor Monthly Meeting of Friends		Conestoga Road	19085	Villanova	3	001	Conestoga Road
002	Old Country Store	3604021660	Henry J. Stewart, Trustee	601	Conestoga Road	19085	Villanova	1	002	601 Conestoga Road
003	School House	3604024421	William R. and Susan E. McGuire	610	Newtown Road	19085	Villanova	1	003	610 Newtown Road
004	The Peak	3604021111	Richard E. and Sally F. Caruso	512	Chaumont Drive	19085	Villanova	2	004	512 Chaumont Drive
005	School House Lot	3604021330	G. Randolph Westby	583	Conestoga Road	19085	Villanova	1	005	583 Conestoga Road
006	Green Hedges	3604021330	Betsy Kalish	581	Conestoga Road	19085	Villanova	2	006	581 Conestoga Road
007	Wayside	3604021640	George L. and Sally C. Pew	569	Conestoga Road	19085	Villanova	2	007	569 Conestoga Road
008	Atterbury House	3604024430	George R. Atterbury	615	Newtown Road	19085	Villanova	008		615 Newtown Road
009	Todd House	3604026680	230 Sproul Road	230	Sproul Road	19085	Villanova	3	009	230 Sproul Road
010	Joseph Harding House							010		620 Lancaster Avenue
011	Fendall House	3604023900	demolished	734	Lancaster Avenue	19085	Villanova	0	011	734 Lancaster Ave.
012	Bel Orme	3602012420	Mortimer N.S. Sellers etal.	615	County Line Road	19087	Wayne	012		615 County Line Rd.
013	Ashwood Manor	3602007970	Augustinian Friars	214	Ashwood Road	19085	Villanova	0	013	214 Ashwood Road
014	Gatehouse Ashwood Manor	3602011570	Mark Eney		Conestoga Road	19085	Villanova	014		E. Lancaster Avenue
015		3604021720	Benner Real Estate Partnership	641	Conestoga Road	19085	Villanova	1	015	641 Conestoga Road
016	David Leedom House	3604021380	Nicholas Delviscio etal.	634	Conestoga Road	19085	Villanova	016		634 Conestoga Road
017	Nathan Matlack House	3603016241	James R. & Holly Holt	425	Darby-Paoli Road	19087	Wayne	017		425 Darby-Paoli Road
018	Springhouse	3607047270	Hilltop Preparatory School	737	South Ithan Avenue	19010	Bryn Mawr	018		737 South Ithan Avenue
019	Spring Valley	3605030275	Harold A. and Joanne Garner	603	Fox Field Road	19010	Bryn Mawr	1	019	603 Fox Field Road
020	Robert E. Strawbridge House	3605031292	Catharine M. Purcell	940	Mill Road	19010	Bryn Mawr	1	020	940 Mill Road
021	Bolingbroke	3602011850	St. Martin Church	424	King of Prussia Road	19087	Wayne	2	021	424 King of Prussia Road
022	Chuckswood	3604025360	James D. and Jean G. Wilson	101	South Spring Mill Road	19085	Villanova	1	022	101 South Spring Mill Road
023	Finley House	3601001030	Radnor Historical Society	113	West Beechtree Lane	19087	Wayne	2	023	113 West Beechtree Lane
025	Launfal	3604026480	Notre Dame de Namur	560	Sproul Road	19085	Villanova	9	025	560 Sproul Road
026	Wayne Cricket Clubhouse	3601001521	demolished		West Beechtree Lane	19087	Wayne	0	026	West Beechtree Lane
027	Sorrel House Inn	3607043900	Agnes Irwin School		South Ithan Avenue	19010	Bryn Mawr	027		South Ithan Avenue
028	Woodstock	3604027040	Steven P. & Lorris K. Sorenson	158	Vassar Circle	19085	Villanova	2	028	158 Vassar Circle
029	Woodstock Barn	3604027041	Richard G. Crecraft	166	Vassar Circle	19085	Villanova	1	029	166 Vassar Circle
031	Holly Tree House	3604024630	CCR Concord Scott LLC	567	Darby-Paoli Road	19085	Villanova	11	031	239 Abraham's Lane
032	Brooke Farm House	3603015490	Susan & Jeremy Cote	109	Brooke Farm	19087	Wayne	032		109 Brooke Farm
032a	Brooke Farm Barn	3603015490	Richard Johnson etal.	105	Brooke Farm	19087	Wayne	032a		105 Brooke Farm
033	North Wayne HD		North Wayne Avenue				Wayne	033		
034	Springhouse	3604024630	CCR Concord Scott LLC		Godfrey Road	19085	Villanova	034		239 Abraham's Lane
035	Morgan, David House	3603017580	Nathaniel Barker & Austill Winslow	812	Maplewood Road	19087	Wayne	3	035	812 Maplewood Ave.
036	Sheaff Farm	3605028420	Landover Realty Properties	300	Landover Road	19010	Bryn Mawr	1	036	300 Landover Road
036a	Sheaff Farm Barn	3605028420	William G. Warden IV and Abbie Lee	300	Landover Road	19010	Bryn Mawr	2	036a	300 Landover Road
037	Read, Thomas House	3605032280	Scott & Joan Baribault	1000	Sproul Road	19010	Bryn Mawr	2	037	1000 Sproul Road
037a	Read, Thomas Barn	3605031105	Scott & Joan Baribault		Sproul Road	19010	Bryn Mawr	1	037a	1000 Sproul Road
037b	Read, Thomas Carriage House	3605031105	Scott & Joan Baribault	108	Leighton Drive	19010	Bryn Mawr	1	037b	108 Leighton Drive
038	Siter, Adam House	3604021310	I. Wistar Morris	500	Conestoga Road	19085	Villanova	1	038	500 Conestoga Road
038a	Siter, Adam Springhouse			500	Conestoga Road	19085	Villanova	1	038a	500 Conestoga Road
039	Cornog House	3604021135	Ryacord Ltd. Partnership	875	Church Road	19087	Wayne	039		875 Church Road
040	Simon Matlack House	3604021991	Edward A. and Melissa A. Begg	461	Darby-Paoli Road	19085	Villanova	2	040	461 Darby-Paoli Road
041	Evans, Nathan House	3604026500	Warwick S. & Mollie M. Wheeler	700	Sproul Road	19010	Bryn Mawr	2	041	700 Sproul Road
042	Abraham's Lane House	3604020249	Robert L. & Jane A. McNeil	245	Abraham's Lane	19085	Villanova	4	042	245 Abrahams Lane
043	Miller, Jonathan House	3605028670	Clifford J. and May L. Holgren	322	S. Bryn Mawr Avenue	19010	Bryn Mawr	3	043	322 S. Bryn Mawr Ave
043a	Miller, Jonathan Barn	3605028670	Peter Bergson and Susan Shilcock	314	S. Bryn Mawr Avenue	19010	Bryn Mawr	2	043a	314 S. Bryn Mawr Ave
045	Kinterra	3603015660	Julie T. Berlicher	676	Church Road	19087	Wayne	045		676 Church Road
046	Siter, William House	3606032700	Walter and Susan Buckley	221	Atlee Road	19087	Wayne	3	046	221 Atlee Road
047	765 Conestoga Road	3607044030	Joseph L. Eremus etal.	1	Meadowood Drive	19010	Bryn Mawr	047		1 Meadowood Drive
048	House -- Coopertown Road				Coopertown Road	19010	Bryn Mawr	0	048	Coopertown Road
049	Millmaster's House	3604025930	Doris P. Heckman	1	Earles Lane	19073	Newtown Square 1	049		1 Earles Lane
050	Lawrence Building	3605029450	Sunrise Realty Associates	1051	Conestoga Road	19010	Bryn Mawr	1	050	1051 Conestoga Road
051	Hickory Hall	3604024630	CCR Concord Scott LLC	239	Abraham's Lane	19085	Villanova	2	051	239 Abraham's Lane
052	The Grange	3604024630	CCR Concord Scott LLC		Newtown Road	19085	Villanova	052		239 Abraham's Lane
053	Baptist School House and Cemetery	3606039720	Joann Henry Clark	304	West Wayne Avenue	19087	Wayne	2	053	304 W. Wayne Ave.
054	Toll House Farm	3607043940	W. Lawrence & Margaret S. Slack	751	Conestoga Road	19010	Bryn Mawr	054		751 Conestoga Road
055	St. Rita's Hall	3604024001	Villanova University	800	Lancaster Avenue	19085	Villanova	1	055	800 Lancaster Ave.
056	Louella Mansion	3601003330	Acer Capital, Inc.	40	Louella Court	19087	Wayne	2	056	40 Louella Court
057	Colonial Building	3601005850	Ernest C. and Leslie W. Eadeh	101	East Lancaster Avenue	19087	Wayne	057		101 E. Lancaster Ave.
058	Saturday Club of Wayne	3606039900	Saturday Club of Wayne	117	West Wayne Avenue	19087	Wayne	1	058	117 W. Wayne Avenue
059	School House	3604024630	CCR Concord Scott LLC		Darby-Paoli Road	19085	Villanova	1	059	239 Abraham's Lane
061	Glenays	3605029610	Blair & Son Inc.	930	Coopertown Road	19010	Bryn Mawr	061		930 Coopertown Road
062	Montgomery Apartments	3604024630	CCR Concord Scott LLC		Newtown Road	19085	Villanova	062		239 Abraham's Lane
063	Radnor Hunt	3604021970	Robert Harding etal.	738	Roberts Road	19010	Bryn Mawr	063		738 Roberts Road
064	Poplarhouse	3603017520	George L. Harrison Jr.	752	Brooke Road	19087	Wayne	064		Maplewood Ave.
065	Camp-Woods	3604024510	Martin A. & Ann C. Snyder	745	Newtown Road	19085	Villanova	1	065	745 Newtown Road
066	Arrossan	3604024630	CCR Concord Scott LLC		Newtown Road	19085	Villanova	066		239 Abraham's Lane
067	Harford	3602010371	Radnor Township	260	Gulph Creek Road	19087	Wayne	2	067	260 Gulph Creek Road
068	Beaupre	3607043405	Philadelphia Presbyterian Homes Inc.	404	Cheswick Place	19010	Bryn Mawr	068		404 Cheswick Place
069	Woodcrest		Cabrini College		Eagle Road	19087	Wayne	069		Eagle Road
070	Walmartan	3602009820	Eastern College	1300	Eagle Road	19087	Wayne	070		1300 Eagle Road
071	Wayne Nursing Home	3601003060	Et Sub Wayne I LLP	30	West Avenue	19087	Wayne	071		30 West Ave.
072	Laurier	3605029660	Swann's Way Revocable Trust	200	East Laurier Place	19010	Bryn Mawr	072		200 E. Laurier Place
073	Toll House	3607047449	Michael and Ellen Mulrone	1045	East Lancaster Avenue	19010	Bryn Mawr	1	073	1045 E. Lancaster Ave.
074	Wayne Hotel	3601003091	Wayne Hotel Associates	139	East Lancaster Avenue	19087	Wayne	074		139 E. Lancaster Ave.
075	Ravenscliff	3603018798	Harry & H. Lynn Tractman	220	Ravenscliff	19087	Wayne	2	075	220 Ravenscliff
076	Rose Garland	3604021900	Radnor Township		Darby-Paoli Road	19085	Villanova	5	076	
077	Mill Dam Club	3606037820	Mill Dam Club	717	Maplewood Road	19087	Wayne	077		717 Maplewood Ave.
078	Chanticleer	3603015470	Chanticleer Foundation	753	Brooke Road	19087	Wayne	078		753 Brooke Road
079	Glencoe	3607049610	Presbuterian Childrens Village	452	Roberts Road	19010	Bryn Mawr	079		452 Roberts Road
080	Faunamede	3604021920	Peter Godfrey, Trustee	739	Darby-Paoli Road	19085	Villanova	080		739 Darby-Paoli Road
081	Downtown Wayne						Wayne	081		Lancaster and South Wayne Avenues
082	Conestoga Road							082		
083	Darby-Paoli Road							083		
084	Watt, John H. House	3603017200	Thomas B. & Karen K. Hartman	320	Louella Avenue	19087	Wayne	2	084	320 Louella Avenue
085	Ballyshannon	3605028410	Bruce & Cynthia Terker	325	Bryn Mawr Avenue	19010	Bryn Mawr	3	085	325 Bryn Mawr Ave.
086	Blabon Mansion	3605028400	Donald L. & Linda L. Thompson	821	Mill Road	19010	Bryn Mawr	2	086	408 Barbara Lane
087	Bloomfield	3604023440	Jerald & Robin Batoff	200	South Ithan Avenue	19085	Villanova	1	087	200 South Ithan Ave.
088	Pennsylvania & Western Substation #1	3604021610	David F. and Gale H. Hoffman	501	Conestoga Road	19087	Wayne	1	088	501 Conestoga Road
089	Wayne Train Station	3601006010	Amtrak	135	North Wayne Avenue	19087	Wayne	3	089	135 North Wayne Avenue
090	Wayne Presbyterian Church	3601003091	Wayne Presbyterian Church	125	East Lancaster Avenue	19087	Wayne	2	090	125 East Lancaster Ave
091	Radnor Methodist Church	3607043921	Radnor Methodist Church	930	Conestoga Road	19010	Bryn Mawr	1	091	930 Conestoga Road
092	St. Mary's Episcopal Church	3603017310	St. Mary's Rectory	103	Louella Avenue	19087	Wayne	1	092	103 Louella Avenue
093	Central Baptist Church	3606036640	Central Baptist Church	108	Lancaster Avenue	19087	Wayne	1	093	108 Lancaster Avenue
094	St. Thomas of Villanova	3604024001	Villanova University		Lancaster Avenue	19085	Villanova	1	094	Lancaster Avenue
095	St. John's AME Church	3606039730	St. John's AME Church	203	Highland Avenue	19087	Wayne	2	095	203 Highland Avenue
096	Second Baptist Church	3606035900	Second Baptist Church	246	Highland Avenue	19087	Wayne	2	096	246 Highland Avenue
097	St. Martin's Episcopal Church	3602011850	St. Martin's Episcopal Church	424	King of Prussia Road	19087	Wayne	1	097	424 King of Prussia Road

099	Christ Church Ithan		Christ Church Ithan			19085	Villanova		098	Conestoga Road
100	Sarah Sifers House	3606036150	Braxton Family Ltd Partnership	620	West Lancaster Avenue	19087	Wayne	2	099	620 W. Lancaster Ave.
101	Lancaster Avenue								100	Lancaster Avenue
101	Sproul Road								101	Sproul Road
103	Church Road House	3604020250	Helen E. Scott		Church Road	19085	Villanova		103	Church Road
104	955 Parkes Run Lane	3604025240	Theresa Mc Brennan	955	Parkes Run Lane	19085	Villanova		104	955 Parkes Run Lane
105		3604020249	Harry C. III & Evelyn R. Groome	243	Abraham's Lane	19085	Villanova		105	243 Abraham's Lane
106	Hardwicke	3604022210	Overbrook Golf Club		Godfrey Road	19010	Bryn Mawr		106	Godfrey Road
107	Valley Brook Farm	3604022120	L.E.D. Hammershaimb	860	Goshen Road	19073	Newtown Square 3		107	860 Goshen Road
108	Goshen Road Bridge				Goshen Road				108	Goshen Road
109	507 Atterbury Road	3604020440	Mark L. & Molly B. Janiczek	507	Atterbury Road	19085	Villanova		109	507 Atterbury Road
110	Gray Walls	3604025840	Robert L. & Jeann Honish	228	South Radnor Chester Road	19085	Villanova	4	110	228 South Radnor Chester Road
111	Derlwyn	3604021995	Jerome J. Reitano	264	Ithan Creek Road	19085	Villanova		111	264 Ithan Creek Road
112	Millridge	3605031291	Millridge Condominium Associates	975	Mill Road	19010	Bryn Mawr		112	975 Mill Road
113	Fox Hill Farm Gatehouse	3605028760	Michael & Lois Haber	548	Bryn Mawr Avenue	19010	Bryn Mawr	1	113	548 Bryn Mawr Ave.
114	Portledge	3607049416	Brook J. Lenfest	609	Portledge	19010	Bryn Mawr		114	609 Portledge
115	Westview	3605032150	Arthur N. & Janice R. Beebe	4	Shannon Circle	19010	Bryn Mawr	2	115	4 Shannon Circle
116	Whitehall Station	3605030207	Bryn Mawr Hospital Realty Corp.	804	County Line Road	19010	Bryn Mawr	1	116	804 County Line Rd.
117	280 Roberts Road	3605032145	Brian R. Macdonald etal.	280	Roberts Road	19010	Bryn Mawr		117	280 Roberts Road
118	501 S. Ithan Ave.	3607047340	Brian McDevitt	501	South Ithan Avenue				118	501 S. Ithan Ave.
119	Villanova Station	3602013550	Amtrak		North Spring Mill Road	19085	Villanova	1	119	North Spring Mill Road
120	Dundale	3602009350	Villanova University			19085	Villanova		120	Conestoga Road
121	1 Wistar Road	3602014830	John F. Smith III etal.	1	Wistar Road	19085	Villanova		121	1 Wistar Road
122	Hillbrook	3602013400	William G. & Susan T. Costin	260	North Radnor Chester Road	19087	Wayne		122	260 N. Radnor Chester Road
123	Radnor Train Station		Amtrak			19087	Wayne		123	Radnor Chester Rd.
124	138 Patton Lane	3602012650	William C. & Madeline B. Herle	138	Patton Lane	19087	Wayne		124	138 Patton Lane
125	Greyrook	3602011650	Henry Glassman	130	Biddulph Road	19087	Wayne		125	130 Biddulph Road
126	516 King of Prussia Road	3602011900	Uli & Carol Kortsch	516	King of Prussia Road	19087	Wayne		126	516 King of Prussia Road
127	Edmary Lawn	3602008880	John J. Dziedzina & Robin K. Putzrath	223	Chamounix Road	19087	Wayne	2	127	223 Chamounix Road
128	238 Chamounix Road	3602008870	George J. Badey III	238	Chamounix Road	19087	Wayne		128	238 Chamounix Road
129	473 St. David's Ave.	3602014300	Gerald E. Scannell Jr.	473	St. David's Avenue	19087	Wayne		129	473 St. David's Ave.
130	451 St. David's Ave.	3602014290	Craig & Elizabeth H. Snyder	451	St. David's Avenue	19087	Wayne		130	451 St. David's Ave.
131	443 St. David's Ave.	3602014270	Robert & Dorothy McCabe	443	St. David's Avenue	19087	Wayne		131	443 St. David's Ave.
132	260 Chamounix Rd.	3602008970	Gary Papa & Kathleen Kuhn	260	Chamounix Road	19087	Wayne		132	260 Chamounix Rd.
133	301 Chamounix Rd.	3602008900	Thomas E. Winnock etal.	301	Chamounix Road	19087	Wayne		133	301 Chamounix Rd.
134	301 Windsor Ave.	3601007280	Steven & Roseanne Franklino	301	Windsor Avenue	19087	Wayne		134	301 Windsor Ave.
135	201 W. Lancaster Ave.	3601002960	H.W. Brest etal	201	West Lancaster Avenue	19087	Wayne	1	135	201 W. Lancaster Ave.
136	126 W. Lancaster Ave.	3606036560	H.N. & Helen K. Pryor	126	West Lancaster Avenue	19087	Wayne	1	136	126 W. Lancaster Ave.
137	124 W. Lancaster Ave.	3606036630	James Landis	124	West Lancaster Avenue	19087	Wayne	1	137	124 W. Lancaster Ave.
138	122 W. Lancaster Ave.	3606036610	Anthony J. & Mary E. Panaccio	122	West Lancaster Avenue	19087	Wayne	1	138	122 W. Lancaster Ave.
139	120 W. Lancaster Ave.	3606036600	Anthony J. & Mary E. Panaccio	120	West Lancaster Avenue	19087	Wayne	1	139	120 W. Lancaster Ave.
140	118 W. Lancaster Ave.	3606036620	James Landis	118	West Lancaster Avenue	19087	Wayne	1	140	118 W. Lancaster Ave.
141	Radnor Memorial Library	3606036630	Eadeh Family Ltd. Partnership	110	West Lancaster Avenue	19087	Wayne	1	141	110 W. Lancaster Ave.
142	U.S. Trust Building	3606036650	100 West Partners	100	West Lancaster Avenue	19087	Wayne	1	142	100 W. Lancaster Ave.
143	105 W. Lancaster Ave.	3601003080	George L. and Gloria L. Morelli	105	West Lancaster Avenue	19087	Wayne	1	143	105 W. Lancaster Ave.
144	Anthony Wayne Theatre	3601003070	100 West Partners	111	West Lancaster Avenue	19087	Wayne	1	144	111 W. Lancaster Ave.
145	134 N. Wayne Ave.	3601006260	Wayne Publications Inc.	134	North Wayne Avenue	19087	Wayne	1	145	134 N. Wayne Ave.
146	103 N. Wayne Ave.	3601005860	Eleanor C. Donato	103	North Wayne Avenue	19087	Wayne	1	146	103 N. Wayne Ave.
147	105 N. Wayne Ave.	3601005870	Stephen and Nancy Ching	105	North Wayne Avenue	19087	Wayne	1	147	105 N. Wayne Ave.
148	107 N. Wayne Ave.	3601005880	Miriam L. Epps	107	North Wayne Avenue	19087	Wayne	1	148	107 N. Wayne Ave.
149	111 N. Wayne Ave.	3601005890	Miriam L. Epps	111	North Wayne Avenue	19087	Wayne	1	149	111 N. Wayne Ave.
150	123 N. Wayne Ave.	3601005930	123 Wayne Corp.	123	North Wayne Avenue	19087	Wayne	1	150	123 N. Wayne Ave.
151	133 N. Wayne Ave.	3601005970	George L. Harrison Jr.	133	North Wayne Avenue	19087	Wayne	1	151	133 N. Wayne Ave.
152	163 E. Lancaster Ave.	3601003110	Wayne Toyotown, Inc.	163	East Lancaster Avenue	19087	Wayne	1	152	163 E. Lancaster Ave.
153	175 E. Lancaster Ave.	3601003120	The Kuo Group, LLC	175	East Lancaster Avenue	19087	Wayne	1	153	175 E. Lancaster Ave.
154	183 E. Lancaster Ave.	3601003130	Arthur W. and Gail H. Foster	183	East Lancaster Avenue	19087	Wayne	1	154	183 E. Lancaster Ave.
155	185 E. Lancaster Ave.	3601003140	Neighborhood League Shops, Inc.	185	East Lancaster Avenue	19087	Wayne	1	155	185 E. Lancaster Ave.
156	189 E. Lancaster Ave.	3601003150	Neighborhood League Shops, Inc.	189	East Lancaster Avenue	19087	Wayne	1	156	189 E. Lancaster Ave.
157	201 E. Lancaster Ave.	3601003180	Eadeh Family Ltd. Partnership	201	East Lancaster Avenue	19087	Wayne	1	157	201 E. Lancaster Ave.
158	205 E. Lancaster Ave.	3601003190	Eadeh Family Ltd. Partnership	205	East Lancaster Avenue	19087	Wayne	1	158	205 E. Lancaster Ave.
159	211 E. Lancaster Ave.	3601003200	Roben and Youda Tehrani etal	211	East Lancaster Avenue	19087	Wayne	1	159	211 E. Lancaster Ave.
160	4 Louella Court	3601003680	William A. and Isabel C. Zulkar	4	Louella Court	19087	Wayne	1	160	4 Louella Court
161	6 Louella Court	3601003670	Neighborhood League Shops, Inc.	6	Louella Court	19087	Wayne	1	161	6 Louella Court
162	10 Louella Court	3601003660	Cora K. and Charles M. Cowan etal.	10	Louella Court	19087	Wayne	1	162	10 Louella Court
163	3 Louella Court	3601003340	Anthony D. Dimaio	3	Louella Court	19087	Wayne	1	163	3 Louella Court
164	7 Louella Court	3601003350	John J. and Betty J. Miraglia	7	Louella Court	19087	Wayne	1	164	7 Louella Court
165	11 Louella Court	3601003360	Eadeh Family Ltd. Partnership	11	Louella Court	19087	Wayne	1	165	11 Louella Court
166	100 E. Lancaster Ave.	3603016540	100 East Partners	100	East Lancaster Avenue	19087	Wayne	1	166	100 E. Lancaster Ave.
167	102 E. Lancaster Ave.	3603016550	Jones Jr. Inc.	102	East Lancaster Avenue	19087	Wayne	1	167	102 E. Lancaster Ave.
168	Harrison's	3603016560	Harrison and Richard Levy	106	East Lancaster Avenue	19087	Wayne	1	168	106 E. Lancaster Ave.
169	108 E. Lancaster Ave.	3603016570	The Rosedon Holding Company	108	East Lancaster Avenue	19087	Wayne	1	169	108 E. Lancaster Ave.
170	110 E. Lancaster Ave.	3603016580	The Rosedon Holding Company	110	East Lancaster Avenue	19087	Wayne	1	170	100 E. Lancaster Ave.
171	112 E. Lancaster Ave.	3603016590	100 East Partners	112	East Lancaster Avenue	19087	Wayne	1	171	112 E. Lancaster Ave.
172	114 E. Lancaster Ave.	3603016600	Wayne Hotel Associates	114	East Lancaster Avenue	19087	Wayne	1	172	114 E. Lancaster Ave.
173	118 E. Lancaster Ave.	3603016610	Giuseppe and Amelia Dedda	118	East Lancaster Avenue	19087	Wayne	1	173	118 E. Lancaster Ave.
174	120 E. Lancaster Ave.	3603016620	John C. and Jane C. Hedden	120	East Lancaster Avenue	19087	Wayne	1	174	120 E. Lancaster Ave.
175	122 E. Lancaster Ave.	3603016630	Ernest C. and Leslie W. Eadeh	122	East Lancaster Avenue	19087	Wayne	1	175	122 E. Lancaster Ave.
176	124 E. Lancaster Ave.	3603016640	Roger S. Galczenskit and John G. Hoopes	124	East Lancaster Avenue	19087	Wayne	1	176	124 E. Lancaster Ave.
177	126 E. Lancaster Ave.	3603016650	Radnor Chase Cronies	126	East Lancaster Avenue	19087	Wayne	1	177	126 E. Lancaster Ave.
178	128 E. Lancaster Ave.	3603016660	Radnor Chase Cronies	128	East Lancaster Avenue	19087	Wayne	1	178	128 E. Lancaster Ave.
179	130 E. Lancaster Ave.	3603016670	Radnor Chase Cronies	130	East Lancaster Avenue	19087	Wayne	1	179	130 E. Lancaster Ave.
180	Bell Telephone Building	3603016680	148 Lancaster Avenue LP	148	East Lancaster Avenue	19087	Wayne	1	180	148 East Lancaster Ave.
181	Argus Building	3603016730	Theresa M. DiPasqua	168	East Lancaster Avenue	19087	Wayne	1	181	168 E. Lancaster Ave.
182	105 S. Wayne Ave.	3603019340	George R. Denno and Eileen Steinberg	105	South Wayne Avenue	19087	Wayne	1	182	105 S. Wayne Ave.
183	107 S. Wayne Ave.	3603019340	Janice M. Pinto and Lori A. Swift	107	South Wayne Avenue	19087	Wayne	1	183	107 S. Wayne Ave.
184	109 S. Wayne Ave.	3603019350	Alexandros & Bessie Kontis	109	South Wayne Avenue	19087	Wayne	1	184	109 S. Wayne Ave.
185	111 S. Wayne Ave.	3603019350	Rosemary C. Smith	111	South Wayne Avenue	19087	Wayne	1	185	111 S. Wayne Ave.
186	113 S. Wayne Ave.	3603019350	Anthony and Theresa Cucchi	113	South Wayne Avenue	19087	Wayne	1	186	113 S. Wayne Ave.
187	Radnor High School / Radnor Middle School	3603019581	Radnor Township	135	South Wayne Avenue	19087	Wayne		187	135 S. Wayne Ave.
188	Alberdor	3603019730	Henry Z. & Sandra P. Lyczak	215	Windermere Ave.	19087	Wayne		188	215 Windermere Ave.
189	319 Louella Ave.	3603017330	John B. & Mary L. Willcox	319	Louella Avenue	19087	Wayne		189	319 Louella Ave.
	Car-Alan	3603018790	James & Mary S. Dpalma	100	Pembroke Avenue	19087	Wayne	1	190	100 Pembroke Ave.
191	Graystone	3603017370	Anne M. Taylor	439	Louella Avenue	19087	Wayne		191	439 Louella Ave.
192	Betsfred	3603016010	Frederick Heldring etux.	365	Conestoga Road	19087	Wayne		192	365 Conestoga Road
193	221 S. Aberdeen Ave.	3603015140	Bruce L. & Kathryn M. Evans	221	South Aberdeen Avenue	19087	Wayne		193	221 S. Aberdeen Ave.
194	236 Upland Way	3603019570	William L. & Catherine Keller	236	Upland Way	19087	Wayne		194	236 Upland Way
195	209 S. Aberdeen Ave.	3603015090	Paul J. & Dianne C. Burkitt	209	South Aberdeen Avenue	19087	Wayne		195	209 S. Aberdeen Ave.
196	410 Orchard Way	3603018600	Harold L. III & Sharon C. Yoh	410	Orchard Way	19087	Wayne		196	410 Orchard Way
197	400 Orchard Way	3603019155	James P. Meehan etal.	400	Orchard Way	19087	Wayne		197	400 Orchard Way
198	500 St. David's Road	3603019150	Robert C. Jr. & Karen A. Hackett	500	St. David's Road	19087	Wayne		198	500 St. David's Road
199	423 St. David's Road	3603018970	Lee A. and Eileen M. Casaccio	423	St. David's Road	19087	Wayne	2	199	423 St. David's Road
200	432 Midland Ave.	3603018060	Joseph M. Evans etal.	432	Midland Avenue	19087	Wayne		200	432 Midland Avenue





*The passive open space of the Willows transforms into active recreation during the winter months.*

## Greenway Destinations

### Parks and Open Space

Radnor Township has an extensive park and open space system with over 25 facilities covering more than 400 acres for both active and passive recreation opportunities. Radnor School District also owns several parks. Notable parks include:

- The Willows—is a 47 acre estate purchased by Radnor Township in 1973. The park contains a fishing pond and a picnic area and is a popular sledding location in the winter. The Little Darby Creek also runs through the park and it should be noted that riparian buffers in this area have been partially cleared and need to be restored. Existing nature trails run from the Willows through Skunk Hollow and Sawmill Park creating an trail network of approximately 5 miles.

- Skunk Hollow Park—is a 93 acre undeveloped piece of land that surrounds the Little Darby Creek. The park is used for a community garden, fishing and contains hiking and walking trails. The site can be accessed from Darby-Paoli Road, Sawmill Road, or the Willows.



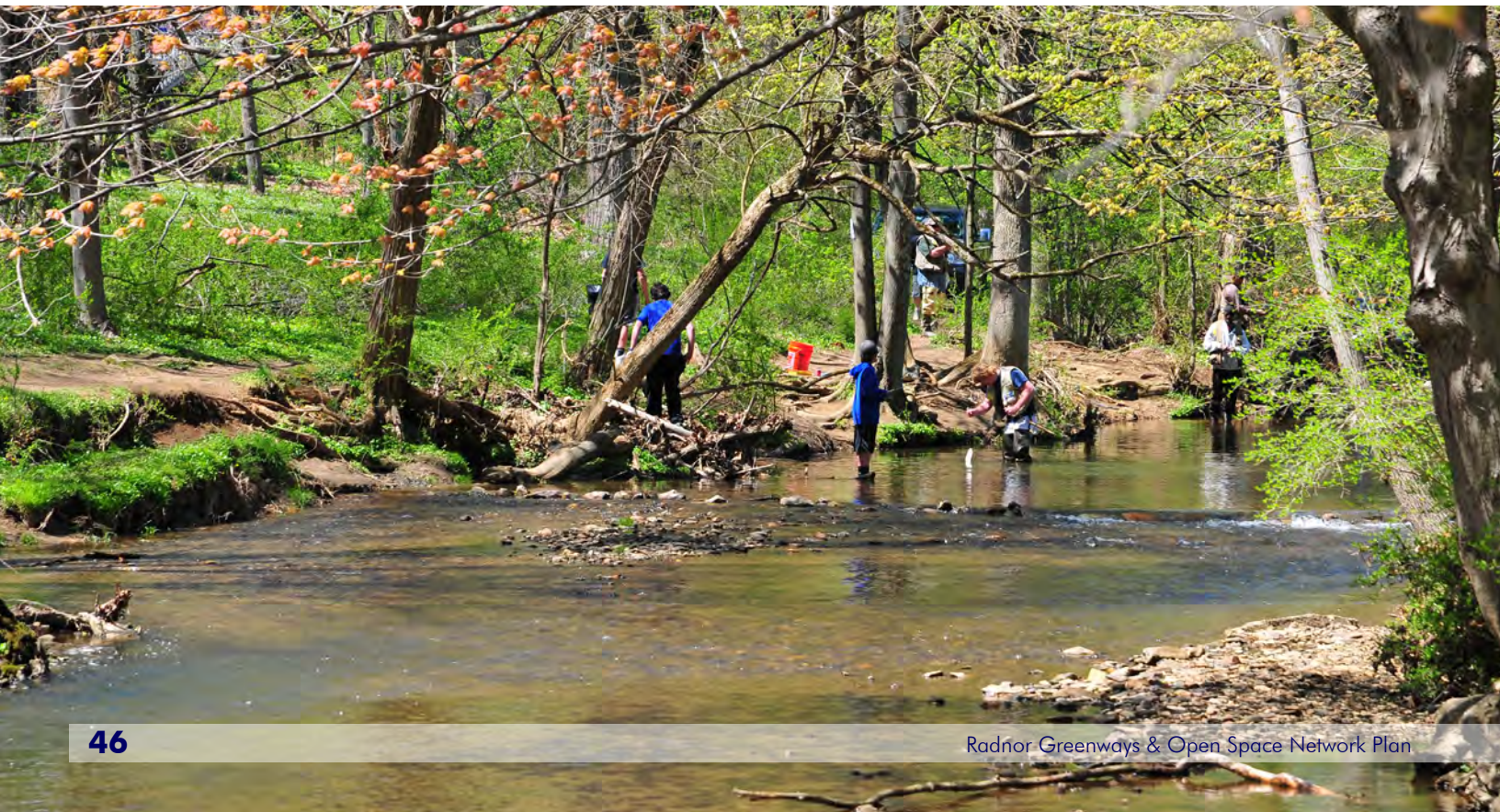




- Saw Mill Park (below) — is a 5.3 acre park located along the Darby Creek. The park is used for fishing and also contains nature trails. The park can be accessed from Sawmill Road.
- Encke Park (above)—is 10 acres in size and located adjacent to the Radnor Township Municipal building. The park is used primarily for active recreation. It contains two baseball fields, a playground, and a skate park. There is a significant grade change from the elevation of the adjacent Radnor Trail to the lower elevation of Encke Park.

Additionally, several ball fields are located in very close proximity to Ithan Creek creating challenges for a connection the Radnor Trail.

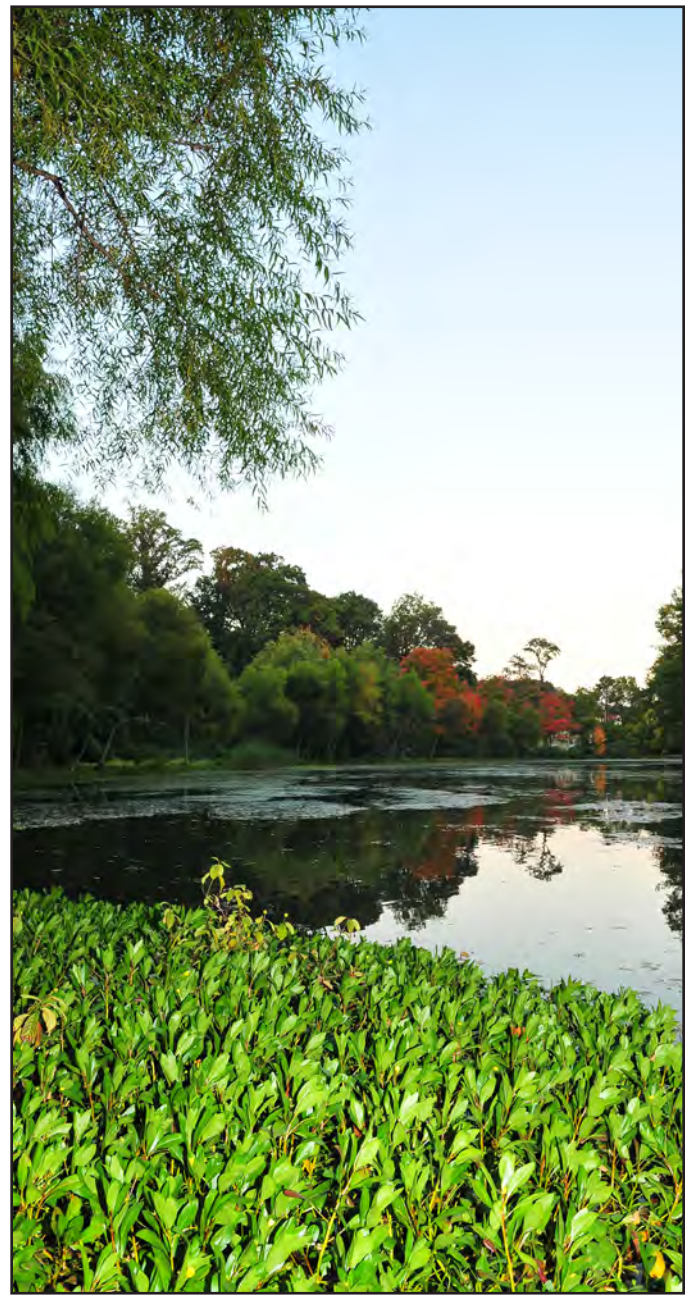
- Harford Park—is a 31 acre park that contains a walking trail and picnic tables. The park is also used for dog walking. The park contains the Creutzburg Center which is a Victorian estate that now holds adult education classes for the community. The park is linked to the adjacent Radnor Corporate Center which provides an opportunity for a connection to Radnor Elementary School (above).





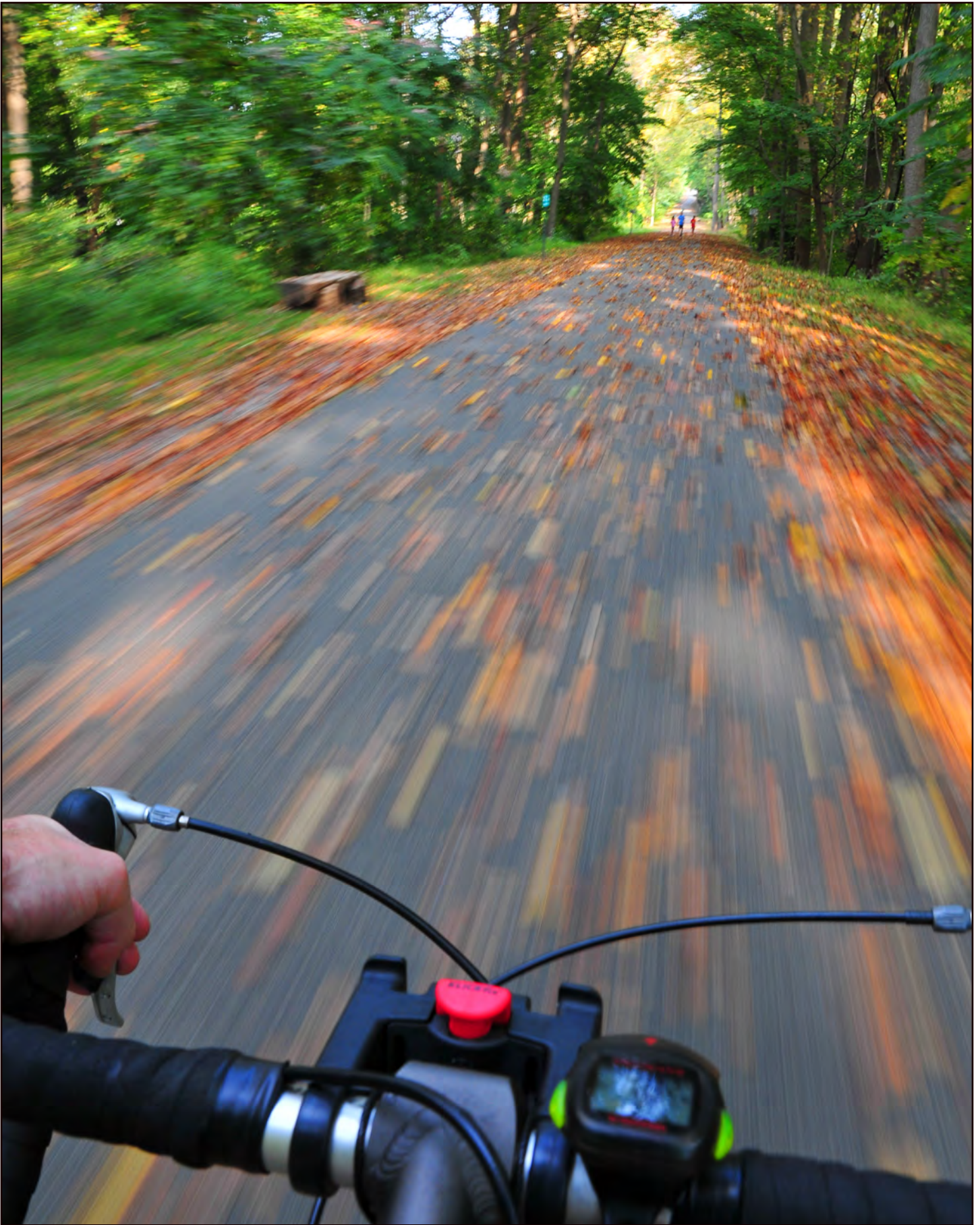


- Ithan Valley Park—is a 19 acre park located off of South Ithan Avenue and adjacent to Route 476. The park contains hiking and nature trails and is also used for dog walking and fishing. Being in close proximity to Haverford Township, the park presents an opportunity to link to the Haverford Heritage Trails.



- Fenimore Woods - is an 11.5 acre parcel acquired by the Township in 1973. The land contains natural foliage, open land, a pond, and a stream. The property also contains a historic stable that was part of the original estate. Fenimore Woods also includes a covered pavilion for large gatherings and picnics, a playground, walking path, parking, and restroom facilities.









*Opening day, 2005*

## Radnor Trail

Opened in April, 2005, the Radnor Trail is one of the most popular recreational spots in the township for walkers, joggers, bikers, and rollerbladers. The 2.4 mile multiuse trail runs along the abandoned Philadelphia & Western (P&W) right of way. The railway operated from 1911 until the line was abandoned in 1956. Historical signage located along the trail commemorates the railway that the trail now occupies.

The trail connects Sugartown Road to S. Radnor Chester Road and has five other intermediate access points. These access points are located at Gallagher Road, W. Wayne Avenue, Brooke Road, Conestoga Road, and John Cappelli Golf Range. Parking for the trail is located off of the Conestoga Road access. The entire length of the trail is surfaced in asphalt paving.



*Radnor trail receives year round use by cross county skiers during the winter months.*





- Martha Brown Woods - is a Radnor School District owned 12.5 acre parcel located at the end of Browns Lane. The land is undeveloped with mature woodlands and is bordered by residential properties, Route 476, and the P&W right of way. The land is primarily used as passive open space.



Other township parks and open space include

- 5th Ward Park, 10.95 Acres
- Bishop Richard Allen Park, 0.2 Acres
- Cowan Field, 3.0 Acres
- Veterans Park, 1.9 Acres
- Filipone Park, 10.2 Acres
- Bo Connor Park, 6.8 Acres
- Chew Tract, 9.84 Acres
- Young Tract, 3.0 Acres
- Clem Macrone Park, 9.4 Acres
- Unkefer Park, 1.5 Acres
- West Wayne Preserve, 6.4 Acres
- Friends of Radnor Trail Park, 3.1 Acres
- Emlen Tunnell Park, 5.0 Acres
- John L. Cappelli Memorial Driving Range, 22.5 Acres
- Odorisio Park, 25 Acres

The Radnor School District also owns additional park and open space including Radnor Memorial Park, Radnor Nature Park, and N. Wayne Field.



## Schools

Safe routes to township schools and institutions are an important part of the Open Space and Greenway Network Plan. The Township has an abundance of schools and institutions within its borders. Radnor Township School District property includes Radnor High School, located at the prominent intersection of Route 30 and Route 476, Radnor Middle School, Radnor Elementary School, Wayne Elementary School, and Ithan Elementary School. Other institutions within Radnor Township include Villanova University, Eastern University, Cabrini College, Valley Forge Military, Jack M. Barrack Hebrew Academy, Archbishop Carroll, The Agnes Irwin School, Hilltop School, Presbyterian Children's Village, Sacred Heart, St. Aloysius, St. Edmunds, and Academy of Notre Dame de Namur. Many of these schools and Institutions have associated open space and local trails that were analyzed for potential connections within the network. Several of these schools and institutions include Villanova University, Cabrini College, Eastern University, Archbishop Carroll, Radnor Elementary, and Radnor High School.

The trail and greenway network discussed later in this report proposes to connect to many of these schools including Radnor High School, Radnor Middle School, Radnor Elementary, Wayne Elementary, Archbishop Carroll, Agnes Irwin, Hilltop School, Sacred Heart, St. Aloysius, Villanova University, Valley Forge Military, Cabrini College, Eastern University, and The American College.

## Commercial, Retail, and Employment Centers

Major commercial, retail, and employment centers are primarily located around the Lancaster Avenue corridor. Notable destinations include Garrett Hill, Radnor Corporate Center, St. David's Square Shopping Center, Radnor Financial Center, Wayne business district, and the Strafford area. Schools and institutions are also major employment centers. Connections to these locations are important as they connect the community to places of work and daily necessities.



*Radnor Township Building*



## Homeowner's Association Lands

Private open space owned by Homeowner's Associations are other potential destinations for the greenway and trail network. This plan does not propose to utilize any private HOA lands for trails, however the plan provides opportunities residential developments to connect to the overall trail network through their private open space. Please refer to the Land Use Map found later in this chapter for HOA open space locations.



## Other Township Destinations

Other prominent destinations include the Radnor Township Municipal building on Iven Avenue, Radnor Valley Country Club, Overbrook Golf Club, Conestoga Swim Club, Martins Dam Swim Club, and Chanticleer Gardens on Church Road. Additionally, mass transit stations are important destinations for creating linkages to other municipalities and destinations outside of Radnor Township.

## Opportunities and Constraints

Because Radnor Township is almost completely developed, opportunities for new open space acquisition and off road trails are limited. Historic bridges throughout the Township create restrictions for on-road routes due to an inability to easily widen them. The Township does however, maintain a strong existing park and open space system of over 400 acres and the Radnor Trail serves as a “backbone” for future trail development. Some linkages to these existing parks and open space will be challenging due to the dense nature of existing development, however some reasonable opportunities exist. With a multitude of schools and institutions within the Township, there is an opportunity for partnerships that could allow trail development through school owned open space providing a benefit to both the institutions and the Township.

While Route 476 presents an obstacle for trail crossings, the Township is well served by mass transit and there are several opportunities to link rail stations and bus stops to the greenway and open space network. Furthermore, other planning studies have developed concepts for regional trails that could connect the existing Radnor Trail system to the regional “Circuit” trail system.





With 19 streams in the Township, efforts should be made to not only preserve but enhance existing riparian buffers and woodlands. These corridors provide opportunities for recreational greenways and no access greenways that improve water quality and wildlife habitats. Where riparian buffers exist on private property, maintenance and vegetation management standards will be needed to preserve the quality of these features and provide enhancements where needed.

The existing Ardrossan Tract (above) is an important piece of undeveloped land within the Township. While future development of portions of this property is anticipated, Radnor Township has recently agreed to an \$11.6 million purchase of 71 acres of the Ardrossan Tract to be used for trails, wetland and woodland preservation, and protection of the viewshed. The purchased lands will include the 16.3 acre Quarry Tract and the 27.04 acre Rye Field located at the intersection of Darby Paoli Road and Newtown Road. Also to be purchased is the 27.65 acre Wheeler Field

located on Darby Paoli Road. A preliminary trail plan for these three parcels has been produced under a separate study. The proposed plan includes a combination of gravel trails, macadam trails, and mowed trails around the perimeter of these parcels as well as fencing and two pedestrian crossings. The Township has also received a grant for additional planning and design of these trails. Efforts should be made by the Township to link these future trails to the trail network proposed in this report.

Efforts should also be made by the Township to recommend that interior and perimeter trails be part of the future development plans for the remainder of the Ardrossan Tract not owned by the Township. These trails should be coordinated with the design of future trails currently being planned on the Township parcels. The Township should also recommend that a perimeter viewshed study and analysis be performed as part of the Ardrossan Tract development to ensure that the appearance of the future development does not conflict with the surrounding uses.







# 3

## GREENWAYS & OPEN SPACE NETWORK PLAN & RECOMMENDATIONS



### Trail Types – Descriptions

#### Bikeway Classifications

The following are nationally recognized bikeway classifications as per the American Association of State Highway Transportation Officials (AASHTO). These classifications are specific to bicycle transportation routes and do not include other pedestrian facilities such as sidewalks and off-road hiking trails which are described later in this chapter.

**Class 1 Bikeways** are pathways completely separated from a roadway. They are also known as ‘off-road trails’, ‘greenways’, ‘shared use paths’, and/or ‘multi-use paths’. The AASHTO recommended width for multi-use paths is 10 feet with 8 feet being the minimum recommended width for a two way trail.

**Class 2 Bikeways** are designated bicycle lanes within a roadway for exclusive use of the cyclist and contains special pavement markings and signage. Bike lanes are one-way in the direction of motor vehicle traffic. The standard width for a bike lane is five (5) feet.





**Class 3 Bikeways** are also known as ‘Bike Routes’. These offer no special accommodations for the cyclist within the road right-of-way. Signs such as “Bicycles May Use Full Lane” or “share the road” are used to define the route and the cyclist shares the roadway with vehicular traffic. Class 3 bikeways sometimes include improved shoulders for additional use by bicycles. PennDOT is considering a 3 foot wide improved shoulder as the minimum width usable for cyclists according to bicycle dimensions in the AASHTO Bike Guide. For shoulders less than 3 feet wide it is assumed that bicyclists will be in the vehicular travel lane.

## Multi-Use Trail (Off-Road)

The trail type that provides for the largest cross section of trail users is a Multi-Use Trail, also known as Class 1 Bikeways (as described above). The following paragraph provides a nationally recognized definition of a Multi-Use Trail and its typical design criteria.

“The American Association of State Highway and Transportation Officials (AASHTO) defines a Multi-Use Trail or Shared Use Path as: a bikeway physically separated from motorized vehicular traffic by an open space or barrier and either within the highway right-of-way or within an





independent right-of-way. Shared use paths may also be used by pedestrians, skaters, wheelchair users, joggers, and other non-motorized users.”

As the definition suggests, this trail type provides for a variety of trail users, depending on the trail surface paving and available right-of-way width. Another general trait of multi-use trails is universal accessibility for those with disabilities. This is due to gentle slopes, adequate widths, and smooth surfaces. Parking areas for multi-use trail segments should provide facility access in accordance with the Federal Americans with Disabilities Act (ADA) guidelines to provide for trail users with disabilities.

Both the Rails-to-Trails Conservancy (RTC) and AASHTO recommend a multi-use trail to be ten feet (10') wide, with the minimum width for a two-way trail at eight feet (8'), and for a one-way trail at five feet (5'). Depending on the user volume, widths of twelve feet (12') or fourteen feet (14') are recommended to avoid potential conflicts. An additional two-foot (2') shoulder is recommended on either side of the trail surface to provide clearance from trees, poles, walls, fences or any other lateral obstruction. Site conditions may warrant additional safety measures such as fencing and increased shoulder widths.







## Hiking Trails

A hiking trail may be defined as a recreational trail that does not meet the design requirements of a multi-use trail such as width, slopes & surfacing. An advantage of hiking trails is that they can allow for access and recreational use of the land quickly at a relatively low cost. A disadvantage of hiking trails is that they generally limit the number and type of trail users due to their minimal width, steeper slopes, and softer surfaces, and generally do not meet ADA requirements.

## Trail Surface Types

### Asphalt

Asphalt surfaces provide for the widest variety of trail users including bicyclist, walkers, joggers, wheelchair users, and in-line skaters. Initial installation costs are relatively high compared to other trail surface types, however long term maintenance costs will remain lower when compared to other surfaces if properly installed and maintained. Asphalt trails are preferred in flood prone areas.

### Crushed Limestone

Crushed limestone surfaces can accommodate all trail user types with the exception of in-line skaters. Initial installation costs for this trail surface are relatively low, however long term maintenance costs increase due this surface's higher susceptibility to erosion, especially if not properly installed with swales and cross drains. A crushed limestone surface can also serve as base material for an asphalt surface if trail use increases or funds become available for a surfacing upgrade. Crushed limestone surfaces should be avoided in flood prone areas or steep slopes. If their gradients fall within limits, these surfaces can be ADA accessible.



## Compact Earth

Compact earth surfaces are the least expensive to install, however they limit the types and number of trail users. Compact earthen surfaces are primarily used for hiking only or horse trails adjacent to multi-use trails that receive significantly less trail user volume. Hiking trails may be considered as an alternate means to reach the more environmentally sensitive areas found within the floodplain area to provide routes to a stream for environmental education, bird watching, or fishing access.

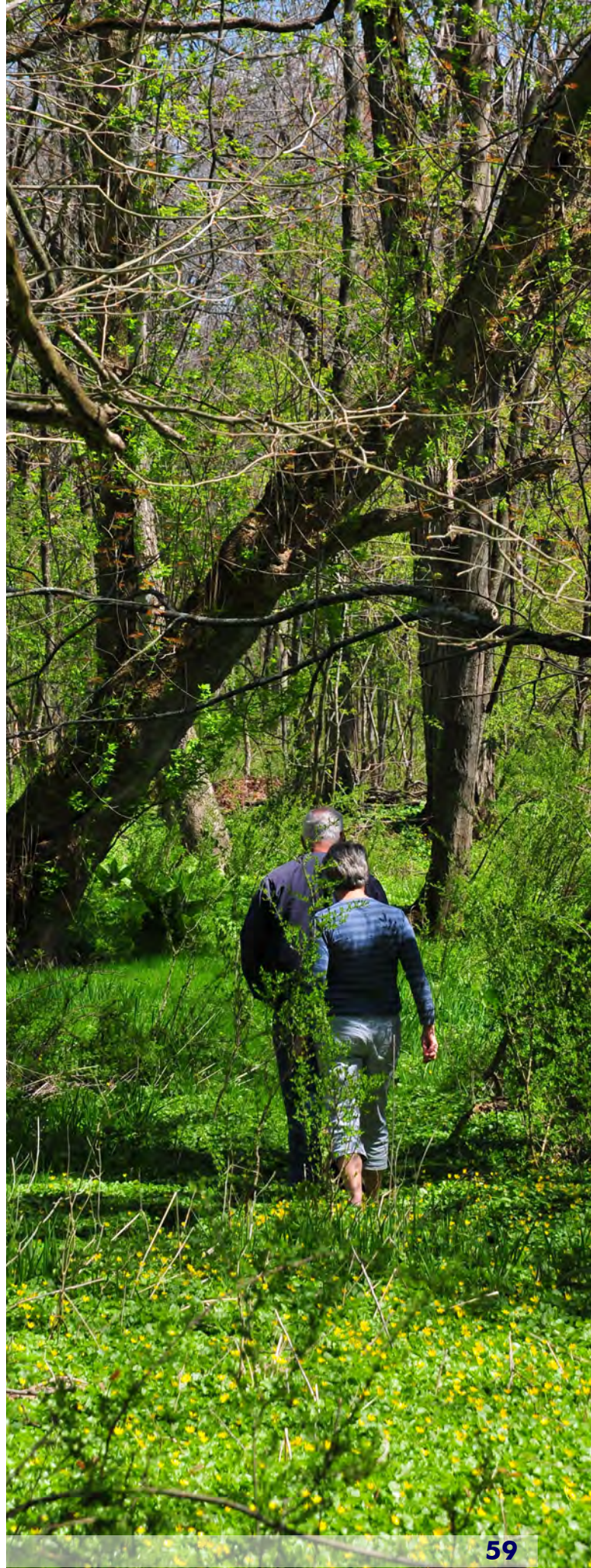
Trails and many other recreational facilities are commonly developed within floodplains to take advantage of the relatively flat land. These trails may require additional maintenance to remove debris deposited by a flood event. If a trail is placed where flood waters will have a significant erosion effect, asphalt surfaces are recommended. Trails should generally not be located within a floodway, which is where the most significant flood damage occurs.

### Sources:

Guide For Development of Bicycle Facilities, American Association of State Highway and Transportation Officials (AASHTO), 1999;

Trails for the Twenty-First Century: Planning, Design, and Management Manual for Multi-Use Trails, Rails to Trails Conservancy (RTC), 1993.

Statewide Bicycle & Pedestrian Master Plan, Bicycling & Walking in Pennsylvania – A Contract for the 21st Century: Bicycle Guidelines, Commonwealth of Pennsylvania Department of Transportation











## Bicyclist Types

The American Association of State Highway and Transportation Officials (AASHTO), and the Pennsylvania Department of Transportation (PennDOT) both classify bicyclists into one of the following three groups:

**Group A – Advanced Bicyclists** – These riders generally use their bicycles as they would a motor vehicle. They are riding for transportation, convenience, and speed and want direct access to destinations with a minimum of detour or delay. They are typically comfortable riding with vehicular traffic. They prefer a sufficient operating space on the travel way or shoulder to eliminate the need for either themselves or a passing motor vehicle to shift position.

**Group B – Basic Bicyclists** – Less confident adult riders may also be using their bicycles for transportation purposes, e.g., to get to the store or to visit friends, but prefer to avoid roads with fast and busy motor vehicle

traffic unless there is ample roadway width to allow easy overtaking by faster motor vehicles. Thus, basic riders are comfortable riding on neighborhood streets and shared use paths and prefer designated facilities such as bike lanes or wide shoulder lanes on busier streets.

**Group C – Child Cyclists** – Riding on their own or with their parents, child cyclists may not travel as fast as their adult counterparts but still require access to key destinations in their community, such as schools, convenience stores and recreational facilities. Residential streets with low motor vehicle speeds, linked with shared use paths and busier streets with well-defined pavement markings between bicycles and motor vehicles, can accommodate children without encouraging them to ride in the travel lane of major arterials.

It is estimated that only 5% of bicyclists overall would qualify as Group A or Advanced Bicyclists, therefore 95% fall into either Group B or C. (Source: AASHTO - Guide For Development of Bicycle Facilities)



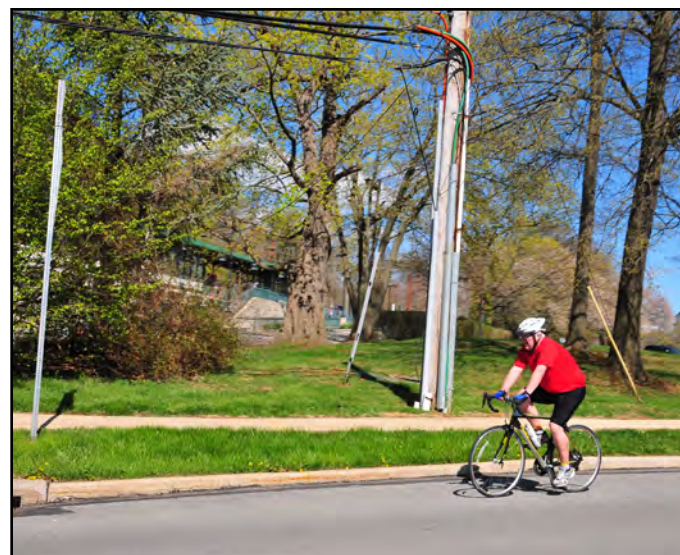
# Proposed Trail Connections

Through the existing conditions analysis, public participation process, and discussions with the project subcommittee, it became apparent that the township has a multitude of important community destinations including but not limited to parks, open space, schools, golf courses, swim clubs, commercial hubs, and employment centers. The Township, however, lacks trail and greenway infrastructure to connect them to the community through non-motorized transportation. Pedestrian sidewalks are also lacking throughout much of the Township further limiting the ability for recreational opportunities via safe pedestrian connections.

This plan proposes to enhance the links between communities and destinations and create new links where they do not currently exist. These trail and bicycle links will establish a network that connects the community to destinations within the Township and also to destinations and trails in adjacent municipalities and public transit stations that provide access to other systems at the regional level. In total, the proposed routes will add approximately 28 miles of trails within the Township.

## On-Road Routes (Bikeways)

These routes are intended to provide safe local connections to Township destinations and easily accessible recreational opportunities. These on-road routes include a combination of class 2 bikeways (designated bicycle lanes) and class 3 bikeways ("share the road"/"bicycles may use full lane" bicycle routes).





Class 2 bicycle lanes are proposed along routes of high anticipated use and also where determined to be feasible based upon a review of existing right of way widths and site conditions. Class 3 share the road routes propose an improved shoulder (3 foot wide minimum) with appropriate signage and striping to clearly indicate a shared road situation. These routes are proposed in areas where existing right of way widths or existing site conditions do not allow for five foot bicycle lanes. These routes are intended to be used by class B and C cyclists and provide important cross township connections and connections to adjacent municipalities.

Each of these proposed segments was estimated for costs as an on-road route. Construction requirements for the on-road improvements include asphalt shoulder improvements estimated at \$17 per square yard. Also included in the estimations are bikeway striping, wayfinding and safety signage. Several routes require additional costs such as small pedestrian bridges, utility pole relocations, and additional earthwork for potential retaining walls.

## Off-Road Routes (Multiuse Trails)

These connections are proposed to provide a safe multiuse recreational and transportation opportunities within the Township. These proposed multiuse routes are separated from vehicular traffic and are intended for pedestrians and bicyclists of all skill levels. The proposed routes also extend the Radnor Trail, connect to mass transit, and link important commercial and employment centers within the Township.

These multiuse trails are proposed to be 10 feet wide with an asphalt surface treatment. Boardwalk trails have also been proposed in some instances where wetlands







currently exist and two small pedestrian bridges are proposed to cross existing streams. Several pedestrian bridges are proposed to cross existing obstacles such as small streams and rail lines and to bypass historic bridges that cannot be easily widened.

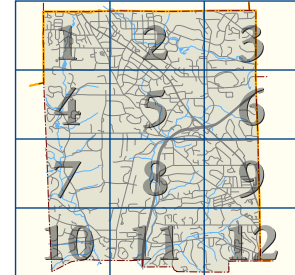
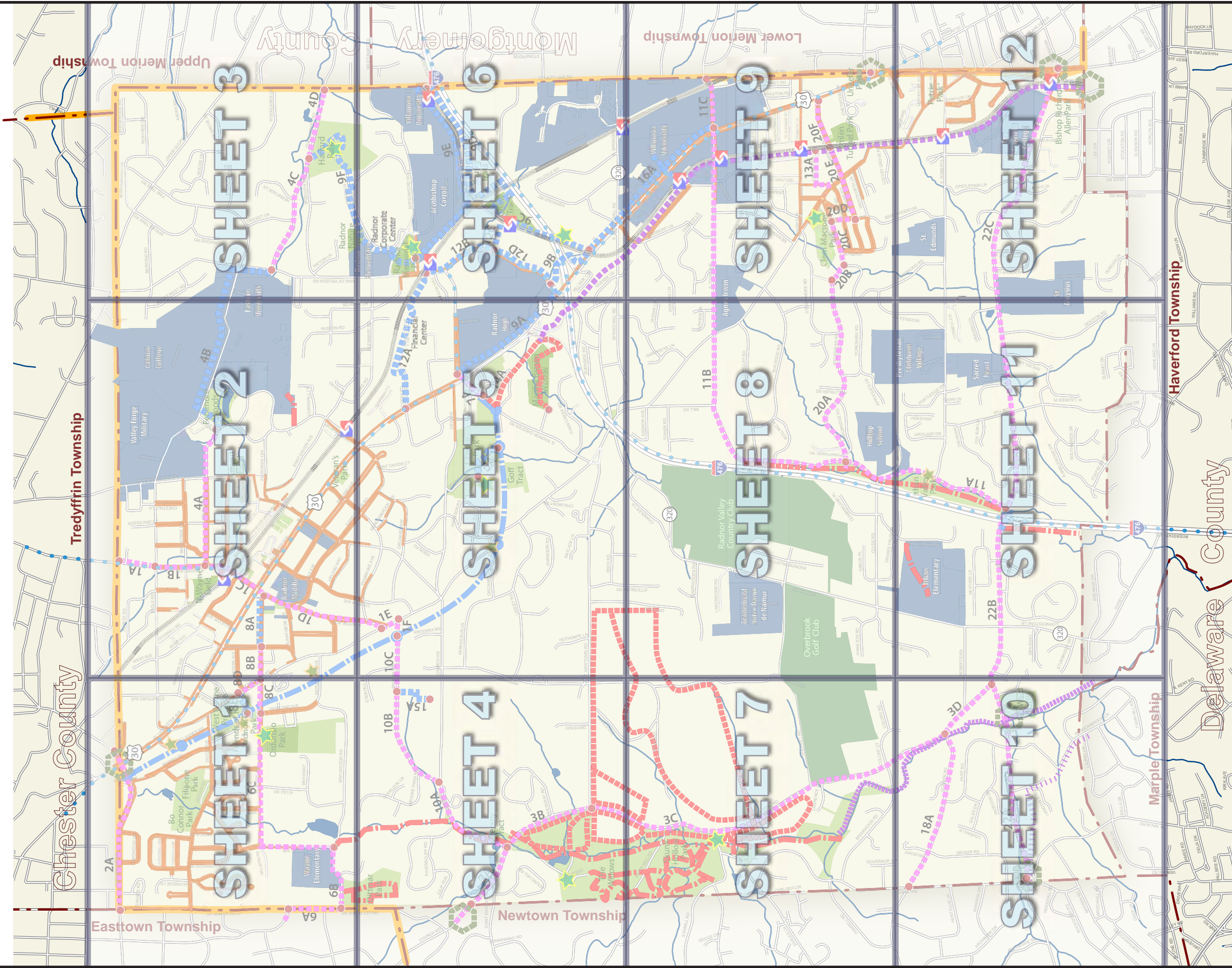
Construction requirements for these multiuse trail segments include site preparation / vegetation clearing, earthwork, and drainage improvements. The total estimated cost for these segments is \$100 per linear foot for asphalt surfacing and associated improvements. Wayfinding signage and safety signage is also proposed along these routes and bollards will be needed in certain locations to prevent unauthorized motorized vehicles from accessing the trails.

Proposed trail improvements are shown on the Trails Map at the end of this section. Routes are identified on the map by route numbers with even numbers indicating an east-west trail alignment and odd numbers indicating a north-south trail alignment. The routes are also divided into segments for more precise identification and cost estimation purposes. Descriptions of the proposed trail network are as follows:

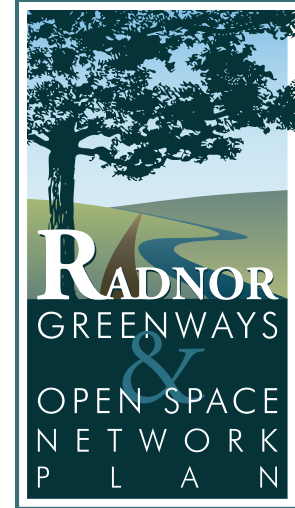
## GIS Mapping

Trail base mapping for the project was created using a Geographic Information System (GIS) program. This GIS program is used as a data management and graphic tool to create the trail mapping exhibits; to calculate accurate lengths for trail segments; and, to identify impacted land parcels. Base data used in the formulation of this report was provided by Radnor Township, the Delaware County Regional Planning Commission (DVRPC), and by the Pennsylvania Spatial Data Access (PASDA) website.

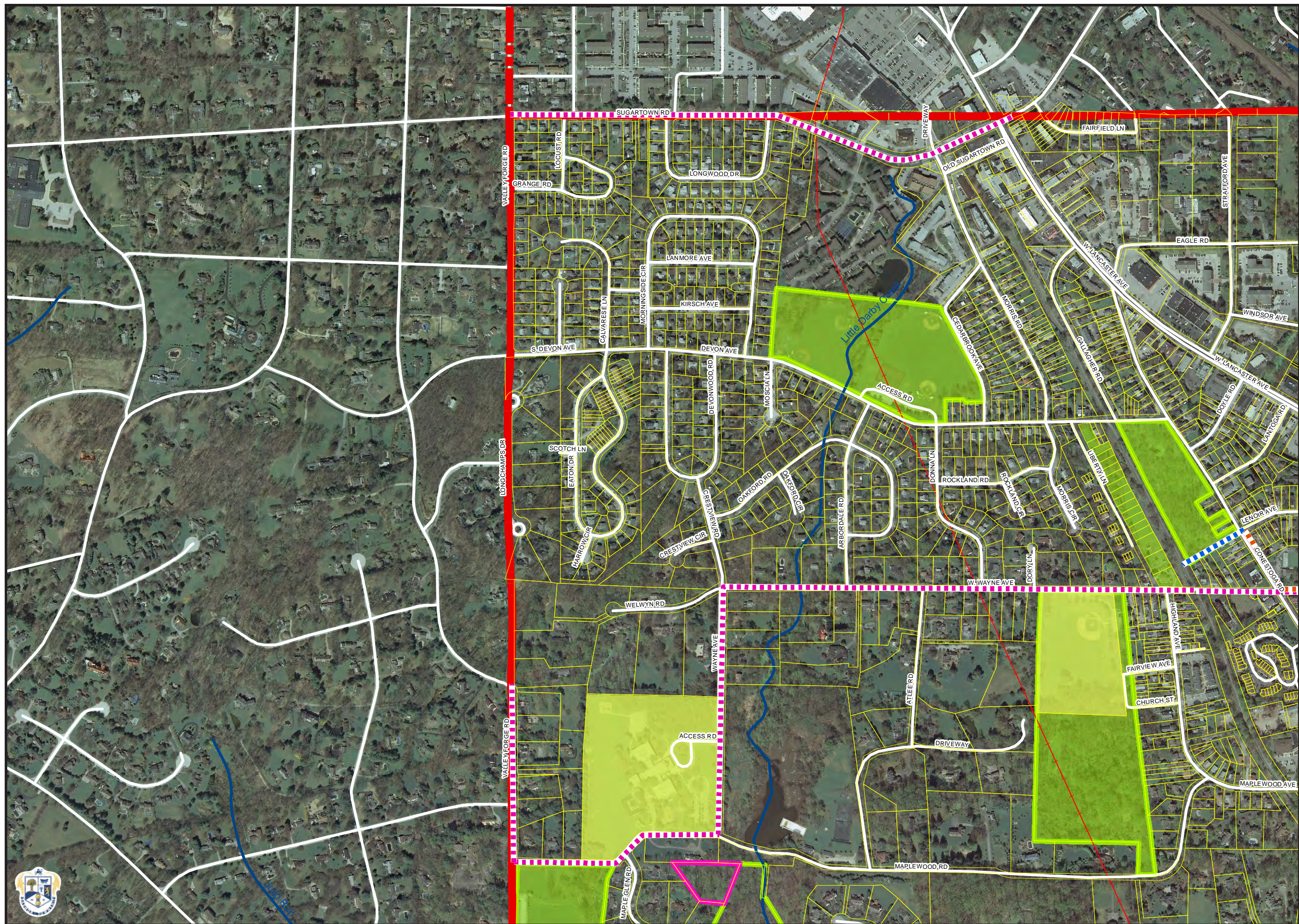




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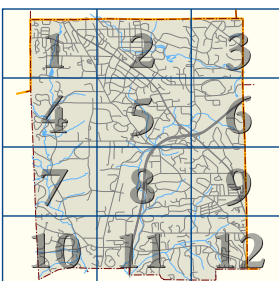
#### Proposed Routes

- Hiking Trail
- Multiuse Trail
- On Road Bike
- Previously Planned

- Parcel
- Municipal Boundry
- County Boundry
- Stream
- Floodplain
- Radnor School District
- Radnor School Dist & Twp
- Institutional

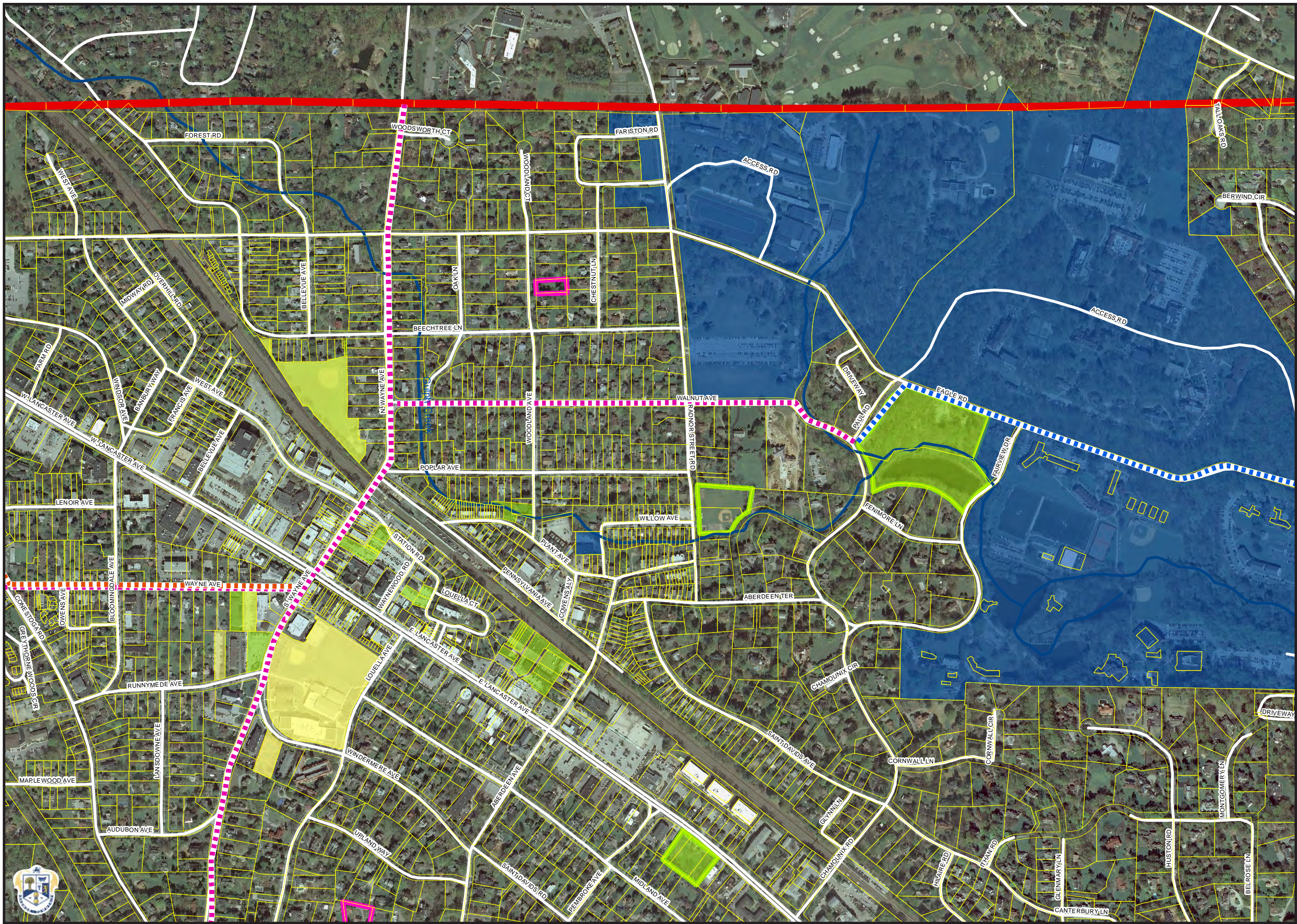
#### Designated Open Space

- Federal
- State
- County
- Municipal
- Nonprofit



**MAP 1**





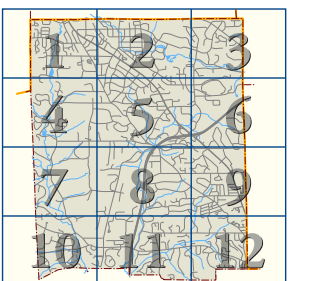
#### Proposed Routes

- Hiking Trail
- Multiuse Trail
- On Road Bike
- Previously Planned

- Parcel
- Municipal Boundry
- County Boundry
- Stream
- Floodplain
- Radnor School District
- Radnor School Dist & Twp
- Institutional

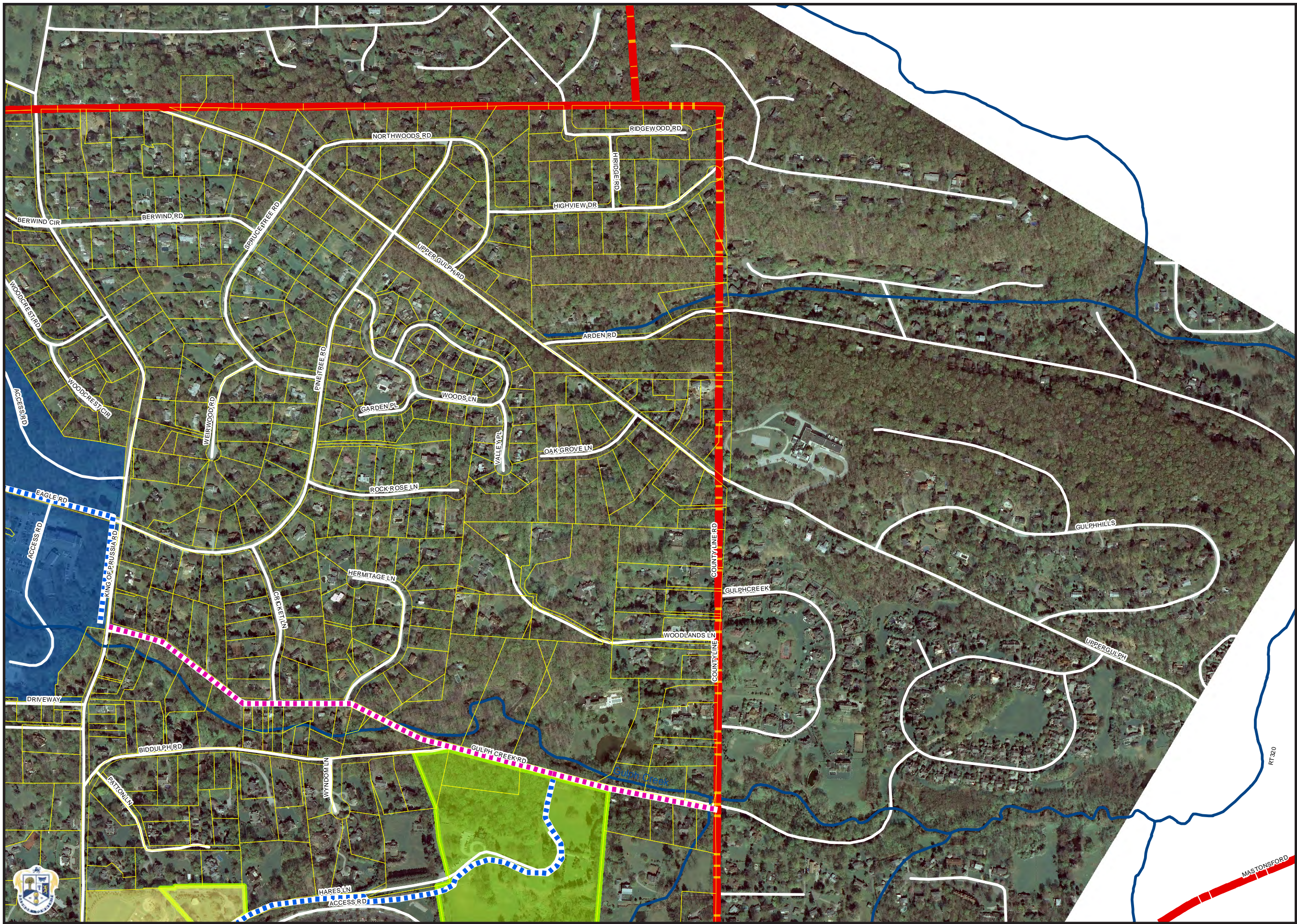
#### Designated Open Space

- Federal
- State
- County
- Municipal
- Nonprofit



**MAP 2**

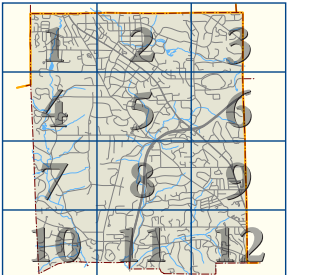




- Proposed Routes**
- Orange dashed line: Hiking Trail
  - Blue dashed line: Multiuse Trail
  - Pink dashed line: On Road Bike
  - Red dashed line: Previously Planned

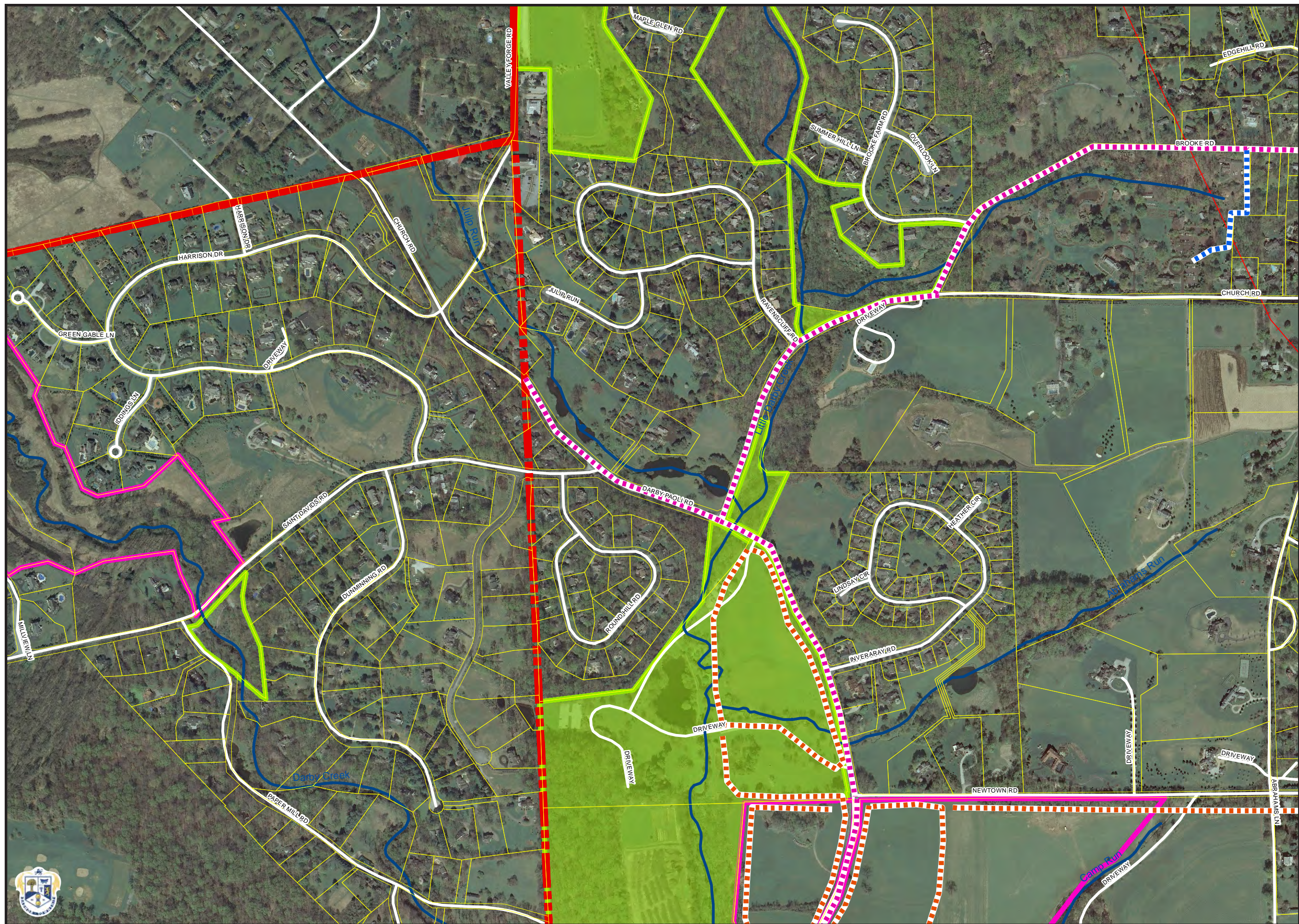
- Yellow outline: Parcel
- Red outline: Municipal Boundry
- Orange outline: County Boundry
- Blue line: Stream
- Light blue outline: Floodplain
- Yellow outline: Radnor School District
- Green outline: Radnor School Dist & Twp
- Dark blue outline: Institutional

- Designated Open Space**
- Green outline: Federal
  - Light green outline: State
  - Yellow outline: County
  - Light green outline: Municipal
  - Pink outline: Nonprofit



**MAP 3**

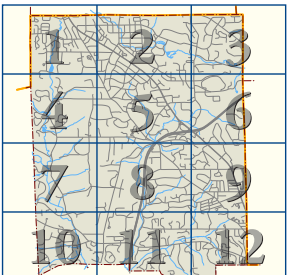




- Proposed Routes**
- Hiking Trail
  - Multiuse Trail
  - On Road Bike
  - Previously Planned

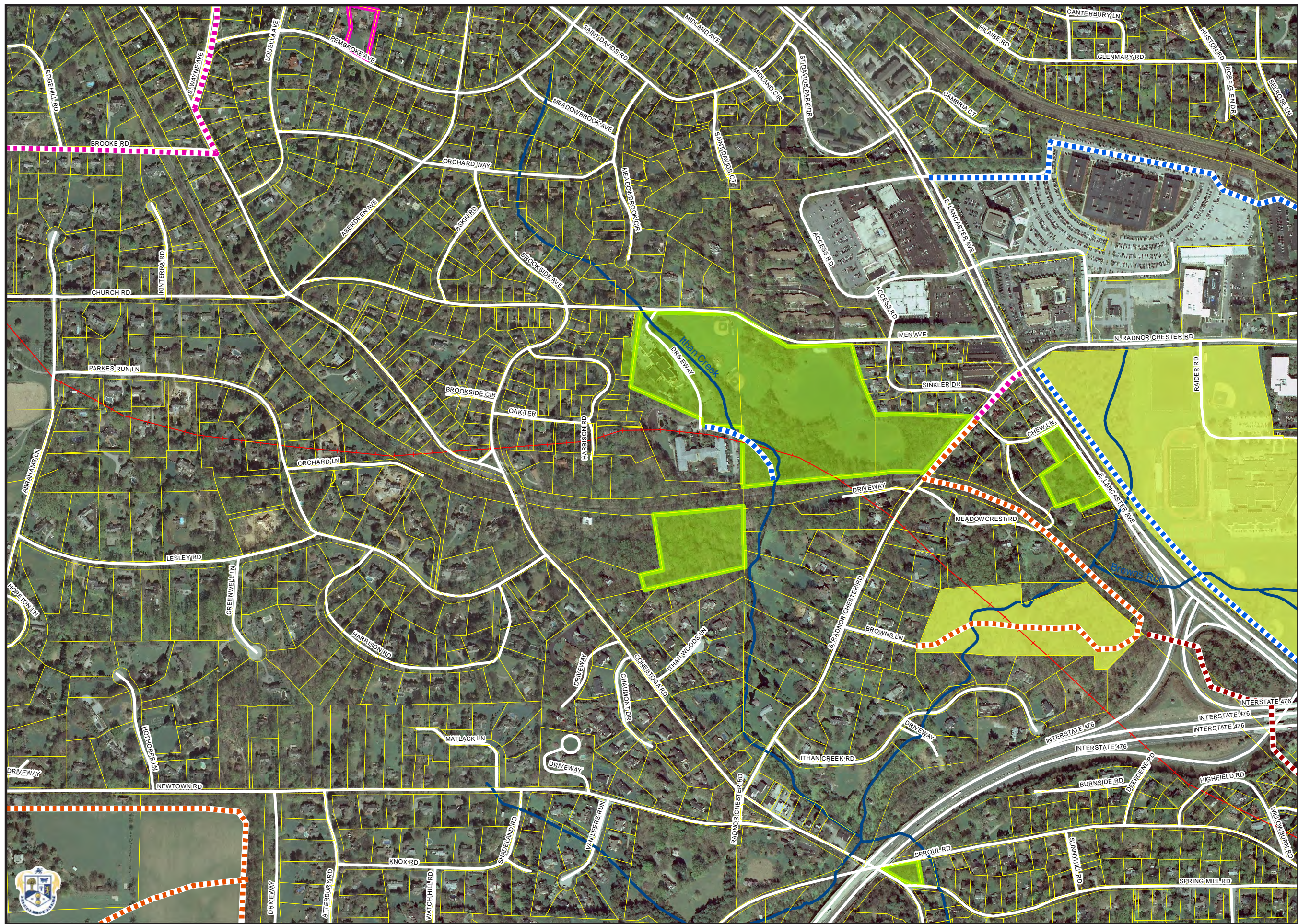
- Parcel
- Municipal Boundry
- County Boundry
- Stream
- Floodplain
- Radnor School District
- Radnor School Dist & Twp
- Institutional

- Designated Open Space**
- Federal
  - State
  - County
  - Municipal
  - Nonprofit



**MAP 4**

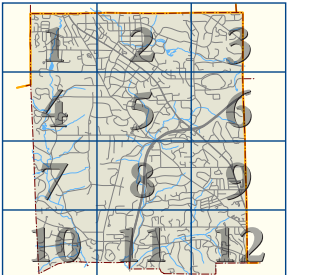




- Proposed Routes**
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  - Blue dashed line: Multiuse Trail
  - Pink dashed line: On Road Bike
  - Red dashed line: Previously Planned

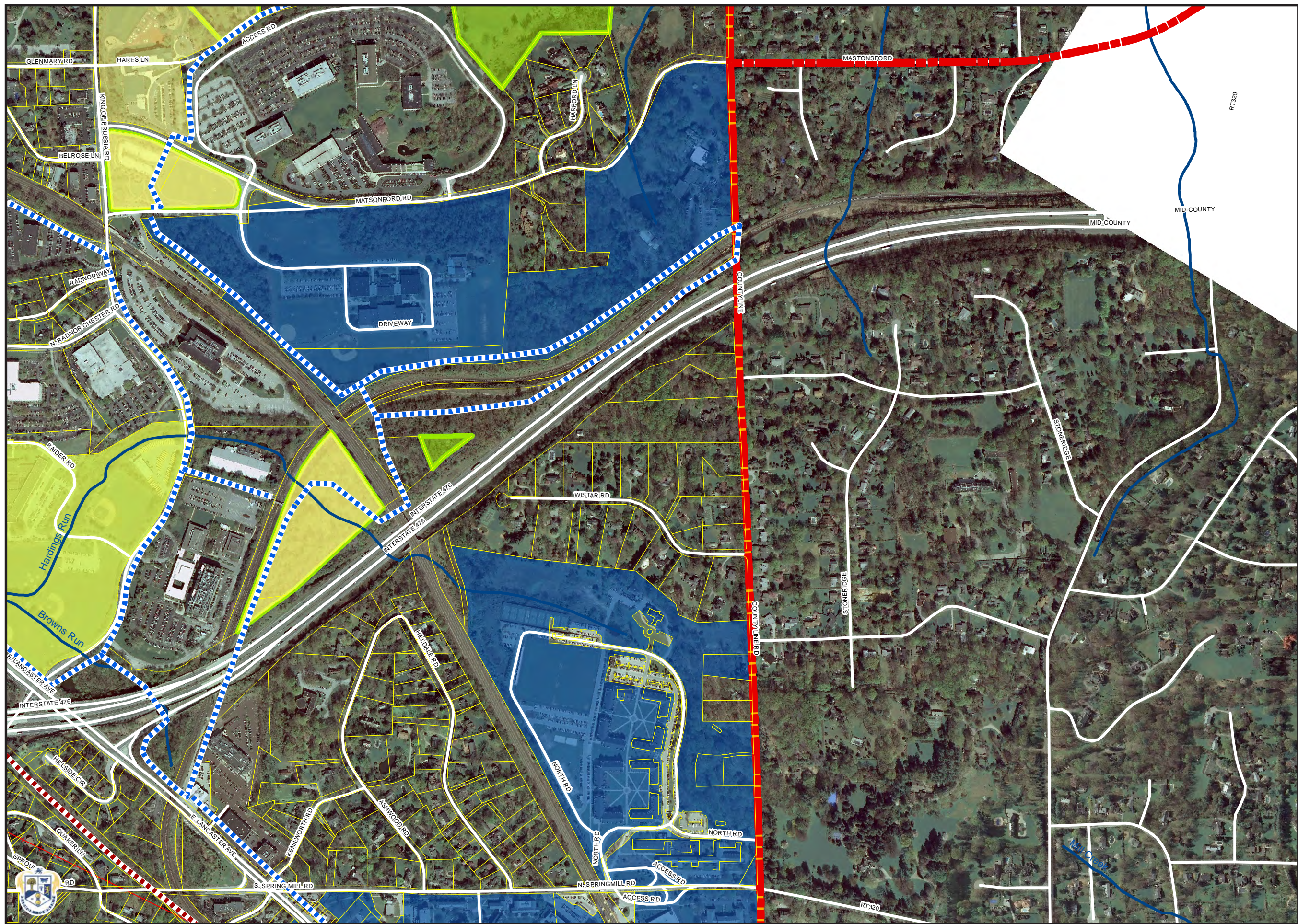
- Yellow outline: Parcel
- Red outline: Municipal Boundry
- Orange outline: County Boundry
- Blue line: Stream
- Light blue outline: Floodplain
- Yellow outline: Radnor School District
- Green outline: Radnor School Dist & Twp
- Dark blue outline: Institutional

- Designated Open Space**
- Green outline: Federal
  - Light green outline: State
  - Yellow-green outline: County
  - Green outline: Municipal
  - Pink outline: Nonprofit



**MAP 5**





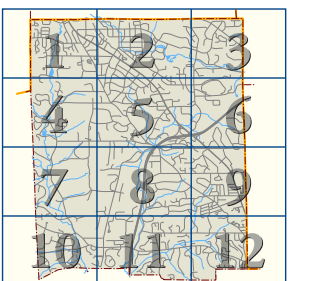
#### Proposed Routes

- Hiking Trail
- Multiuse Trail
- On Road Bike
- Previously Planned

- Parcel
- Municipal Boundry
- County Boundry
- Stream
- Floodplain
- Radnor School District
- Radnor School Dist & Twp
- Institutional

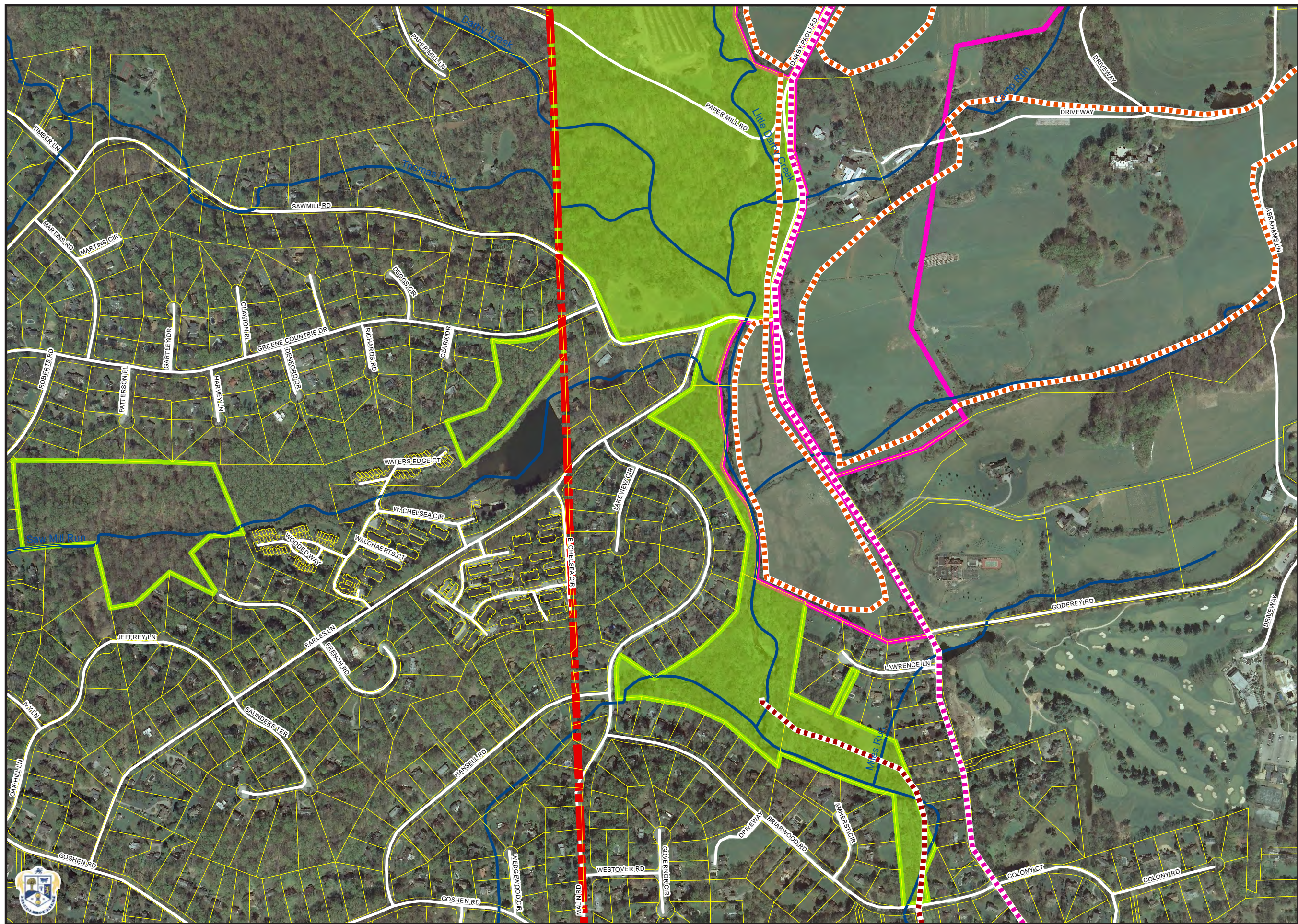
#### Designated Open Space

- Federal
- State
- County
- Municipal
- Nonprofit



**MAP 6**

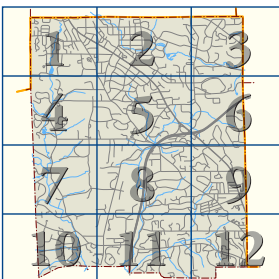




- Proposed Routes**
- Hiking Trail
  - Multiuse Trail
  - On Road Bike
  - Previously Planned

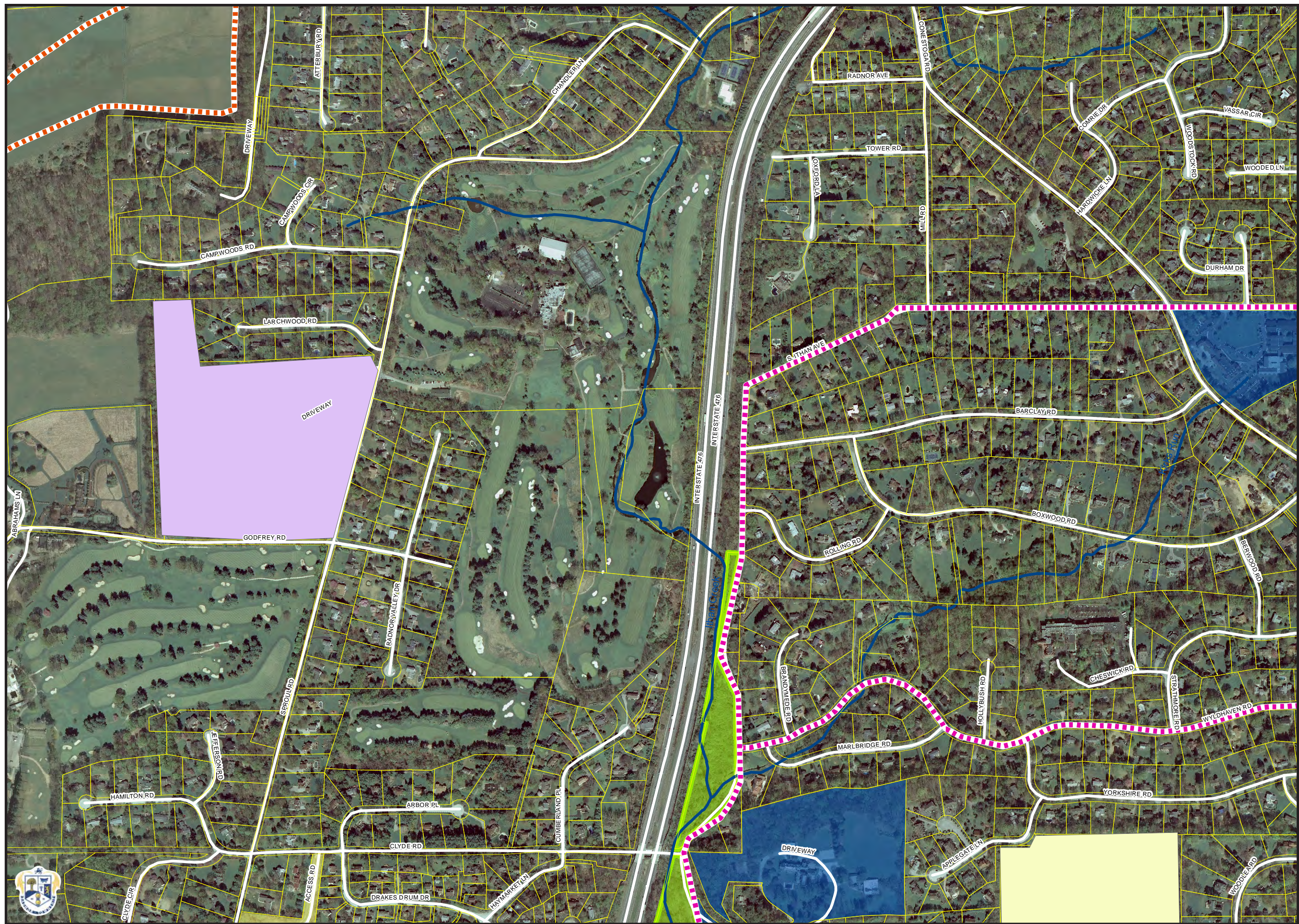
- Parcel
- Municipal Boundry
- County Boundry
- Stream
- Floodplain
- Radnor School District
- Radnor School Dist & Twp
- Institutional

- Designated Open Space**
- Federal
  - State
  - County
  - Municipal
  - Nonprofit



**MAP 7**





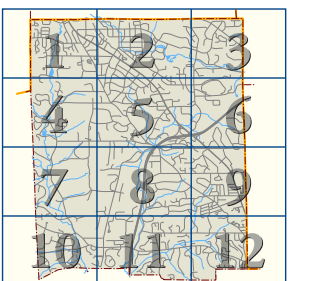
#### Proposed Routes

- Hiking Trail
- Multiuse Trail
- On Road Bike
- Previously Planned

- Parcel
- Municipal Boundry
- County Boundry
- Stream
- Floodplain
- Radnor School District
- Radnor School Dist & Twp
- Institutional

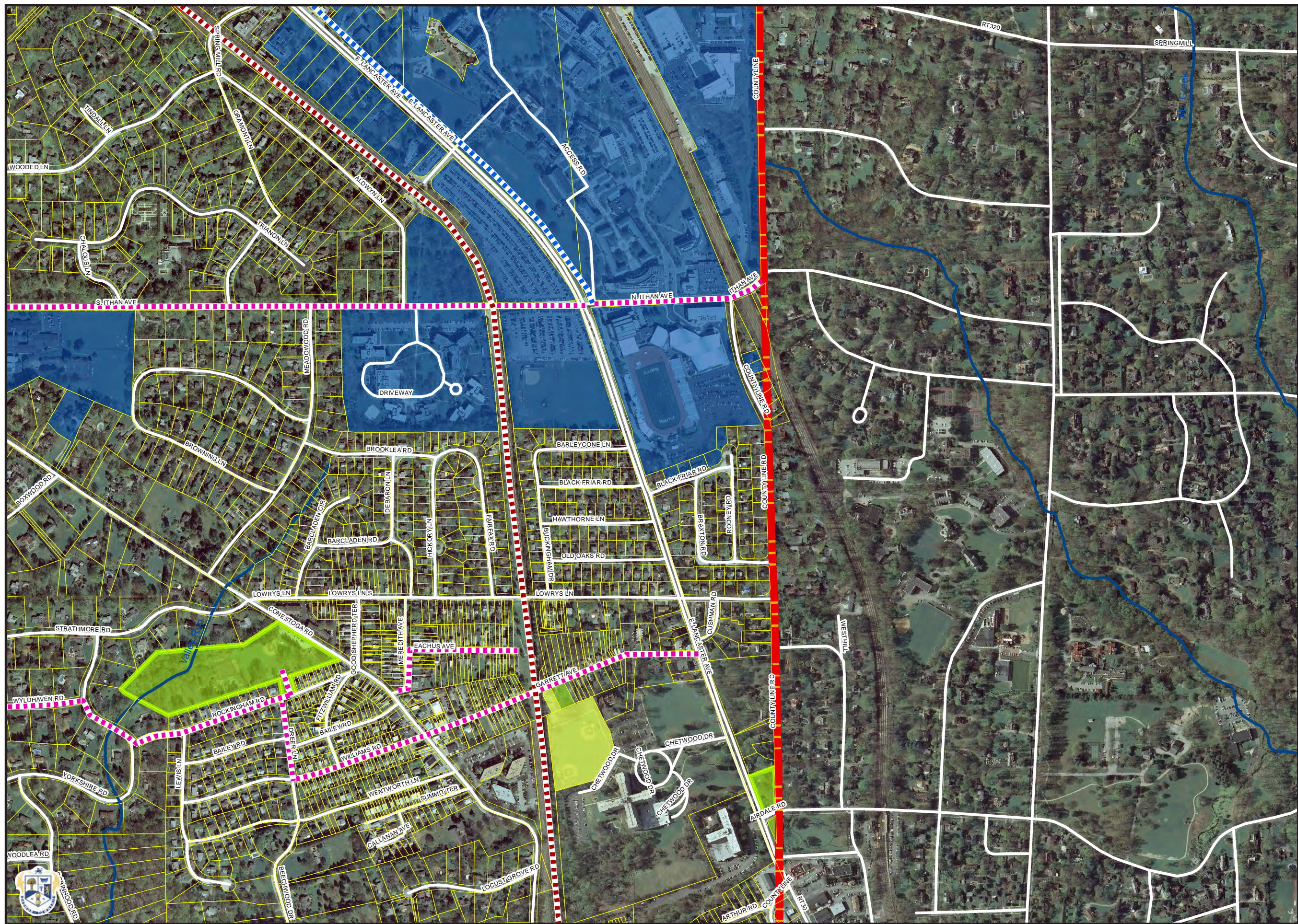
#### Designated Open Space

- Federal
- State
- County
- Municipal
- Nonprofit



**MAP 8**

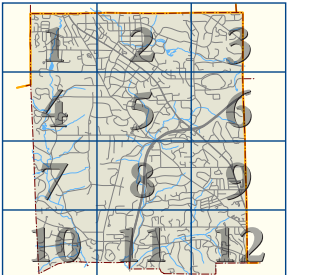




- Proposed Routes**
- Orange dashed line: Hiking Trail
  - Blue dashed line: Multiuse Trail
  - Pink dashed line: On Road Bike
  - Red dashed line: Previously Planned

- Yellow outline: Parcel
- Red solid line: Municipal Boundry
- Orange solid line: County Boundry
- Blue solid line: Stream
- Light green solid line: Floodplain
- Yellow solid line: Radnor School District
- Light green solid line: Radnor School Dist & Twp
- Dark green solid line: Institutional

- Designated Open Space**
- Dark green outline: Federal
  - Light green outline: State
  - Yellow outline: County
  - Light green outline: Municipal
  - Pink outline: Nonprofit

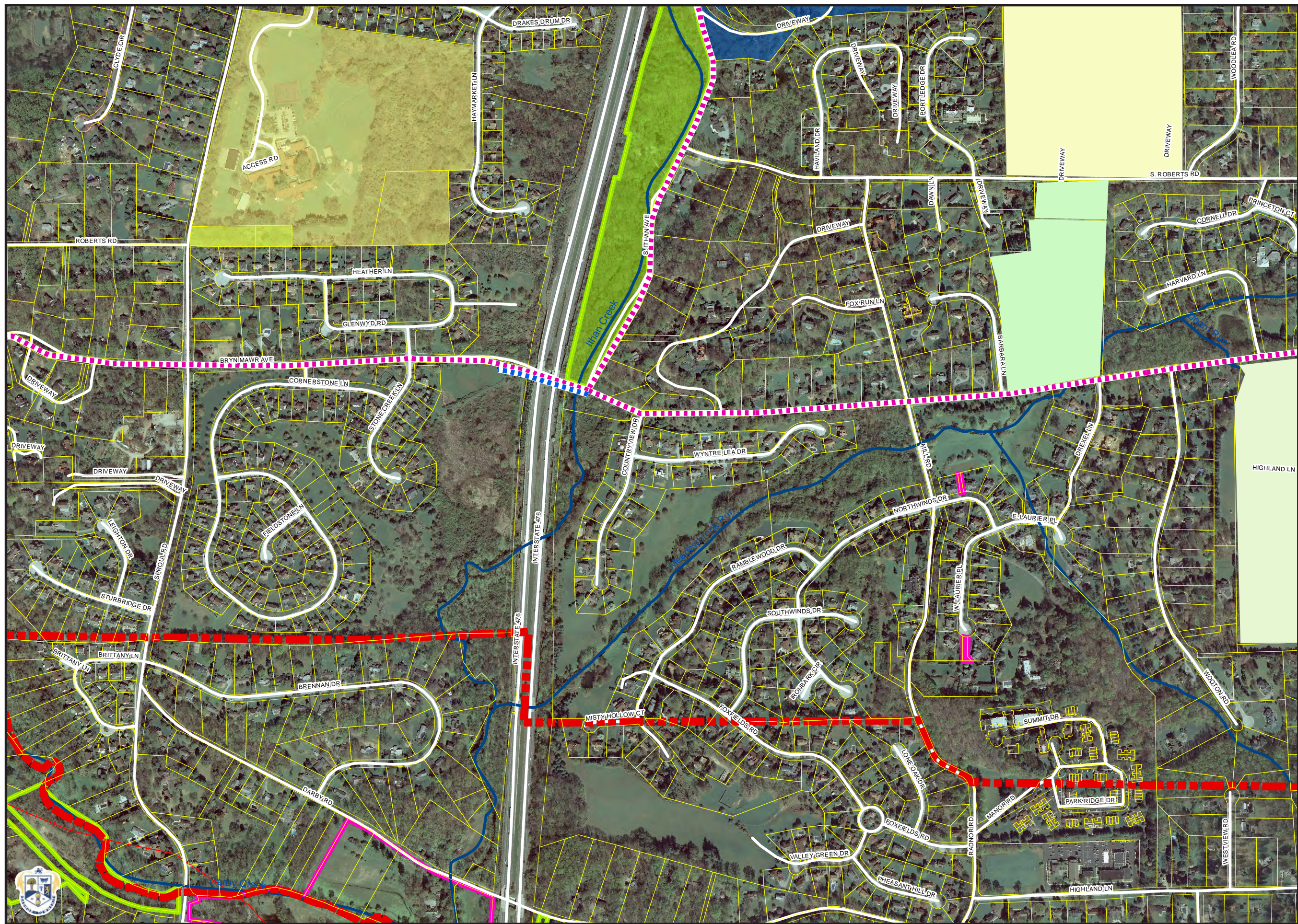


**MAP 9**









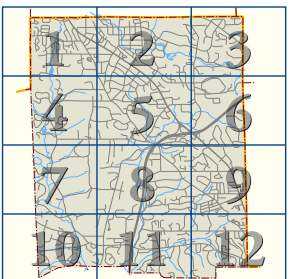
#### Proposed Routes

- Hiking Trail
- Multiuse Trail
- On Road Bike
- Previously Planned

- Parcel
- Municipal Boundry
- County Boundry
- Stream
- Floodplain
- Radnor School District
- Radnor School Dist & Twp
- Institutional

#### Designated Open Space

- Federal
- State
- County
- Municipal
- Nonprofit

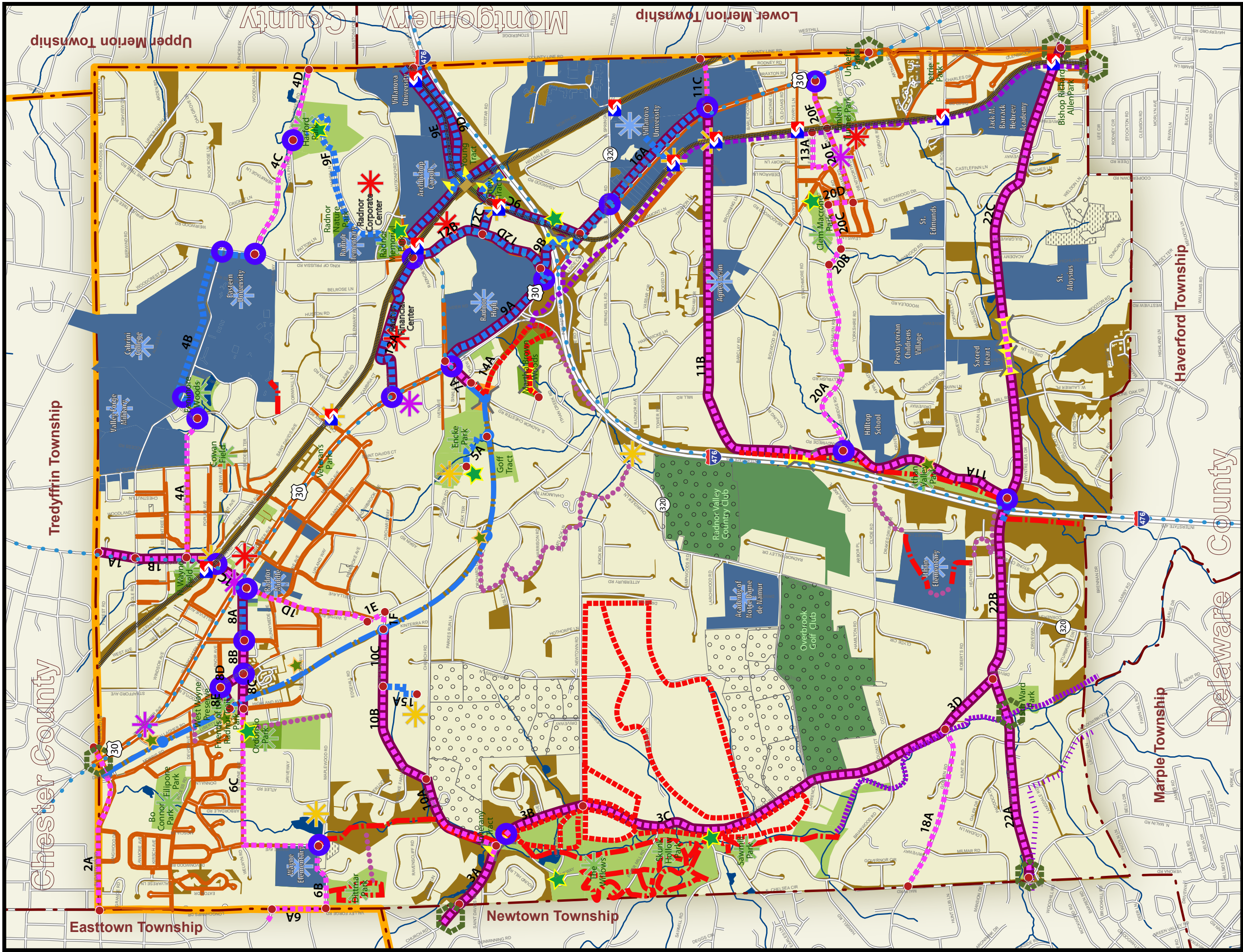



**MAP 11**











# TRAILS MAP

## Greenways & Open Space Network Plan

for Radnor Township

**Proposed Trails**

- Hiking/Walking
- Multiuse
- On road bike
- Priority Route
- Proposed Bridge
- Proposed Underpass
- Potential Improvement
- Other Planned Township Trail Connections

**Existing Trails**

- Hiking/Walk
- Multiuse

**Planned Trails**

- Forge to Refuge
- Darby Greenway
- Newtown Line

**Destinations**

- Institutional
- Recreation
- Commercial/Retail
- Employment
- Other

**Community Input**

- Concept alignment

**Trailheads**

- Existing
- Proposed

**Radnor Parks & Open Space**


- Radnor School District
- Institution
- Golf Course
- HOA & Right-of-Way

**Conservation Easements**

- NLT Easements

**Other Features**

- Existing Sidewalk
- Municipal Boundary
- County Boundary
- SEPTA Station
- Railroad
- Bus/Charter Route



Traffic Planning and Design



## Proposed Routes

The proposed routes described below are shown on the Trails Map. The routes have been identified by numbers with odd numbers representing trails running in a north-south direction and even numbers representing trails of an east-west direction. Additionally, each individual route has been separated into several segments for more precise identification and cost estimation.

### *N. Wayne Ave / S. Wayne Ave from Tredyffrin Township to Radnor Trail (Route 1)*

Because downtown Wayne is such an important Township destination, this on-road route is proposed to provide two important bicycle connections. The first connection is from the Radnor Trail and the second is from Tredyffrin Township to the north. The route is proposed as a share the road route with a 3 foot improved shoulder in each direction except where the route passes through the Wayne business district. Within the Wayne business district, the roadway widens to allow angled parking on each side of the road. The route will have to be heavily signed as a cyclist route and striped as a bike lane with sharrows through this area since an improved shoulder is not feasible due to the existing parking spaces.

### *Sugartown Road from Easttown Township to Tredyffrin Township (Route 2)*

This on-road route connects the terminus of the Radnor Trail to both Easttown Township and Tredyffrin Township. Currently, the Radnor Trail connects at grade to Sugartown Road. It is recommended that a barrier be installed to prevent trail users from directly accessing Sugartown Road from the end of the Radnor Trail. Trail users should be encouraged to cross the road at the existing signal to the west. Along Sugartown Road, the route is proposed as a share the road situation with 3 foot wide improved shoulders. Wayfinding and safety signage is also proposed to be installed along the route.



*Darby Paoli Road by Sawmill Road.*

### *Darby Paoli Road from Newtown Township to Bryn Mawr Avenue (Route 3)*

This route links much of the western side of the Township in a north-south direction. The trail connects The Willows, Skunk Hollow, and Saw Mill Park to both Bryn Mawr Avenue (Route 22) and to Church Road (Route 10). The route also provides an opportunity for a future link to any trails constructed on or around the Ardrossan property. The bike route proposed will widen the existing pavement to incorporate two (2) 11 foot wide vehicular travel lanes and two (2) three (3) foot shoulders. The existing bridge just south of Church Road is 19 feet wide. This section will require two new pedestrian bridges parallel to the existing bridge to allow trail users to bypass the existing structure.





### *Walnut Ave / Gulph Creek Road & Multiuse Trail from Upper Merion Township to N. Wayne Ave (Route 4)*

With two on-road segments and one on-road segment this route provides a link from Wayne to Fenimore Woods, Harford Park, and Upper Merion Township. The on-road segments are proposed as share the road routes with 3 foot wide improved shoulders. The multiuse segment extends from Fenimore Woods to Gulph Creek Road and passes along the edge of Cabrini College land. This trail provides an excellent recreational opportunity for Cabrini College, Valley Forge Military, and Eastern University students. In discussions of the proposal during the planning process Cabrini College representatives were unofficially receptive to this multiuse trail, however further planning with the College will be needed to establish this multiuse segment.

### *Multiuse Trail from Radnor Trail to Radnor Township Building (Route 5)*

This proposed 10 foot wide multiuse trail will travel along Ithan Creek and link the Radnor Trail to Encke Park and the Radnor Township Municipal Building. This trail will need to navigate a considerable grade change to reach the lower elevation of Encke Park. The location of the trail through Encke Park will need to be further examined as one existing ball field is very close to Ithan Creek and does not leave adequate width for a trail between the creek and the ball field.

### *Valley Forge Rd, Maplewood Rd, & W. Wayne Ave from Easttown Township to Radnor Trail (Route 6)*

An already popular bicycle route within the Township, this route is proposed to link Easttown Township, Wayne Elementary, and West Wayne neighborhoods to the Radnor Trail. The route is proposed as a share the road

*Pictured left, Radnor trail entrance along West Wayne Ave.*



route with an improved three foot wide shoulder in each direction. The route also connects to Dittmar Park and Odoriso Park.

### ***Widen sidewalk along S. Radnor Chester Road from Radnor Trail to Lancaster Avenue (Route 7)***

This route provides a very short (425 LF) but important connection from the Radnor Trail to Radnor High School and the proposed multiuse trail routes 9 and 12. By completing this missing link along S. Radnor Chester Road in conjunction with the construction of route 9 (multiuse trail), the Radnor Trail can be extended all the way to Harford Park and also connect to the Radnor Station (regional rail), Radnor Station (NHSL), and County Line Station (NHSL).

The route along Radnor Chester Road proposes to expand the existing sidewalk on the east side of the road to accommodate pedestrians. Bicycles will be directed on the roadway in a share the road situation. Intersection improvements including improved pedestrian crossing signals will likely be needed at the intersection of S. Radnor Chester Road and Lancaster Avenue and also at point where the existing Radnor Trail would cross S. Radnor Chester Road. Pedestrian and bicycle traffic would likely increase dramatically at these locations.

### ***Multiuse Trail from downtown Wayne to Radnor Trail (Route 8)***

This complex route provides an important link from the Radnor Trail to the very popular Wayne business district. The route proposes a combination of pedestrian only and on-road bicycle segments to link the two destinations. The link provides an excellent opportunity for Township residents and visitors to access the Wayne business district through alternative transportation means.

The link proposes a two-way cycle track for bicyclists along the south side of W. Wayne Ave from S. Wayne Ave to Bloomingdale Ave. A two-way cycle track is a physically separated bicycle path that allows bicycle movement in both directions on one side of the road and is proposed because this segment of W. Wayne Avenue is a one-way road. At the intersection of W. Wayne Ave and Bloomingdale Ave, bicyclists will be directed to utilize the appropriate side of the street to continue on west on W. Wayne Ave in a shared road situation and will access the Radnor Trail at the existing access point at the Friends of Radnor Trail Park.

Pedestrians will be directed to utilize sidewalks along W. Wayne Avenue to Conestoga Road. They will then be directed north on Conestoga Road to the intersection with Lenoir Avenue where they will cross Conestoga Road and access the Radnor trail along a new multiuse wetland boardwalk through the West Wayne Preserve. It was determined that crossing Conestoga Road at Lenoir Avenue is the safest and most direct location for pedestrians to access the trail.

### ***Multiuse Trail from Radnor High School to Harford Park (Route 9)***

This route provides the best multiuse trail (off-road) opportunity within the Township. The route utilizes existing open space and institutional properties to provide an extension of the Radnor Trail that would benefit pedestrians and bicyclists of all skill levels. In total, the off road route will extend approximately 3 and 3/4 miles from Radnor High School on Lancaster Ave to Harford Park on Gulph Creek Road.

The trail uses two existing Route 476 underpasses and an existing Norristown High Speed Line (NHSL) underpass along Lancaster Avenue in order to access the Chew Tract from Radnor High School. Additionally one new bridge





is proposed in this area. From the Chew Tract, the trail also provides access to the Radnor Station/Norristown High Speed Line (NHSL). One small pedestrian bridge is proposed within the Chew Tract to cross an existing stream.

Segment 9B is proposed adjacent to the potential BioMed campus development. If the BioMed development moves forward to land development, this trail should be included as part of the land development plans along with proposed segment 12D.

North of the Radnor Station, the proposed trail utilizes Route 476 ROW under the SEPTA regional rail to access the Young Tract. The trail will cross over the NHSL at the existing County Line Road bridge. North of the NHSL the trail will navigate through open lands along the edges of the Villanova University Conference Center and Archbishop Carroll before reaching the Radnor Station (regional rail). A pedestrian bridge is also proposed over the NHSL railway within the Young Tract to provide access to Archbishop Carroll.

The trail will continue through Radnor Memorial Park and then on Radnor Corporate Center property past Radnor Elementary School and Radnor Nature Park. The trail will continue to use Radnor Corporate Center property to connect to Harford Park at Gulph Creek Road.

### ***Multiuse Trail from Radnor Trail to The Willows (Route 10)***

It is anticipated that this route will be heavily used as it links the Radnor Trail to The Willows, Skunk Hollow and Saw Mill Park. Additionally the route passes by Chanticleer Garden creating an excellent connection for visitors and residents. The distance from the Radnor Trail to Chanticleer along Brooke Road is approximately one mile. Because of the anticipated use of this trail, 4 foot wide bike lanes are proposed. Portions of Brooke

*Pictured left, the old mill dam along that can be seen from Ithan Ave.*



Road include granite curbing. This curbing will need to be removed and relocated to allow appropriate width for the bike lanes.

### ***Ithan Ave from Bryn Mawr Ave to Lower Merion Township (Route 11)***

This route provides an excellent bicycle connection from Lower Merion Township and Villanova University to Ithan Valley Park and Bryn Mawr Avenue. The route also connects to the Villanova Stadium Station (Norristown High Speed Line) and The Agnes Irwin School. The route is proposed as a share the road route with an improved three foot wide shoulder in each direction. Some sections of the roadway in the area of Agnes Irwin are curbed. Some of these curbs may need to be relocated to allow for the proposed shoulders.

### ***Multiuse Trail along King of Prussia Road (Route 12)***

King of Prussia Road as it currently exists is quite wide with approximately 36' of pavement width. This width allows enough space to construct a multiuse trail on the northern side of the road. A multiuse trail in this location will link Lancaster Avenue, the Radnor Financial Center, and Radnor High School to the Radnor Regional Rail station and Radnor NHSL station. These destinations will also be connected to the Radnor Trail with the construction of route 7 along Radnor Chester Road. This multiuse trail is proposed within the right of way adjacent to the potential BioMed development. If the BioMed development moves forward to construction, this trail should be included as part of the land development plans along with proposed segment 9B.

### ***Eachus Ave from Conestoga Road to Garrett Hill Station (Route 13)***

The community of Garrett Hill is already well served by pedestrian sidewalks. This short on-road route provides enhances the connectivity of Garrett Hill by providing a bicycle link from the center of Garrett Hill on Conestoga Road to the Garrett Hill Station (Norristown High Speed Line). Because the entire length of this route has parking on one side of the street, the route will need to be appropriately signed and striped as a share the road to prevent conflicts with automobile parking.

### ***Hiking Trail from Radnor Trail to Browns Lane (Route 14)***

Taking advantage of the existing vacated P&W right of way, this off road hiking/walking trail is proposed to connect the Radnor Trail to Martha Brown Woods. The route begins at the terminus of the Radnor Trail at S. Radnor Chester Road and extends along the P&W right of way until it reaches the 476 on-ramp. From this point the trail extends to Martha Brown Woods and terminates at Browns Lane. This trail proves a scenic extension of the Radnor Trail and is an excellent opportunity for pedestrians. Construction of the trail will likely include selective clearing, earth compaction, minor grading, and wayfinding signage.

### ***Multiuse Trail from Brooke Road to Chanticleer Garden (Route 15)***

This short multiuse connector trail should be constructed in conjunction with Route 10 to create a direct bicycle connection from the Radnor Trail to Chanticleer. The design of this trail will need to be coordinated and agreed upon with Chanticleer. The route is proposed as a 10 foot wide asphalt trail and would provide an excellent connection for Township residents and visitors by enhancing the transportation alternatives to this popular destination.



### *Multiuse Trail along Lancaster Avenue (Route 16)*

This multiuse trail is intended to link the proposed multiuse trail routes 9 and 12 to Villanova and Ithan Avenue. A multiuse trail on the north side of Lancaster Avenue is feasible due to a relatively wide right-of-way and minimal development and utilities immediately adjacent to the roadway. Near the intersection with Spring Mill Road there are several small commercial parking lots with no separation from Lancaster Avenue. The trail will need to be heavily signed and striped through these lots and will also need to be a stop and dismount location for cyclists. Additionally, the existing fencing on the north side of Lancaster Avenue adjacent to Villanova property will be relocated to allow adequate trail width and to provide access to the future pedestrian bridge from the Villanova campus (at the Villanova Church) over Lancaster Road to the Villanova Rail Station (NHSL) south of Lancaster Avenue.

### *Goshen Road from Newtown Township to Darby Paoli Road (Route 18)*

This short on road bicycle route links Darby Paoli Road to Newtown Township. This road is an already popular bicycle route. Three foot shoulders are proposed along each side of the road along with necessary share the road striping and signage.

### *Wyldhaven Road / Garrett Ave from Ithan Ave to Lancaster Ave (Route 20)*

Garrett Hill is a small dense neighborhood with narrow rights-of-way and pavement widths and on street parking that limits its ability to connect to the rest of the Township. This on-road connection provides an important outlet from the Garret Hill neighborhood to Ithan Valley Park and Bryn Mawr Avenue to the west also the Garrett Hill Station (NHSL). The connection to Ithan Valley Park and Bryn Mawr Avenue will provide an excellent recreation



*Bryn Mawr Avenue under Rt. 476*

opportunity and linkage to the western side of the Township. Due to the limited width for pavement improvements, the route is proposed as a shared road route with appropriate signage and striping. The entire route is proposed on residential streets with low speed limits. The route also connects to Emlen Tunnel Park and Clem Macrone Park, and an existing sidewalk on Lancaster Avenue.

### *Bryn Mawr Avenue from Malin Road to County Line Road (Route 22)*

This route is intended to link the southwestern and southeastern sides of the Township. The route also connects to Ithan Valley Park trails that link to Haverford Township. The western side of the route passes by 5th Ward Park also intersects with Darby Paoli Road to provide access to Sawmill Park, Skunk Hollow Park, and The Willows. The eastern side of the route connects to Lower Merion Township. The narrowest portions of the existing roadway are approximately 26 feet in width. The road widens to approximately 33 feet width west of Darby Paoli Road. The proposed route conditions include widening the road where needed to allow two (2) 11 foot vehicular travel lanes and two (2) 3 foot shoulders for bicycle use. Two historic bridges that exist along the route create pinch points for cyclists. New pedestrian bridges for trail users will need to be constructed in these areas in order to avoid the historic structures.



*Sidewalk Connections to West Wayne Preserve*

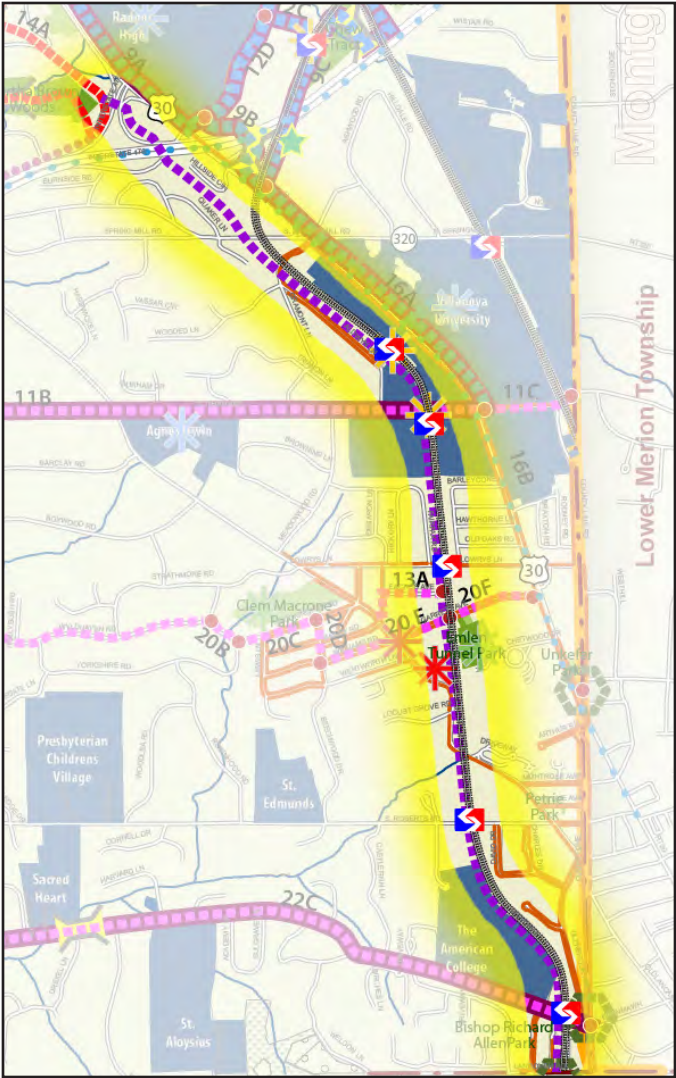
A new sidewalk connection is recommended along the south side of S. Devon Avenue from Morris Road to Conestoga Road. This short but important pedestrian connection will safely link much of the West Wayne neighborhood to Liberty Lane and the existing asphalt trail to the West Wayne Preserve and Radnor Trail. This sidewalk would also connect to existing steps on the north side of the Radnor Trail at S. Devon Avenue. These existing steps serve as an informal access point to the Radnor Trail. Crosswalks at the S. Devon Ave / Morris Road intersection and S. Devon Ave / Conestoga Road intersection should also be constructed.

*Planned Off Road Trail with Rail along SEPTA ROW*

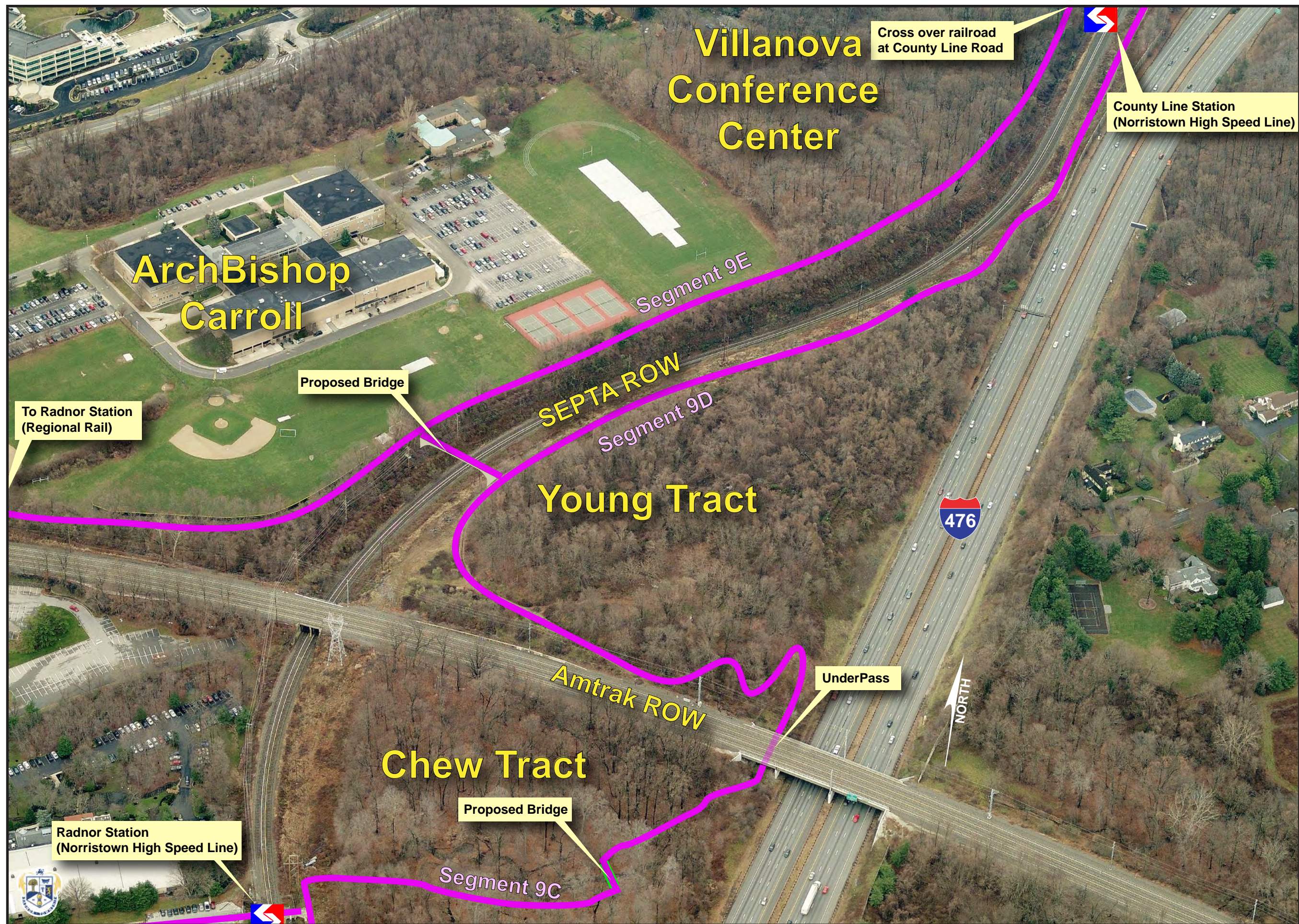
This trail has previously been studied and is currently part of a separate planning study of the Forge to Refuge Trail that is intended to link the Valley Forge National Historic Park to John Heinz National Wildlife Refuge.

This proposed trail segment in Radnor Township would run within SEPTA ROW along the active Norristown High Speed Line for approximately 2.7 miles from Martha Brown Woods to Haverford Township. The route would connect to five SEPTA NHSL stations. These stations include Villanova Station, Stadium Station, Garrett Hill Station, Roberts Road Station, and Bryn Mawr Station.

At this time SEPTA is unsure if it will need this right-of-way width for future transit needs and cannot release right-of-way for trail use.

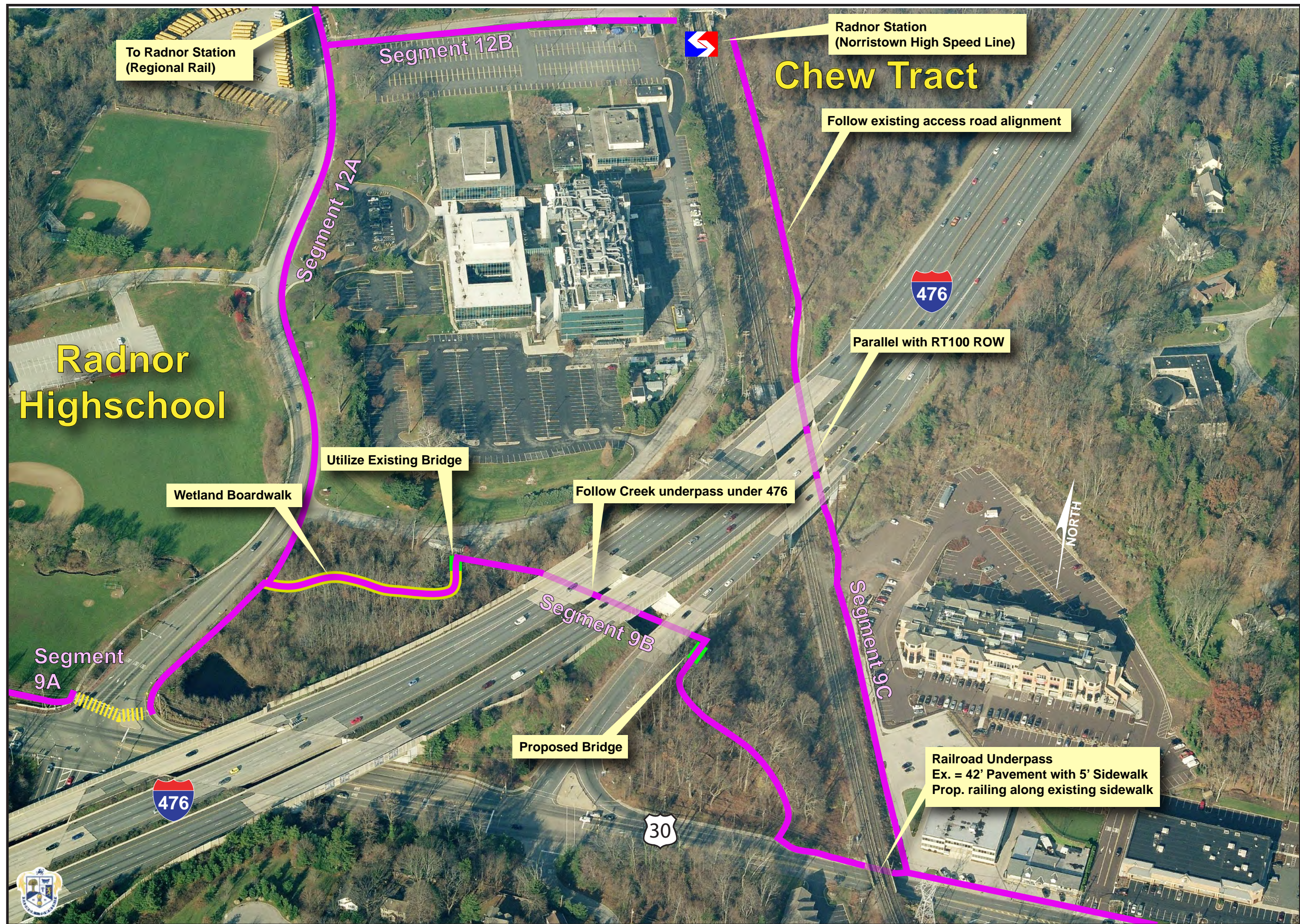






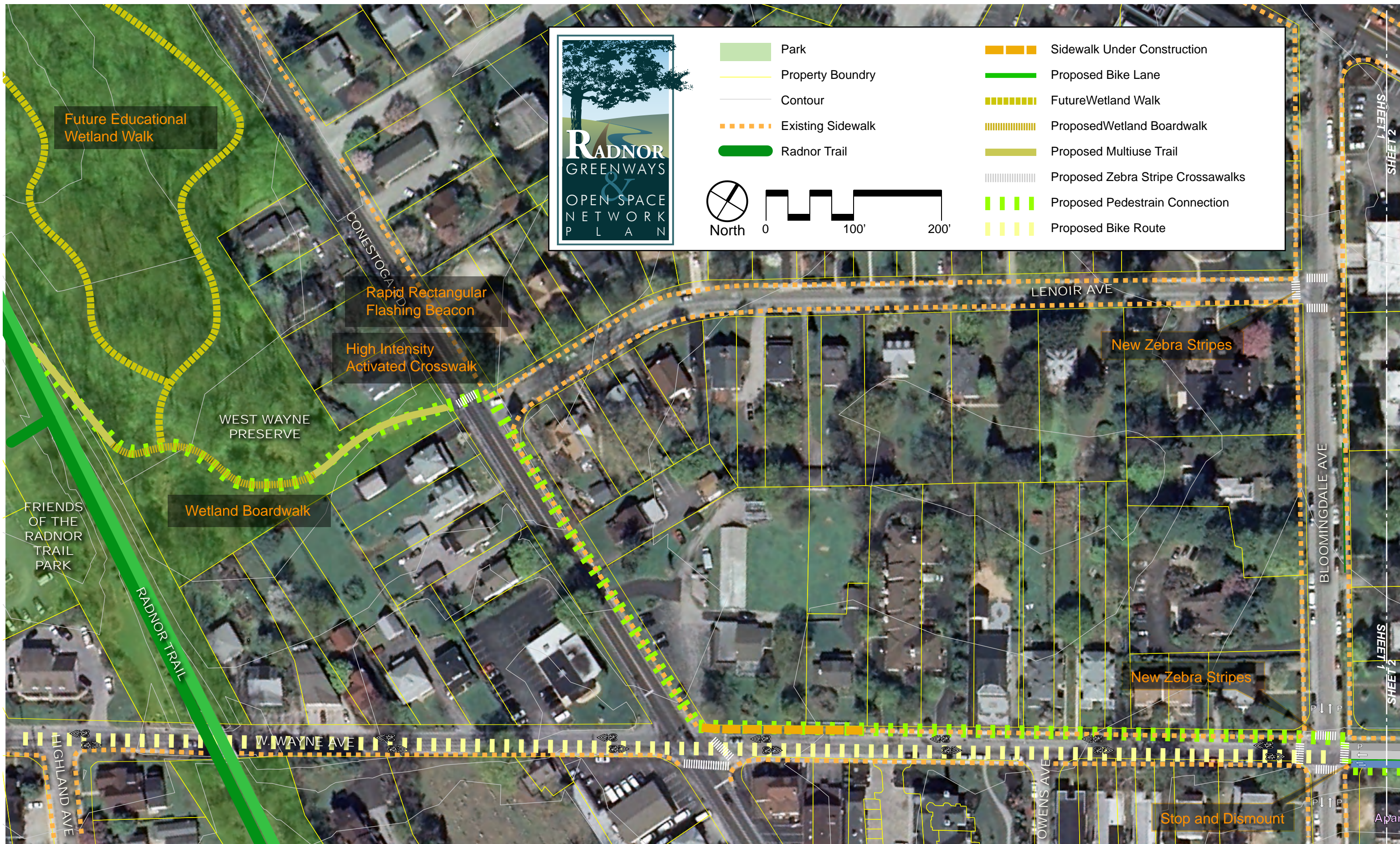
**Trail Detail  
Map**





## Trail Detail Map





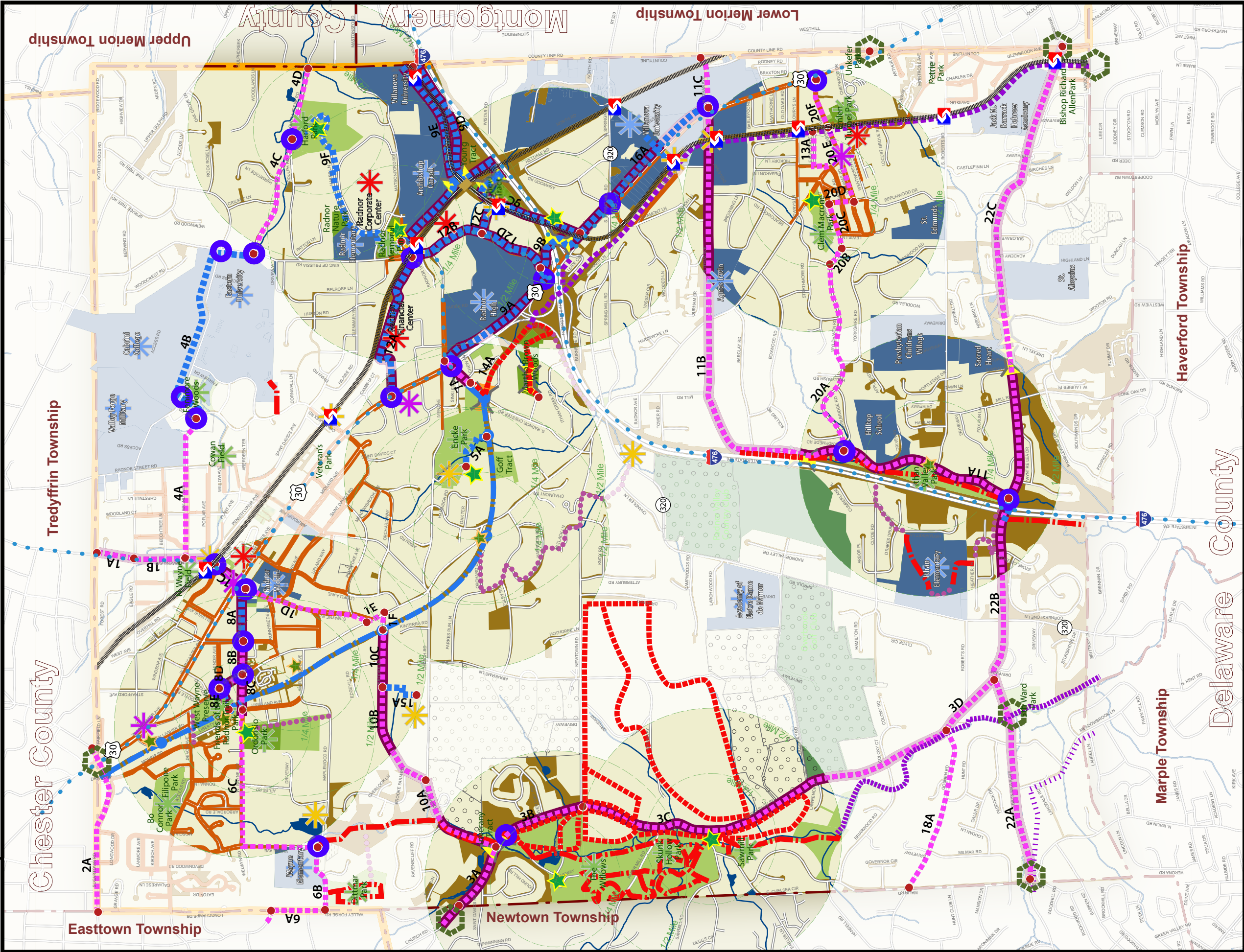
**Radnor Trail to Wayne Business District Connection - Sheet 1**





**Radnor Trail to Wayne Business District Connection - Sheet 2**







# Trailheads and Amenities

Ten trailheads have been proposed to complement four existing trailheads. The existing and proposed trailheads are shown on the Trails Map at the end of this chapter. Locations for proposed trails include:

- Harford Park
- Radnor Memorial Park
- Ithan Valley Park
- The Willows
- Saw Mill Park
- Radnor Township Municipal Building (Encke Park)
- Ordorisio Park
- Fenimore Woods
- Clem Macrone Park
- Villanova Center retail and office park (Lancaster Avenue adjacent to the Chew Tract).

Existing trailheads are located at:

- Gallagher Road
- Friends of Radnor Trail Park
- Conestoga Road
- Wayne Art Center

All of the proposed trailheads will utilize existing parking areas. Signage should be installed at all locations to identify them as official trailheads. Specific amenities at trailheads will vary depending on existing site conditions and nearby facilities. Existing and proposed trailhead amenities include trash and recycling receptacles,

information kiosks, bicycle parking, restrooms, and water fountains. Several of these trailhead locations are also ADA accessible. Please see the matrix (below) of existing and proposed trailhead facilities.

Public restrooms exist at Odorisio Park, the Township Building, and Radnor Memorial Park. Future public restrooms at other locations should be considered where appropriate.

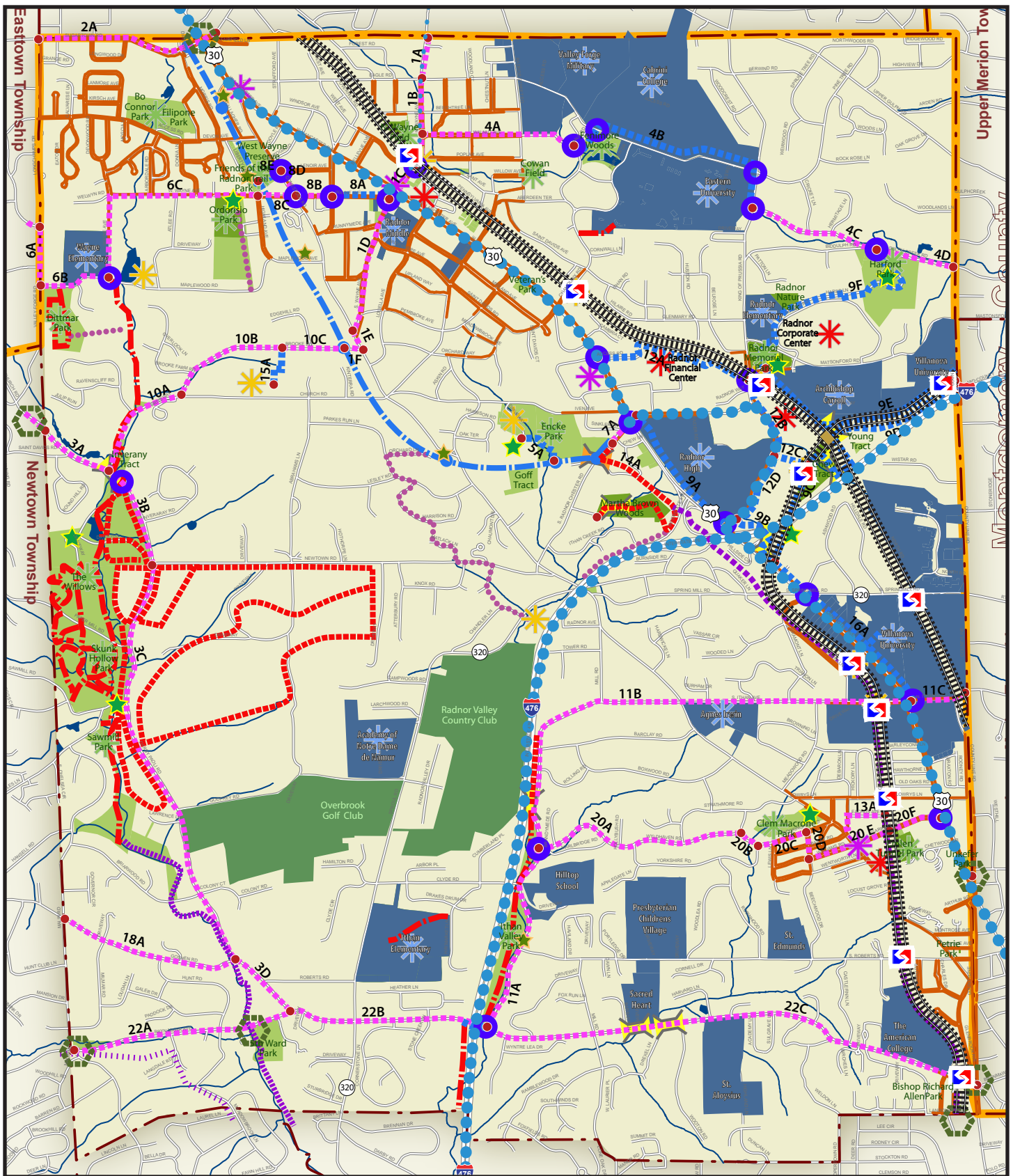
Covered bicycle parking and storage stations should also be considered at prominent destinations such as the Wayne business district, rail stations, and schools.

In addition to trailheads, four additional “after business” parking locations are proposed. These locations are Wayne Elementary, Radnor High School, Radnor Middle School, and Radnor Elementary. These locations provide public parking not restricted to times when these facilities are open.

Trailhead Amenities										
	Existing Radnor Trailhead	On Street Parking	Off Street Parking	Trash	Recycling	Kiosk (Trail Map, Education)	Bike Rack	Bathrooms	Water Fountain	ADA Accessible
Gallagher Road										
Friends of the Radnor Trail Park										
Ordorisio Park										
Conestoga Trail Head										
Township Building / Enke Park										
Fenimore Woods										
Harford Park										
Radnor Memorial Park										
Chew Tract										
The Willows										
Sawmill Park (Sawmill at Darby Paoli)										
Ithan Valley Park										
Clem Macrone Park										
Wayne Elementary										
Radnor High School										
Radnor Middle School										
Radnor Elementary										
Wayne Art Center										

ExistingProposed





Mass transit connections with the proposed trails.



## Mass Transit Stations (Rail)

Connections to mass transit is an important part of the trail network. The proposed network makes connections to nine SEPTA rail stations within the Township. These stations are part of both the SEPTA Regional Rail and



SEPTA Norristown High Speed Line. Connected Regional Rail stations include:

- Wayne Station
- Radnor Station

Connected Norristown High Speed Line (NHSL) stations include:

- County Line Station
- Radnor Station
- Villanova Station
- Stadium Station
- Garrett Hill Station
- Roberts Road Station
- Bryn Mawr Station

The trail network also makes links to two bus stops on the SEPTA bus route 105 that runs through Radnor Township. These bus stops include:

- Radnor NHSL Station
- Lancaster Avenue and Wayne Avenue

In the interest of multimodal transportation, SEPTA has made certain accommodations for the use of bicycles on trains and buses. Bicycles are permitted on all SEPTA buses through the use of bicycle racks located on the front of all SEPTA buses. Each bicycle rack holds two bicycles. for the interest of passenger safety and comfort, bicycles are not permitted on buses where the bicycle rack is already full.





Adjacent township mass transit connections. - Map Source: SEPTA Suburban Transit Map





*SEPTA's Radnor station along the Paoli/Thornedale line*

On the Regional Rail, two (2) bicycles are permitted per car in passenger service and must be stored in designated areas. Bicycles are permitted:

- On all weekday trains except inbound trains arriving at any Center City station between 6:00 am and 9:30 am, and afternoon outbound trains departing from any Center City station between 4:00 pm and 6:30 pm.
- On all trains on Saturday, Sunday, and major holidays

On the Norristown High Speed Line, two (2) bicycles are permitted per car and must be stored on the rear vestibule. Bicycles are permitted:

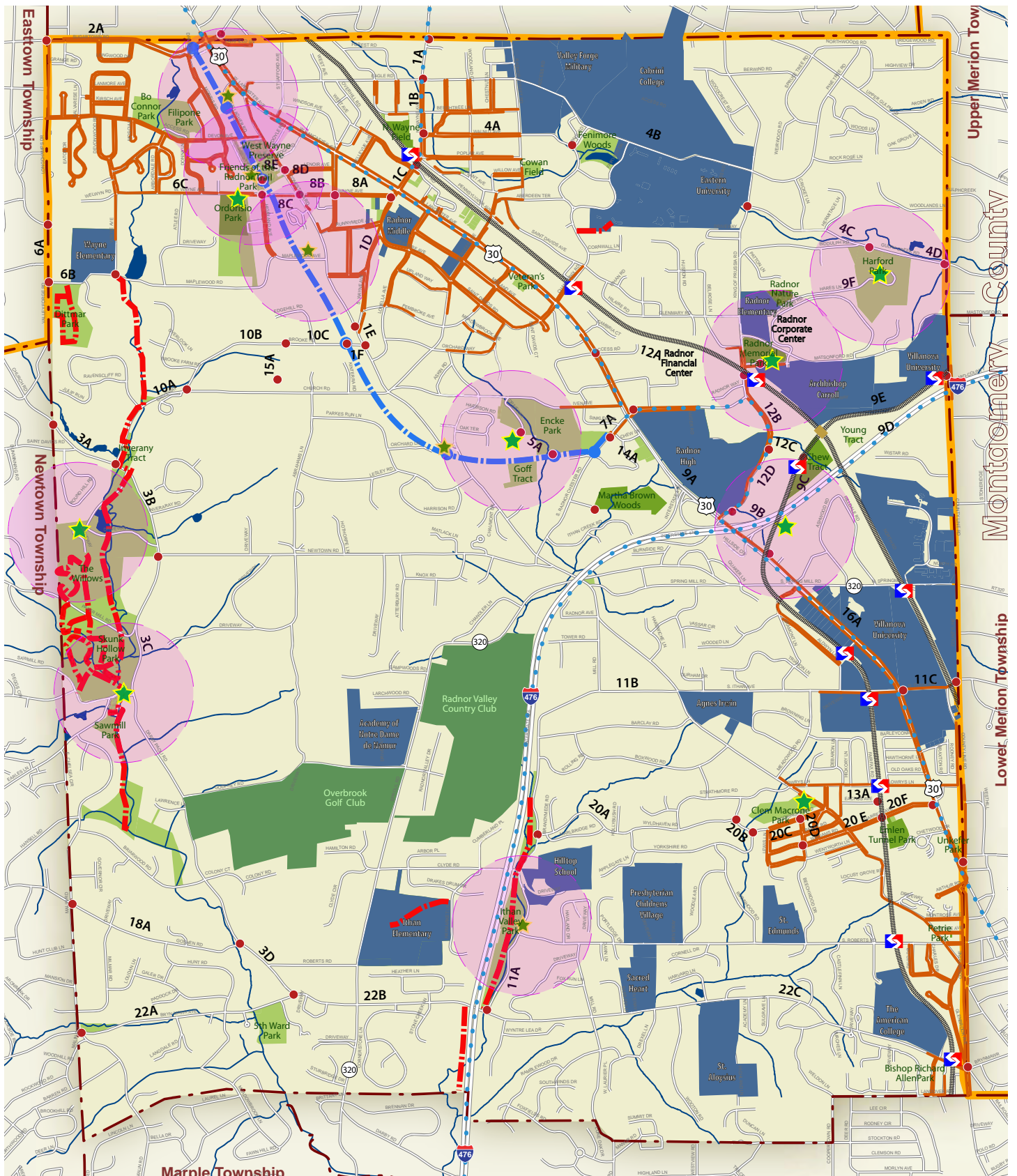
- On weekdays before 6:00 am, between 9:00 am and 3:00 pm, and after 6:00pm.
- All day on Saturday, Sunday, and major holidays

More information on bike and ride policies and facilities can be found on the SEPTA website at <http://www.septa.org/policy/bike.html>



*Radnor station on the Norristown High Speed Line adjacent to the 105 and 106 bus routes.*







# Pedestrian Only Routes (Sidewalks)

A good sidewalk system can provide safe recreational opportunities and accessible pedestrian linkages to local destinations such as schools, parks, trails, open space, recreational facilities, service locations, and transit stations. The sidewalks within Radnor are generally located in Wayne, Garrett Hill, and along the Lancaster Avenue corridor. The existing sidewalk map shown on this page depicts the areas of existing sidewalks based on GIS mapping provided by the Township during this study. These existing sidewalks should be examined by the Township to make determinations including:

- Areas where the existing mapping needs to be updated to show any recently constructed sidewalks or sidewalk locations not shown;
- Areas where existing conditions of the sidewalks are unsafe, are not ADA accessible, or generally need to be repaired;
- Locations where gaps or missing links exist in the sidewalk network. These gaps should be determined by reviewing the locations of important Township destinations and also the trail network proposed in this report to determine where the addition of sidewalks would improve pedestrian connectivity and recreational opportunities.
- Areas where pedestrian street crossings do not exist, are unsafe, are not ADA accessible, or generally need to be improved.

Enhanced sidewalk connections within the Township will improve the safety of pedestrian travel and connectivity of Radnor's neighborhoods to other trails, parks, schools,

mass transit and important destinations. Increased recreational opportunities reduced vehicular traffic could result from improved sidewalk connections.







## Proposed Greenway Connections

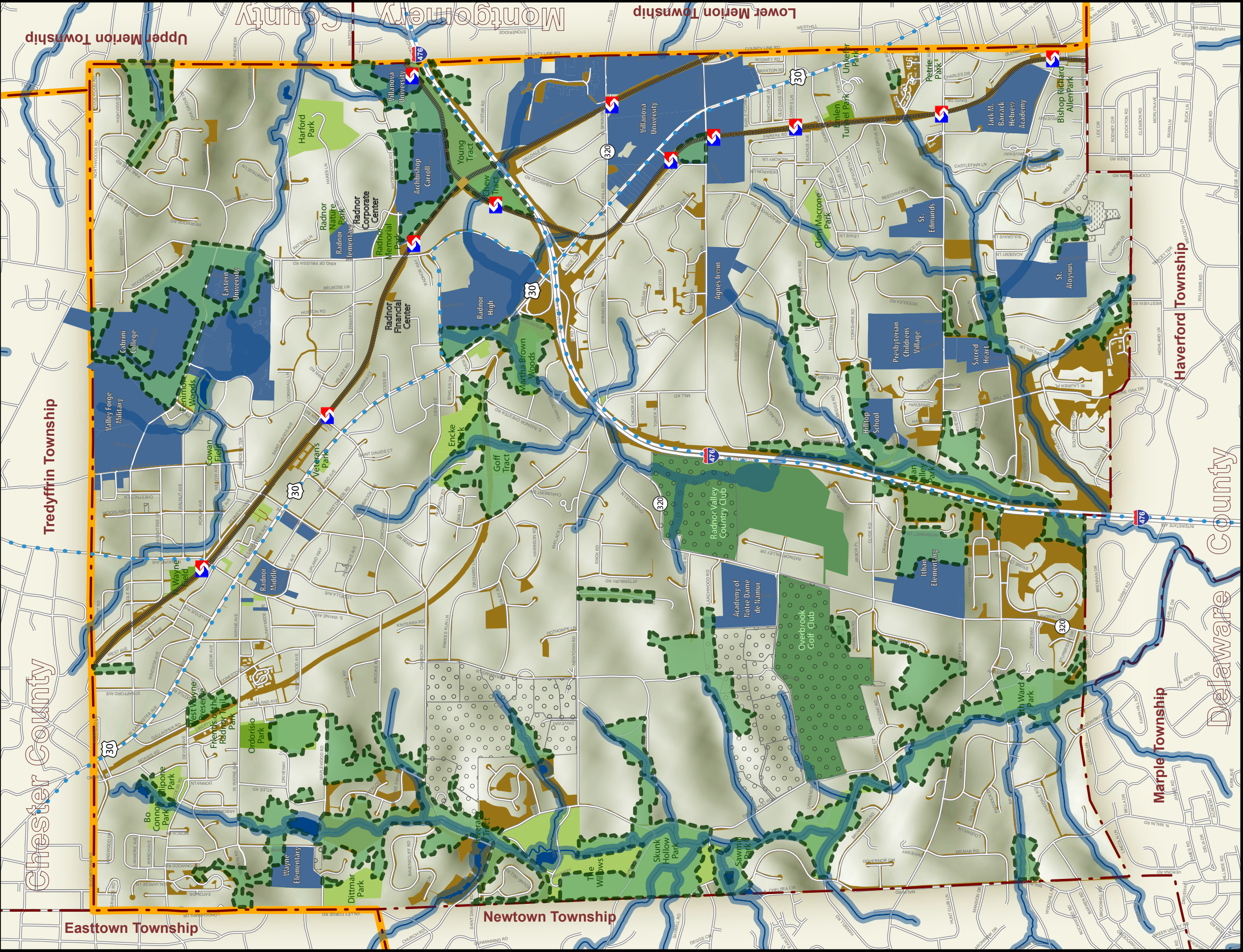
Greenways are corridors of land preserved for either recreational use or natural resource protection. Recreational greenways often include passive recreational uses or trails for pedestrian and/or bicycle use while greenways preserved for natural resource protection typically prohibit access by the public. Greenways can also be extremely important in protecting riparian corridors and wildlife habitats. Greenways within the Township are primarily focused around existing riparian corridors and areas of existing woodlands and are categorized as either primary or secondary greenways. Primary greenways are located around major streams within the Township while secondary greenways are located around minor tributaries and drainage ways. The proposed greenway map displays the greenway opportunities in Radnor Township.

Four opportunities for recreational greenways that incorporate trails have been identified within the Township. The first area is that of the Willows, Skunk Hollow, and Saw Mill Park along the western side of the township. Trails currently exist within these parks and the Darby Creek

Greenway regional trail has also been planned in this area. If completed, the Darby Creek Greenway would likely be a footpath that extends along the Darby Creek from Newtown Township, through Radnor Township and into Haverford Township. The second proposed recreational greenway is that in the area of Ithan Valley Park where an existing trail exists along the Ithan Creek. The third area is in the vicinity of the Young Tract, Chew Tract, and Martha Brown Woods where proposed multiuse trails are proposed through these existing open space lands. The fourth area recommended as a recreational greenway is in the area of Eastern University and Cabrini College where a multiuse trail is proposed within the existing wooded lands in the area of Gulph Creek.

Greenways that do not include trails would be considered no access greenways as much of the land is located on private property. It is recommended that the Township develop minimum vegetation management standards for all riparian buffers and greenways in order to maintain a high level of quality for these features as a means to preserve and enhance its water quality. Vegetation management standards should include guidelines for recommended maintenance procedures to ensure that these important environmental features are appropriately maintained on public and private property.





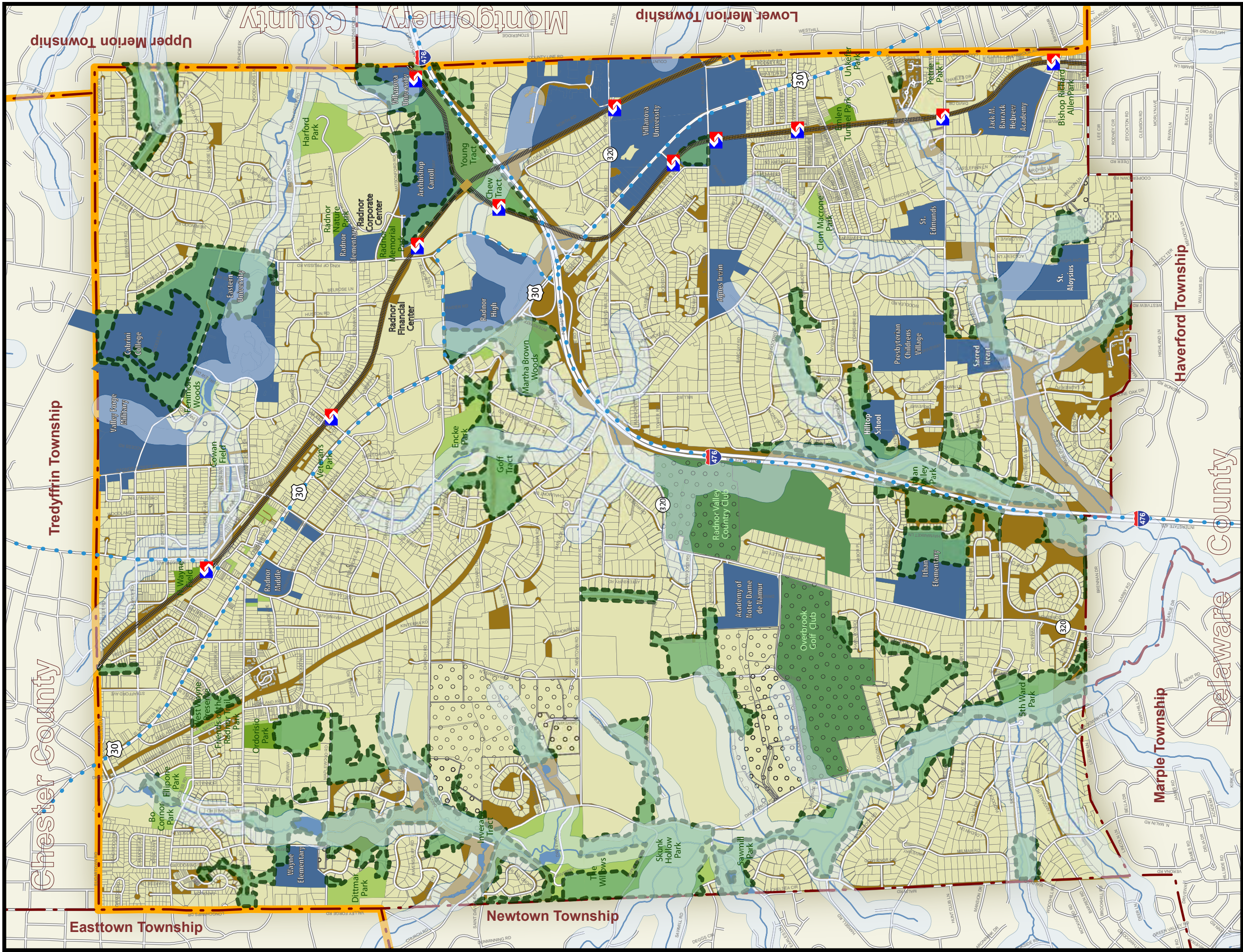
# GREENWAYS - INVENTORY


## Greenways & Open Space Network Plan

for Radnor Township

- Stream Corridor
- Stream
- Wooded Areas
- Radnor Parks & Open Space
- Radnor School District
- Institution
- Golf Course
- HOA & Right-of-Way
- Existing Sidewalk
- Municipal Boundary
- County Boundary
- SEPTA Station
- Railroad
- Bus/Charter Route
- Conservation Easements
- NLT Easements




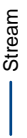
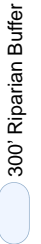



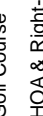

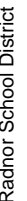









# GREENWAYS - RIPARIAN CORRIDOR



## Greenways & Open Space Network Plan


for Radnor Township











Traffic Planning and Design











# 4

## IMPLEMENTATION



### Implementation Schedule

The improvements proposed in this plan represent a long term initiative for the Township. It is expected that these improvements will take place over a 15 to 20 year period or longer. The proposed development described herein should be reviewed by the Township annually and should be designed and constructed in sections or phases as funding becomes available. Potential project partners, recommended implementation priorities, and potential funding opportunities are discussed in this chapter.

### Project Partners

The following is a listing of project partners identified by the study committee and the public participation process.

- Radnor Township
- Delaware County
- State Agencies (DCNR, PennDOT, DCED, PennVest, DEP)
- Local Conservancies (Radnor Conservancy, Brandywine Conservancy, Natural Lands Trust)



- Schools and Institutions
- Real Estate Developers
- Local businesses
- Civic groups

Each of these entities will likely be involved with the promotion, funding, and/or implementation of the greenway and trail system. The Township will need begin the implementation process by applying for and securing grant funds for an initial demonstration project.

State agencies such as DCNR and DCED will be important sources for design/engineering and construction funding and PennDOT will need to be involved with the proposed routes on state roadways.

Additionally, private developers will be an important part of the implementation process where alignments proposed in this report are to be located within or adjacent to land tracts under future or current land development review. The Township should make every effort to have these improvements included in the land development application and constructed as part of the proposed developments. To help achieve this, it is recommended that the township adopt an Official Map, as permitted under the PA Municipal Planning Code (PAMPC) and described later in this chapter.

## Implementation Priority Routes (Loop System)

Routes that are recommended as high priority are shown on the Priority Route Map at the end of this section. It is recommended that these be implemented first as determined by community interest, cost, private land owner funding, and available public funding. These routes have been identified as those that would create important connections within the Township, provide additional recreation opportunities, and/or create safe transportation routes. Additionally, the priority routes create a bicycle loop of approximately 17 miles in length throughout the Township. This loop utilizes several roads that are already heavily traveled by bicycles including Ithan Avenue, Darby Paoli Road and Brooke Road. The off-road portion of the loop extends the Radnor Trail by adding over 4 miles of multiuse trails through several Township open space parcels. Routes identified as priority routes include:

- Route 1 - N. Wayne Ave / S. Wayne Ave from Tredyffrin Township to Radnor Trail
- Route 3 - Darby Paoli Road from Newtown Township to Bryn Mawr Avenue
- Route 7 – Multiuse Trail along S. Radnor Chester Road from Radnor Trail to Lancaster Avenue
- Route 8 – On Road trail and walking trail from downtown Wayne to Radnor Trail
- Route 9 – Multiuse Trail from Radnor High School to Harford Park
- Route 10 – Multiuse Trail from Radnor Trail to The Willows
- Route 11 – Ithan Ave from Bryn Mawr Ave to Lower Merion Township



- Route 12 – Multiuse Trail along King of Prussia Road
- Route 16 - Multiuse Trail along Lancaster Avenue
- Route 22 - Bryn Mawr Avenue from Malin Road to County Line Road

Of these priority routes, it is recommended that the following five routes be considered top priority and be implemented in the following order:

### *Priority 1*

**Route 8 – On Road trail and walking trail from downtown Wayne to Radnor Trail** - This route provides a critical connection from the Radnor Trail to the Wayne business district.

### *Priority 2A*

**Routes 9A, 9B, 9C, 12B, 12C, and 12D - Multiuse Trail System** - Routes 9 and 12 provide the best opportunity in the township to utilize existing open space for a multiuse recreational trail and extension of the Radnor Trail. The first phase should establish a connection to the Radnor Station (Regional Rail), Radnor Station (NHSL), and the Chew Tract from Radnor Chester Road.

### *Priority 2B*

**Routes 9D and 9E - Multiuse Trail System** - Routes 9D and 9E further extend the multiuse trail system from the Chew Tract through the Young Tract, Villanova University Conference Center, and Archbishop Carroll, ultimately connecting to Radnor Memorial Park. These segments also connect to the County Line Station (NHSL).

### *Priority 3*

**Route 7 - Multiuse Trail along S. Radnor Chester Road from Radnor Trail to Lancaster Avenue** - This segment

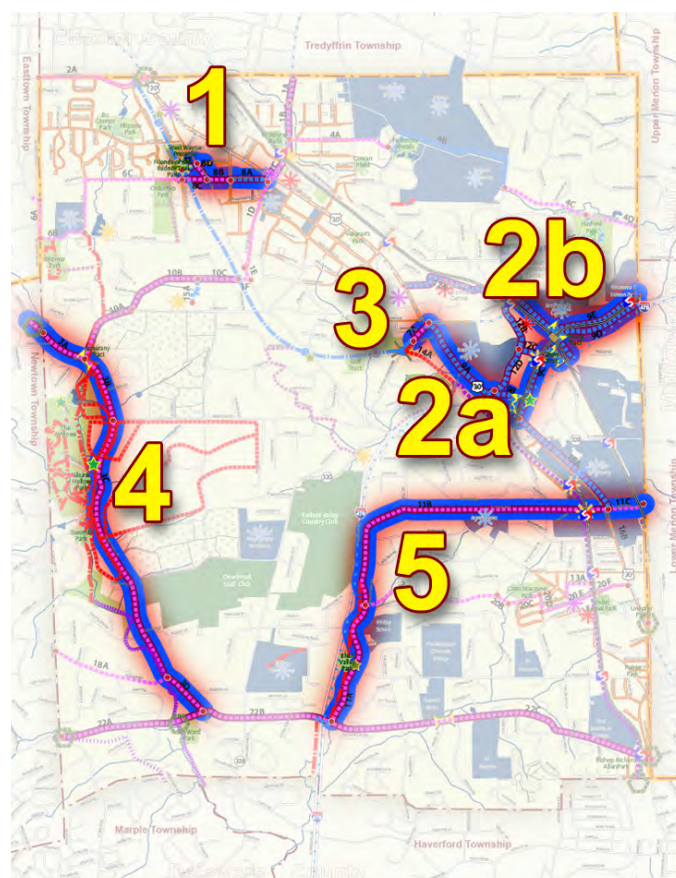
is a short but important connection that links the Radnor Trail to proposed routes 9 and 12.

### *Priority 4*

**Route 3 - Darby Paoli Road from Newtown Township to Bryn Mawr Avenue** - This route provides links to The Willows, Skunk Hollow Park, and Saw Mill Park from Church Road and Bryn Mawr Avenue.

### *Priority 5*

**Route 11 - Ithan Ave from Bryn Mawr Ave to Lower Merion Township** - This popular bike route provides an important link from Lancaster Avenue and Villanova University to Ithan Valley Park.





## Official Map

As permitted by the Pennsylvania Municipalities Planning Code (PAMPC), an Official Map<sup>1</sup> allows a municipality to “reserve” lands for trails, streets, parks, open space, and other public purposes. Should a landowner file notice to develop a parcel that includes some of these reserved lands, the municipality has one year to work with the land owner to develop the improvements as noted on the Official Map. Additionally, the municipality has the ability to negotiate with the land owner to incorporate improvements identified on the Official Map as part of the land development process.

Because Radnor Township currently does not have an Official Map, it is recommended that it become a top priority to adopt one that includes the trails proposed in this report. This will allow the Township to use the land development process as another means for implementation of the proposed trail network described herein.

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<sup>1</sup> A municipality may express an interest in acquiring specific land (or easements thereon) for trails, streets, parks, open space networks and other public purposes by establishing an “official map” that “reserves” this land. If a landowner seeks to develop reserved land, the municipality has a year to pursue acquisition of the land from the owner before the owner may freely build or subdivide.

A municipality may more effectively provide for future trails, parks, networks of open space, road improvements, or other public uses by identifying the location of key public grounds and infrastructure in advance of the public's need and reserving the necessary land on an official map. By reserving the land, the municipality expresses its intent to acquire that specific land at some future date. This expression of intent does not affect existing property ownership; landowners still own and control their land. However, the owners are constrained in building on, subdividing or otherwise developing the reserved land until (1) they receive a special encroachment permit or (2) they provide written notice of intent to develop and then allow the municipality up to a year to acquire the land from them.

The municipality and landowner may negotiate the sale of the reserved land or an easement, or they may agree to an alternative approach that will still meet the public need. If negotiations fail, the municipality may use its powers of condemnation, although municipalities rarely exercise these powers. If the municipality does not acquire the land within a year of the notice, the reservation lapses and the owner is free to build or subdivide following the normal regulatory process. For more information, visit <http://conservationtools.org/guides/show/60-Official-Map#ixzz2naStCPpG> (Taken from the Pennsylvania Land Trust Association website)

## Action Plan

Immediate priority actions that are recommended upon Township approval of this plan are as follows:

- Maintain Greenways & Open Space Committee – meet twice a year to report on progress and pursue opportunities for grants.
- Submit a grant application in April 2015 to DCNR for trail engineering and implementation funding (Wayne to Radnor Trail connector).
- Revise Open Space Acquisition Ordinance
- Adopt Official Map and add proposed trail network to the Official Map.
- Fill in existing gaps in township sidewalk system concurrently with development of trail network.



# Estimate of Probable Development Cost

Probable construction costs were developed by taking measurements from the GIS mapping/database and applying unit costs determined by current material pricing and construction costs for similar projects. General construction items included in the estimate are:

- trail construction;
- sidewalk improvements;
- road and shoulder modifications;
- pavement markings;
- signage;
- pedestrian bridges;
- utility pole relocations; and,
- retaining walls.

A summary of the probable development costs are as follows:

Priority On-Road Routes: \$1.6 Million

Priority Off-Road Routes: \$3.7 Million

**Total Priority Routes: \$5.3 Million**

Other On Road Routes: \$280,000

Other Off Road Routes: \$1.2 Million

**Total Other Routes: \$1.5 Million**

Contingency (20%) \$1.35 Million

Design & Engineering (20%) \$1.35 Million

**Grand Total: \$9.5 Million**

The cost estimates include a 20% contingency and a 20% design and engineering cost. Any required acquisition costs have not been included. Additionally, any routes identified on the Trails Map as previously “Planned Trails” have not been included in the estimate. Trails in and around the perimeter of the Ardrossan property have also not been included in the estimates as they are part of a separate study. Additionally, the previously planned route along the SEPTA NHSL has not been included in the cost. Detailed cost estimate breakdowns can be found later in this chapter.

## Potential Funding Sources

Over the next 15 to 20 years Radnor Township will need to be proactive in obtaining funds for design and construction of the improvements proposed in this study. The Township will need to continually seek project partners and review opportunities for funding. There are multiple funding sources that provide grants for development projects identified in this plan. Examples of such sources are as follows.

### *Pennsylvania Department of Conservation and Natural Resources (PA DCNR) - Community Conservation Partnership Program (C2P2)*

The Community Recreation and Conservation Program through the PA DCNR Community Conservation Partnership Program (C2P2) provides funding 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 construction



and rehabilitation of parks, trails, and recreation facilities. Most of these projects require a 50% match, which can include a combination of cash and/or non-cash values.

The Pennsylvania Recreational Trails Program, also through the C2P2 Program, awards grants to federal and state agencies, local governments, non-profit and for-profit organizations to assist with the construction, renovation and maintenance of trails and related facilities for both motorized and non-motorized recreational trail use, the purchase or lease of equipment for trail maintenance and construction and the development of educational materials and programs. These grants require a minimum 20% match, which can include a combination of cash and/or non-cash values.

Radnor Township recently received a \$1,000,000 grant for acquisition of a portion of the Ardrossan Estate for open space and passive recreation in December 2013. The Township should continue to seek funding from DCNR for any future acquisition needs and trail development. Grant applications for the C2P2 program are accepted annually—usually in April. More information on this program can be found at the DCNR website: <http://www.dcnr.state.pa.us/brc/grants/indexgrantsinstruct.aspx>

### *Transportation Alternatives Program (TAP)*

The Transportation Alternatives Program (TAP) is a Federal highway and transit funds set-aside under the Surface Transportation Program (STP) for community-based “non-traditional” projects designed to strengthen the cultural, aesthetic, and environmental aspects of the nation’s intermodal transportation system. The Transportation Enhancements (TE) funding category, which has historically funded many pedestrian and bicycle supportive projects such as streetscape improvements,

was originally established by Congress in 1991 under the IS-TEA transportation authorization legislation, and was most recently affirmed as TAP under the Moving Ahead for Progress in the 21st Century Act (MAP-21).

The program seeks to provide funding for projects such as construction, planning, and design of on-road and off-road trail facilities for pedestrians, bicyclists, and other non-motorized forms of transportation. Non-motorized forms of transportation include sidewalks, bicycle infrastructure, pedestrian and bicycle signals, traffic calming techniques, lighting and other safety-related infrastructure, and transportation projects to achieve compliance with the Americans with Disabilities Act of 1990. The application period for the most recent round of funding closed in April 2014. The Township should continue to monitor the program as future rounds of funding are anticipated. For more information on the PA Transportation Alternative Program, visit the DVRPC website at <http://www.dvrpc.org/TA/>

### *Delaware Valley Regional Planning Commission (DVRPC)*

The DVRPC Regional Trails program with funding from the William Penn Foundation aims to capitalize 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. Any Radnor Township trail segments that are added to the Circuit will receive priority in funding. Previous grants administered through this program required a 20% match. For information contact the DVRPC grant administrator or visit the program’s website at: <http://www.dvrpc.org/RegionalTrailsProgram/>



### *Commonwealth Financing Agency (CFA) - Greenways, Trails and Recreation Program (GTRP)*

Administered through the PA Department of Community and Economic Development (DCED), the Greenways, Trails and Recreation Program (GTRP) provides funding for planning, acquisition, development, rehabilitation and repair of greenways, recreational trails, open space, parks and beautification projects. The program awards up to \$250,000 per project to eligible applicants and required a local match of 15% of the total project cost. Additional information on the Greenways, Trails, and Recreation Program can be found at <http://www.newpa.com/find-and-apply-for-funding/funding-and-program-finder/greenways-trails-and-recreation-program-gtrp>

### *Commonwealth Financing Agency (CFA) – Multimodal Transportation Fund*

The Multimodal Transportation Fund provides grants to encourage economic development and ensure that a safe and reliable system of transportation is available to the residents of the commonwealth. Funds may be used for the development, rehabilitation and enhancement of transportation assets to existing communities, streetscape, lighting, sidewalk enhancement, pedestrian safety, connectivity of transportation assets and transit-oriented development. Grants are available for projects with a total cost of \$100,000 or more and grants shall not exceed \$3,000,000 for any project. For more information please visit <http://www.newpa.com/find-and-apply-for-funding/funding-and-program-finder/multimodal-transportation-fund>

### *PennDOT Multimodal Fund*

PennDOT's multimodal program seeks to improve freight and passenger mobility options, maximize benefits of capital investment in all modes of transportation, promote

safety on all modes of transportation, use transportation improvements to spur economic development, and improve the effectiveness and efficiency of the transportation network. Projects eligible for funding include:

- projects that coordinate local land use with transportation assets to enhance existing communities including but not limited to: sidewalk/crosswalk safety improvements, bicycle lanes/route designation, greenways, etc.
- projects related to streetscape, sidewalk enhancement, pedestrian safety
- transit oriented development projects
- projects related to connectivity improvements

The PennDOT Multimodal fund is separate from the Multimodal Transportation Fund administered by the Pennsylvania DCED. A local match of at least 30% of the non-federal project costs is required. While the deadline for 2014 applications has passed, upcoming deadlines and more information on the program can be found at <http://www.dot.state.pa.us/internet/web.nsf/Multimodal?OpenFrameSet>

The PennDOT Multimodal fund is separate from the Multimodal Transportation Fund administered by the Pennsylvania DCED.

### *Safe Routes To School (SRTS)*

Administered through PennDOT, Pennsylvania's Safe Routes to School (SRTS) program makes federal-aid highway funds available to school districts, schools, municipalities, county government, and planning partners to address infrastructure projects that provide safer walking and bicycling routes. These funds are intended to benefit elementary and middle school children in kindergarten through the eighth grade.



SRTS funding is only available to municipalities, school districts, individual schools county government, and planning partners. Funding may only be used for infrastructure projects that physically exist within the public right-of-way.

Eligible projects include the planning, design, and construction of infrastructure-related projects that will substantially improve the ability of students to walk and bicycle to school, including:

- sidewalk improvements
- traffic calming and speed reduction improvements
- pedestrian and bicycle crossing improvements
- on-street bicycle facilities
- off-street bicycle and pedestrian facilities
- secure bicycle parking facilities
- traffic diversion improvements in the vicinity of schools

The next round of SRTS funding has not yet been determined. For more information on the PA SRTS program, please visit <http://www.saferoutespa.org/Funding/Infrastructure-Funding/>

### *Legislative Funding*

State and federal elected officials can often include items into legislation for worthy projects in their districts. A conversation between county and municipal officials and legislators is the way to begin this process. This type of funding should be targeted toward capital improvement projects.

### *PennVEST (Pennsylvania Infrastructure Investment Authority)*

PennVEST offers both grants and low interest loans for projects that help to manage stormwater and improve water quality. Several of the proposed bike routes may be of interest to PennVEST since they may include stormwater infiltration areas / BMPs.

### *Local Schools and Institutions*

Local schools and institutions could also be potential funding sources. Trails on or near school property, trails that improve transportation alternatives for students, or trails that provide a recreational amenity to the institution could be excellent candidates for this kind of funding. Partnerships with local schools and institutions could also result in funding opportunities for trail maintenance or cleanup as part of an educational program or volunteer groups. While the amounts of funds raised may be relatively small, these partnerships are valuable and create “ownership” of trail sections that is an important part of the long-term success of the trails.



ESTIMATE OF PROBABLE DEVELOPMENT COSTS

Segment ID	Priority	Road Name	Description	Roadway Ownership	Length (LF)	Proposed Improvements	QTY	UNIT	UNIT COST	TOTAL
1A	N. Wayne Ave (Share the Road)	Township boundary to Eagle Road	PennDOT	851	Pavement Markings (Share the Road)	2	EA	\$300	\$600	Share the Road striping (2/mile both directions)
					Signage: W16-1 Share the Road	4	EA	\$80	\$320	Post mounted, at intersections, both directions + 2/mile
					Signage: W11-1 Bicycle Crossing	2	EA	\$165	\$330	Post mounted, at intersections, both directions
					Signage: Wayfinding	2	EA	\$50	\$100	2/mile (both directions)
					SUBTOTAL		\$1,350			
1B	N. Wayne Ave (Share the Road)	Eagle Road to West Ave	PennDOT	1,824	Pavement Markings (Share the Road)	2	EA	\$300	\$600	Share the Road striping (2/mile both directions)
					Signage: W16-1 Share the Road	8	EA	\$80	\$640	Post mounted, at intersections, both directions + 2/mile
					Signage: W11-1 Bicycle Crossing	8	EA	\$165	\$1,320	Post mounted, at intersections, both directions
					Signage: Wayfinding	2	EA	\$50	\$100	2/mile (both directions)
					SUBTOTAL		\$2,660			
1C	N. Wayne Ave (Share the Road)	Pennsylvania Ave to W. Wayne Ave	PennDOT	523	Pavement Markings (Share the Road)	2	EA	\$300	\$600	Share the Road striping (2/mile both directions)
					Signage: W16-1 Share the Road	6	EA	\$80	\$480	Post mounted, at intersections, both directions + 2/mile
					Signage: W11-1 Bicycle Crossing	4	EA	\$165	\$660	Post mounted, at intersections, both directions
					Signage: Wayfinding	4	EA	\$50	\$200	2/mile
					SUBTOTAL		\$1,940			
1D	S. Wayne Ave (Share the Road)	W. Wayne Ave to Conestoga Road	PennDOT	2,976	Asphalt shoulder modifications	3,307	SY	\$17	\$56,213	3' width, both sides
					Pavement Markings (Share the Road)	5,952	LF	\$2	\$11,904	Striped Bike Lane, one side
					Signage: W16-1 Share the Road	7	EA	\$80	\$560	Post mounted, at intersections, both directions + 2/mile
					Signage: W11-1 Bicycle Crossing	4	EA	\$165	\$660	Post mounted, at intersections, both directions
					Signage: Wayfinding	4	EA	\$50	\$200	2/mile (both directions)
					SUBTOTAL		\$69,537			
1E	Conestoga Road (Share the Road)	N. Wayne Ave to Brooke Road	PennDOT	327	Pavement Markings (Share the Road)	654	LF	\$2	\$1,308	Striped Bike Lane, one side
					Signage: W16-1 Share the Road	2	EA	\$80	\$160	Post mounted, at intersection
					Signage: W11-1 Bicycle Crossing	4	EA	\$165	\$660	Post mounted, at intersections, both directions
					Signage: Wayfinding	2	EA	\$50	\$100	2/mile (both directions)
					SUBTOTAL		\$2,228			
1F	Brooke Road (Share the Road)	Conestoga Road to Radnor Trail	Township	350	Pavement Markings (Share the Road)	700	LF	\$2	\$1,400	Striped Bike Lane, one side
					Signage: W16-1 Share the Road	2	EA	\$80	\$160	Post mounted, at intersection
					Signage: W11-1 Bicycle Crossing	3	EA	\$165	\$495	Post mounted, at intersections, both directions
					Signage: Wayfinding	2	EA	\$50	\$100	2/mile (both directions)
					SUBTOTAL		\$2,155			
2A	Sugartown Road (Bike Lanes)	S. Valley Forge Road to Fairfield Lane	Township	3,383	Asphalt shoulder modifications	3,759	SY	\$17	\$63,901	5' width, both sides
					Pavement Markings (Bike Lanes)	6,766	LF	\$2	\$13,532	Striped Bike Lane, each side
					Signage: W16-1 Share the Road	7	EA	\$80	\$560	Post mounted, at intersections, both directions + 2/mile
					Signage: W11-1 Bicycle Crossing	7	EA	\$165	\$1,155	Post mounted, at intersections, both directions
					Signage: Wayfinding	6	EA	\$50	\$300	2/mile
					Barricade	1	EA	\$500	\$500	
					SUBTOTAL		\$79,948			
3A	Church Road (Share the Road)	S. Valley Forge Road to Brooke Road	PennDOT	1,633	Pavement Markings (Share the Road)	2	EA	\$300	\$600	Share the Road striping (2/mile both directions)
					Signage: W16-1 Share the Road	5	EA	\$80	\$400	Post mounted, at intersections, both directions + 2/mile
					Signage: W11-1 Bicycle Crossing	4	EA	\$165	\$660	Post mounted, at intersections, both directions
					Signage: Wayfinding	2	EA	\$50	\$100	2/mile (both directions)
					SUBTOTAL		\$1,760			
3B	Darby Paoli Road (Share the Road)	Brooke Road to Newtown Road	PennDOT	2,101	Asphalt shoulder modifications	700	SY	\$17	\$11,906	1.5' width, both sides
					Pavement Markings (Share the Road)	2	EA	\$300	\$600	Share the Road striping (2/mile both directions)
					Signage: W16-1 Share the Road	4	EA	\$80	\$320	Post mounted, at intersections, both directions + 2/mile
					Signage: W11-1 Bicycle Crossing	4	EA	\$165	\$660	Post mounted, at intersections, both directions
					Signage: Wayfinding	2	EA	\$50	\$100	2/mile (both directions)
					Pedestrian Bridge	1	LS	\$250,000	\$250,000	
					Trailhead Construction (The Willows)					
					Signage	2	EA	\$50	\$100	
					Bollards	2	EA	\$500	\$1,000	
					Information Kiosk	1	EA	\$5,000	\$5,000	
					Recycling	1	EA	\$1,000	\$1,000	
					Bike Rack	1	EA	\$500	\$500	
					Water Fountain	1	EA	\$1,500	\$1,500	
					SUBTOTAL		\$272,686			



ESTIMATE OF PROBABLE DEVELOPMENT COSTS										
Segment ID	Priority	Road Name	Description	Roadway Ownership	Length (LF)	Proposed Improvements	QTY	UNIT	UNIT COST	TOTAL
3C	Darby Paoli Road (Share the Road)	Newtown Road to Goshen Road	PennDOT	8,424	Asphalt shoulder modifications	2,808	SY	\$17	\$47,736	1.5' width, both sides
					Pavement Markings (Share the Road)	8	EA	\$300	\$2,400	Share the Road striping (2/mile both directions)
					Signage: W16-1 Share the Road	10	EA	\$80	\$800	Post mounted, at intersections, both directions + 2/mile
					Signage: W11-1 Bicycle Crossing	7	EA	\$165	\$1,155	Post mounted, at intersections, both directions
					Signage: Wayfinding	8	EA	\$50	\$400	2/mile (both directions)
					Trailhead Construction (Saw Mill Park)					
					Signage	2	EA	\$50	\$100	
					Bollards	2	EA	\$500	\$1,000	
					Information Kiosk	1	EA	\$5,000	\$5,000	
					Trash	1	EA	\$1,000	\$1,000	
					Recycling	1	EA	\$1,000	\$1,000	
					Bike Rack	1	EA	\$500	\$500	
					SUBTOTAL					
3D	Darby Paoli Road (Share the Road)	Goshen Road to Bryn Mawr Ave	PennDOT	1,474	Asphalt shoulder modifications	491	SY	\$17	\$8,353	1.5' width, both sides
					Pavement Markings (Share the Road)	2	EA	\$300	\$600	Share the Road striping (2/mile both directions)
					Signage: W16-1 Share the Road	5	EA	\$80	\$400	Post mounted, at intersections, both directions + 2/mile
					Signage: W11-1 Bicycle Crossing	3	EA	\$165	\$495	Post mounted, at intersections, both directions
					Signage: Wayfinding	2	EA	\$50	\$100	2/mile (both directions)
					SUBTOTAL					
4A	Walnut Ave (Bike Lanes)	N. Wayne Ave to Fenimore Woods	Township	3,070	Asphalt shoulder modifications	3,411	SY	\$17	\$57,989	5' width, both sides
					Pavement Markings (Bike Lanes)	4	EA	\$300	\$1,200	Share the Road striping (2/mile both directions)
					Signage: W16-1 Share the Road	10	EA	\$80	\$800	Post mounted, at intersections, both directions + 2/mile
					Signage: W11-1 Bicycle Crossing	8	EA	\$165	\$1,320	Post mounted, at intersections, both directions
					Signage: Wayfinding	4	EA	\$50	\$200	2/mile (both directions)
					SUBTOTAL					
4B	Multiuse Trail	Walnut Ave to Gulph Creek Road		4,499	10' Asphalt Trail	4,499	LF	\$100	\$449,900	Earthwork, construction, materials, drainage
					Signage: Wayfinding	4	EA	\$50	\$200	2/mile (both directions)
					Signage: W11-15 Trail Crossing	7	EA	\$165	\$1,155	Post mounted, at intersections, both directions
					Bollards	12	EA	\$500	\$6,000	
					Trailhead Construction (Fenimore Woods)					
					Signage	2	EA	\$50	\$100	
					Bollards	2	EA	\$500	\$1,000	
					Recycling	1	EA	\$1,000	\$1,000	
					Bike Rack	1	EA	\$500	\$500	
SUBTOTAL								\$459,855		
4C	Gulph Creek Road (Share the Road)	Segment 4C to Harford Park	PennDOT	3,128	Pavement Markings (Share the Road)	4	EA	\$300	\$1,200	Share the Road Striping (2/mile both directions)
					Signage: W16-1 Share the Road	6	EA	\$80	\$480	Post mounted, at intersections, both directions + 2/mile
					Signage: W11-1 Bicycle Crossing	2	EA	\$165	\$330	Post mounted, at intersections, both directions
					Signage: Wayfinding	4	EA	\$50	\$200	2/mile (both directions)
					SUBTOTAL					
4D	Gulph Creek Road (Share the Road)	Harford Park to County Line Road	PennDOT	1,100	Pavement Markings (Share the Road)	4	EA	\$300	\$1,200	Share the Road Striping (2/mile both directions)
					Signage: W16-1 Share the Road	6	EA	\$80	\$480	Post mounted, at intersections, both directions + 2/mile
					Signage: W11-1 Bicycle Crossing	4	EA	\$165	\$660	Post mounted, at intersections, both directions
					Signage: Wayfinding	2	EA	\$50	\$100	2/mile (both directions)
					SUBTOTAL					
5A	Multiuse Trail	Township Building to Radnor Trail		612	10' Asphalt Trail	612	LF	\$100	\$61,200	Earthwork, construction, materials, drainage
					Signage: Wayfinding	2	EA	\$50	\$100	2/mile
					Signage: W11-1 Bicycle Crossing	8	EA	\$165	\$1,320	Post mounted, at intersections, both directions
					Bollards	4	EA	\$500	\$2,000	
					Trailhead Construction (Encke Park)					
					Signage	2	EA	\$50	\$100	
					Bollards	2	EA	\$500	\$1,000	
					Recycling	1	EA	\$1,000	\$1,000	
					SUBTOTAL					
6A	S. Valley Forge Road (Share the Road)	Dorset Road to Maplewood Ave	Township	1,165	Pavement Markings (Share the Road)	2	EA	\$300	\$600	Share the Road Striping (both directions)
					Signage: W16-1 Share the Road	7	EA	\$80	\$560	Post mounted, at intersections, both directions + 2/mile
					Signage: W11-1 Bicycle Crossing	4	EA	\$165	\$660	Post mounted, at intersections, both directions
					Signage: Wayfinding	2	EA	\$50	\$100	2/mile (both directions)
					SUBTOTAL					
6B	Maplewood Ave (Share the Road)	S. Valley Forge Road to W. Wayne Ave	Township	1,415	Pavement Markings (Share the Road)	2	EA	\$300	\$600	Share the Road Striping (both directions)
					Signage: W16-1 Share the Road	4	EA	\$80	\$320	Post mounted, at intersections, both directions + 2/mile
					Signage: W11-1 Bicycle Crossing	2	EA	\$165	\$330	Post mounted, at intersections, both directions
					Signage: Wayfinding	2	EA	\$50	\$100	2/mile (both directions)
					SUBTOTAL					



ESTIMATE OF PROBABLE DEVELOPMENT COSTS										
Segment ID	Priority	Road Name	Description	Roadway Ownership	Length (LF)	Proposed Improvements	QTY	UNIT	UNIT COST	TOTAL
6C	W. Wayne Ave (Share the Road)	Maplewood Ave to Radnor Trail	Township	4,682	Pavement Markings (Share the Road)	4	EA	\$300	\$1,200	Share the Road Striping (both directions)
					Signage: W16-1 Share the Road	6	EA	\$80	\$480	Post mounted, at intersections, both directions + 2/mile
					Signage: W11-1 Bicycle Crossing	5	EA	\$165	\$825	Post mounted, at intersections, both directions
					Signage: Wayfinding	4	EA	\$50	\$200	2/mile (both directions)
					Trailhead Construction (Odorisio Park)					
					Signage	2	EA	\$50	\$100	
					Bollards	2	EA	\$500	\$1,000	
					Information Kiosk	1	EA	\$5,000	\$5,000	
					Recycling	1	EA	\$1,000	\$1,000	
					Water Fountain	1	EA	\$1,500	\$1,500	
								<b>SUBTOTAL</b>	<b>\$11,305</b>	
7A	S. Radnor Chester Road (Share the Road & Sidewalk)	Radnor Trail to Lancaster Avenue	PennDOT	425	8' Concrete Trail	425	LF	\$120	\$51,000	Earthwork, construction, materials, drainage
					Signage: W11-1 Bicycle Crossing	2	EA	\$165	\$330	Post mounted, at intersections, both directions
					Signage: Wayfinding	2	EA	\$50	\$100	2/mile (both directions)
								<b>SUBTOTAL</b>	<b>\$51,430</b>	
8A	Multiuse Trail (W. Wayne Ave)	S. Wayne Ave to Bloomingdale Ave	Township	1,182	10' Asphalt Trail	1,182	LF	\$100	\$118,200	Earthwork, construction, materials, drainage
					Signage: Wayfinding	2	EA	\$50	\$100	2/mile (both directions)
					Signage: W11-15 TrailCrossing	2	EA	\$165	\$330	Post mounted, at intersections, both directions
								<b>SUBTOTAL</b>	<b>\$118,630</b>	
8B	W. Wayne Ave (Share the Road & Sidewalk)	S. Wayne Ave to Bloomingdale Ave	Township	690	Pavement Markings (Share the Road)	2	EA	\$300	\$600	Share the Road striping (both directions)
					Signage: W16-1 Share the Road	4	EA	\$80	\$320	Post mounted, at intersections, both directions + 2/mile
					Signage: W11-15 Trail Crossing	2	EA	\$165	\$330	Post mounted, at intersections, both directions
					Signage: Wayfinding	2	EA	\$50	\$100	2/mile (both directions)
					Utilize Existing Sidewalk					
								<b>SUBTOTAL</b>	<b>\$1,350</b>	
8C	W. Wayne Ave (Share the Road)	Conestoga Road to Bloomingdale Ave	Township	543	Pavement Markings (Share the Road)	2	EA	\$300	\$600	Share the Road striping (both directions)
					Signage: W16-1 Share the Road	4	EA	\$80	\$320	Post mounted, at intersections, both directions + 2/mile
					Signage: W11-1 Bicycle Crossing	2	EA	\$165	\$330	Post mounted, at intersections, both directions
					Signage: Wayfinding	2	EA	\$50	\$100	2/mile (both directions)
								<b>SUBTOTAL</b>	<b>\$1,350</b>	
8D	Conestoga Road (Pedestrian Only Sidewalk)	Conestoga Road to Bloomingdale Ave	Township	454	Signage: W11-15 Trail Crossing	2	EA	\$165	\$330	Post mounted, at intersections, both directions
					Signage: Wayfinding	2	EA	\$50	\$100	2/mile (both directions)
					Utilize Existing Sidewalk					
								<b>SUBTOTAL</b>	<b>\$430</b>	
8E	Multiuse Trail	Conestoga Road to Radnor Trail		457	10' Asphalt Trail	457	LF	\$100	\$45,700	Earthwork, construction, materials, drainage
					Signage: Wayfinding	2	EA	\$50	\$100	2/mile (both directions)
					Bollards	4	EA	\$500	\$2,000	
					Boardwalk Trail	229	LF	\$50	\$11,425	
								<b>SUBTOTAL</b>	<b>\$59,225</b>	
9A	Multiuse Trail	Radnor Chester Road to King of Prussia Road		3,142	10' Asphalt Trail	3,142	LF	\$100	\$314,200	Earthwork, construction, materials, drainage
					Signage: Wayfinding	4	EA	\$50	\$200	2/mile (both directions)
					Signage: W11-15 Trail Crossing	2	EA	\$165	\$330	Post mounted, at intersections, both directions
					Bollards	4	EA	\$500	\$2,000	
								<b>SUBTOTAL</b>	<b>\$316,730</b>	
9B	Multiuse Trail	King of Prussia Road to Segment 9C		1,315	10' Asphalt Trail	1,315	LF	\$100	\$131,500	Earthwork, construction, materials, drainage
					Signage: Wayfinding	2	EA	\$50	\$100	2/mile (both directions)
					Bollards	2	EA	\$500	\$1,000	
					Small Pedestrian Bridge	1	LS	\$125,000	\$125,000	
								<b>SUBTOTAL</b>	<b>\$257,600</b>	
9C	Multiuse Trail	Segment 9B to Radnor Station (NHSL)		2,027	10' Asphalt Trail	2,027	LF	\$100	\$202,700	Earthwork, construction, materials, drainage
					Signage: Wayfinding	2	EA	\$50	\$100	2/mile (both directions)
					Bollards	4	EA	\$500	\$2,000	
					Trailhead Construction (Villanova Center)					
					Signage	2	EA	\$50	\$100	
					Bollards	2	EA	\$500	\$1,000	
					Information Kiosk	1	EA	\$5,000	\$5,000	
					Trash	1	EA	\$1,000	\$1,000	
					Recycling	1	EA	\$1,000	\$1,000	
								<b>SUBTOTAL</b>	<b>\$212,900</b>	
9D	Multiuse Trail	County Line Road to Radnor Station (Regional Rail)		4,151	10' Asphalt Trail	4,151	LF	\$100	\$415,100	Earthwork, construction, materials, drainage
					Signage: Wayfinding	4	EA	\$50	\$200	2/mile (both directions)
					Bollards	4	EA	\$500	\$2,000	
					New Pedestrian Bridge (Small)	1	LS	\$125,000	\$125,000	
					New Pedestrian Bridge (Large)	1	LS	\$500,000	\$500,000	
								<b>SUBTOTAL</b>	<b>\$1,042,300</b>	



ESTIMATE OF PROBABLE DEVELOPMENT COSTS

Segment ID	Priority	Road Name	Description	Roadway Ownership	Length (LF)	Proposed Improvements	QTY	UNIT	UNIT COST	TOTAL	
9E	Multiuse Trail		County Line Road to Radnor Station (Regional Rail)		4,725	10' Asphalt Trail	4,725	LF	\$100	\$472,500	Earthwork, construction, materials, drainage
						Signage: Wayfinding	4	EA	\$50	\$200	2/mile (both directions)
						Bollards	6	EA	\$500	\$3,000	
						Trailhead Construction (Radnor Memorial Park)					
						Signage	2	EA	\$50	\$100	
						Bollards	2	EA	\$500	\$1,000	
						Information Kiosk	1	EA	\$5,000	\$5,000	
						Recycling	1	EA	\$1,000	\$1,000	
						Bike Rack	1	EA	\$500	\$500	
									<b>SUBTOTAL</b>	<b>\$483,300</b>	
9F	Multiuse Trail		Radnor Station (Regional Rail) to Gulph Creek Road		4,519	10' Asphalt Trail	4,519	LF	\$100	\$451,900	Earthwork, construction, materials, drainage
						Signage: Wayfinding	4	EA	\$50	\$200	2/mile (both directions)
						Signage: W11-15 Trail Crossing	2	EA	\$165	\$330	Post mounted, at intersections, both directions
						Bollards	4	EA	\$500	\$2,000	
						Trailhead Construction (Harford Park)					
						Signage	2	EA	\$50	\$100	
						Bollards	2	EA	\$500	\$1,000	
						Recycling	1	EA	\$1,000	\$1,000	
						Bike Rack	1	EA	\$500	\$500	
									<b>SUBTOTAL</b>	<b>\$457,030</b>	
10A	Church Road (Bike Lanes)		Darby Paoli Road to Church Road	PennDOT	2,254	Asphalt shoulder modifications	1,753	SY	\$17	\$29,803	3.5' width both sides
						Pavement Markings (Bike Lanes)	4,508	LF	\$2	\$9,016	Striped Bike Lane, each side
						Pavement Markings (Share the Road)	2	EA	\$300	\$600	Share the Road Striping (both directions)
						Signage: W16-1 Share the Road	6	EA	\$80	\$480	Post mounted, at intersections, both directions + 2/mile
						Signage: W11-1 Bicycle Crossing	4	EA	\$165	\$660	Post mounted, at intersections, both directions
						Signage: Wayfinding	4	EA	\$50	\$200	2/mile (both directions)
									<b>SUBTOTAL</b>	<b>\$40,759</b>	
10B	Brooke Road (Bike Lanes)		Church Road to Segment 15A	Township	2,471	Asphalt shoulder modifications	1,922	SY	\$17	\$32,672	3.5' width both sides
						Curb Removal	750	LF	\$5	\$3,750	
						Tree Removal & Clearing	1	LS	\$5,000	\$5,000	
						Utility Pole Relocation	14	EA	\$10,000	\$140,000	On north side of road
						Pavement Markings (Bike Lanes)	4,942	LF	\$2	\$9,884	Striped Bike Lane, each side
						Signage: W16-1 Share the Road	2	EA	\$80	\$160	Post mounted, at intersections, both directions + 2/mile
						Signage: W11-1 Bicycle Crossing	2	EA	\$165	\$330	Post mounted, at intersections, both directions
						Signage: Wayfinding	2	EA	\$50	\$100	2/mile (both directions)
									<b>SUBTOTAL</b>	<b>\$191,896</b>	
10C	Brooke Road (Bike Lanes)		Segment 15A to Radnor Trail	Township	1,205	Asphalt shoulder modifications	937	SY	\$17	\$15,933	3.5' width both sides
						Retaining Walls	600	LF	\$250	\$150,000	Both sides
						Grading	1	LS	\$5,000	\$5,000	
						Demolish Existing Stone Wall	100	LF	\$10	\$1,000	
						Curb Removal	2,410	LF	\$5	\$12,050	
						Tree Removal & Clearing	1	LS	\$5,000	\$5,000	
						Utility Pole Relocation	10	EA	\$10,000	\$100,000	On north side of road
						Pavement Markings (Bike Lanes)	2,410	LF	\$2	\$4,820	Striped Bike Lane, each side
						Signage: W16-1 Share the Road	3	EA	\$80	\$240	Post mounted, at intersections, both directions + 2/mile
						Signage: W11-1 Bicycle Crossing	2	EA	\$165	\$330	Post mounted, at intersections, both directions
						Signage: Wayfinding	2	EA	\$50	\$100	2/mile (both directions)
									<b>SUBTOTAL</b>	<b>\$294,473</b>	
11A	S. Ithan Ave (Share the Road)		Bryn Mawr Ave to Wyldhaven Road	Township	3,902	Pavement Markings (Share the Road)	4	EA	\$300	\$1,200	Share the Road striping (both directions)
						Signage: W16-1 Share the Road	6	EA	\$80	\$480	Post mounted, at intersections, both directions + 2/mile
						Signage: W11-1 Bicycle Crossing	3	EA	\$165	\$495	Post mounted, at intersections, both directions
						Signage: Wayfinding	4	EA	\$50	\$200	2/mile (both directions)
						Trailhead Construction (Ithan Valley Park)					
						Signage	2	EA	\$50	\$100	
						Bollards	2	EA	\$500	\$1,000	
						Trash	1	EA	\$1,000	\$1,000	
						Recycling	1	EA	\$1,000	\$1,000	
						Bike Rack	1	EA	\$500	\$500	
									<b>SUBTOTAL</b>	<b>\$5,975</b>	
11B	S. Ithan Ave (Share the Road)		Wyldhaven Road to Lancaster Ave	Township	9,736	Pavement Markings (Share the Road)	8	EA	\$300	\$2,400	Share the Road striping (both directions)
						Signage: W16-1 Share the Road	12	EA	\$80	\$960	Post mounted, at intersections, both directions + 2/mile
						Signage: W11-1 Bicycle Crossing	7	EA	\$165	\$1,155	Post mounted, at intersections, both directions
						Signage: Wayfinding	8	EA	\$50	\$400	2/mile (both directions)
						New Pedestrian Bridge (Small)	1	LS	\$125,000	\$125,000	
									<b>SUBTOTAL</b>	<b>\$129,915</b>	
11C	S. Ithan Ave (Share the Road)		Lancaster Ave to County Line Road	Township	1,121	Pavement Markings (Share the Road)	2	EA	\$300	\$600	Share the Road striping (both directions)
						Signage: W16-1 Share the Road	4	EA	\$80	\$320	Post mounted, at intersections, both directions + 2/mile
						Signage: W11-1 Bicycle Crossing	2	EA	\$165	\$330	Post mounted, at intersections, both directions
						Signage: Wayfinding	2	EA	\$50	\$100	2/mile (both directions)
									<b>SUBTOTAL</b>	<b>\$1,350</b>	
12A	Multiuse Trail		Lancaster Ave to Radnor Station (Regional Rail)		3,313	10' Asphalt Trail	3,313	LF	\$100	\$331,300	Earthwork, construction, materials, drainage
						Signage: Wayfinding	4	EA	\$50	\$200	2/mile (both directions)
						Bollards	4	EA	\$500	\$2,000	



ESTIMATE OF PROBABLE DEVELOPMENT COSTS										
Segment ID	Priority	Road Name	Description	Roadway Ownership	Length (LF)	Proposed Improvements	QTY	UNIT	UNIT COST	TOTAL
									SUBTOTAL	\$333,500
12B	Multiuse Trail		Radnor Station (Regional Rail) to Segment 12C		1,558	10' Asphalt Trail	1,558	LF	\$100	\$155,800
						Signage: Wayfinding	2	EA	\$50	\$100
						Bollards	2	EA	\$500	\$1,000
									SUBTOTAL	\$156,900
12C	Multiuse Trail		Segment 12B to Radnor Station (NHSL)		603	10' Asphalt Trail	603	LF	\$100	\$60,300
						Signage: Wayfinding	2	EA	\$50	\$100
						Bollards	2	EA	\$500	\$1,000
									SUBTOTAL	\$61,400
12D	Multiuse Trail		Segment 9A to Segment 12C		1,324	8' Asphalt Trail	1,324	LF	\$100	\$132,400
						Signage: Wayfinding	2	EA	\$50	\$100
									SUBTOTAL	\$132,500
13A	Eachus Ave (Share the Road)		Conestoga Road to Garrett Hill Station (NHSL)	Township	1,030	Pavement Markings (Share the Road)	2	EA	\$300	\$600
						Signage: W16-1 Share the Road	6	EA	\$80	\$480
						Signage: W11-1 Bicycle Crossing	3	EA	\$165	\$495
						Signage: Wayfinding	2	EA	\$50	\$100
									SUBTOTAL	\$1,675
14A	Hiking Trail		Radnor Trail to Browns Lane		3,910	Compacted Earth (5' wide)	3,910	LF	\$25	\$97,750
						Selective Vegetation Clearing	1	LS	\$10,000	10,000
						Signage: Wayfinding	6	EA	\$50	\$300
									SUBTOTAL	\$108,050
15A	Multiuse Trail		Brooke Road to Chanticleer Garden		998	10' Asphalt Trail	998	LF	\$100	\$99,800
						Signage: Wayfinding	2	EA	\$50	\$100
						Bollards	4	EA	\$500	\$2,000
									SUBTOTAL	\$101,900
16A	Multiuse Trail		Segment 11A to Ithan Ave		3,775	10' Asphalt Trail	3,775	LF	\$100	\$377,500
						Signage: Wayfinding	4	EA	\$50	\$200
						Signage: W11-15 Trail Crossing	2	EA	\$165	\$330
						Bollards	6	EA	\$500	\$3,000
						Relocate Existing Fence	1,888	LF	\$50	\$94,375
									SUBTOTAL	\$475,405
18A	Goshen Road (Bike Lanes)		Malin Road to Darby Paoli Road	PennDOT	3,585	Pavement Markings (Bike Lanes)	7,170	LF	\$2	\$14,340
						Signage: W16-1 Share the Road	9	EA	\$80	\$720
						Signage: W11-1 Bicycle Crossing	5	EA	\$165	\$825
						Signage: Wayfinding	4	EA	\$50	\$200
									SUBTOTAL	\$16,085
20A	Wylldhaven Road (Bike Lanes)		S. Ithan Ave to Yorkshire Way	Township	4,265	Pavement Markings (Bike Lanes)	8,530	LF	\$2	\$17,060
						Signage: W16-1 Share the Road	6	EA	\$80	\$480
						Signage: W11-1 Bicycle Crossing	7	EA	\$165	\$1,155
						Signage: Wayfinding	4	EA	\$50	\$200
									SUBTOTAL	\$18,895
20B	Yorkshire Way (Share the Road)		Wylldhaven Road to Rockingham Road	Township	482	Pavement Markings (Share the Road)	2	EA	\$300	\$600
						Signage: W16-1 Share the Road	4	EA	\$80	\$320
						Signage: W11-1 Bicycle Crossing	2	EA	\$165	\$330
						Signage: Wayfinding	2	EA	\$50	\$100
									SUBTOTAL	\$1,350
20C	Rockingham Road (Share the Road)		Yorkshire Way to Dreer Lane	Township	1,042	Pavement Markings (Share the Road)	2	EA	\$300	\$600
						Signage: W16-1 Share the Road	4	EA	\$80	\$320
						Signage: W11-1 Bicycle Crossing	2	EA	\$165	\$330
						Signage: Wayfinding	2	EA	\$50	\$100
						Trailhead Construction (Clem Macrone Park)				
						Signage	2	EA	\$50	\$100
						Bollards	2	EA	\$500	\$1,000
						Recycling	1	EA	\$1,000	\$1,000
									SUBTOTAL	\$3,450
20D	Dreer Lane (Share the Road)		Beechwood Drive to Lancaster Ave	Township	515	Pavement Markings (Share the Road)	2	EA	\$300	\$600
						Signage: W16-1 Share the Road	4	EA	\$80	\$320
						Signage: W11-1 Bicycle Crossing	4	EA	\$165	\$660
						Signage: Wayfinding	2	EA	\$50	\$100
									SUBTOTAL	\$1,680



ESTIMATE OF PROBABLE DEVELOPMENT COSTS										
Segment ID	Priority	Road Name	Description	Roadway Ownership	Length (LF)	Proposed Improvements	QTY	UNIT	UNIT COST	TOTAL
20E	Garrett Ave (Share the Road)	Dreer Lane to Garrett Hill Station (NHSL)	Township	1,595	Pavement Markings (Share the Road)	2	EA		\$300	\$600
					Signage: W16-1 Share the Road	5	EA		\$80	\$400
					Signage: W11-1 Bicycle Crossing	3	EA		\$165	\$495
					Signage: Wayfinding	2	EA		\$50	\$100
									<b>SUBTOTAL</b>	<b>\$1,595</b>
20F	Garrett Ave (Share the Road)	Garrett Hill Station (NHSL) to Lancaster Ave	Township	1,187	Pavement Markings (Share the Road)	2	EA		\$300	\$600
					Signage: W16-1 Share the Road	3	EA		\$80	\$240
					Signage: W11-1 Bicycle Crossing	3	EA		\$165	\$495
					Signage: Wayfinding	2	EA		\$50	\$100
									<b>SUBTOTAL</b>	<b>\$1,435</b>
22A	Bryn Mawr Ave (Bike Lanes)	Malin Road to Darby Paoli Road	PennDOT	4,450	Asphalt shoulder modifications	1,978	SY		\$17	\$33,622
					Pavement Markings (Bike Lanes)	8,900	LF		\$2	\$17,800
					Signage: W16-1 Share the Road	6	EA		\$80	\$480
					Signage: W11-1 Bicycle Crossing	6	EA		\$165	\$990
					Signage: Wayfinding	4	EA		\$50	\$200
									<b>SUBTOTAL</b>	<b>\$53,092</b>
22B	Bryn Mawr Ave (Share the Road)	Darby Paoli Road to S. Ithan Ave	PennDOT	3,932	Asphalt shoulder modifications	874	SY		\$17	\$14,854
					10' Asphalt Trail	606	LF		\$100	\$60,600
					Pavement Markings (Share the Road)	7,864	LF		\$2	\$15,728
					Signage: W16-1 Share the Road	11	EA		\$80	\$880
					Signage: W11-1 Bicycle Crossing	7	EA		\$165	\$1,155
					Signage: Wayfinding	2	EA		\$50	\$100
					Bollards	2	EA		\$500	\$1,000
									<b>SUBTOTAL</b>	<b>\$94,317</b>
22C	Bryn Mawr Ave (Share the Road)	S. Ithan Ave to County Line Road	PennDOT	9,955	Asphalt shoulder modifications	676	SY		\$17	\$11,492
					Pavement Markings (Bike Lanes)	6,084	LF		\$2	\$12,168
					Pavement Markings (Share the Road)	6	EA		\$300	\$1,800
					Signage: W16-1 Share the Road	6	EA		\$80	\$480
					Signage: W11-1 Bicycle Crossing	28	EA		\$165	\$4,620
					Signage: Wayfinding	6	EA		\$50	\$300
					Pedestrian Bridges	2	EA		\$100,000	\$200,000
					Retaining Walls	1,500	LF		\$25	\$37,500
					Utility Pole Relocations	15	EA		\$10,000	\$150,000
									<b>SUBTOTAL</b>	<b>\$418,360</b>
Existing Trailhead Modifications						Trailhead Modifications (Gallagher Road)				
						Information Kiosk	1	EA		\$5,000
						Recycling	1	EA		\$1,000
						Bike Rack	1	EA		\$500
						Water Fountain	1	EA		\$1,500
						Trailhead Modifications (Friends of Radnor Trail Park)				
						Information Kiosk	1	EA		\$5,000
						Recycling	1	EA		\$1,000
						Trailhead Modifications (Conestoga Road)				
						Signage	2	EA		\$50
						Bollards	2	EA		\$500
						Information Kiosk	1	EA		\$5,000
						Recycling	1	EA		\$1,000
						Bike Rack	1	EA		\$500
						Water Fountain	1	EA		\$1,500
						Trailhead Modifications (Wayne Art Center)				
						Signage	2	EA		\$50
						Bollards	2	EA		\$500
						Bike Rack	1	EA		\$500
						Water Fountain	1	EA		\$1,500
									<b>SUBTOTAL</b>	<b>\$26,200</b>

TOTAL TOWNSHIP ON ROAD\$1,855,869

TOTAL TOWNSHIP OFF ROAD\$4,904,975

TOTAL EXISTING TRAILHEAD MODIFICATIONS\$26,200

Subtotal	\$6,787,044
Contingency (20%)	\$1,357,409
Design & Engineering (20%)	\$1,357,409
TOTAL	\$9,501,861

Key:

Priority Trail

Other Trail













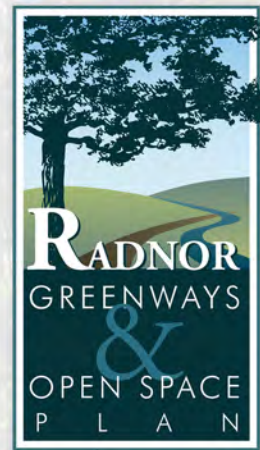
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## APPENDIX CONTENTS:

- Committee Meetings**
- Focus Groups**
- Memos**
- Online Survey**
- Planning Documents**
- Press Releases**
- Public Meetings**







prepared by:



Traffic Planning and Design