

Delaware County Open Space, Recreation, and Greenway Plan

Conserve | Enhance | Connect

Volume I

Open Space and Recreation Plan



APRIL 2015

Delaware County Open Space, Recreation, and Greenway Plan
Conserve | Enhance | Connect

**Volume I:
Delaware County Open Space,
Recreation, and Greenway Plan**

APRIL 2015

Prepared By:

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**A RESOLUTION of the DELAWARE COUNTY COUNCIL
Park, Open Space and Greenway Plan
Community Conservation Partnerships Grant
PROJECT (BRC-TAG-16-58)**

WHEREAS, the County of Delaware, with assistance from TPW Design Studios, has prepared a Countywide Open Space, Recreation, and Greenway Plan; and,

WHEREAS, the purpose of the Plan is to create an overarching vision for the protection and enhancement of natural and cultural resources, open spaces, and greenways in Delaware County; to provide guidance for decision-making regarding open space and greenways; and increase public benefit while ensuring environmental quality and,

WHEREAS, the Plan was financed in part by a Community Conservation Partnerships Program grant under the administration of the Pennsylvania Department of Conservation and Natural Resources, Bureau of Recreation and Conservation, under contract number **BRC-TAG-16-58**

NOW, THEREFORE, BE IT HEREBY RESOLVED by Delaware County Council that:

- a. The project was completed in accordance with the Grant Agreement.
- b. All project expenditures have been made and were in accordance with the Grant Agreement.
- c. The Plan and related materials are acceptable to the County.
- d. The Plan and related materials will be used to guide future recreation and conservation decisions.
- e. The Plan and related materials shall be adopted as a component of the Delaware County Comprehensive Plan in accordance with the Pennsylvania Municipalities Planning Code (Act 247 of 1968, as amended).

ADOPTED THIS 22 DAY OF APRIL, 2015, by Delaware County Council.



Mario J. Civera, Jr., Chairman

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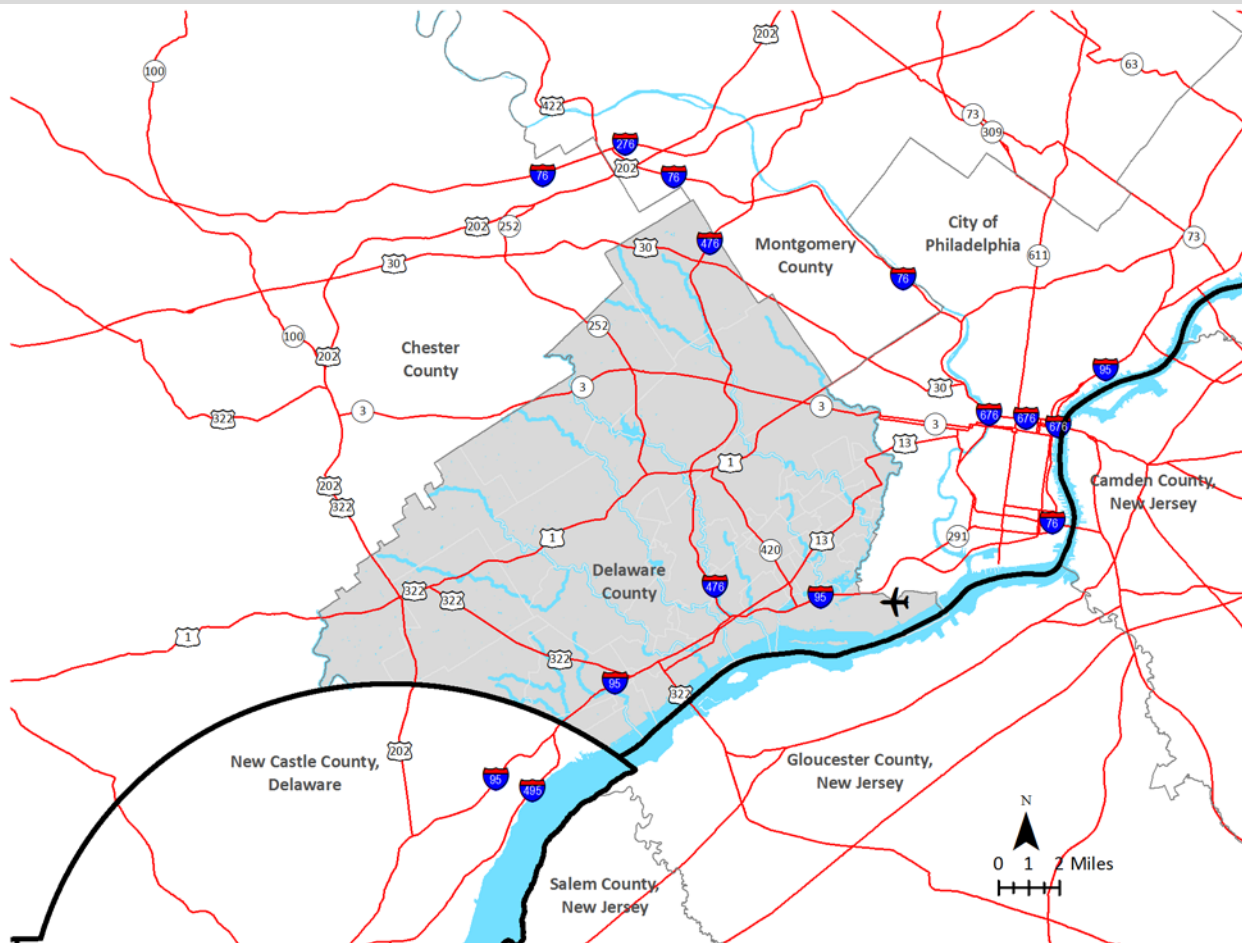
Chapter 1: Introduction and Background

INTRODUCTION

Delaware County is located in the southeast corner of Pennsylvania, immediately west of the City of Philadelphia. It is bordered by Chester, Montgomery, and Philadelphia Counties in Pennsylvania; Gloucester County, New Jersey; and New Castle County, Delaware (See Map 1-1). The five-county region, which includes Delaware, Bucks, Montgomery, Chester, and Philadelphia Counties, has a combined population of more than 3.8 million people. According to the 2010 Census, Delaware County is home to 558,979 people. It has a land area of 191 square miles, making it the second smallest county in the region, after Philadelphia County.

Delaware County's landscape has undergone enormous change over the last century. Open land, which once constituted much of the County, has now given way to development, particularly over the last fifty years. This was primarily due to social, economic, technological, and industrial shifts. What remains of the County's open land, so crucial to our quality of life, is in short supply and under a great deal of development pressure. Public meetings and surveys undertaken as part of this open space planning effort reveal that open space and recreational facilities are a priority to citizens Countywide. The public

Map 1-1: Delaware County



Sources for all maps throughout this document can be found in the Appendix I-C: Map Data Sources

has expressed interest in the re-greening of urban areas, recreational parks, trails, and open spaces, with a heightened sensitivity for natural resources.

In response to public interest in open space, the County is taking a proactive approach in planning to identify needs and opportunities, as well as to address the challenges facing the County during the early third of the 21st century. The first major step in this process was the completion of the County's comprehensive plan, *Delaware County 2035*, which was adopted in the fall of 2013.

DELAWARE COUNTY 2035

Delaware County 2035, a Comprehensive Policy Framework Plan, establishes an overall vision for the future of the County through the year 2035. It also sets policies for development, redevelopment, conservation, and economic initiatives. The Plan provides the County's 49 municipalities with a framework for the strategic use of public resources to improve the quality of life for all its residents. In accordance with the Municipalities Planning Code (MPC), the plan "establishes objectives of the municipality concerning its future development, including, but not limited to, the location, character, and timing of future developments."

Delaware County 2035 consists of a central Land Use Policy Framework Plan and a number of related and interconnected, but more detailed, component plans. Some of these component plans – addressing additional planning-related elements within the County – have already been developed, such as the County Bicycle Plan; more are under development. Each component plan will use the same framework and build off of the land use policies laid out in the Framework Plan. Individual municipal plans serve as a basis for these plans. This Open Space, Recreation, and Greenway plan will serve as the open space component plan of *Delaware County 2035*.

The County Profile section of *Delaware County 2035* is organized by the key themes of Delaware County:

The Land:

- A Range of Housing Options
- Natural Resources Protection
- Quality Community Services and Facilities
 - Health Care
 - Higher Education
- Utilities

The People

- Demographics
 - Aging in Place
 - Race, Ethnicity, and Diversity
- Energy
- Employment

The Places

Delaware County 2035 recognizes the importance of supporting growth in the County through the celebration of community character, that is, the sum of essential qualities that makes each neighborhood and municipality a distinct place. The County has four Character Area types, which are broad areas with similar development patterns and characteristics, and four types of Central

Places, which are community focal points that reinforce or establish a sense of place and character. The planning areas (or place types) (see the Delaware County Profile section for more detailed description of each) identified in *Delaware County 2035* are:

Character Areas

- Mature Neighborhood
- Growing Suburb
- Open Space
- Greenway

Central Places

- Urbanized Center
- Town Center
- Neighborhood Center
- Activity Corridor

The Land Use Framework chapter of *Delaware County 2035* details prioritized objectives, policies, and actions that County and municipal decision makers can take to address their common issues and challenges. Recommendations are presented for each of the eight place types listed above. The plan also identifies place-making themes which were derived from the themes represented in the County's municipal comprehensive plans. They address general goals for improvement across the County. Themes related to open space, recreation, and greenways include:

- **Sustainable Development Patterns** – development that meets the needs of the present without compromising the ability of future generations to meet their own needs. This also includes development which can be adapted for future uses and focuses on development around existing centers.
- **Multi-modal Transportation** – a connected transportation system that supports pedestrians, public transit, bicycles, and motor vehicles.
- **Multi-municipal Partnerships** – municipal partnerships on a variety of projects at a variety of levels from informal information sharing to formalized joint contracting. Working with neighboring communities allows for efficiencies of scale and coordinated development across municipal lines.
- **Historic and Natural Resource Protection** – preserving historic and natural assets within the County's landscape that have recreational, visual, cultural, environmental, or economic benefits.
- **Healthy Lifestyles** – promoting a built environment and programs that encourage active transportation and recreation, and make provisions for access to healthy food options for all citizens.
- **Community Character** – planning for new construction within the context of existing landscapes and development while recognizing that with the growth of our region new development will in fact change the landscape of the County. New development and redevelopment should fit in with the existing or desired character of the community.

OPEN SPACE COMPONENT PLAN

As stated above, this document is a component plan of *Delaware County 2035* and, as such, follows the framework and builds off the land use policies established in the plan. The intent of the Open Space Component Plan is to serve as a guide and resource for countywide, multi-municipal, and municipal

open space planning efforts. It examines the policies and trends identified in the *Delaware County 2035* Land Use Framework Plan with specific regard to open space, recreation, and greenway needs and opportunities specific to the County.

It is important to note that the plan implementation relative to planning and zoning remain the responsibility of municipal officials. The County's powers are limited to suggesting refinements to local actions that reflect the common issues, goals, and strategies shared by the municipalities.

The Open Space Component Plan is the result of widespread public participation, which included surveys, stakeholder interviews, focus groups, input from a task force, and several public meetings. The public participation efforts conducted, in conjunction with the framework established in *Delaware County 2035*, informed the goals and objectives established throughout this plan. The document also benefited from the work of design and planning consultants contracted by Delaware County to examine open space needs and opportunities, particularly regarding the County Parks system.

In order to integrate all of the information, analysis, and goals of this plan into a manageable format, the Open Space Plan was organized into four separate volumes:

Volume I: Open Space and Recreation Plan (this document)

Volume I provides a complete review of municipal, county, state, and federal open space within Delaware County. It includes an inventory of existing open spaces and natural resources, analysis of open space and recreational needs and opportunities, and an overview of implementation methods for municipalities and the County to utilize.

Volume II: Countywide Greenway Plan

Volume II is Delaware County's first ever countywide greenway plan. It identifies a countywide Primary Trail Network which connects recreational and cultural hubs via trails, as well as conservation greenways along stream corridors.

Volume III: County Parks and Recreation

Volume III specifically examines the Delaware County Parks and Recreation system, and includes long range site development drawings and accompanying narratives for several of the major County parks.

Volume IV: Public Participation

Volume IV is the accumulation of public participation materials from the planning process used for the development of the plan. This includes public presentation documents, public comments, meeting agendas and minutes/comments, stakeholder interview lists, and online survey results.

Connection with *Delaware County 2035*

As a component of *Delaware County 2035*, it is important to consider how the open space plan correlates with and reinforces the County land use strategy established by that framework plan. Though not always identified directly, the place-making themes from *Delaware County 2035* are an important underlying factor in much of the Open Space, Recreation, and Greenway Plan.

The place types identified above, on the other hand, are utilized specifically throughout this plan to frame the discussion of open space within the context of Character Areas and Central Places. The type

and quantity of open space varies depending on the Character Area and Central Place. Using the place types to discuss open space allows for an informed conversation regarding what is preferred and appropriate for the desired community characters identified in *Delaware County 2035*.

The following are the countywide objectives from *Delaware County 2035* which were identified as a result of the planning process for the comprehensive plan. The intent of this plan is to build upon the objectives established in that document with specific regard to open space. As such, the *Delaware County 2035* objectives inform the specific goals, objectives, and actions of this Open Space Plan.

Delaware County 2035

Objectives

LU 1:

Create desirable places to live by ensuring that land resources are allocated for uses that will achieve the following:

- Accommodate and enhance established community character and planned growth;
- Support viable transportation and infrastructure systems;
- Include a range of housing options;
- Protect natural and historic resources;
- And provide for adequate community facilities.

LU 2:

Encourage compatible land use, redevelopment, and revitalization that will protect the stability and enhance the character of Mature Neighborhoods.

LU 3:

Encourage context-sensitive design and sustainable development and redevelopment.

LU 4:

Preserve, connect, and expand greenways and open space to protect natural and historic resources, and promote healthy lifestyles.

LU 5:

Improve land use compatibility and accommodate population growth, institutions, services, and culture to strengthen economic competitiveness. One series of policies and actions is presented for Urbanized Center, Town Center, and Neighborhood Center since they share a common objective.

LU 6:

Promote economic redevelopment and development, while preserving community character and improving accessibility.

(Delaware County Planning Department 2013)

GOALS

As part of the planning process, three overarching goals were identified to guide the open space planning efforts in the County. They are the result of public participation, consultation with the Open Space Task Force, and an analysis of existing open space needs and opportunities. They also take into account the objectives from *Delaware County 2035* identified above, along with their respective policies and actions. The goals of the Open Space Plan are:

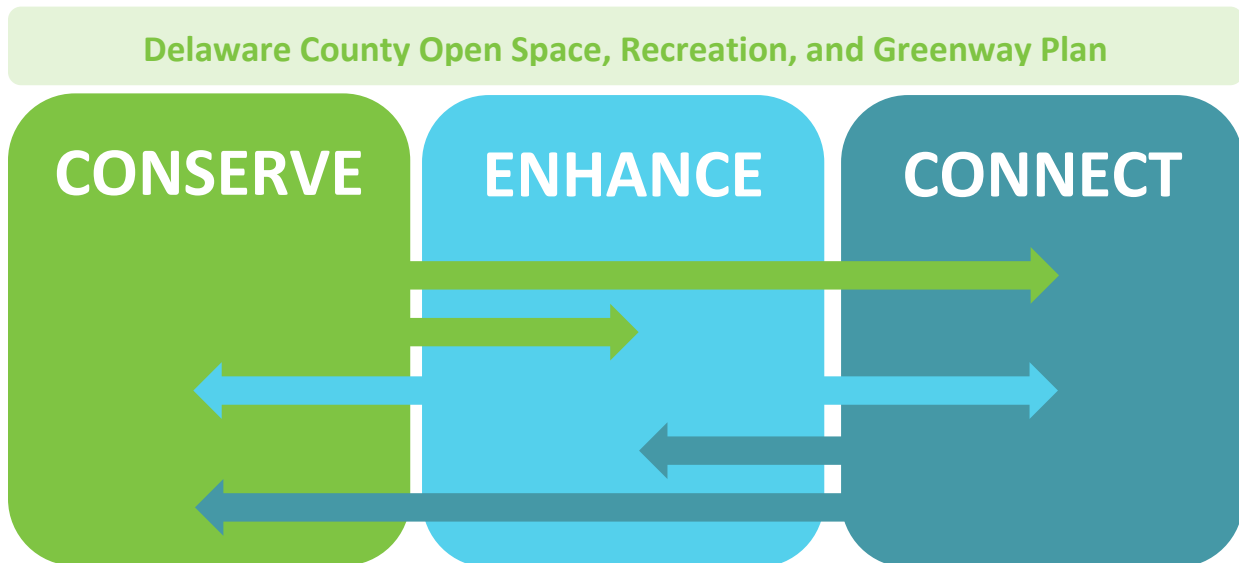
Goal 1: Conserve
Conserve the natural and cultural resources of the County

Goal 2: Enhance
Increase and enhance the environmental and/or recreational value of developed and undeveloped lands

Goal 3: Connect
Develop a greenway network that connects natural features and people to community and regional destinations.

These interrelated goals represent a three-pronged approach to addressing the County’s open space needs and opportunities and long term sustainable quality of life in the 21st century. The goals are indicative of widespread opportunities to continue to conserve, enhance, and connect various features of Delaware County’s open space system. As such, they serve as the basis for both discussion and recommendations made in this plan.

The objectives and actions for each chapter often relate to more than one, if not all, of the 3 goals. Therefore, objectives and actions are organized by chapter rather than by goal, and reflect the specific needs and opportunities discussed in that chapter.



DEFINING OPEN SPACE

DEFINITION

Open space can be defined many ways, depending on the context in which the term is used. The following paragraph, which defines open space, was excerpted from *Delaware County 2035*.

Open space is the land and water features of the landscape that have not been developed for intensive human uses, such as residential neighborhoods, business districts and industrial sites. A variety of terms are used to describe different types of open space, including *active open space* (athletic fields), *passive open space* (scenic and natural parks), *public open space* (government-owned or controlled), and *private open space* (undeveloped and unavailable for public use). The term *protected open space* includes publicly owned open space, land owned by a land trust or conservation organization, land under a permanent easement or deed restriction, and homeowners association open space. *Unprotected open space* describes all other privately owned undeveloped land. *Quasi-public open space*, a subcategory of unprotected open space, is a term that covers school fields, institutional lands, cemeteries, and club recreation areas like golf courses and swim clubs.

As this definition shows, open space can take many forms and can belong to more than one of the categories noted above. Each reflects the fact that it is a highly valued and irreplaceable asset to our communities. The following section further describes open space types identified above.

Active or Passive

“Active open space” generally refers to recreation areas, such as playgrounds or athletic fields, that engage the public in the use of facilities and/or other improvements. “Passive open space” most often refers to generally unimproved land used for natural conservation or interpretation. It is well suited for activities such as hiking, bird watching, and education. Some park complexes contain both active and passive use areas.

Public or Private

Open space can be privately- or publicly-owned. Undeveloped land owned or otherwise controlled by the government is referred to as “public open space.” It is usually, but not always, open for public use. “Private open space,” depending on the land use type, is generally not open to the public. Examples of private open space include vacant lots, large estates, private arboreta, or private agricultural land.

Protected or Unprotected

“Protected open space” is land that is permanently protected for parks and recreation, scenic, or environmental purposes by means of public ownership or a permanent conservation easement. It can be publicly or privately-owned. Some privately-owned “protected open space” is land preserved for scenic or environmental purposes, but without public access unless specifically granted in an easement. Unprotected open space could potentially be developed at any time by its owner.

Quasi-public

The term “quasi-public open space” is used when discussing properties like school campuses, golf courses, swim clubs, or homeowners’ association open space, which, while privately-owned/controlled, are still available for use.

PARKS

Defined

Similar to open space there is no universally accepted definition for a park. The definition for a park often depends on the person using the term. The following four criteria can be used to help identify a place as a park: it (1) is publicly accessible, (2) has identifiable boundaries, (3) contributes to the overall community aesthetics, and (4) provides a community gathering place (Springgate 2008). It is important to note that while all parks are open space, not all open spaces are parks.

Historical Context

The concept of the urban park has changed over time. The following historical context is paraphrased from Springgate, 2008. In the 1800s, urban parks were spacious, informal, and unstructured. Some of the most prominent examples of this time include the work of renowned landscape architect Frederick Law Olmsted, such as Central Park in New York City. They included pathways and playgrounds, and were open and accessible to all users to engage in any recreational activity.

In the 1900s, there were two eras of park design that focused on active recreation. The first, from 1900 to 1930, was the Reform movement, which focused on enlightened programming and recreation facilities to solve social problems by helping city residents to use their time more “productively.” Then, from 1930 to 1965, the Recreation Facility Era discarded social reform in favor of practical considerations like numerical planning standards. Landscaping, aesthetics, and unstructured open space were given a secondary role in favor of a multitude of specific organized recreation uses. Public access was also limited because of the many areas reserved for specific groups.

The most recent movement focuses on the protection of natural resources, and is driven by natural resource conservation advocacy at levels. It began in earnest in the 1970s as groups began to bring attention to the negative impacts from development patterns of the early- and mid-1900s. This helped lead to the creation and protection of state and national parks and the municipal protection of natural areas including woodlands, wetlands, and shorelines as parkland. This movement continues today, as groups and individuals push to raise awareness about the sensitivity of natural features.

Functions

Parks serve many different purposes and come in many shapes and sizes. Olmsted pioneered the concept of a park system in which significant parklands are connected by green boulevards (streetscapes) and trails (Mertes and Hall 1996). This concept is still embraced today and can be used to help people located in different places be connected to parks that offer the functions they need. The following are categories of functional components that make up a well-rounded parks system. Keep in mind, there are places performing some of these functions that are not physically accessible to the general public or meet the definition of a “park,” but they are still vital to the open space system.

- Recreation Complexes – athletic fields and game courts comprise much of the site
- Landscaped Parks – arboretums, formal gardens
- Trails – serving a transportation purpose, connecting to other parts of the park system
- Natural Resource Sites – woodlands, wildlife habitat, stream valley parks
- Streetscapes – street trees, medians, gateway parks, plazas, sidewalks
- Heritage Resource Sites – public historic sites as an indoor/outdoor museum
- Open Spaces – valued undeveloped land not in other categories such as agricultural land, highway clover leaves, institutional or corporate grounds, scenic vistas, community gardens

Types

Municipalities in Delaware County that have developed parks and open space plans have categorized parkland in slightly different ways, using varying terminology. National Recreation and Park Association (NRPA) classifications are the most widely accepted, and are intended to be used at the local level. The park types described below are adopted from the NRPA standards, which take into consideration community needs (Mertes and Hall 1996). It is possible that a single park can be classified as more than one type. The first four types are more illustrative of the size and service area of a park, while the others relate to its ownership, facilities, and intended use. When classifying a park, service area is more important than size because it clarifies how many people and who will be using it. Parks fitting the definition of a certain type are sometimes much smaller in an urban setting, such as many parts of Delaware County.

- **Mini-Park** – Also known as a “pocket park,” is the smallest size park, usually serving one recreational need in a residential setting. It can be a small playground, ornamental garden, or sitting area, up to one acre in size and serving an area within a ¼ mile radius.
- **Neighborhood Park** - The basic unit of a municipal park system, serving one neighborhood and not more than one municipality. Many different activities can take place at one neighborhood park. Five to ten acres is often and optimal size for this type.
- **Community Park** - Serves a broader area than a neighborhood park. The size is as needed to accommodate desired uses, but is usually between 30 and 50 acres. Emphasis may be placed on the preservation of unique landscapes and open spaces within these parks. Programs and facilities at these parks attract people from surrounding municipalities or from around a county.
- **Regional Park and Park Reserve** - Large scale, regionally based parks and open spaces, focusing on natural lands preservation and nature recreation. Size can be in the thousands of acres. State and national parks and preserves fall under this category.
- **Sports Complex** - Consolidates heavily programmed athletic fields and associated facilities on larger and fewer sites strategically located throughout the community. These are optimally 40 to 80 acres and may also include community or neighborhood park facilities.
- **School Park** - Can be used in conjunction with, or in place of neighborhood or community parks. School sites often provide a majority of a community’s indoor recreation and community center facilities.
- **Special Use** - Single-purpose or -use parks that serve a wide area because it contains unique features that cannot be provided by municipalities in many areas of a county.
- **Greenway** - Linear connection that ties park systems together to form a linear park, preserves natural resources, or provide space for a trail. Can be land, road, transit, or water.
- **Private Park / Recreation Facility** - Park and recreation facility that is privately owned and operated as a club or commercial operation, contributing to the overall park and recreation system.
- **Undeveloped Open Space** - Publicly-owned open space that has not been developed with recreation facilities and is not part of a greenway. These spaces could become a park or remain as an undeveloped area for wild area or as scenic visual relief.

In Delaware County, it is apparent that the ownership of a park does not dictate its type or function. For example, not all of the parks in the County’s park system are community parks, though the six largest are. Some of the other County-owned parks are neighborhood parks, sections of greenways, or undeveloped open spaces.

Role of Parks in the Community

In 2008, the APA Planning Advisory Service released a document titled *From Recreation to Re-Creation: New Directions in Parks and Open Space Systems Planning*. It contained eleven (11) briefing papers that discussed, in detail, the various roles of urban parks. These roles include the following:

- Community Revitalization
- Community Engagement
- Economic Development
- Create Safer Neighborhoods
- Green Infrastructure
- Help Children Learn
- Improve Public Health
- Arts and Cultural Programs
- Promote Tourism
- Smart Growth
- Climate Change Management

The briefing papers clearly demonstrate the wide variety of roles that parks provide in the community. Roles range from community revitalization, where parks server as a landmark point of pride and spur economic growth, to climate change management, where parks help to cool and clean the air.

IMPORTANCE OF OPEN SPACE

Numerous studies have indicated that there are significant benefits to protecting open space, as it has the power to attract business, promote tourism, elevate property values, and create a sense of place.

The following benefits of open space are taken directly from *Local Greenprinting for Growth, Volume I*, a report published by the Trust for Public Land and the National Association of Counties. According to the report, open space:

- Is good for the bottom line
- Attracts homebuyers
- Protects public health
- Can prevent costly flood damage
- Can secure our quality of life and our lifestyle

The report provides more detail regarding the above points, but this list makes it clear that open space provides benefits beyond recreation. Open space even helps to prevent the negative effects of development in many instances.

Economic Value of Protected Open Space in Southeastern Pennsylvania

\$577 million in annual benefit for residents who recreate on protected open space, including parks.

\$16.3 billion added to the value of southeastern Pennsylvania's housing stock.

\$240 million in annual property and transfer tax revenue for local governments.

\$133 million in costs avoided as a result of environmental services natural areas provide.

\$795 million in annually avoided medical costs as a result of recreation that takes place on protected open space.

6,900 jobs created on or as a result of protected open space in the five-county region.

(GreenSpace Alliance; Delaware Valley Regional Planning Commission 2011)

The Conservation Fund and the Pennsylvania Department of Natural Resources published the book *"Better Models for Development in Pennsylvania"* by Edward McMahon and Shelley Mastran in 2005. The Economic Value of Open Space section lists the "clear and strong benefits" that open space brings to a community's bottom line. According to this book, open space:

- Is a net benefit to community coffers
- Increases nearby property values
- Is a key factor in corporate location decisions
- Protection is smart growth
- Energizes economic development and neighborhood revitalization
- Preservation protects the future of working lands
- Can generate spending from managing agencies
- Can protect against natural disasters
- Protects natural systems
- Promotes healthy lifestyles
- Attracts tourism dollars

The book states that these benefits are backed by numerous studies, including multiple economic analyses of property values with regard to open space. In addition to the above, there are other specific benefits associated with high quality recreational facilities. While recreation activities provide obvious physical and mental health benefits, they can also change attitudes, perceptions, and behavior. Creating and maintaining positive recreation programs can help reduce criminal risk exposure for youth and young adults. Recreation can be an agent for change and a top enhancement for any community's quality of life. Further, preservation of our natural resources and our historical heritage, both of which are directly linked to our commitment to regreening and open space preservation, contributes significantly to attracting businesses and tourists, enhancing property values, and thereby creating a stable tax base long into the future.

Economic Value of Open Space

According to a report released by GreenSpace Alliance and Delaware Valley Regional Planning Commission in 2011, the protected open space system in southeastern Pennsylvania adds an estimated \$16.3 billion to the value of its housing stock. The value reflects the willingness of homeowners to pay a premium in order to live in proximity to protected open space. The report states that the wealth is "captured by citizens through higher sales values of homes near protected open space, and generates increased government revenues via larger property tax collections and transfer taxes at time of sale." Open space also creates indirect cost savings, such as the

\$795 million annually in avoided medical costs, thanks to the recreation occurring on protected open space (GreenSpace Alliance; Delaware Valley Regional Planning Commission 2011). These benefits are influential attractors for businesses and residents who see that value provided, both directly and indirectly.

DELAWARE COUNTY PROFILE

OVERVIEW

There are several key assets that influenced Delaware County's historical development patterns. Perhaps the most important is the Delaware River, which has been a significant resource since the time of Native American settlement. Today, the River serves as a key port area for industry located along the riverfront. Other assets include Philadelphia International Airport, Interstates 95 and 476 (commonly referred to as the Blue Route), and Southeastern Pennsylvania Transportation Authority (SEPTA) surface routes, light rail, and regional rail. Owing to the unique mix of these development factors found in different parts of the County, the character of Delaware County's communities varies widely.

As discussed above, *Delaware County 2035* organizes the County into distinct planning areas with common characteristics. The planning areas (Character Areas and Central Places) are used to meaningfully organize the long range planning policies. These areas are also extremely useful in discussing the history of growth and development patterns as well as open space issues. Due to the common features of the Character Areas, they typically face similar open space issues. The following are the Character Areas and Central Places, as defined in *Delaware County 2035*:

Character Areas

Mature Neighborhoods

- Underlying areas that are established and have realized most of their population, employment growth, and infrastructure build-out.
- Some are stable and thriving with affordable housing, access to transit, and a strong community identity.
- Some are experiencing population losses and deteriorating infrastructure systems.
- Over time, the prevalence of Mature Neighborhoods is moving toward the western boundary of the County.
- Revitalization opportunities exist in a variety of scales and locations.

Growing Suburbs

- Underlying areas that have undeveloped or agricultural land remaining and are experiencing or are forecast to experience population growth.
- Mostly residential with primarily single-family detached housing.
- Typically located in western Delaware County.

Open Space

- Underlying area that either remains in a natural state or is used for agriculture; free from intensive development for residential, commercial, industrial or institutional uses.
- Open space can be publicly or privately owned and may include: forest land, water bodies, wetlands, steep slopes, undeveloped coastal lands, cemeteries, parks, preserves, golf courses, abandoned railroad beds, and utility property.

Greenway

- A linear system of connected natural and man-made elements that function together for public benefit.
- As vegetated buffers, greenways can protect natural habitats, improve water quality, and reduce the impacts of flooding in floodplains.
- Proximity and access to Greenways has an impact on quality of life.

Central Places

Urbanized Center

- A medium-to-large scale community consisting of a multiple street central business district surrounded by mature residential neighborhoods.
- Land uses are mixed and consist of a range of scales and density.
- Well-connected street grid network, sidewalks, and mass transit.
- Transit-oriented developments may exist around regional rail lines and bus ways.
Examples: 69th Street (Upper Darby/Millbourne), Chester City, Darby, Lansdowne, Media, Wayne

Town Center

- A small-scale community consisting of one main street or town square surrounded by neighborhoods.
- Land uses are mixed and mostly consist of small-scale, low-intensity businesses, services, and cultural resources that serve the community.
- Residential fabric typically consists of medium-size blocks with a range of building types, including apartments and single-family residences, promoting a walkable environment.
- Transit-oriented developments may exist around regional rail lines and bus ways.
Examples: Boothwyn, Concord Ville, Havertown, Marcus Hook, Morton, Newtown Square, Parkside, Ridley Park, Swarthmore

Neighborhood Center

- An area at an intersection of roads and/or commuter rail/bus lines surrounded by neighborhoods.
- Typically has definable focal point and/or a mix of commercial, retail or civic uses.
- Often a walkable destination.
- Has a unique history or sense of a community within the larger neighborhood setting.
Examples: Aldan, Aronmink, Aston Mills, Booths Corner, Chadds Ford, Collingdale, Gradyville, Secane, Sharon Hill, University Crossing (Chester), Wallingford

Activity Corridor

- A linear-shaped place flanking major transportation corridors or highway interchanges with intense development and where public transport facilities, mixed land uses, and people are centrally focused.
- Varied width, density, and design depending on the local context and underlying character.
- A variety of retail, social, and employment opportunities integrated with high density residential functions.
- Although some are auto-centric, Activity Corridors can become more walkable, connect to neighborhoods, and include attractive streetscapes.
Examples: Highway Routes 1, 3, 13, 202, 252, 291, 320, 352, 452, and 491; Trolley Lines 101, 102, 11, and 13; Norristown High Speed Line

The two most prevalent Character Areas, Mature Neighborhoods and Growing Suburbs, have distinct differences that are significant when considering open space. Mature Neighborhoods (concentrated in the eastern and southern portions of the County) are densely populated with small-lot neighborhoods and heavy industry along the riverfront. Very few large lots remain undeveloped in this area. Growing Suburbs (typically the western and northern portions of the County), on the other hand, are characterized by modern development patterns of single-family detached homes on 1- and 2-acre parcels with large parcels of undeveloped land dispersed throughout the area.

Shifting Population 1980-2010

According to the United State Census Bureau, Delaware County’s overall population remained relatively stable between 1980 and 2010. Despite a few minor fluctuations, the population changed from 555,007 (1980) to 558,979 (2010), representing only a 0.17% increase. However, overall Countywide population figures do not reflect a significant demographic shift in population from the Mature Neighborhoods (eastern and southern municipalities) to the Growing Suburbs (northern, central, and western municipalities) (See Character Areas). It is anticipated that the County’s population will stabilize itself in the coming years.

Between 1980 and 2010, most municipalities in the Mature Neighborhoods of the County had population declines in the single-digit percentage points. Swarthmore, Morton and Millbourne Boroughs were the exceptions, as they had modest gains over 30 years. Chester Township (-31%), Chester City (-26%), Darby Township (-24%), Folcroft Borough (-20%), and Rutledge Borough (-16%) had the most significant percentage of population loss in Delaware County during that time period. The most extreme declines (double-digit), between 1980 to 2000, occurred in places such as Colwyn, Upland, Marcus Hook, Rutledge, Sharon Hill, and Darby Boroughs. Most, but not all, of these municipalities slowed or reversed these trends in the following decade. Refer to Table 1-1 for more information.

The Growing Suburb municipalities of Bethel Township (261%), Edgmont Township (183%), Concord Township (168%), Thornbury Township (120%), and Chester Heights Borough (94%) had the most significant percentages of population growth in Delaware County during the period from 1980 to 2010 (See Table 1-1). Concord Township is unusual in that it grew steadily over this entire 30 year period. Others like Edgmont and Chester Heights grew rapidly from 1980 to 2000 (178% and 91%, respectively), but slowed over the last 10 years (1.8%, 2.0%). Bethel, Thornbury, Chadds Ford, Middletown, Aston, and Upper Chichester Townships also had significant 1980s and 90s growth followed by a post–2000 slowdown, but to a lesser extreme.

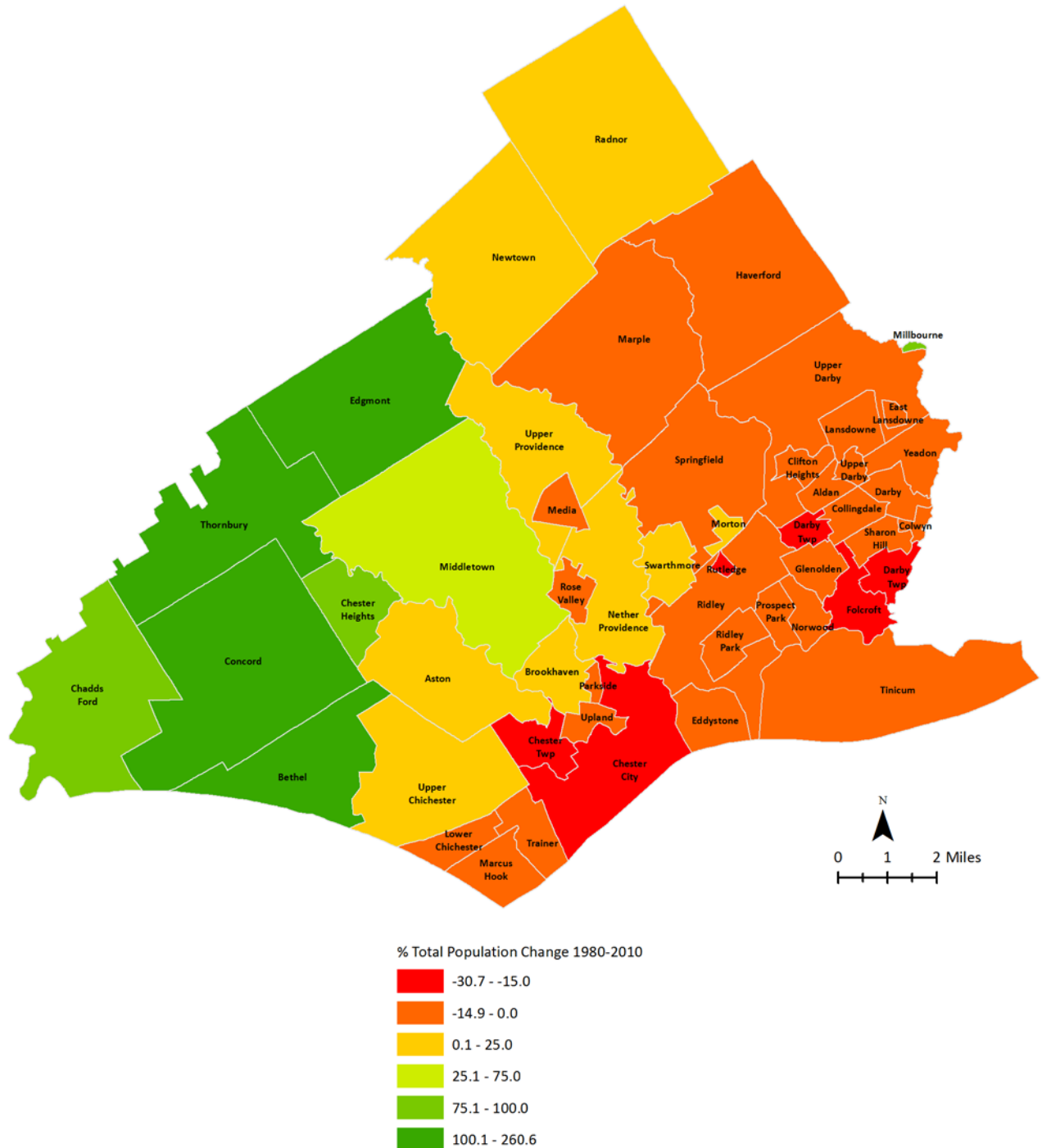
**Table 1-1: Municipalities with the Greatest Population Change
1980 to 2010**

Population Losses				Population Gains			
Municipality	Population			Municipality	Population		
	1980	2010	% Change		1980	2010	% Change
Chester Township	5,687	3,940	-30.72%	Bethel Township	2,438	8,791	260.58%
Chester City	45,794	33,972	-25.82%	Edgmont Township	1,410	3,987	182.77%
Darby Township	12,264	9,264	-24.46%	Concord Township	6,437	17,231	167.69%
Folcroft Borough	8,231	6,606	-19.74%	Thornbury Township	3,653	8,028	119.76%
Rutledge Borough	934	784	-16.06%	Chester Heights Borough	1,302	2,531	94.39%

Figures presented reflect proposed (not necessarily constructed) development.
Source: DCPD, 2014

When analyzing the movement of population within the County, percent change in population (by municipality) and the change in number by people should/must be weighed together. Refer to Appendix I-D, Municipal Population Figures for Delaware County municipalities, for a complete listing of population data by municipality.

Map 1-2: Total Population Change (1980-2010)



Current Subdivision and Land Development Activity

Records since 2000 indicate that the high level of development activity experienced in the past continues today, although at a more moderate rate compared to the years leading up to 2008. Table 1-2 illustrates the total number of residential units reviewed by the County Planning Department between 2000 and 2013. The table indicates a tremendous number of proposed residential units from 2000 through 2006 before a significant downturn in 2007. Non-residential proposals in Delaware County peaked at over 3.8 million square feet in 2007, but saw a significant downturn in 2009. The decrease in proposals beginning in 2007 is evidence of the economic recession which affected the country between 2008 and 2010. The County has since rebounded, albeit at more moderate levels of developed, a few years later.

It should be noted that the numbers presented in this table are for proposed developments reviewed by DCPD, and are not necessarily what has been or will be built. However, they can still serve as an indicator of development activity and trends. The figures also include redevelopment which was proposed on land previously developed.

**Table 1-2: Proposed Development in Delaware County
2000 to 2013**

Year	Proposed	
	Residential Units	Non-Residential Square Footage
2000	2,375	3,095,365
2001	1,741	2,103,828
2002	959	2,401,162
2003	1,413	1,286,956
2004	1,217	1,471,915
2005	2,132	2,635,509
2006	1,183	3,064,479
2007	629	3,897,429
2008	615	3,254,785
2009	345	900,719
2010	1,334	1,187,453
2011	459	1,068,982
2012	1,244	1,354,357
2013	885	718,885
Total 2000-2009	12,609	24,112,147
Total 2004-2013	10,043	19,554,513
Total 2000-2013	16,531	28,441,824

Figures presented reflect proposed (not necessarily constructed) development.

Source: DCPD, 2014

In the years 2000-2013, Concord Township had the greatest number of both proposed residential units and non-residential square footage in the County. Other Growing Suburbs filled out much of the rest of the residential top 10, as seen in Table 1-3. During this time period, the top four municipalities, Concord, Newtown, Middletown and Bethel, accounted for roughly 50% of the proposed residential units in the County. (For an annual breakdown of proposed development by municipality, see Appendix I-E, Table E-1: Proposed Residential Units in Delaware County and Table E-2: Proposed Non-Residential Development in Delaware County.)

Several large Growing Suburbs did not experience a great deal of development between 2000 and 2013. When examined further, the reasons for this becomes clearer. Many of these municipalities have large tracts of protected open space, which lead to its characterization as a Growing Suburb; however, these lands are unavailable for development. Edgmont Township, for instance, has less potential to develop than its size might indicate because much of its land area lies within Ridley Creek State Park. Radnor Township, also considered a Growing Suburb, did not see significant residential development between 2000 and 2013, but did see a large amount of proposed non-residential uses (5th highest amount in the County). Chadds Ford Township has been less affected by development due to its position at the extreme western end of the County and the prevalence of landowners holding onto large tracts of agricultural lands and woodlands. Chester Heights Borough, a smaller municipality nestled between four larger municipalities, also has a cluster of large-tract landowners.

**Table 1-3: Municipalities with the Most Proposed Development
 2000 to 2013**

Residential		Non-Residential	
Municipality	Total Proposed Units	Municipality	Total Proposed Square Footage
Concord Township	3,287	Concord Township	5,401,113
Newtown Township	1,940	Middletown Township	2,584,378
Middletown Township	1,670	Chester City	2,378,892
Bethel Township	1,431	Newtown Township	1,858,840
Aston Township	966	Radnor Township	1,844,353
Upper Chichester Township	924	Chester Township	1,778,280
Thornbury Township	693	Tinicum Township	1,415,899
Marple Township	611	Upper Chichester Township	1,120,629
Chester City	543	Aston Township	844,605
Springfield Township	465	Springfield Township	808,115

Figures presented reflect proposed (not necessarily constructed) development.

Source: DCPD, 2014

One reason the western municipalities were able to grow more than the others was the availability of land for development. Low-density suburban living also grew in popularity over the last 30 years, and where residences were built, commercial development to serve them followed. During this time period, land became very valuable and a great deal of former agricultural land was sold for development. As large tracts of land become more limited in the western and northern portions of the County, the type of development is expected to change from the sprawling single family homes popular in the 1990s and 2000s, to more dense housing patterns such as townhomes. Over the last decade, there has been a

renewed interest in smaller lot sizes, more public open space, and trail and transit connections. In many areas, zoning ordinances have been amended to not only allow, but also encourage, denser housing and more land conservation.

Infill development and redevelopment is expected to be the trend in the eastern, southern, and central parts of the County. This is exemplified by the number of Mature Neighborhoods, such as Chester City and Chester Township, which had significant amounts of proposed non-residential square footage (refer to Table 1-3). Since the housing recession of 2008, residential development has recovered at more moderate levels than experienced in the years leading up to 2008. Many of the Mature Neighborhoods of the County are facing a great deal of infill development (both residential and non-residential), focused in the Central Places such as Activity Corridors and Town Centers.

Agricultural Trends

Even though Delaware County cannot be considered agricultural, it continues to have a number of farms; most are relatively small, with an average size of 62 acres. Approximately 37% of all farms in Delaware County are less than 10 acres, and 64% are less than 50 acres in size, with an emphasis on greenhouse and nursery products as the top sales generator. According to the U.S. Department of Agriculture's *Census of Agriculture* (reported every 5 years), the County had 5,751 acres of farmland in 1997 and 4,361 acres in 2007.

Farmland is often the most desirable land for development, as it is level, well-drained, and mostly clear of woody vegetation. Much of the recent residential and commercial development in the western municipalities was built on former farmland and rich agricultural soils. The decrease in farmland over the years is a direct result of development pressure and rising land values. In many areas of the County, it has become more profitable to sell land to a developer than to continue farming it. During the period from 1997 to 2012, the estimated market value per acre of the average farm in the County increased, from \$9,013 to \$13,798 (USDA, National Agricultural Service 2012).

Natural Area Trends

In 1992, the Delaware County Planning Department commissioned the *Natural Areas Inventory, Delaware County, Pennsylvania* (NAI). The report was comprehensively updated by the Western Pennsylvania Conservancy as the *Natural Heritage Inventory for Delaware County, Pennsylvania* (NHI) in 2011. The 2011 report presents several listings and evaluations regarding the County's most important natural areas (listed by state/global significance, and by County/local significance), and identifies specific rare, endangered threatened, and other species that contribute to the County's biodiversity. Page 18 of the NHI states: "Despite extensive land use changes in this heavily developed portion of the state, Delaware County contains a significant number of rare species and communities that represent an important part of the Commonwealth's biodiversity." The County has 215 individual occurrences of species tracked by Pennsylvania Natural Heritage Program, including those listed as endangered, threatened, and rare. Delaware County ranks 19th out of the Commonwealth's 67 counties for biodiversity (Pennsylvania Natural Heritage Program 2011).

Even though the NAI and NHI recommended the protection of the County's significant natural areas, some have been developed over the years. This is a result of the fact that while open space is often preserved as part of the development process, ecologically valuable resource areas become fragmented, compromised, or lost completely. As forests or grasslands become fragmented, they become an "edge habitat," which is more conducive to invasive non-native plant and tree species and more dangerous

and unhealthy for nesting birds. Municipal subdivision ordinances and mandatory dedication of open space ordinances can help prevent this from happening.

OPEN SPACE PLANNING EFFORTS

DELAWARE COUNTY

Emerging Concern for Open Space in the 1950's & 60's

Open space planning in Delaware County began in earnest in the 1950s and 1960s when citizen councils and government entities began preparing reports discussing a need to preserve open space and provide for outdoor recreation. The region's Health and Welfare Council reported in *Deadline on Open Space* (1959), "Open Space, so precious to [William] Penn and the early planners, is rapidly disappearing. Some present day planners predict that this entire area will someday be part of an endless city, stretching all the way from Washington to New York." This "endless city" has somewhat materialized along the I-95 corridor, with Delaware County right in the middle.

In the 1960s, the Citizens Council of Delaware County published guide booklets designed to mobilize municipal governments and citizens to preserve valuable open space tracts. *Preservation of Open Space in Delaware County* (1961) listed a range of open space preservation tools that included planning and zoning, subdivision controls, gifts, matching funds, and acquisition of tax-delinquent land. *Operation Open Space: A Proposal to All Delaware County Residents* (1962 and 1964) was an inventory of prioritized suggestions for acquisition that were directed at municipalities for open space preservation programs.

Project 70

The programs suggested in *Operation Open Space* were intended to be funded by Project 70, a state of Pennsylvania program with a goal to acquire \$70 million worth of open space by 1970. A November 1963 state bond issue approved by Pennsylvania voters legalized the constitutional amendment that called for this expenditure (Project 70 Land Acquisition and Borrowing Act of 1964). Twenty million dollars would be allocated to assist counties and municipalities in the acquisition of open space land.

Until 1964, most of the land in the Delaware County Parks system had been acquired as gifts from estates or individuals. When Project 70 was activated, Delaware County prepared a preliminary statement of interest identifying nine acquisition projects to enlarge two existing parks and create five new parks. In a five-year period, over 250 acres of open space were acquired. By 1967, the County had received almost \$600,000 in financial assistance from Project 70 and almost \$170,000 from federal programs.

Ridley Creek State Park was purchased in the mid-1960s with Project 70 funds, and developed with federal Land and Water Conservation Fund money; park facilities were dedicated for public use in August of 1972. In addition, portions of Rose Tree County Park, Upland County Park, and Clayton County Park, were acquired through Project 70 funds.

In 1967, The Delaware County Planning Commission published an inventory of parks called *Public Parks and Recreation Areas*. It was the County's first modern inventory of open space land and recreational facilities owned or controlled by state, county, and municipal governments.

The Delaware County Open Space, Parks, and Recreation Study

The *Delaware County Open Space, Parks, and Recreation Study* was developed by the Delaware County Planning Department (DCPD) and adopted by Delaware County Council in August 1978. The study, which is now over 35 years old, was the only comprehensive County plan for parks, recreation, and open space until now. There were four classes of concern in the study: people, planning, physical resources, and a balanced system of service delivery. The plan was organized in two parts: Existing Conditions, and Findings and Recommendations. The plan defined the role of the recently reorganized Delaware County Parks Department, setting its internal management structure. The document contained recommendations for future actions and policy and objective statements. A large portion was devoted to the planning, administration, and coordination of recreational services. The plan contained a physical overview of the County, an overview of the County Parks system, and an inventory of state, municipal and federal parks.

What the study did not do was devote much consideration to greenways or trails since they were not in vogue as they are today. However, stream valley open space conservation and acquisition was addressed for each creek valley. The study was the basis for County and municipal stream valley acquisition in the 1980s, with County acquisitions in subsequent years primarily aimed at Darby Creek. Unfortunately, the study did not convey a very high sense of urgency for conserving open space for public use. The study also did not foresee the increase in development and changing land use patterns that has occurred in the years since it was written.

Delaware County Open Space Project and Growing Greener Programs

In September of 1994, County Council instituted the Delaware County Open Space Leadership Group for the purpose of developing “a long term strategy for the preservation of open space and natural amenities, to explore the potential of the County Park System, to promote the development of greenways and/or stream corridors, to stimulate open space municipal planning and acquisition efforts, and to explore open space restoration and preservation efforts in developed areas.” The Leadership group was comprised of government, nonprofit, and business leaders in the County, as well as DCPD staff. Sixteen months later, in February of 1996, the *Delaware County Open Space Project – Recommended Strategy*, was presented to Council detailing recommendations for a 10-year, \$100 million program to facilitate efforts on the part of Delaware County and its municipalities to preserve and acquire land. Council passed a resolution to put this program before County voters in a referendum on April 23, 1996. Unfortunately, due to what are believed to be concerns relating to Countywide reassessment, many citizens voted against the program, and the issue was defeated by a 3-1 margin. The results of referendum showed a divide between the residents of the Growing Suburbs, who generally voted in favor of the program, and the residents of the Mature Neighborhoods, who generally voted against the program.

In July 2000, hoping to pick up where the bond issue left off, County Council formed the Delaware County Growing Greener Committee (originally called the Delaware County Open Space and Land Use Task Force) to keep the momentum and interest in open space alive and to find alternate ways to support the preservation of open space. The eleven-member task force met monthly for about three years. It was comprised of volunteers from all parts of the County, with the Planning Department serving as support staff. Its mission was to promote sound land use and intergovernmental cooperation.

Committee members conducted interviews with municipal leaders to determine the extent of revitalization, open space and recreation planning being done, and the kinds of help that would be most

useful and possible for the Growing Greener Committee or County government to provide. The Committee also explored preservation options for important parcels of undeveloped land.

The Delaware County Renaissance/Revitalization Program

The Growing Greener Committee stated in its recommendations to County Council that it needed the strong backing of Council and additional professional assistance to successfully reach its goals. Soon after the recommendations were released, County Council established the Revitalization Program (originally titled the Renaissance Program) to encourage smart growth and economic development in all 49 municipalities. The outreach included two distinct, but related, initiatives created to guide revitalization efforts in the 29 municipalities. The two initiatives were:

- Open Space Mapping and Technical Assistance Program
- Renaissance Action Plans

The goal of the Open Space Mapping and Technical Assistance Program was to protect the most important remaining undeveloped lands in 20 eligible municipalities in the northern and western parts of the County. Through a partnership, the Delaware County Planning Department and Natural Lands Trust were able to identify and map the County's existing open spaces, as well as natural resources and large, undeveloped parcels. The final products were digital GIS maps that represented each municipality's vision of its comprehensive open space system. The Program has already had a positive impact on land conservation. In Concord Township, the identification of strategic parcels contributed to a \$6 million open space bond initiative that voters approved by a two to one margin in November 2004. The southern and eastern municipalities also used Revitalization money for parks in certain Action Plan funded projects.

Municipalities have also received money directly from County Council for certain acquisition projects. In the early 2000s the County contributed \$100,000 each to three major municipal open space acquisitions: the 33-acre Green Bank Farm in Marple Township, the 36-acre Lavin Tract in Upper Providence Township, and a 22-acre portion of the Sleighton School property in Middletown Township. From 2006 through 2008, the County also offered an open space funding program which contributed up to 5 percent of the cost of municipal land purchases. For a complete list of County contributions to municipal open space acquisitions see Table 1-4.

Recent County Open Space Acquisition

Over the years, Delaware County has proactively acquired open space, particularly areas of notable environmental significance. In the 1980s, the County acquired multiple parcels along the Darby Creek stream valley. This effort was not only part of a concerted effort to preserve open space in a largely developed portion of the County, but also to protect the stream from increased stormwater runoff and pollution.

In 1999, Delaware County purchased the 24-acre former Paper Mill Products site in Springfield and Nether Providence Townships for \$100,000. The site was originally purchased by PennDOT in the 1980s for construction of the Blue Route. Prior to PennDOT's ownership, the land was polluted and degraded due to more than 100 years of industrial use. PennDOT cleared the buildings from the site and cleaned up the land (at a cost of \$3.4 million) in the mid-1990s before selling the land to the County (Hardy 1999).

**Table 1-4: Delaware County Open Space Acquisition Grants to Municipalities
 2004 to 2008**

	Property Name	Municipality	Acres Preserved	Program	Total Acquisition Cost	County Funds
2004	Greenbank Farm	Marple Township	33	O.S. Task Force Recommendation	\$2,300,000.00	\$100,000.00
	Sleighton Tract	Middletown Township	22	O.S. Task Force Recommendation	\$2,000,000.00	\$100,000.00
	Municipal Marina	Ridley Township	0.2	2003 Revitalization	\$170,000.00	\$50,000.00
	Municipal Marina	Ridley Township	0.3	2004 Revitalization	\$700,000.00	\$325,000.00
2005	Knowles Avenue Field	Glenolden Borough	0.6	2003 Revitalization	\$54,000.00	\$30,132.88
	Ivy Mills Road	Concord Township	21.4	2004 Revitalization	\$2,150,000.00	\$100,000.00
2006	Lavin Tract	Upper Providence Township	36	Open Space Fund	\$3,525,000.00	\$175,000.00
	Collman Property	Concord Township	24.1	Open Space Fund	\$2,460,000.00	\$123,000.00
	Connor Property	Concord Township	1	Open Space Fund	\$350,000.00	\$17,500.00
	Dante Property	Concord Township	21.9	Open Space Fund	\$3,700,000.00	\$185,000.00
	Smedley Property	Middletown Township	76	Open Space Fund	\$8,427,540.00	\$420,000.00
	Borough Green	Rose Valley Borough	1.2	Open Space Fund	\$220,000.00	\$11,000.00
	Timber Lane Property	Thornbury Township	5.7	Open Space Fund	\$160,000.00	\$8,000.00
	Mill Road Property	Upper Chichester Township	17.8	Open Space Fund	\$323,750.00	\$16,187.50
	Chichester Baseball League Fields	Upper Chichester Township	11.3	Open Space Fund	\$800,000.00	\$40,000.00
2008	Darby Creek Properties	Haverford Township	59.9	Open Space Fund	\$2,500,000.00	\$125,000.00
TOTAL 2004-2008			272.5		\$29,840,290.00	\$1,700,820.38

Year given is the year County funds were released.

Source: Delaware County Office of Housing and Community Development, 2014

Most recently, the County acquired approximately 41 acres in Middletown Township and preserved an additional six acres via a conservation easement. The acquisition of the site, referred to as Mineral Hill, was coordinated by the County in cooperation with and monies from Natural Lands Trust, Middletown Township, and DCNR. The acquisition is adjacent to two municipal parks, Memorial Park in Middletown Township and Louis Scott Park in Upper Providence Township. The combined area of these three parks is approximately 123 acres. The park consists of an important geologic outcrop and significant native habitat, including wetlands, forests, and the main stem of Ridley Creek.

Municipal Open Space Efforts

In 1987, Middletown Township was the first Delaware County municipality to pass a referendum for open space funding, as voters approved a \$5.4 million measure. Another referendum was passed for \$8.5 million in 2005. Radnor Township followed with two successful referendums in 1994 and 1996 (a

possible new bond is under discussion in Radnor for 2014). Nether Providence Township voters also approved a bond in 1996, for \$2.8 million. See Table 1-5 below for all locally funded open space programs in Delaware County. In addition to the information provided in the table, many municipalities use other funding sources for parks. Springfield Township for example, generates some funding from bus shelter advertising used strictly for park maintenance, mainly play equipment.

**Table 1-5: Locally Funded Open Space Programs
 1987 to 2014**

Municipality	Year Approved	Source		Estimated Tax Revenue
		Bond Amount	Dedicated Tax	
Middletown Township	1987	\$5,400,000		
	2005	\$8,500,000		
Radnor Township	1994		0.25% Realty Transfer Tax	\$825,000
	1994*	\$10,000,000		
	2006	\$20,000,000		
Nether Providence Township	1996	\$2,800,000		
Upper Providence Township	2003	\$6,000,000		
Concord Township	2004	\$6,000,000		
	2004		0.189 mils Real Estate Tax	\$300,000
Chadds Ford Township	2005		0.28 mils Real Estate Tax	\$125,000
Lansdowne Borough	2012	\$250,000		

All of the above were approved after a voter referendum.

*Bonds issued by Radnor Township in 1996 (\$7.5 million) and 2002 (\$2.5 million)

** Earmark designated for Hoffman Park from 2012 bond.

Source: DVRPC; DCPD, 2014

The funds noted above have been or are to be used to help municipalities purchase open spaces for new public active or passive recreation areas. To this point, all of these municipal bonds or taxes were approved after the issue was taken to its respective citizens in an Election Day referendum. In most cases, the lands in question had been shown as “high priority” for protection in a municipal comprehensive plan or open space plan.

REGIONAL MOVEMENTS AND PROGRAMS

There are a number of regional open space planning efforts currently underway. The County should consider coordinating with the entities responsible.

GreenSpace Alliance

The GreenSpace Alliance of Southeastern Pennsylvania (the Alliance) was founded in 1992 as a project of the Pennsylvania Environmental Council (PEC). The Alliance was a coalition of organizations and concerned individuals interested in the conservation of open space, and supporting recreation consistent with conservation, as well as residential and economic development. Members of the Alliance included PEC, four major regional land trusts, 10,000 Friends of Pennsylvania, the Pennsylvania Horticultural Society, and Delaware Valley Regional Planning Commission (DVRPC). In 2013, the Alliance ceased to exist as a separate entity, but its mission and work is continued at DVRPC and its Regional Open Space Coordinating Committee (see below).

In late 2003, the GreenSpace Alliance released the *Regional Open Space Priorities Report*. The *Report* indicated that there are tremendous assets in the five-county region, but they are disappearing quickly. There were ten recommendations laid out as guidelines for the region's conservation planning efforts. The main finding on which these were based was that "Priorities can be set for protection based on two kinds of lands: Open Space Priority Lands, where regional protection should be focused, and Suburban/Urban Priority Lands, where local community needs should predominate."

Recommendations included:

- Encouragement of multi-municipal cooperation
- Commitment to "regional statesmanship," which is the support of protection of Open Space Priority Lands even if they are not in one's immediate vicinity
- Dedication of planning and funding to stream and river corridors
- For Suburban/Urban Priority Lands, concentration on protecting high resource-value lands for recreational purposes and for limited natural resource and specialty agricultural resources.

DVRPC

DVRPC is the Philadelphia area's Metropolitan Planning Organization (MPO). It is federally mandated to update its long range plan for Greater Philadelphia every four years. DVRPC's *Connections 2040* Plan for Greater Philadelphia was adopted by the DVRPC Board on July 25, 2013. The Plan focuses on four core principles: creating livable communities; managing growth and protecting the environment; building the economy; and establishing a modern multimodal transportation system. The first two principles and associated goals relate directly to open space, recreation, and greenway planning.

The plan's GreenSpace Network map identifies an interconnected open space and greenway network across the region. This map evolved from the *Regional Open Space Priorities Report*, which was first incorporated into DVRPC's long range plan in *Destination 2030* (2005). The GreenSpace



Figure 1-1: Delaware County on the DVRPC 2040 GreenSpace Network

Network includes an interconnected system of parks, forests, meadows, stream corridors, and floodplains. This regional plan is especially useful in showing where connections across the County border should be made.

The Circuit

In 2012, there was a regional effort to coordinate trail building efforts and promote and market a trail regional network. A coalition was formed which branded the Greater Philadelphia regional trails network “the Circuit.” When complete, the Circuit will be a regional network containing over 750 miles of bicycle and pedestrian trails.

The Delaware County Planning Department is an agency partner of the Circuit Coalition, which also includes many non-profit and foundation partners. DVRPC’s Regional Trails Program, which was funded by the William Penn Foundation (a Circuit Coalition member), used incorporation into and connection with the Circuit as a way to evaluate grant applications.

Building the network and filling its gaps is the Coalition’s first priority, while the ultimate goal is to make the Circuit the premier regional trail network in the nation.



Figure 1-2: The Circuit-Existing, Planned, and In-Progress Trails, May 2012.

STATEWIDE MOVEMENTS AND PROGRAMS

Growing Greener

In 1999, after receiving approval by voters to borrow \$650 million, Pennsylvania enacted the first Growing Greener Program. The purposes of Growing Greener were to provide the funding necessary to preserve farmland and protect open space; eliminate the maintenance backlog in state parks; clean up abandoned mines and restore watersheds; and provide new and upgraded water and sewer systems across the Commonwealth. This money was put to use over a five-year period. The program enabled municipalities, counties, and organizations to apply for grants from DCNR and DEP to access Growing Greener matching funds for their projects that meet the goals of the program. Parks and open spaces developed or acquired with the help of Growing Greener money can now be found throughout Delaware County.

On May 17, 2005, a question was placed on the statewide ballot asking if Pennsylvania should borrow money to renew the Pennsylvania Growing Greener Program (commonly referred to as Growing Greener II). The ballot question passed, with Delaware County having the highest percentage of “yes” votes among all counties in the Commonwealth (79%). From this show of public support, it is apparent that the citizens of Delaware County value open space, outdoor recreation, and the natural environment as a highly important part of their quality of life.

Pennsylvania Greenways Partnership

In 2001, the statewide Pennsylvania Greenways Partnership Commission charged the counties of Pennsylvania with creating a web of greenways across the state in a report titled “Pennsylvania

Greenways: An Action Plan for Creating Connections.” One goal of the Greenways Program is for every county to have a plan for greenways. Surrounding counties like Montgomery and Philadelphia have extensive greenways established or in the planning stages, such as the hugely successful Schuylkill River Heritage Corridor. These Montgomery County and Philadelphia greenways, which include trails found close to Delaware County’s borders, have the potential for making inter-county connections to benefit the entire region.

Rivers Conservation Plans

The Pennsylvania Rivers Conservation Program was developed to conserve and enhance river and stream resources through preparation and accomplishment of locally initiated plans. Funding for the Program comes from the Keystone Recreation, Park and Conservation Fund Act of 1993, a component of the Community Conservation Partnership Program, administered by DCNR’s Bureau of Recreation and Conservation. The program provides technical and financial assistance to municipalities and river, stream, and watershed support groups to carry out planning, implementation, acquisition, and development activities. Rivers Registry status must be achieved to qualify for implementation, development, or acquisition grants. In order for a river to be placed on the Pennsylvania Rivers Registry, it must have an approved plan and local municipal support.

With funding assistance from the Rivers Conservation Program, Rivers Conservation Plans (also known as Watershed Conservation Plans) have been created for all of the major watersheds in Delaware County.

- Ridley Creek Conservation Plan (1997)
- Chester Creek Conservation Plan (2001)
- Schuylkill Watershed Conservation Plan (2001)*
- Brandywine Creek Watershed (included in Chester County’s *Watersheds* plan) (2002)*
- Crum Creek Watershed Conservation Plan (2005)
- Darby Creek Watershed Conservation Plan (2005)
- Delaware River Corridor (2014)

*Prepared by Montgomery and Chester Counties, respectively

Rivers Conservation Plans typically contain a wealth of information including a comprehensive resource survey, maps and data, analysis, and conclusions and policies for the protection of natural resources in its respective watershed. As a requirement of the program, citizen input is emphasized within these plans. Since each one reflects the unique characteristics of the study area, the recommendations can be quite different.

LOOKING AHEAD

It is important to consider that open space planning is an ongoing effort. As circumstances change, so should the objectives and efforts of individual municipalities. For that reason, Countywide goals and strategies, which address common issues and needs, are outlined in this plan. The objectives and actions established in this plan reflect the goals and strategies with regard to different Character Areas. As specific communities grow and adapt in the coming years, different objectives and actions may become more relevant to them. The objectives and actions are listed at the end of each chapter. Chapter 7: Implementation comprehensively summarizes the techniques, partnerships, and roles for the approaches outlined throughout this plan.



Natural Features 2

Chapter 2: Natural Features

INTRODUCTION

A landscape's natural features are the result of natural process occurring over long periods of time. Natural features include topography, geology, soils, water bodies, and other natural resources. The natural features of Delaware County directly influence and impact the land use and development patterns of the County. In order to protect the County's critical natural features, it is important to develop land use policies that are consistent with resource objectives for areas of environmental concern.

NATURAL FEATURES OF DELAWARE COUNTY

PHYSIOGRAPHY AND GEOLOGY

A physiographic province is characterized by its distinctive geological formations and related landscapes. Delaware County lies within two distinct physiographic provinces: the Piedmont Upland and the Atlantic Coastal Plain. The boundary follows the northern limits of the Pensauken and Bridgeton bedrock formations (see Map 2-1) (Pennsylvania Natural Heritage Program 2011).

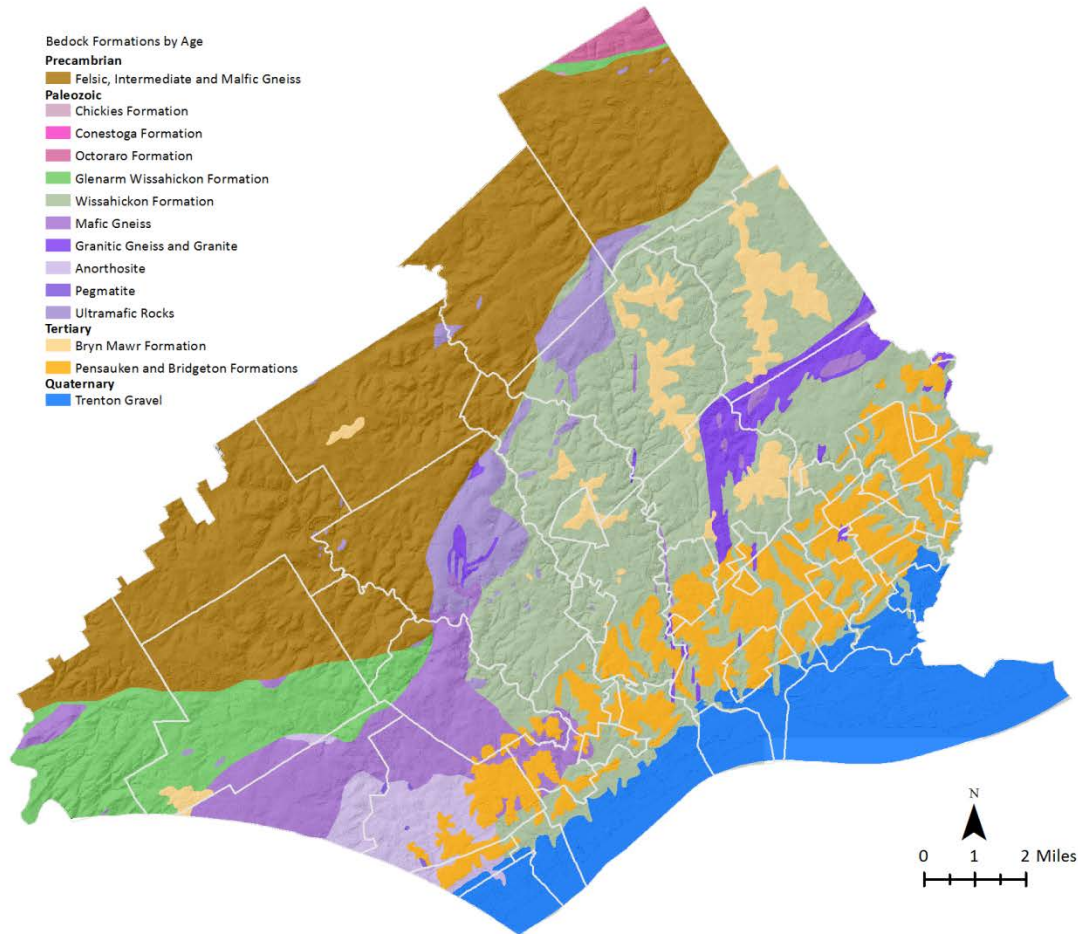
The Piedmont Upland province is composed of rolling hills surrounding around wide valleys. The geologic structure consists of folded and faulted metamorphic and igneous rocks, which includes an abundance of schist rocks, as well as gneiss, marble, quartzite, granite, and serpentine. Schist does not have high water absorption properties, but the lowlands of this area still contain deep soils that provide excellent opportunities for agriculture.

The Atlantic Coastal Plain province in the southern third of the County is relatively flat and composed of sand, gravel, and clay derived from weathered metamorphic rocks and the deep alluvial sediments within the floodplain of the Delaware River. The sand and gravel of this area allow for quick drainage to the water table in areas that are not covered with impervious surfaces (though much of this province has been developed). A large portion of this province is near or at sea level and once supported extensive tidal marshlands (Pennsylvania Natural Heritage Program 2011).

Geology is one of the most significant natural features, affecting both the soil structure as well as the water resources in the County. The various geologic formations provide the parent material for the various soil types and their associated resource attributes such as agricultural productivity and suitability for development. The distinctive serpentine barrens in central Delaware County contain unique plant life that grows only in soils derived from the serpentine rich rock formations lying below the surface of the area. Map 2-1 shows the various geologic formations of the County.

Groundwater Resources of Delaware County, Pennsylvania (1996) states that Delaware County has "limited water resources," and that "groundwater occurs mostly in the weathered zone above bedrock and in fractures to depths of about 300 feet below land surface. None of the geologic formations in Delaware County yield enough water consistently for large public or industrial supplies; however, most wells should produce sufficient quantities for domestic purposes." It also states that water quality is "generally suitable for most uses." (Balmer and Davis 1996). Regardless, there are very relatively few wells in use in Delaware County because of the widespread availability of public water supplies.

Map 2-1: Geologic Formations

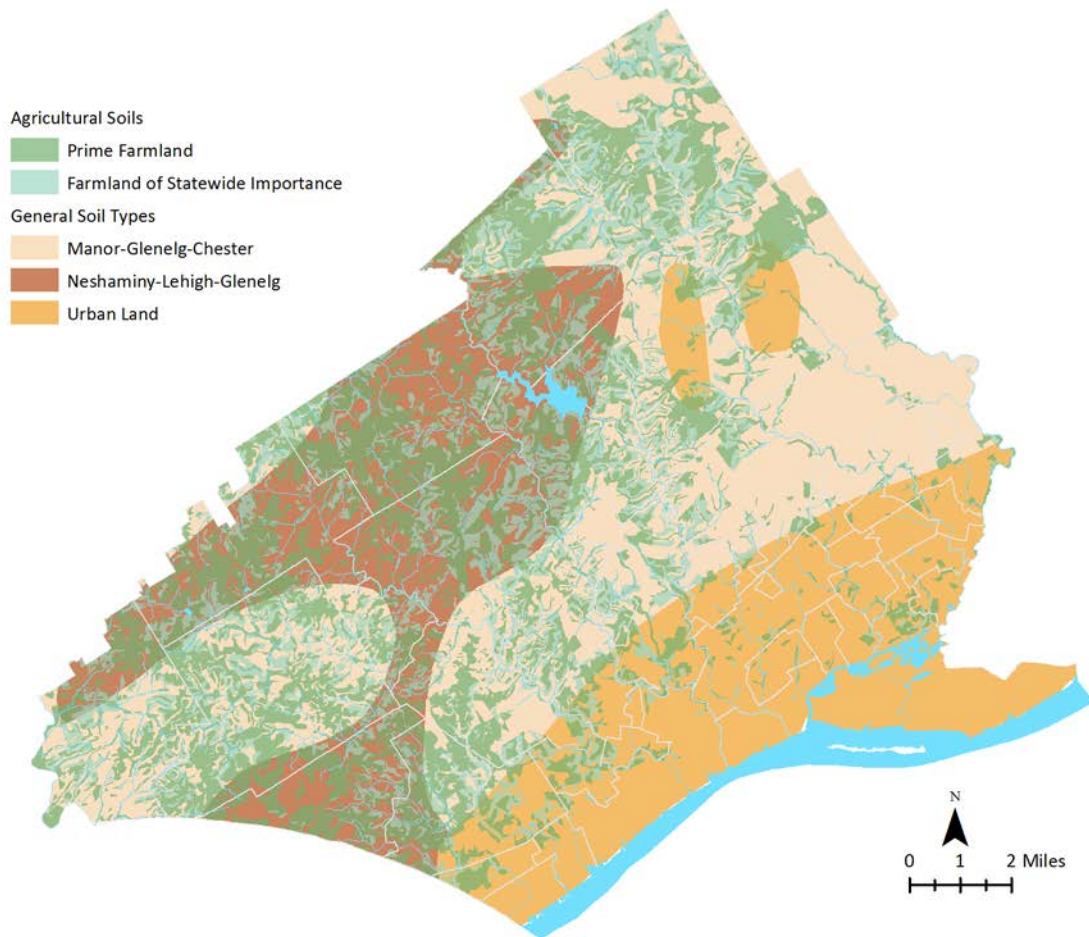


SOILS

Soils reflect the underlying geology and provide the material for plant growth. Soils also help to determine land use to a large degree. A soil association is a group of soils with a distinctive, proportional pattern of occurrence in the landscape. Three general soil types were mapped for Delaware County: Manor-Glenelg-Chester, Neshaminy-Lehigh-Glenelg, and Urban Land. (Pennsylvania Natural Heritage Program 2011) Their locations are shown on Map 2-2.

Manor-Glenelg-Chester soils are shallow to deep, silty and channery, on grayish brown schist and gneiss rock material. They are mostly gently to moderately sloping and would require protection to control erosion. Crops that have been grown on these soils include orchards and crops used to feed animals. General farm crops grow well on the soils of the Neshaminy-Lehigh-Glenelg association, which are moderately deep to deep, well drained, silty, channery, gravelly soils on gabbro and granodiorite rock material. (United States Department of Agriculture 1963)

Map 2-2: Soils



In many areas of Delaware County, soils have become highly disturbed from clearing and grading the land for development and through agricultural practices. These disturbed soils are simply characterized as “Urban Land,” meaning that the land is so developed and disturbed that determining the original or underlying soil type is impractical. Some general observations about the structure and function of the Urban Land, can however still be made.

The upland soils of the County are very deep and well drained as a result of the parent material they are derived from. The weathering of Paleozoic and Precambrian metamorphic rocks created the sand, silt, and gravel of which they are composed. This makes them well-suited for agriculture, but also makes the soil prone to erosion. The soils within the floodplain of the Delaware River are also deep, but they have a higher proportion of organic material from the tidal marshes that formerly covered the area (Pennsylvania Natural Heritage Program 2011).

Maintaining existing soils is of importance because they are a non-renewable resource. Once soils are altered or paved over, their qualities and benefits can never be regained. Therefore, it is important to consider how current development may impact the quantity, quality, and function of the County’s soil profile.

Agricultural Soils

Prime agricultural soils are defined in the *Soil Survey of Chester and Delaware Counties* (1963) as Class I (excellent) and Class II (above average). These classes are capable of supporting the production of agricultural products and are suitable for intensive cultivation and capable of high productivity with minimal management. Class III (average) soils are also significant; however, they have more limitations. The natural productivity of these soils makes them environmentally important because crops and timber can be grown on them more efficiently, they produce higher yields, and they require less management of the land (Delaware County Planning Department 1984).

Farmland of Statewide Importance is a land classification that includes land capability Classes II and III that do not quite meet the standards of Prime Farmland soils. These soils can still produce high yields of crops when treated and managed according to appropriate farming methods.

Much of Delaware County's once abundant farmland soils have been developed. However, the soils still remain on farms and other less developed areas in municipalities such as Radnor, Edgmont, Concord, Thornbury, Middletown, and Chadds Ford Townships, and Chester Heights Borough. Agricultural soils are shown on Map 2-2.

TOPOGRAPHY

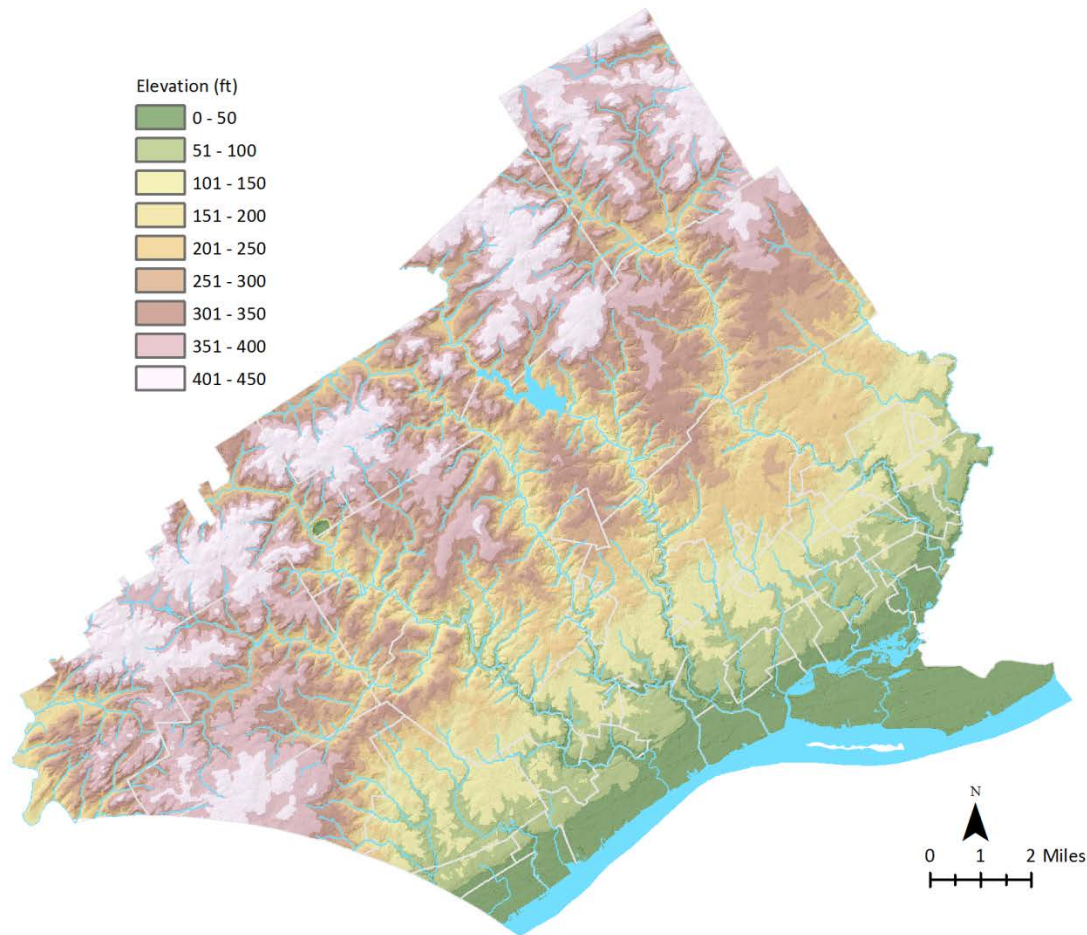
The lowest elevations in the County are along the Delaware River. In fact, the lowest point in Delaware County, at sea level on the Delaware River in Marcus Hook Borough, is also the lowest point in the state of Pennsylvania. The highest elevation in Delaware County is 495 feet above sea level at Longchamps Drive in northwestern Radnor Township, next to the boundary with Chester County. See Map 2-3.

Slopes

Slopes are natural topographic features. The slope of an area is the product of natural processes that constantly change the grade of the land through erosion, wind, and other forces. Degree of slope is expressed as a percentage, and measured in 100-foot increments (for example, a 16% slope is the difference in elevation of 16 feet over a distance of 100 feet). Slopes over 15% are considered "steep slopes." "Very steep slopes" are those areas of land where the grade is 25% or greater.

Steep Slopes

Steep slopes can be considered significant natural features. Water tables may be seasonally exposed on steep slopes, resulting in springs that feed streams; they may also serve as important habitat areas. Vegetation helps to stabilize a slope by anchoring the soil, preventing erosion, and reducing slope failure. Vegetation also reduces runoff by acting as a sponge to absorb precipitation, thus helping to reduce runoff. Because steep slopes are extremely sensitive to disturbance and erosion, they are generally unsuitable for building or other development; therefore, it is important to protect them from development whenever possible (Delaware County Planning Department 1984).

Map 2-3: Topography

WATERSHEDS AND WATER FEATURES

Watersheds

Watersheds are also referred to as drainage basins. They are defined by the local topography that dictates which way water will flow to the lowest point in an area. A watershed is named for the creek or river that drains that area. A watershed includes all of the land area, streams, and their tributaries that drain to another, larger, waterbody. These smaller tributary streams are often referred to as sub-watersheds. Delaware County lies completely within the Delaware River watershed (drainage basin) that encompasses land area and streams from New York State to the Atlantic Ocean. The area in the lower Delaware River and the Delaware Bay, where freshwater meets salt water, is referred to as the Delaware Estuary.

Delaware County's watersheds are shown on Map 2-4. The major watersheds are, from west to east: the Brandywine Creek (or River), with the stream serving as the County's western boundary with Chester County; Chester Creek; Ridley Creek; Crum Creek; and Darby Creek, with its Cobbs Creek tributary as the eastern boundary with Philadelphia. Naamans, Marcus Hook, and Stoney Creeks and land areas between watersheds along the Delaware River are considered areas of direct drainage to the Delaware River.

Map 2-4: Watersheds of Delaware County



Delaware County’s watersheds have experienced various levels of disturbance, ranging from moderate to very severe, depending on the degree of development. The process of damming, channelizing, armoring, and piping or burying streams has been occurring since shortly after colonization. Where these activities have occurred, the ecological health of the streams has been significantly impacted. Streams that are dammed have altered habitats caused by increased water temperatures and irregular sediment distribution in the creek. Dams also act as barriers to fish migration. For these reasons, dam removal, and stream “daylighting” have become target activities for restoring the health of streams.

The most heavily impacted watershed in the County is the Darby Creek watershed, as it is a mature, urban community. Numerous stretches of the channel have been armored with boulders or riprap, and many segments are piped. Other watersheds, like those of Ridley and Chester Creeks developed more recently, for the most part. They remain relatively intact, with fewer piped streams and a large proportion of the watershed remaining in relatively natural cover, though the system is still constrained by development around the creeks’ edges.

Surface Waters

Generally speaking, streams in the County flow in a south or southeastward direction and drain into the Delaware River, either directly or through the State of Delaware (Brandywine and Naamans). Steam

segments close to the Delaware River are tidal. Crum and Ridley Creeks are used as water supplies for Aqua Pennsylvania, and water from Chester Creek is used to supplement downstream flow during dry times. Ridley Creek is dammed, with a water outtake just below Baltimore Pike. Crum Creek is dammed in two places. The dam at Route 252, which creates the Springton Reservoir, was constructed in 1931. The Lower Crum Creek Reservoir is located further downstream in Springfield Township, and is a major drinking water outtake for Aqua Pennsylvania. Map 2-5 shows the surface waters of Delaware County.

Map 2-5: Surface Waters



Industry, agriculture, and urban development, as well as other activities, have contributed to the degradation of water quality around the County. Protecting the quality of surface and groundwater resources from degradation influences the well-being of all plants and animals as well as people (Pennsylvania Natural Heritage Program 2011).

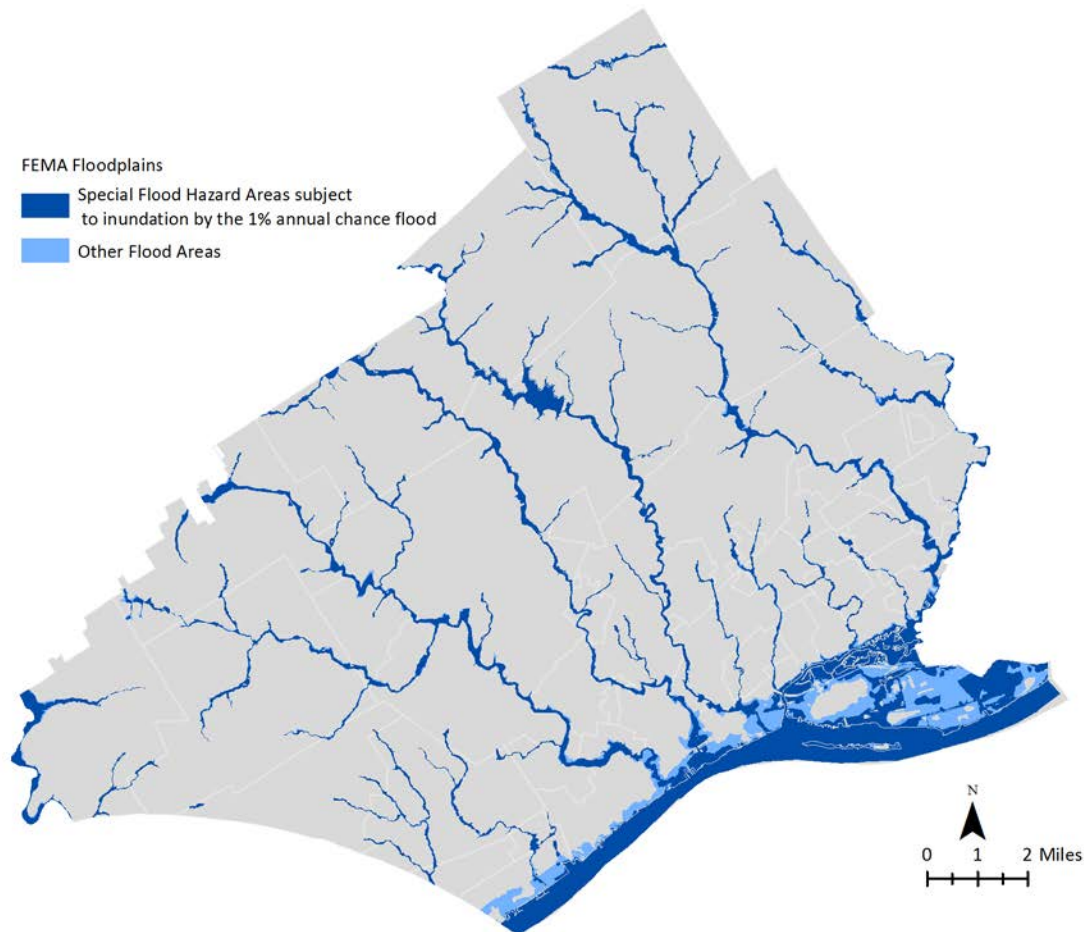
Aside from the important values noted in the floodplain and other water resource-related sections of this chapter, the shorelines of the County's rivers and streams, in particular the Delaware River, offer a variety of functions and opportunities unavailable elsewhere in the County or the region. Stream corridors are of great importance because they are generally aesthetically pleasing, they offer scenic relief, and they provide unmatched opportunities for open space and passive recreation. Additional

important riverine resource values, particularly along the Delaware River, include recreation, transportation (shipping), and industrial (process water).

FLOODPLAINS

Floodplains are the flat low-lying lands along streams and other water bodies that are subject to flooding. They are extensions of stream channels provided by nature to carry overbank flows resulting from heavy rains or melting snows. It is important to protect and maintain our floodplains for the sake of the important natural resource values they provide. Floodplains serve an ecological function and provide natural resource benefits as well as recreational value. Vegetated floodplains can serve as a protective buffer against stream bank erosion, filter pollutants and excessive nutrients from stormwater runoff, shade the waterway, and help lessen flood damage along streams. Map 2-6 shows the FEMA floodplains in Delaware County.

Map 2-6: Floodplains



Floodplains are the most common natural feature to be regulated at the municipal level. The County's floodplains are mapped on Flood Insurance Rate Maps (FIRMs), which are distributed by the Federal Emergency Management Agency (FEMA). The National Flood Insurance Act, passed in 1968, provides federally subsidized flood insurance for structures that are located within floodplains in exchange for local floodplain regulation. To further help ensure public safety, Pennsylvania Act 166, the Floodplain

Management Act of 1978, also requires flood-prone communities to regulate floodplain development using local ordinances.

All municipalities in Delaware County participate in the Flood Insurance Program and have adopted floodplain management ordinances in accordance with federal and state requirements. The adoption of strong stream corridor (or riparian buffer) protection programs at the municipal level would help to increase the flood carrying capacity of local streams.

WETLANDS

Wetlands are generally low lying areas with high water tables, which are temporarily or intermittently filled with shallow water. In addition to being visually appealing, they perform a variety of important ecological functions, one of the most important of which is the stabilization of the water regime. Wetlands have the capacity to store large quantities of floodwater and release it slowly to regulate stormwater runoff. Wetland soils can also filter and store suspended particles, silt, and other pollutants. Wetlands are important habitat area, and can support many forms of wildlife. It is for these reasons that both federal and state governments regulate development which could affect wetlands (Delaware County Planning Department 1984). Therefore, wetland protection is of major concern, and efforts should be made to ensure that those wetlands remaining in the County are preserved.

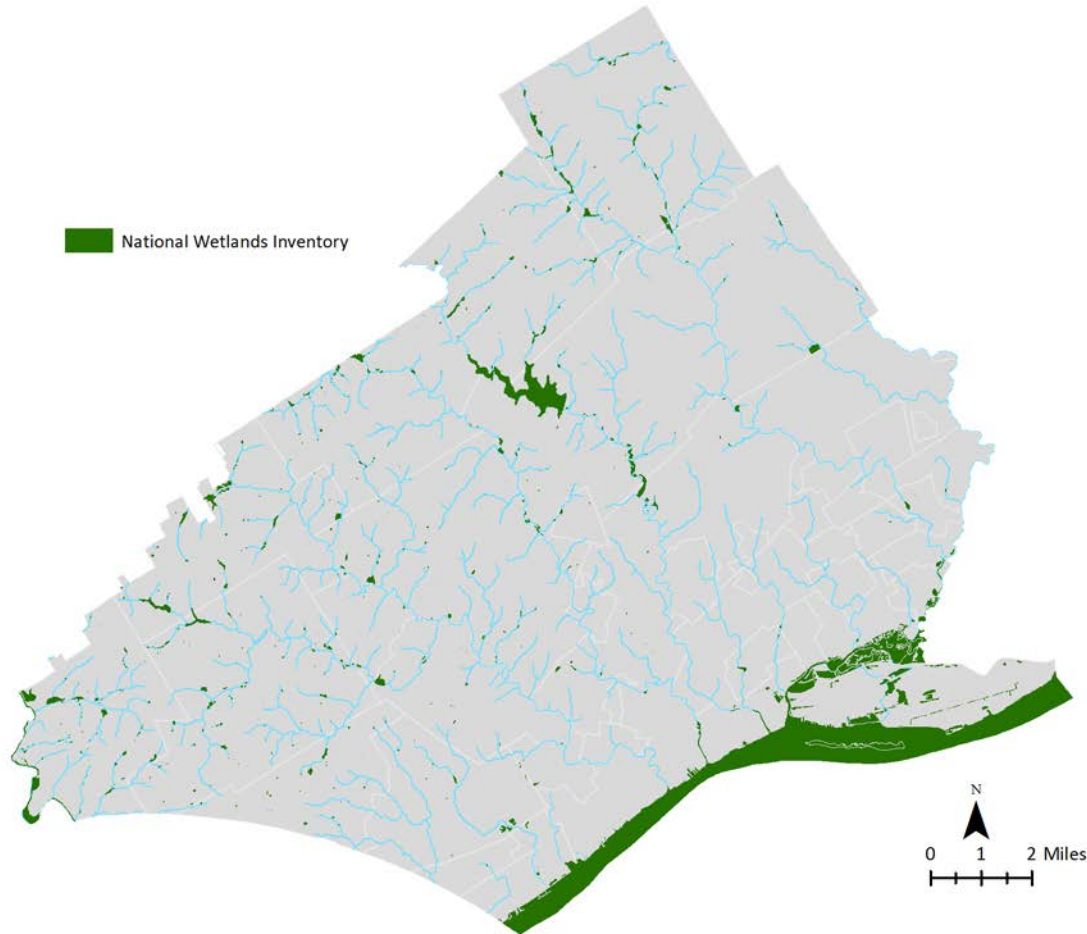
The U.S. Army Corps of Engineers and the Environmental Protection Agency jointly define wetlands as, “Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.” The three major indicators used to identify a wetland include hydric soils, water dependent vegetation, and evidence of hydrology (presence of water on the surface of the land for a period of the year).

The National Wetlands Inventory (NWI) was created by the US Fish and Wildlife Service in 1974 to serve as a nationwide inventory of wetlands to provide scientists and others with information on the distribution of wetlands to aid in wetland conservation efforts. However, the NWI mapping only shows of the locations and prevalence of wetlands three acres or larger. Therefore, the inventory should not be construed to be a comprehensive inventory of all wetlands. In order to identify all wetlands on a site, federal and state agencies require a site-specific wetland delineation involving use of the three wetland indicators. Delineated wetlands fall under federal and state regulations regarding their protection and mitigation. NWI Wetlands of Delaware County are shown on Map 2-7.

NATURAL AREAS

Despite its high degree of urbanization, Delaware County has a number of ecologically significant areas. The *Natural Heritage Inventory of Delaware County, Pennsylvania* (2011) identifies these areas and classifies them according to their relative significance. The inventory provides maps and lists of important natural communities on each of the different significance levels, as well as the locations of all known animals and plants of endangered, threatened, or rare classifications to help maintain these species.

Map 2-7: National Wetlands Inventory (NWI) Wetlands



The NHI can prove to be useful for planning and development purposes because it shows where Delaware County’s remaining sensitive and limited resources (i.e., significant wetlands and remaining interior forests) are located so that care can be taken not to negatively impact them during the development process. The areas indicated in the Natural Areas Inventory only represent the significant natural resources “identified” in the County to date. Therefore, while it is important to use this document to guide land development decisions affecting such resources, it is also important to continue to document other remaining resources not yet identified.

The 2011 inventory is actually an update of the Natural Areas Inventory prepared for the County in 1992, during the first wave of PA County inventories. A new element in the updated NHI is a list of seven general recommendations for the protection of Natural Heritage Areas within the County. The document contains detailed text to explain each recommendation:

1. Consider conservation initiatives for natural heritage areas on private land.
2. Prepare management plans that address species of concern and natural communities.
3. Protect bodies of water.
4. Provide for buffers around natural heritage areas.
5. Reduce fragmentation of the landscape surrounding natural heritage areas.

6. Encourage the formation of grassroots organizations.
7. Manage for invasive species.

The Natural Heritage areas identified in the inventory are shown on Map 2-8. To see each site in more detail, please consult the Delaware County NHI. All county NHI's, including Delaware County's, are viewable on the web at <http://www.naturalheritage.state.pa.us>.

HABITATS OF PLANTS AND WILDLIFE

The Natural Heritage Inventory identifies and characterizes the rare, threatened, and endangered species and habitats that comprise the biodiversity found within Delaware County.

Animals

A section in the NHI titled "A Review of the Animals of Delaware County" (pages 57-78), contains a complete overview of the animal species present in the County, both common and prevalent species, and those that are historically native but in decline locally. Each category of animals (mammals, birds, reptiles and amphibians, fish, and insects) contains a summary of the various species and communities (year round and migratory) and their habitats. Lastly, each category of animals contains conservation recommendations. Below is a very brief overview of the animals of Delaware County.

Mammals

The white-tailed deer is the most common large mammal in Delaware County. Conflict between deer and humans is an ongoing issue, and white-tailed deer overpopulation remains a challenge to the conservation of biodiversity. The other common mammals in Delaware County include the gray squirrel, raccoon, striped skunk, red fox, Virginia opossum, and chipmunk, all of which thrive in various habitat types.

Species with more restricted habitat needs and are termed "habitat specialists." They may be restricted to grassland habitats, the forest interior, upper elevation ridgelines, or wetlands and streams. Examples of grassland species include the meadow vole, the cottontail rabbit, the eastern mole, groundhog, and the meadow jumping mouse. Wetland and stream mammals include shrews, rodents, weasels, muskrat, beaver, star nosed moles, and river otters, which have been reintroduced in some places in the region after their numbers had dwindled. Mammals found in forest habitats include the red squirrel, the flying squirrel, gray fox, red-backed vole, and two more species of shrews.

Some formerly abundant mammals in Delaware County could benefit from reintroduction programs, including the least shrew and Delmarva fox squirrel.

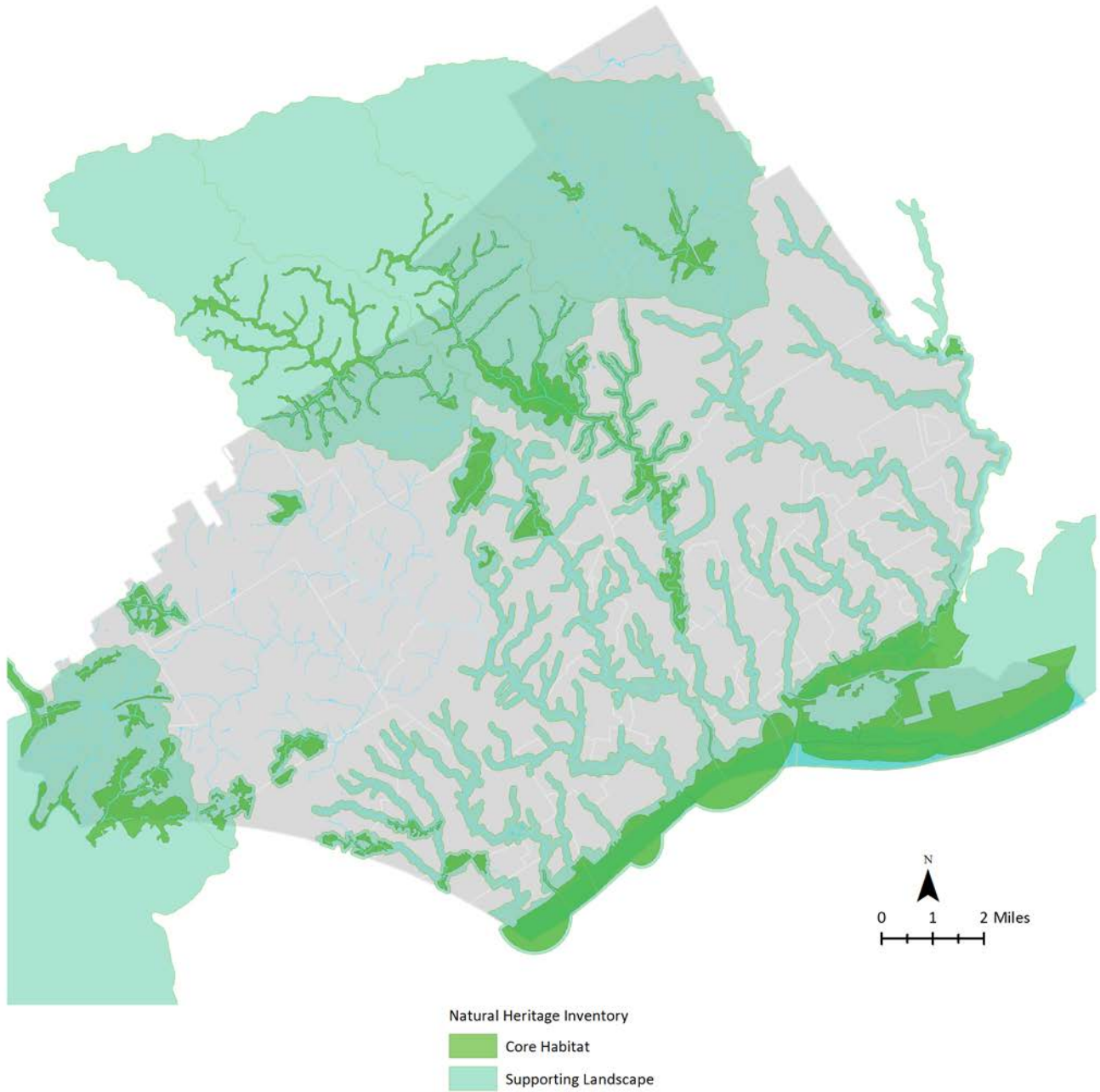
The John Heinz National Wildlife Refuge is an Important Mammal Area (IMA) that has been designated in Delaware County by the Pennsylvania Biological Survey.

Birds

With its proximity to the Tinicum Marsh, the Delaware Bay, and the Delaware River, Delaware County presents a wide range of habitats for birds. Bird habitats include tidal marsh, upland woods and grasslands, riparian corridors and expansive riverine areas, and the urban environment.

Because of its many stream valleys and the John Heinz National Wildlife Refuge at Tinicum, the County contains many birds that are dependent upon marshes, wetlands, and riparian areas. Pennsylvania species of concern found at the Heinz Refuge include bald eagle, osprey, peregrine falcon,

Map 2-8: Natural Heritage Inventory Sites



great blue heron, and great egret. Some birds are dependent upon open water such as the various species of gulls. Some species, like the double-crested cormorant, are very common along the Delaware River and are sometimes seen inland as well.

Several bird species are specially adapted to the forest edge and “old field” habitat types found within the County, though invasive plants can make this habitat less attractive. Good examples of this habitat type can be found scattered throughout the County. Birds found in wetlands include waterfowl, shorebirds, herons, rails, bitterns, swallows, and sparrows.

Delaware County is located within the Atlantic Flyway, which is a migration route that stretches from the shores of Greenland south along the Atlantic seaboard of North America to the tip of Florida. This flyway opens the area to arctic species in the winter, tropical species in the summer, and a wide range of boreal, temperate, and coastal species during migration. Ridley Creek State Park and Heinz Refuge are well known as regional birding hotspots. The County’s Important Bird Areas (IBA’s) are the Heinz Refuge and Mud Island IBA, and the Upper Ridley-Crum Creek IBA (mainly in Edgmont, Middletown, and Newtown Townships). There are 85 IBA’s in the state, as identified by the Pennsylvania chapter of the National Audubon Society, along with the Pennsylvania Ornithological Technical Committee of the Pennsylvania Biological Survey. The NHI includes conservation recommendations methods for the IBA’s.

Reptiles and Amphibians

According to the NHI, the amount of habitat destruction in the eastern portion of Delaware County has dramatically decreased the overall diversity of reptile and amphibian species (collectively known as herptiles). Some inhabiting the Coastal Plain are considered species of concern. A number of herptiles are listed as threatened or endangered by the Pennsylvania Fish & Boat Commission, not only because there is little habitat left for them in the state, but also because of the continued development pressure on their remaining habitats.

Even with the change from an agricultural landscape to a primarily suburban landscape, some sizable tracts of habitat remain in Delaware County, particularly in public parks. Streams, such as the Brandywine, Ridley, Darby, Crum, Cobbs, and Chester Creeks, house much of the herpetological diversity in the County. These areas provide the most contiguous habitat for Delaware County’s herptiles.

Delaware County is home to a number of “generalists,” or common species which can live in a variety of habitats. These include the eastern garter snake, the bull and green frogs, painted and snapping turtles and the red-spotted newt. Some other snakes that are still very common in the County include the northern black racer, the black rat snake, eastern milk snake, northern water snake, northern brown snake, and ringneck snake. Along with these common species, Delaware County includes several less common species of herptiles. Many of these species have restricted ranges or are considered specialists, meaning their life histories have more specific habitat requirements.

The bog turtle is a federally threatened species and is listed as state endangered. This species has suffered severe decline due to habitat destruction, habitat fragmentation, illegal collection, and predation. The red-bellied turtle is listed as a Pennsylvania threatened species.

Although relatively little habitat exists within Delaware County, it remains a significant location for the Commonwealth’s reptiles and amphibians. The forested tracts, though small, and numerous waterways and wetlands provide critical habitat for reptiles and amphibians, both common and rare. Of utmost importance to the conservation of the County’s herptiles is the protection of the remaining forests,

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streams, and wetlands. The species that could be considered a priority for conservation in Delaware County include the New Jersey chorus frog, southern leopard frog, red bellied turtle, bog turtle, and mud turtle (Pennsylvania Natural Heritage Program 2011).

Fish

Fish are an important part of the biology of streams and other water bodies. Between all of the various species and subspecies, fish eat a wide variety of items. Most are predatory and eat other stream animals including invertebrates and other fish. Some fish species will eat mollusks, crayfish, salamanders, frogs or other animals living in or near streams. Other fish eat only plant material, like the algae growing on rocks.

Many species migrate upstream to spawn. As such, smaller streams can be important habitat for fishes – both for the act of spawning and the development of young fish.

Five fish communities of Delaware County have been identified through the Pennsylvania Natural Heritage Program Aquatic Community Classification. They are (with example species), Atlantic Coldwater Community 1 (slimy sculpin, stocked brown trout), Atlantic Coldwater Community 2 (white sucker, golden shiner), Lower Delaware River Community (white perch, American shad, striped bass, white catfish), River and Impoundment Community (walleye, yellow perch, black crappie), and Warm Water Community (sunfish, smallmouth bass, rock bass, common shiner) (Pennsylvania Natural Heritage Program 2011). More species are listed in the NHI, as well as more information about fish habitats.

Insects

Insects of Delaware County which are under threat include species of butterflies and moths (Lepidoptera), dragonflies and damselflies, as well as tiger beetles. Many Lepidoptera depend not only on a specific habitat, but also a specific plant within that habitat. The larvae of many species will often use only a single host plant. This is the relationship between the monarch butterfly and the milkweed, or the spicebush swallowtail caterpillar and the spicebush. If the plant is lost, the dependent insect will disappear from the area (Pennsylvania Natural Heritage Program 2011).

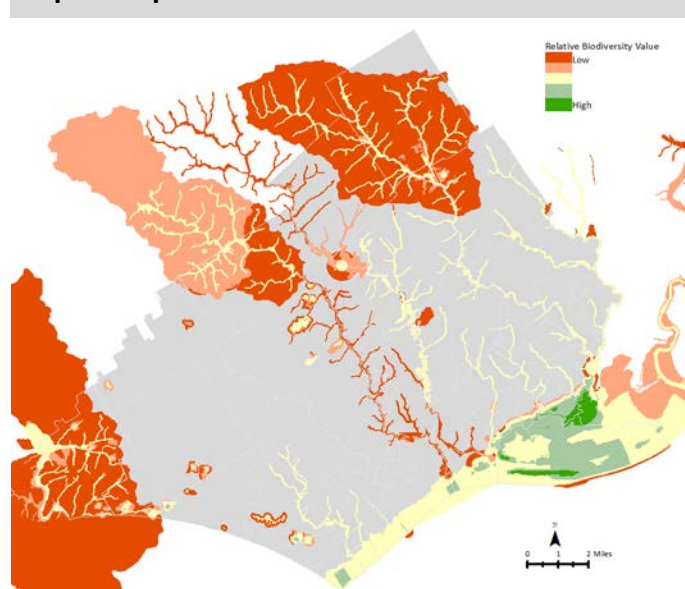
Species of Concern

Map 2-9 was created with data from the NHI, and shows areas classified as habitats of species of concern. The map shows the relative biodiversity value of places within this classification (dark green as high value, dark orange as low value, yellow in the middle). This map can be used to discern how ecologically important the areas immediately surrounding streams and water bodies are, the value of the less developed areas in the upper portions of the watersheds, and the high value of the Heinz Refuge.

Invasive Species

An invasive species is a plant or animal introduced an area from outside the local natural system. Invasive plants reproduce

Map 2-9: Species of Concern - Habitats



rapidly, spread quickly over the landscape, and have few, if any, natural controls such as predators and diseases to keep them in check. They can create havoc on the landscape and crowd out and displace native plants that wildlife prefer to eat. Invasive plants can come in the form of vines and tall leafed stalks. Chestnut blight is a fungus that was probably introduced from nursery stock from China in the 1890's and is responsible for nearly eradicating the once prevalent American chestnut tree. The Norway rat and the house mouse are invasive mammal species encountered in urban and suburban areas. The Canada goose is a common invasive bird species. Sliders are an invasive turtle species that invade the habitat of the red-bellied turtle.

Invasive plants include Japanese knotweed, purple loosestrife, bamboo, mile-a-minute, Japanese hops, and Norway maple. Invasive animals include the gypsy moth, hemlock wooly adelgid, common carp, Asian clam, flathead catfish and snakehead fish. Refer to the NHI for longer lists of invasive plant and animal species found in Delaware County. These species can directly threaten populations of native animals through direct competition or predation (Pennsylvania Natural Heritage Program 2011).

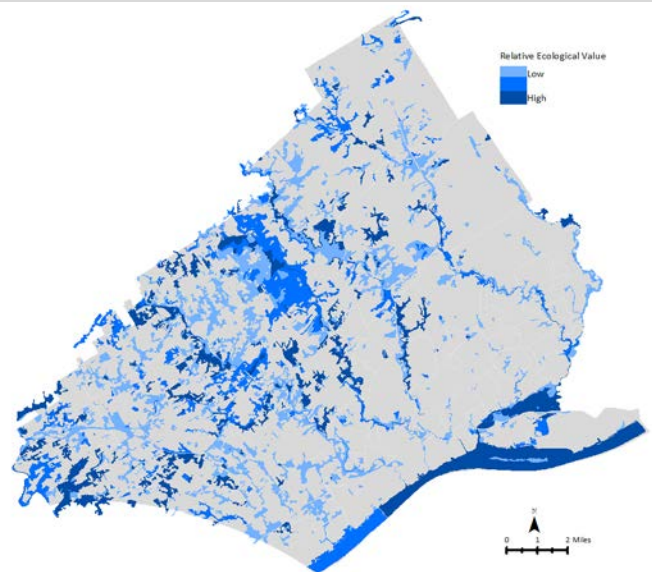
The removal of invasives is an essential component of a stream bank restoration or open space management. Although removal and replacement with natives can often be costly and time consuming, the benefits outweigh costs over time. Methods also vary, depending on the target species, but they include biological, mechanical, or chemical methods. The NHI presents overall recommendations for invasive species and a list of ways to deal with them.

Natural Communities

Unaltered natural communities are rare in the County, but some examples exist. Since the area was first settled, Delaware County's landscape has experienced major modification from both land use changes (land development for all aspects of modern human life) and unintentional impacts (introduction of invasive species, removal of top predators, and pollution). Despite the moderate impacts, Delaware County still has a number of important natural communities and has the potential for reestablishment or re-creation.

The NHI lists and describes natural communities that were likely common within the Delaware County area 400 years ago, and which have the potential to be restored within existing natural areas or re-created anew (a process usually referred to as reclamation). Each type contains historic characteristic forest types with specific tree species. Categories of this community include terrestrial communities containing upland forest, coastal plain forest, floodplain forest, Atlantic white-cedar forests, serpentine barrens, and grasslands/meadows/old fields, and wetland communities containing freshwater tidal wetlands and spring seeps. (Pennsylvania Natural Heritage Program 2011) These natural communities are reflected on Map 2-10 with a range of relative ecological values.

Map 2-10: Natural Communities



WOODLANDS AND TREE CANOPY COVERAGE

Delaware County is highly developed; as such, it does not contain the extensive woodlands found in many other areas of Pennsylvania. However, the County has varying levels of tree canopy cover, depending on location. Tree canopy coverage refers to the amount of land which is covered by the canopy of trees. These areas can include wooded or forested lands, planted trees on residential, commercial, or public properties, and street trees along roadways and in parking lots. Protecting existing woodland areas and restoring canopy coverage in other areas provides a range of benefits, including increased property values, decreased stormwater runoff, and cleaner air. Strategic tree planting and preservation techniques can contribute to a higher quality of life in the surrounding communities.

Benefits and Importance

Property Values and Economics

Trees have been shown to contribute to higher housing values. Mature trees on a property are very often seen as an asset when marketing and selling both residential and commercial properties. During the summer, deciduous and evergreen trees provide shade for buildings. This shade contributes to a cooler interior temperature of the building, reducing the costs associated with air conditioning. During the winter, shade trees lose their leaves, allowing the sun to reach into the building and provide a source of natural heat and daylight. This contributes to a lower heating costs and a reduced need for artificial lighting in the winter. In commercial areas, trees can buffer visitors and pedestrians from traffic noise and views, while providing shade in the warmer months. These benefits allow for a more pleasant experience for a visitor, which contributes to more regular foot traffic along commercial corridors and shopping centers.

Stormwater Benefits

Increased volume and intensity of stormwater runoff lead to stream bank erosion and destabilization, as well as a higher likelihood of downstream flooding events. Trees help to maintain the natural hydrological cycle by capturing and storing rainfall in the canopy and root zone. Much of the rainwater caught in the tree canopy is released into the atmosphere through evapotranspiration, and stormwater runoff surrounding the tree is infiltrated into the soil, where it is stored as groundwater. The soil, tree roots, and microscopic organisms within the soil filter pollutants out of the water. By slowing and filtering runoff, trees prevent harmful pollutants from reaching local water bodies, significantly decreasing the volume and intensity of streams during storm events. Trees are particularly effective at reducing and filtering runoff from smaller, more frequent storms.

Air Quality Benefits

Trees improve air quality by removing nitrogen dioxide (NO₂), sulfur dioxide (SO₂), carbon monoxide (CO), ozone (O₃), and particulate matter 10 microns or less in size. Nitrogen dioxide, sulfur dioxide, and carbon monoxide are results of the burning of fossil fuels. Ozone is the primary constituent of smog but is not the direct result of specific sources. It is created by the reaction of sunlight and other pollutants in the atmosphere. Trees work to maintain consistent air quality by breaking down these chemicals into more harmless byproducts through a natural process. The leaves of the tree canopy act as catch points for the pollutants in the air. Small pores on the leaves of trees, called stomata, give trees the ability to absorb carbon monoxide, and other compounds from the air. The tree then handles these compounds in a variety of ways before finally releasing fresh oxygen.

Carbon Sequestration

Trees use carbon dioxide (CO₂) as a source of food and growth by converting it into sugar, cellulose, and other carbohydrates during the process of photosynthesis. The trees store carbon dioxide in the tree

trunks, branches, foliage, roots (referred to as biomass) and soil surrounding it. The burning of fossil fuels is a large producer of carbon dioxide, which is naturally present in the atmosphere, but can be harmful at higher levels. Trees work to continuously absorb carbon dioxide and break it down into components useful for its growth.

Habitat

One of the greatest sources of habitat for birds and animals is trees, particularly the canopy of trees. Individually, trees provide a number of benefits to animals, including acting as a shelter and primary food source. Together, large numbers of trees contribute to a healthy ecosystem. The shade provided by larger trees in forest allows understory trees and shrubs to grow, increasing the food source and coverage for animals.

Current Status

When the first European settlers arrived in what is now Delaware County, they found abundant forest cover over the entire area except for the tidal marshes that existed along the Delaware River. In all probability, the forests were mainly hardwoods similar to those species present today. A formerly prevalent species was the American chestnut, which was eliminated by the chestnut blight in the early 1900's. Conifers, such as the eastern hemlock and possibly a few scattered white pines, were probably confined to the stream valleys.

Region

American Forests published a report on the Delaware Valley region's tree cover titled *Urban Ecosystem Analysis Delaware Valley Region*, in March 2003. The report was the result of an urban ecosystem analysis that included documentation of landscape changes over time and their environmental impacts, and a detailed analysis of aerial imagery conducted by American Forests. The area covered by the report includes Bucks, Chester, Delaware, Montgomery, and Philadelphia Counties in Pennsylvania, as well as Burlington, Camden, Gloucester, and Mercer counties in New Jersey. The land area considered totaled more than 2.4 million acres (American Forests 2003).

The analysis covered the time period between 1985 and 2000. During that period, the region saw tremendous growth, particularly in the outer suburbs. According to American Forests, urban land increased from 387,167 acres to 473,067 acres, an increase of 22%. The increased amount of urban land reduced the amount of land covered by trees, decreasing the aforementioned benefits of trees in the region. The decline in tree cover reduced the ability of the forests to detain almost 53 million cubic feet of stormwater; American Forests values this service at \$105 million to the region (American Forests 2003). The loss in tree cover also impacted air quality by reducing the amount of pollutants in the air removed by trees. The impact from the loss of tree canopy coverage also reflects the loss of core habitat areas throughout the region. As trees are removed, core habitats or interior forests, are reduced significantly. Interior forests provide a large amount of habitat for wildlife and offer protection that edge forest cannot replicate. The loss also increases the urban heat island effect, as trees provide shade and absorb sunlight. Much of the pavement that is replacing trees reflects sunlight and absorbs heat that it releases slowly throughout the day and night, leading to warmer temperatures on and around paved surfaces.

As a result of the American Forests study, Pennsylvania DCNR launched TreeVitalize in 2004, as a partnership with Pennsylvania Horticultural Society to "increase public awareness of the importance of community trees" (TreeVitalize n.d.). TreeVitalize launched in 2004 with a goal of planting 1 million trees, and since has planted 391,595 trees (as of fall 2014) across the state. The partnerships offers a

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multitude of benefits beyond tree planting, including small grants, volunteer organization, and educational outreach for professionals, municipal officials, and volunteers.

Delaware County

Historically, Delaware County was densely wooded, particularly in the upland areas of the County. The initial old growth forests were clear cut for timber and the land turned into productive agriculture in early settlements. Since then, many areas of the County have reforested naturally, while others have developed from agricultural to residential. This reduction in tree cover slowly occurred over several hundred years of development into the 21st century. According to American Forests, Delaware County went from 44,163 acres of land (37%), with heavy tree cover in 1985, to 36,200 acres (30%) in 2000, a decrease of 7,963 acres (18% of woodland) (American Forests 2003). Today, the Character Areas of Delaware County (Mature Neighborhoods, Growing Suburbs, open space, and greenways) have varying degrees of tree canopy coverage due to differing patterns of development. See Map 2-11: Tree Canopy Cover for a map of tree canopy coverage in Delaware County.

Today, woodlands in the County are second- and third-growth stands of the oak-hickory forest type. Although many sub-groups or sub-types are also present, such as associations of yellow poplar/ash, yellow poplar/oak, and oak/ash/beech, the final species composition will consist of oaks and hickories. The County is rather unique in its location with regard to forest type. Although the County is classed as part of the central hardwood forest, it also lies on the northern edge of the range of several trees found in southern forests, and contains several species native to the south (magnolia, sweet gum, persimmon, and American holly). The County is also located near enough to the northern forest to find some species native to that forest (sugar maple, eastern hemlock, etc).

Tree Cover in Character Areas

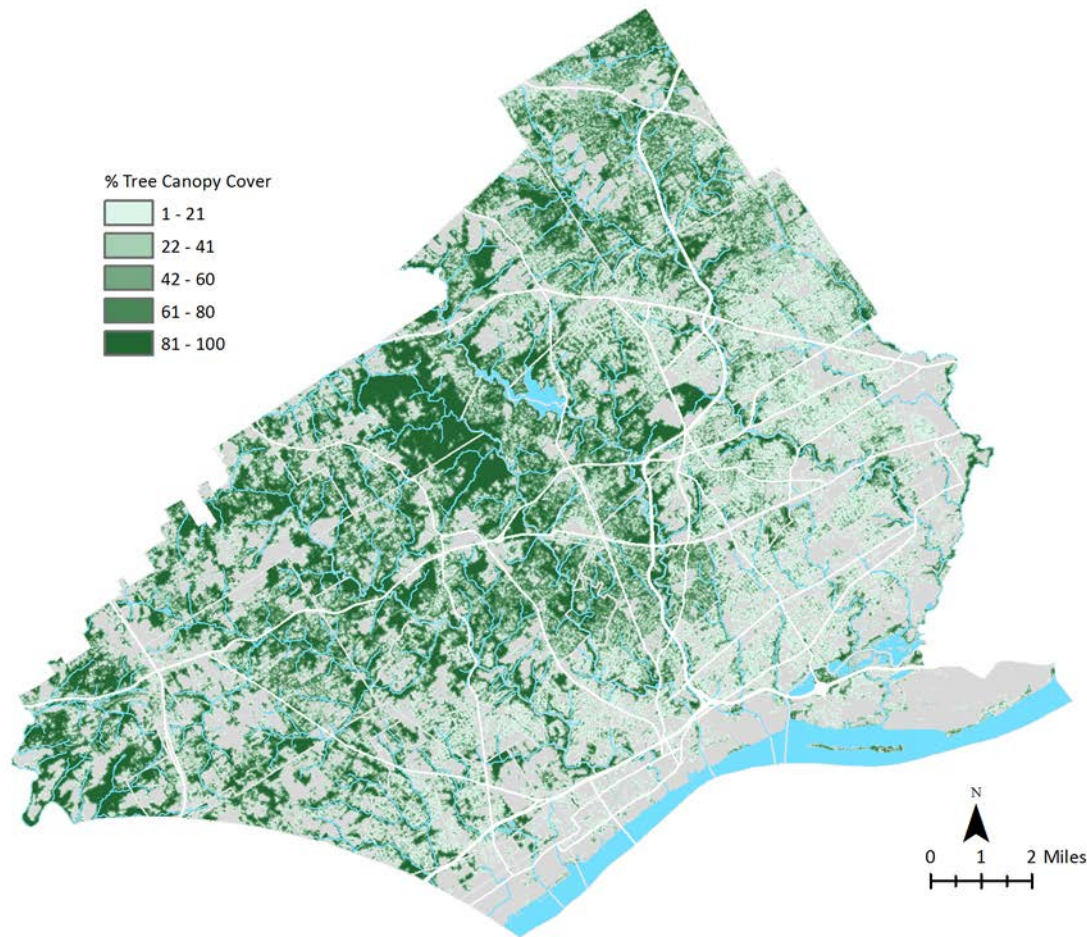
Mature Neighborhoods

Tree canopy cover in Mature Neighborhoods is typically characterized by larger, established trees on residential properties and lining the streets. Due to the dense development patterns of many of these areas, there are fewer large contiguous areas of trees. However, some Mature Neighborhoods have very limited tree canopy coverage due to lack of replacement trees for those cut down and limited space for new street tree planting.

Growing Suburbs

Growing Suburbs often have large areas of contiguous wooded areas mixed among primarily residential areas. The residential developments within the Growing Suburbs benefit from increased environmental protection efforts by Delaware County municipalities, including tree replacement and street tree requirements. These environmental protection efforts are intended to address sprawling development, which involves clearing large areas of wooded and undeveloped lands.

Map 2-11: Tree Canopy Cover



Open Space and Greenways

As discussed in Chapter 1: Introduction and Background, open space is an umbrella term used to describe lands that are free from intense development. As such, many of these lands contain a significant quantity of tree cover. Tree cover in these areas can range from densely wooded areas to ornamental tree planting in parks. Greenways have relatively consistent tree cover. Most of these areas are comprised of stream corridors or utility rights-of-way. Stream corridors often have dense canopy coverage located along the stream banks and in floodways adjacent to creeks. Utility rights-of-way do not characteristically have any tree coverage due to the sensitivity of the infrastructure within these areas.

Tree Cover in Central Places

Tree cover in the Central Places of Delaware County, such as the Town Centers, is often limited to street trees and/or pocket parks. Along the edges of the Central Places, increased tree cover can be found on residential and other private properties. Many of Delaware County's Central Places are lined with street trees and other streetscape improvements.

Map 2-12 shows forest land in Delaware County using 2011 data from the National Land Cover Database. There are very few large tracts of woodlands left in the County. Although forested areas are still widespread around the County, most are fragmented and not deep enough to contain "interior

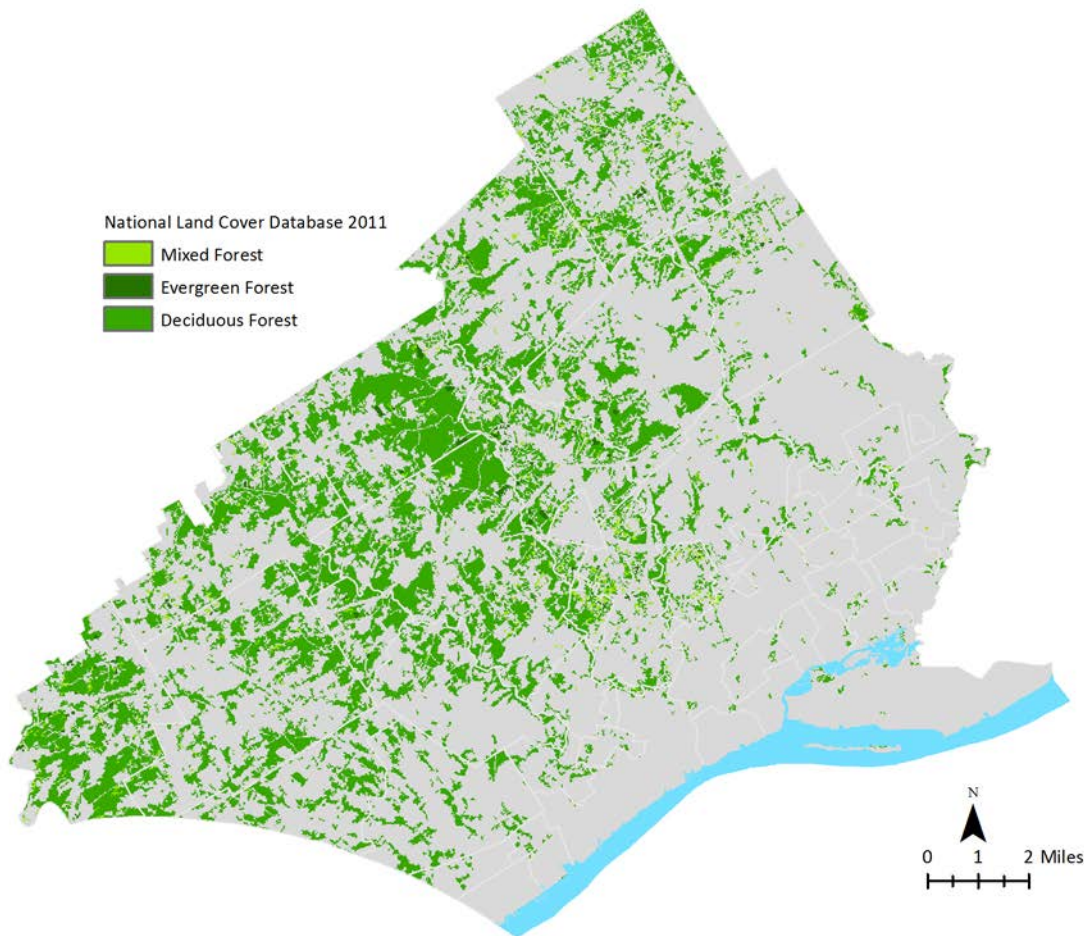
Chapter 2: Natural Features

forest” (a forest at least 100 meters in from the edge of any human created opening such as a field, road, railway line or utility right-of-way). Concentrations of forested areas are usually found in stream valleys. One large unbroken tract appears in portions of Edgmont and Middletown Townships in Ridley Creek State Park and the adjoining Tyler Arboretum. Other large forests are located in Chadds Ford and around the boundary of Chester Heights extending into Middletown, Thornbury, and Chester Heights. Although few large tracts of woodlands remain, many smaller tracts are scattered throughout the County.

Large forests and their natural habitats should be considered the backbone of wildlife habitat in the County. As such, conservation efforts should concentrate on maintaining these large forest blocks by avoiding further fragmentation with additional roads, development, and utility rights-of-way (Pennsylvania Natural Heritage Program 2011).

Forest trees have value not only as habitat, but also as an agricultural resource. Forest products, varying from lumber and veneer to firewood, are often harvested from woodlands in the County. This is dependent upon the goals and objectives of the individual landowner (Delaware County Planning Department 1984).

Map 2-12: Forests



Potential

Limiting Tree Canopy Loss

Growing Suburbs

The underlying areas of the Growing Suburbs host the majority of the County's significantly sized areas of tree cover. Municipalities in these areas can identify and develop a strategy for protecting these wooded areas. Many municipalities choose to enact ordinances and zoning codes that emphasize conservation by design practices such as discussed in Chapter 6: Open Space Protection Tools.

Reforestation

Reforestation is a general term used to discuss the process of planting trees in areas that previously were forested, but were cleared due to development or other land use changes. There remains potential for tree canopy in areas where tree cover has previously been cleared or cannot be protected from development. Reforesting in these areas of Delaware County helps to bring the benefits discussed above into the Mature Neighborhoods, open spaces, and greenways.

Mature Neighborhoods

As compared with other areas of the County, significant reforestation is most difficult in the Mature Neighborhoods. Due to the dense development patterns, adequate planting space is not readily available in many neighborhoods. However, several municipalities in the County have made a concerted effort to develop tree planting programs in Mature Neighborhoods. Lansdowne Borough, for instance, has worked to plant street trees along Baltimore Avenue through various regional programs, including TreeVitalize. Developing a green streets program, as discussed further in Chapter 6: Open Space Protection Tools, can also help to increase tree canopy in Mature Neighborhoods.

Growing Suburbs

As mentioned above, Growing Suburbs have significant opportunities to protect large tracts of wooded area. However, they should also direct their focus increasing tree plantings in newer residential developments, particularly on lands of the single-family detached housing which comprises much of the Growing Suburbs. While this land is privately owned, municipalities can encourage tree planting with technical assistance or even tree giveaway programs. As commercial businesses develop in Growing Suburbs, the parking lots also offer a grant chance for increasing tree canopy.

Open Space and Greenways

Open spaces of Delaware County offer some of the greatest opportunities for replacing lost tree canopy. Many of these areas contain vast expanses of lawn with limited tree cover. Planting trees could provide shade and help to reduce the amount of mowing. As part of the TreeVitalize program, Pennsylvania Horticulture Society coordinated a tree planting at Upland County Park in the fall of 2014. The program included planting 50 trees throughout the park to increase tree canopy cover and replace trees that died over the years. The planting was made possible thanks to volunteers and donations from TD Bank through its "TD Tree Days" program.

Reforestation along County greenways can provide tremendous benefits, particularly along stream corridors where riparian buffers can protect the water supply as well. Because development is often not permitted in this area, and funding sources for riparian planting is offered by a number of agencies, greenways are a very attractive area for tree planting. In the fall of 2010, for instance, Delaware County Conservation District, Parks and Recreation Department, and the Community Corrections Department worked with community volunteers to plant 192 native trees and shrubs along Crum Creek in Smedley County Park. The project was funded by Aqua Pennsylvania through the Pennsylvania Horticultural

Society's TreeVitalize program. Community volunteers included members of local school and watershed groups. Similar tree planting have taken place in other County parks as well.

RELATIONSHIP BETWEEN NATURAL FEATURES AND OPEN SPACE

The Mature Neighborhoods and Central Places of Delaware County were developed in a traditional manner with grid street patterns and sidewalks. In these areas, the parks were often designed and set aside as the towns were being built. For the most part, they are still parks today, entirely surrounded by the development that filled in the rest of the community. There is very little open land available for open space, except for the steep slopes in the creek valleys.

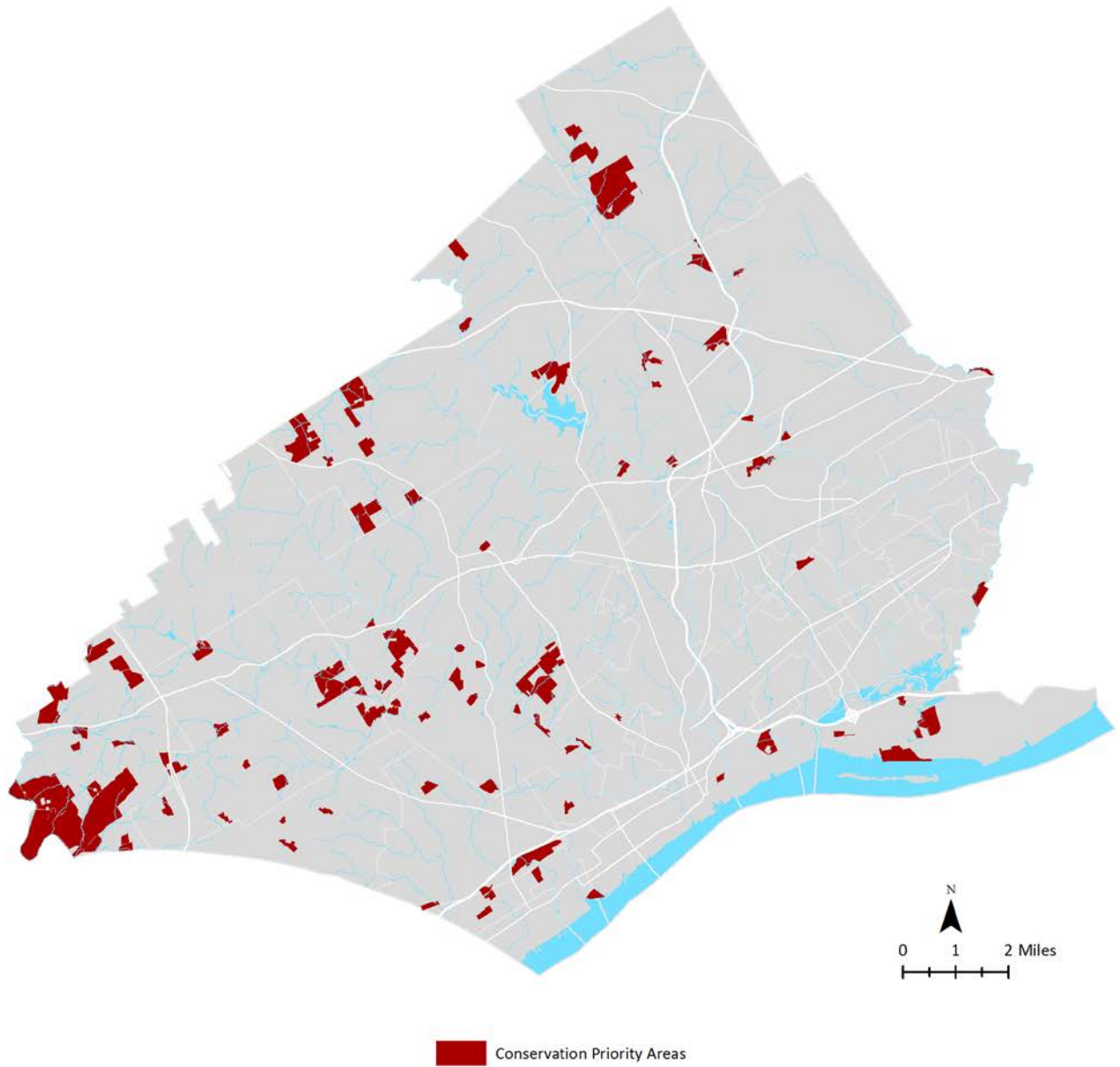
The Growing Suburbs of the County developed later and are still being developed with modern residential subdivisions and non-residential land developments. Local codes in the Growing Suburbs generally require the preservation of environmentally sensitive areas and often require that a percentage of the development be preserved for open space.

An advantage to planning for parks and natural lands protection in the less developed areas of the County is that many of the large tracts are mainly undeveloped. This presents the opportunity to better conserve and protect natural features. There are also more opportunities to create larger more substantial passive and active parks.

Map 2-13 shows Conservation Priority Areas in Delaware County, which were developed for *Delaware County 2035*, primarily using data found in municipal comprehensive plans. They were defined as "undeveloped areas of high scenic, environmental, recreational, or agricultural value that should be preserved in their undeveloped or minimally developed state to ensure they continue to serve as resources for the County and its residents."

Many of these municipal plans were developed prior to the Natural Heritage Inventory update in 2011, or may not have shown important natural features on a map for a variety of reasons. The map of NHI sites and supporting landscapes (Map 2-8) should be consulted and these areas should be given high consideration when municipalities seek to update conservation goals and priorities.

Map 2-13: Conservation Priority Areas



ACTIONS:

Objective

OS 1 Recognize the importance of Delaware County's natural features as resources to be conserved and enhanced.

Actions

Delaware County will...

- OS 1.1** Raise awareness on the part of municipal officials and residents on the importance of conserving natural features and resources.
- OS 1.2** Promote the use of conservation design principles in new land developments.
- OS 1.3** Provide technical assistance to municipalities in conserving and enhancing natural features.
- OS 1.4** Install and enhance riparian buffers on County-owned properties.
- OS 1.5** Provide technical assistance to municipalities in increasing tree canopy coverage.

Municipalities are encouraged to...

- OS 1.6** Identify significant natural feature areas for conservation.
- OS 1.7** Coordinate educational outreach to promote the importance of natural features.
- OS 1.8** Adopt ordinances providing protection for the natural features of Delaware County.
- OS 1.9** Utilize conservation design practices in municipal zoning and subdivision and land development ordinances.
- OS 1.10** Prioritize the protection of Natural Heritage Areas identified in the Natural Heritage Inventory of Delaware County.



Open Space Resources 3

Chapter 3: Open Space Resources

INTRODUCTION

This chapter details the existing open spaces in Delaware County. It examines and inventories public open spaces and parks as well as various types of private open lands. It also includes a discussion on historic and cultural resources and how they relate to open space. Many of these open space and historic/cultural resource areas also contain natural resources that should be conserved, protected, and managed for the benefit of the natural environment and our quality of life. Implementing the actions presented at the end of the chapter will help to ensure these resources are cared for and put to proper use.

The following is a discussion and inventory of the various types of open space resources, organized by ownership, in Delaware County. These categorizations also determine their level of protection, public access, and overall benefit to the County's open space or "green infrastructure" system.

EXISTING OPEN SPACE IN DELAWARE COUNTY

Public open space is that which is owned by federal, state, county, and municipal governments. It is controlled by public agencies or officials and is generally supported by tax dollars. These lands are considered to be permanently protected for public use. One reason for this assumption is that they are sometimes purchased with funds from programs with a stipulation to permanently preserve open space for public recreational use (all properties purchased with PA DCNR grant funds, for example). The scale of public open spaces varies by owner, location, and purpose (e.g., tot lot, ballfields, natural resource protection).

The following is a summary of national, state, county, and municipal owned public open space in Delaware County.

FEDERALLY PROTECTED OPEN SPACE

The John Heinz National Wildlife Refuge at Tinicum (Heinz Refuge) is comprised of 993 acres within an approved 1,200-acre acquisition boundary, divided between the City of Philadelphia and Delaware County. The Delaware County portion (713.5 ac.) contains land within Tinicum Township (420 ac.), Folcroft Borough (289.7 ac.), and Darby Township (3.8 ac.). It is managed by the United States Fish and Wildlife Service (USFWS) as part of the National Wildlife Refuge System. Approximately 200 acres of the largest freshwater tidal marsh in Pennsylvania protected in the Refuge. Well-known among birdwatchers, it is an important migratory bird stopover along the Atlantic Flyway, and a protected breeding habitat for threatened and endangered species (approximately 80 species nest there, and 300 have been recorded).

The Refuge offers a variety of ways to experience its important resources. The facility contains a canoe launch, environmental education center, and over ten miles of trails. Sustaining and protecting the resources requires active management, planning, and partnerships with the surrounding communities in the region.

Programs at the Heinz Refuge promote natural and cultural resource stewardship, demonstrate the conservation of urban wildlife habitat, and encourage outdoor public uses that are compatible with

resource protection. In 2012, the Refuge developed a comprehensive conservation plan (CCP) for the purpose of specifying a management direction for the refuge for the subsequent 15 years.

First State National Historic Park was created as America's 400th national park in 2013. It is made up of a number of locations including the Woodlawn open space in the State of Delaware and Chadds Ford Township, Delaware County. The Delaware County portion is 234.1 acres in size. Planners for the park estimated that an additional 110,000 visitors a year would be added to the 140,000 who already visit the parkland, based on comparisons with four parks whose characteristics appear comparable to the 1,100-acre Woodlawn property: Greenbelt Park in Maryland, Harpers Ferry National Historical Park in West Virginia, Great Falls Park in Virginia, and Valley Forge National Historical Park in Pennsylvania. Even before becoming parkland, the property contained a network of earthen hiking paths open to the public.

STATE PARKS AND OPEN SPACE

The Commonwealth of Pennsylvania owns over 2,700 acres of protected open space within Delaware County (see Table 3-1 and Map 3-1). The majority of this acreage is located in Ridley Creek State Park, which is mostly in Edgmont and Middletown Townships and is the largest open space of any kind in the County.

Ridley Creek State Park encompasses over 2,539 acres of Delaware County woodlands and meadows. The gently rolling terrain of the park, bisected by Ridley Creek, is only 16 miles from center city Philadelphia and is a haven of densely wooded open space in a suburbanized area. The park includes:

- Fishing along Ridley Creek
- Hiking – 13 miles of trails
- Biking/Jogging – 5 mile multi-use trail loop
- Horseback Riding – 4.7 miles of trails
- Formal gardens and landscaping that can be rented for events (e.g., weddings)
- Organized group tent camping
- Cross country skiing and sledding
- Colonial Pennsylvania Plantation – interpretation and programs about farming in Pennsylvania before the American Revolution

The state currently provides limited staff and programs at the Brandywine Battlefield Park in Chadds Ford Township and Morton Homestead Historic Site in Prospect Park Borough. The Battlefield Park contains a visitor's center and historic buildings related to the battle (which took place throughout a much larger area in Chester and Delaware Counties). Historic interpretation programs at the Battlefield Park are run by volunteers. Prospect Park Borough entered into a lease agreement with the State in 2012 to allow the Prospect Park Historical Society to maintain and manage the Morton Homestead.

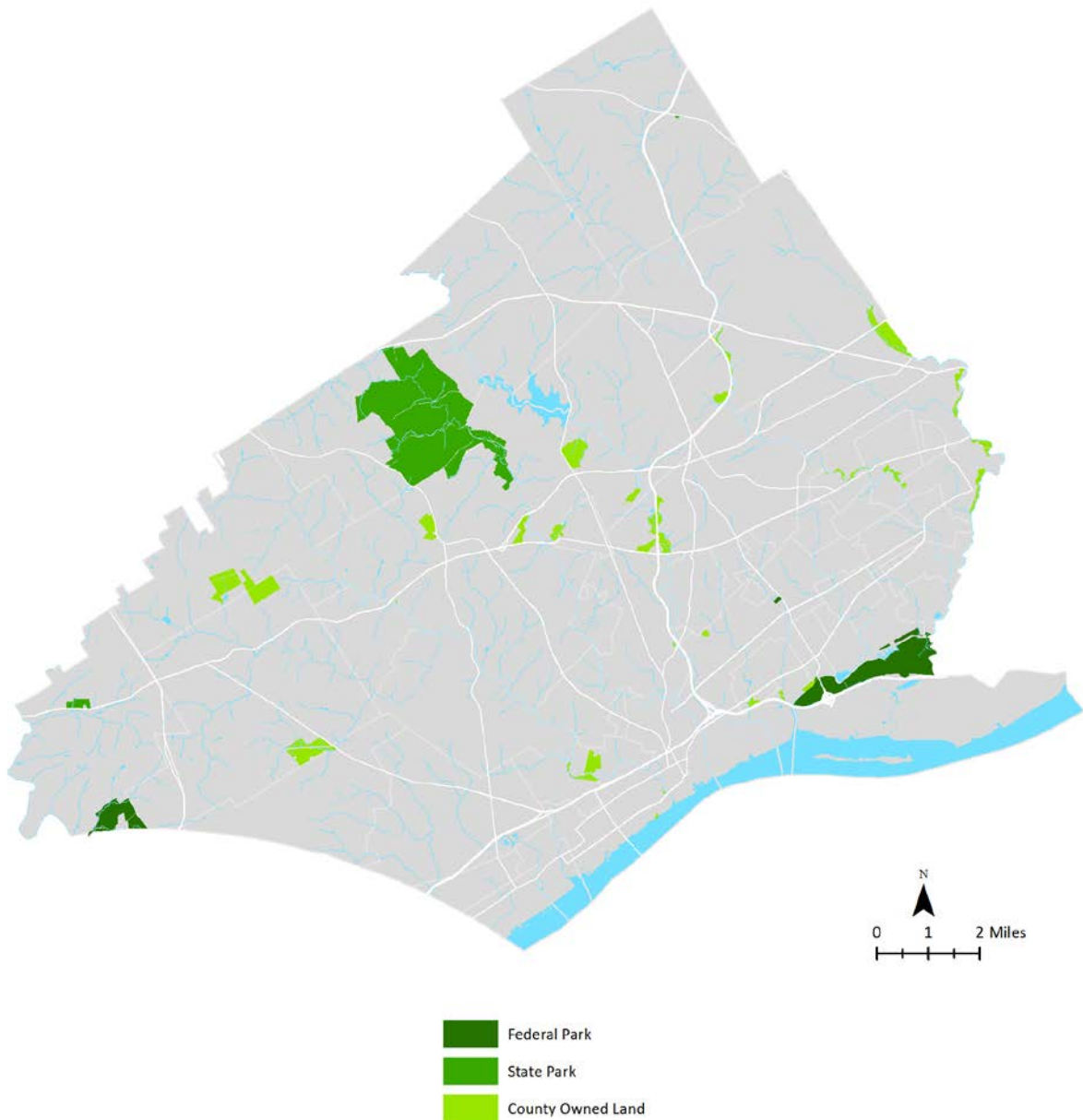
Little Tinicum Island, Tinicum Township is a 2-mile long undeveloped island in the Delaware River, owned and managed by the Pennsylvania Bureau of Forestry as part of the William Penn State Forest. The exact acreage has varied over the years due to excavation and erosion and deposition of sediment – from 85 acres between three separate islands in 1937, a 155 acre island in 1971, to today's approximately 130 acres at high tide.

Table 3-1: State Owned Open Space

Open Space	Municipality	Acreage
30/320 Park (PennDOT)	Radnor Township	3.2
Brandywine Battlefield Park	Chadds Ford Township	46.5
Little Tincum Island	Tincum Township	±130.0
Morton Homestead Historic Site	Prospect Park Borough	3.0
Ridley Creek State Park	Edgmont, Middletown, & Upper Providence Twps.	2539.1
TOTAL:		2721.8

Source: DCPD, 2014

Map 3-1: National, State, and County Parks and Open Space



COUNTY PARKS AND OPEN SPACE

County Parks

Delaware County owns approximately 1,000 acres of public parks and open space (see Map 3-1). Of the County-owned open space, 633.5 acres are in the 15 parcels considered County Parks. Many of these County Parks have considerable park amenities that have been developed over the years. These facilities range from typically picnic areas and pavilions to a full golf course at Clayton County Park. Some of the most common amenities are formal and informal trails within the parks, which are used for exercise, nature walks, and connections to other destinations. Rose Tree County Park, perhaps the most recognized County Park, has an amphitheater, several memorials, significant passive open space, and an extensive trail and path network. Smedley County Park in Springfield Township has several active recreation fields, including baseball and soccer. In Upper Darby, Kent County Park is located along the Darby Creek and has a dog park and playground. The County is currently negotiating the purchase of Little Flower Manor in Darby Borough and Upper Darby Township on Darby Creek.

Of the 15 County Parks, there are six over 30 acres in size (Clayton County Park, Glen Providence County Park, Mineral Hill County Park, Rose Tree County Park, Smedley County Park, and Upland County Park). Mineral Hill County Park, which was acquired in 2010, is a 43-acre parcel that is yet to be developed with passive recreational facilities. The County Park system is discussed in more detail in Volume III: County Parks and Recreation Plan.

While not a Delaware County Park, the City of Philadelphia's Cobbs Creek Park contains approximately 247 acres within Delaware County along the County's eastern boundary. Haverford Township, Upper Darby Township, and Yeadon Borough each contain separate portions of the park (29, 150, and 67 acres, respectively), which is managed by the City of Philadelphia's Parks and Recreation Department. This is important to consider because it is of a scale to be classified as a County Park, even though it is not owned by Delaware County.

Conservation Areas

In addition to its parks, the County also owns several conservation areas. These lands are protected for their open space and environmental significance. Beginning in the 1980s, the County worked to preserve significant open space along the Darby Creek Stream Valley. Over 30 acres of conservation areas have been preserved along Darby Creek, in addition to Kent County Park, Pennock Woods County Park, and Shrigley County Park (all located in Darby Creek Stream Valley). The County owns several other conservation areas throughout the County, primarily along streams and other water bodies.

When the Blue Route (I-476) was under construction, the County was able to acquire land along the highway right-of-way to preserve as open space. Over 26 acres were acquired in Marple Township in addition to 2.2 acres in Springfield Township.

The County conservation areas are not intended for recreation, but were preserved to provide environmental and social benefits of preserved open space. However, there is a trail planned that will traverse many of the Darby Creek Stream Valley parcels.

Non-Recreational Open Space

The County also owns significant amounts of open space adjacent to County service buildings. The County prison sits on over 140 acres of land, only a relatively small portion of which is developed for the

prison. In Middletown Township, the 911 and Juvenile Detention Center sit on nearly 70 acres. Most of this land remains open lawn or forested. While these spaces are not recreational or parkland, the additional lands serve environmental functions, such as stormwater control and wildlife habitat, and also help to maintain the rural characteristics of Delaware County.

Please see Appendix I-F for a listing and corresponding map of Delaware County-owned open space.

County Parks Planning

The need to plan specifically for Delaware County’s parks system was acknowledged early in the planning process. As such, an in-depth analysis of County open spaces and existing park facilities was developed. This included an analysis of existing County open spaces, recreation programs, and site development narratives and drawings for six County parks (Clayton, Glen Providence, Kent, Rose Tree, Smedley, and Upland County Parks). The public survey conducted for this Plan included questions inquiring about County parks, services, and programs which helped to inform the site development drawings and goals for the County parks system. For more information regarding County parks, see Volume III: County Parks and Recreation Plan.



Figure 3-1: Upland County Park Site Development Drawing

Table 3-2: Delaware County-Owned Open Space

Name	Municipality	Acreage
Recreational Open Space		Total: 666.3
County Parks		633.5
Catania Park	Ridley Park Borough	14.9
Clayton Park	Concord Township	148.3
Glen Providence Park	Media Borough/Upper Providence Township	32.3
Incinerator Field	Marple Township	27.9
Kent Park*	Upper Darby Township	5.2
Leedom Estates Park	Ridley Township	14.9
Martin Park	Upper Providence Township	22.4
Mineral Hill County Park	Middletown Township	43.2
Ridley Township Municipal Park	Ridley Township	8.6
Rose Tree Park	Upper Providence Township	117.9
Pennock Woods*	Lansdowne Borough	7.2
Shrigley Park*	Lansdowne Borough	6.7
Smedley Park**	Nether Providence/Springfield Township	116.9
Upland Park	Upland Borough	60.1
Willow Park	Ridley Township	7.0
Darby Creek Stream Valley Park Open Space		32.8
Burkholder Tract	Lansdowne Borough	1.9
Castle Tool	Upper Darby Township	5.4
Darby Creek Parkland	Lansdowne Borough	2.2
Garrett Tract	Upper Darby Township	7.4
Holsten Tract	Yeadon Borough	4.8
Kempner Tract	Upper Darby Township	3.1
Kent Mills	Clifton Heights Borough	5.6
Kmart Easement	Clifton Heights Borough	1.2
Woodgate Tract	Clifton Heights Borough	1.2
Non-Recreational Open Space		Total: 416.5
5th & Penn Vacant Streamside/PA Health Dept. Building	Chester City	2.5
911 Center and Juvenile Detention Center	Middletown Township	66.9
Camp Sunshine	Thornbury	13.9
Chester City-County Vacant Land (Riverfront)	Chester City	3.1
Conservation Area - Marple	Marple Township	26.3
Conservation Area - Springfield	Springfield Township	2.2
Delaware County Prison	Concord/Thornbury Township	269.9
Pusey Lease Area	Chester Township	30.0
Stony Bank Road & Chester Creek	Thornbury Township	0.3
Unnamed Open Space	Chester Heights Borough	1.4
County Open Space Total:		1082.8

*: Can also be considered Darby Creek Stream Valley Park Open Space

**: Acreage does not include 30.3 acre tract leased from Swarthmore College

Source DCPD, 2015

MUNICIPAL PARKS AND OPEN SPACE

Recreational and Non-Recreational Open Space

Approximately 4,655 acres of public parks and open space are under municipal ownership throughout Delaware County. This total can be broken into three sub-categories: Municipal Active Recreation (parkland and ballfields) (1,761 acres), Municipal Passive Parkland (2,341 acres), and Municipal Non-recreational Open Space (552 acres). Non-recreational open space includes areas owned and maintained by the municipality, but not open for public recreation. See Table 3-3 for an acreage breakdown by municipality. Collectively, municipalities own more open space than any other ownership type. Each of the 49 municipalities in the County owns at least one park, and some contain expansive systems of parks and public open space. Most municipal parkland is owned in fee-simple, although a few municipalities maintain lease agreements with other entities such as utilities (PECO, Aqua PA), school districts, or the County. The acreage of parks managed under such arrangements are not reflected in the totals noted, which only reflects municipality-owned land. Municipal open space is shown on Map 3-2; a complete listing of municipal parks and open spaces is found in Appendix I-G.

Municipal parks may or may not be deed restricted for permanent public use, depending upon the circumstances and funding source used for acquisition. Generally, municipal open space is considered to be permanent open space and, with some exceptions, is accessible to the public.

Active recreation on athletic fields is a common function of municipal parks, though they are used for a variety of activities such as playgrounds and court sports. Some of Delaware County’s Growing Suburbs have large parks seemingly of the scale of a County Park, which also support passive recreation and trails. The smaller, more mature urban municipalities tend to have smaller mini-parks of the plaza or monument based type included under the passive category.

Municipal open spaces in Delaware County contain diverse system of facilities and natural features. Active recreational lands tend to have more facilities than passive and non-recreational open space. Some of the most common facilities found in active recreational open space include ballfields, soccer fields, playgrounds, and other multi-purpose athletic fields. The facilities most often found at passive parkland in the County include picnic pavilions, benches, and trails. Non-recreational open space is often preserved for its environmental significance and not intended for public use. As such, they typically do not contain any recreational facilities.

The preservation of natural features, such as stream corridors and forested areas, are common to three sub-categories of municipal open space. It is notable that many municipal parks in Delaware County are located along streams. Limitations on development within floodplains and stream corridors led to the preservation of these areas. Municipalities have also made concerted efforts to preserve forested areas, both in upland areas and as riparian buffers along stream valleys of parks and conservation areas.

Table 3-3: Municipal Recreational Parks and Non-recreational Open Space

Municipality	Active Recreational	Passive Parkland	Non-recreational	Total
Aldan Borough	3.7	1.0	3.4	8.1
Aston Township	72.5	60.1	44.5	177.0
Bethel Township	2.7	32.3	0.0	35.0
Brookhaven Borough	41.4	25.2	0.0	66.5
Chadds Ford Township	0.0	60.0	19.0	79.0

Table 3-3: Municipal Recreational Parks and Non-recreational Open Space (cont.)

Municipality	Active Recreational	Passive Parkland	Non-recreational	Total
Chester City	180.7	40.4	12.5	233.5
Chester Heights Borough	6.3	0.0	0.9	7.2
Chester Township	16.5	0.5	8.4	25.5
Clifton Heights	35.6	1.3	0.1	36.9
Collingdale	24.7	0.0	2.9	27.6
Colwyn Borough	12.8	16.9	0.0	29.8
Concord Township	0.0	180.9	41.5	222.4
Darby Borough	2.1	18.5	0.05	20.66
Darby Township	39.3	5.0	0.0	44.3
East Lansdowne	0.0	0.03	0.0	0.03
Eddystone Borough	4.8	1.0	0.0	5.8
Edgmont Township	0.0	26.9	10.8	37.7
Folcroft Borough	40.9	0.0	0.0	40.9
Glenolden Borough	24.1	0.6	0.0	24.7
Haverford Township	284.6	130.3	7.8	422.7
Lansdowne Borough	7.4	14.3	1.1	22.8
Lower Chichester	24.6	8.0	0.0	32.6
Marcus Hook Borough	10.2	5.8	0.1	16.1
Marple Township	130.7	42.9	33.2	206.8
Media Borough	2.9	4.6	0.0	7.5
Middletown Township	28.3	310.5	115.8	454.7
Millbourne Borough	0.0	0.5	0.0	0.5
Morton Borough	6.3	2.4	0.0	8.7
Nether Providence	10.2	62.4	0.0	72.6
Newtown Township	33.4	137.4	18.8	189.6
Norwood Borough	57.9	7.2	0.1	65.2
Parkside Borough	0.0	5.5	0.0	5.5
Prospect Park	17.1	2.1	0.2	19.3
Radnor Township	137.0	309.1	18.0	464.1
Ridley Park Borough	5.9	32.2	0.1	38.1
Ridley Township	63.8	11.3	30.1	105.2
Rose Valley Borough	0.0	54.3	0.0	54.3
Rutledge Borough	0.8	0.0	0.0	0.8
Sharon Hill Borough	9.2	0.0	0.0	9.2
Springfield Township	97.3	111.0	10.3	218.7
Swarthmore Borough	0.0	7.9	0.0	7.9
Thornbury Township	45.2	205.1	46.6	296.9
Tinicum Township	38.3	131.0	63.6	232.9
Trainer Borough	12.4	23.1	8.2	43.7
Upland Borough	2.9	2.2	0.1	5.3
Upper Chichester	83.9	60.3	21.6	165.9
Upper Darby Township	123.6	111.3	6.7	241.5
Upper Providence	8.7	72.5	24.6	105.8
Yeadon Borough	10.5	5.6	1.1	17.2
County Total	1,761.2	2,341.4	552.1	4,654.7

As based on parcel information in Delaware County GIS records

Map 3-2: Municipal Open Space and Parkland

Pocket Parks

Pocket parks are small, typically municipal-owned parcels of land, usually in densely populated communities, that are used for public open space. Due to their characteristic size, pocket parks are only intended to serve the immediate population of an area. Many pocket parks are created from un-used or vacant land and are often the result of grass roots efforts by local residents to improve their neighborhood. In other areas, pocket parks are small parcels that have been owned and maintained by the municipality for years. Still, in some areas they are created as a recreational amenity as part of new development. Pocket parks can contribute to large scale greenway networks and local neighborhood beautification projects. They are a considerably worthy option for adding green space in densely developed Mature Neighborhoods of Delaware County, where more open space is needed, but the cost of land is high.

Pocket parks can meet a variety of community needs, including serving as a playground, seating area/gathering space, picnic space, outdoor classroom, and community garden. They can also serve as a refuge for birds and small insects, although the benefits are limited due to the size and public use of these spaces. The increase in vegetation does contribute to the overall ecology of the surrounding area, however. These spaces often serve as stormwater infiltration areas, acting as a sponge for runoff from surrounding impervious surfaces. These spaces help to reinforce positive relationships between local

Chapter 3: Open Space Resources

authorities and communities while maximizing use of space, both of which support higher real estate values of surrounding proprietries.

Current Status

For the purpose of this report, pocket parks are measured as municipal owned parkland that is less than ½ acre. There appear to be approximately 72 pocket parks scattered through the County, which are listed in Appendix H-I. Most of them lie within the Mature Neighborhoods of Delaware County.

A consideration when discussing pocket parks is that they are not necessarily all green spaces. On State Street in Media, for example, the Plum Street Mall alleyway between State and Front Streets acts as a pocket park. The space consists of a fountain, benches, tables, and planters, and it serves many of the same functions of a pocket park, including connecting the streets, while also providing a respite for pedestrians. However, this space is not considered a park by many people even though it may function in a similar manner.

Potential

Due to the size and versatility of pocket parks, the possibilities remain relatively open-ended. Whether in a Mature Neighborhood of eastern Delaware County or a Growing Suburb along the western edge of the County, pocket parks typically have similar amenities. The context, however, influences how the park is used by its community. For those in Mature Neighborhoods, pocket parks may be the only local choice for open space and recreation. In Growing Suburbs, strategically located pocket parks can provide visual diversity and open space within residential development.

As noted above, not all pocket parks are green spaces. Plum Street Mall alleyway is a local example of how to increase safety and beauty in spaces that are typically underused. Communities can promote revitalization of alleys and similar areas to increase public gathering space.

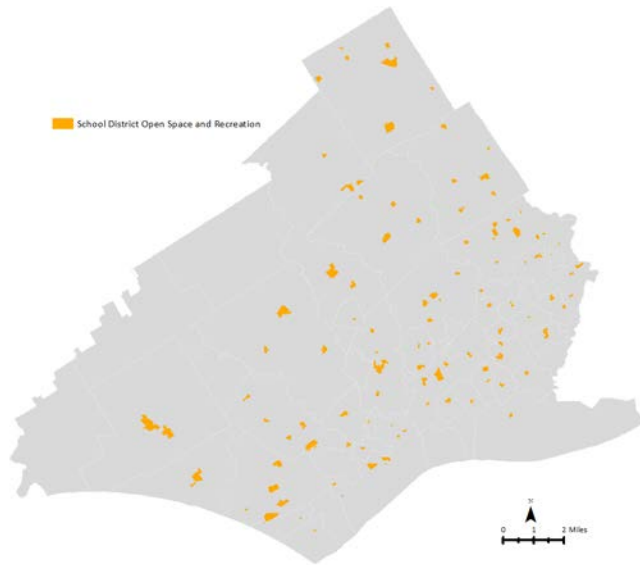
Mature Neighborhoods

The most effective locations for pocket parks in Delaware County are its Mature Neighborhoods. Pocket parks allow communities to make best use of vacant sites in both residential and commercial areas. Existing small municipal parks can also be great assets to communities. Programs to nurture these small parks and develop others can help to sustain them as attractive community amenities, particularly in Mature Neighborhoods.

Growing Suburbs

A significant amount of open space in the Growing Suburbs is managed by a homeowners' association (HOA) for use by a particular subdivision's residents. While many of the small pocket park scale open spaces held by HOAs are not suitable for large scale improvements, tot lot equipment, small picnic areas, and other gathering spaces can be appropriate for some sites.

Map 3-3: Public School Lands



QUASI-PUBLIC OPEN SPACE

CATEGORIES

Public school and homeowners' association land is often referred to as quasi-public open space because it is not owned by government; rather it is owned by an organization. Institutional lands, such as cemeteries and club recreation areas, are sometimes considered quasi-public, but for the purposes of this document, they are categorized as private in the next section.

Public School Properties

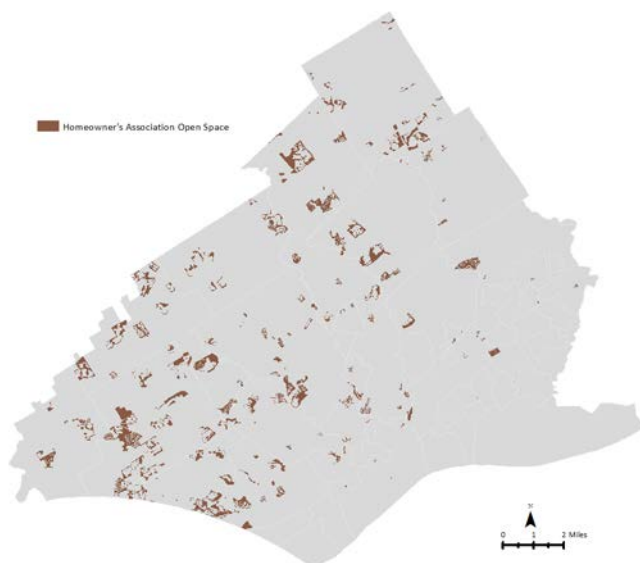
Most public school properties contain adjacent open space in the form of athletic fields, ball courts, and playgrounds of a type and size appropriate for the grade level.

Depending on the community, many school sites may provide a majority of a neighborhood's indoor recreation and community center facilities. Occasionally, school districts own open space that is not adjacent to the school building sites, which might be held for future school facilities development, often serving as passive parkland, or used for additional athletic fields. Public school land is shown on Map 3-3.

Homeowners Association Land

Developers often set aside portions of a property for open space as part of the process of residential subdivision. The open space is usually preserved to satisfy an ordinance requirement to dedicated open space or preserve environmentally sensitive land. The land that is preserved is often owned and maintained by a homeowners association or HOA.

Map 3-4: Homeowners Association Open Spaces



Most HOA open spaces are natural, passive recreation areas such as woodlands, wetlands, floodplains, stream valleys, and open meadows. Public access is generally restricted to residents of the respective subdivision or community. Although HOA land is often used for internal trail systems, public trail access can be difficult to negotiate. HOA open spaces are listed in Table 3-4, which includes all municipalities with at least one HOA open space and the total acreage for each municipality. (Substantial common open space at an apartment complex is also categorized as HOA.) It is notable that municipalities with greatest HOA acreage are the ones that developed using modern subdivision design and open space subdivision

provisions. The locations of homeowners' association open space in the County are shown on Map 3-4.

Table 3-4: Homeowners Association Open Space

Municipality	Number of HOA Lands	Total Acreage
Concord Township	26	808.3
Newtown Township	10	427.1
Thornbury Township	11	410.1
Bethel Township	18	378.3
Radnor Township	17	318.6
Middletown Township	16	306.9
Marple Township	7	291.5
Upper Chichester Township	8	223.1
Chadds Ford Township	10	197.0
Chester Heights Borough	7	196.0
Edgmont Township	9	191.1
Upper Darby Township	3	117.5
Aston Township	7	113.8
Upper Providence	3	102.6
Nether Providence	6	87.3
Haverford Township	9	67.9
Brookhaven Borough	6	49.7
Chester Township	2	44.6
Ridley Township	2	40.6
Springfield Township	1	37.3
Glenolden Borough	1	35.9
Media Borough	4	10.9
Chester City	4	8.8
Morton Borough	3	7.0
Rose Valley Borough	1	6.6
Folcroft Borough	1	6.0
Yeadon Borough	1	4.0
Parkside Borough	1	3.0
Lansdowne Borough	1	2.7
Ridley Park Borough	1	1.2
COUNTY TOTALS		4,495.5

Source: DCPD, 2014

PRIVATE OPEN SPACE AND RECREATION LAND CATEGORIES

The remainder of the County's open spaces range from members-only (sports and golf clubs) to private property with no public access (large estates or farms). This category also includes institutional land and cemeteries. With the exception of conservation organization land, they cannot be considered "protected" as the owners of these lands could sell or develop them at any time.

Institutional Lands

Land belonging to private institutions makes up approximately 4,815 acres. Institutional open space is divided into the following subcategories: colleges, private schools, and other institutional open space (including religious institutions, historic societies and friends groups, residential institutions, and retirement communities). Map 3-5 shows institutional land with open space in Delaware County. See Appendix I-I for a complete listing of these properties.

Colleges

There are 14 college campuses in Delaware County, on land totaling over 1400 acres. Their open spaces are generally used by students. Some campuses openly double as a kind of passive park open to the public, in the form of arboreta and natural passive parks. Swarthmore College has preserved Crum Woods, which includes a system of hiking paths and is utilized for educational purposes. Also of value are densely forested areas at Delaware County Community College in Marple Township and Cabrini College in Radnor Township. Similar to school district land, locals are often allowed to use recreational open space land when it is not being used for programmed college activities.

Private Schools

Delaware County is home to 73 private institutions, on over 1,600 acres. They include the parochial schools of the Philadelphia Archdiocese, other religious-affiliated schools (Delaware County Christian School, Episcopal Academy), Williamson Free School of Mechanical Trades, the Garrett Williamson Foundation, and Glen Mills School for Boys. In contrast, private schools in urban settings found in the Mature Neighborhoods tend to lack green open space. Schools in the Growing Suburbs, however, hold a significant amount of open space.

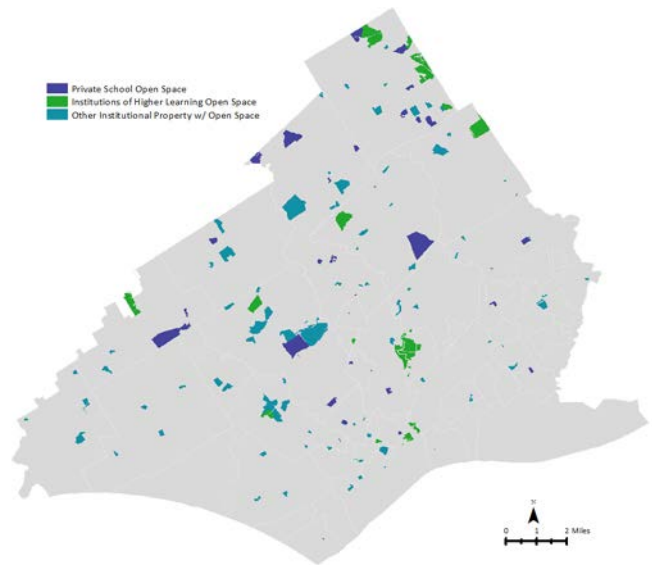
Other Institutional Open Space

Properties owned by religious institutions scattered around the County contain significant acreage (nearly 1,700 acres). The largest concentration of religious-affiliated open space is the approximately 250 acres comprising the Our Lady of Angels Convent (Sisters of St. Francis) in Aston Township. Villa St. Teresa (Little Flower Manor) in Darby Borough and Upper Darby Township contains approximately 45 acres of open space. The 15 acre Pendle Hill Quaker retreat in Nether Providence Township is another valuable open space resource.

Historical societies and friends groups also own land associated with specific sites. Examples include the Caleb Pusey House and Landingford Plantation in Upland Borough, Chadds Ford Historical Society's open space, and land owned by the Delaware County Historic Society in Marple Township, among others.

Residential institutions, such as Elwyn in Middletown Township and retirement communities like the Granite Farms in Middletown and The Quadrangle in Haverford Township, also contain significant open space that falls under the institutional category.

Map 3-5: Institutional Land with Open Space



Cemeteries

Cemeteries are by nature gardens of peace that can often serve as greenspace. Unused land that is not suitable for burial is often either used for cemetery-related building construction or left as open space. Several cemeteries in the County contain streams. In most cases, headstones are set back from the stream and a natural riparian buffer is allowed to remain. However, streams in some cemeteries could benefit greatly from streambank restoration and buffer replacement as they are mowed to the top of the streambank.

Most of the cemeteries not associated with a particular church building are located in the Mature Neighborhoods of the County.

In areas where cemetery access is not permitted, these sanctuaries serve as green backdrops that preserve local viewsheds. The cemetery inventory in Table 3-5 includes major cemeteries in the County. Many of the small cemeteries that are associated with churches were not included in the table or on the maps.

Table 3-5: Cemeteries in Delaware County

Cemetery	Municipality	Acreage
Mt. Hope Cemetery	Aston Township	19.8
Siloam Church and Cemetery	Bethel Township	9.7
Ohev Sholom Cemetery	Brookhaven Borough	9.7
Chester Rural Cemetery	Chester City	35.7
St Paul's Graveyard	Chester City	0.5
St. Michael's Cemetery	Chester City	6.5
Carter Cemetery	Chester Township	0.1
Greenlawn Cemetery	Chester Township	10.6
Haven Memorial Cemetery	Chester Township	18.4
Darby Methodist Meeting Cemetery	Collingdale Borough	1.4
Eden Cemetery	Collingdale Borough	49.3
Har Zion Cemetery	Collingdale Borough	13.8
Mount Zion Cemetery	Collingdale Borough	24.9
Mount Lebanon Cemetery	Collingdale Borough/Darby Township	29.2
Edgewood Memorial Park Cemetery	Concord Township	68.6
Darby Friends Cemetery	Darby Borough	3.7
Mount Jacob Cemetery	Darby Township	22.0
Mount Lawn Cemetery	Darby Township	59.6
Holy Cross Cemetery	Darby/Yeadon Boroughs	220.2
Haverford Friends Cemetery	Haverford Township	3.7
Odd Fellows Cemetery	Haverford Township	0.8
St. Denis Cemetery	Haverford Township	19.3
Lawncroft Cemetery	Lower Chichester Township	113.0
Lawncroft Cemetery Open Space	Lower Chichester Township	22.3
First Presbyterian Church Cemetery	Marple Township	1.4
Glenwood Cemetery	Marple Township	64.1
St. Peter and Paul Cemetery	Marple Township	321.8
Sandy Bank Cemetery	Media Borough	0.6
Cumberland Cemetery	Middletown Township	18.7

Table 3-5: Cemeteries in Delaware County (cont.)

Cemetery	Municipality	Acreage
Middletown Presbyterian Cemetery	Middletown Township	8.4
Prospect Park Cemetery	Prospect Park Borough	3.9
Radnor Methodist Cemetery	Radnor Township	3.7
Eastlawn Cemetery	Ridley Township	4.4
Old Union UMC Cemetery	Rose Valley Borough	2.1
Mount Sharon Cemetery	Springfield Township	39.4
Immaculate Heart Cemetery	Upper Chichester Township	21.2
Arlington Cemetery	Upper Darby Township	109.5
Fernwood Cemetery	Upper Darby Township	97.8
Friends Southwest Burial Ground	Upper Darby Township	15.8
Har Juhuda Cemetery	Upper Darby Township	31.8
Montrose Cemetery	Upper Darby Township	9.2
St. Charles Borromeo Cemetery	Upper Darby Township	3.3
Media Cemetery	Upper Providence Township	25.4
Graceland Cemetery	Yeadon Borough	3.1
Mt Moriah Cemetery	Yeadon Borough	81.5
COUNTY TOTALS		1629.9

Source: DCPD, 2014

Golf Courses/Clubs

Golf courses comprise a significant amount of open space in Delaware County. Many of the courses are owned and operated by private clubs which require membership for use. Several courses, such as Clayton County Park Golf Course and Paxon Hollow Country Club, are open to the public for a fee. The majority of the courses are located in the Growing Suburbs of the County and add to the character of those areas. While they may not all be accessible to the public, they offer visual relief and some stormwater management. The courses have a variety of characteristics; some of the courses are intermixed with densely forested areas while others are located in largely open fields. Due to the design of the courses, they often provide a variety of habitat areas, including forested and riparian areas. For a listing of these properties, see Table 3-6.

Map 3-6: Cemeteries and Golf Courses

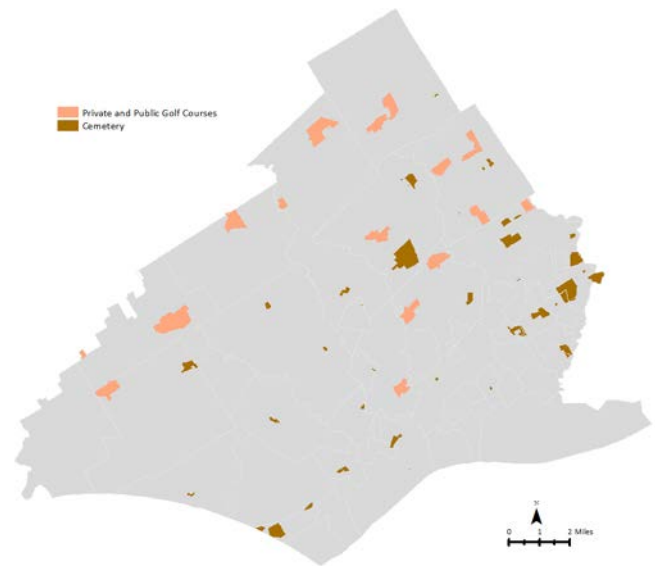


Table 3-6: Private and Public Golf Courses

Golf Course	Municipality	Acreage
Clayton Park Golf Course	Concord Township	148.3
Concord Country Club	Concord/Thornbury Townships	182.7
Edgmont Country Club	Edgmont Township	197.3
Llanerch Country Club	Haverford Township	130.6
Merion Golf Club	Haverford Township	83.6
Merion Golf Club East	Haverford Township	70.4
Merion Golf Club West	Haverford Township	128.2
Paxon Hollow Country Club	Marple Township	149.4
Springhaven Country Club	Nether Providence	108.6
Aronimink Golf Club	Newtown Township	294.8
Olde Masters Golf Club	Newtown Township	50.3
Overbrook Golf Club	Radnor Township	128.1
Radnor Valley Country Club	Radnor Township	156.9
Rolling Green Golf Club	Springfield Township	155.8
Springfield Country Club	Springfield Township	150.0
Glen Mills Golf Course	Thornbury Township	401.7
Penn Oaks Golf Course	Thornbury Township	27.5
PECO Energy Golf Club	Upper Darby Township	74.1
COUNTY TOTALS		2638.2

Source: DCPD, 2014

Swim Clubs, Sports Clubs, and Other Private Organization Recreational Land

There are a number of private (members only) outdoor pools and recreation areas in Delaware County. They include swim clubs and other sports and athletic association facilities. Delaware County is home to five YMCAs (Haverford, Ridley, Chester, Lansdowne, and Rocky Run); Rocky Run YMCA in Middletown Township is the only one with significant outdoor space.

Delaware County is home to about 40 swim club properties, some of which also own athletic fields and courts adjacent to the pools. The only public pay-as-you go pool in the County is at Chester City's Memorial Park.

The approximately 131 acre Newlin Grist Mill Historic site falls into the privately owned open space category even though it is open to the public for passive recreational use free of charge (programs with a fee). As a foundation, it is similar in its organizational structure to that of an arboretum. There are two boat clubs in Tinicum Township and three gun or archery clubs are also listed under this category.

A comprehensive inventory of indoor recreation facilities in the County was not created due to the changing nature of private businesses. Such an inventory would include racquet clubs, ice skating centers, community arts centers, gymnasiums and fitness centers, and other club or commercial recreation.

Table 3-7 shows a listing of swim clubs, sports clubs, and other private organization open spaces in Delaware County.

Table 3-7: Swim Clubs, Sports Clubs, and other Private Organization Recreational Land

Club	Municipality	Acreage
Aldan Swim Club	Aldan Borough	7.9
Pen-Del Archers	Bethel Township	47.2
Brookhaven Swim Club	Brookhaven Borough	16.6
Brandywine Youth Club	Concord Township	11.6
Newlin Grist Mill	Concord Township	36.2
Newlin Grist Mill/Newlin Foundation	Concord Township	95.2
Ballfields/Briarcliff Father & Sons	Darby Township	3.4
Briarcliffe Swim Club	Darby Township	4.8
Folcroft Swim Club	Folcroft Borough	6.0
Glenolden Swim Club	Glenolden Borough	2.2
Hilltop Swimming Club	Haverford Township	3.5
Karakung Swim Club	Haverford Township	2.0
Lansdowne Swim Club	Lansdowne Borough	4.2
Drexel Swim Club	Marple Township	3.0
Gamma Tennis & Swim Club (Not in Use)	Marple Township	7.0
Lawrence Park Swim Club	Marple Township	4.6
Marple Newtown Swim Club	Marple Township	12.4
Rose Tree Woods Swim Club	Marple Township	10.5
Broomall's Lake Country Club Total	Media Borough/Upper Providence Township	13.9
Delaware County Field & Stream Association	Middletown Township	57.6
Delaware County Sportsman's Association	Middletown Township	65.4
Hidden Hollow Swim Club	Middletown Township	15.9
Riddlewood Swim Club	Middletown Township	10.3
Rocky Run YMCA	Middletown Township	34.5
Creekside Swim Club	Nether Providence	3.7
Wallingford Swim Club	Nether Providence	8.9
MGolf Driving Range and Learning Facility	Newtown Township	12.0
St. Albans Swim Club	Newtown Township	17.4
Suburban Swim Club	Newtown Township	3.2
Prospect Park Swim Club	Prospect Park	2.5
Conestoga Swim Club	Radnor Township	5.7
Mill Dam Swim Club	Radnor Township	22.8
Ridley Park Swim Club	Ridley Park Borough	4.8
Aquatic Swim Club	Ridley Township	3.7
Folsom Athletic Club	Ridley Township	5.2
Golf Driving Range	Ridley Township	12.5
Nassau Swimming Club/Nassau Field	Ridley Township	6.4
Ridley Township Swim Club	Ridley Township	4.1
Rose Valley Swimming Pool	Rose Valley Borough	5.3
Sharon Hill Swim Club	Sharon Hill Borough	1.7
Springfield Swim Club	Springfield Township	5.0
Swarthmore Swim Club	Swarthmore Borough	4.9
Corinthian Yacht Club	Tinicum Township	9.5
Tinicum Township Swim Club	Tinicum Township	4.0

Table 3-7: Swim Clubs, Sports Clubs, and other Private Organization Recreational Land (cont.)

Club	Municipality	Acreage
West End Boat Club	Tinicum Township	4.6
Fun Spot Recreation Facility	Upper Chichester	7.7
Aronimink Swim Club	Upper Darby Township	9.2
Idle Hours Tennis Club	Upper Darby Township	5.2
Primos Secane Swim Club	Upper Darby Township	2.6
Timberwyck Swim Club	Upper Providence	2.0
Nile Swim Club	Yeadon Borough	2.1
Yeadon Swim Club (Closed)	Yeadon Borough	5.4
COUNTY TOTALS		657.6

Source: DCPD, 2014

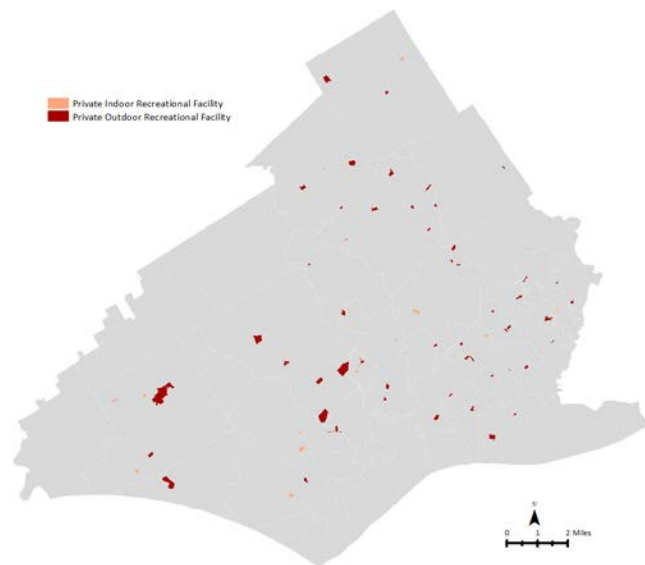
Conservation Organization Land

Land trusts, conservancies, and other such organizations with a mission centered on land preservation and conservation have helped to protect many valuable lands in Delaware County. While some of these lands are protected in preserves that are made available for public access as passive recreation, including trails, other preserves may have little to no trail development or provision for public access.

The two most prominent land trusts/land conservancies operating in Delaware County are Natural Lands Trust, with headquarters at its Hildacy Farm Preserve in Marple Township, and the Brandywine Conservancy, located in Chadds Ford Township.

Collectively, these two organizations have preserved 1,670 acres of open space using conservation easements on privately owned land in Delaware County (1,485 acres by the Brandywine Conservancy, 185 acres by NLT). To protect the privacy of the owners, these eased lands are not listed or mapped in this plan.

Map 3-7: Swim Clubs, YMCAs and other clubs



Preserves and arboretum properties are listed Table 3-8 and shown on Map 3-8.

Table 3-8: Conservation Organization and Arboretum Owned Land and Preserves

Owner	Municipality	Acreage
Brandywine Conservancy	Chadds Ford Township	46.3
Brandywine Conservancy - N.C. Wyeth House & Studio	Chadds Ford Township	18.0
Brandywine Conservancy Open Space	Chadds Ford Township	68.1
Brandywine Conservancy - River Museum	Chadds Ford Township	4.1
Tri County Conservancy Open Space	Chadds Ford Township	2.0
Natural Lands Trust - Wawa Preserve, Chester Heights	Chester Heights Borough	17.4
Natural Lands Trust Northeast Edgmont	Edgmont Township	39.2

Table 3-8: Conservation Organization and Arboretum Owned Land and Preserves (cont.)

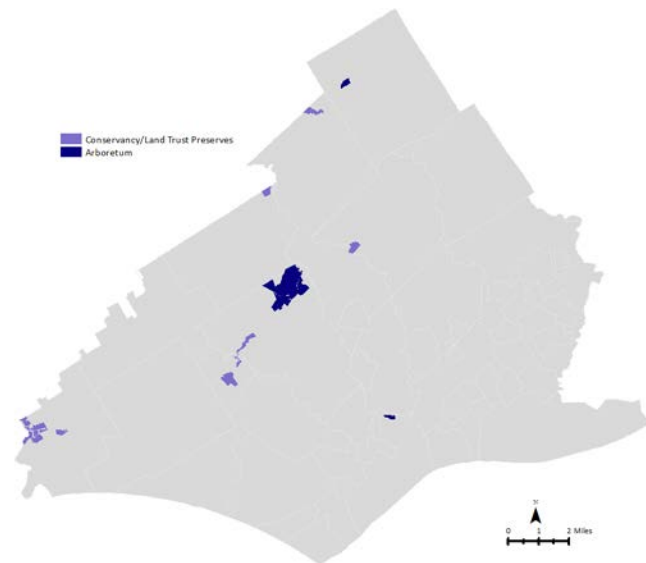
Owner	Municipality	Acreage
Natural Lands Trust - Hildacy Farm Preserve	Marple Township	57.4
Natural Lands Trust - Wawa Preserve 1, Middletown	Middletown Township	48.9
Natural Lands Trust Wawa Preserve 2, Middletown	Middletown Township	59.1
Tyler Arboretum	Middletown Township	651.1
Taylor Arboretum	Nether Providence	26.8
Brandywine Conservancy - Waterloo Mills Preserve	Newtown Township	58.4
Chanticleer (arboretum/gardens)	Radnor Township	34.6
COUNTY TOTALS		1,131.4

Source: DCPD, 2014

Arboreta and Public Gardens

For the purposes of this plan, privately owned arboreta are classified with “conservation organization land.” The 651-acre Tyler Arboretum in Middletown Township, Taylor Memorial Arboretum in Nether Providence Township, along with the Chanticleer “pleasure garden” in Radnor Township are three such places. Tyler is run by a non-profit organization and Chanticleer by a foundation. Both are supported by private donations and admissions fees. Tyler Arboretum is also on the National Register of Historic Places and has been designated as a state “Important Bird Area.” Taylor Arboretum is open free of charge and is supported by a trust. All are highly popular for their recreational and educational offerings and benefits.

Map 3-8: Land Trusts/Conservation Organizations



The following are other known arboreta in the County that are situated on land owned by a larger institution or by a municipality. All of these are accessible free of charge:

- Crozer Arboretum, Upland Borough, owned by the Crozer-Keystone Health System
- Scott Arboretum at Swarthmore College, Swarthmore Borough, contained within the Swarthmore College campus
- Haverford College Arboretum, Haverford Township, contained within the Haverford College campus
- Palmer Arboretum, owned by Thornbury Township

FARMLAND AND AGRICULTURAL OPEN SPACE

Farms

There is no comprehensive inventory of farms in Delaware County by name and location. This section is based on the figures and numbers of farms and their productivity (according to the USDA Census of Agriculture, 2012), discussed in Chapter 1: Introduction and Background.

According to the 2012 USDA Census, Delaware County has 4,725 acres of farmland. Some of these farms could be in a stage of inactivity or currently existing as unharvested meadow in a large estate. Most of the farmland acreage in Delaware County is used for food production, particularly fruits and vegetables. Farms with livestock, such as cows, are much more limited throughout the County (USDA, National Agricultural Service 2012).

Large working farm operations include the Linvilla Orchards in Middletown Township and the Arasapha Farm in Edgmont Township. Lifestyle farms, also known as hobby farms are another type of farmland. These are typically much smaller in size (less than 10 acres) but can include a variety of products, including nursery products, food, and livestock. Horse-breeding farms (or ranches) and large estates on former productive family farms fall under this type and exist in places like Concord, Chadds Ford, Thornbury, Bethel, Edgmont, and Middletown Townships, and Chester Height Borough.

Because of the high market value of land, both working farms and lifestyle farms are becoming less common, smaller, and more scattered. However, as stated in the soils section in Chapter 2: Natural Features, once the land is developed, the County loses more of its important agricultural soils.

As of 2014, the 351 acre Ardrossan Farm in Radnor Township and the 174 acre Woodlawn Trustees' property in Concord Township are the subject of development proposals. Both developments' site plans propose open space. In Radnor's case some of the open space is to be purchased by the Township.

The approximately 80-acre Arasapha Farm and 120-acre Sleighton Farm in Edgmont Township have been permanently protected under the State Farmland Preservation Program since 1993 when they both sold their development rights to the state.

Urban Gardens/Agriculture

An urban garden is a general term used to reference smaller, open pieces of land for agricultural use. Common examples include community gardens, school gardens, and rooftop gardens. Although most urban gardens are small in size, they help to contribute to larger open space strategies and perform multiple functions, particularly in urban areas. Urban agriculture can help increase access to fresh fruits and vegetables, provide opportunity for community involvement, improve health and environmental stewardship education, increase local employment opportunities, and return underused lands to productive use.

Community Gardens as Open Space

One of the most well-known community gardens in Delaware County is at Rose Tree County Park. Over 100 community garden plots are available for lease to County residents for a small fee. The plots can be used for gardening, including growing fruits and/or vegetables. The plots are a great example of the productive use of existing open space while also providing an amenity for the community.

In Chester City, the Chester Garden Project provides residents with both an educational tool and a source of locally grown, fresh food. The garden is a collaborative effort between residents of Ruth L. Bennett Homes and students at Swarthmore College. It began as a way to bring fresh food to the residents of the City, and it quickly grew into a tremendous educational tool. The garden works with volunteers of all ages to educate them on the process of growing vegetables in a community garden and the benefits it provides.

Hillside Farm is a community supported agriculture (CSA) initiative established in 2009 at Elwyn's Media Campus in Middletown. The site turned what was previously an open field into a productive farm, providing produce for its members and for sale at the Media Farmers' Market. It is comprised of 10 acres of land that is used for agriculture and educational outreach. The group has also developed programs that connect youth and teens with the agriculture process. Red Hill Farm, located on lands owned by the Sister of Saint Francis of Philadelphia in Aston Township, is a CSA that promotes educational outreach and healthy eating. The seasonal food produced grown at the site is available to members throughout the year.

Potential

There are many opportunities to increase urban gardening in both the Mature Neighborhoods and the Growing Suburbs of Delaware County. Potential locations include schoolyards, where parts of open lawn or paved playgrounds can be used as an educational garden or to produce fruits and vegetables for students. Additional locations could include vacant lots, parks, and land owned by HOAs. When identifying possible sites, consideration should be given to former land uses (and possible soil contamination) and surrounding land uses to ensure that urban gardening is appropriate in that context.

Other potential options to preserve and maximize productivity of important farmland on public spaces are to allow use for community gardens or lease portions of the open space to farmers.

HISTORIC AND CULTURAL RESOURCES OF DELAWARE COUNTY

Delaware County has a rich heritage that can be seen in our landscapes and built environment. The landscapes surrounding historic structures help to provide context for historic resources. This context may include the open spaces we designed, planted, and farmed, as well as the natural features of wild meadows, waterways, and hillsides.

There are a number of historical and cultural resources that are located on public land, and are either accessible or are visible to the public. These resources help define our open spaces and tell the history of the land and the people that inhabited it. The types of resources are diverse; they include markers or statues that commemorate historic figures, farmsteads, old trees, rail lines, stone walls, historic districts, and historic vistas.

In the process of preserving an historic or culturally significant structure, it is important to consider the landscape. Large estate buildings, for example, are often significant for their architectural features; however, the landscape surrounding the building can also be an important part of the story behind the building. Likewise, buildings on farmsteads are intimately tied to the history of the land. Preserving the land around significant buildings helps to tell the whole story while also preserving open space. Historic districts are a tremendous resource in preserving the historic character of an area. This may include a downtown district with ornate buildings or a rural area with historical farmlands. Developing a historic district not only preserves the cultural details of these areas, but also protects the remaining open space

that serves as the context of these buildings. Often times, the open space itself is equally as historically significant.

Delaware County has many great examples of combining the preservation of historical resources with the retention of the natural context and open space. Several municipalities have parks that contain adaptively re-used historic stone buildings that capitalize on heritage resources. One example is Ridley Creek State Park's Colonial Plantation, which uses its historic buildings to create living history, portraying the activities one would see on a Colonial farmstead. Many municipalities have converted historic houses in parks into museums, including Upper Darby, Radnor, Marple, Haverford, Chadds Ford, Norwood, and Nether Providence (to name a few). Rose Tree Park has retained and re-used two stone buildings for County offices and one for the Visitors' Bureau. Several municipal trails pass by historic resources or are themselves a re-use of a historic rail line. The Haverford's Heritage Trail is an example of the former, while the Radnor Trail is an example of the latter. Such trails provide an opportunity for interpretation through education signage.

The County encourages the adaptive reuse of historic buildings and structures set within open spaces. Keeping our built heritage alive and used is the best insurance that our stories will survive.

The County supports Heritage Tourism as a means of economic development. Touring historic places is a popular pastime, and it has been documented to contribute to economic vitality through overnight stays, restaurants and shopping.

Preserving our built and natural heritage has many benefits, including:

- Retaining our shared history for future generations
- Community revitalization
- Reducing the carbon footprint
- Maintaining a sense of visual calm with green landscapes and foliage
- Creating jobs
- Retaining open space
- Stormwater Management
- Keeping our communities aesthetically pleasing and varied places to work, live and play

Tools for Preserving Historic Sites and Landscapes

There are many tools to promote preservation of our cultural resources within their context. National Register eligible resources include parks, cemeteries, and gardens. The National Register of Historic Places is a federal status used to designate important historic buildings and landscapes for protection. In order to be considered for designation, the resources must first be determined eligible based on significance, age, and integrity. This federal designation showcases the most significant resources and can include objects, structures, buildings, sites and districts. Although there are other ways to preserve our heritage resources, National Register listing is the most well-known.

THE DELAWARE COUNTY OPEN SPACE NETWORK

Map 3-9 displays all "protected" public and quasi-public open space, and conservation organization protected land. Other categories of open space discussed in this chapter (e.g., institutional) are not indicated on the map. Even though they are not protected, they are still part of the overall open space network, and are important to our county's character and quality of life. Such open spaces would

benefit from communication and partnerships with their owners regarding their proper management and long term future (this is also true for land in the quasi-public category).

In addition to the open spaces noted, there are a number of other lands worthy of protection as open space. They include important natural resource areas (including Natural Heritage Inventory sites) on private land or quasi-public open space.

Farmland, while generally privately owned, is often protected by easements, land trust, or other conservation method. However, since many are potentially developable, they are not included in the Open Space Network.

Therefore, it is important for municipalities to develop strategies to preserve open spaces via acquisition or planning/land use controls. The mechanism/tool depends on the reason for protection (e.g., recreation, natural reserve, protection, etc.).

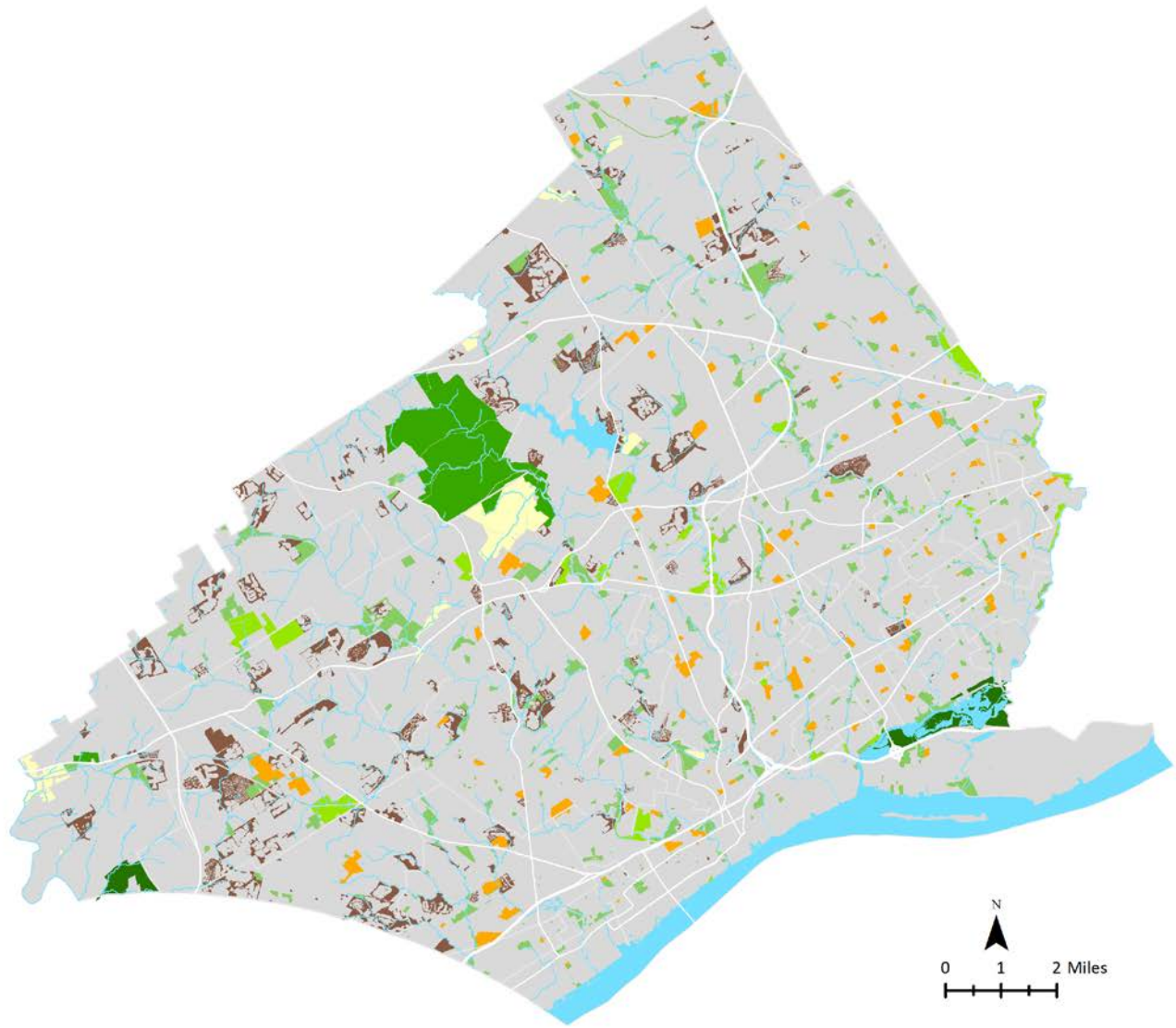
OPEN SPACE IN ADJACENT COUNTIES

Delaware County is also part of the larger Philadelphia/Southeastern PA region. The County shares a boundary with five different counties (Chester, Montgomery, Philadelphia, New Castle, DE, and Gloucester, NJ) across two additional states (Delaware and New Jersey). Since people are willing to travel between counties for recreation and entertainment, it is important to consider the parks and recreation attractions in the region.

Map 3-10 shows the major parks in counties adjacent to Delaware County. The proximity of these recreational resources to Delaware County's resources should be considered when planning greenway connections and park development.

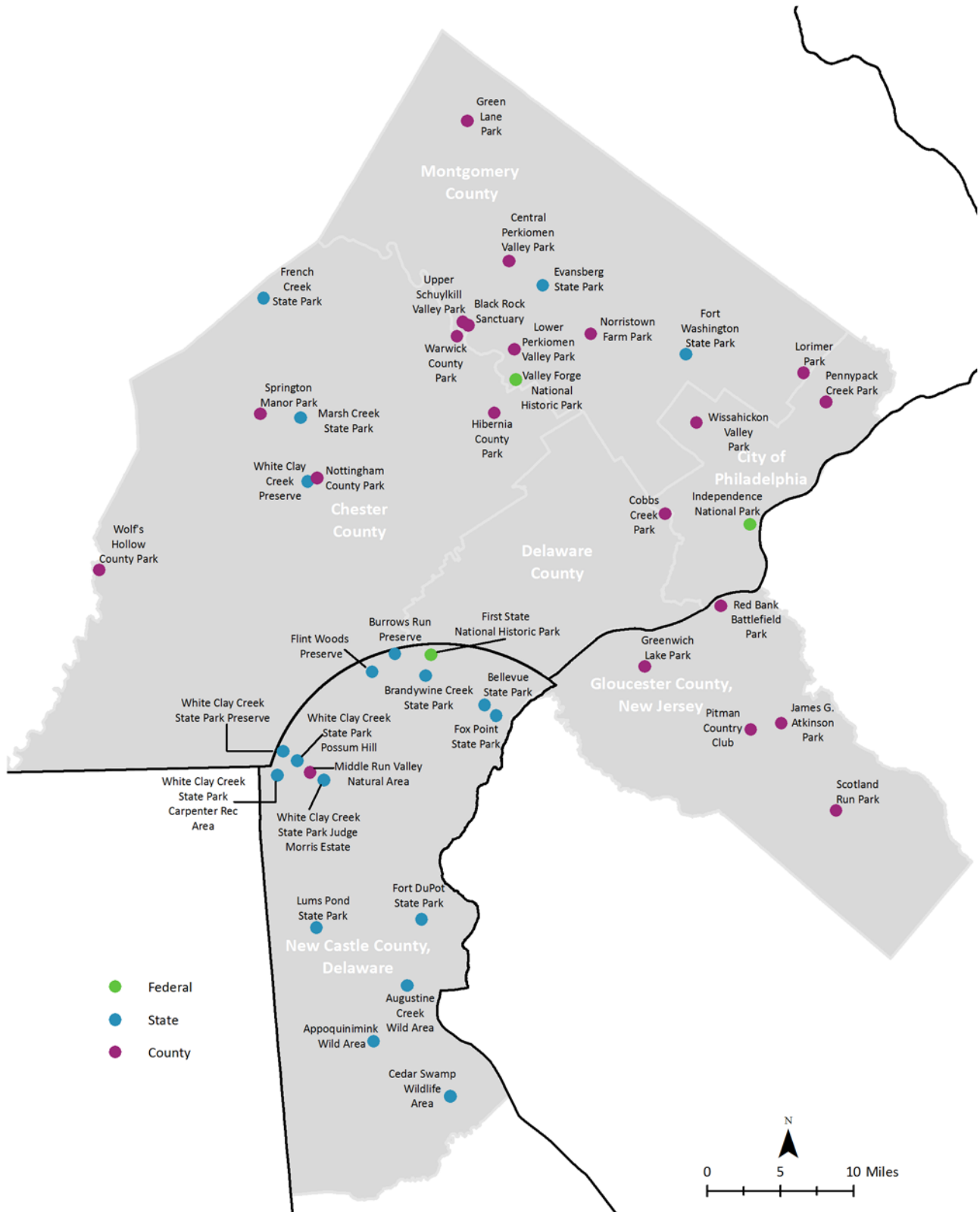
An example of a connection across a county/state line is the First State National Historic Park. The National Park is in both Delaware County and New Castle County, Delaware, where on its southern end it is adjacent to Brandywine Creek State Park. There is potential to connect trails from county and state lines such as routes connecting Concordville to West Chester, Media to Malvern via Ridley Creek State Park, Valley Forge National Park to the John Heinz National Wildlife Refuge through portions of eastern Delaware County, from Wilmington to Center City Philadelphia via Delaware County's Delaware River waterfront.

Map 3-9: Composite Delaware County Open Space and Parks



- Federal Park
- State Park
- County Owned Land
- Municipal Owned Land
- School District Open Space and Recreation
- Homeowner's Association Open Space
- Conservation Organization Protected Lands

Map 3-10: Major Parks in Adjacent Counties



PARKS AND OPEN SPACE NEEDS IN DELAWARE COUNTY

Quality of life is directly linked to open space; therefore, measures need to be taken to ensure that Delaware County's communities have an adequate number of park and recreation facilities, and that there is enough open space to maintain the environmental health and the visual integrity of County. However, once land is subdivided and built upon, it is very difficult, yet not impossible, to return it back into open land. Therefore, efforts should first be made to preserve as much valuable open space as possible when planning for development, and consider regreening urbanized areas as a function of redevelopment.

ECONOMIC VALUE OF OPEN SPACE

The average citizen doesn't often equate open space with economic development. However, people want to live where they can play, walk, or sit outside, often away from busy streets and noise. Therefore, parks and green spaces attract residents, consumers, and business. The benefits of open space were studied and documented for the Greater Philadelphia region in the Delaware Valley Regional Planning Commission (DVRPC)/Greenspace Alliance's study *Return on Environment - The Economic Value of Protected Open Space in Southeastern Pennsylvania* (2010). As stated previously, great park facilities and programs enhance a community's quality of life, which in turn attracts people to live, visit, play, and shop there. This high quality of life instills a sense of pride and collective ownership in a community.

Because of the need for the many benefits parks and open spaces provide, they are valuable and important components of Delaware County's green infrastructure, and thus its future land use.

PUBLIC OPEN SPACE OVERVIEW

Even though some people define open space as "undeveloped land characterized by a rural quality," the concept is multi-faceted. (The "Introduction and Goals" chapter includes a discussion of Delaware County's definition of open space.)

Each type and facet of open space, whether it is a pocket park, a pasture, or an unobstructed view of the Delaware River, reflects the fact that it is an asset to our communities, and is highly valued and irreplaceable. Numerous studies, including the Delaware Valley Regional Planning Commission's *Return on Environment - The Economic Value of Protected Open Space in Southeastern Pennsylvania* (2010), have indicated that economic benefits are accrued through open space protection. It has been shown that, to a significant degree, it attracts business, fosters tourism, elevates property values, and fosters a pride of place.

Delaware County and its municipalities have a number of specialized open space needs and many possibilities for their fulfillment. The Mature Neighborhoods of the County are highly urbanized and densely populated. Opportunities for the creation and protection of open space in these urbanized areas include pocket parks, urban gardens, tree planting, and stream corridor acquisition. The Delaware River waterfront communities have problems similar to those in the eastern portions of the County; however, with improving water quality and the availability of vacant industrial acreage (currently being redeveloped), this area has additional opportunities to incorporate open space into the redevelopment process.

The Growing Suburbs of the northern, and particularly the western, portions of the County are experiencing quite different problems and have distinct opportunities. The County's last valuable unprotected wetlands, woodlands, and farms are located in the western and northern municipalities

where new development is rapidly replacing open land. As the population in this area continues to grow, so does the need for open space. It is important to act quickly to protect the County's remaining important natural resources as identified in the *Delaware County Natural Heritage Inventory* (2011), as well as those other locally significant areas that are not yet identified. In this area, sound planning and wise utilization of land development controls can still provide some level of open space protection.

OPEN SPACE NEEDS ASSESSMENT

Numerical standards based on population and density are often used to determine open space needs; however, they provide only a rough critique of whether or not a jurisdiction has enough open space. The Delaware Valley Regional Planning Commission (DVRPC) has developed basic "parkland" standards for regional, sub-regional, and local parks based on population and density. For the purpose of numerical standards, "parkland" consists of municipal active and passive recreational lands, but it does not include non-recreational land area or take into account natural resources that could or should be protected beyond a numerical standard.

In 1995, the National Recreation and Park Association dropped its numerical standard due to "limitations of a 'one-size-fits-all' standard." Instead, it now emphasizes a systemic approach that accounts for unique needs and opportunities of a community. The NRPA suggest park planners consider the entire community and balance land uses into "environmentally harmonious park, recreation, and open space land units" (National Park and Recreation Association 1995).

As such, it is important to consider natural resources, needs and desires, and opportunities available in the County; as well as the location, accessibility, service area, facilities, safety, and maintenance of its open spaces. In recognition of the incomplete picture a strict numerical standard can place on open space assessment, the highly developed nature of the County, and limited land area for open space and parkland, this plan takes into consideration a broad list of usable open spaces and recreation areas in the County.

For example, traditional numerical standards for sub-regional or local parks would not account for lands owned and managed by federal and state agencies in Delaware County. Such facilities include Ridley Creek State Park in Edgmont Township (618 acres), John Heinz National Wildlife Refuge (Tinicum Township, 324 acres; Folcroft Borough, 290 acres; and Darby Township, 4 acres), and First State National Historic Park (Chadds Ford Township, 234 acres). However, due to the geographic size of the County, and proximity and accessibility to large numbers of residents, they often function as sub-regional and local parks. Additionally, school districts provide over 1,700 acres of open space in Delaware County. Many school districts share use of these facilities with the community, providing many of the same benefits as municipal parks. These facilities provide highly accessibly open space, in addition to municipal land, for community recreation.

Private open spaces also would not be counted under a standard numerical standard method. Homeowners' association land in newer developments in portions of the County, often satisfy the need for neighborhood level parks in many communities. Other private facilities that help to satisfy recreation needs in Delaware County include swim clubs, YMCAs, golf courses, and arboreta (e.g., Tyler Arboretum in Middletown Township).

Due to limited availability and the high cost of land in Delaware County, communities should attempt to acquire new open spaces as opportunities arise, but also direct their attention to enhancing existing

Chapter 3: Open Space Resources

parks and facilities to meet community needs. Providing diverse, high quality facilities can help communities maximize the use of open space. The Haverford Reserve in Haverford Township is a good example of developing a high quality facility to maximize the use of open space in the community. While the site is certainly not considered small (over 100 acres), it provides multiple athletic fields, a destination playground, and a community recreation center.

Current Open Space Issues

Portions of Delaware County's landscape were developed earlier than many of Philadelphia's other suburban counties. This was due to the County's location on the Delaware River and its proximity to the City of Philadelphia. Due to limited land for development and/or open space, land values in the County remain high. Delaware County is highly urbanized and losing open land to development at an increasing rate. According to data presented in the County comprehensive plan, *Delaware County 2035*, only 4% of the County's land area, or 4,721 acres, is not otherwise developed or already protected. Much of this land may or may not be of significant scale for use as contiguous parkland.

Even though many opportunities to preserve large expanses of natural lands have been lost to development, there are still many more opportunities of which to take advantage. In the Mature Neighborhoods, there are still opportunities to increase open space and protect natural features through redevelopment. The Growing Suburbs, with their increase in land development, and the Mature Neighborhoods, with its aging infrastructure, each require different strategies for open space and parkland preservation.

In the Mature Neighborhoods, most large open spaces have already been developed, and the dense settlement patterns are already in place. The mature urban areas have a need for quality small neighborhood parks; opportunities for residents to connect with nature, such as in stream valley parks or community gardens; and street trees for shade, clean air, and beauty. When installed in conjunction with economic development activities, greening and reintroducing open space could transform many areas into sources of community pride. Another way to increase open space is through acquisition of vacant lots and demolition of derelict structures. Additionally, redevelopment activities provide a major opportunity to incorporate open space and green infrastructure. Municipalities can also work closely with school districts to maximize the open space and recreational use of school lands

In the Growing Suburbs, there are more opportunities to preserve open land. However, it is being rapidly developed. Therefore, it is important to identify areas in advance of development, and use land development tools to preserve open spaces. Municipalities should also incorporate the protection of natural features. Opportunities to provide open space in these areas include stream corridors, wetlands, farms, and woodlands. In the less densely developed parts of the County, it is possible to develop around the sensitive areas during the development process at little cost, but with many benefits to the communities at large. In this case, protection of sensitive areas may result in more public, but less active, open space that may also be in private ownership.

Special Issues

Development Pressure

As discussed in Chapter 1: Introduction and Background, the Growing Suburbs have seen significant residential and commercial development in the last two decades. The influx of development led to a significant reduction in the number of large parcels of open space, such as agricultural land. Limited land for development (or open space) has increased land values, making open space acquisition more

expensive. Although there is also development pressure in Delaware County's Mature Neighborhoods, it is generally focused on redevelopment and infill, which typically have more limited impact on open space.

Property Value

The way in which open land is assigned a dollar value for taxation purposes is another special problem. Property assessed at "fair market value" (in other words, the maximum development value) carries with it taxes which are difficult to pay unless the property is developed for a high-income use. Once an area becomes desirable for development, real estate values increase and the trend toward development is fueled. Thus the incentive on the part of the landowner to leave ground open, in farmland, or to develop at a lower density is reduced. The trend toward development is also fueled by the reliance of municipalities on property taxes for their operating budgets. However, studies have shown that development, particularly residential development, actually costs a municipality money. According to the American Farmland Trust, for instance, providing services to residential development costs communities \$1.16 per \$1.00 of revenue raised. Open land, on the other hand, costs \$0.35 per \$1.00 of revenue raised (American Farmland Trust 2010).

As described in Chapter 1: Introduction and Background, open space provides significant ecosystem services to a community. According to *The Economic Value of Protected Open Space in Southeastern Pennsylvania*, open space provides an estimated \$133 million in avoided costs due to the environmental services. Protected open space also provides \$577 million in recreational benefits to the residents in the region (GreenSpace Alliance; Delaware Valley Regional Planning Commission 2011).

Zoning

In Pennsylvania, zoning can create yet another subtle problem. Zoning designates all land for some kind of developed use; thus, the land's recognized value is based on its potential development rather than its value for groundwater recharge, flood protection, food production, recreation, or scenery. Zoning also tends to separate uses, necessitating automobile dependence and encouraging sprawl development by channeling commercial development into linear strips along major roads. Residential development tends to be placed between the highways in the center of open lands.

However, sound planning and use of land development controls such as zoning can also be useful tools. Through the planning and zoning processes authorized under the Pennsylvania Municipalities Planning Code (Act 247, as amended), municipalities are enabled to do the following:

- Create comprehensive land use plans which may include provisions for agriculture, public grounds, parks and recreation, and flood plains (Section 301);
- Create official maps which may include existing and proposed public parks, playgrounds, and open space reservations, as well as flood control basins, floodways and flood plains, storm water management areas and drainage easements (Section 401);
- Require of proposed subdivisions the public dedication of land and/or monies for parks and recreation purposes (Section 503);
- Create zoning ordinances to promote, protect, or facilitate recreational facilities, public grounds, water supply, natural values, scenic values, historic values, forests, wetlands, aquifers, floodplains; to prevent floods; and to preserve prime agricultural land (Section 604);
- Create "overlay" zoning for the regulation, restriction, or prohibition of uses and structures at, along, or near natural or artificial bodies of water, steep slopes, public grounds, places of

Chapter 3: Open Space Resources

- historic value, flood plains, agricultural areas, and other places of special character or use affecting or affected by their surroundings (Section 605); and
- Allow planned residential developments to encourage innovations including the conservation and more efficient use of open space near dwellings (Section 701).

As is further discussed in later sections of this plan, all municipalities, particularly those in developing areas, should take full advantage of their planning and zoning powers to protect sites and land resources of community importance.

The existing development pattern has already reduced the available land for open space. Tracts over 100 acres in size and suitable for county-scale parks are increasingly rare. Several areas of high natural value identified in the *Natural Heritage Inventory of Delaware County* (NHI) have been the subject of development proposals; therefore, there is a sense of urgency for municipalities to act.

Flooding

A significant amount of land in Delaware County is near a stream. In the urban areas of the County, historic development patterns often did not recognize the dangers associated with constructing in the floodplain, nor did they recognize the impact that impervious cover in a watershed has on flooding and water quality. Today, especially with increased runoff due impervious coverage upstream, flooding regularly threatens downstream residential and business owners with property damage and personal injury. This becomes evident, not only during hurricanes and tropical storms, when severe flooding results in fatalities, flooded homes and businesses, and millions of dollars in property damage. Open space can be used to store runoff and provide groundwater recharge areas, helping to reduce stormwater runoff and urban flooding downstream.

Greenways

Due to limited expanses of open land for new large, regional parks, it would appear that one of the best ways to satisfy need for recreational open space is to create greenways. Greenways provide neighborhoods with scenic and natural amenities, which can increase property values; greenways also benefit communities by bringing visitors in, thereby providing a boost in the local economy. Opportunities exist to link existing smaller parks, trails, or public land.

Despite the fact that western Delaware County has a limited number of parks, analysis of aerial photography indicates that there is still open land available for either preservation or development, especially in the northern and western parts of the County. Elsewhere, in the Mature Neighborhoods of the County, open land is usually found in a narrow or linear pattern, along creeks, and on wooded steep slopes, or in vacant lots. Delaware County and its municipalities' most pressing need is to identify and prioritize these lands, adopt plans identifying open spaces, and then undertake measures to preserve of open space and provided needed recreational facilities.

ACTIONS:

Objective

OS 2 Identify, enhance, and expand Delaware County's open space network in order to serve the needs of the public.

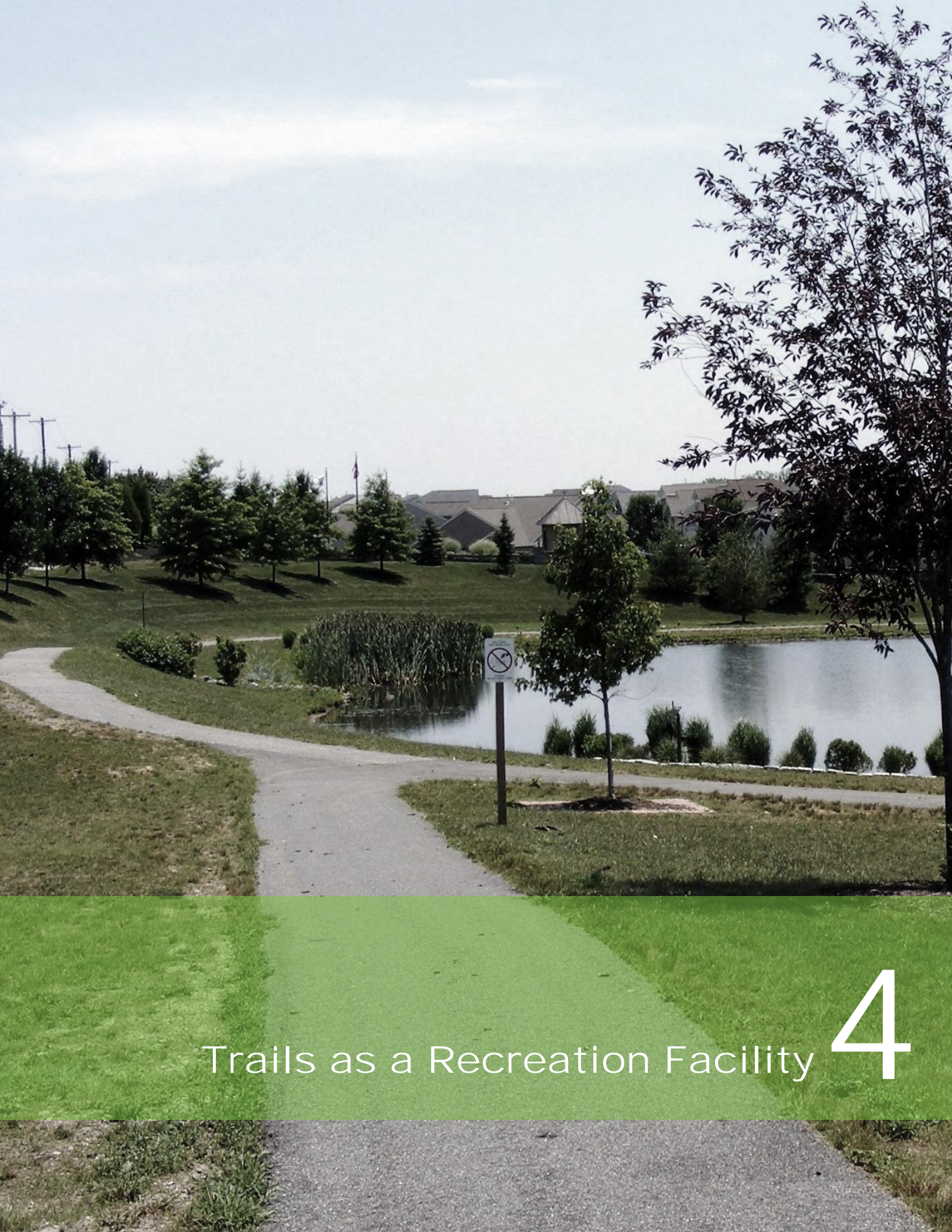
Actions

Delaware County will...

- OS 2.1** Promote and support the use and ease of access to large state and national parks and open space in the County.
- OS 2.2** Further investigate opportunities for enhancing County-owned open space and facilities.
- OS 2.3** Provide technical assistance to municipalities in identifying open space needs and opportunities.
- OS 2.4** Provide technical assistance to communities in developing pocket parks.
- OS 2.5** Support farming and agriculture, including urban agriculture, in the County.

Municipalities are encouraged to...

- OS 2.6** Identify opportunities for enhancing municipal-owned open space.
- OS 2.7** Identify specific open space needs and opportunities.
- OS 2.8** Plan for the protection of open space.
- OS 2.9** Engage quasi-public and private land owners in open space and greenway conservation, planning, and outreach activities.
- OS 2.10** Coordinate with adjacent municipalities and agencies to provide access to parks across boundaries.



Trails as a Recreation Facility 4

Chapter 4: Trails as a Recreation Facility

OVERVIEW

Pedestrian paths and multi-use trails have become increasingly popular for satisfying open space and recreational needs. They are a priority at regional, state, and national levels as evidenced in recent local rail-to-trail projects and the development of the East Coast Greenway. Trails can satisfy a wide range of recreational interests and serve as an alternative to automobile travel. Areas such as abandoned railroad rights-of-way and utility corridors provide unique opportunities for open space preservation, recreation, and as linear parks.

BENEFITS OF TRAILS

Trails provide connections between communities and natural and historic resources, enhance recreational opportunities, and often conserve linear open spaces. They also provide a valuable recreational and fitness opportunity for various groups of people including: walkers, joggers, and bicyclists.

Trail Connections

Between Communities

Trails can connect communities along and across streams using roadways or trail bridges. When a roadway or pedestrian bridge connects greenways on either side of a stream, it provides an opportunity to link one town to the next and benefits both communities better than a separate greenway park on each side. As such, communities should attempt to find ways to link parkland and trails on the opposite sides of a stream.

Natural and Historical Resources

Trails can connect people to nature and history. Trails can not only connect people with historic sites, they can also function as a “heritage trail” that follows the route of a historic Native American path or troop movements during a Revolutionary War battle such as the Battle of Brandywine.

Trails can also bring people closer to nature and help increase their understanding and appreciation of the natural environment. People are more likely to respect and steward a stream if they can legally access and walk alongside it. Access also makes it easier to maintain the stream and its banks through volunteer work days and stream cleanups.

Interpretive signage can enhance the trail user experience by drawing attention to natural, historic, and cultural features along a trail (e.g., remnants and ruins of the past, the story behind an old barn foundation or mill structure, important wetland, or other features). The interpretive signage installed in the Route 291/13 Corridor through the riverfront communities (where the East Coast Greenway is being built) serves to educate residents and visitors about industrial heritage, local arts, and other cultural assets and environmental resources.

Alternative Transportation

Trails not only serve recreation and wellness purposes, they also fulfill another role as an alternative means of transportation to the automobile. Instead of driving or taking a bus to school, students with access to a trail have another means of getting to a destination. Following the events of September 11,

2001, it was realized that trails can serve as alternative evacuation routes, as they can help reduce congestion on roadways and may actually be quicker.

Trails can help to increase employment opportunities for residents without an automobile by providing connections to public transportation. Users with a trail between their neighborhood and a transit station have an option other than the automobile for travel. Also, trails can save commuters gasoline and vehicle maintenance costs. The IRS estimates that an automobile cost, on average, \$5,820/year in car payments, insurance, maintenance, etc. (IRS, 2005). If pedestrian and/or bicycle trips can be substituted for auto trips, part of this money can be used for other purposes that could improve the quality of life.

Health Benefits

There is a definitive connection between trails and health, as health is directly related to regular physical activity. Since trails provide the opportunity for a pedestrian or bicycle transportation connection, their existence encourages healthy habits. Whenever a walking or bicycling route is made more convenient or safer for individuals and families, healthy habits will increase. See Chapter 5: Recreation Programming, for a more complete discussion on the link between recreation and health.

TRAIL CLASSIFICATIONS

Functional Types of Trails

In *Trail and Path Planning: A Guide for Municipalities* (2007), Chester County identifies different types of trails. A *Trail* is typically a permanent off-road facility, which is open to the public and generally part of a larger park or greenway system. It is often multi-use, allowing for various forms of non-motorized recreation such as bicycling, hiking, or horseback riding. A *Path* is a trail that has been designed, constructed, and maintained for a specific form of recreation or travel, such as walking, or bicycling. Paths are usually shorter than trails. *Bicycle Routes* are usually found in conjunction with existing facilities, such as a roadway shoulder. For example, a bike route may simply be a striped bike lane along a low traffic roadway. A *Traditional Hiking Route* is an unimproved trail that is not officially part of a trail system, also known as “social trail” or “desire path.”

Trails are sometimes self-contained within one or two parks, such as a fitness loop trail in a park or on homeowners association property. Loop trails within parks are popular park amenities; however, it is preferred that they and other trails connect to a larger network. Networked trails provide access between destinations and can be used not only for recreation, but also as an alternative means of transportation. Connecting trails together as a network requires cooperation between many public and private groups. Trails as a network will be covered in Volume II: Countywide Greenway Plan.

The National Recreation and Park Association classifies types of trails. The following is adapted from the NRPA pathway classifications (Page 95) (Mertes and Hall 1996):

1. *Park Trail* – Trails and paths located within greenways, parks, and natural resource areas. The focus is on recreational value and harmony with the natural environment. These can be designated as single purpose (paths) or multi-purpose trails, hard-surfaced or unpaved.
2. *Connector Trails* – Multipurpose hard-surfaced trails that emphasize safe travel for pedestrians to and from parks and around the community. The focus is both on recreation and transportation. Connector trails can be constructed in rights-of-way such as abandoned rail lines, utilities, or roadsides.

3. *On-Street Bikeways* – Paved segments of vehicular roadways can serve to safely separate bicyclists from vehicular traffic.
 - a. Bike Route – Designated portions of a road for preferential or exclusive use by bicyclists.
 - b. Bike Lane – Portions of the roadway shoulder designated for bicycle use by painted lines and signage.

Hybrid On-street Bikeways:

- c. Bicycle Track – A bicycle lane with a concrete barrier, curb or other physical barrier between lane and street, in effect creating a separated trail on the street surface.
 - d. Bicycle Boulevard – A street that uses bollards and plantings to block some intersections from vehicular traffic while allowing bicycles to travel the entire length of the street (Arvidson 2008).
4. *All-Terrain Bike Trail* – Off-road trail for all-terrain (mountain) bikes. These can be thought of as a single-purpose park trail.
5. *Equestrian Trail* – Loop trails developed for horseback riding, usually located in larger parks and natural resource areas. Sometimes developed as multipurpose trails, also allowing hiking and all-terrain biking.

Trail Types by Physical Configuration

Trails can also be grouped by their ability to handle specific levels of traffic due to their width or the hardness of their surface. The following three types were developed by NRPA (Mertes and Hall 1996).

Type I trails are actually two parallel hard-surfaced paths used in situations where use patterns dictate separate paths for pedestrians and bicyclists/in-line skaters. An example would be a trail around a lake or waterfront, or within the shoulder of a collector street or parkway (as seen in park trails and connector trail types). Separated lanes of this type are not very common today. As an alternative, multi-use trails anticipating higher amounts of traffic are sometimes built wider (10-12 feet), with signage or striping designating lanes for pedestrians or bicyclists/in-line skaters.

Type II trails are hard-surfaced trails more suited to lighter use patterns, such as from a housing subdivision to a natural resource area, or between a parkway or thoroughfare and a nearby housing development (as seen in park trails and connector trails types).

Type III trails are suited for areas requiring minimum impact, such as nature preserves. Soft-surfaced trails and paths in natural resource areas are typical of this type (as seen in the park trails type).

Rail Rights-of-Way Trails

An abandoned rail right-of-way can serve as an ideal route for a trail. Rail right-of-way conversion, nicknamed “rails-to-trails” or “rail trails,” has become very popular nationwide. Rail trails often cover great distances through multiple municipalities. Advantages to developing a trail along a railroad right-of-way are that they are usually fairly level and are under one owner for long distances.

Rails-to-Trails Program

In 1983, the U.S. Congress amended the National Trails System Act to address the growing number of abandoned rail corridors across the country. When a railroad plans to abandon a rail corridor, public agencies and/or qualified private organizations are given the opportunity to lease the corridor for public use. This leasing process is referred to as railbanking. Railbanking preserves the corridor for future rail use by converting it to a public trail in the interim. The railroad and the interested party agree to lease

terms that prevent the rail right-of-way from abandonment. Many rights-of-way contain easements that revert back to adjacent landowners when a land is officially abandoned. Preserving the rail right-of-way prior to abandonment secures the legal standing of the right-of-way. It is important to consider that trails on railbanked land are subject to potential future restoration of rail service (Rails-to-Trails Conservancy n.d.).

It is also important to note that not all trails along former rail rights-of-ways are on railbanked land. One of the most popular examples of a rail trail in Delaware County is the Radnor Trail, which was built



Figure 4-1: Radnor Trail

on the former Philadelphia and Western rail line. This right-of-way is no longer owned by the railroad, but rather by PennDOT. See case study below. The Chester Creek Trail is also a rail-to-trail corridor, much of which is along an inactive rail line. SEPTA owns the right-of-way and has agreed to a 30-year lease with the Friends of the Chester Creek Branch to use the right-of-way. The various segments of the trail are in different stages of design and development. One section of the Chester Creek Trail is proposed as rail-with-trail. A case study for the Chester Creek Trail can be found later in this chapter.

Rails-with-Trails

There are several successful examples of “rails-with-trails,” or a trail built alongside an active railroad either within or directly alongside its right-of-way. The 2013 report, *America's Rails-with-Trails: A Resource for Planners, Agencies and Advocates on Trails Along Active Railroad Corridors*, produced by the Rails to Trails Conservancy, documented that rails-with-trails trails can be a resourceful method of securing land for multi-use trails. The report examined the experiences and lessons learned for 88 rails-with-trails in 33 states, based on a survey of trail managers and the results of Conservancy's ongoing 20-years of study. Data supports exemplary safety records and evidence of successful liability protection for railroads and trail managers (Rails-to-Trails Conservancy 2013).

Case Study: Radnor Trail

The Radnor Trail is a 2.4-mile long rail-trail in Radnor Township which opened to the public in 2005. It is a fully paved multi-use trail that is practical for various forms of recreation such as walking, bicycling, running, in-line skating, dog-walking, and strollers.

The trail follows the former Pennsylvania & Western Railroad (P&W) right-of-way and can be accessed at seven locations, with Sugartown Road and Radnor-Chester Road the current terminal access points. A narrower trail (about 5 ft. wide) extends north on Radnor-Chester Road, connecting the Radnor Trail to Lancaster Avenue. The Radnor Trail is available for public use from dawn to dusk. The trail is maintained by Radnor Township's Department of Parks and Recreation, along with support from the Radnor Historic Society and the Friends of the Radnor Trail. See Appendix I-K for more details regarding the design and development of the Radnor Trail.

Utility Rights-of-Way Trails

Another type of right-of-way that could be used for a trail is the utility right-of-way. Power line and underground utility and fuel pipelines, as well as sewer and communications rights-of-way, are examples. In other counties, PECO has been agreeable to allowing paved multi-use trails on its rights-of-way. One reason companies may not mind a public trail on their right-of-way is that it would help provide easier access for maintenance vehicles, enabling them to drive the length of it using the trail instead of navigating the road network to different stops or driving off-road. The various utility and fuel transmission companies that own or lease space in a right-of-way each have their own concerns regarding safety and security that need to be addressed as part of a trail feasibility study for a corridor.



Figure 4-2: Concord Township Park Trail

Stream Valley Trails

Stream valleys are great places to locate public trails because they can be scenic and provide closeness to nature. They are usually relatively level and unobstructed. A trail located near a streambank can provide easier access to the stream, making it a favorable destination for environmental education programs and stream clean-up events. They also provide access to the water for anglers of all abilities. However, depending on the distance from the streambank, floodplain/wetland issues and significant permitting requirements may arise during the design and development processes. These matters should be taken into account when planning a trail.

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Inactive rail or utility rights-of-way sometimes follow streams, making it easier to secure a long distance trail, as in the case of Chester Creek, Foxes Run, and Naylor's Run. A sanitary sewer right-of-way may present the benefit of having a previously cleared route for a trail, but clearing does not necessarily secure access rights. A trail builder will often have to secure the rights along a stream parcel by parcel in the form of negotiated easements or fee-simple land acquisition.

Road-Based Connections

The street network represents an opportunity to provide pedestrian connections on sidewalks and bikeways through the development of bike lanes and share the road designations. These road-based connections can be joined to pedestrian and multi-use trails to further extend the non-motorized network.

Bikeways

Bicycling has both recreational and transportation benefits. Bicycle users are able to go farther and faster than by walking or hiking. Bicycling is a legal activity carried out on-road or off-road. Legally, a bicycle is a vehicle and is allowed on most roadways. In Delaware County, there is a lack of adequate and safe biking facilities for both the on- and off-road bicyclists.

As far as off-road trails are concerned, several short multi-use trails presently exist in the County, but they are generally only a few miles in length. This situation should improve in the years to come since more bike trails and multi-use trails have been proposed in many municipalities.

One example of a proposed bike trail is the East Coast Greenway Trail, which will stretch from Maine to Florida, through the riverfront municipalities of Delaware County. The East Coast Greenway route will include both on- and off-road segments. Another proposed multi-use trail is the Chester Creek Trail, which is slated to run through several Chester Creek stream valley municipalities. For an in-depth analysis and recommendations regarding bicycling topics and bike routes, please consult the *Delaware County Bicycle Plan* (2009).

Complete Streets

Delaware County 2035 (2013) defines a complete street as "a street designed and operated to enable safe, attractive, and comfortable access and travel for all users, including pedestrians, bicyclists, motorists, and public transport users of all ages and abilities." A street accommodating only automobile traffic is not complete. As such, the plan recommends that some streets be designed or upgraded to facilitate the travel of bicyclists, pedestrians, transit users, and people with disabilities. The *Delaware County Bicycle Plan* makes recommendations on how more streets in the County can be completed to accommodate these other modes of transportation. A complete street can be a type of trail, and could also be considered a greenway, especially if it contains trees and greenspace at its side, or if it connects people to parks.

Considerations regarding road-based connections include surfacing, dimensions, and vehicular lane crossings. A bikeway or complete street could also include such items as interpretive and directional signage and bike racks for users to temporarily store bicycles while stopping at restaurants or other businesses.

TRAIL DEVELOPMENT

Trail Design

The design and placement of trails should meet the standards of PennDOT and AASHTO (American Association of State and Highway Transportation Organizations). All pedestrian trails should also comply with the Americans with Disabilities Act (ADA) standards, though hiking paths are often an exception due to topography and other considerations. The AASHTO standards for trail width are 12 feet for “urban,” and 10 feet for suburban trails. The recent trend for paved trails in Delaware County has been for an 11 foot wide paved area (as seen at the Chester City Riverwalk Trail and the Lansdowne Gateway Trail). The Radnor Trail has a 10-foot wide paved area, but is adjoined by a six-foot wide cinder path, and a three-foot wide stone shoulder. Pedestrian-only trails, such as those found through areas with steep terrain or heavily forested areas, are typically much narrower (3-4’ depending on specific terrain).

Depending on its purpose and the intended amount of traffic, a trail can be made of various surface materials such as asphalt, porous paving, crushed stone, gravel, or wooden boardwalk decking. There are various cost and environmental factors to consider for each. Paving provides more support for high traffic and requires less maintenance costs, but is more expensive at the time of installation. Stone or gravel may cost less to install, but will have a higher lifetime cost due to the need for more frequent maintenance. Porous paving lets stormwater infiltrate through the surface, but is more expensive than traditional asphalt.

Private Property Concerns

The fragmented nature of Delaware County’s development pattern can make trail planning difficult even for short trails connecting destinations. For this reason, every attempt should be made to locate trails on public property. However, if public right-of-way is unavailable, approaching private property owners for permission to put a trail easement on their land may be the next option.

Condemnation of private land for trail purposes is viewed as an option of last resort. Alternative routing as well as negotiated access rights (easements) are preferred. When encountering unwilling landowners or neighborhoods, it is often best to find an alternative route. This could mean taking the trail to the other side of a stream or on a brief on-road detour. When trails are proposed adjacent to private land, compromises, such as a fence, berm, or other visual barrier, may help in negotiating access.

Landowner Protection from Liability Lawsuits

The Pennsylvania Recreational Use of Land and Water Act (referred to as “RULWA”) provides immunity protection for landowners (private and governmental) who invite or permit people to come onto their land for recreational uses such as trails. Landowners do not assume responsibility, or incur liability, for bodily injury or property damage suffered by any recreational user invited onto the property for a

Case Study: Chester Creek Rail Trail

The Chester Creek Rail Trail is a multi-phase trail project planned in western Delaware County. It is the result of grassroots efforts by interested parties to develop a trail in a SEPTA right-of-way. Phase I, a 2.8 mile stretch of the trail, is located mostly in Middletown Township and will begin construction in 2015. Phase I represents the middle section of the trail. Phases II and III will undergo planning and design studies in the coming years. See Appendix I-K for more details regarding the design and development of the Chester Creek Rail Trail.

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recreational purpose. RULWA provides landowners with immunity from being sued, except in cases where a malicious failure to guard or warn against a dangerous condition on the land can be proven. Pennsylvania courts interpreting RULWA have found that an easement holder is also entitled to the same scope of protection as a landowner. A Model Public Access Easement and additional information and clarification of RULWA can be obtained from the PA Land Trust Association website at www.Conservationtools.org. Municipalities or property owners should consult with their attorneys for more information regarding the latest case law concerning RULWA.

Safety and Security on Trails

There are many myths about trails in relation to safety and security. While no park or public space is 100% safe from crime, many rights-of-way or undeveloped public open spaces are made much safer just by building a public trail on them. A formal trail opens the areas to the eyes and ears of legitimate users running, pushing strollers, or riding bicycles. Most of these trail users carry cell phones, so the wait for a 911 call to report suspicious activity or call for help may only be as long as the next passerby.

A trail is not isolated if it is being used. Studies and statistics time after time have shown that safety concerns are based on false perceptions rather than real danger. Radnor Township Police reported no incidents of “assaults, attacks, or disorderly conduct” on the Radnor Trail between 2005 (its opening) and 2013. Since lighting and nighttime policing can be costly or a nuisance to trail neighbors, many trails are closed at night. Light poles may make sense, however, for short connectors or trails at waterfronts or close to popular evening attractions such as stadiums, amphitheaters, or shopping centers (Miller 2010).

Stormwater

As is the same with any land improvement, stormwater management should be carefully considered and addressed in the trail design process. The County’s model Act 167 stormwater management ordinance requires infiltration of runoff, as well as control of peak runoff, from all paved surfaces over a certain size. The ordinance contains a diagram indicating how to achieve stormwater infiltration. Permeable pavement, such as porous asphalt, may be a good way to achieve stormwater control on trails. Trails developed in stream valleys also need to consider riparian buffer requirements. Several municipal stormwater management ordinances in the County permit limited paving for recreational trails within a riparian buffer. Due to the sensitivity and importance of riparian buffers, special design considerations to limit the amount of disturbance in the riparian buffer should be undertaken. This may include the use of different paving materials, decreasing the trail width, or increasing the amount of vegetation alongside the trail.

EXISTING TRAILS

Many recreational trails currently exist throughout Delaware County. Map 4-1 shows where known formally established trails of all types are located. For a complete listing of these trails, see Appendix I-J.

Existing trails in Delaware County are largely located within parks or other recreation areas. Many of these trails are simple earthen paths that have developed from desire paths. They can vary from simple loop trails within a park, such as at the Concord Township Park, to more elaborate web of trails such as the network found at Ridley Creek State Park. The other prominent type of trail in the County may be classified as a connector trail, which links parks or open space with other areas of interest. Connector trails are typically formalized with paved pathways and amenities along its course. The Radnor Trail, for

example, connects Encke Park, the Wayne Arts Center, and the Wayne/St. Davids downtown area via a former rail right-of-way.

Due to limited mapping information for existing trails, the County and municipalities would benefit from compiling a geo-referenced inventory of existing trails. This may include the lengths and surface material in order to provide a clearer picture as to the status of trails in the County. Providing this information to the public would increase awareness of the accessibility to a variety of trails within the County.

In addition to existing trails within the County, several more trails have been proposed. Proposed trails that are part of the Countywide Primary Trail Network are highlighted in Volume II: Countywide Greenway Plan.

Map 4-1: Existing Trails



*Map 4-1 displays existing trails which were mapped in GIS; it does not include all existing trails in the County

VISION FOR A DELAWARE COUNTY TRAIL NETWORK

Increased interest in local trail planning efforts has led to the formation of a regional coalition of stakeholders whose purpose is to identify and promote priority trail corridors and opportunities for connections. As discussed in Chapter 1: Introduction and Background, the Circuit is a regional effort to coordinate trail planning and building efforts. Several Circuit trails have already been constructed, but many are only in the planning and design phases. When developing a vision for a trail network, it is

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important to consider connections beyond a municipality and to examine multi-municipal and regional connections. Trails and paths should be planned as an intertwined network that includes destinations such as community and neighborhood parks, schools, and town centers without specific regard to municipal boundaries.

Countywide Primary Trails

The Delaware County Primary Trail Network is a conceptualized network containing linear planning zones that have the potential to link key destination points using public trails. The Delaware County Planning Department refers to these linear planning zones as Countywide Primary Trails. These make up a network of long-distance multi-municipal trails identified as the spines or main arterials of a countywide trail system. Map 4-2 shows these Primary Trails, which are intended to be Type I and Type II (hard-surface) off-road connector trails owned or managed at the County, municipal, or multi-municipal level. Existing earthen and/or crushed stone trails that represent direct, long-distance routes or continuations of paved trails are included in this category, but should be considered for paving as degree of use warrants.

When combined, the 25 recommended Primary Trails form a network of interconnected non-motorized travel and recreation connections near and between all corners of Delaware County, as well as to existing and proposed trails in adjacent counties. This network will provide County residents, some of which live in the most densely populated urban centers, with non-motorized access to major publicly-owned recreation land and facilities. Such access can help to spur economic development in the County's urban centers in two ways. First, the network will draw trail users into existing downtown commercial districts, creating the possibilities for increased recreation-based commerce. Second, the existence of regional trails in densely developed areas will also provide their multitude of residents with increased access to open space and recreational facilities, a feature which has been shown to increase the value of residential housing and increase municipal tax revenues (GreenSpace Alliance; Delaware Valley Regional Planning Commission 2011).

The 25 Primary Trails identified in this plan are presented as the general locations for possible links in a countywide network of trails, and should not be regarded as a detailed plan for all future trail or municipal trail alignments in the County. Primary Trail Corridors are not presumed to be the only logical locations for multi-municipal multi-use trails. In fact, unforeseen changes in land use in the County may make some of these recommended Primary Trail Corridors impractical or infeasible to implement.

Volume II: Countywide Greenway Plan highlights the corridors that are considered Primary Trail development opportunities. Planning beyond the conceptual stage should be completed as part of the implementation of greenway segment and corridor plans. Examples of plans to be developed subsequent to conceptual plans include trail feasibility studies and trail design and engineering plans.

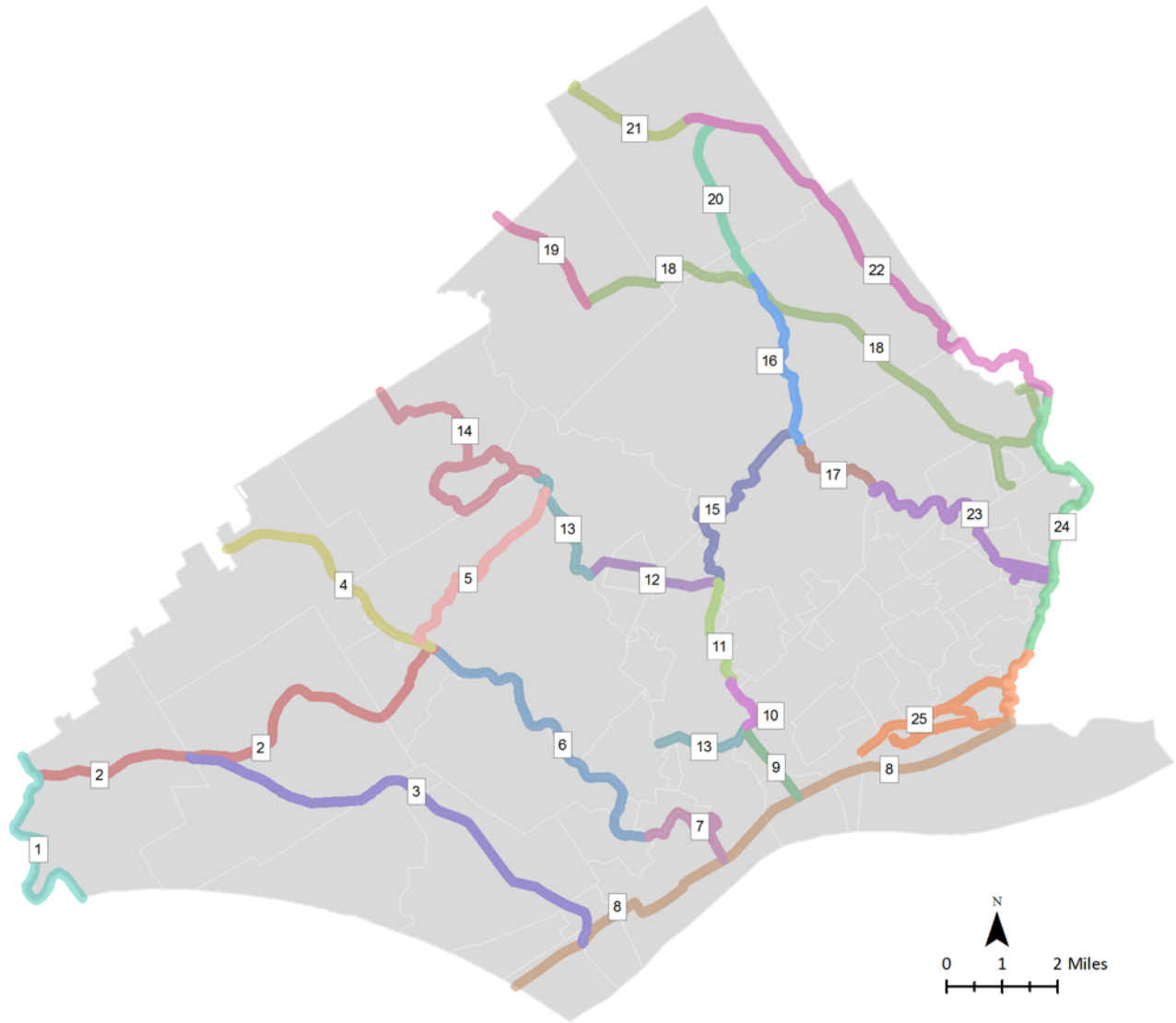
For a more comprehensive look at the Trails Network and how it relates to The Circuit, refer to Volume II: Countywide Greenway Plan.

Vision for Trail Planning and Development

There are a number of ways that the County and municipalities can pursue desired trail connections.

People do not limit their activities to destinations within specific municipal boundaries. As such, the County recommends that municipalities coordinate when planning and developing trails. Two adjacent

Map 4-2: Countywide Primary Trail Network



- | | | |
|---|--|--|
| 1 - Brandywine Creek Greenway | 10 - Blue Route Bikeway - Leiper to Kinder Connector | 19 - Route 252 Bicycle Route |
| 2 - Octoraro Rail Trail | 11 - Blue Route Bikeway - Leiper-Smedley Trail | 20 - Blue Route Bikeway - Ithan-Darby Creek Valley |
| 3 - PECO Right-of-Way Trail | 12 - Media-Smedley Connector Trail | 21 - Radnor Trail |
| 4 - Chester Creek Trail - North Extension | 13 - Ridley Creek Greenway (North & South Sections) | 22 - Forge to Refuge Trail |
| 5 - Rocky Run Trail | 14 - Ridley Creek State Park Trails | 23 - Darby Creek Stream Valley Park Trail |
| 6 - Chester Creek Trail | 15 - Blue Route Bikeway - Smedley to Darby Creek | 24 - Cobbs Creek Trail |
| 7 - Chester Creek Trail - East Coast Greenway (ECG) Connector | 16 - Darby Creek Trail - Haverford Township | 25 - Heinz Refuge Trails |
| 8 - East Coast Greenway | 17 - Darby Creek Trail - Drexel Hill Connector | |
| 9 - Blue Route Bikeway - East Coast Greenway (ECG) Connector | 18 - Newtown Square Branch Rail Trail | |

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municipalities may only need to connect to the same Primary Trail (perhaps one at their boundary) to connect their municipal trail and open space networks. In addition to making trail connections between County Parks and the surrounding communities, the County is in a position to recognize and foster such multi-municipal connections and provide assistance for implementation of the Countywide Network. It can act as a convener to bring municipal staff, elected officials, and stakeholders together to identify and plan for a common network.

Municipalities should consider making local trail connections to both the Primary Trail and the regional trail networks when possible. This can be accomplished through a local planning process associated with development of a comprehensive plan, open space plan, or both. It is important that conceptual plans for municipal trail networks identify safe pedestrian and bicycle connections between existing parks and public open space sites. Connecting these spaces provides an added layer to municipal open spaces beyond individual park-based trails. Another important step in planning and developing municipal trail network is identifying gaps in the existing county or municipal systems. The plan could then review potential connections, emphasizing those that bridge the gaps and increase connections for residents.

TRAIL PLANNING GUIDEBOOKS AND REFERENCES

There are many publications available for purchase or internet download that can help citizens and government officials learn about trail development, funding, management, and maintenance. The following is a short list of resources recommended for municipalities and trail organizations to use when planning for trail projects.

Pennsylvania Trail Design & Development Principles: Guidelines for Sustainable, Non-motorized Trails

Pennsylvania Department of Conservation and Natural Resources (DCNR), Pashek Associates, 2013

This guide presents a compilation of best practices, guidelines, and do's and don'ts for the planning, design, construction, and management of all types of non-motorized trails. Much attention is paid to guide the construction of trails that are both physically and environmentally sustainable. It also presents methods for developing trails that create fun, desirable, and enjoyable experiences for trail users.

Trail and Path Planning: A Guide for Municipalities

Chester County Planning Commission, 2007

This comprehensive trail planning guide for municipal officials was prepared as an implementation resource for Chester County's *Linking Landscapes* (2002) plan. Although it contains Chester County specific elements, it is also very applicable to other communities in Pennsylvania. It includes basic trail planning principles and instructions for incorporating trails into the comprehensive plan, the municipal official map, and trail-friendly zoning and SALDO ordinances. The document also contains design standards, and cost examples.

Creating Connections: The Pennsylvania Greenways and Trails How-To Manual

Pennsylvania Environmental Council for the Pennsylvania Greenways Partnership, Russ Johnson, 1998

This document is a trail guide promoted by the state through the Pennsylvania Greenways Partnership, with funding by the William Penn Foundation, the Howard Heinz Endowment, and PA DCNR. The Partnership's purpose is to develop a coordinated approach for the planning, promotion, and funding of greenway projects. This guidebook was heavily promoted statewide as a resource to help communities

plan and develop trails. There are many other previous publications listed in its bibliography that may also be helpful.

Community Trails Handbook

Brandywine Conservancy, 1997

This early trail planning resource examines management liability, case law, and legislative acts. Funding programs and trail implementation techniques are also discussed. Case studies, mainly from southeastern Pennsylvania, provide good examples from the planning and development experiences of others. Whole chapters are dedicated to “The Design Process” and “Ownership, Management, and Liability.” Model ordinance language to enable trail connections through the zoning and subdivision and land development ordinance is presented in an appendix.

See also:

- DCNR’s list of publications on their website for additional resources, many of which (including some of the above) are available for free download:
<http://www.dcnr.state.pa.us/brc/elibrary/brcpublications/index.htm>
- ConservationTools.org, a website of the Pennsylvania Land Trust Association, also has a library section with a list of trail resources available for free download (including “Creating Connections”).

ACTIONS

Objective

OS 3 Create a Countywide trail network that enhances quality of life by connecting people and places

Actions

Delaware County will...

- OS 3.1** Study, plan for, and promote the development of Countywide Primary Trails.
- OS 3.2** Work with municipalities to inventory existing trails and produce a user-friendly trail guide.
- OS 3.3** Coordinate multi-municipal trail planning efforts with local governments.
- OS 3.4** Coordinate with the regional trail efforts outlined in the Circuit.
- OS 3.5** Identify potential bicycle and pedestrian connections between existing trails and the County’s parks system.
- OS 3.6** Identify and suggest potential local connections between linear open spaces.
- OS 3.7** Provide technical assistance to municipalities in identifying potential bicycle and pedestrian connections to existing trails and public open spaces.
- OS 3.8** Implement planned trails when, where, and to the degree appropriate.

Chapter 4: Trails as a Recreation Facility

Municipalities are encouraged to...

- OS 3.9** Further study and plan for development of municipal trail networks.

- OS 3.10** Inventory existing trails and provide information concerning trails to the public in a user-friendly format.

- OS 3.11** Identify pedestrian and bicycle connections between public open spaces and recreational sites within their jurisdictions.

- OS 3.12** Coordinate with adjacent municipalities to provide for linear linkages between neighboring municipal open space and trail systems.

- OS 3.13** Identify potential bicycle and pedestrian connections to Primary and regional trails.



Recreation Programming 5

Chapter 5: Recreation Programming

INTRODUCTION

Recreation programming is one of the most significant facets of a community's public services. Recreation programs provide the public with opportunities to engage in activities on open spaces. Both public and private entities offer recreation programs. There are a number of organizations in Delaware County, including public agencies, youth organizations, and private organizations, that provide services and facilities. Recreation needs and opportunities vary greatly across the region. As such, it is important that the County and its municipalities fully examine the needs of the community in order to develop suitable recreation programs for the constituencies they serve. Partnerships between public agencies and private organizations can help to achieve community goals for recreation programming.

DEFINITION

Recreation can be defined as time spent participating in either moderate or vigorous activity that contributes to the refreshment of one's body and mind. Recreation programming is the organization and promotion of various recreation activities. These may occur either inside or outside and be designed for individuals and groups of people. Recreation programs can include events, such as sport leagues, organized educational events, and senior card games and other age targeted activities, as well as group runs/walks (Landes, Recreation and Parks Board Handbook 2004).

Types of Recreation Programming

The range of recreation programming is practically endless. As such, communities have a number of opportunities to customize recreation programs to address their needs. Recreation activities are classified into two general categories: active recreation and passive recreation. Active recreation

Common Types of Recreation Activities

Active Recreation

- Baseball/Softball
- Football
- Soccer
- Lacrosse
- Basketball
- Tennis
- Hockey (roller)
- Skateboarding
- Ice Hockey
- Golf

Passive Recreation

- Walking/Hiking
- Running
- Bicycling
- In-line Skating
- Picnicking
- Dog Exercise
- Camping
- Rock Climbing
- Wildlife Observation

Water-based Recreation

- Swimming
- Fishing
- Boating
- Canoeing and Kayaking

Miscellaneous

- Environmental Education
- Arts/Crafts
- Theater/Shows
- Special Events

Chapter 5: Recreation Programming

typically consists of sports and athletics that require higher levels of movement for participation. Passive recreation generally involves less vigorous levels of activity, such as indoor activities like arts/crafts or pursuits which do not require a formal field or court, such as outdoor activities like walking, picnicking, or wildlife observation. Other common types of passive recreation include environmental education and special events (e.g., farmers markets, parades, and holiday celebrations). Water-based programs (e.g., swimming, fishing, or boating) also play a prominent role in many communities as facilities are available.

Recreation, Programming, and Service Trends

National trends in recreation, programming, and service delivery include the following, many of which are evident in Delaware County:

- **Increasing participation in sports**, such as soccer and lacrosse, result in the need for additional sport facilities. About 60 percent of boys and 47 percent of girls are on a sports team by age six. While affluent suburban youth play on three, four, or five teams, those least likely to play are urban and rural youth from lower income households. While baseball and soccer start off fast, basketball is the most popular competitive sports because both boys and girls play. Most children play sports at some time: only about 15 percent of boys and girls have never played a team sport (Kelley and Carchia 2013).
- **Sports are an important tourism segment** that contributes to the regional economy.
- **Facility trends** include:
 - **Dog parks** - Dog parks are the segment of public parks experiencing the fastest rate of growth in the United States.
 - **Spray parks** - A spray park is a zero-depth play area where water sprays from structures or ground sprays and then is drained away before it can accumulate. When properly designed, spray parks offer cost-effective, safe, and fun additions to public play spaces that are suitable for children of all ages. Through the use of computerized controllers, there is no need for lifeguards, and water only flows when children are present. Spray park structures are designed to withstand high levels of use and to be aesthetically pleasing even after the water is turned off.
 - **Naturalized playscapes** - The naturalized playscape (or natural playground) is a space with as few man-made components as possible. Using native plants, rolling hills, and lots of trees, these playscapes represent a natural place such as a forest. They are designed with the intent of bringing children and people back to nature.
 - **Destination playgrounds** – Destination playgrounds are substantial playgrounds of an acre or two that attract people from distances of 30 to 60 minute drive times. They enable families to make the better part of a day engaged in family bonding and play.
- **Self-directed recreation activities are important.** While recreation opportunities may be perceived as organized scheduled programs, facilities for recreation that people can undertake at their own volition for walking, bicycling, tennis, basketball, geo-caching, fishing, boating, Frisbee, disc golf, playgrounds and socializing, natural areas and wildlife watching, all enable more people to participate in recreation year round.
- **Partnerships** - Governmental entities in all forms across the United States can no longer provide all types of park and recreation services on their own. Partnerships have become essential in parks and recreation facilities nationwide in order to provide the type and extent of facilities and programs that the citizens desire. Such partnerships include dedicated staff that provides direct service through facility maintenance, development, and programming; volunteers; working with other government and not-for-profit organizations; and public-private partnerships that supplement the Delaware County Parks & Recreation Department's operating budget. Delaware

County has fine examples of partnerships, including the dog park in Kent County Park, programmed activities at Glen Providence County Park, the conservation of Mineral Hill, and the summer concert series at Rose Tree County Park.

- **Creating connections to the outdoors and management of natural resources** is becoming a priority of citizens, conservation organizations, and government, as evident within the trails in Glen Providence and Kent County Parks, the development of trails such as Darby Creek Stream Valley Park Trail, the East Coast Greenway, and the Chester Creek Rail Trail, and the conservation of Mineral Hill.
- **Health and wellness is a growing national concern.** Long-term, the nation's biggest health concern remains obesity. Despite all the youth leagues, the waistlines of America's children are growing. According to the latest CDC numbers, 16.9 percent of kids were obese in 2009-10; almost triple the rate of 1980. According to the CDC, overweight children have a 70 percent chance of becoming overweight adults. By 2030, the CDC predicts that 42 percent of all American adults will be obese. Few adolescents get 60 minutes of exercise seven days a week.
- **Programming trends** include:
 - **Health and fitness.** Parks and recreation departments have begun to take an active role in public health and fitness through creative recreation programs.
 - **Generational programming** focuses on families with children of all ages, not just young ones.
 - **Life sports** include bicycling, kayaking, swimming, jogging, and tennis that people play throughout their lifetime.
 - **Collaborative programming** is becoming more important with organizations in the public and private sectors coming together to provide programs and services.
- **Marketing** is becoming more important and more targeted. One-size advertising doesn't fit anyone – successful marketing reaches out to specific target audiences. Building a strong public identity is essential in sustaining parks and recreation department long-term.
- **Customer service and convenience rule.** Registration needs to be as easy as possible 24/7 with online registration and credit card payments accepted. Parks and recreation departments are striving to create “customers for life” through excellent customer service.
- **Self-sufficiency** is crucial as government at all levels struggle with budgets and limited resources. The emphasis is on operating more like a business generating revenue to offset costs.

IMPORTANCE OF RECREATION PROGRAMMING

Recreation programming helps to create and support a sense of community by encouraging involvement. It also helps to support economic development. When locating offices, companies look for communities that have a strong sense of community. Tourism opportunities often include diverse recreation programming that attracts visitors to local businesses. Recreation programs provide health benefits as well, including increased focus and opportunities for healthy exercise (Landes, Municipal Recreation Programming 2008).

Sense of Community

A strong sense of community, promoted and supported by a comprehensive recreation program, helps to create desirable places to live and work. Low-cost activities for all ages provide opportunities for the entire community to become active and involved. Community recreation programming, such as annual holiday ceremonies, sport tournaments, or fairs, can also become local traditions that bring residents of all ages together. The traditions created help to promote a sense of pride and appreciation in a

Chapter 5: Recreation Programming

community. The traditions are an important factor in the attractiveness of communities for both homebuyers and business. (Landes, Municipal Recreation Programming 2008).

Health Benefits

The health benefits of recreation programming cannot be understated. Recreation helps to reduce stress levels and keep people active. Increasing daily activity levels, predominantly in youth, has garnered national attention over the last two decades, as it is seen as one of the best and most cost effective methods to address the well-publicized “obesity epidemic” in America, particularly in children.

The term “obesity epidemic” can be considered a misnomer; it is, in fact, one of physical inactivity and poor nutrition. Regular recreation has been proven to have a direct connection to a person’s health. Significant health benefits can be obtained by including even a moderate amount of physical activity in daily schedules. Regular physical activity helps to build muscles and reduce fat, while also decreasing the risk of chronic diseases such as heart disease, adult onset diabetes, and osteoporosis.

RECREATION PROGRAMS

As stated above, there are a variety of recreation programs and providers in Delaware County; each has a unique focus. Federal and state programs, for instance, tend to focus on healthy lifestyles and interaction with nature, whereas local organizations often emphasize more active, sports oriented activities. Other programs include nature conservation and interaction. The diversity of programs and providers in Delaware County offers residents tremendous recreational resources and affords municipalities a multitude of partnership opportunities.

FEDERAL AND STATEWIDE PROGRAMS

Healthy Lifestyle Programs

There have been a number of federal and statewide programs that emphasize improving healthy lifestyles in children and adults. While these programs may not be regular events held in communities, they are ongoing programs that provide outreach and special events. Many of these programs influence local community programs, such as nrgBalance, or are directly evident in local schools, as with The President’s Challenge.

Safe Routes to School

The Safe Routes to School program (SRTS) is a national program signed into law in 2005. It was created in order to encourage and assist local, state, and federal governments to promote walking and biking to school. The intent of this program was to improve the health and well-being of children. When it was signed into law, the program dedicated \$612 million toward outreach and education, as well as increasing safety along routes by developing sidewalks, trails, and other pedestrian improvements. Today, the program is eligible for funding as part of a variety of transportation improvement bills (National Center for Safe Routes to School n.d.).

The President’s Challenge

The President’s Challenge was founded in the 1960’s as a fitness test for youth across the country. The program is intended to help “people of all ages and ability increase their physical activity and improve their fitness through research-based information, easy-to-use tools, and friendly motivation.” As part of the program, there is a Presidential Youth Fitness Program, which provides a model for healthy fitness education of youth. This program replaced the Youth Fitness Test in order to promote healthy lifestyles beyond the test. This program is primarily run in conjunction with school districts and private schools.

The President's challenge also includes programs aimed at adults, such as the Presidential Champions Program and the Presidential Active Lifestyle Award (Presidential Youth Fitness Program n.d.). For more details, visit: www.presidentschallenge.org.

nrgBalance

nrgBalance (short for "energy balance") was launched in 2008 as an initiative to provide schools and community leaders assistance in promoting healthy lifestyles. The initiative was developed by Center for Nutrition and Activity Promotion at Penn State Hershey Children's Hospital and is involved with school and communities throughout Pennsylvania. The name is derived from the concept of "energy balance", which is the relationship between calories consumed (energy in) and calories burned through daily activity (energy out). The program focuses its efforts on education outreach at schools and youth in community centers (nrgBalance n.d.). For more information, visit www.nrgbalance.org.

DELAWARE COUNTY

The Delaware County Parks and Recreation Department provides programs in three ways:

- Facilitation of recreation programming and opportunities by working with other direct providers of services such as organized sports,
- Provision of direct organized, scheduled programs, and
- Making facilities available for citizens to use at their own discretion.

While organized programs seem to capture the limelight of parks and recreation departments, the facilitation of recreation programs by others and the provision of facilities for self-directed recreation require a great deal of work among department staff.

Facilitated Programs: Sports leagues use County parks and recreation facilities to operate their sports leagues. Other providers using County recreation facilities include: the Car Show, Community Gardens, and Delaware County Senior Games.

Organized, Scheduled Programs: The County's hallmark programs are the Summer Festival, with over 40 concerts, and the Festival of Lights, held from early December through January each year. The Department also manages the Redwood Community Playhouse. The Playhouse is in transition from being perceived as a senior center to being recognized as a community center for all, featuring programming for active aging "Baby-Boomers." More than 200 senior citizens use the facility for meals and socializing. The Playhouse operates with a full schedule of programs during the day and in the evenings.

Discretionary Use: About 80 percent of the use of a parks and recreation system is by citizens using facilities on their own.

The following are existing programmed activities that are organized through the Delaware County Parks and Recreation Department.

Delaware County Summer Festival

The Delaware County Summer Festival is an annual event that takes place five nights a week during the summer months at Rose Tree County Park. It is a concert series held at the amphitheater featuring musical guests from all over the country, and attracting visitors from all over the County and beyond. In

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2014, the series included over 40 live performances in the park at no-cost to attendees. Each year, thousands of people attend the Summer Festival programs.

Delaware County Senior Games

The Delaware County Senior Games is a County-sponsored program that helps to promote healthy active lifestyles in older adults. It is an annual weeklong schedule of activities open to individuals aged 50 years and older, composed of education, fitness, and various sporting events held at several venues around the County. The event is a coordinated effort by County Council, County Parks and Recreation, County Office of Services for the Aging, and the Brandywine Conference and Visitors Bureau.

Redwood Community Playhouse

Delaware County Parks and Recreation manages the Redwood Community Playhouse in Upland County Park. Each week, hundreds of people come to Redwood to enjoy senior social dances, live bands, line dancing, country performers, and more. Dances are held year round. There are also more passive activities, such as card games and movie nights. All of these programs are offered by the County free of charge. The Playhouse is in transition from being perceived as a senior center to a community center for all, featuring programs for active aging “Boomers.” It operates with a full schedule of programs during the day and in the evenings.

Other Programs

The County provides a number of other programs throughout the year. It works with local schools and clubs to allow the use of Rose Tree County Park for cross country practice and competitions, both large and small. In Upland County Park, several groups organize adult and youth recreation leagues for football, baseball, and softball. The soccer and baseball fields at Smedley County Park are also used by several organizations throughout the year. Clayton County Park contains a low-cost golf course for use by community members from around the region.

Delaware County Parks and Recreation also organizes the annual Festival of Lights, a popular holiday light and decorations display in and around the plaza area of Rose Tree County Park. The Friends of Glen Providence County Park, in cooperation with the County, offers small concerts and other similar events at Glen Providence County Park in Media Borough.

MUNICIPAL

Municipalities are the most prominent providers of recreation programs within Delaware County’s communities. They own and maintain many of the parks and open spaces that support numerous programs, including both active and passive recreation. Their facilities, which often include ballfields and soccer fields, also help to support other providers, such as youth athletic organizations. Some of the most popular programs municipalities offer include leagues for competitive and intramural sports, arts and crafts, and farmers markets. The parks and open spaces they own and maintain also provide for less programmed recreation, such as picnicking, nature watching, walking/running, and use of playground equipment.

Both Springfield and Haverford Townships operate ice skating facilities, offering hockey leagues and public skating times among other programs. Some municipalities, such as Springfield and Marple Townships, own and manage public golf courses. These courses often provide discounted rates for members of the municipality that owns the facility.

Many municipalities offer a variety of special events and holiday celebrations in their parks. Popular events include Fourth of July fireworks and celebrations, Christmas Tree Lightings, outside movie nights, and concerts. Some municipalities also offer day camps, including sports and summer recreation camps. For a listing of recreation programs provided by municipalities, see Appendix I-L.

SCHOOL DISTRICTS

There are 17 school districts that serve portions of Delaware County. Many of the districts own and maintain a significant number of recreation facilities, such as multi-purpose fields and indoor basketball courts. Their outdoor facilities are often available for public use (when not reserved for school functions). The school districts also offer recreation programs such as travel and intramural athletic teams, camps, and tournaments, and often agree to allow youth athletic organizations to use their facilities (for a fee), particularly indoor facilities that are in high demand. In addition to the public school districts in the County, there are a number of private schools that also provide recreational facilities. Most often, these facilities are indoor gymnasiums and/or playgrounds. Some school districts have their own indoor pool facilities, used for interscholastic swimming and other school functions. As with other school facilities, when the pools are not reserved for school functions, they may be available for other uses. The combination of these facilities helps to support municipal recreation programs and reduces the need for municipalities to build indoor facilities for basketball and volleyball.

OTHER PROVIDERS

Private Organizations

Athletic Organizations

Some of the most visible private providers of recreation programs in the County are athletic organizations. The groups offer a variety of competitive and noncompetitive programs, leagues, and teams for youth and adults. Several of the most common sports are baseball, basketball, soccer, and football. Their activities complement those provided by public agencies. The groups are run by volunteers who support all of the necessary tasks to organize and maintain the programs. Several groups own their own facilities, while others have agreements with partners such as municipalities or schools to use their facilities.

YMCA's

YMCA is an international non-profit organization centered around three areas of focus: youth development, healthy living, and social responsibility. With their predominately indoor facilities, they strive to meet goals of strengthening communities and bringing people together, regardless of background, through programs that build a healthy spirit, mind and body. There are five YMCAs in Delaware County (Haverford, Ridley, Chester, Lansdowne, and Rocky Run/Middletown). They all have a huge slate of year-round programmed fitness classes, athletic activities, day camps, educational programs, and times for un-programmed use of gym facilities available for dues paying members. YMCAs are a traditional piece of the region's recreation programs.

Commercial Providers

In addition to the public recreation providers, there are numerous commercial recreation providers that supplement public programs for a fee. Maplezone Sports Institute in Bethel Township, for example, offers indoor batting cages, indoor multi-purpose athletic fields, and outdoor athletic fields. It also organizes several sports leagues, tournaments, lessons, and camps on its facilities. Other prominent

private facilities in the County include IceWorks in Aston, which has four regulation size ice rinks, and Marple Sports Arena in Marple, which has two roller hockey rinks that can be temporarily converted for other uses. Smaller commercial providers include business like swim clubs, fitness gyms, yoga, martial arts, dance, and gymnastics class facilities.

Commercial recreation providers can offer types of programs that typically require specific or large scale facilities that municipalities are not normally capable of owning and maintaining. Therefore, when developing comprehensive and diverse recreation programs in a community, it is important to consider the services offered by commercial providers.

RECREATION PROGRAM PLANNING NEEDS

OVERVIEW

As discussed in Chapter 1: Introduction and Background, in order to help identify the needs, desires, and opportunities for recreation in Delaware County, the open space planning process included an extensive public participation efforts. The County was assisted by a consulting Certified Parks and Recreation Professional (CPRP) recognized by the National Parks and Recreation Association.

PUBLIC OUTREACH

One of the most important components of a parks and recreation needs assessment is exploring the opinions of the residents about existing facilities and services, future needs, and other important considerations. Public input consisted of multiple types of public outreach, including public surveys, several public meetings, and key person interviews with parks and recreation providers and users in the County. The goals of the outreach were to determine:

- Opportunities to address countywide.
- Challenges to parks and recreation in Delaware County.
- Improvements that should be made over the immediate through the long term.
- What works well and the strengths of the Delaware County Parks and Recreation System.
- Core services and facilities that Delaware County should be providing in parks and recreation.
- What Delaware County can do responsibly to address issues and seize opportunities.

The following is a summary of some of the major results of the public survey. Note: all of the information from the public participation effort is contained in Volume IV: Public Participation.

Public Survey

In the summer of 2012, the County conducted a public survey as part of this Open Space, Recreation, and Greenway planning effort. It covered a range of topics, focusing on desired recreational amenities and services and existing County Parks. The results of the survey were used to help identify parks and recreation interest and needs as well as to help identify recommendations in this plan. This section contains a summary of the survey results. The complete results of the public survey can be found in Volume IV: Public Participation.

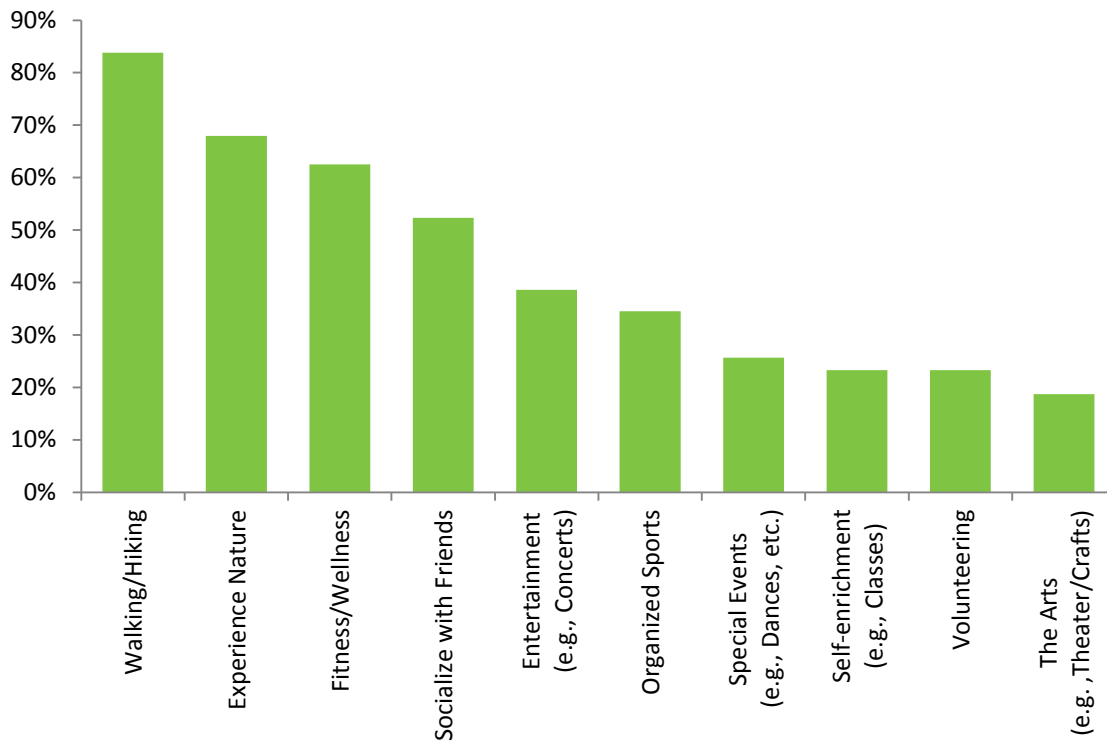
Of the 1,267 participants, 39.7% were 35-49 years old and 35.7% were 55+ years old. According to the 2010 U.S. Census, the median age of Delaware County residents is 38.7 years old. While many of the survey participants are concentrated at or above the median age of Delaware County, it is important to consider that these groups often have children and are acutely aware of the recreational needs of the

County’s youth population. As such, the survey provides a starting point for establishing and developing County and municipal recreational programs.

Desired Recreational Experiences

Of particular significance is the first question in the survey, which asked “*What experiences are you looking for when visiting parks or recreation areas?*” Over 80% of respondents selected “Walking/Hiking.” The second most popular response was “Experience Nature,” followed by “Fitness/Wellness;” each was selected in more than 60% of the responses. See Chart 5-1 for the complete results of this question.

Chart 5-1: Experiences Desired in Parks or Recreation Areas



Chapter 5: Recreation Programming

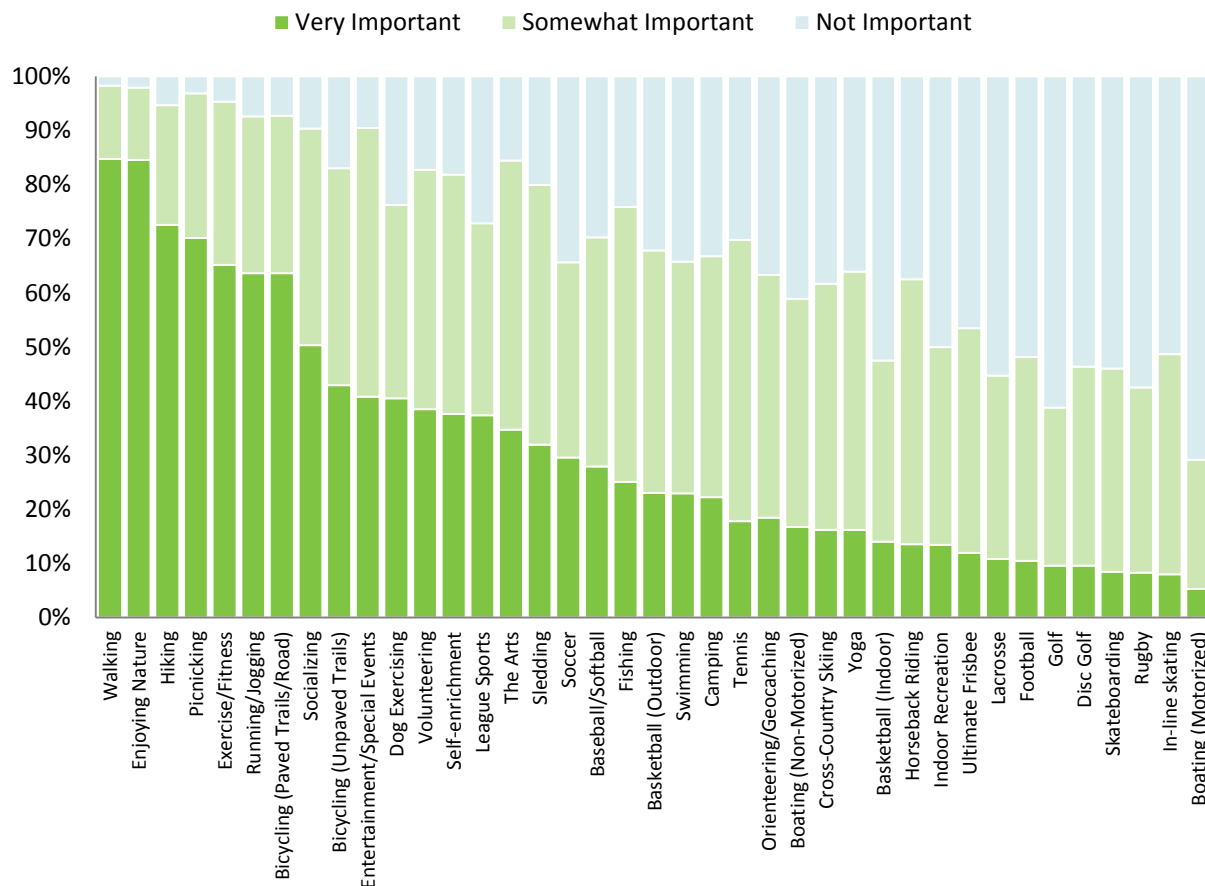
Important Activities in County Parks

As stated above, much of the survey conducted for this plan focused on County parks. The participants were asked “How important is it to provide for the following activities in County parks?”

The results displayed in Chart 5-2 show a clear trend toward passive recreation and fitness activities, such as walking, hiking, running, and bicycling. This emphasis on health and fitness activities aligns with regional and national trends. Another important national trend is the movement to conserve critically important natural areas. This is supported in Delaware County, with 84.6% of responses identifying “Enjoying Nature” as “very important” in the survey. An additional 13.4% stated it was “somewhat important,” while only 2.1% saw it as “not important.”

According to the survey, organized activities, such as soccer or baseball, are most commonly considered “somewhat important” in County parks. This may be due to the fact that organized sports are more often provided at the municipal level in the County. Boating (motorized), in-line skating, rugby, skateboarding, disc golf, and golf, were identified as “very important” in less than 10% of the responses.

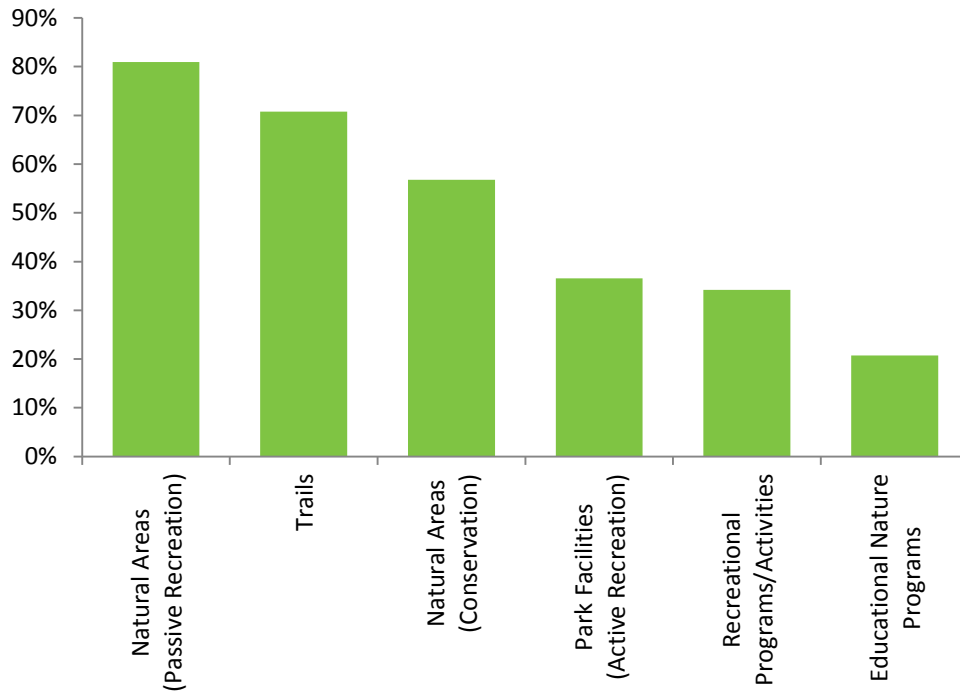
Chart 5-2: Importance of Activities in County Parks



Future Planning Focuses

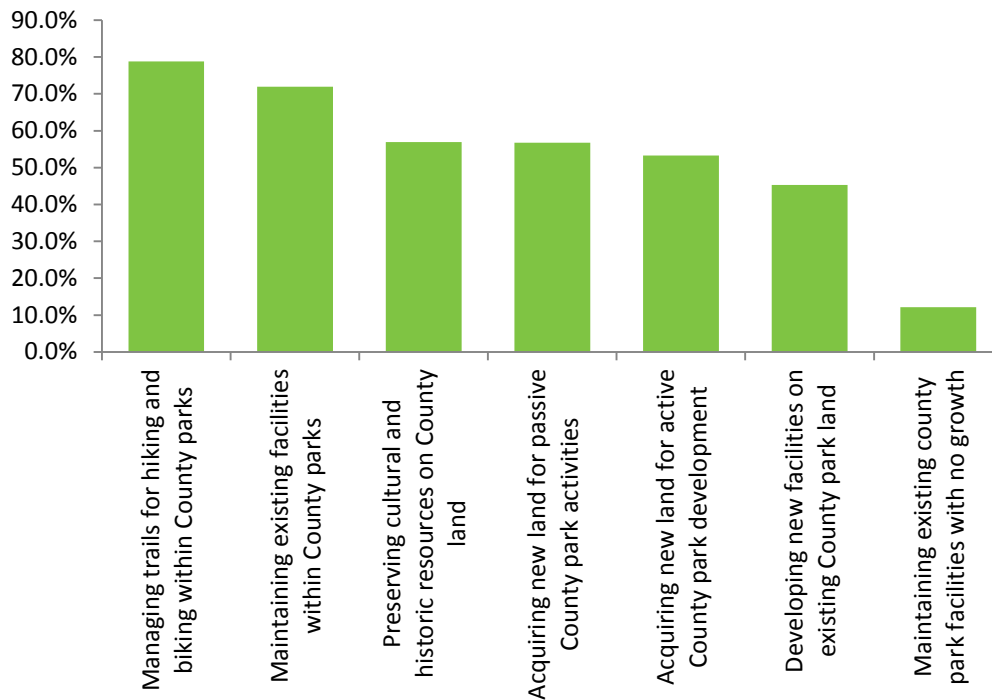
A question on the survey asked: “On which recreation services and program areas should the County place the most emphasis, when planning for the next 10 years?” The top three results included natural areas for passive recreation or open space (81.0%), trails (70.8%), and natural areas for environmental protection (56.8%). The complete results are shown in Chart 5-3.

Chart 5-3: Recreation and Services to Emphasize in Planning over the Next 10 years



The survey also asked the following question: “On which items should the County focus its attention when planning for open space over the next 10 years?” The respondents identified managing trails for hiking and biking within County parks (78.8%), and managing existing facilities within County parks (71.9%) as the two highest priorities. See Chart 5-4 for the full results of this question.

Chart 5-4: Open Space Planning Focus Over the Next 10 Years



NEEDS AND OPPORTUNITIES

Countywide Recreation Trends

It is important for all recreation providers in Delaware County to focus on families, youth, and active aging “Boomers,” as well as ensure equitable access to recreation opportunities in urban, suburban, and rural areas. It is also important to note that parks and recreation is an important ingredient in revitalizing urban areas. It can be a tool to foster youth development, spur health and wellness, connect people with nature, and build strong family bonds in urban communities.

About 14% of the County’s population is 65 or older. Then age cohort of 55 to 59 increased by 45% from 2000 to 2010, indicating a need for active aging “Boomer” recreation services, as well as the potential for tapping a new group of volunteers in parks and recreation. The County also remains very family-oriented; 23.3% of the population is under the age of 18, up from 22% in 2000. The diverse age groups in the County emphasize the need to provide recreation opportunities for all.

In discussions with representatives from municipal parks and recreation departments and boards from across Delaware County, the need for additional sports facilities and trails to be developed emerged as the most widespread issues.

Opportunities

Trails

Trails emerged as a high priority in the public participation process for the Open Space, Recreation, and Greenways Plan. As discussed in Chapter 4: Trails as a Recreation Facility, there are limited long-distance multi-use trails in the County. There are many existing short and unconnected multi-use and hiking trail segments around the County (for example the Ridley Creek State Park Trails and the Smedley County Park Trails), many of which are a part of long distance trails in the planning and development processes.

Some of these trails include the Radnor Trail in Radnor Township, the Chester Creek Rail Trail, the Darby Creek Stream Valley Park Trail, the Leiper-Smedley Trail, and the Newtown Square Branch Rail Trail. There are also other potential trail corridors being explored, including a trail along the former Octoraro railroad right-of-way, the cross-county PECO right-of-way, and the Ridley Creek Greenway.

Currently, the Chester Creek Rail Trail and the Darby Creek Stream Valley Trail Park are open in some areas and under construction in others, while the Valley Forge to Heinz Refuge Trail is under study and will connect southern Delaware County, the Cobbs Creek Trail, and the East Coast Greenway to the Radnor Trail and on to the Valley Forge.

The consultant team recommended that the County provide advocacy, create partnerships with, and potentially guide the formation of trail committees to further the trail development initiatives in Delaware County. There are various different groups involved in trails and their development within the County. The Delaware County Planning and the Parks and Recreation Departments have an opportunity to bring these groups together to help guide development of a robust pedestrian and trail network.

Partnerships

Municipal officials who participated in the planning process expressed a desire to work together to further common countywide parks and recreation goals. They saw the County as being the convener of a network of parks and recreation allies in municipal and county government. Elevating the quality of discussion about parks and recreation and networking these ideas will help to improve parks and recreation and thereby the quality of life countywide. Beyond multi-municipal partnerships, communities can also work closely with other recreation providers to meet local needs. Other providers include athletic clubs, school districts, and private commercial providers. Partnering with tourism agencies, such as the Brandywine Conference and Visitors Bureau, can raise public awareness of parks in the County and help parks and recreation programs become an economic driver for the region.

RECREATION PROGRAMMING TOOLS

There are number of resources available for communities when developing recreation programs. It is important for municipalities to develop recreation programs that are appropriate to address the community's needs. This may involve public outreach similar to that which was conducted for this plan (discussed above). It will allow the municipality to look at the desires of community members and how it matches with existing programs. Partnerships with other agencies and organizations can help to provide new services and reach new audiences, while many funding techniques can be used to support these programs financially. Marketing campaigns for new and existing programs can help communities to remain aware of ongoing events and activities. A combination of these tools can help to support a diverse and strong recreation program.

PARTNERSHIPS

It is important for recreation program providers to coordinate efforts with other agencies and organizations. Coordination can help to provide additional resources and more comprehensive programs for users while simultaneously curbing costs. Some of the most common partners include other levels of government, such as state or county or even nearby municipalities, and private organizations.

State Partners

Pennsylvania Department of Conservation and Natural Resources, Bureau of Recreation and Conservation (DCNR)

DCNR's Bureau of Recreation and Conservation staff is available to assist communities with the development of recreational programming and municipal capacity building for providing recreational services. DCNR has Regional Advisors in the Southeast Region field office in Philadelphia, whose job it is to support and advise local governments and non-profits in recreation and conservation efforts. They can provide direct knowledge, free DCNR publications and guidebooks, and support open space efforts through technical assistance and funding. DCNR also holds training workshops, seminars, and webinars on a variety of topics. Past webinar titles have included "Budget for Success" and "Recreation and Park Board Basics 101."

Pennsylvania Department of Health (DoH)

The Pennsylvania Department of Health (DoH) coordinates all health related programs from the state government through the Physical Activity Program. Recreation and physical activity supports many goals of the DoH and other state agencies. Along with the Department of Conservation and Natural Resources, the DoH is a member of the Pennsylvania Greenways Partnership Commission's Interagency Coordination Team. The work of the DoH helps to promote and support the goals of Pennsylvania Greenways.

The Pennsylvania Governor's Council for Physical Fitness and Sports

The Pennsylvania Governor's Council for Physical Fitness and Sports is a non-regulatory advisory board established to help initiate and support physical activity programs across the Commonwealth. The program helps to support several initiatives, including the Keystone State Games and Pennsylvania Senior Games. The Council also oversees awards and a mini-grant program (Pennsylvania Department of Health n.d.)

The Penn State Cooperative Extension

The Penn State Cooperative Extension operates in each county in Pennsylvania to provide support for a variety of programs, particularly agriculture and nutrition. Many of the programs offered include education events on nutrition, growing produce, and the links between health and food. The Extension office can help to partner with municipalities and other recreation providers to develop education programs. The Delaware County Extension is operated out of Smedley County Park in Springfield. For more details, visit: <http://extension.psu.edu/delaware>.

County Partners

Delaware County Parks and Recreation Department

In the past, the Delaware County Parks and Recreation Department has organized educational, information sharing, and networking meetings and workshops for municipal recreation leaders and staff around the County. The Parks Department can work directly with the municipalities in which its parks are situated, as well as the surrounding communities, when appropriate, to help address park related issues and facilitate events of that can draw a multi-municipal audience.

Delaware County Park Board

The Delaware County Park Board works closely with the Parks and Recreation Department throughout the year to enhance the recreational services the Department provides. It does so by assisting the Department in determining needs and providing insight into potential recreation programs.

Delaware County Office of Services for the Aging (COSA)

One of COSA's goals is to enable senior citizens to maintain their independence and dignity. Promoting physical activity is an important component of its programs to prevent diseases and disability. As described above, COSA partners with County Parks and Recreation Department in organizing the Delaware County Senior games.

Delaware County Planning Department

The Delaware County Planning Department works closely with municipalities. The Planning Department offers technical assistance to municipalities and can help municipalities with planning for open space and recreational needs.

Multi-Municipal Partnership

As the need and desire for diverse recreation programming continues to grow, multi-municipal partnerships provide a cost effective method for municipalities to provide services. Multi-municipal partnerships can come in many forms. Agreements are commonplace between municipal parks departments, school districts, and athletic organizations. These may be informal verbal agreements or more formal written agreements.

Due to the high cost of providing multiple recreational programs, many organizations find it beneficial to enter into joint purchasing agreements, which allow municipalities to purchase common items in bulk, resulting in a reduced unit cost. Many municipalities utilize joint purchase agreements for items such as road salt, but they can also be used for park and recreation equipment and sharing of services.

There is a tremendous opportunity for municipalities to join together to provide services and maintenance of the parks. Entering into joint agreements with one or more adjacent municipalities can help to share the cost of providing a comprehensive parks and recreation system, while also adding to the potential services residents can enjoy. Marple and Newtown Townships, for example, are served by the Marple-Newtown Joint Recreation Commission, which utilizes an 8-member board with representatives from both townships. The Commission offers extensive recreation programs, mostly funded by user fees, similar to programs provided by individual municipalities.

Municipal Park and Recreation Board

A municipal park and recreation board is comprised of volunteer citizens who advise local government officials on matters related to parks and recreation. The board makes recommendations to elected officials who have the final vote on matters. A park and recreation board is formed only after the elected officials formally adopt an ordinance describing the title, number of members, powers, duties, responsibilities, and organizational structure. One of the primary benefits of forming a park and recreation board is the direct involvement of concerned and interested citizens. In addition to providing support to the municipality, it also offers an additional outlet for citizens to provide feedback (Landes, Recreation and Parks Board Handbook 2004). As of 2014, 39 municipalities in Delaware County have some form of a Parks and Recreation Board/Commission.

Private Organizations

Private organizations are often non-profit groups, such as youth athletic organizations, which provide services or facilities at low-cost. Some private organizations are for-profit companies which may charge fair-market rates, but provide different services. These organizations, in conjunction with public agencies, help to create diverse recreational opportunities in a community. A public recreation provider

can work with private organizations, particularly youth athletic organizations, to meet community needs. Municipalities can help to support these organizations by allowing use of fields and providing technical assistance to volunteers.

MARKETING

Building public support for community recreation programs is one of the most crucial components of a recreation program. There are two main aspects to building this support: communities must 1) be aware of the programs offered; and 2) have positive experiences with those programs and the parks system.

Developing good marketing can help to bring new users to parks and build awareness about the programs offered. Marketing has the potential to reinforce a program's image in the community, while increasing awareness and use. As with any marketing market campaign, it is important to identify a strategy to guide the process. The main components of a marketing strategy for parks and recreation programs include:

- Objective (intent of the marketing strategy)
 - Target Audience (who it is you are trying to reach)
 - Needs of the Audience (how your service will address audience needs)
 - Recreation Program (what it is you are marketing)
 - Outreach Strategy (various marketing media to use)
 - Promotion (including price, place, people)
 - Evaluation Plan (examine the effectiveness of the marketing campaign)
- (Landes, Municipal Recreation Programming 2008)

With the exponential increase in social media over the last several years, the medium used in marketing outreach may differ greatly from that of only a few years ago. Many parks systems have created social media accounts that not only promote the parks and recreations programs, but also monitor the reputation of the system. Social media, such as Facebook and Twitter, allow recreation providers to have an interactive marketing campaign that reaches the different audiences. If a community member has a negative experience, a representative of the parks department often reaches out to the commenter to discuss the issue. This provides community members with another outlet to be heard, and offers parks system feedback on current services.

Marketing extends beyond outreach to bring community members to the parks; it also includes the experiences visitors have and the appearance of the parks themselves. The relationships visitors have with park employees, cleanliness, and maintenance are just a few of the items that contribute to the reputation of a parks system in the community. The reputation that develops as a result of these interactions will become an informal marketing campaign for the parks/recreation programs. As such, developing positive relationships and experiences for community members builds public support and pride in the programs, leading to positive word-of-mouth marketing (Landes, Municipal Recreation Programming 2008). For more details on how to market parks and recreation programs, see DCNR's *Municipal Recreation Programming* (2008).

Signage

Identification signage near park entrances or boundaries serves as one of the most straightforward marketing tools. Identifiable signage can help to raise awareness of public open space and parks, while also reinforcing the image, or brand, of the public parks system. In addition to identification signage,

internal park wayfinding signage can direct visitors to unique park amenities, and interpretive signage can educate users on the environmental or cultural significance of a site. As such, a comprehensive signage system is one of the most important marketing tools a community can use to build support for community recreation programs.

ACTIONS:

Objective

OS 4 Enhance and expand access to recreational programs for all ages and abilities.

Actions

Delaware County will...

OS 4.1 Provide technical assistance to municipalities in developing their recreational programs.

OS 4.2 Convene parks and recreation officials from across the County to facilitate coordination of recreation programs.

Municipalities are encouraged to...

OS 4.3 Prepare municipal open space and recreation plans to identify facilities and programs for all ages and abilities.

OS 4.4 Coordinate recreation programs with surrounding municipalities.

OS 4.5 Work with other recreation providers (i.e., athletic clubs, school districts, and commercial providers) to satisfy community recreation needs.

OS 4.6 Enhance and expand local recreation programming.



Implementation Tools

6

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INTRODUCTION

There are numerous techniques available for communities to reach their open space goals. This chapter organizes them into four main types. The first, Open Space Acquisition, is the outright purchase or procurement of lands for preservation purposes. Private Land Protection, the second, involves protecting privately owned lands through incentives. The third type, Green Development and Redevelopment, involves protecting and conserving land through sound development and redevelopment practices. This includes sound land stewardship and methods to enhance environmental qualities of both protected and unprotected open spaces, in undeveloped as well as developed areas. The fourth category consists of various funding techniques to reach community open spaces and recreation goals.

OPEN SPACE ACQUISITION

Open space acquisition is the procurement of land for preservation or public use by public agencies and/or a land conservancy. There are several common mechanisms for the acquisition of open space land, such as fee simple purchase, easements, and donations. They can be used separately or in combination with other techniques listed below to facilitate acquisition.

FEE SIMPLE ACQUISITION

The most effective means of preserving land is through fee simple purchase. Fee simple ownership gives the owner complete control of the land, including all public access and conservation practice decisions. However, fee simple acquisition, particularly purchases at market value, can also be the most expensive. Therefore, many entities interested in land preservation, particularly public agencies or land conservancies with limited budgets, will explore more creative options to acquire open space.

Purchase at Market Value

Purchasing open space at market value is often the most expensive option to acquire open space. As with other fee simple acquisition methods, the purchaser gains complete control of the land. However, the purchase price is typically dictated by market trends, desirability, and land availability in the immediate area. This method is most often used when the seller does not have an incentive or a personal motive to conserve the land.

Bargain Sale

A bargain sale involves the sale of land, at a reduced price, to a municipality or land conservancy by a conservation-minded landowner. The landowner's main motivations for this type of sale include the tax benefits that may be associated with "donating" the difference between the market value of the land and the commercial selling price. This enables a municipality to acquire open space acreage at less than the market price. The municipal solicitor should be contacted for more information regarding the mechanics of such a sale, as well as any potential tax benefits in a particular municipality.

Life Estate

A conservation-minded landowner can donate or will property (or rights thereon) to a municipality or conservation organization upon death or other specified condition, after which the land (or rights)

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reverts to the municipality or organization. The landowners and heirs benefit from reduced taxes because another party has legal ownership or interest in the property, and the owner is assured that the land will be used in perpetuity for open space purposes. In some cases, public access is granted for recreational trails on the property while the landowner is still alive.

PURCHASE AND LEASEBACK OR RESALE

An entity interested in preservation, such as a local government or a conservancy, can purchase land in fee simple, place restrictions on the deed prohibiting certain uses (e.g., residential development), and resell or lease the land to an interested party. The original buyer gains the potential for future use at the current price and may recover some or all, of the purchase price through leasing. The land is maintained in open space and may be developed as a park if and when future demand warrants.

Resale of some or all of the land with deed restrictions may maintain open space levels, relieve the municipality of maintenance obligations, and return the land to the tax rolls. A variation of this technique is possible at the County level when tax-delinquent land parcels become temporary property of Delaware County. For example, the County government might prefer to transfer a parcel in the greenway to the municipal government or other entity, but would first guarantee its preservation by placing a conservation deed restriction upon it.

DONATION

Land or an easement on the land is frequently donated by a private owner, organization, or corporation. Local governments should encourage land donations by pointing out benefits of such actions, including possible federal income and estate tax benefits and public relations value. Prior to accepting a donation, a municipality should consider the location of the parcel and the anticipated development and maintenance costs. If the location is poor and/or projected management costs appear to be excessive, the municipality should strongly consider whether or not to accept the land. In addition to land, corporations and other private parties also frequently provide cash donations for worthy causes, including land preservation.

EASEMENTS AND DEED RESTRICTIONS

Conservation Easements/Deed Restrictions

An easement is a mechanism by which a municipality or conservation organization can obtain a legal interest in private land for public use or conservation purposes. Conservation easements place restrictions or an outright prohibition on development at a lower cost than fee simple acquisition. Under a conservation easement, land remains in current ownership, but the property owner voluntarily agrees to donate or sell one or more rights attached to the land. In the case of a conservation or access easement, it would be the right to develop the land. Furthermore, a conservation easement may also provide the property owner with federal income tax and estate tax benefits. For example, easements may be placed on historic lands or buildings, open space, forests, or farmland. Conservation easements are frequently used for environmental preservation without providing for public use of the land. The easement can be held by a municipality, county, or a private conservancy, such as Natural Lands Trust or Brandywine Conservancy, both of which is headquartered in Delaware County.

Deed restrictions are legally recognized “conditions” placed on all or a portion of public land for a specific purpose. The deed restriction becomes binding on all future owners of the land. It can describe nearly any condition of the land, from certain uses to constricting development.

Public Access and/or Trail Easements

A conservation easement can also be combined with a *pedestrian easement* or *right of public access easement* to allow public access for walking, hiking, horseback riding, bicycling, fishing, and other activities. The easement language typically establishes rules and restrictions, such as limiting when, where, and how the easement may be utilized. PA Act 68, Recreational Use of Land and Water Act (RULWA), assures that the landowner is not held liable for any injuries, crimes, or death associated with public use of the land.

Other Easements

Joint-Use Easement

Electric transmission lines, sanitary sewer lines, and petroleum or gas pipelines have utility easements for their uses. There are opportunities to use these corridors for trail connection, as they contain a cleared pathway. A joint-use easement allows multiple uses under one easement. Municipalities can look for opportunities to enter into joint-use agreements.

Agricultural Conservation Easement

Agricultural conservation easements acquired through state or county programs may be appropriate for the protection of prime farmland. Agricultural conservation easements can help to preserve important soils and helps to maintain the scenic character of the agricultural landscape. Such a program involves the purchase of development from owners of prime farmland if the owner agrees to keep the land in agricultural use. The land must meet certain acreage, soil, and production criteria to qualify for the program. Additional information about agricultural conservation easements is available from the Penn State Cooperative Extension. Delaware County does not have its own program; however, two of its municipalities participate in the state program. For more information, refer to the Agriculture Security Area discussion in the following section on private land protection.

Resources

The Pennsylvania Land Trust Association (PALTA) is the statewide coalition of nonprofit land conservation groups. PALTA has developed model easements and agreements that are available on the association's website. They include:

- Pennsylvania Conservation Easement
- Trail Easement Agreement
- Water Quality Improvement Easement
- Riparian Forest Buffer Protection Agreement
- Fishing Access Agreement

EMINENT DOMAIN

When land for open space or trails cannot be obtained through negotiated fee-simple purchase or easement, a governmental entity (municipality, county, or other) can exercise its right to use eminent domain as a means to acquire land for public purpose. Eminent domain involves condemnation proceedings to acquire land in exchange for "just compensation" from an unwilling seller. The just compensation is usually a dollar amount equal to the fair market value of the condemned land. The condemner must pay all associated costs for acquisition. Eminent domain can be an effective tool for land acquisition; however, it is the acquisition method of last resort.

PRIVATE LAND PROTECTION

There are a number of programs that private property owners can pursue. They have differing degrees of protection and permanence. Tax incentive programs and easements are some of the most common practices used for private land protection.

AGRICULTURAL SECURITY AREAS

The Pennsylvania Agricultural Area Security Law (PA Act 43 of 1981) allows for the establishment of agricultural security areas (ASAs). ASAs are intended to promote permanent and viable farming operations over the long term by strengthening the farming community's sense of security in land use and the right to farm. They are created by municipalities in cooperation with individual landowners who agree to collectively place at least 250 acres in an agricultural security area. The Law allows for the creation of joint municipality agricultural security areas. The ASA is reviewed every seven years; however, new parcels of farmland may be added to an established ASA at any time.

Under the law, a municipality, or group of contiguous municipalities, agree not to pass nuisance ordinances that would restrict normal farming operations. Limitations are placed on the ability of government to condemn farmland located in an agricultural security area for new schools, highways, parks, or other governmental projects.

Having land enrolled in an agricultural security area does not restrict a landowner's ability to use his or her property for non-agricultural development purposes. Landowners who are part of a 500-acre or larger agricultural security area are eligible for consideration to apply to sell an easement (development rights) under the state's Easement Purchase Program, through the local county's agricultural preservation program.

Eligible Properties must be: 1) noncontiguous farm parcels that are at least 10 acres in area; 2) properties made up of viable agricultural land (cropland, pasture, and woodland can all be included in an ASA); 3) properties with at least 50% of the land in Soil Capability Classes I-IV as defined by the county soil survey; 4) zoned to permit agricultural uses.

ASA's currently exist in Edgmont and Concord Townships. Municipalities interested in forming an ASA should contact the Delaware County Conservation District to discuss program requirements. Agricultural security areas are most relevant to the Growing Suburbs as they contain more agricultural land.

PRIVATE LANDOWNER CONSERVATION INCENTIVE PROGRAMS

Preferential assessment programs (i.e., Act 515 and Act 319) can be valuable tools for open space preservation. They involve a property owner signing a covenant (agreement) not to change the land use from open space, farm, forest, etc. in exchange for a reduced tax assessment. Therefore, development is limited for the life of the agreement on the property. In the meantime, the landowner retains ownership and maintenance of his or her land. However, the protection that these programs provide should not be considered permanent. High land values can affect a property owner's decision to leave the program after the agreement expires, or it may offset the tax penalty for breaching the program. Both programs have a minimum 10-acre requirement, and parcels under a single covenant must be contiguous and held in common ownership. As such, both programs are most relevant to communities in the Growing Suburbs.

PA Act 515 (PA Assessment of Open Space Covenant Act – 1966)

Act 515 enables counties to offer preferential tax assessment on land that is used for open space, farmland, forest land, or water supply land (per a minimum acreage requirement). The landowner covenants with the County for a reduced assessment for a period of 10 years (with an automatic yearly renewal thereafter). If the covenant is breached, the landowner must pay roll-back tax penalties to all taxing districts. In Delaware County, the Act 515 Open Space Covenant program is administered by the County Planning Department.

PA Act 319 (PA Farmland and Forest Land Assessment Act – 1974)

Act 319 enables counties to offer preferential tax assessment on land based on the agricultural use value of the land according to the productivity of the soil. Act 319 can be applied to farmland or forest land (per minimum acreage and agricultural income requirements). The landowner covenants with the County for a reduced assessment, subject to terms of the County Board of Assessments and based on soil productivity. If the covenant is breached, the landowner must pay roll-back tax penalties to all taxing districts. In Delaware County, the Act 319 program is administered by the Delaware County Board of Assessments.

GREEN DEVELOPMENT AND REDEVELOPMENT

Green development and green redevelopment are broad techniques that focus on sustainable development patterns and design to address environmental, economic, and social concerns. The principles behind green development are applicable to both new development and redevelopment, with a focus on sustainable use or reuse of land resources using smart growth concepts.

Green Development

Green development practices are important to take into consideration when developing previously undisturbed areas. Many undeveloped lands contain significant old growth forested area which can be fragmented by development, reducing the amount of core habitat. In woodlands, as well as agricultural areas, natural soils and steep slopes are extremely sensitive to disturbances, which can easily cause them to lose their integrity and environmental value. Altering the natural processes significantly affects the water regime of the site. The extension of infrastructure to serve previously undisturbed areas can affect surrounding sites and beyond. Utilities such as sewerage, for instance, may require earth disturbance over long distances to connect to a site.

Green Redevelopment

The considerations for redevelopment sites are much different than for new development. Redevelopment provides an opportunity to improve sites that were previously developed without green development practices. Decreasing impervious surfaces, increasing vegetation, and introducing on-site stormwater management are emphasized. Redevelopment sites are also already served by public infrastructure, requiring less neighboring land disturbance and lower development costs. Where important natural resources are still intact, green development practices should be implemented to preserve their environmental values.

SMART GROWTH

The concepts of green development and redevelopment are also significant components of what is commonly referred to as 'Smart Growth.' Smart Growth covers a range of development and conservation strategies that help protect our natural environment and make our communities more attractive, economically stronger, and more socially diverse. It is about building and developing

communities that positively impact residents' lives (United States Environmental Protection Agency 2013).

The basic principles of Smart Growth include:

1. Mix land uses
2. Take advantage of compact building design
3. Create a range of housing opportunities and choices
4. Create walkable neighborhoods
5. Foster distinctive, attractive communities with a strong sense of place
6. Preserve open space, farmland, natural beauty, and critical environmental areas
7. Strengthen and direct development towards existing communities
8. Provide a variety of transportation choices
9. Make development decisions predictable, fair, and cost effective
10. Encourage community and stakeholder collaboration in development decisions
(United States Environmental Protection Agency 2013)

These ten basic principles can help inform decision- and policy-making at the municipal level in order to facilitate green development and redevelopment.

PENNSYLVANIA MUNICIPALITIES PLANNING CODE

In order to facilitate green development and redevelopment, municipalities should take proactive steps to guide future development through planning and implementation using a variety of tools. The Pennsylvania Municipalities Planning Code (MPC), PA Act 247, as amended is the enabling legislation that authorizes municipalities to plan for and zone land within their boundaries. It is the rule book that sets the standards for land use planning documents, such as county and municipal comprehensive plans, zoning ordinances, subdivision and land development ordinances, and official maps. These land use planning documents and tools can help municipalities to set green development and redevelopment objectives and guide development accordingly.

Municipal Comprehensive Plan

As defined by Act 247, a municipal comprehensive plan "shall include, but need not be limited to, the following related basic elements:

- (1) A statement of objectives of the municipality concerning its future development, including, but not limited to, the location, character and timing of future development, that may also serve as a statement of community development objectives as provided in Section 606.
- (2) A plan for land use, which may include provisions for the amount, intensity, character and timing of land use proposed for residence, industry, business, agriculture, major traffic and transit facilities, utilities, community facilities, public grounds, parks and recreation, preservation of prime agricultural lands, floodplains and other areas of special hazards and other similar uses." (Pennsylvania Municipalities Planning Code, PA Act 247 1968, as amended)

The public participation and input required for preparation of municipal comprehensive plans make their objectives both informative and useful. The comprehensive plan can identify goals specific to green development and redevelopment, and can identify not only locations and intensity for development, but also desired uses including parks and recreation, and land preservation. It should be noted, however, that a comprehensive plan is only a vision document for a municipality. In order to implement the plan,

a municipality must adopt zoning and subdivision and land development ordinances, where appropriate, as well as through use of an Official Map and other special purpose local ordinances.

Zoning and Subdivision and Land Development Ordinances

One of the easiest ways to protect environmentally sensitive land is through a municipal zoning ordinance, subdivision and land development ordinance (SALDO), or other free-standing ordinance. Put simply, zoning ordinances define what land uses are allowed in specific locations, while a SALDO defines how these uses may be built or developed. These and other local ordinances are the legally enforceable measures that support implementation of a municipality's comprehensive plan. Local ordinances contain provisions that permit, prohibit, or define standards for development on or near environmentally sensitive areas. Performance standards, which describe an end result rather than a method, are frequently included in ordinances. The following provisions are often used with regard to green development and redevelopment.

Performance Standards

A performance standard identifies the end result rather than defining a particular method to achieve the standard. The standard sets a minimum requirement or maximum allowable limit on the effects of a use or measurable or identifiable effect such as, but not limited to, noise, vibration, smoke, or odor. Such standards are placed on individual uses in the zoning code, and allow the alteration of zoning or subdivision standards to achieve a desired form of development and protect the public from dangerous or objectionable elements. Examples of a performance standard may require screening or an open space buffer between a noisy, odorous, or unsightly development and a residential area.

Open Space Requirements

The preservation of open space as part of the development process can be facilitated with provisions in the zoning ordinance and SALDO. Open space development provisions are often modifications to existing lot size requirements in each zoning district (e.g., Low Density Residential District: 1.0 acre minimum lot size or 0.60 acre with 40% open space), or a SALDO provision requiring a riparian buffer or replacement of trees.

Mandatory Dedication of Open Space or Fee-in-Lieu Thereof

The Pennsylvania Municipalities Planning Code enables municipalities to require developers dedicate land, or fees-in-lieu of land, for public recreation. Municipalities must have an adopted recreation plan and an adopted ordinance relating to mandatory dedication before land or fees can be accepted. The amount of land required must be related to the demand for recreation land typically created by new development. The required land dedication should be in addition to the preservation of natural features on the land, such as floodplains, wetlands, steep slopes, woodlands, or other sensitive areas. Several municipalities in Delaware County, including Aston, Chadds Ford, Concord, Edgmont, Haverford, Middletown, Newtown, Radnor, Springfield, and Thornbury Townships, and Chester Heights Borough, have open space/fee-in-lieu ordinances.

Conservation Design/Conservation Subdivision

Also referred to as open space development or "cluster development," conservation subdivisions are very useful for preserving sensitive environmental features, vistas, historic/cultural resources, and greenways. When a tract is developed using conservation design, increased density is sometimes allowed in exchange for mandatory preservation or dedication of open space. As an example, under standard suburban development configurations, a 100-acre lot adjacent to a stream might be subdivided into 100 one-acre lots. Under conservation design:

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- The natural features of the site are identified and preserved first (10 acres, for example).
- Open space is then set aside near the stream (40 acres, for example).
- The remaining area is subdivided into the 100 lots originally allowed under conventional zoning, but the lots are only 0.5 acres each.

PRDs and PUDs

Planned residential developments (PRDs) or planned unit developments (PUDs) are large-scale development projects that permit a variety of types of uses on the same tract of land. A PUD is developed as a unit under single ownership or unified control. Its design is regulated under the PRD or PUD provisions of a municipal subdivision and land development ordinance. It is developed as a single unit rather than as an aggregate of individual lots, allowing for design flexibility from traditional siting regulations or land-use restrictions. This greater flexibility makes it possible to include open space as one of the required uses. PRD provisions most often include performance standards as well as numerical standards for area, bulk, and open space.

Negotiated Improvements

Negotiation is a bargaining tool, often used in conjunction with zoning or SALDO provisions involving the use of waivers, the alteration of minor zoning requirements in exchange for desired improvements, increased open space, etc.

Other Ordinances for Environmental Protection

Riparian buffers are the areas within a specified distance from a waterway within which a planted area serves to protect, or “buffer,” the water body from excessive runoff and/or pollution/sedimentation. Riparian buffer widths are dependent on the reason or goal for the buffer. The buffers often range from 50-100 feet wide. The most appropriate buffer size depends on the size of the stream, its location within a watershed (e.g., headwaters), and the existing natural and human-built features along the stream. A two-tiered buffer can set different standards for setbacks depending on proximity to the stream (e.g., no development within 100 feet, and no mowing within 50 feet).

Floodplain regulations restrict development and certain other activities within the 100-year floodplain, frequently in a separate floodplain ordinance. State floodplain regulations represent a bare minimum of floodplain protection, and require, at a minimum, elevation and floodproofing of structures and contain provisions regulating storage of hazardous materials. Ideally, all floodplains should be kept in open space; however, that is not always possible. Activities such as tree-cutting and clearing of vegetation can negatively affect floodplain function and should be prohibited or restricted. Improvements to existing structures in the floodplain are also required when other substantial improvements are made.

Wetlands, high water table soils, and hydric soils are areas containing permanently or frequently saturated soil conditions, standing water, or specific wetland indicator plant species. True wetlands must contain all three wetland parameters. Wetlands are currently regulated at both the state and federal levels. As such, they are most often not regulated at the municipal level. However, many zoning ordinances/SALDOs recognize the need for their protection by requiring wetland delineation to be performed by a qualified wetland as delineated by a qualified wetland specialist, and require proof of any necessary regulatory permits prior to final approval of the plan.

Steep slopes are usually divided into two categories: 15–25% (steep slopes) and 25% and greater (very steep slopes). Development densities and buildings sites are typically restricted on slopes between 15 and 25 %, and restricted or prohibited on slopes 25% and greater. Restricting development on steep slopes helps to prevent erosion by preserving vegetation that maintains the structural integrity of the slope, while also preserving open space. Twenty-one of the 49 municipalities in Delaware County have adopted a steep slope ordinance.

Woodlands – Most SALDOs contain provisions regulating tree-cutting, which often require replacement of trees removed as part of the development process. Identifying a maximum percentage of trees that may be removed *per lot* is another, more protective option. Cutting restrictions can also be placed on floodplain forests and upland forests, respectively, to protect woodlands along stream corridors and ridges.

Agricultural zoning – “Effective agricultural zoning” limits the amount of development on key prime farmland tracts so that most of the land remains in large lots, allowing them to remain more viable for farming. Agricultural zoning must consider soils, physical features, current land use patterns, and other matters. Limiting water and sewer extensions and transfer of development rights may also help to conserve farmland. Radnor Township has an Agricultural Conservation zoning district on its major farmland and golf course areas; however, detached residences are still one of the permitted uses, with a required minimum lot size of two acres.

Official Map

An official map is a map and ordinance identifying lands needed for existing and/or future public projects within the municipality in order to meet objectives from an official municipal plan. Authority for an official map is provided in Article IV of the Pennsylvania Municipalities Planning Code (Act 247, as amended). The official map can be used to reserve a right-of-way which can be very useful to a municipality for trail development, easement acquisition, or other negotiations with developers. Preferably, when a greenway plan is adopted, the proposed greenways should be put on a municipal official map, which would be adopted by the municipality. If a development is proposed on a parcel where a greenway is proposed, the municipality has one year to acquire control of all or a portion of the parcel, or negotiate other arrangements in accordance with local policies prior to development of the parcel.

Land on an official map can be reserved without immediate purchase, giving the municipality time to set aside funds for future acquisition. Having an adopted official map allows a municipality up to 12 months to acquire property or begin eminent domain proceedings, after a property owner gives notification of his intentions to build on, subdivide, or otherwise develop the land identified on it. It can also provide leverage for outside funding as it indicates municipal commitment to purchase land and/or make improvements. Funding agencies are more comfortable supporting projects that are part of a well-thought out strategy that has the community’s support.

It is important to note that an official map is not zoning; nor does it place landowners in jeopardy of having land taken away, or imply municipal responsibility for opening, maintaining, or improving the identified property.

Transfer of Development Rights

Transfer of development rights (TDR) is a zoning tool that can help to facilitate the preservation of environmentally sensitive land. Under a typical TDR system, development rights from an area to be protected can be transferred to another parcel of land more suitable for intense development. The developer receives approval to build on the development parcel at a higher density than would be allowed without the additional development rights from the preserved parcel.

The developer and the owner of the sensitive land privately negotiate a price. The municipality approves the higher density development, and, simultaneously, a conservation easement is placed on the sensitive land. Municipalities may adopt a transfer of development rights program across municipal boundaries within a multi-municipal planning region. This could enable owners of undeveloped land to sell development rights to developers for use in another municipality within the region, thereby relieving pressure on rural lands or greenway lands and helping to sustain developed areas.

TDR has never been put into practice in Delaware County, but Concord Township does have an adopted TDR ordinance.

Other Techniques

Land Swaps or Land Exchanges

Land swaps or land exchanges are useful when a development interest and a conservation interest both own a piece of land more appropriate to the mission of the other. For example, a residential developer may own a wetland area next to a park while a municipal government owns a vacant tract near an existing developed area. With the land exchange, the environmentally sensitive land is preserved by the municipality and the developer builds in an appropriate location. Any mismatches in land value can be negotiated.

“Good Neighbor” Agreements

“Good neighbor” agreements between a developer and municipality may result from negotiations. In this case, the developer adds some sort of improvement or conservation measure to the site as a way of maintaining good relations with the community or municipal government.

MUNICIPAL OPEN SPACE PLAN

A municipal open space plan can be a stand-alone document or serve as the open space component of a comprehensive plan. Similar to the comprehensive plan discussed above, it sets a vision for a municipality’s land specific to open space and recreation. Many municipal open space plans also contain a greenway component. The open space plan is intended to guide municipal policy regarding open space and recreation. It can be used to help determine further land use and open space protection strategies. Municipal open space plans typically include an inventory and analysis of existing open space and recreation in the municipality and identify needs and opportunities that align with the comprehensive plan and forecasted population changes. Completing a municipal open space plan is a vital step in identifying specific needs and opportunities for municipalities looking to guide green development and redevelopment efforts.

LAND STEWARDSHIP

The protection of open space is vital for the protection of natural resources. Sound land stewardship is a mechanism by which municipal officials and residents in both the Growing Suburbs and Mature

Neighborhoods can undertake ongoing efforts to protect and preserve their resources through better management. The techniques apply not only to large tracts of preserved land, but also to smaller privately owned lands and common spaces.

Growing Suburbs have opportunities to focus their efforts on maintaining natural features on municipal or conservation organization protected lands, and encourage stewardship on private property and HOA land. Sustaining the natural qualities of environmentally sensitive land requires active intervention by the landowner due to the pressure from continuous development surrounding many of these parcels. A stewardship plan is often developed to determine the necessary amount and type of intervention required, particularly on large properties.

In addition to maintaining preserved open spaces, Mature Neighborhoods and Central Places (e.g., Downtown Media) should emphasize reintroducing natural resources into the community. This is often referred to as “regreening.” Community efforts can vary widely in scale, from street tree planting to riparian corridor restoration. The concentration of these efforts is bringing the environmental benefits of green spaces back into developed areas, emphasizing enhancement of landscaping and connecting small open spaces. Many regreening projects occur along commercial thoroughfares as an economic development project to improve the aesthetics of the area.

Natural Lands Stewardship

Natural lands stewardship is the management of land in a manner that conserves and enhances the natural features that are found on the site. It may include forest or meadow management or a reforestation strategy. One of the first steps in natural lands stewardship is developing goals for the lands that address the unique features and challenges. The goals should consider adjacent land uses and set realistic expectations. A land management strategy should then be developed which identifies specific techniques, locations, and participants to reach the identified goals.

Natural Lands Trust, based in Media, is a tremendous local resource for information on natural lands management techniques and assistance. The organization published *Land for Life – A Handbook on Caring for Natural Lands* (2014) as a resource for landowners, both private and public. The document provides step-by-step instructions for stewarding lands in a natural setting. For more details, visit <https://natlands.org/what-we-do/caring-for-nature/land-life-handbook-caring-nature/>.

Another great local resource in Delaware County is the Brandywine Conservancy, located in Chadds Ford. The Conservancy focuses conservation efforts in the Brandywine River watershed and surrounding areas, with an emphasis on conservation of water quantity and quality. As part of this effort, the Conservancy offers land stewardship programs to help create and implement conservation plans. For more details on Brandywine Conservancy, visit <http://www.brandywineconservancy.org/index.html>.

Common Challenges

Due to the County’s historical development patterns and current development pressures, it faces many challenges that threaten the natural resources. According to *Land for Life*, the four major challenges are:

Fragmentation/Edge Effects

Remaining forests in this region are isolated patches of former contiguous woodlands, which create large areas of “edge” type forest ecology. Many plant and animal species require the microclimate found in core habitat to survive. Landowners should work to create connections between forested patches.

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Deer Overabundance

The lack of natural predators in this region has led to an increase in deer population to the point of overabundance. It is a burden on the ecosystem because deer consume shrubs and small trees in large quantities, thus limiting growth, particularly of understory, in forested areas. Maintaining deer population at an appropriate level is a priority for landowners in suburban environments.

Invasive Plants

Invasive plants are a threat to the ecosystems of this region because they compete with native plants for resources such as sunlight, water, and space. Developing a management strategy for invasive plants will help diverse native ecosystems thrive.

Water Quality

Development patterns have increased stormwater runoff quantity, while simultaneously reducing the quality. It is important for landowners to maintain land cover. This is particularly true for riparian buffers, which helps to protect the water bodies from pollution and increase infiltration

(Natural Lands Trust 2014).

REFORESTATION

As discussed in Chapter 2: Natural Features, and reinforced by the American Forests Ecosystem Analysis for the Delaware Valley, tree canopy cover contributes greatly to quality of life in an area. For this reason, the County and municipalities should look for opportunities to protect wooded areas, while reforesting others. Depending on the location in Delaware County, the most effective approaches to woodland protection or reforestation will differ. As such, municipalities should develop a personalized strategy that takes into account the specific development patterns and trends of the municipality. For most municipalities in Delaware County, it will require the dual commitment of limiting tree canopy loss and reforestation.

Limiting Tree Canopy Loss

The Growing Suburbs of Delaware County still contain areas of dense tree canopy on a number of parcels. These areas are important not only for their environmental functions, but also for the neighborhood character they provide. Therefore, the County encourages municipalities to take steps to protect tree canopy and forested areas. One of the most comprehensive approaches to limiting tree canopy loss involves the use of municipal ordinances to protect densely wooded areas and/or require tree replacements for trees cleared. Municipalities have the legal authority to encourage and/or require development be conducted in a sustainable manner, such as through conservation by design and smart growth practices, which emphasize the protection of tree cover. Municipal shade tree ordinances can also help to protect shade trees as an asset to and an important characteristic of the municipality. Shade tree ordinances establish requirements and processes for the maintenance, removal, and replacement of trees within a municipality. The replacement ratios are based on the diameter at breast height of the trees removed, and require a specific number of replacement trees of a certain size according to the determined ratio.

Reforestation

Reforestation is most likely the most appropriate approach in the Mature Neighborhoods of Delaware County. Open spaces and greenway areas can also benefit from considerable reforestation, and can

Important Planting Considerations

Select trees that are appropriate for the site to avoid incompatibility with surrounding landscape.

Choose native trees that are adapted to the local climate to limit the need for additional watering.

Plant salt tolerant trees along roadways and parking lots that can withstand salt sprayed on the roadways during the winter months.

Avoid planting tall shade trees in close proximity to aerial utilities.

Plant a diversity of tree species to help promote resiliency. A street lined with trees of the same species is susceptible to being completely wiped out if a disease infects them.

Always call PA One Call at #811 (www.pa1call.org) to identify underground utilities before digging.

The above tips are intended only as general guidelines. Always consult with a certified arborist or other qualified professional when planning tree plantings.

serve as environmental focal points for the surrounding areas. When considering reforestation, there are several approaches a municipality may take. These include everything from establishing a shade tree commission to advise municipal officials, to forming volunteer groups that can help maintain and plant trees.

Shade Tree Commission

Shade tree commissions are created by municipal ordinance and are intended to advise community leaders/staff on administering the community forest, assist in organization of tree planting and maintenance, and develop forest inventories, management plans, and ordinances. Municipalities often task the shade tree commission with review and comment on development plans that propose removal of large quantities of trees. Twenty-six municipalities in Delaware County have shade tree commissions.

Tree City USA

Tree City USA is a national program run by the Arbor Day Foundation. It provides a framework for a community to manage its forestry program. In order to be considered a "Tree City USA" municipality, certain criteria must be met. The municipality must have a tree board or department (e.g., shade tree commission), a tree care ordinance, which sets policies for the community forestry program, a community forestry program with specific budget requirements, and an Arbor Day celebration. As a member of this program, municipalities receive education and strategic advice and standards from Tree City USA when developing their community forest strategy. As of fall 2014, 11 municipalities in Delaware County are Tree City USA members.

Community Forestry

Community forestry depends heavily on the involvement of area citizens. It requires close coordination with volunteer groups of all ages, ranging from school-aged children to senior citizens. Encouraging involvement leads to a greater understanding and respect for the issue of tree cover, while also creating a community with a vested interest in the protection and growth of the tree canopy. Community forestry benefits significantly from advertising community events such as tree plantings and Arbor Day celebrations. Efforts often include memorial tree funds, where relatives/friends can donate trees in memory of loved ones. Adopt-a-tree/street programs, where a group or company can sponsor tree(s) on a street or other area, are also popular. Continued public outreach and education not only leads to more awareness of the issue, but also to greater opportunity and incentive to partner with local businesses that can provide donations in the form of materials or labor.

Multi-Municipal Partnerships

Municipalities can work together toward common goals, particularly

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along Activity Corridors that cross jurisdictional boundaries. For instance, municipalities along an activity corridor can work together to identify objectives and approaches to increasing tree canopy cover. A main component of this could be the planting of street trees to provide a buffer for the commercial businesses, while providing shade for pedestrians. With a multi-municipal approach, costs can be reduced by purchasing trees, tools, and other materials in bulk quantities. For a broader discussion regarding landscaping of activity corridors and streets, see the Green Streets section below.

Post-Planting Program

An important consideration when developing and implementing a municipal tree planting program is the post-planting care required. Trees planted in more natural settings do not require as much monitoring and maintenance as trees planted along busy streets and pedestrian corridors. In natural areas, the trees should be checked regularly for damage from deer. Street trees, however, need to be pruned and maintained to keep a clear distance above the roadway and sidewalks/pathways. In particular, newly planted street trees should be pruned regularly to set desired, upright growth habits. Regular pruning of young trees helps to establish the desired branching patterns that may limit the amount of future pruning required. Regular pruning of mature trees should include the removal of dead/dying branches as a precautionary measure. In both natural and urban settings, trees should be watered regularly. Trees that present a significant hazard should be removed as quickly as feasible for public safety, particularly in high-traffic areas.

Establish Goals

When developing a municipal or community forestry program, municipalities should set a clear goal for tree cover. American Forests recommends 40% tree cover for urban areas in Delaware Valley. Since Delaware County is the second most densely populated county in the state, this goal may not be feasible for each municipality. Achievable goals will vary across the County, depending on degree of existing development. The increase in coverage can be achieved at a number of locations, including tree plantings in parks, along street rights-of-way and in riparian buffers. See the Chapter 2: Natural Features for examples of protection and reforestation efforts in Delaware County.

Prioritize Focus Areas

In order to achieve their desired goals, municipalities should identify specific areas where tree canopy cover can be a focus. See the examples discussed in Chapter 2: Natural Features for information on tree planting efforts in various areas. A common example of a priority area for tree plantings is along streets where the trees can buffer views of parking lots and provide shade for pedestrians. Parkland is an ideal location to emphasize municipal tree plantings because the land is owned and maintained by the municipality. Focusing initial municipal tree planting efforts around primary paths and parking lots in parkland can have a tremendous impact on the user experience. Riparian buffer areas are very important sites for tree planting as stream banks are generally unsuitable for development. Additionally, planting and protecting trees in riparian buffers can help to reduce flooding and pollution from stormwater runoff, and stabilize the stream banks to prevent sedimentation in streams. As such, municipalities should take the benefits that trees provide into consideration when developing a reforestation strategy.

LAND REUSE

Vacant or underutilized land owned by a municipality or redevelopment authority provides opportunities for Mature Neighborhoods to introduce a pocket park or urban garden as part of a strategy to re-green/improve a community.

Pocket Parks

Development of pocket parks is one of the most effective methods for Mature Neighborhoods and Central Places to increase greenspace and provide recreation opportunities. Many pocket parks began as vacant lots that were maintained by local residents who began to clean up lots and use them for various activities. There are several approaches to developing pocket parks. Municipalities can either purchase the land or they can convert vacant land acquired through tax sale (a very cost effective way to increase the amount of open space). Community members and non-profits can come together to apply for funding to develop and maintain unused lands in their neighborhoods. Municipal leaders can provide technical and/or financial support to help these residents construct and maintain pocket parks. Other ways municipal officials can encourage pocket parks include limiting barriers to community gardens and keeping a dialogue open with community residents.

Urban Gardening and Urban Agriculture

As discussed in Chapter 3: Open Space Land Resources, urban gardening/agriculture provides a great opportunity for communities to reintroduce diverse landscapes into developed areas. Turning vacant parcels or areas of lawn into urban gardens makes productive use of land that would otherwise have limited environmental value. Regional and local studies have recognized the values urban gardening can provide communities, such as local food sourcing and educational outreach. There are various challenges to urban gardening, including dealing with compacted or poor soil, but this obstacle can be overcome.

Regional Studies

Municipalities should continue to participate in regional studies examining urban gardening and food systems, such as the *Greater Philadelphia Food Study*, developed by the Delaware Valley Regional Planning Commission in 2010. Regional studies provide significant benefits to municipalities in that they typically show trends, case studies, and best practices to be considered when planning for urban gardens.

Comprehensive Plans

One of the best approaches to promoting urban gardens is to identify them as a community asset in a municipal comprehensive plan. Urban gardening can be used as the centerpiece of a larger sustainability plan or serve a local food agenda goal. After identifying potential locations, types, and scale of desired urban gardening in the comprehensive plan, a municipality will have a sound basis for implementing its goals.

Zoning Ordinances

A barrier that urban gardening regularly faces is that it is often not recognized as a legitimate land use in zoning ordinances. In order to implement urban agriculture as outlined in a comprehensive plan, a municipality should adjust its zoning code and designate agriculture as a permitted use. Further, municipalities can list community gardens as a desired amenity within existing zoning, districts such as planned unit development, traditional neighborhood development, and conservation subdivisions. When promoting urban gardening through zoning, municipalities should carefully consider the appropriateness and desired amount of urban gardening within a community.

Other Ordinances

Many municipalities have ordinances that can affect urban gardening. For example, many communities have ordinances that do not permit residential composting due to concerns relating to odors and insects. Thanks to research and consumer product advancements, many best practices for residential

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composting reduce these concerns. In order to promote urban gardening and the productive use of smaller urban spaces in certain areas, municipalities can amend ordinances to permit residential composting provided the composting process meets or exceeds preset standards of best practices identified in the ordinance.

Municipal Parks

Several parks in Delaware County have specific areas for community gardens. Garden plots are designated and leased to community members for a small fee; the renter uses and maintains the plot for gardening purposes. A local example of this can be found at Rose Tree County Park.

Other

Municipalities can encourage the use of vacant lands for urban gardening as an interim use. Public-owned vacant lots can be used on an interim basis to help maintain and contribute to local beautification efforts, as well as to help reduce crime.

Utility rights-of-ways often have planting restrictions, particularly with regard to heights and root zones. However, due to the amount of space in these rights-of-way, portions of many can be used for urban gardening. Lands owned and maintained by HOAs can also be used more productively. Often, these spaces buffer developments from roadways and are typically large spaces of open lawn. HOAs can work with community groups and residents to identify portions of HOA lands that can be leased out to interested parties for productive uses.

Communitywide Composting

Many communities offer free composting as a benefit to its residents. Free compost can help to reduce operating costs associated with urban gardens. Compost offered at communitywide compost centers is often the product of county and municipal composting efforts, with leaf litter collected throughout the fall. Delaware County Solid Waste Authority provides compost, free of charge, at the Marple Transfer Station in Broomall. These efforts reduce the amount of organic matter sent to landfills while producing nutrient rich soils. Turning the leaf litter into an asset for the community to use at low to no cost is an extremely effective method of encouraging turning unused lands into productive parcels.

GREEN STREETS

Overview

The term “green streets” is commonly used to refer to streets that specifically emphasize landscaped components within the road right-of-way. Green streets enhance the pedestrian experience and improve open space through the emphasis on environmental quality. Green streets typically have less pavement, more trees, and green stormwater infrastructure incorporated into the design of the street.

When considering green streets, it is important to recognize them as one portion of the larger complete streets concept. A “complete street” is one that emphasizes use of multiple modes of transport, such as walking, biking, driving, and public transit. It encourages these uses through the design of the roadway, which typically includes sidewalks and bicycle lanes along landscaped roadways lined with street trees.

Approach

In Delaware County, 14% of the land is occupied by transportation infrastructure. This includes local roadways, interstate highways, and railroad rights-of-way. Implementing components of green streets

can help to improve the visual appearance of the streetscape and increase valuable green stormwater infrastructure.

There are several different methods by which municipalities can further develop green streets. To be most effective, green streets should be developed in conjunction with other county or municipal goals. Green streets can help to contribute to beautification, economic stability, and reduced stormwater runoff. When encouraging green streets, careful attention should be given to the safety of the end users, including vehicular, pedestrians, and bicyclists. Consultation and coordination with PennDOT and other highway agencies is a vital component of any green streets plan.

Complete Streets

The most comprehensive system for developing green streets is to develop a complete streets plan with green streets considered a key component. As discussed above, a complete streets plan develops guidelines for streets with the specific intent of providing space for a multiple modes of transportation. Common concepts addressed in a complete streets plan include design and sizing of bike lanes, street trees, landscaped medians, and traffic calming devices, such as pedestrian bump-outs. A municipality, or consortium of municipalities and the County, could develop guidelines for green streets as part of a complete streets guideline document. Guidelines should be developed for general design of site amenities, best practices for siting amenities (e.g., distance from street corners, distance from light posts), potential maintenance concerns, and potential points of integration with other projects.

Demonstration Street

A common approach for municipalities that desire to develop green streets is to implement a demonstration project, utilizing a parking lot or residential street, to show what green streets would look like in their town. This frequently helps to alleviate concerns on the part of residents who are unsure of the aesthetics and other effects of green streets. Demonstration areas benefit from significant educational signage that clearly portrays the reasoning behind and goals of the green street demonstration area. Demonstration areas provide the most reach when developed along a high traffic area, such as a main street in an urbanized, town, or neighborhood center. These types of projects help to raise awareness about the benefits of green streets in order to build support for the concept.

Partners

Municipalities can partner with a number of organizations to develop green streets. One of the most popular ways to implement a green streets plan is to work with a business improvement district or chamber of commerce. These organizations often promote landscaping amenities along commercial corridors to improve aesthetics and the experience of visitors. Main Street and Elm Street program organizations are also strong partners for green streets due to their focus on site improvements in areas of urbanized, town, and neighborhood centers.

Green Street Design Components

Green streets can address stormwater concerns by promoting bio-retention and enhancing the aesthetics of the street by softening the edges of the roadways and providing shade. The following are commonly implemented stormwater components used in green streets.

Stormwater Tree Trench

A stormwater tree trench consists of a series of street trees that are connected through an underground infiltration structure. The streets are planted in normal tree pits with the space between them covered with sidewalk, the same as typical street trees. An underground trench runs the length of the sidewalk, and is filled with a structural soil that allows water to pass through, while still supporting the weight of the sidewalk. Stormwater runoff from the adjacent street is directed into an inlet that feeds through the stormwater tree trench, where it infiltrates into the soil and is used by the street trees.

Vegetated Roadside Swale

A vegetated roadside swale is placed adjacent to the roadway, but still within the right-of-way, often in areas with no sidewalk. The top of the growing medium is below the elevation of the roadway, with no curb between the swale and the road. This allows the stormwater runoff to flow freely into the swale where it infiltrates into the soil. On roadways with sidewalks, a roadside swale can be placed on the street side of the curb if the road is wide enough, without disturbing the sidewalk. When placed on roads with sidewalks vegetated swales are often narrower than three feet wide.

Permeable Pavements

Permeable pavement refers to pavement systems that allow water to infiltrate through the subgrade and into the soil below. There are several main types of permeable pavements: pervious asphalt, pervious concrete, and permeable pavers. Pervious asphalt and pervious concrete both function very similarly. The mixes of stone and binding compounds used to create these leave small void spaces throughout the depth of the material which allow water to pass through. With permeable paver blocks water passes through the void spaces between the individual pavers and into the soil below. These types of pavers do not use any grout material and are set on a compacted material that remains porous.

Stormwater Planter (Rain Garden)

Stormwater planters are typically found along sidewalks or in parking lots. They are often rectangular in shape, paralleling the roadway along the sidewalk. Stormwater is directed into the planter through curb cuts or a storm inlet, and infiltrates into the specialized planter. The planter is filled with stone, soil, and planting specifically selected for infiltrating water at the particular site.

Stormwater Bump-out

One of the most popular green stormwater infrastructure techniques is the stormwater bump-out. A bump-out is an extension of the curb into the street, typically near an intersection. The space created is filled with stone, soil, and vegetation, similar to the stormwater planter discussed above. Stormwater runoff from the roadway is directed into the bump-out through a curb-cut, or a designated storm inlet. The stormwater in the bump-out then infiltrates into the soil.

Stormwater Tree

A stormwater tree is one planted in a pit along the street edge, with the top of the growing medium slightly below the elevation of the street. A curb cut, or other type of inlet, provides a direct path into the pit for stormwater runoff from the roadway. Along with a tree, the pit can be planted with low growing vegetation to support bioretention.

FUNDING

The protection of open space, natural features, and recreational services and facilities outlined in this plan will require a significant amount of funding. Many of the Plan's actions require money for land conservation, the procurement of easements, and the development of trails. No single source of funding will meet the needs, goals, and objectives of a community. Most grant programs require a match or stand a better chance of receiving a grant award if the project involves a partnership.

For these reasons, implementation of the plan will rely on multiple sources of funding and multiple partners. Funding is briefly described in the following three sections: municipal budgeting, bonds and dedicated taxes for parks and open space, and grants. The sections outline the many ways that governments can fund park operation, maintenance, improvements, and programs, as well as partner with others to lower costs and increase capacity. A park and recreation department can be funded many ways, and no one combination of methods is right for all communities. (Note that techniques for funding for recreation programming were discussed in more detail in Chapter 5, and fee-in-lieu ordinances were described earlier in this chapter).

BUDGETING

The first step a municipality can take to establish a basis and capacity for public open space and recreation programming funding is to create a budget. The two subsections of a recreation and parks budget are the operating budget and the capital budget.

An operating budget is a plan to allocate the funds and estimate the income to finance day to day operation during the upcoming year. This includes elements such as wages and salaries, utility costs, postage, supplies, and other regularly recurring expenses.

A capital budget identifies, prioritizes, and finances expensive projects, including parkland acquisition, construction of new recreation facilities, purchase of new equipment, and major repairs or replacement of existing facilities and equipment. Capital projects are nonrecurring high-cost expenditures with multi-year impacts.

There are also different methods for maintaining the budget and directing funds throughout the year. The two budgeting methods that most recreation and parks departments use are fixed allocation budgets and variable expense budgets. Fixed allocation budgets allocate funds at the beginning of the year and do not change them. Revenue generated goes back into the general fund and not into individual departments (like parks and recreation) to spend. Variable expense budgets tie expenses to the amount of income generated. If revenue is less than anticipated, expenses must be reduced. Income and expenses are tracked closely to meet budget goals. This budgeting system is common in recreation and parks agencies that must generate their operating income and rely on a variety of revenue sources.

Outside of tax dollars from the general fund, revenue that is generated internally through parks and recreation (i.e., parks fees like program or activity fees, facility use, parking) or impact fees (e.g., developers' fee-in-lieu of dedication of open space) should be accounted for carefully in the budget. A written revenue policy is essential to establish a framework for fees and charges that make sense in a particular community. The revenue policy is based on factors like average income level and demand for services, the cost to maintain facilities, and the municipality's philosophy regarding generating revenue. Some types of recreational facilities are revenue generating by their very nature. A few examples

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include large sports complexes, indoor recreation centers, marinas and boating facilities, golf courses, swimming pools, and street/in-line hockey rinks.

There are many other ways that governments can creatively sharpen the skills of professional staff, tap community resources, and create partnerships in order to do more with less. For more details on budgeting, revenue generating, as well as using volunteers, foundations, and friends groups, financing capital projects, business sponsorships, and more, please see DCNR's 2005 publication "Financing Municipal Recreation and Parks."

BONDS AND DEDICATED TAXES FOR PARKS AND OPEN SPACE

In addition to budgeted money from the municipal general fund or parks department-generated revenue, there are a number of other initiatives that can provide funding for open space, recreation, and greenways programs. When large amounts of money are needed immediately or to build up a fund for an anticipated expense, bonds or special taxes are options that have been used to great effect in Pennsylvania.

Bond and Tax Referenda

State statutes limit the amount of debt a local government can incur. Under the Local Government Debt Act (Title 53, Part VII, Subpart B, Chapter 80), the debt limit is 250% of a municipality's borrowing base (average annual revenue over the last three years). Property tax rates are regulated by municipal codes. The Local Tax Enabling Act (P.L.1257, No. 511) sets the earned income tax rate at 1.0% unless voters approve a higher rate. If proposed financing does not put a local government over its statutory debt or tax limits, there is no need for a referendum. If the limits are exceeded, then a public referendum is required. If the municipal government anticipates incurring additional debt or raising taxes in the future, a referendum may still be desirable even if not required (Gordon, 2008).

Taking on debt to acquire bonds is a proven and effective way to finance open space and greenways project. A variety of different types of bond options are available to municipalities. Regardless of the type of bond referendum, an education and awareness program should be implemented to increase public and support in advance of any vote.

Revenue Bonds

Revenue bonds are a type of bond that can be used to fund a recreation facility or program that requires a large up-front cost, but can be paid for over time with municipal revenue generated in subsequent years. They are secured by a guarantee of repayment exclusively from revenues generated from a specific local government activity. In the issue statement that is taken to a vote, the government entity issuing the bond pledges to generate sufficient revenue annually to cover the new program's operating costs, plus meet the annual debt service requirements (principal and interest payments).

General Obligation Bonds

Local governments are commonly able to issue general obligation bonds. These are bonds that are secured by the full trust and credit of the municipality. In this case, the local government issuing the bonds pledges the use of any sources of its revenue (like raising taxes, for instance) to generate sufficient revenues to make the debt service payments on the bonds. A general obligation pledge is sturdier and more sound than a revenue bond. This typically means that the interest rate will be lower than a revenue bond would be.

Property, Real Estate, and Earned Income Taxes

Under Act 153 of 1996, two different taxation tools, property tax and earned income tax, were identified as means to purchase open space land or development rights. The Act amended the Pennsylvania Conservation and Land Development Act, expanding the authority of municipalities to acquire open space interests for a variety of purposes. Under the Act, two taxation tools, property tax and earned income tax were identified as ways to fund the purchase development rights or open space land. An additional type of tax that can be used for open space is real estate transfer tax.

Act 153 requires that revenue from property tax or earned income tax be used to retire debt incurred in the purchase of open space properties or interests or to make new property acquisitions, which will secure an "open space benefit" in following with the Conservation and Land Development Act. These taxes may only be levied following referendum approval from the voters.

Property Tax

Property tax is charged to property owners based on a percentage of the assessed property value, and is usually measured in millage ("mills"), where 1 mill equals \$1 of tax for every \$1,000 of assessed property value. The tax should not to exceed the millage authorized by voter referendum. Although property taxes provide a steady source of revenue, their use to fund open space activities may inhibit the ability of the municipality to raise money for other needed activities. This is due to the limits of the total level of the millage rate. Chadds Ford Township has used this type of tax to help fund its open space program.

Earned Income Tax

Act 153 of 1996 allows the use of a referendum authorizing voters to approve the levy of an increased earned income tax beyond the 1.0 percent Pennsylvania cap. This rule allows this exception solely for the purpose of purchasing open space. Earned income tax is applied only to earned income, and not to assets or pensions. This funding method may be more acceptable and popular in municipalities with a higher percentage of retired senior citizens.

Real Estate Transfer Tax

This is a tax levied on properties at the time of sale and is usually divided between the buyer and seller. Although it can generate significant funding for open space and greenways, it is also an unpredictable revenue stream because it is based on real estate market conditions, which can fluctuate. Radnor Township has used this type of tax to generate revenues for open space acquisition.

GRANTS

There are many potential sources of grant funding for open space, parks, and greenway projects. The most popular funding source is the DCNR Community Conservation Partnership Program (C2P2), which brings together a number of streams of money into one application program. With some exceptions, C2P2 grants generally cover 50% of the budget for a variety of project types including planning, land acquisition, park development, trails, and partnerships.

One of the services that the DCNR Bureau of Recreation and Conservation (BRC) provides is a Funding Resources section on their website at:

<http://www.dcnr.state.pa.us/brc/elibrary/resourcesta/funding/index.htm>

DCNR not only offers technical support for applications to their own grant program, it also provides information concerning other sources of funding, which may or may not be used to match a C2P2 grant. Two publications currently available at the web address above that are worth viewing are:

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- Funding Guide for Recreation and Conservation (DCNR BRC, 2014)
- Finding the Green: A Guide to State Funding Opportunities for Conservation, Recreation and Preservation Projects (Pennsylvania Growing Greener Coalition, 2014)

The above funding guides were compiled for statewide usage. As funding programs change, the content of DCNR's website and funding guides will likely be updated. Keep in mind, the use of these and other written guides is not a substitute for speaking with the regional advisor about a specific project idea.

Below is a list of grants and other funding sources which are applicable in Delaware County and its municipalities. These sources are for projects relating to open space, parks, recreation, greenway, environmental education, and environmental stewardship projects for which municipalities are eligible applicants, unless otherwise noted. While this list is long, it is not exhaustive and will be outdated not long after this plan is first printed, since programs end and new ones are established every year.

Other organizations, both public and private, also offer funding for specific types of projects. The funding, project eligibility, and match requirement vary from year to year. For more information on the programs listed, and the criteria and contact information as of January 2015, see Appendix I-M.

Federal Grants

- Federal Transportation Alternatives Program (TAP)
- National Fish Passage Program Grants
- National Park Service – Rivers, Trails, and Conservation
- Public Works Grants
- Hazard Mitigation Grant Program

United States Environmental Protection Agency (EPA) Grants:

- Targeted Watershed Grants Program
- Brownfields Cleanup Grants
- Clean Water State Revolving Fund
- Environmental Education Grants

Pennsylvania Grant Programs

PA Department of Community and Economic Development (DCED):

- Multimodal Transportation Fund
- Commonwealth Financing Agency (CFA) Grants:*
- Greenways, Trails and Recreation Program (GTRP)
 - Marcellus Legacy Fund, Watershed Restoration Protection (WRPP)

Department of Conservation and Natural Resources (DCNR) Grant Programs:

- DCNR Community Conservation Partnerships Program Grants (C2P2)
- DCNR TreeVitalize Program Grants

Department of Environmental Protection (DEP) Grants:

- DEP Coastal Zone Grants
- DEP Environmental Education Grant Program
- DEP Growing Greener Program Watershed Grants

PA Department of Transportation (PennDOT):

- Multimodal Transportation Fund

PENNVEST (Pennsylvania Infrastructure Investment Authority) Grants:

- Green Initiatives
- Non-Point Source Projects

Pennsylvania Fish and Boat Commission (PFBC):

- Boating Infrastructure Grant Program

Pennsylvania Historic and Museum Commission (PHMC) Grants:

- PHMC Certified Local Government Grant Program
- PHMC Keystone Historic Preservation Project Grants

Delaware Valley Regional Planning Commission Funding Programs

- Congestion Mitigation and Air Quality (CMAQ) Program
- DVRPC Regional Trails Program

Non-Governmental Grants (Corporate, Foundation, and Other)

- Do GOOD Outdoors
- Joint Use Playground Grants
- Keep America Beautiful (KAB) Grants
- The Lorrie Otto Seeds for Education Grant Program
- PECO Green Region Grants Program
- Public Lands Every Day - Every Day Event Grants
- PeopleForBikes Community Grant Program
- Robert Wood Johnson Foundation
- Scotts Miracle-Gro - GRO1000 Grassroots Grants
- Tony Hawk Foundation Skateboard Park Grants
- Water Resources Education Network (WREN) Grants
- Wells Fargo Grants
- William Penn Foundation Grants

ACTIONS:

Objective

OS 5 Implement the actions of the Open Space, Recreation, and Greenway Plan to conserve, enhance, and connect the County’s open space network.

Actions

Delaware County will...

- OS 5.1** Provide technical assistance to municipalities in developing municipal comprehensive and open space plans.
- OS 5.2** Provide technical assistance to municipalities in identifying parcels for open space acquisition.
- OS 5.3** Steward County-owned lands to conserve and enhance the natural features.
- OS 5.4** Provide technical assistance to municipalities in developing green streets programs.
- OS 5.5** Use the Countywide Greenway Plan (Volume II) to develop a countywide network of trails and open space.
- OS 5.6** Use the County Parks and Recreation Plan (Volume III) to guide future decision making for recreational programs and facilities for County Parks.

Municipalities are encouraged to...

- OS 5.7** Adopt zoning and subdivision and land development ordinances which protect sensitive natural features.
- OS 5.8** Promote private landowner conservation through incentive programs and easements.
- OS 5.9** Steward municipally-owned lands to conserve and enhance the natural features.
- OS 5.10** Use the Delaware County Greenway Plan (Volume II) to help prioritize and plan municipal greenway networks in order to link to adjacent municipalities and help contribute to a countywide greenway network.



Action Plan **7**

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OVERVIEW

The purpose of this plan is to guide Delaware County and its municipalities in the planning, creation, and maintenance of an open space network that aligns with the three goals of this plan: Conserve, Enhance, and Connect. In order to do so, the County and municipalities must work together to implement the actions identified in this plan. It requires a long-term, coordinated effort that involves consistent communication with the public.

HOW THE COUNTY SHOULD USE THIS PLAN

As an implementing element of the County's comprehensive plan, *Delaware County 2035*, this Open Space, Recreation, and Greenway Plan can be used to direct the County's open space and greenway projects and priorities, as well as provide direction for the County parks system. The objectives and actions listed throughout the Plan provide the path for the County to meet the overarching goals of conserve, enhance, and connect.

HOW MUNICIPALITIES SHOULD USE THIS PLAN

The Open Space, Recreation, and Greenway Plan is intended to serve as a resource for municipalities. Municipalities should reference this plan when developing their own comprehensive and open space plans, and incorporate the countywide vision as appropriate. Municipalities can also reference Chapter 6: Implementation Tools for an overview of potential approaches to achieving open space goals at the municipal level. The actions listed throughout this plan, and compiled below, offer actions for municipalities to work toward the goals of this Plan.

MAJOR RECOMMENDATIONS OF THIS PLAN

VOLUME I: OPEN SPACE AND RECREATION PLAN

Volume I: Open Space and Recreation Plan (this document) provides an inventory and analysis of the natural features and open space in Delaware County. It also identifies opportunities for enhancing the existing open space network.

Each type and facet of open space reflects the fact that it is an asset to our communities, and is highly valued and irreplaceable. Economic benefits are accrued through open space protection, and it has been shown that it attracts business, fosters tourism, elevates property values, and fosters a pride of place. Delaware County has a wealth of natural features that have evolved over time and remain today. The natural features of Delaware County directly influence and impact the land use and development patterns of the County. In order to conserve, enhance, and connect the County's critical natural features and open space, it is important to develop land use policies that are consistent with the goals of the County's open space vision.

The major recommendations contained in this Plan emphasize the need to conserve and enhance the natural features of Delaware County through the use of sustainable development and redevelopment practices and enhance and expand the recreational open space network to serve the needs of the County's residents. As a way to achieve its goal to "connect," this Plan proposes developing trails that

will connect existing open spaces and cultural destinations. The objectives and actions for the Open Space and Recreation Plan can be found in The Actions section below.

VOLUME II: COUNTYWIDE GREENWAY PLAN

Volume II: Countywide Greenway Plan is Delaware County's first ever countywide greenway plan. The two main purposes behind Volume II are to conserve and connect natural features and to identify a countywide trail network for recreation and alternative transportation. As a result of this dual-purpose, the Greenway Plan consists of two, often overlapping, greenway networks: conservation greenways and recreational greenways.

The conservation greenways consist of the County's stream valleys, streams, and water bodies and their immediate surrounding landscapes. These linear features are the most wide reaching natural feature, and they are highly valuable as plant and animal habitats. The recreation greenways identified represent the Countywide Primary Trail Network. The planned Primary Trail Network is a conceptual vision for a countywide network of multi-use trails that connect to both regional and municipal trail systems. These trails utilize conservation greenways, transportation corridors, and other potential links to establish connections between protected open spaces and other hubs, such as neighborhood centers, commercial centers, schools and colleges, and transit stations. This network consists of 25 multi-use trails, some of which currently exist.

The primary recommendations of the Countywide Greenway Plan include coordinating with regional trail and greenway efforts, maintaining and restoring vegetated riparian buffers along streams, and implementation the Primary Trail Network. Municipalities are also encouraged to prepare and implement municipal greenway and trail plans and to review ordinances and planning documents for consistency regarding conservation greenway recommendations (i.e., riparian buffers, conservation designs, etc.).

VOLUME III: COUNTY PARKS AND RECREATION

Volume III: County Parks and Recreation Plan is the result of careful consideration of the County Park system's needs and opportunities. It includes an analysis of existing County open spaces, recreation programs, and needs. It also contains site development narratives and drawings for six major County parks (Clayton, Glen Providence, Kent, Rose Tree, Smedley, and Upland County Parks), which will serve as long-range master plans for future improvements and management. The public survey conducted for this Plan included questions inquiring about County parks, services, and programs which helped to inform the site development drawings and goals for the County parks system. As a result, the site development drawings include significant space for internal trails, observation of nature, and more active recreation such as soccer and baseball. The plan examines the parks systems and how it is meeting the County's needs and offers recommendations for how to better meet the needs.

The major recommendations for the County Parks system include:

- Improve the "marketing" of County parks (enhance its website and develop consistent park identification signage).
- Enhance the parks according to the site development drawings.
- Increase the sustainability of County parks (meadows, riparian buffers, and green stormwater infrastructure).

VOLUME IV: PUBLIC PARTICIPATION

Volume IV: Public Participation documents the public process used throughout the planning process. The public participation process included a comprehensive public survey, development of a task force, several public meetings, key person interviews, focus groups, and a final comment period. The information gathered from this process was crucial to the development of the Open Space, Recreation, and Greenway Plan. The three goals of this plan, “Conserve, Enhance, and Connect,” were developed as a result of the public’s desire to conserve open space and natural features, enhance their environmental and recreational uses, and connect communities, cultural/historical resources, and natural features.

The public survey conducted had over 1,200 participants from Delaware County. The results of the survey helped to identify parks and recreation interests and needs, as well as helped identify recommendations made in this plan. The complete results of the survey, along with documentation from public meetings and task force meetings, can be found in Volume IV: Public Participation.

THE ACTIONS

The actions detailed throughout this plan are intended to provide direction for Delaware County and municipalities in implementing the County open space vision. A full list of the objectives and corresponding actions, along with timing, from Volume I can be found in Table 7-1.

Table 7-1: Action Plan

OBJECTIVE		
OS 1	Recognize the importance of Delaware County’s natural features as resources to be conserved and enhanced.	
ACTION	<i>Delaware County will...</i>	
OS 1.1	Raise awareness on the part of municipal officials and residents on the importance of conserving natural features and resources.	●
OS 1.2	Promote the use of conservation design principles in new land developments.	●
OS 1.3	Provide technical assistance to municipalities in conserving and enhancing natural features.	●
OS 1.4	Install and enhance riparian buffers on County-owned properties.	●
OS 1.5	Provide technical assistance to municipalities in increasing tree canopy coverage.	●
	<i>Municipalities are encouraged to...</i>	
OS 1.6	Identify significant natural feature areas for conservation.	▲
OS 1.7	Coordinate educational outreach to promote the importance of natural features.	●
OS 1.8	Adopt ordinances providing protection for the natural features of Delaware County.	▲
OS 1.9	Utilize conservation design practices in municipal zoning and subdivision and land development ordinances.	◆
OS 1.10	Prioritize the protection of Natural Heritage Areas identified in the Natural Heritage Inventory of Delaware County.	▲

▲ : Short Range (1-5 Years) ◆ : Medium Range (5-10 Years) + : Long Range (10+ Years) ● : Ongoing

Table 7-1: Action Plan (cont.)

OBJECTIVE	Identify, enhance, and expand Delaware County's open space network in order to serve the needs of the public.	
OS 2		
ACTION	<i>Delaware County will...</i>	
OS 2.1	Promote and support the use and ease of access to large state and national parks and open space in the County.	●
OS 2.2	Further investigate opportunities for enhancing County-owned open space and facilities.	▲
OS 2.3	Provide technical assistance to municipalities in identifying open space needs and opportunities.	●
OS 2.4	Provide technical assistance to communities in developing pocket parks.	●
OS 2.5	Support farming and agriculture, including urban agriculture, in the County.	▲
	<i>Municipalities are encouraged to...</i>	
OS 2.6	Identify opportunities for enhancing municipal-owned open space.	◆
OS 2.7	Identify specific open space needs and opportunities.	◆
OS 2.8	Plan for the protection of open space.	◆
OS 2.9	Engage quasi-public and private land owners in open space and greenway conservation, planning, and outreach activities.	●
OS 2.10	Coordinate with adjacent municipalities and agencies to provide access to parks across boundaries.	●
OBJECTIVE	Create a Countywide trail network that enhances quality of life by connecting people and places.	
OS 3		
ACTION	<i>Delaware County will...</i>	
OS 3.1	Study, plan for, and promote the development of Countywide Primary Trails.	●
OS 3.2	Work with municipalities to inventory existing trails and produce a user-friendly trail guide.	◆
OS 3.3	Coordinate multi-municipal trail planning efforts with local governments.	●
OS 3.4	Coordinate with the regional trail efforts outlined in the Circuit.	●
OS 3.5	Identify potential bicycle and pedestrian connections between existing trails and the County's parks system.	▲
OS 3.6	Identify and suggest potential local connections between linear open spaces.	◆
OS 3.7	Provide technical assistance to municipalities in identifying potential bicycle and pedestrian connections to existing trails and public open spaces.	●
OS 3.8	Implement planned trails when, where, and to the degree appropriate.	●
	<i>Municipalities are encouraged to...</i>	
OS 3.9	Further study and plan for development of municipal trail networks.	◆
OS 3.10	Inventory existing trails and provide information concerning local trails to the public in a user-friendly format.	●
OS 3.11	Identify pedestrian and bicycle connections between public open spaces and recreational sites within their jurisdictions.	▲
OS 3.12	Coordinate with adjacent municipalities to provide for linear linkages between neighboring municipal open space and trail systems.	●
OS 3.13	Identify potential bicycle and pedestrian connections to Primary and regional trails.	◆
▲ : Short Range (1-5 Years) ◆ : Medium Range (5-10 Years) ■ : Long Range (10+ Years) ● : Ongoing		

Table 7-1: Action Plan (cont.)

OBJECTIVE		
OS 4	Enhance and expand access to recreational programs for all ages and abilities.	
ACTION	<i>Delaware County will...</i>	
OS 4.1	Provide technical assistance to municipalities in developing their recreational programs.	●
OS 4.2	Convene parks and recreation officials from across the County to facilitate coordination of recreation programs.	●
	<i>Municipalities are encouraged to...</i>	
OS 4.3	Prepare municipal open space and recreation plans to identify facilities and programs for all ages and abilities.	◆
OS 4.4	Coordinate recreation programs with surrounding municipalities.	●
OS 4.5	Work with other recreation providers (i.e., athletic clubs, school districts, and commercial providers) to satisfy community recreation needs.	●
OS 4.6	Enhance and expand local recreation programming.	●
OBJECTIVE		
OS 5	Implement the actions of the Open Space, Recreation, and Greenway Plan to conserve, enhance, and connect the County's open space network.	
ACTION	<i>Delaware County will...</i>	
OS 5.1	Provide technical assistance to municipalities in developing municipal comprehensive and open space plans.	●
OS 5.2	Provide technical assistance to municipalities in identifying parcels for open space acquisition.	●
OS 5.3	Steward County-owned lands to conserve and enhance the natural features.	●
OS 5.4	Provide technical assistance to municipalities in developing green streets programs.	◆
OS 5.5	Use the Countywide Greenway Plan (Volume II) to develop a countywide network of trails and open space.	●
OS 5.6	Use the County Parks and Recreation Plan (Volume III) to guide future decision making for recreational programs and facilities for County Parks.	●
	<i>Municipalities are encouraged to...</i>	
OS 5.7	Adopt zoning and subdivision and land development ordinances which protect sensitive natural features.	▲
OS 5.8	Promote private landowner conservation through incentive programs and easements.	●
OS 5.9	Steward municipally-owned lands to conserve and enhance the natural features.	●
OS 5.10	Use the Delaware County Greenway Plan (Volume II) to help prioritize and plan municipal greenway networks in order to link to adjacent municipalities and help contribute to a countywide greenway network.	●

▲ : Short Range (1-5 Years) ◆ : Medium Range (5-10 Years) ■ : Long Range (10+ Years) ● : Ongoing

PRIORITIZATION CRITERIA

Conservation of the Delaware County Greenway Network can be achieved through implementation of many types of projects, including but not limited to, planning, developing ordinances, engineering, land or easement acquisition, trail construction, and tree planting. This section identifies two sets of prioritization criteria (Conservation of Green Spaces, Landscapes, and Cultural Resources and Trails).

Municipalities and groups of municipalities can use the lists to develop local objectives for inclusion in their individual greenway network and segment plans and to prioritize planning for and construction of local trails. The criteria could also be considered when municipalities are weighing one project against another.

The lists are also presented in a general order of importance. When prioritizing a project, a municipality might consider simply how many criteria the project meets or use a weighted system. When appropriate, grant applications and letters of support should highlight how these criteria will be met by the project.

Conservation of Green Spaces, Landscapes, and Cultural Resources

The following is a list of potential criteria that might be appropriate for use in the conservation of green spaces, landscapes, and cultural resources in the greenway network. These criteria could be considered when looking to implement projects related to conservation greenways.

The project:

- Protects or positively impacts areas that are biologically and ecologically significant (i.e., identified in the Natural Heritage Inventory of Delaware County).
- Provides an opportunity for floodplain preservation.
- Involves stream protection and restoration (projects such as the establishment of riparian buffers and/or natural stream channel design).
- Protects or positively impacts a locally significant open space that is under threat of a land use change.
- Expands or enhances an existing protected open space usable for both passive and active recreation.
- Could potentially be used as a location for a potential segment of a Countywide Primary Trail.
- Is adjacent or potentially accessible to a Countywide Primary Trail or other trail connected to the Countywide Trail Network.
- Protects important wildlife corridors and bird migration paths.
- Encourages or helps to facilitate protection of important historic and cultural resources.
- Protects important natural landscapes (e.g., steep slopes, woodlands, tree canopy, wetlands, meadows, and vistas).
- Presents an opportunity for brownfield restoration or reclamation (contaminated site clean-up and redevelopment).
- Protects agricultural land.

Trails (Recreation Greenways)

The following is a list of potential criteria that could be used for development of trails in the Delaware County Greenway Network

The project:

- Is a Primary Trail in the Countywide Primary Trail Network.
- Is a priority trail in the Circuit, Greater Philadelphia's Regional Trail Network.
- Is listed in a local trail corridor plan or feasibility study.
- Links directly to a Primary Trail in the Countywide Primary Trail Network.
- Is listed in a local trail network plan within a comprehensive municipal parks, recreation, and greenway plan.
- Is listed in a municipal comprehensive plan.
- Requires the least amount of effort (planning/approvals/cost) compared to other possible projects.
- Links significant local destinations (e.g., schools, parks, shopping or employment centers, or residential areas), where there is direct evidence that trail will be well used.
- Links important historic, cultural, and commercial destinations (man-made resources).
- Provides a safe alternative to an unsafe condition (e.g., a project offering an alternative to pedestrians sharing a vehicular route or crossing a busy roadway at grade).
- Connects established or protected linear greenway corridors and major hubs or destinations.
- Provides a missing link to allow connection of segments as part of a longer trail system.

ROLES AND RESPONSIBILITIES OF IMPLEMENTERS

The two primary implementers of this plan are the County and Delaware County municipalities. Other agencies and organizations can contribute as partners, informational resources, and as sources of technical assistance. It will take the combined efforts of many government agencies, organizations, officials, stakeholders, and motivated citizens to implement all the ideas and actions presented in this plan. This section will lay out roles of implementation and sources of assistance for the implementation of the Open Space, Recreation, and Greenway Plan.

MUNICIPALITIES

The role of the municipalities in protecting natural resources, providing open space, and implementing greenways is significant. They have the power to acquire and hold land and enact local codes and ordinances. Involvement at the municipal level will require participation by governing bodies, planning commissions, park and recreation staff, and environmental advisory councils, as well as park boards and open space committees, environmental advisory councils, and citizen committees focused on open space, trail, and recreation planning.

The key roles of municipalities will include:

Land Use Planning and Regulation

- Prepare and adopt comprehensive municipal or multi-municipal plans for greenway and trail network. This could be either a stand-alone plan or a part of an open space, park, and recreation plan.
- Review zoning and subdivision and land development ordinances to strengthen environmental provisions designed to protect natural resource features.

Special Purpose Studies

- Develop local trail corridor plans or feasibility studies.

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Open Space, Recreation, and Greenways Development and Management

- Acquire open space as needed to meet the recreational needs of the community.
- Enhance community recreation programs to meet the needs of the community.
- Develop local greenway and trail systems. The first priority should be Countywide Primary Trails within the municipality or, if none, making connections to existing or planned primary trails in adjacent municipalities.
- Provide for local parkland and recreational needs by appointing a park board and recreation board or committee.

Land Preservation and Stewardship

- Acquire land and easements for publicly accessible greenways and preservation of natural features.
- Communicate with property owners on long term plans and conservation principles and practices.

Education and Community Engagement

- Assist with educational and outreach efforts to promote natural resource protection and land conservation.
- Form partnerships and make use of friends groups, homeowners associations, and civic and business associations.

DELAWARE COUNTY

The County has roles to play in open space and greenway development and preservation. The degree to which County departments undertake implementation activities is at the discretion of County Council.

The County recognizes its responsibility to operate its parks system, and its potential to take leadership and oversight roles in the development of trails, where feasible. Equally important, the County recognizes the coordination role it can play in the protection of open space and natural resources.

Please refer to the specific actions continued in Volume II: Countywide Greenway Plan and Volume III: County Parks and Recreation Plan with regard to trails.

It is most likely that, under the leadership of County Council, the Planning Department and the Parks and Recreation Department will be responsible for the implementation of many of the action items in this plan, particularly as they relate to planning and improvement of County parks or facilities. However, there are a number of other County departments and agencies that will have specialized roles in the implementation of this plan.

Delaware County Parks and Recreation Department

The Parks department oversees over 621 acres of County-owned public open space. The mission of the Delaware County Parks and Recreation Department is to provide and promote quality recreation programs, facilities, and services to the residents of Delaware County.

The Delaware County Parks and Recreation Department will play a primary role in the management, upgrade, and improvement of the Parks system, as well as conservation of the greenway network and development of a trail network. Its roles include:

- Managing and maintaining the grounds and buildings in County Parks and open spaces.

- Developing and maintaining trails within County Parks.
- Honoring use and maintenance agreements between the County and municipalities or organizations where the other party manages or maintains the park.
- Working closely with the Planning Department on planning projects that impact County Parks.
- Communicating with municipalities containing County parks on matters such as safety and security, traffic, and adjacent landowners.
- Convening meetings and workshops with municipal parks leaders for information sharing.
- Promoting the County Parks system as a resource for County residents.

The Delaware County Park Board is that advisory body, appointed by Council for the purposes of overseeing the activities of the County Parks and Recreation Department, and should provide support for the Parks and Recreation Department.

Delaware County Planning Department:

The Delaware County Planning Department will likely take the lead for projects involving the preparation of plans and studies, and for recommending to Council policies regarding open space and greenways and for multi-municipal or countywide level implementation of this plan. Specific roles of the Planning Department staff include:

- Provide technical assistance and support to municipalities in planning, mapping, and applying for grant funding.
- Providing guidance on the protection of natural resources and provision of open space, recreational facilities, and greenways.
- Promoting the use of open space protection tools.
- Convening and facilitating of partnerships for multi-municipal projects, including trails.
- Review and comment on development plans for natural features, open space, and greenways.
- Reviewing land development plans.

Delaware County Open Space Task Force

The Open Space Task Force was convened to guide the efforts behind the development of this Plan. Due to the success of the group, the group should continue to meet periodically to guide and provide support for implementation of this Plan.

Delaware County Conservation District

The Delaware County Conservation District is both a County department and a unit of state government. Every County is required to have a conservation district by state law, and it receives operations funding from the Commonwealth. The Conservation District works to promote the conservation of natural resources throughout the County. Roles of the conservation district include:

- Reviewing development plans for compliance with environmental regulations relating to erosion and sediment control and stormwater management.
- Working with watershed organizations on projects that include wetland restoration, conservation or restoration of rare or threatened species habitat, and protection of water quality.
- Working with landowners to create vegetated riparian buffers.
- Educating farmers on best management practices for the protection of soil and water quality.

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- Convening the Delaware County Agricultural Land Preservation Board, as needed, for the oversight of applicable programs such as the PA Agricultural Land Preservation Program.
- In conjunction with the County Planning Department, provide guidance to municipalities and individual property owners regarding greenway conservation.

Delaware County Intercommunity Health Coordination

The Delaware County Department of Intercommunity Health Coordination is responsible for implementing health coordination programs throughout the County. This Department acts as a referral and resource center regarding public health issues, handling requests received from the community at large, as well as from other agencies concerning various health topics. Through active participation in a wide of range of public health and community wellness related coalitions and committees in Delaware County and the southeastern Pennsylvania region, Intercommunity Health Coordination is able to share valuable information on a variety of topics. Promoting the health benefits of physical activity is a fundamental way that Intercommunity Health Coordination can help to advance its goals, while helping to implement the actions of this plan.

With the assistance of local hospitals and human service organizations, the Department is able to direct residents to many beneficial health programs offered throughout Delaware County and its surrounding area. The following are some ways that Intercommunity Health Coordination can help to implement the actions or further the goals of this plan:

- Marketing and awareness of recreational programs with physical activity to the public and to healthcare and recreation providers.
- Creating awareness of the importance of the health benefits of physical activity.
- Directing residents to many beneficial health programs offered throughout Delaware County and its surrounding area that cross promote physical activity and parks.
- Cross-promotion with County Parks and Recreation on outdoor events and activities and the promotion of their health benefits.
- Holding or sponsoring health programs and events in parks.

Delaware County Industrial Development Authority (IDA)

The Delaware County Industrial Development Authority is separate from the County government, and operates out of the Delaware County Commerce Center. As such, it has the authority to purchase and hold land for future uses as necessary. As the IDA acquires parcels (typically previously developed sites), it can work with other County agencies and departments and potential buyers to develop the site with the goals of this Plan in mind.

IMPLEMENTATION PARTNERS AND SUPPORT

In addition to the County and its municipalities, many other organizations, agencies, and groups have a role to play in implementation of this plan. Some of them can provide technical assistance or funding for projects. Others can provide expertise for educational programs or provide volunteer manpower. Existing organizations and programs detailed in the following sections can help to further the goals of this plan and help implement its action items.

COMMONWEALTH OF PENNSYLVANIA

There are many agencies at the state level that can play a role in implementing the actions contained in this plan. The following is a list of state agencies available to provide funding and technical assistance for implementation of this plan:

Pennsylvania Department of Conservation and Natural Resources (DCNR)

DCNR is the agency responsible for implementing the state outdoor recreation plan and the state greenway plan, *Pennsylvania Greenways: An Action Plan for Creating Connections*. The three bureaus discussed below provide technical assistance and funding, making DCNR a valuable partner in implementation of this plan.

DCNR Bureau of Recreation and Conservation

DCNR's Bureau of Recreation and Conservation provides support for open space conservation and recreational improvements. They offer grant programs and technical assistance to both county and municipal agencies for planning and implementation of open space goals. The DCNR regional advisor is a valuable resource that offers communities information and advice on how to pursue its goals.

DCNR Bureau of State Parks

The Commonwealth is a major owner of land in the County and, through the DCNR Bureau of State Parks, a provider and manager of open space and recreational facilities. Delaware County's Ridley Creek State Park offers outdoor recreation programs and serves as an outdoor classroom for environmental education. State Park managers have considerable proficiency in managing recreation and park facilities. They can be a source of local technical assistance and partnership opportunities. The DCNR Bureau of State Parks can contribute to the implementation of the open space and greenway network through the continued protection of the park and the development of additional trails.

DCNR Bureau of Forestry

DCNR's Bureau of Forestry provides a number of channels to help communities and private citizens make informed forestry decisions. A DCNR Service Forester is assigned to each Pennsylvania county to advise residents on forest management and urban forestry. This person can be a valuable resource, both to municipalities and to private forest landowners. The Community & Urban Forestry Assistance program offers community organizations information on all aspects of forest ecology and management. Forest management demonstration areas, located across Pennsylvania, provide examples of a variety of management practices. Program areas within the Urban and Community Forestry section include Urban Forestry, Community Forestry, Watershed Forestry, Stewardship Forestry, and Conservation Education.

Pennsylvania Department of Environmental Protection (DEP)

PA DEP could provide technical assistance and funding for implementation projects such as:

- Preserving environmentally sensitive areas such as wetlands, floodplains, steep slopes, riparian buffers, and prime agricultural soils.
- Protecting natural areas that are habitats for rare, threatened, or endangered species.
- Preserving greenways contributing to wildlife habitat and travel corridors.

Pennsylvania Department of Transportation (PennDOT)

PennDOT's role in plan implementation includes allocating federal funds and providing technical assistance for parks, open space, and trail projects with a clear transportation function. It could also be involved in integrating greenway elements (trails, green streets, complete streets, etc.) into municipal

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transportation infrastructure planning and development projects. PennDOT also administers the Safe Routes to School Program, supported by both state and federal funds, which encourages, promotes, and provides funding for projects and partnerships that make the transportation networks more usable for bicyclists and pedestrians.

Pennsylvania Department of Community and Economic Development (DCED)

DCED and its staff have the following roles in the implementation of this plan:

- Providing greenways training for county, regional, and municipal planners in conjunction with its public education initiatives relating to land use being coordinated by the Governor's Center for Local Government Services.
- Providing technical assistance for open space and greenway projects related to economic and community development, travel and tourism, and land use planning.
- Providing funding opportunities for revitalization and redevelopment projects, and historic resources rehabilitation projects identified in the open space and greenway network, or which involve parks and recreation.

Pennsylvania Fish and Boat Commission (PFBC)

The mission of the Pennsylvania Fish and Boat Commission is to protect, conserve, and enhance aquatic resources and provide fishing and boating opportunities. The PFBC should be sought out for assistance related to recreational boating facilities, amenities, and procedures. The PFBC administers grant funding programs that can help with the establishment of water access points that can contribute to the development of water trails.

Pennsylvania Historical and Museum Commission (PHMC)

Promotion and preservation of Pennsylvania's history are the functions of PHMC. Its responsibilities include the collection, conservation, and interpretation of Pennsylvania's historic heritage. PHMC can provide technical assistance and funding for various historic and cultural resource initiatives, including historic site preservation projects and heritage education programs relating to learning opportunities and landmarks along greenways.

INSTITUTIONS, ORGANIZATIONS, BUSINESSES, AND UTILITIES

School Districts

School districts help to meet local recreation and open space needs by entering into agreements with municipalities and allowing community and municipal use of school playgrounds and ballfields. In the event that a school property is proposed to be closed or vacated, school districts could also work with municipal government to save the open space and recreational land associated with it. Public schools (as well as private schools) can also take part in implementing educational components of the Plan by including them into their curriculum. The Delaware County Intermediate Unit can play a role by helping to coordinate these educational components countywide.

Institutional Property Owners

Institutions with significant land holdings can properly manage their lands and possibly offer easements for trails where they are advantageous to the municipal or county network. Depending on the function of the institution, they may be able to assist with educational components of Plan implementation and

marketing. Such institutions include healthcare providers, colleges, private schools, and religious organizations.

Land Trusts and Conservancies

Land trusts and conservancies have already played a significant role in the preservation of open space and natural resource areas in Delaware County. Some ways that they can continue to assist the County with implementation of the Plan include:

- Contributing to the protected open space network and preservation of natural areas through land acquisition and/or conservation easements.
- Partnering with municipalities to obtain easements which would allow for the provision of proposed trails or access to other recreational facilities.
- Developing and assisting with education and outreach efforts to teach the public about the importance of open space and greenways.
- Consulting with private land owners about the preservation and proper management of their lands.
- Working with landowners to encourage conservation easements on private property to protect critical natural resources.

Businesses and Foundations

A role played by some businesses and foundations is donation of funding for open space and greenway projects and initiatives. Where corporations are large landowners with open space holdings, they can partner with municipalities to properly manage their lands and possibly offer easements for trails. A business can partner with a government entity to sponsor a park, play field, trail, or special event, and contribute funding for planning, acquisition, or development of a public open space or trail. Businesses could be part of programs designed to encourage adoption of different open space and greenway network elements, such as stream corridors or trails segments.

Utility and Infrastructure Companies

Volume II: Countywide Greenway Plan, proposes the utilization of unused rail and power line corridors for multi-use trails. Utility and infrastructure companies can become involved in the development of these trails by providing easements. They will also be involved in addressing safety and liability issues.

PECO, the electric utility serving Delaware County, owns not only linear space, but also some parcels of open space that contribute to the open space network. PECO also contracts to trim street trees growing around overhead electric cables, and they should work with municipal governments to do this in an environmentally sensitive manner.

Sanitary sewer authorities control sewer rights-of-way and require access to maintain their facilities. Siting trails in sewer rights-of-way can be mutually beneficial because they provide easy access for servicing utility lines. Utility and infrastructure companies may also own open space land that could be used for open space purposes or serve as part of a greenway system and should manage the land accordingly.

Because public water companies like Aqua PA are concerned with the water quality in source water streams, they have a stake in anything that impacts water resources, including development of new recreational facilities in parks next to streams. Water companies and other utilities will be invited to

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serve on park master plan steering committees and/or to participate in some other capacity, especially when the parkland has an influence on water resources or a utility corridor they utilize.

PROPERTY OWNERS

Individual Property Owners

The participation of individual property owners can greatly contribute to the successful implementation of the Plan. All of the following are roles landowners can play in implementation:

- Proper management and stewardship of privately owned open space.
- Offering access easements for trails.
- Granting conservation easements for the protection of natural resource features.
- Protecting privately owned historic and cultural resources by documenting and maintaining them.

Developers

Developers can play a significant role in the implementation of the Plan by incorporating greenway elements and open space protection into their developments. Developers also have opportunities to increase open space or provide for trails as part of the redevelopment process. Municipalities can encourage this by providing incentives and regulations and negotiating improvements that achieve the goals of the plan. Although many municipalities have ordinance provisions that require developers to preserve natural features and provide open space, they should look for additional opportunities to implement or connect with nearby greenway resources.

Open space protection tools for developers include:

- Use of conservation design/conservation subdivision techniques.
- Establishing riparian buffer zones adjoining streams.
- Providing recreational lands and trails, either for a homeowners association or for dedication to the municipality.
- Setting aside and protecting natural features and resources such as steep slopes, wetlands, and rare species habitats.

CITIZEN ADVOCACY GROUPS

Recreation Clubs and Organizations

Recreation clubs and associations based in individual communities are composed of people of all ages, but primarily of the children and youth who participate in team-based athletics. Club members and family often volunteer for cleanups at park locations. When there is a usage agreement with the owners of the park, the organizations also maintain athletic fields and facilities. Swim and golf club maintenance staff, as well as volunteers, can help properly manage, maintain, and restore their land and its natural features.

Friends Groups

Friends groups form when citizens gather in support of a common cause such as the building of a rail trail, the care and beautification of an existing park or historic site, or the protection of an open space under threat. Friends groups are grassroots and entirely made up of volunteers and interested citizens. They usually form on their own without any suggestion by government officials. The members genuinely

care about their place of focus and have high levels of enthusiasm. This can translate into their being a great asset for many kinds of volunteer help, in assistance to municipal officials, planners, parks departments, and other parks and recreation providers. Park managers need to develop a good communications and a relationship with the group's leadership to identify mutually beneficial activities/projects. A few examples of active friends groups in Delaware County include the Friends of Ridley Creek State Park, Friends of the Chester Creek Branch Rail Trail, Friends of Glen Providence Park, and the Friends of Brandywine Battlefield.

Watershed Organizations

Watershed organizations are made up of citizens advocating for watershed or multi-watershed area. They are dedicated to the protection and enhancement of the watershed's resources, including water, wildlife, historic sites, and the floodplain. Besides support from members, they also receive donations and support from businesses, land trusts, water companies, local governments, and government agencies. In Delaware County the two main watershed organizations are the Darby Creek Valley Association and the Chester Ridley Crum Watersheds Association.

The Darby Creek Valley Association (DCVA) is a well-established, all volunteer, nonprofit organization with over 100 members focusing on the watershed's area in Delaware, Chester, Montgomery, and Philadelphia Counties. Its primary mission is public education. DCVA is responsible for an annual conference, an annual stream clean up, educational programs, and partnerships with historical sites in the watershed. DCVA has a volunteer monitoring network, "StreamWatch," which has a strong environmental education component, reaching out to local schools and streamside residents. Website link: <http://www.dcv.org>

The Chester-Ridley-Crum Watersheds Association (CRC), founded in 1970, focuses on three watersheds: Chester, Ridley, and Crum in Delaware and Chester Counties. It is a 501(c)(3) nonprofit organization with over 500 individual, municipal, business, institutional, and nonprofit members. CRC's members and full-time director are devoted to the protection of the creek valleys, the natural environment of the watersheds, and the health, recreational, and quality of life benefits they afford the residents. CRC activities include tree plantings, water quality studies, annual stream clean ups, and educational programs.

Website link: <http://crcwatersheds.org>

Watershed organizations can assist with the implementation of the Plan in a variety of ways including:

- Providing volunteer labor to assist in ongoing trail and passive park maintenance.
- Conducting projects such as stream clean-ups and riparian and stream restorations.
- Organizing educational programs for the public, stakeholders, and municipal officials regarding natural resource protection, stewardship practices for landowners, and conservation development principles.
- Supporting the conservation of open space and natural features.
- Sharing knowledge and providing assistance during the planning of potential trails, especially those along streams.

Greater Philadelphia Bicycle Coalition (GPBC)

The Greater Philadelphia Bicycling Coalition is the bicycling advocacy group serving the region. The Coalition is also one of the leading partners building the Circuit, the regional trails network. Bike Delaware County is the arm of GPBC that focuses on issues and projects in Delaware County. Bike

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Delaware County's goal is to see the implementation of the Delaware County Bicycle Plan and the building of the Circuit trails. GPBC can help implement this Plan by advancing multi-use trails and bicycle friendly components of green streets initiatives.

ADDITIONAL ORGANIZATIONS OFFERING TECHNICAL ASSISTANCE

Delaware County Transportation Management Association (DCTMA)

DCTMA is a private, non-profit organization dedicated to improving the transportation network serving Delaware County. Its mission is to provide a forum for employers; local, county, and state agencies; and transit authorities in order to cooperatively address transportation issues and coordinate a cost-effective and efficient transportation management strategy for the County. DCTMA helps to advance a cleaner, healthier environment, sustain the quality of life, and enhance the economic vitality of the County through its cooperative efforts, participation in planning activities, and promotional campaigns. DCTMA can help implement this Plan by promoting the development and use of trails, sidewalks, and bikeways as a sustainable means of transportation within and between communities and other destinations, and by promoting the use of public transit as a way to access parks, trails, and recreational facilities.

Penn State Cooperative Extension

The Penn State Cooperative Extension in Delaware County provides local residents with easy access to the resources and expertise of the Pennsylvania State University. Extension agents deliver unbiased, research-based information through educational programs, publications, and events. Agents can also answer questions on a wide variety of topics such as horticulture, forestry (rural and urban), gardening, and agriculture. The Delaware County extension office is located in Smedley County Park.

Pennsylvania Recreation and Parks Society

The Pennsylvania Recreation and Parks Society (PRPS), an affiliate of the National Recreation and Park Association (NRPA), is a statewide membership organization that provides education and training, technical assistance, and information on funding opportunities to local, county, regional, and state recreation providers. It is recommended that all municipal park boards have a PRPS membership. Group memberships for municipal parks advisory boards are available at a reasonable cost. The Recreation and Parks Technical Assistance Program (RecTAP) is a membership service of PRPS. Under this service, an experienced professional will act as a peer consultant, spending up to three days working with the client, including an in-person visit. The purpose is to help solve an existing problem or upgrade services in a specific area, and provide implementable hands-on recommendations. RecTAP grants have a maximum value of \$1,500 and no matching funds are required.



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Appendices

APPENDIX I-A: GLOSSARY OF ACRONYMS

- AASHTO** – American Association of State and Highway Transportation Organizations. Sets national standards for trail design.
- ADA** – Americans with Disabilities Act (1990)
- BMP** – Best Management Practice (as referenced in the Pennsylvania Handbook of Best Management Practices for Developing Areas, 2007). The new term for stormwater BMP is “stormwater control measure.”
- CCP** – Comprehensive Conservation Plan
- COSA** – County Office of Services for the Aging
- CPRP** – Certified Parks and Recreation Professional
- CRC** – Chester-Ridley-Crum Watersheds Association
- CSA** – Community Supported Agriculture
- DCCD** – Delaware County Conservation District
- DCED** – Pennsylvania Department of Community and Economic Development
- DCNR** – Pennsylvania Department of Conservation and Natural Resources
- DPCD** – Delaware County Planning Department
- DCVA** – Darby Creek Valley Association
- DEP** – Pennsylvania Department of Environmental Protection
- DoH** – Pennsylvania Department of Health
- DVRPC** – Delaware Valley Regional Planning Commission
- EAC** – Environmental Advisory Council
- FEMA** – Federal Emergency Management Agency
- FIRM** – Flood Insurance Rate Maps
- HOA** – Homeowners Association Land
- IBA** – Important Bird Area
- IMA** – Important Mammal Area
- LLC** – Limited Liability Corporation
- LP** – Limited Partnerships
- MPC** – Municipalities Planning Code
- MPO** – Metropolitan Planning Organization
- NHI** – Natural Heritage Inventory (formerly Natural Areas Inventory)
- NRPA** – National Recreation and Park Association
- NWI** – National Wetlands Inventory
- OHCD** – Delaware County Office of Housing and Community Development
- P&W** – Pennsylvania and Western Railroad
- PEC** – Pennsylvania Environmental Council
- PECO** – Philadelphia Electric Company, an energy delivery unit of Exelon
- PEMA** – Pennsylvania Emergency Management Agency
- PennDOT** – Pennsylvania Department of Transportation
- PGPC/PGPAC** – Pennsylvania Greenway Partnership Commission/Pennsylvania Greenways Program Advisory Committee

Appendix I-A: Glossary of Acronyms

PHFA – Pennsylvania Housing Finance Agency

PHMC – Pennsylvania Historical and Museum Commission

PRD – Planned Residential Development

PUD – Planning Unit Development

RCP – Rivers conservation plan, sometimes called a watershed conservation plan

RULWA – Pennsylvania Recreational Use of Land and Water Act

SALDO – Subdivision and Land Development Ordinance

SEPTA – Southeastern Pennsylvania Transportation Authority

SRTS – Safe Routes to School

TDR – Transfer of Development Rights

USFWS – United States Fish and Wildlife Service

YMCA – Young Men’s Christian Association

APPENDIX I-B: GLOSSARY OF TERMS

AGRICULTURAL: Land developed with crops, pastures, orchards, tree farms, or other agricultural uses. The farmstead and associated buildings are also agricultural. Single or double lot split-offs with house are included in the agricultural classification.

BUFFER: Graduated mix of land uses, building heights or intensities designed to mitigate potential conflicts between different types or intensities of land uses; may also provide for a transition between uses. A landscaped buffer may be an area of open, undeveloped land and may include a combination of fences, walls, berms, open space and/or landscape plantings. A riparian buffer is located along a stream or other water body and contains plants appropriate to protecting water quality.

COMMUNITY CHARACTER: Those attributes of a community that make it unique, both in terms of the built environment and its population.

COMPLETE STREETS: A street designed and operated to enable safe, attractive, and comfortable access and travel for all users, including pedestrians, bicyclists, motorists, and public transport users of all ages and abilities.

CONSERVATION: The restoration, stabilization, management, and wise use of natural and heritage resources for compatible educational, recreational, aesthetic, agricultural, and scientific purposes or environmental protection.

CORRIDOR: An uninterrupted path or channel of developed or undeveloped land paralleling the route of a street, highway, or transit line.

DENSITY: Number of dwelling units (du) divided by the gross acreage (ac) of a site being developed in residential use; or, the number of dwelling units per acre (du/ac).

ENVIRONMENTAL IMPACT: Any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization's activities, products, or services.

FLOODPLAIN: Those land areas in and adjacent to streams and watercourses subject to periodic flooding. The 100 year floodplain has a one percent chance of flood occurrence in any given year.

GREENWAYS: A linear system of connected natural and man-made elements that function together for public benefit. These connections and the open spaces and other features that they connect, may be accessible to the public in the form of county or municipally owned parks and trails, or they may be owned privately with little or no public access.

HERITAGE OR HISTORIC RESOURCES: Structures, sites, and objects that reflect the prehistory and history of Delaware County.

Appendix I-B: Glossary of Terms

INFILL: The use of land within a built-up area, typically for the reuse and repositioning of obsolete or underutilized buildings and sites. May involve a change of type or density of land use.

MODE OF TRANSPORTATION: A type of transportation or means of getting from one place to another, including train, trolley, bus, bicycle, walking, motorcycle, car, and van. Multi-modal transportation refers to a connected transportation system that supports cars, bicycles, pedestrians, and public transit.

NATURAL RESOURCES: Assets such as soils, woodlands, wetlands, and agricultural lands, along with hydrologic features such as rivers, lakes, and streams, that occur naturally within the County's landscape. This includes important habitat areas and the wildlife that they contain. Though sensitive to human disturbance, these resources have notable environmental, recreational, visual, and economic benefits, creating a needed balance between growth and their conservation.

OPEN SPACE: Land and water features of the landscape that have not been developed for intensive human uses such as residential neighborhoods, business districts, or industrial sites. A variety of terms are used to describe different types of open space, including *active open space* (athletic fields, play areas), *passive open space* (scenic and natural parks), *public open space* (government-owned or controlled), and *private open space* (undeveloped and unavailable for public use). The term *protected open space* includes publicly owned open space, land owned by a land trust or conservation organization, land under a permanent easement or deed restriction, and homeowners association open space. *Unprotected open space* describes all other privately owned undeveloped land. *Quasi-public open space*, a subcategory of unprotected open space, covers school fields, institutional lands, cemeteries, and club recreation areas like golf courses and swim clubs.

REVITALIZATION: The renewal and improvement of older commercial and residential areas through any of a series of actions or programs that support and facilitate private and public investment. This community investment can include (but is not limited to) activities and programs designed to improve neighborhoods; strengthen existing businesses; attract new businesses; encourage quality renovation and new construction; enhance public spaces and pedestrian amenities; ensure safe, efficient and convenient traffic flow; and contribute to the social and economic vitality of the area.

SUBDIVISION: The division by plat or deed of a piece of property into two or more lots, plots, tracts, parcels or other land divisions.

UNDEVELOPED/UNIMPROVED LAND: Vacant land areas are areas that are undeveloped and not clearly wooded, nor agricultural, nor developed.

UTILITY: A service providing access to electricity, natural gas, water, sewage, or telecommunications. An organization that maintains the infrastructure for a public service; regulated under Title 52 (Public Utilities) of the Pennsylvania Code.

WATERSHED: A land area, also known as a drainage basin, that drains, or “sheds” water to a particular stream or body of water.

WOODLAND: Forested areas of contiguous canopy or solid tree cover, woodlands, and natural lands.

WETLANDS: Land characterized by wetness for a portion of the growing season. Wetlands are generally delineated on the basis of physical characteristics such as soil properties indicative of wetness, the presence of vegetation with an affinity for water, and the presence or evidence of surface wetness or soil saturation. Wetland environments provide water quality improvement benefits and are ecologically valuable. Development activity in wetlands is subject to permitting processes administered by the PA Department of Environmental Protection and the U.S. Army Corps of Engineers.

ZONING ORDINANCE: A document adopted by municipal governments that classifies all land into residential, commercial, industrial, planned development and/or overlay districts. It describes in detail the permitted density and uses allowed in each zoning district; and that lists the specific regulations that govern each land use.

APPENDIX I-C: DATA SOURCES FOR MAPPING

Map 1-1: Delaware County

Delaware County Planning Department

Map 1-2: Total Population Change (1980-2010)

Delaware County Planning Department

Map 2-1: Geologic Formations

DCNR, Berg, T. M., Edmunds, W. E., Geyer, A. R., and others, compilers, 1980, Geologic map of Pennsylvania (2nd ed.): Pennsylvania Geological Survey, 4th ser., Map 1, 3 sheets, scale 1:250,000. Available online as a ZIP file.

Map 2-2: Soils

NRCS, PASDA and <http://datagateway.nrcs.usda.gov/GDGOrder.aspx>

Map 2-3: Topography

Delaware County Planning Department, created from DVRPC Contours, 2010

Map 2-4: Watersheds of Delaware County

Environmental Resources Research Institute, 1997, Small Watersheds, PASDA

Map 2-5: Surface Waters

Delaware County Planning Department

Map 2-6: Floodplains

Federal Emergency Management Agency (FEMA)

Map 2-7: National Wetlands Inventory (NWI) Wetlands

National Wetland Inventory, U.S. Fish and Wildlife Service

Map 2-8: Natural Heritage Inventory Sites

Natural Heritage Inventory of Delaware County, Pennsylvania. June, 2011.

Map 2-9: Species of Concern - Habitats

Natural Heritage Inventory of Delaware County, Pennsylvania. June, 2011.

Map 2-10: Natural Communities

Natural Heritage Inventory of Delaware County, Pennsylvania. June, 2011.

Map 2-11: Tree Canopy Cover

National Land Cover Database UFS Tree Canopy, U.S. Geologic Survey. 2011

Map 2-12: Forests

National Land Cover Database Land Cover, U.S. Geologic Survey. 2011

Map 2-13: Conservation Priority Areas

Delaware County 2035, Delaware County Planning Department. November, 2013.

Appendix I-C: Data Sources for Mapping

Map 3-1: National, State, and County Parks and Open Space

Delaware County Planning Department

Map 3-2: Municipal Open Space and Parkland

Delaware County Planning Department

Map 3-3: Public School Lands

Delaware County Planning Department

Map 3-4: Homeowners Association Open Spaces

Delaware County Planning Department

Map 3-5: Institutional Land with Open Space

Delaware County Planning Department

Map 3-6: Cemeteries and Golf Courses

Delaware County Planning Department

Map 3-7: Swim Clubs, YMCAs, and Other Clubs

Delaware County Planning Department

Map 3-8: Land Trusts/Conservation Organizations

Delaware County Planning Department

Map 3-9: Composite Delaware County Open Space and Parks

Delaware County Planning Department

Map 3-10: Major Parks in Adjacent Counties

Delaware County Planning Department

Map 4-1: Existing Trails

Delaware County Planning Department

Map 4-2: Countywide Primary Trail Network

Delaware County Planning Department

APPENDIX I-D: MUNICIPAL POPULATION FIGURES

**Table D-1: U.S. Census Population Figures for Delaware County Municipalities
1980 to 2010**

Municipality	Population				Population Change			% Population Change		
	1980	1990	2000	2010	1980-2000	2000-2010	1980-2010	1980-2000	2000-2010	1980-2010
Aldan Borough	4,671	4,549	4,313	4,152	-358	-161	-519	-7.7%	-3.7%	-11.1%
Aston Township	14,530	15,080	16,203	16,592	1,673	389	2,062	11.5%	2.4%	14.2%
Bethel Township	2,438	3,330	6,421	8,791	3,983	2,370	6,353	163.4%	36.9%	260.6%
Brookhaven Borough	7,912	8,567	7,985	8,006	73	21	94	0.9%	0.3%	1.2%
Chadds Ford Township	2,057	3,118	3,170	3,640	1,113	470	1,583	54.1%	14.8%	77.0%
Chester City	45,794	41,856	36,854	33,972	-8,940	-2,882	-11,822	-19.5%	-7.8%	-25.8%
Chester Heights Borough	1,302	2,273	2,481	2,531	1,179	50	1,229	90.6%	2.0%	94.4%
Chester Township	5,687	5,399	4,604	3,940	-1,083	-664	-1,747	-19.0%	-14.4%	-30.7%
Clifton Heights Borough	7,320	7,111	6,779	6,652	-541	-127	-668	-7.4%	-1.9%	-9.1%
Collingdale Borough	9,539	9,175	8,664	8,786	-875	122	-753	-9.2%	1.4%	-7.9%
Colwyn Borough	2,851	2,613	2,453	2,546	-398	93	-305	-14.0%	3.8%	-10.7%
Concord Township	6,437	6,933	9,933	17,231	4,802	7,298	10,794	74.6%	73.5%	167.7%
Darby Borough	11,513	11,140	10,299	10,687	-1,214	388	-826	-10.5%	3.8%	-7.2%
Darby Township	12,264	10,955	9,622	9,264	-2,642	-358	-3,000	-21.5%	-3.7%	-24.5%
East Lansdowne Borough	2,806	2,691	2,586	2,668	-220	82	-138	-7.8%	3.2%	-4.9%
Eddystone Borough	2,555	2,446	2,442	2,410	-113	-32	-145	-4.4%	-1.3%	-5.7%
Edgmont Township	1,410	2,735	3,918	3,987	2,508	69	2,577	177.9%	1.8%	182.8%
Folcroft Borough	8,231	7,506	6,978	6,606	-1,253	-372	-1,625	-15.2%	-5.3%	-19.7%
Glenolden Borough	7,633	7,260	7,476	7,153	-157	-323	-480	-2.1%	-4.3%	-6.3%
Haverford Township	52,349	49,848	48,498	48,491	-2,741	-7	-3,858	-5.2%	0.0%	-7.4%
Lansdowne Borough	11,891	11,712	11,044	10,620	-847	-424	-1,271	-7.1%	-3.8%	-10.7%
Lower Chichester Twp.	3,784	3,660	3,591	3,469	-193	-122	-315	-5.1%	-3.4%	-8.3%
Marcus Hook Borough	2,638	2,546	2,314	2,397	-324	83	-241	-12.3%	3.6%	-9.1%
Marple Township	23,642	23,123	23,737	23,428	95	-309	-214	0.4%	-1.3%	-0.9%
Media Borough	6,119	5,957	5,533	5,327	-586	-206	-792	-9.6%	-3.7%	-12.9%
Middletown Township	12,463	14,130	16,064	15,807	3,601	-257	3,344	28.9%	-1.6%	26.8%
Millbourne Borough	652	831	943	1,159	291	216	507	44.6%	22.9%	77.8%
Morton Borough	2,412	2,851	2,715	2,669	303	-46	257	12.6%	-1.7%	10.7%
Nether Providence Twp.	12,730	13,229	13,456	13,706	726	250	976	5.7%	1.9%	7.7%
Newtown Township	11,775	11,366	11,700	12,216	-75	516	441	-0.6%	4.4%	3.7%
Norwood Borough	6,647	6,162	5,985	5,890	-662	-95	-757	-10.0%	-1.6%	-11.4%
Parkside Borough	2,464	2,369	2,267	2,328	-197	61	-136	-8.0%	2.7%	-5.5%
Prospect Park Borough	6,593	6,764	6,594	6,454	1	-140	-139	0.0%	-2.1%	-2.1%
Radnor Township	27,676	28,703	30,878	31,531	3,202	653	3,855	11.6%	2.1%	13.9%
Ridley Park Borough	7,889	7,592	7,196	7,002	-693	-194	-887	-8.8%	-2.7%	-11.2%
Ridley Township	33,771	31,169	30,791	30,768	-2,980	-23	-3,003	-8.8%	-0.1%	-8.9%
Rose Valley Borough	1,038	982	944	913	-94	-31	-125	-9.1%	-3.3%	-12.0%
Rutledge Borough	934	843	860	784	-74	-76	-150	-7.9%	-8.8%	-16.1%
Sharon Hill Borough	6,221	5,771	5,468	5,697	-753	229	-524	-12.1%	4.2%	-8.4%

**Table D-1: U.S. Census Population Figures for Delaware County Municipalities (cont.)
 1980 to 2010**

Municipality	Population				Population Change			% Population Change		
	1980	1990	2000	2010	1980-2000	2000-2010	1980-2010	1980-2000	2000-2010	1980-2010
Springfield Township	25,326	24,160	23,677	24,211	-1,649	534	-1,115	-6.5%	2.3%	-4.4%
Swarthmore Borough	5,950	6,157	6,170	6,194	220	24	244	3.7%	0.4%	4.1%
Thornbury Township	3,653	4,728	7,093	8,028	2,134	935	4,375	58.4%	13.2%	119.8%
Tinicum Township	4,291	4,440	4,353	4,091	62	-262	-200	1.4%	-6.0%	-4.7%
Trainer Borough	2,056	2,271	1,901	1,828	-155	-73	-228	-7.5%	-3.8%	-11.1%
Upland Borough	3,458	3,334	2,977	3,239	-481	262	-219	-13.9%	8.8%	-6.3%
Upper Chichester Twp.	14,377	15,004	16,842	16,738	2,465	-104	2,361	17.1%	-0.6%	16.4%
Upper Darby Township	84,054	81,177	81,821	82,795	-2,233	974	-1,259	-2.7%	1.2%	-1.5%
Upper Providence Twp.	9,477	9,727	10,509	10,142	1,032	-367	665	10.9%	-3.5%	7.0%
Yeadon Borough	11,727	11,980	11,762	11,443	35	-319	-284	0.3%	-2.7%	-2.4%
COUNTY TOTALS	112,518	111,994	111,860	118,849	-3,033	8,115	3,972	-0.5%	1.5%	0.7%

Source: U.S. Census Bureau

APPENDIX I-E: PROPOSED DEVELOPMENT IN DELAWARE COUNTY

**Table E-1: Proposed Residential Units in Delaware County
2000 to 2013**

Municipality	Number of Proposed Residential Units														
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total Units
Aldan Borough	0	0	0	1	1	3	0	0	0	1	0	0	0	0	6
Aston Township	104	48	30	186	79	209	15	9	1	1	284	0	0	0	966
Bethel Township	263	287	71	60	556	6	9	4	2	1	101	0	59	12	1,431
Brookhaven Borough	1	3	1	3	0	164	18	5	85	2	2	0	0	5	289
Chadds Ford Township	5	3	21	82	6	4	0	1	2	0	0	0	2	0	126
Chester City	132	8	0	2	28	144	13	70	4	73	5	64	0	0	543
Chester Heights Borough	8	0	11	0	68	0	0	0	0	0	21	1	0	0	109
Chester Township	34	0	0	0	0	0	0	0	0	71	48	71	0	0	224
Clifton Heights Borough	0	0	0	0	0	3	5	0	0	2	140	0	10	0	160
Collingdale Borough	0	0	0	0	2	4	4	0	0	0	0	0	0	0	10
Colwyn Borough	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Concord Township	667	286	135	217	79	61	770	4	381	11	0	6	505	165	3,287
Darby Borough	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Darby Township	0	0	0	4	0	1	8	34	2	2	0	1	4	0	56
East Lansdowne Borough	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eddystone Borough	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
Edgmont Township	1	0	34	27	37	23	23	24	5	0	5	3	1	2	185
Folcroft Borough	0	10	6	4	0	6	0	2	0	0	0	0	0	0	28
Glenolden Borough	0	0	0	2	0	2	1	0	0	1	0	0	2	0	8
Haverford Township	14	8	31	14	7	15	3	306	6	3	7	19	5	11	449
Lansdowne Borough	0	2	41	0	0	0	2	0	0	0	4	0	0	0	49
Lower Chichester Township	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Marcus Hook Borough	0	2	1	0	0	0	14	0	0	0	0	0	0	0	17
Marple Township	83	22	44	34	33	8	8	18	4	2	59	0	152	144	611

Appendix I-E: Proposed Development in Delaware County

**Table E-1: Proposed Residential Units in Delaware County (cont.)
2000 to 2013**

Municipality	Number of Proposed Residential Units														
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total Units
Media Borough	0	6	13	21	5	13	2	2	3	0	0	22	16	26	129
Middletown Township	15	18	223	82	36	626	22	3	0	22	136	139	13	335	1,670
Millbourne Borough	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Morton Borough	1	2	3	2	0	8	3	0	0	1	0	0	8	0	28
Nether Providence Township	6	8	5	2	17	172	26	6	1	3	0	4	7	0	257
Newtown Township	95	528	1	229	3	152	18	8	0	26	449	0	390	41	1,940
Norwood Borough	0	0	0	0	2	0	4	0	0	0	0	80	0	0	86
Parkside Borough	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prospect Park Borough	0	0	1	3	12	6	4	0	0	0	5	3	4	0	38
Radnor Township	16	53	12	10	32	82	4	4	19	0	0	14	24	13	283
Ridley Park Borough	1	3	2	6	12	6	2	3	3	0	0	0	8	2	48
Ridley Township	29	33	4	11	11	50	48	2	5	9	49	0	11	86	348
Rose Valley Borough	0	0	0	0	0	0	45	0	0	0	0	5	0	0	50
Rutledge Borough	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Sharon Hill Borough	0	40	0	4	2	4	6	0	1	0	3	0	0	0	60
Springfield Township	316	1	8	26	65	31	2	1	0	2	3	1	7	2	465
Swarthmore Borough	13	0	1	0	3	0	0	0	0	0	0	0	0	2	19
Thornbury Township	61	345	88	14	11	86	38	0	1	2	6	0	8	33	693
Tinicum Township	0	0	2	0	3	33	5	4	0	1	0	0	0	0	48
Trainer Borough	0	0	8	0	0	0	30	18	12	0	0	0	0	0	68
Upland Borough	0	0	0	128	64	114	0	0	0	0	2	0	2	0	310
Upper Chichester Township	502	0	66	39	32	63	14	86	35	85	0	0	0	2	924
Upper Darby Township	0	0	72	108	8	22	0	0	6	2	0	26	3	2	249
Upper Providence Township	8	25	24	92	3	11	14	13	4	0	5	0	1	2	202
Yeadon Borough	0	0	0	0	0	0	3	0	33	22	0	0	0	0	58
Delaware County	2,375	1,741	959	1,413	1,217	2,132	1,183	629	615	345	1,334	459	1,244	885	16,531

Note: Shaded cells are the 10 highest values in each column; Figures presented reflect proposed (not constructed) development

Source: DCPD, 2014

**Table E-2: Proposed Non-Residential Development in Delaware County
2000 to 2013**

Municipality	Proposed Nonresidential Building Area in Square Feet by Year														
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2000-13
Aldan Borough	0	0	0	0	10,160	0	0	0	0	0	0	0	0	0	10,160
Aston Township	271,603	53,994	17,778	51,163	106,245	0	1,200	152,820	147,230	0	14,942	15,470	0	12,160	844,605
Bethel Township	0	61,645	6,869	6,869	28,400	109,560	300	79,804	6,600	2,984	166,140	8,572	0	0	477,743
Brookhaven Borough	18,150	3,200	2,610	0	0	15,038	7,772	3,607	1,440	0	0	0	0	68,000	119,817
Chadds Ford Township	167,516	46,075	75,148	37,340	46,600	140,065	25,280	76,982	10,492	0	14,341	0	0	7,890	647,729
Chester City	222,666	478,160	281,728	83,720	424,266	473,115	27,924	55,154	134,489	45,869	43,791	52,706	9,998	45,306	2,378,892
Chester Heights Borough	69,250	108,272	0	325	0	0	282,700	102,700	0	0	5,600	0	0	6,340	575,187
Chester Township	66,814	248,911	283,362	131,454	0	9,600	301,914	59,800	607,011	24,614	44,800	0	0	0	1,778,280
Clifton Heights Borough	1,500	0	0	2,100	0	9,992	0	2,160	0	0	12,890	0	735	0	29,377
Collingdale Borough	0	0	37,709	0	0	1,000	0	0	85	0	0	0	0	0	38,794
Colwyn Borough	0	0	0	0	0	0	0	0	0	0	0	0	1,904	0	1,904
Concord Township	434,934	280,304	262,319	64,863	141,032	166,409	794,904	1,243,340	1,120,535	226,053	3,824	150,458	300,283	211,855	5,401,113
Darby Borough	32,827	0	15,468	13,057	0	0	0	0	21,522	43,814	0	0	3,825	0	130,513
Darby Township	71,024	68,700	142,680	29,712	63,666	1,500	24,975	4,950	0	0	0	7,650	0	0	414,857
East Lansdowne Borough	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eddystone Borough	0	0	0	95,000	0	2,172	0	9,600	0	0	130,676	34,617	0	114,697	386,762
Edgmont Township	9,368	0	58,005	0	0	110,030	248,288	46,678	1,000	0	19,400	4,085	0	0	496,854
Folcroft Borough	72,325	24,183	1,985	0	3,000	0	49,675	44,300	76,800	5,495	0	2,180	0	0	279,943
Glenolden Borough	15,003	0	12,150	3,329	0	0	0	0	2,230	0	0	0	0	8,100	40,812
Haverford Township	9,050	11,452	12,438	17,000	105,048	0	87,630	0	85,473	26,226	147,380	223,586	1,157	10,836	737,276
Lansdowne Borough		0	0	0	0	0	0	2,800	0	0	27,897	0	0	0	30,697
Lower Chichester Twp	1,750	0	0	0	81,000	0	0	12,000	153,900	9,375	0	0	0	0	258,025
Marcus Hook Borough	28,750	76,200	0	10,500	0	0	0	6,000	30,000	0	0	3,150	0	0	154,600
Marple Township	51,706	83,159	26,180	1,680	38,133	11,658	10,317	62,850	12,157	6,556	2,980	471	2,560	2,240	312,647
Media Borough	545	7,386	19,769	2,364	11,616	18,410	124,191	4,974	99,777	720	10,173	65,364	6,099	0	371,388
Middletown Township	206,209	3,223	384,729	22,774	49,453	84,411	58,067	1,438,019	38,261	0	38,437	215,786	4,809	40,200	2,584,378

Appendix I-E: Proposed Development in Delaware County

**Table E-2: Proposed Non-Residential Development in Delaware County (cont.)
2000 to 2013**

Municipality	Proposed Nonresidential Building Area in Square Feet by Year														
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2000-13
Millbourne Borough	0	2,250	0	0	0	0	1,800	0	0	0	484	0	120	0	4,654
Morton Borough	4,460	3,640	0	0	0	0	0	4,780	0	0	0	0	0	0	12,880
Nether Providence Twp	0	20,965	10,938	0	12,437	15,357	0	97,075	0	7,341	32,460	0	29,051	0	225,624
Newtown Township	120,176	80,955	44,519	5,842	21,800	523,956	513,772	210,769	33,928	42,582	198,301	57,520	4,720	0	1,858,840
Norwood Borough	0	0	2,040	0	0	0	0	0	0	0	0	0	0	0	2,040
Parkside Borough	0	37,000	0	0	0	0	0	0	0	0	0	0	0	0	37,000
Prospect Park Borough	0	0	2,000	0	0	0	11,153	0	0	2,157	0	0	0	0	15,310
Radnor Township	53,815	66,970	63,604	233,161	214,223	495,698	110,005	4,351	145,011	19,802	83,714	47,080	272,202	34,717	1,844,353
Ridley Park Borough	0	0	0	0	0	46,737	0	0	0	1,584	0	0	0	0	48,321
Ridley Township	180,964	60,199	27,015	31,025	18,563	22,400	45,644	16,414	129,185	3,160	15,936	20,210	124,195	26,583	721,493
Rose Valley Borough	8,000	0	0	0	0	0	0	0	0	0	0	0	0	0	8,000
Rutledge Borough	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sharon Hill Borough	2,422	23,940	4,285	0	0	98,520	0	0	0	0	0	24,472	280	0	153,919
Springfield Township	13,140	53,942	110,651	16,642	13,346	24,438	4,000	63,413	306,486	94,519	22,069	14,400	64,017	7,052	808,115
Swarthmore Borough	1,944	0	55,000	65,000	0	0	0	0	0	0	0	0	0	90,678	212,622
Thornbury Township	0	3,250	300	0	3,750	0	4,370	0	0	130,886	0	0	0	0	142,556
Tinicum Township	556,127	16,520	23,775	61,737	15,085	115,290	57,412	53,815	55,649	12,723	0	0	447,036	730	1,415,899
Trainer Borough	0	10,286	0	0	0	0	84,390	28,001	0	0	0	2,900	0	0	125,577
Upland Borough	0	31,455	195,100	0	0	0	30,277	0	0	0	0	0	8,400	0	265,232
Upper Chichester Twp	283,229	51,115	48,844	235,230	27,000	82,628	103,056	7,763	0	151,339	63,535	7,332	59,558	0	1,120,629
Upper Darby Township	88,710	69,573	144,474	54,469	15,159	34,025	41,751	2,510	34,790	11,574	87,683	98,093	13,408	30,301	726,520
Upper Providence Twp	29,788	11,504	27,690	10,600	21,933	23,500	6,912	0	734	31,346	0	3,700	0	0	167,707
Yeadon Borough	1,600	5,400	0	0	0	0	4,800	0	0	0	0	9,180	0	1,200	22,180
Delaware County	3,095,365	2,103,828	2,401,162	1,286,956	1,471,915	2,635,509	3,064,479	3,897,429	3,254,785	900,719	1,187,453	1,068,982	1,354,357	718,885	28,441,824

*Shaded cells are the 10 highest values in each column; Figures presented reflect proposed (not constructed) development

Source: DCPD, 2014

APPENDIX I-F: DELAWARE COUNTY OWNED OPEN SPACE

Table F-1: Delaware County-Owned Open Space

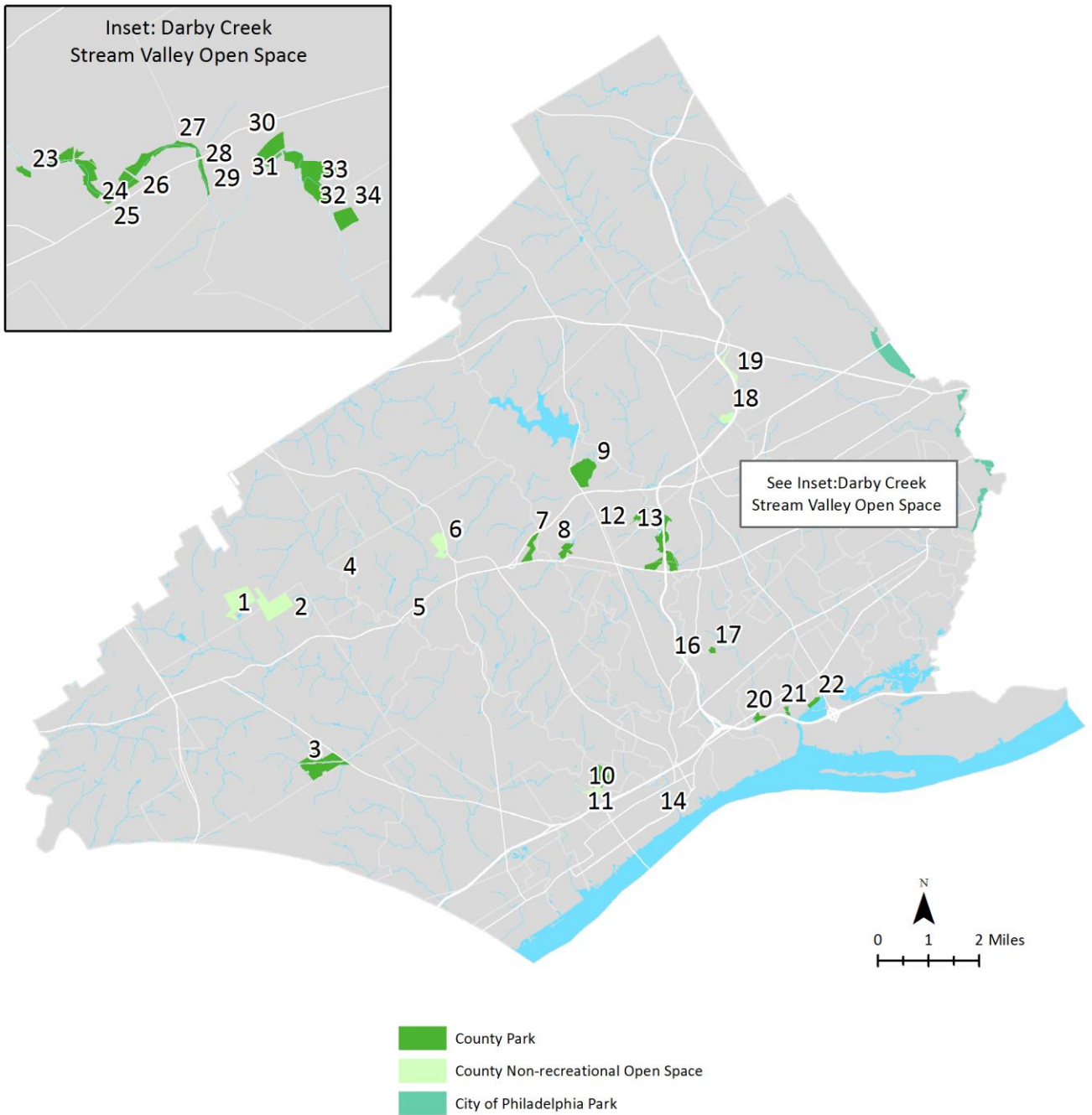
Name	Map #	Municipality	Acreage
Recreational Open Space			Total: 666.3
County Parks			633.5
Catania Park	20	Ridley Park Borough	14.9
Clayton Park	3	Concord Township	148.3
Glen Providence Park	8	Media Borough/Upper Providence Township	32.3
Incinerator Field	18	Marple Township	27.9
Kent Park*	26	Upper Darby Township	5.2
Leedom Estates Park	22	Ridley Township	14.9
Martin Park	12	Upper Providence Township	22.4
Mineral Hill County Park	7	Middletown Township	43.2
Ridley Township Municipal Park	17	Ridley Township	8.6
Rose Tree Park	9	Upper Providence Township	117.9
Pennock Woods*	32	Lansdowne Borough	7.2
Shrigley Park*	30	Lansdowne Borough	6.7
Smedley Park**	13	Nether Providence/ Springfield Township	116.9
Upland Park	11	Upland Borough	60.1
Willow Park	21	Ridley Township	7.0
Darby Creek Stream Valley Park Open Space			32.8
Burkholder Tract	29	Lansdowne Borough	1.9
Castle Tool	33	Upper Darby Township	5.4
Darby Creek Parkland	27	Lansdowne Borough	2.2
Garrett Tract	24	Upper Darby Township	7.4
Holsten Tract	34	Yeadon Borough	4.8
Kempner Tract	31	Upper Darby Township	3.1
Kent Mills	25	Clifton Heights Borough	5.6
Kmart Easement	28	Clifton Heights Borough	1.2
Woodgate Tract	23	Clifton Heights Borough	1.2
Non-Recreational Open Space			Total: 416.5
5th & Penn Vacant Streamside/PA Health Dept. Building	15	Chester City	2.5
911 Center and Juvenile Detention Center	6	Middletown Township	66.9
Camp Sunshine	1	Thornbury	13.9
Chester City-County Vacant Land (Riverfront)	14	Chester City	3.1
Conservation Area - Marple	19	Marple Township	26.3
Conservation Area - Springfield	16	Springfield Township	2.2
Delaware County Prison	2	Concord/Thornbury Township	269.9
Pusey Lease Area	10	Chester Township	30.0
Stony Bank Road & Chester Creek	4	Thornbury Township	0.3
Unnamed Open Space	5	Chester Heights Borough	1.4
County Total:			1082.8

*: Can also be considered Darby Creek Stream Valley Open Space

** : Acreage does not include 30.3 acre tract leased from Swarthmore College

Source: DCPD, 2015

Volume I: Open Space and Recreation Plan
Appendix I-F: Delaware County Owned Open Space



APPENDIX I-G: PROTECTED OPEN SPACE BY MUNICIPALITY

Table G-1: Protected Open Space by Municipality

Municipality	Municipal Active	Municipal Non-recreational	Municipal Passive	County Non-recreational	County Park	State Park	Federal Park	School District Open Space and Recreation	HOA Open Space	Conservation Organization Protected Lands	Total
Aldan Borough	3.7	3.4	1.0					7.4			15.5
Aston Township	72.5	44.5	60.1					105.9	113.8		396.8
Bethel Township	2.7		32.3					63.2	378.3		476.5
Brookhaven Borough	41.4		25.2					20.1	49.7		136.4
Chadds Ford Township		19.0	60.0			46.5	234.1		197.0	138.5	695.1
Chester City	180.7	12.5	40.4	5.6				71.3	8.8		319.3
Chester Heights Borough	6.3	0.9		1.4					196.0	17.4	222.0
Chester Township	16.5	8.4	0.5	30.0				10.6	44.6		110.6
Clifton Heights	35.6	0.1	1.3		8.0						45.0
Collingdale	24.7	2.9						2.6			30.2
Colwyn Borough	12.8		16.9								29.7
Concord Township		41.5	180.9	145.8	148.3			157.8	808.3		1482.6
Darby Borough	2.1	0.0	18.5					20.3			40.9
Darby Township	39.3		5.0				3.8	12.7			60.8
East Lansdowne			0.0					0.7			0.7
Eddystone Borough	4.8		1.0					0.8			6.6
Edgmont Township		10.8	26.9			1705.2			191.1	39.2	1973.2
Folcroft Borough	40.9						289.7	8.9	6.0		345.5
Glenolden Borough	24.1		0.6					30.3	35.9		90.9
Haverford Township	284.6	7.8	130.3					82.4	67.9		573.0
Lansdowne Borough	7.4	1.1	14.3		18.0			16.6	2.7		60.1
Lower Chichester	24.6		8.0					2.8			35.4
Marcus Hook Borough	10.2	0.1	5.8					2.2			18.3
Marple Township	130.7	33.2	42.9	26.3	27.9			73.6	291.5	57.4	683.5
Media Borough	2.9		4.6		7.8			3.2	10.9		29.4
Middletown Township	28.3	115.8	310.5	66.9	43.2	808.7		100.0	306.9	759.1	2539.4

Appendix I-G: Protected Open Space by Municipality

Table G-1: Protected Open Space by Municipality (cont.)

Municipality	Municipal Active	Municipal Non-recreational	Municipal Passive	County Non-recreational	County Park	State Park	Federal Park	School District Open Space and Recreation	HOA Open Space	Conservation Organization Protected Lands	Total
Millbourne Borough			0.5								0.5
Morton Borough	6.3		2.4						7.0		15.7
Nether Providence	10.2		62.4		78.2			85.7	87.3	26.8	350.6
Newtown Township	33.4	18.8	137.4					59.3	427.1	58.4	734.4
Norwood Borough	57.9	0.1	7.2					10.7			75.9
Parkside Borough			5.5					4.7	3.0		13.2
Prospect Park	17.1	0.2	2.1			3.0		22.3			44.7
Radnor Township	137.0	18.0	309.1			3.2		173.5	318.6	34.6	994.0
Ridley Park Borough	5.9	0.1	32.2		14.9			14.1	1.2		68.4
Ridley Township	63.8	30.1	11.3		30.5			96.6	40.6		272.9
Rose Valley Borough			54.3						6.6		60.9
Rutledge Borough	0.8										0.8
Sharon Hill Borough	9.2							25.7			34.9
Springfield Township	97.3	10.3	111.0	2.2	38.7			65.9	37.3		362.7
Swarthmore Borough			7.9					31.1			39.0
Thornbury Township	45.2	46.6	205.1	138.3					410.1		845.3
Tinicum Township	38.3	63.6	131.0			130.0	420.0	7.4			790.3
Trainer Borough	12.4	8.2	23.1								43.7
Upland Borough	2.9	0.1	2.2		60.1			7.5			72.8
Upper Chichester	83.9	21.6	60.3					160.5	223.1		549.4
Upper Darby Township	123.6	6.7	111.3		21.1			121.7	117.5		501.9
Upper Providence	8.7	24.6	72.5		164.8	25.2		86.6	102.6		485.0
Yeadon Borough	10.5	1.1	5.6		4.8			24.7	4.0		50.7
County Total	1,761.2	552.1	2,341.4	416.5	666.3	2,721.8	947.6	1,791.4	4,495.5	2,802.0*	18,495.8*

Source: DCPD, 2014

*: Total includes lands protected via permanent easements by a land trusts/land conservancy. To protect the privacy of the owners, these eased lands are no separated by municipality.

Table G-2: Municipal Recreational Parks and Non-recreational Open Space

	Active Recreational	Non- recreational	Passive Parkland	Total
Aldan Borough	3.7	3.4	1.0	8.1
Aldan Borough Park (Jeffrey Rd)			0.5	0.5
Aldan Darby Creek & Lobbs Run Land		3.4		3.4
Aldan Park, Carr Memorial Field	3.7			3.7
Mayor Jack Edmundson Park			0.4	0.4
Veteran's Park			0.1	0.1

Aston Township	72.5	44.5	60.1	177.0
Aston - Middletown Little League	14.8			14.8
Aston Memorial Plaza			0.4	0.4
Aston Mills School Site		1.0		1.0
Aston Valley View Park	3.0			3.0
Bridgewater Farms Park	2.7			2.7
Bridgewater Open Space		42.3		42.3
Collins Park	0.7			0.7
Concord Square Park	2.4			2.4
Flood Control Facility		0.8		0.8
Fortress PA Open Space			3.1	3.1
Greenbriar Place Open Space			21.6	21.6
Highgrove Open Space			14.5	14.5
Hillcrest Drive Open Space			1.4	1.4
Indian Rock Open Space			10.7	10.7
Lewis H. Fisher Memorial Park	19.3			19.3
Mount and Gordonville Roads Open Space			5.5	5.5
North Lamppost Lane Park	3.1			3.1
Pennell Manor Park	3.7			3.7
Poore Park	2.6			2.6
Savage Park	1.5			1.5
Unnamed Municipal Open Space		0.4		0.4
Valley Green			2.8	2.8
Weir Park	15.6			15.6
Woodbrook Park	3.0			3.0

Bethel Township	2.7		32.3	35.0
Bethel Community Park	2.7			2.7
Calais Woods			7.0	7.0
Jack King Park			9.2	9.2
John T. Adkinson Park			6.3	6.3
Sharon Park			9.7	9.0

Appendix I-G: Protected Open Space by Municipality

	Active Recreational	Non- recreational	Passive Parkland	Total
Brookhaven Borough	41.4		25.2	66.5
Brookhaven Memorial Park	7.6			7.6
Brookhaven Municipal Center Walking Trail			6.8	6.8
Ed Eaton Park			3.2	3.2
Jim Durkin Field and Open Space	30.3			30.3
Meadowbrook Lane Open Space			6.7	6.7
Mun Ctr Gateway & Veterans Memorial Garden			1.0	1.0
Ralph A. Garzia Park			6.0	6.0
Samson Park	3.5			3.5
Summerville Park			1.5	1.5

Chadds Ford Township		19.0	60.0	79.0
Camp Sunset Hill			59.5	59.5
Mother Archie's Park			0.4	0.4
Turner's Mill/Chadds Ford Twp Hall		19.0		19.0

Chester City	180.7	12.5	40.4	233.5
15th Street Park			0.4	0.4
Butler Park	0.5			0.5
Chester City Ridley Creek Open Space			8.8	8.8
Chester Housing Authority Open Space		12.0		12.0
Chester Park	82.8			82.8
Crosby Square	0.1			0.1
Crozer Park	47.4			47.4
Ethel Waters Park			1.1	1.1
Eyre Drive Recreation Area (demolished)			19.2	19.2
Four Seasons Play Area	1.0			1.0
Highland Park	1.0			1.0
Little S Park	0.1			0.1
Lloyd Neighborhood Playground	0.3			0.3
Martin Luther King Memorial Park	22.6			22.6
McCafferty Park	0.0			0.0
McClurg Playground	0.4			0.4
Octagon Play Area	0.4			0.4
Penns Landing Park			3.0	3.0
Pulaski Playground	1.6			1.6
Sun Court open space		0.2		0.2
Sun Village Park	21.6			21.6
Unnamed Municipal Passive Parkland			0.6	0.6
Unnamed Municipal Open Space		0.3		0.3
Ward Street Playground			0.1	0.1
Washington Park			7.1	7.1
West 10th Street Park	0.4			0.4
William Mitchell Park	0.5			0.5

Chester Heights Borough	6.3	0.9		7.2
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Volume I: Open Space and Recreation Plan
Appendix I-G: Protected Open Space by Municipality

	Active Recreational	Non- recreational	Passive Parkland	Total
Chester Creek-Lenni Road Open Space		0.9		6.3
Chester Heights Community Park	6.3			0.9

Chester Township	16.5	8.4	0.5	25.5
Chester Township Unnamed Open Space		2.2		2.2
Feltonville Recreation Area	5.4			5.4
I-95 Industry Owner's Association		5.3		5.3
Jacks Park	7.3			7.3
Unnamed Municipal Active Parkland and Ballfields	0.2			0.2
Unnamed Municipal Open Space		1.0		1.0
Williams Circle Playground			0.5	0.5
Worrilow Park	2.9			2.9
Yarnell Street Playground	0.7			0.7

Clifton Heights	35.6	0.1	1.3	36.9
Clifton Heights Athletic Fields	14.0			14.0
Clifton Heights Softball Field	1.6			1.6
Clifton Heights Swim Club	2.9			2.9
Diamond Street Park	17.0			17.0
Ted McFadden Memorial Playground			0.8	0.8
Unnamed Municipal Active Parkland and Ballfields	0.1			0.1
Unnamed Municipal Passive Parkland			0.5	0.5
Unnamed Municipal Open Space		0.1		0.1

Collingdale	24.7	2.9		27.6
Collingdale Park	16.7			16.7
Community Center Park	3.9			3.9
Pusey Playground	1.6			1.6
Veterans Field	1.7			1.7
Westmont Drive and Northern Pusey Run Open Space		2.9		2.9
Westmont Playground	0.8			0.8

Colwyn Borough	12.8		16.9	29.8
Bosacco Park	12.5			12.5
Colwyn Swim Club property			2.7	2.7
Floyd Park			0.7	0.7
Frank W. Burr Field			12.6	12.6
Keystone Avenue Park			0.2	0.2
Unnamed Municipal Passive Parkland			0.7	0.7
Water Street Park	0.3			0.3

Concord Township		41.5	180.9	222.4
Bickley Tract			21.6	21.6

Appendix I-G: Protected Open Space by Municipality

	Active Recreational	Non- recreational	Passive Parkland	Total
Bush Hill Farm			23.0	23.0
Cambridge Downs			7.0	7.0
Carter Way Open Space		11.6		11.6
Colonial Village			23.0	23.0
Concord Township Park-Colmman Tract Open Space			24.9	24.9
Concord Township Park-Connor Park			7.6	7.6
Concord Township Park-Kids Dream Playground			14.2	14.2
Featherbed Road Tract			1.8	1.8
Fisher Tract			38.4	38.4
Leopard Run			3.6	3.6
Pierce Willets Tract		3.9		3.9
Pole Cat Road House		1.0		1.0
Richardson Tract			8.3	8.3
Stein Property			7.5	7.5
Ward Tract		2.5		2.5
Wawa NC Lot 2		6.3		6.3
Wolf Tract		16.2		16.2

Darby Borough	2.1	0.0	18.5	20.7
Bartram Park			17.2	17.2
Darby Park			1.2	1.2
Norman Powell Park	2.1			2.1
Poplar St Playground			0.1	0.1
Unnamed Municipal Open Space		0.0		0.0

Darby Township	39.3		5.0	44.3
Brookwood Playground			4.6	4.6
Conway Park	11.3			11.3
Crescent Park	4.3			4.3
Grobes Park	0.5			0.5
Madison & Beech Playground			0.3	0.3
Orange Avenue Park	0.7			0.7
South Hermersprota Run Park	4.5			4.5
South Hermesprota Run Park	4.5			4.5
Spruce Street Park	0.1			0.1
Studevan Field	7.4			7.4
Westbridge Park/Park Drive Playground	6.1			6.1

East Lansdowne			0.03	0.03
JFK Memorial Gateway			0.03	0.03

Eddystone Borough	4.8		1.0	5.8
Bessie Barber Memorial Park			0.1	0.1
Dom Marion Field & Dorothy Taylor Gotthardt Plygd	4.5			4.5

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Appendix I-G: Protected Open Space by Municipality

	Active Recreational	Non- recreational	Passive Parkland	Total
Nancy Scott-Cowan Memorial Park			0.9	0.9
Village Playground	0.2			0.2

Edgmont Township		10.8	26.9	37.7
Deep Meadow Drive Municipal Parcel		10.8		10.8
Municipal Park			26.9	26.9

Folcroft Borough	40.9			40.9
Llanwellyn Park	2.2			2.2
Montgomery Park	29.9			29.9
Primos Avenue Ballfield	3.5			3.5
Rasmussen Square	5.4			5.4

Glenolden Borough	24.1		0.6	24.7
Glenolden Park	23.0			23.0
Glenolden Playground	1.2			1.2
Muckinipates Greenway Open Space			0.6	0.6

Haverford Township	284.6	7.8	130.3	422.7
Abandoned Newtown Railroad			2.9	2.9
Abandoned Railroad		0.9		0.9
Bailey Park	4.7			4.7
Cadwalader Tract		5.8		5.8
Chatham Glen Park	3.3			3.3
Darby Creek Valley Park			5.0	5.0
Darby Creek Valley Park North	42.6			42.6
Darby Creek Valley Park/Pilgrim Park	3.6		1.0	4.5
Ellwell Field Park	5.4			5.4
Farwood Tot Lot	0.2			0.2
Finelli Tract		1.2		1.2
Foster Tract	1.5			1.5
Genthert Field	3.9			3.9
Gest Tract	11.1			11.1
Glendale Rd and Francis Dr Municipal Open Space			0.8	0.8
Grange Field	20.9			20.9
Grasslyn Park	2.4			2.4
Haverford Reserve	59.9		96.3	156.2
Highland Farms Park	2.6			2.6
Hilltop Park	18.5			18.5
Lawrence Road Park	1.0			1.0
Llanerch Crossing Park			0.1	0.1
Llanerch Park	0.5			0.5
Lynnewood Park	5.8			5.8
Merion Golf Manor			4.0	4.0
Merry Place Park	15.3			15.3
Merwood Park	3.4			3.4
Normandy Park	1.2			1.2

Appendix I-G: Protected Open Space by Municipality

	Active Recreational	Non- recreational	Passive Parkland	Total
Paddock Farms Park	10.3			10.3
Passive Parkland - Darby Creek Road			15.3	15.3
Polo Field	18.0			18.0
Powder Mill Valley Park	17.4			17.4
Preston Field	9.3			9.3
Richland Farms Park	1.7			1.7
Thompson Nature Park			5.0	5.0
Veterans Field	15.4			15.4
Westgate Hills Park	4.7			4.7

Lansdowne Borough	7.4	1.1	14.3	22.8
Belmont Park			2.3	2.3
Borough Greene			0.1	0.1
Gateway Park			2.4	2.4
Gladstone Manor Island		0.1		0.1
Hays Playground	1.2			1.2
Hoffmann Park			7.6	7.6
Interboro Park	3.2		0.2	3.3
Marlyn Park	3.0			3.0
Mini-Park			0.8	0.8
Reservoir Park		0.6		0.6
Reservoir Park		0.1		0.1
Sycamore Park			0.9	0.9
Unnamed Municipal Open Space		0.3		0.3

Lower Chichester	24.6		8.0	32.6
Anne R. Stevens Memorial Park	0.6			0.6
Anniline Village Park	3.7			3.7
Elliot Drive Playground	1.6			1.6
Morton Street Open Lot	0.1			0.1
Naamans Creek Road Park			8.0	8.0
Rocco Gaspari, Sr. Municipal Park	17.6			1.0
Simpson Playground	1.0			17.6

Marcus Hook Borough	10.2	0.1	5.8	16.1
11 & Market Street Field	3.4			3.4
Centennial Park			0.6	0.6
Market Green			0.4	0.4
Market Square Memorial Park			3.4	3.4
Mickey Vernon Park	4.3			4.3
Robert Haebel Plaza			0.5	0.5
Unnamed Municipal Passive Parkland			0.8	0.8
Unnamed Municipal Open Space		0.1		0.1
Williamson Field	2.5			2.5

Marple Township	130.7	33.2	42.9	206.8
Anthony Avenue Tract		4.7		4.7

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Appendix I-G: Protected Open Space by Municipality

	Active Recreational	Non- recreational	Passive Parkland	Total
Cherry Hill Lane Tract		5.0		5.0
Donna Circle Tract		0.4		0.4
First Ward Park	5.0			5.0
Foxcroft Park			10.6	10.6
Green Bank Farm			29.1	29.1
Kent Park	29.6			29.6
Langford Road Tract		2.5		2.5
Larchmont Park	18.0			18.0
Lawrence Park	22.2			22.2
Malin Road Tot Lot	1.5			1.5
Malin Road Tract		3.3		3.3
Marple Gardens Park	4.9			4.9
Marple Township Little League	5.6			5.6
New Ardmore Park	14.5			14.5
Old Marple School	4.6			4.6
Peace Tract		0.1		0.1
Unnamed Municipal Passive Parkland			3.2	3.2
Unnamed Municipal Open Space		16.7		16.7
Veterans Memorial Park	25.0	0.5		25.5

Media Borough	2.9		4.6	7.5
John K. Barrall Community Park	2.6			2.6
Media Municipal Government Center and Tot Lot			3.2	3.2
Muriel Jaisohn Memorial Park			0.4	0.4
Oakmont Tot Lot	0.3			0.3
Philip Green Park			0.8	0.8
Plum Street Mall			0.2	0.2

Middletown Township	28.3	115.8	310.5	454.7
Darlington Trail			52.3	52.3
Darlington Valley Open Space			164.2	164.2
E. Knowlton Road		1.4		1.4
Highpoint/Donovan		25.9		25.9
Indian Orchards Park			40.0	40.0
Knight Tract			13.3	13.3
Knowltonwood Development Open Space			5.3	5.3
La Belle Tract		6.4		6.4
Lenni Park	7.0			7.0
Martin's Lane/Tunbridge Open Space			2.3	2.3
Media Station Road Tract		1.8		1.8
Memorial Park			14.6	14.6
Municipal Non-recreational OS at Mt Alverno Rd		8.8		8.8
Old Mill Pointe Open Space			18.5	18.5
Sleighton Park	21.3			21.3
Smedley Tract		71.1		71.1
Woodland Avenue		0.4		0.4
Millbourne Borough			0.5	0.5
Wister Drive Park			0.5	0.5

Appendix I-G: Protected Open Space by Municipality

	Active Recreational	Non- recreational	Passive Parkland	Total
Morton Borough	6.3		2.4	8.7
Alpha Terrace Field	0.9			0.9
Community Center and Highland Ave Playground			1.3	1.3
Jacob's Park and Upper Field Complex	5.4			5.4
Sycamore Avenue Woods			1.1	1.1
Nether Providence	10.2		62.4	72.6
Furness Park			16.1	16.1
Hepford Field	4.2			4.2
Houston Park			36.1	36.1
Leiper Park			6.8	6.8
Mickey Vernon Field	1.2			1.2
Morris Sopovitz Park	4.4			4.4
Paper Street			0.3	0.3
Unnamed Municipal Passive Parkland				0.4
Woodrow Wilson Park	0.4		3.0	3.0
Newtown Township	33.4	18.8	137.4	189.6
Aspen Drive			2.0	2.0
Bartram Covered Bridge			0.6	0.6
College Avenue Lot			0.2	0.2
DeBotton Tract		3.7		3.7
Delmont Road Tract		0.8		0.8
Drexel Lodge Park			16.6	16.6
Gable Park	9.3			9.3
Gable Park/Township Offices/Police Station	8.3			8.3
Green Countrie Drive			5.9	5.9
Hatch's Lane		13.6		13.6
Hidden Springs			4.6	4.6
Interior French Road			21.5	21.5
Jack Daly Baseball Complex	8.8			8.8
Locust Street Lot			0.1	0.1
Newby Park			7.3	7.3
Newtown Meadow Preserve			47.5	47.5
Newtown Square Petticoat League	3.4			3.4
Newtown Township Veterans Memorial Park			20.9	20.9
Paper Mill House			4.0	4.0
Peter Krasas Memorial Field	3.5			3.5
Unnamed Municipal Open Space		0.7		0.7
Winding Way Park			6.4	6.4
Norwood Borough	57.9	0.1	7.2	65.2
Harrison Avenue Playground	1.3			1.3
Huron Park			0.2	0.2

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	Active Recreational	Non- recreational	Passive Parkland	Total
John Kugler Park			1.3	1.3
Lower Park	56.6			56.6
Memorial Park			0.7	0.7
Morton-Mortonson House			4.9	4.9
Unnamed Municipal Open Space		0.1		0.1
Parkside Borough			5.5	5.5
ILG Island Memorial			0.0	0.0
Parkside Woodlot			5.3	5.3
Wesley Coale Veterans Memorial Park			0.1	0.1

Prospect Park	17.1	0.2	2.1	19.3
Moore's Lake Park	10.8			10.8
Park Square			2.1	2.1
Unnamed Municipal Open Space		0.2		0.2
Witmer Field	6.2			6.2

Radnor Township	137.0	18.0	309.1	464.1
5th Ward Park			10.2	10.2
Bishop Richard Allen Park	0.3			0.3
Bo Connor Park/Filipone Park	17.9			17.9
Brooke Farm Trail North			13.1	13.1
Brooke Farm Trail South			13.5	13.5
Bryn Mawr at Malin			2.2	2.2
Chew Tract		10.4		10.4
Clem Macrone Park	9.4			9.4
Conestoga at Sproul			0.6	0.6
Cowan Field	2.1			2.1
Darby Creek Park - Briarwood			10.2	10.2
Darby Creek Park - Malin			15.2	15.2
Emlen Tunnell Park	0.3			0.3
Enke Park/Municipal Building	10.0			10.0
Fenimore Woods			10.0	10.0
Friends of Radnor Tails Park			3.0	3.0
Goff Property Park			5.8	5.8
Harford Park	29.0			29.0
Inverary Park			2.7	2.7
Ithan Valley Park			26.2	26.2
James C Dittmer Park	13.8			13.8
John Cappelli Golf Range	21.6			21.6
Leaming Tract		2.8		2.8
Martha Browns Woods			12.8	12.8
Odorisio Park	15.0			15.0
Odorisio Park/Ralph DiMaio Field	9.8			9.8
Petrie Park			0.1	0.1
Radnor Memorial Park	7.2			7.2
Radnor Middle School	0.7			0.7
Radnor Nature Park			2.8	2.8

Appendix I-G: Protected Open Space by Municipality

	Active Recreational	Non- recreational	Passive Parkland	Total
Radnor Trail			30.4	30.4
Saw Mill Park			4.5	4.5
Skunk Hollow Park			88.7	88.7
St David's Community Park			1.5	1.5
The Willows			48.2	48.2
Unkefer Park			0.8	0.8
West Wayne Preserve			6.7	6.7
Willows, The		1.7		1.7
Young Tract		3.1		3.1
Ridley Park Borough	5.9	0.1	32.2	38.1
ABC Park	5.9			5.9
Bonnes Park			1.1	1.1
Eastlake Park			13.7	13.7
Hetzel Park			2.3	2.3
Little Crum Creek Open Space			4.9	4.9
Nevin Street Park			0.6	0.6
Spirit of America Park			0.8	0.8
Stoney Creek Open Space			6.6	6.6
Tome Street Park (Firehouse Park)			1.4	1.4
Unnamed Municipal Open Space		0.1		0.1
Veterans Park			0.7	0.7
Ridley Township	63.8	30.1	11.3	105.2
6th Avenue Playground	1.4			1.4
Balignac Park			0.4	0.4
Bissinger Park	3.3			3.3
Black Rock Park	17.4			17.4
Bullens Lane Open Space Tract		15.8		15.8
Clark Avenue Park			0.5	0.5
Derwood Park and Gillespie Field	8.4			8.4
Father Nall Field	3.3			3.3
Franklin Field	1.2			1.2
Georgetown Park			1.7	1.7
Hutchinson Park			0.8	0.8
Mann Park	7.3			7.3
Maplewood Park	0.4			0.4
Moore's Lake Park	3.6			3.6
Picket Park			0.4	0.4
Ridley Township Building and Library			7.0	7.0
Ridley Township Marina	15.0			15.0
Rodney Island Park			0.1	0.1
Tony Daliessio Municipal Park	1.0			1.0
Unnamed Municipal Passive Parkland			0.4	0.4
Unnamed Municipal Open Space		14.3		14.3
West Road Park	1.7			1.7
Rose Valley Borough			54.3	54.3
Baxter Wildlife Preserve			0.9	0.9

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	Active Recreational	Non- recreational	Passive Parkland	Total
Longpoint Wildlife Sanctuary			17.6	17.6
Pew Park			0.3	0.3
Saul Wildlife Sanctuary			20.9	20.9
Todmorden Woods Wildlife Sanctuary			5.8	5.8
Valley Green			8.7	8.7

Rutledge Borough	0.8			0.8
Rutledge Triangle	0.8			0.8

Sharon Hill Borough	9.2			9.2
Academy Park	6.0			6.0
Memorial Park	1.6			1.6
Weiderwax Field	1.6			1.6

Springfield Township	97.3	10.3	111.0	218.7
Church Road Park	14.7			14.7
Crowell Park	14.9			14.9
Doe Run Park			2.8	2.8
Ellson Glen Park	4.6	10.2	0.4	15.2
Greenbriar Park			3.3	3.3
Halderman Field	7.0			7.0
Indian Rock Park			22.3	22.3
Jane Lownes Park			19.5	19.5
Kerr Park			2.2	2.2
Lehigh Circle Park			1.6	1.6
Levis Road Park			3.2	3.2
Maple Avenue Park	0.4	0.1		0.6
Meadowgreen Park	4.4			4.4
Netherwood Park	9.0			9.0
Pennsdale Park	3.4			3.4
Rolling Green Park			9.4	9.4
Spring Valley Park			4.8	4.8
Thomson Park			15.1	15.1
Veterans Memorial Park	7.1			7.1
Wagner Wayside Park			3.0	3.0
Walsh Park	18.0			18.0
Wildwood Avenue Park	1.0			1.0
Williams Park/Ampitheater	12.9			12.9
Woodland Park			23.5	23.5

Swarthmore Borough			7.9	7.9
Centennial Park			0.4	0.4
Gateway Park (Temporary name)			0.3	0.3
Keystone Park			0.4	0.4

Appendix I-G: Protected Open Space by Municipality

	Active Recreational	Non- recreational	Passive Parkland	Total
Little Crum Creek Park			5.3	5.3
Thatcher Park			0.2	0.2
Umoja Park			1.2	1.2

Thornbury Township	45.2	46.6	205.1	296.9
103 Creek Road			0.8	0.8
132 Creek Road			16.2	16.2
20 Westtown Road		10.3		10.3
39 Timber Lane		5.6		5.6
82 Creek Road			6.8	6.8
92 Creek Road			48.4	48.4
Bonner Park			58.1	58.1
Brinton Lake Road		3.9		3.9
Lovalee Lane			6.8	6.8
Martin Park			43.9	43.9
Palmer Arboretum			22.1	22.1
Thornbury Park	45.2		2.0	47.3
Township Complex		6.3		6.3
Township Maintenance Building		7.4		7.4
Unnamed Municipal Open Space		13.0		13.0

Tinicum Township	38.3	63.6	131.0	232.9
Governor Landing	2.1			2.1
Governor Printz Park			5.5	5.5
Lazaretto		8.6		8.6
Municipal Building Park	1.9			1.9
Tinicum Manor Recreation Area	17.6			17.6
Unnamed Municipal Passive Parkland			15.1	15.1
Unnamed Municipal Open Space		55.0		55.0
Wanamaker Park			1.5	1.5
Waterfront Open Space-Westinghouse Tract			108.9	108.9
Westinghouse Field	5.2			5.2
Westinghouse Grove	11.6			11.6

Trainer Borough	12.4	8.2	23.1	43.7
7th St Park			2.7	2.7
7th Street Park			14.5	14.5
Anderson Street Park	0.8			0.8
Henry Johnson Park	11.4		5.9	17.3
Municipal Building & Open Space		1.5		1.5
Unnamed Municipal Open Space - Center & Linwood St.		0.3		0.3
Unnamed Municipal Open Space		5.5		5.5
Vacant lot - Chestnut and 9th Sts.		0.9		0.9
Wilcox Street Park	0.2			0.2
Upland Borough	2.9	0.1	2.2	5.3
Bristol Lord Field	2.9			2.9
Hill Street Park			1.2	1.2
Municipal Building w/ Open Space			1.0	1.0

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Appendix I-G: Protected Open Space by Municipality

	Active Recreational	Non- recreational	Passive Parkland	Total
Municipal Nonrecreational Open Space		0.1		0.1
Upper Chichester	83.9	21.6	60.3	165.9
Bezors Run Stream Valley Open Space			4.6	4.6
Carlton I. Wilson Memorial Playground	0.7			0.7
Chichester Baseball League Fields	29.3			29.3
Furey Road Municipal Park	39.7	7.3		47.0
Gardendale Park	0.4			0.4
Jennifer Way Open Space		7.5		7.5
Johnson Avenue Playground	0.6			0.6
Kingsman Road Playground	1.5			1.5
Mill Road Woods			4.5	4.5
Naamans Creek South Open Space			8.9	8.9
Ogden Fields	4.6			4.6
Peach Street Playground	7.0			7.0
Tara Circle Woods			2.2	2.2
Twin Oaks Playground			0.6	0.6
Unnamed Municipal Active Parkland and Ballfields	0.2			0.2
Unnamed Municipal Passive Parkland			4.0	4.0
Unnamed Municipal Woods			35.6	35.6
Unnamed Municipal Open Space		6.8		6.8

Upper Darby Township	123.6	6.7	111.3	241.5
2 Story House		0.7		0.7
69th Street Park	8.6		6.4	15.0
Aberdeen Park			0.4	0.4
Addingham Manor & Gillespie Park	34.0			34.0
Beverly Hills Recreation Area	19.2			19.2
Bishop Park	3.7			3.7
Blanchard Road Play Area			0.4	0.4
Brookwood Park	1.7			1.7
Cardington Recreation Area			3.6	3.6
Clark Street Play Area	0.5			0.5
Cobbs Creek Park			0.3	0.3
Collenbrook Farm			8.4	8.4
Darby Creek Valley Park/Pilgrim Park			44.7	44.7
Dermond Circle		0.3		0.3
Dermond Recreation Area			12.3	12.3
Drexel Gardens Park			13.3	13.3
Evans Lane Park			4.8	4.8
Gillespie Park			4.6	4.6
Golf Road Play Area	0.3			0.3
Guilford Park			0.3	0.3
Huey Park	3.9		1.4	5.3
Keystone Play Area	2.0			2.0
Kirklyn Play Area	0.9			0.9
Mansion Park			4.4	4.4
McKinley Play Area	0.3			0.3
Michele Park			0.2	0.2

Appendix I-G: Protected Open Space by Municipality

	Active Recreational	Non- recreational	Passive Parkland	Total
Name Not Known	0.1			0.1
Naylor's Run Park	27.5			27.5
Observatory Hill Recreation Area	4.4			4.4
Parkview Play Area			1.1	1.1
Penn Pines Park	6.9			6.9
Providence Road Municipal Open Space		5.5		5.5
Scullion Park			0.4	0.4
Second Ward Play Area	2.9			2.9
Sellers Play Area	5.2			5.2
Shadeland Park			0.7	0.7
Stratford Play Area			0.1	0.1
Swedish Cabin			3.3	3.3
Unnamed Municipal Passive Parkland			0.5	0.5
Unnamed Municipal Open Space		0.2		0.2
Westview Play Area	0.9			0.9
Windermere Play Area	0.5			0.5

Upper Providence	8.7	24.6	72.5	105.8
Berman Park			0.5	0.5
Cherry Street Park	8.7			8.7
Drexline Tract		9.2		9.2
Homeowners Association Open Space - Ridley Creek Rd.		1.0		1.0
Houtman Park (Media Borough-owned)			3.3	3.3
Lavin Tract (Scott Park)			32.7	32.7
Municipal Nonrecreational Open Space - Farnum Road		1.9		1.9
Muriel Jaisohn Memorial Park			0.6	0.6
Ray Roche Park/Municipal Building			1.9	1.9
Scott Park (Media Borough-owned)			26.8	26.8
Sewer Facility		11.8		11.8
Thompson Park			6.5	6.5
Unnamed Municipal Open Space		0.7		0.7
Weldon Street Tot lot			0.2	0.2

Yeadon Borough	10.5	1.1	5.6	17.2
Blunston Run Park			5.6	5.6
Guenther Avenue & Cobbs Creek Parkway Traffic Island		0.1		0.1
Unnamed Municipal Open Space		0.9		0.9
Yeadon Community Park	10.5			10.5

Source: DCPD, 2014

APPENDIX I-H: POCKET PARKS IN DELAWARE COUNTY

Table H-1: Pocket Parks in Delaware County

Park Name	Municipality	Acres
Mayor Jack Edmundson Park	Aldan Borough	0.37
Veteran's Park	Aldan Borough	0.13
Aston Memorial Plaza	Aston Township	0.41
Mother Archie's Park	Chadds Ford Township	0.43
15th Street Park	Chester City	0.42
Crosby Square	Chester City	0.11
Little S Park	Chester City	0.12
Lloyd Neighborhood Playground	Chester City	0.33
McCafferty Park	Chester City	0.03
McClurg Playground	Chester City	0.37
Octagon Play Area	Chester City	0.43
Ward Street Playground	Chester City	0.12
West 10th Street Park	Chester City	0.38
William Mitchell Park	Chester City	0.49
Unnamed Municipal Active Parkland and Ballfields - Chester Twp	Chester Township	0.23
Unnamed Municipal Active Parkland and Ballfields - Clifton Hts	Clifton Heights	0.09
Unnamed Municipal Passive Parkland - Clifton Hts	Clifton Heights	0.47
Keystone Avenue Park	Colwyn Borough	0.18
Water Street Park	Colwyn Borough	0.28
Poplar St Playground	Darby Borough	0.14
Grobes Park	Darby Township	0.47
Madison & Beech Playground	Darby Township	0.34
Spruce Street Park	Darby Township	0.13
JFK Memorial Gateway	East Lansdowne	0.03
Bessie Barber Memorial Park	Eddystone Borough	0.09
Village Playground	Eddystone Borough	0.25
Farwood Tot Lot	Haverford Township	0.18
Llanerch Crossing Park	Haverford Township	0.07
Llanerch Park	Haverford Township	0.50
Borough Greene	Lansdowne Borough	0.12
Morton Street Open Lot	Lower Chichester	0.05
Market Green	Marcus Hook Borough	0.38
Oakmont Tot Lot	Media Borough	0.33
Plum Street Mall	Media Borough	0.17
Paper Street	Nether Providence	0.32
Woodrow Wilson Park	Nether Providence	0.43
College Avenue Lot	Newtown Township	0.15
Locust Street Lot	Newtown Township	0.11

Table H-1: Pocket Parks in Delaware County (cont.)

Park Name	Municipality	Acres
Huron Park	Norwood Borough	0.23
ILG Island Memorial	Parkside Borough	0.03
Wesley Coale Veterans Memorial Park	Parkside Borough	0.14
Bishop Richard Allen Park	Radnor Township	0.26
Emlen Tunnell Park	Radnor Township	0.34
Petrie Park	Radnor Township	0.08
Balignac Park	Ridley Township	0.39
Maplewood Park	Ridley Township	0.40
Picket Park	Ridley Township	0.36
Rodney Island Park	Ridley Township	0.10
Unnamed Municipal Passive Parkland - Ridley	Ridley Township	0.43
Pew Park	Rose Valley Borough	0.32
Maple Avenue Park	Springfield Township	0.44
Gateway Park (Temporary name)	Swarthmore Borough	0.29
Keystone Park	Swarthmore Borough	0.42
Thatcher Park	Swarthmore Borough	0.22
Wilcox Street Park	Trainer Borough	0.19
Gardendale Park	Upper Chichester	0.42
Unnamed Municipal Active Parkland and Ballfields - Upper Chichester	Upper Chichester	0.18
Aberdeen Park	Upper Darby Township	0.38
Blanchard Road Play Area	Upper Darby Township	0.36
Clark Street Play Area	Upper Darby Township	0.47
Cobbs Creek Park	Upper Darby Township	0.25
Golf Road Play Area	Upper Darby Township	0.35
Guilford Park	Upper Darby Township	0.27
McKinley Play Area	Upper Darby Township	0.30
Michele Park	Upper Darby Township	0.24
Scullion Park	Upper Darby Township	0.39
Stratford Play Area	Upper Darby Township	0.11
Unnamed Municipal Passive Parkland - Upper Darby	Upper Darby Township	0.49
Unnamed Municipal Active Parkland and Ballfields - Upper Darby	Upper Darby Township	0.15
Windermere Play Area	Upper Darby Township	0.45
Berman Park	Upper Providence	0.47
Weldon Street Tot lot	Upper Providence	0.17

Source: DCPD, 2014

APPENDIX I-I: SIGNIFICANT INSTITUTIONAL OPEN LANDS

Table I-1: Institutional Lands

Institution	Municipality	Acreage
Agnes Irwin School	Radnor Township	17.5
American College	Radnor Township	34.2
Archbishop Carroll High School	Radnor Township	48.8
Archbishop Prendergast and Monsignor Bonner	Upper Darby Township	29.9
Archbishop Prendergast and Monsignor Bonner High Schools	Upper Darby Township	0.0
Benchmark School & Athletic Fields	Upper Providence Township	18.1
Bethlehem Methodist Church	Thornbury Township	10.3
Bible Community	Glenolden Borough	1.6
Brinton 1704 House	Chadds Ford Township	10.7
Brookhaven Baptist Church	Brookhaven Borough	3.8
Brookline School Playground	Haverford Township	2.0
Cabrini College	Radnor Township	103.8
Caleb Pusey Historic Site	Upland Borough	1.0
Calvary Chapel	Chadds Ford Township	26.7
Calvary Episcopal Church Open Space	Aston Township	8.1
Cardinal O'Hara High & Archdiocese Open Space	Marple Township	273.5
Care Matrix	Upper Providence Township	4.2
Chadds Ford His. Soc., J. Chads Vis Cntr.	Chadds Ford Township	3.5
Chadds Ford Historical Society	Chadds Ford Township	2.6
Chanticleer Foundation	Radnor Township	10.3
Chester Christian School	Middletown Township	31.0
Cheyney University	Thornbury Township	107.7
Chichester Baptist Church	Upper Chichester Township	14.5
Christ United Methodist Church & Open Space	Marple Township	2.5
Christian Life Complex	Concord Township	18.4
Community Hospital of Chester	Chester City	13.2
Country Day School	Radnor Township	15.8
Covenant Fellowship Church Inc	Concord Township	14.3
Crozer Arboretum	Upland Borough	6.0
Crozer Arboretum & Open Space	Upland Borough	30.5
Delaware County Christian Elementary School	Newtown Township	6.5
Delaware County Christian Middle and High School	Newtown Township	16.1
Delaware County Community College	Marple Township	122.1
Delaware County Historical Society	Marple Township	3.8
Delaware County Vocational Tech School	Marple Township	12.4
DelCo Early Learning Center	Upper Darby Township	2.1
Divine Providence Village	Marple Township	22.1
Dunwoody Continuing Care Retirement Community	Newtown Township	87.3
Eastern University	Radnor Township	88.6
Elam United Methodist Church	Concord Township	8.6
Elwyn Inc	Aston/Middletown Townships	273.1

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Appendix I-I: Significant Institutional Open Lands

Table I-1: Institutional Lands (cont.)

Institution	Municipality	Acreage
Elwyn Inc, Easement Section to County	Middletown Township	5.5
Episcopal Academy	Newtown Township	126.8
Eternal Hope of Glory Church Open Space	Chester Township	10.0
Fair Acres	Middletown Township	100.0
Faith Community Church	Brookhaven Borough	3.3
Fox Valley Community Service	Concord Township	9.2
Friend's Meeting	Radnor Township	5.0
Garrett Williamson Foundation	Newtown Township	239.7
Glen Mills School for Boys	Thornbury Township	237.4
Granite Farm Estates Retirement Community	Middletown Township	26.1
Greek Orthodox Church Complex	Middletown Township	11.4
Green Ridge Fire Company	Aston Township	4.9
Hancock United Methodist Church Open Space	Springfield Township	5.5
Haverford College	Haverford Township	7.5
Haverford College & Open Space	Haverford Township	153.5
Haverford College Open Space	Haverford Township	4.5
Hilltop Prep School	Radnor Township	23.3
Immanuel Church	Edgmont Township	11.1
Katherine Drexel Catholic School	Chester City	6.2
Landingford Plantation	Upland Borough	11.4
Lima Estates Retirement Community	Middletown Township	48.0
Little Flower Manor and Villa St. Teresa	Darby Borough/Upper Darby Township	45.8
Little Flower Manor Nursing Home	Darby Borough	1.7
Lutheran Knolls	Upper Chichester Township	10.4
Malvern School of Glen Mills	Thornbury Township	12.1
Martin's Run Life Care Community	Marple Township	21.6
Media Providence Friends School	Media Borough	1.2
Melmark School and Home	Newtown Township	59.7
Mercy Hospital Open Space	Yeadon Borough	7.4
Neumann College	Aston Township	40.6
New Brinton Lake Club	Thornbury Township	23.1
Northminister Presbyterian Church	Upper Darby Township	6.1
Notre Dame de Namur	Ridley Township	10.4
Notre Dame DeNamur	Radnor Township	36.3
Old Union United Methodist Church Fields	Rose Valley Borough	2.0
Open Connections School	Edgmont Township	28.0
Our Lady of Charity	Brookhaven Borough	11.8
Our Lady of Fatima & Open Space	Ridley Township	5.9
Pen del Hill Quaker Retreat	Nether Providence Township	15.2
Penn State Brandywine Campus	Middletown Township	87.3
Pennsylvania Institute of Technology	Upper Providence Township	9.9
Philadelphia Camp Meeting	Chester Heights Borough	30.5
Praise Center Mennonite Church Playground	Eddystone Borough	0.4

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Appendix I-I: Significant Institutional Open Lands

Table I-1: Institutional Lands (cont.)

Institution	Municipality	Acreage
Presbyterian Children's Village	Radnor Township	42.7
Proclamation Presbyterian	Radnor Township	8.7
Riddle Memorial Foundation/Village	Middletown Township	40.2
Riddle Memorial Hospital	Middletown Township	36.9
Sacred Heart Hospital	Haverford Township	8.0
Sisters of St. Francis Convent	Aston Township	190.3
Sleighton Farm School (Abandoned)	Middletown Township	25.9
Smedley Park, Swarthmore College Lands	Springfield Township	30.3
SPCA of Delaware County & Open Space	Upper Providence Township	7.0
Spruce St. Baptist Church	Newtown Township	10.9
St Albans Church & Open Space	Radnor Township	4.6
St Cornelius Roman Catholic Church	Chadds Ford Township	49.2
St Edmonds Home	Radnor Township	15.8
St James Episcopal Church	Aston Township	4.6
St James Methodist Church	Marple Township	4.8
St John Chrysostom Church & School	Nether Providence Township	15.7
St Kevin's Church and Open Space	Springfield Township	11.8
St Louis Church	Yeadon Borough	4.8
St Martin's Church and Cemetery	Marcus Hook Borough	1.6
St Thomas the Apostle Church	Chester Heights Borough	30.2
St. Aloysius Academy	Radnor Township	42.6
St. David's Episcopal Church	Newtown Township	11.8
St. Dorothy's Church	Upper Darby Township	6.8
St. Eugene's School/Convent Open Space	Upper Darby Township	12.3
St. James Church & Open Space	Haverford Township	1.9
St. Martin's Church and Open Space	Radnor Township	7.3
St. Martin's Episcopal Church and Cemetery	Upper Chichester Township	12.5
St. Mary Magdalen Church & School	Upper Providence Township	12.2
Sunrise Assisted Living & Open Space	Newtown Township	11.8
Swarthmore College Campus	Swarthmore Borough	115.0
Swarthmore College Clothier Fields	Swarthmore Borough	28.5
Swarthmore College Cunningham Fields	Swarthmore Borough	18.4
Swarthmore College Indoor Recreation Facilities	Swarthmore Borough	4.3
Swarthmore College Open Space	Nether Providence/Springfield Townships/Swarthmore Borough	125.4
Taylor Community Foundation Open Space	Ridley Park Borough	9.6
Technical School at Folcroft	Folcroft Borough	9.8
The Christian Academy	Brookhaven Borough	15.0
The Quadrangle	Haverford Township	74.8
The School in Rose Valley	Rose Valley Borough	8.2
The Walden School	Upper Providence Township	1.6
Trinity Methodist Church	Chester City	1.7
Unitarian Church and Open Space	Upper Providence Township	9.0

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Appendix I-I: Significant Institutional Open Lands

Table I-2: Institutional Lands (cont.)

Institution	Municipality	Acreage
United Presbyterian Church Open Space	Aston Township	7.8
University of Penn Labs Open Space	Glenolden Borough	16.0
Valley Forge Military Academy	Radnor Township	68.8
Villanova University	Radnor Township	30.9
Villanova University & Open Space	Radnor Township	189.7
Walnut Lane Swarthmore College Woods	Springfield Township	2.3
White Horse Village	Edgmont Township	92.9
Widener Open Space	Upland Borough	11.5
Widener University Football/Baseball Stadiums	Chester City	34.4
Widener University Open Space	Chester City	36.2
Williamson Free School	Middletown Township	215.2
COUNTY TOTALS		4,814.9

Source: DCPD, 2014

APPENDIX I-J: EXISTING TRAILS IN DELAWARE COUNTY

Table J-1: Existing Trails in Delaware County

Name	Municipality	Type of Trail	Surface Type
Adkinson Park Trail	Bethel	Multi-use	Paved
Bailey Park Pedestrian Path	Haverford	Multi-use	Concrete
Bartram Park Trail	Darby Borough	Hiking	Dirt/Mulch
Black Rock Park Trail (north)	Ridley	Hiking	Dirt
Black Rock Park Trail (south)	Ridley	Hiking	Dirt
Blue Trail (RCSP)	Edgmont	Hiking	Dirt
Blue Trail (Tyler-Rocky Run Trail)	Middletown	Hiking	Grass
Bonner Park Trail	Thornbury	Hiking	Dirt
Brandywine Trail	Chadds Ford	Hiking	Gravel/Boardwalk
Brooke Farm Trail	Radnor	Hiking	Dirt
Brookhaven Municipal Center Walking Trail	Brookhaven	Multi-use	Paved
Brookhaven Swim Club Trail	Brookhaven	Hiking	Dirt
Butterfly Trail	Edgmont	Hiking	Dirt
Chester City Riverfront Trail	Chester City	Multi-use	Paved
Clayton Park Trail	Concord	Hiking	Paved
Cobbs Creek Park Trail (Upper Darby South)	Upper Darby	Hiking	Paved/Dirt
Cobbs Creek Park Trail (Yeadon North)	Yeadon	Hiking	Paved/Dirt
Cobbs Creek Park Trail (Yeadon South)	Yeadon	Hiking	Paved/Dirt
Cobbs Creek Park Trails (Haverford)	Haverford	Hiking	Dirt
Concord Township Park Trail	Concord	Hiking	Paved
Cornucopia Trail	Middletown	Hiking	Dirt
Creskide Trail	Upper Chichester	HOA Hiking	Paved
Darby Creek Trail - Haverford	Haverford	Multi-use	Paved
Darlington Trail	Middletown	Hiking	Dirt
Dittmar Walking Trail	Radnor	Hiking	Paved
Ellson Trail	Springfield	Hiking	Dirt
Fisher Park Trail	Aston	Hiking/Biking	Stone
Fisherman's Trail	Edgmont	Hiking	Dirt
Fox Hill Farm Trails	Concord	HOA Hiking	Paved
Furness Park Trail	Nether Providence	Hiking	Dirt
Garnet Oaks trails	Bethel	HOA Hiking	Dirt
Glen Providence Park Trails	Upper Providence	Hiking	Grass/Dirt
Glendale Trail (south)	Haverford	Hiking	Dirt
Goshen Road Trail (SAP Trail)	Newtown	Multi-use	Paved
Grange Trail	Haverford	Hiking	Dirt
Green Trail (Tyler Arboretum)	Middletown	Hiking	Grass
Haverford College Trail	Haverford	Hiking	Dirt

Appendix I-J: Existing Trails in Delaware County**Table J-1: Existing Trails in Delaware County (cont.)**

Name	Municipality	Type of Trail	Surface Type
Haverford Reserve Trails	Haverford	Hiking	
Heinz Refuge Impoundment Trail	Tinicum	Hiking/Biking	Gravel
Hepford Field Trail	Nether Providence	Hiking/Biking	Paved
Hildacy Farm Trails	Marple	Hiking	Dirt
Hildacy Farms Trails	Marple	Hiking	Grass
Horse Trail (RCSP)	Edgmont	Equestrian	Dirt
Indian Orchard Trail	Middletown	Hiking	Dirt
Indian Rock Park Trail	Springfield	Hiking	Dirt
Ithan Valley Trail	Radnor	Hiking/Biking	Dirt
Karakung Trail (and extensions)	Haverford	Hiking	Mulch/Dirt
Kent Park Trail	Marple	Hiking	Dirt
Lansdale Glen Trail	Middletown	Hiking	Dirt
Lawrence Park-Loomis Elementary Trail	Marple	Hiking	Dirt
Leiper-Smedley Trail	Nether Providence	Multi-use	Paved
Linville Trail	Middletown	Hiking	Grass
Luckenbach Trail	Thornbury	Hiking	Dirt
Martin Park Trail	Thornbury	Hiking	Grass
Millennium Trail	Middletown	Hiking	Grass/Dirt
Naamans Creek South OS Trail	Upper Chichester	Hiking	Dirt
Newlin Mill Trail	Concord	Hiking	Dirt
Orange Trail (RCSP)	Edgmont	Hiking	Dirt
Orange Trail (Tyler-Dismal Run Trail)	Middletown	Hiking	Grass
Palmer Arboretum Trail	Thornbury	Hiking	Dirt
Patterson Woods Trail	Thornbury	Hiking	Dirt
Pennock Woods	Lansdowne	Hiking	Dirt
Pennsy Trail	Haverford	Hiking	Wood Chips/Dirt
Pilgrim Park Trail (Haverford)	Haverford	Hiking	Dirt
Pilgrim Park Trail (Upper Darby)	Upper Darby	Hiking	Dirt
Pink Trail (Tyler-Pink Hill Trail)	Middletown	Hiking	Dirt
Powder Mill Valley Trail	Haverford	Hiking	Dirt
Purple Trail-East (Tyler Connector Trail)	Middletown	Hiking	Dirt
Purple Trail-West (Tyler Connector Trail)	Middletown	Hiking	Dirt
Radnor Trail	Radnor	Multi-use	Paved
Red Trail (RCSP)	Edgmont	Hiking	Dirt
Red Trail (Tyler-Painter Trail)	Middletown	Hiking	Grass
Ridley Creek State Park Multi-Use Trail	Edgmont	Multi-use	Paved
Ridley Township Municipal Park Exercise Trail	Ridley	Multi-use	Gravel

Table J-1: Existing Trails in Delaware County (cont.)

Name	Municipality	Type of Trail	Surface Type
Rocky Run Trail	Middletown	Hiking	Dirt
Rolling Green Trail	Springfield	Hiking	Dirt
Rose Tree Park Trail	Upper Providence	Hiking	Dirt
Runnymede Trail	Edgmont	Hiking	Wood Chips
Saul Wildlife Trail	Rose Valley	Hiking	Dirt
Saw Mill Trail	Radnor	Hiking/Biking	Paved/Dirt
Skunk Hollow Trail	Radnor	Hiking/Biking	Dirt
Spring Valley Trail	Springfield	Hiking	Dirt
Springfield Trail/Smedley Yellow Trail	Springfield	Hiking	Dirt
Summit Trail	Thornbury	Hiking	Dirt
Swarthmore College Crum Woods Trails	Swarthmore	Hiking	Dirt
Swarthmore Trail	Swarthmore	Hiking	Dirt
Taylor Arboretum Trail	Nether Providence	Hiking	Dirt
Thornbury Park Back Field Loop	Thornbury	Hiking	Grass
Thornbury Park Paved Loop	Thornbury	Multi-use	Paved
Trolley Station Trail (Smedley Park)	Nether Providence	Hiking	Dirt
Veterans Memorial Trail	Marple	Hiking	Paved
Walsh Trail	Springfield	Hiking	Stone
White Trail (RCSP)	Edgmont	Hiking	Dirt
White Trail (Tyler-Minshall Trail)	Middletown	Hiking	Dirt
Willow Park Trails	Ridley	Hiking	Dirt
Willows Trail	Radnor	Hiking/Biking	Dirt
Woodlawn Trustees Trail	Concord	Multi-use	Wood Chips/Dirt
Woodlot Trail	Parkside	Hiking	Paved
Yellow Trail (RCSP)	Edgmont	Hiking	Dirt
Yellow Trail (Tyler-Middle Farm Trail)	Middletown	Hiking	Grass

Source: DCPD, 2014

APPENDIX I-K: PARKS AND TRAIL CASE STUDIES

The Radnor Trail: a Delaware County Multi-Use Rail Trail Success Story

The Radnor Trail is a 2.4-mile long rail-trail in Radnor Township which opened to the public in 2005. It is a fully paved multi-use trail that is practical for various forms of recreation such as walking, bicycling, running, in-line skating, dog-walking, and strollers. The 2011 DVRPC/Greenspace Alliance study *Return on Environment - The Economic Value of Protected Open Space in Southeastern Pennsylvania* prepared by the Economy League of Greater Philadelphia states that “One recent estimate reports that the Trail can see between 200 and 600 users per day. It is also estimated that the Trail has more than 150,000 day users every year, mostly from Radnor and neighboring townships, as well as from the City of Philadelphia.” (GreenSpace Alliance; Delaware Valley Regional Planning Commission 2011)

The trail follows the former Pennsylvania & Western Railroad (P&W) right-of-way and can be accessed at seven locations, with Sugartown Road and Radnor-Chester Road currently being the two end access points. A narrower trail (about 5 ft. wide) extends north on Radnor-Chester Road, connecting the Radnor Trail to Lancaster Avenue. The Radnor Trail is available for public use from dawn to dusk. The trail is maintained by Radnor Township's Department of Parks and Recreation, along with support from the Radnor Historic Society and the Friends of the Radnor Trail.

Benefits of the Radnor Trail to the Community

According to *Return on Environment*, “The Radnor Trail serves as a community gathering place that encourages physical activity among Township residents and provides an alternative way to get from one place to another.”

Effect on Property Values and Revenue Generation

“The trail’s presence has helped to increase already strong property values in the desirable Main Line communities surrounding it. According to analysis of real estate sales within a quarter-mile of the Trail, proximity to the Radnor Trail equates to an average property enhancement of \$69,139. The Trail is also often mentioned in real estate listings as a recreational and amenity and as a method of convenient connection to nearby destinations.”

“Local businesses benefit from the Trail’s presence, as well. A Wawa store located near the trailhead at Sugartown Road in Wayne benefits from an increase in its customer base due to Trail traffic and donations to the Friends of Radnor Trails. Businesses and community groups often post advertisements and signs along the Trail’s fence and gates in order to reach a larger audience.” (GreenSpace Alliance; Delaware Valley Regional Planning Commission 2011)

Effect on Physical Activity

“Before the Radnor Trail’s construction, the primary local options for joggers and walkers were the high school track or township roads. The Trail provides a convenient additional outlet for exercise, contributing to a healthier community.”

“Aside from individuals who use the Radnor Trail for personal fitness and recreation, organized groups also take advantage of it. The high school track team utilizes it for practices, and the Radnor Township Parks and Recreation Department offers exercise classes on the trail for adults, including a stroller fitness class for mothers. Additionally, several private fitness instructors meet clients along the Trail for training sessions.” (GreenSpace Alliance; Delaware Valley Regional Planning Commission 2011)

Growing the Radnor Trail from Idea to Planning

Before it was turned into a trail, this section of the P&W railway had been inactive since 1956. Radnor Township acquired the rights to build a trail where the railway existed. The railroad was purchased by PennDOT (then the Pennsylvania Department of Highways) as right-of-way for the proposed Wayne Bypass which was never constructed. Some of the right-of-way was, of course, later used in the construction of I-476. (Thomas, Interview Regarding Radnor Trail 2013)

With the energy crisis in the mid-1970's interest grew in Radnor and other communities in trails. The Township was awarded a Bikeway Demonstration grant from the Federal Highway Administration to perform a feasibility study on the conversion of the railbed to a trail. However because of many objections by some citizens, the grant was turned down, and the Township used its own funds for the study, which was prepared by Campbell Thomas & Co. in the early 1980's. Here again there were numerous objections, and the Township dropped the matter. (Thomas, Interview Regarding Radnor Trail 2013)

The process of proposing and developing the trail served to bring area residents together, both those for and against it. A grassroots effort to build a multi-use trail began in earnest in 1992. (GreenSpace Alliance; Delaware Valley Regional Planning Commission 2011) The resurgence in interest in the trail was spurred by the success of other nearby trails such as the Schuylkill River Trail. Also, PennDOT was concerned with the right of way and wanted it to be put to some good use. District Engineer Karlton Kieffer was the champion within PennDOT who worked with the Township and the Friends of Radnor Trails to get the Township to agree to at least a referendum on studying the possibility of a trail. (Thomas, Interview Regarding Radnor Trail 2013)

Campbell Thomas & Company was retained by PennDOT through a competitive process to serve as consultant for each stage of the process from feasibility, through preliminary and final design, public involvement (over 60 meetings with the public and citizens over a two year period), bidding and construction. (Thomas, Interview Regarding Radnor Trail 2013)

Tom Blomstrom, Director of Parks and Recreation for Radnor at the time, attended virtually every meeting with Bob Thomas and Penn DOT's project manager Mike Girman through this difficult period. Blomstrom and Girman were essential in the development of a cooperative agreement between PennDOT and the Township wherein PennDOT continues to take responsibility for the large girder bridges on the trail, and the Township manages the Trail as part of the Township park system. (Thomas, Interview Regarding Radnor Trail 2013)

Concerns and Fears Addressed

The Township held several public meetings at every stage of the process. The Township and PennDOT agreed to meet, and did meet with property owners at their convenience to listen to concerns and recommendations. (Thomas, Interview Regarding Radnor Trail 2013)

As planning and outreach went on, the trail movement served to catalyze a group of passionate opponents with various concerns and fears. The Township worked to address each of these in the planning process. The Friends of Radnor Trails, a citizens group formed in 1993, worked with the township's Department of Parks and Recreation to raise support and funds and to hold one-on-one meetings with concerned homeowners to curb such apprehension and sell the trail concept to residents.

Access and Parking Concerns

Concerns for access were answered by the careful placement of entrances to the trail. In the end, planners strategically placed trail access points so that users could walk to school, to downtown Wayne shops and restaurants, and other destinations, such as the Whole Foods Market on Lancaster Avenue. (GreenSpace Alliance; Delaware Valley Regional Planning Commission 2011)

Concerns about parking were addressed by providing for both on-street and off-street parking where possible, though the design for parking sparked controversy as well. (Thomas, Interview Regarding Radnor Trail 2013) Today, usage by those arriving by automobile is accommodated by the presence of trailhead parking lots. The parking lot at Conestoga Road and Brookside Avenue was the last battle of the trail's planning. Some thought people would abandon derelict cars there. (Thomas, 2010) Before the trail was built, abandoned cars, appliances, trash, and broken glass were commonly found along the long-unused train tracks. (GreenSpace Alliance; Delaware Valley Regional Planning Commission 2011) The Township Parks Department volunteered to maintain the lot as a "park." Some members of the public thought no one would use the lot, but it has been very popular and well-utilized. (Thomas, 2010) Other places users can park today include the Township Building lot, at Odorisio Park off West Wayne Avenue, and at the Friends of Radnor Trails Park.

Addressing Safety and Security Fears

Fears expressed ranged from theft and assault to the dumping of trash and disruption of drainage. Some citizens worried that a new trail would allow users from outside of Radnor to walk too closely to their homes, compromising privacy and safety. (GreenSpace Alliance; Delaware Valley Regional Planning Commission 2011)

Part of the compromise negotiated with homeowners who were originally in opposition to the proposal included the offer of multiple fencing options, ranging from no fence, to wire right-of-way fence, to wood stockade fencing. Other options chosen by landowners included installing a gate for the owner's use, or providing for a future gate in the design of the fence (i.e. having the fence "gate-ready." (Thomas, Interview Regarding Radnor Trail 2013) The biggest provision for homeowners was the installation of a tall wooden fence along parts of the trail, blocking views into backyards. (GreenSpace Alliance; Delaware Valley Regional Planning Commission 2011)

In the time since it has become a popular amenity, many homeowners have built gates, access paths, and stairs to link to the Trail. People have also strategically placed for-sale signs facing the Trail when putting their properties on the market. (GreenSpace Alliance; Delaware Valley Regional Planning Commission 2011)

Since the Radnor Trail's construction, Township officials say that the community has responded in an overwhelmingly positive way and that their original safety concerns failed to materialize. In fact, the Trail may have helped to stop some minor crimes and vandalism. (GreenSpace Alliance; Delaware Valley Regional Planning Commission 2011) No trail is completely without incident. In the trail's first nine years, only two sets of incidents involved the Trail: one series of reckless mischief events in 2012 involving rocks being thrown from a trail overpass onto traffic on a road below, and one isolated incident of indecent exposure in 2008. (Segall 2012) (Heck 2011) (Schaefer 2008)

Today, the thought is that criminal activities have been effectively discouraged and the trail is perceived as a clean and safe place. The trail is also well signed. It is not difficult for a person to tell where one is on the trail using mile markers and other signs, which is helpful in case of an emergency. (Thomas, Tour

Appendix I-K: Parks and Trail Case Studies

of Radnor Trail 2010) This level and safety and security is attributed mainly to the heavy use and monitoring by its hundreds of daily users, Township staff, and police, and excellent management and maintenance by the Township. Despite strong resistance to the creation of the Trail among some homeowners, the Radnor Trail is now widely viewed as a major community amenity. (GreenSpace Alliance; Delaware Valley Regional Planning Commission 2011)

Other Impacts of Outreach on Trail Planning and Design

Besides those detailed above, the following are two more examples of the results of conversations and private meetings with landowners.

- The Greystone Condominiums development had boulders left over which were used for landscaping along the trail. The Township worked with the contractor to place them along the trail for landscaping. In some sections they act as a retaining wall. (Thomas, Tour of Radnor Trail 2010)
- Today, an apartment complex has no side trail connecting it to the Radnor Trail, despite encouragement by the Township. When the trail was being planned, planners had to meet separately with people associated with the apartments in separate groups (i.e. those for the trail, and those against it). (Thomas, Tour of Radnor Trail 2010)

Since the Trail's Opening

Historic interpretive signage was put in a few years after the trail opened. The surface of the historic signs are made of porcelain enamel, which should last 30 years. (Thomas, Tour of Radnor Trail 2010)

Friends of Radnor Trails Park, is a Township park on the Trail at W. Wayne Avenue that opened in 2009. It contains parking, restrooms, a bike rack, picnic tables, landscaping, and a large mowed lawn area. A spur trail also runs through the park to S. Devon Avenue. On the other side of the Radnor Trail from this park is another larger Township property known as the Levin Tract. That wooded land currently functions as a stormwater management area but it may be used for additional functions in the future. (Thomas, Tour of Radnor Trail 2010)

The Wayne Art Center presently has the ideal trail access entryway. Because of its access to the Center, hundreds of properties are now connected to the trail. The Center board initially voted against the trail entryway. A fence was put in gate-ready. Today there is no sign of the fence, as it was removed, and a pathway, landscaping, and a kiosk were put in between the parking lot and the trail. The Center was in favor of the Conestoga Road Parking lot because they didn't want trail users to take up spaces at the Art Center. This is still an issue that they have to keep on top of. (Thomas, Tour of Radnor Trail 2010)

Future Trail Extension

Currently there is a movement to extend the trail to both the north and southeast. The intent of this "Forge to Refuge Trail" is to have the Radnor Trail be a part of a regional trail that links the Valley Forge National Park to the John Heinz National Wildlife Refuge at Tinicum through parts of Chester, Delaware, and Philadelphia Counties. Links to Ithan Valley Road and the Blue Route right-of-way are two other links that the Township and County have explored in their trail and greenway planning.

The Leiper Smedley Trail: Seizing an Opportunity

The Leiper-Smedley Trail was built in conjunction with the construction of I-476, locally known as the “Blue Route” which opened in December of 1991. The trail is a 2.2-mile paved trail that runs roughly parallel to I-476. At 5 to 10 feet wide, it is adequate in most portions for a multi-use trail of this type. Many people use the trail for walking and jogging. A portion of the trail is used for the Township’s annual 5K Race for First Responders.

Trail Location

The trail can be accessed from Smedley Park (located on Baltimore Pike in Nether Providence and Springfield Townships on Crum Creek), from Avondale Road at the overpass of Interstate 476 in Nether Providence Township, or from the historic Leiper House in Nether Providence Township. Another key destination along the trail is the Community Arts Center of Wallingford. Two street overpasses, Rogers Lane and Plush Mill Road, are utilized by the trail to get users from one side of the highway to the other. The trail is available for public use from dawn to dusk.

The Offer for a Highway Right-of-Way Trail

In 1985 the Delaware County Planning Department drew up a trail route for a multi-use trail mostly in the highway right-of-way. PennDOT had proposed paying 90% of the cost of trail construction for a trail running the length of the highway in Delaware County, and the County government offered another 5% to interested municipalities. Because of some concerns from some municipalities over security and ongoing maintenance costs for a trail, only Nether Providence Township took PennDOT and the County up on their offer, which resulted in the construction of the Leiper-Smedley Trail.

Planning and Public Outreach

The Township held public input meetings with residents and established its Walkway Committee which coordinated the effort to have a trail. As a result of these meetings, the location of the trail between Rogers Lane and Plush Mill Road was relocated to the west side along the properties of the Pendle Hill Quaker Study Center and the Community Arts Center. The relocation was made to address some resident concerns that the trail would provide burglars easy access to the back yards of adjacent homes. Additionally, security fencing was included along portions of the trail.

Maintenance and Security – Uncomplicated and Trouble-Free

The Township Public Works Department maintains the trail by removing overhanging vegetation and cutting the bordering grass areas using large mowers. Maintenance is fairly easy since the footbridges and most of the path is accessible using a pick-up truck and small dump truck. During the first 22 years of the trails existence (as of 2013) there was only 1 criminal incident and a handful of incidents involving graffiti.

Future Connection and Expansion Opportunities

In 2013, a sidewalk was completed from the Wallingford train station to Rogers Lane and Turner Road. Further extensions are planned to interconnect the trail with more neighborhoods in the Township.

Despite the PennDOT offer for financing the trail being off the table at this point, extensions of this trail from the north and south ends are possible, but not without obstacles. These extensions could connect through Smedley Park along the Crum Creek stream valley to Haverford’s Darby Creek Trail to the north, and connect through Ridley Township to the East Coast Greenway to the south.

The Rocky Run Trail and Middletown Township’s Open Space Preservation

Middletown Township, one of the largest municipalities in Delaware County in Land Area, is known for its proactive programs, policies, and public support for open space and preservation and trails development. The Rocky Run Trail is the Township’s longest and most interconnected trail; however it cannot be properly explained or understood without first understanding some of the background of Middletown’s open space preservation program and its vision for a Township trail network.

Project 300: The Rise of Middletown’s Open Space Preservation Program

In 1986, the Middletown Township Council initiated an ambitious open space preservation program called Project 300, named after the Township’s tricentennial. Voters overwhelmingly supported Project 300 in a special referendum in 1987 to authorize a \$5.4 million bond to purchase open space. The Middletown Township Land Conservancy (MTLC) played a major role in community outreach, positively affecting attitudes about open space preservation among Township residents. Preservation of significant portions of the remaining open space in Middletown was felt to be a key element in helping to retain and protect the present character and quality of life of the community.

With the showing of citizen support, the Township was able to proceed with the acquisition of two tracts in 1987: 157 acres of from the Linvill family on the north side of West Knowlton Road, and about 170 acres from the Jesse and Martha Darlington Estate heirs located along both sides of Darlington Road adjacent to Chester Creek.

Outside of Project 300, the Township added, with the help of the MTLC, the former Indian Orchard Girl Scout Camp property in 1981. More recently, the Township acquired a 22-acre undeveloped part of the former Sleighton School (now Sleighton Park) in 2002, and the 76-acre Smedley Tract in 2005 (purchased through a voter-approved bond of \$8.5 million). These lands, along with other additions, now comprise one of the largest municipally-owned open space systems in the Greater Philadelphia area at approximately 650 acres.

Another source of land and funding for the expansion of Township’s parks and public open space system has been from developers via a mandatory public dedication of open space or fee-in-lieu ordinance.

Middletown Township Trail Network

After the acquisition of the Linvill and Darlington Tracts, members of Township Council, led by Chairman John Laskas, felt that it was very important for residents to be able to enjoy the new open space without significantly altering the character and beauty of the newly-acquired parcels. Council members worked with an Open Space Advisory Committee of residents and staff to create a trail network.

Middletown’s early open space acquisitions provided a big head start for recreational trail development. The Linvill Trail / Indian Orchard Trail system spans Indian Orchard Park and Linvilla Orchards where the Township owns land and has a life estate agreement with the farm, a popular retail store and “agri-tourism” business. Future extensions of this trail could connect it to the planned Chester Creek Trail.

There was very little objection to the overall layout and marking of the Township’s trails. In most cases, very little clearing needed to be done as the trails were laid out based on existing slopes and site conditions. The perimeter trail around the Linvilla Orchard life estate on the new Township open space was separated from the active farm/orchard area by a wire and post farm fence, with materials purchased by the Township and installed by Linvilla Orchards employees.

The Rocky Run Trail

The Rocky Run Trail is situated in an area north of and generally parallel to Baltimore Pike. The approximately 2.5-mile, 10 foot wide earthen hiking trail traverses the Township along Rocky Run, a tributary of Chester Creek. Parking lots on Valley Road (mid-trail) and Darlington Road (western end, on the connecting Darlington Trail) serve users of the trail.

The upstream (eastern) portion of the trail runs east from Valley Road, first behind the Wawa dairy farms, through meadows and forest behind the Granite Farms Estates retirement community, along the edges of Delaware County's Fair Acres Geriatric Center, along Lima Estates (another retirement community), and ending at a connection with one of the Tyler Arboretum's hiking trails. A spur of the Rocky Run Trail connects to the parking lot of the Rocky Run YMCA.

The downstream (western) portion runs under a dense woods before connecting to the Township's Darlington (2 ¾ mile loop) and Cornucopia (1 ¼ mile loop) Trails near Chester Creek. This trail could also potentially connect to the future Chester Creek Trail.

All sections of the trail are an approximately 10 foot wide, flat, earthen surface. Where the trail is more out in the open at Fair Acres and Lima Estates, lawn has been able to subsist underfoot. The only at-grade road crossings are sparsely trafficked Valley Road and Middletown Road, at a lighted intersection. Small markers mounted on trees or poles help users identify the trail route.

Building the Trail

The Rocky Run trail was laid out and created in the early 1990's based on agreement between the Township, Natural Lands Trust (NLT), Delaware County, Lima Estates (an ACTS facility), and Tyler Arboretum.

A significant central portion of the land on which the trail was constructed is part of the 60-acre Wawa Preserve. ACTS Retirement-Life Communities (ACTS) had previously explored the purchase of property from Wawa, Inc. for construction of the Granite Farms Estates on Baltimore Pike in the mid 1980's. Middletown Township was willing to approve a life care facility with a density of approximately 4 units per acre, but open space preservation was a key goal. The total tract size under discussion was approximately 85 acres. Ultimately, approximately 60 acres of the tract was transferred to NLT as permanent open space, with Wawa receiving some tax benefits from the transfer. The life care facility was constructed by ACTS on a 25 acre tract with a nominal density of 16 units per acre (reflecting the reduced size of the area retained for actual construction after the 60 acres of preserved open space was transferred to NLT).

The Township's role as participant in the discussions between the parties was to help the arrangements of the land preservation and site development get worked out to the satisfaction of all parties.

Trail Maintenance and Use

The Township Public Works Department is responsible for maintenance of the Rocky Run Trail. From time to time, volunteers contribute service projects such as a scout group or environmental group doing a clean-up or invasive plant removal, or an Eagle Scout service project that built a footbridge over a small stream.

Most of the maintenance costs (which for the trail aren't tracked and logged separately) are for the labor of Public Works staff to mow the trail when needed, repair footbridges as needed, replace trail

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markers, remove downed trees or large limbs from the trail area, and trim brush along the trail and parking areas. Trash cans at the access parking area are also periodically emptied as needed.

Township manager Bruce Clark reported in April, 2014 that the Township periodically receives complaints such as dogs being allowed to wander off leash, all-terrain vehicle (ATV) use, minor vandalism of signs, and after hours use and gathering for party purposes. No events of a criminal nature that have been reported by the State Police, according to Clark.

The trail gets regular use from a wide variety of people including abutting neighbors, other residents, employees of area businesses, off-road joggers, dog walkers, horseback riders, etc. The trail is generally 10 feet wide with an earthen surface. At this time there are no plans to upgrade the surface to paved or stone. When originally created, the trails were intended to be low impact and unobtrusive in nature, primarily for walking and hiking, with many sections also set up with the expectation of use by horseback riders. Bicycle and ATV use was specifically not intended.

The Future of Middletown's Trail Network

Middletown residents place high value on having places to enjoy the beauty and diversity of the terrain and natural resources within the community. To meet this demand and using its current trails as a foundation, the Township's long-range objective is to create a larger trail network along both the Ridley and Chester Creeks, and to interconnect these and other significant open space tracts.

The Chester Creek Rail Trail – A Three-Phase Planned Rails-to-Trails Project

The Chester Creek Trail is a planned multi-use rails-to-trail project in Western Delaware County. In its planning stages, it truly has been an example of partnerships and intergovernmental cooperation. Since its planned route on the Chester Creek Branch right-of-way traverses several municipalities, is owned by an authority, and is contained within one county, the project will only succeed if there continues to be significant cooperation between all parties involved.

History of the Right-of-Way

The right-of-way on which it will be built is the former Chester Creek Branch of the Pennsylvania Railroad freight line, which has not been used since the early 1970's. This rail line was a vital link in the economic development of Southern Delaware County. During the Industrial Revolution, mills, factories, and warehouses located themselves adjacent to the railroad while new communities sprouted up near rail depots. (Friends of the Chester Creek Trail n.d.)

As modes of transportation diversified, patterns of development changed. With the advancement of the automobile and the interstate highway system, rail service fell out of demand, and many Chester Creek businesses relocated. After it sustained severe flood damage in the early 1970's, the Chester Creek Branch line was taken out of service and finally deeded to SEPTA. (Friends of the Chester Creek Trail n.d.)

Location and Benefits

When constructed, the Chester Creek Trail will travel approximately seven miles beginning at its south end at the historic Caleb Pusey Plantation in Upland Borough, continuing through Chester, Aston, and Middletown Townships. The trail will end at the Wawa station of SEPTA's Media/Elwyn rail line in Middletown Township, a former station that is being planned for re-activation in the coming years.

Many of the immediate connections and surrounding uses are residential. The trail will serve as a linear park for residents of many existing housing developments in the areas around Chester Creek. It will eventually provide bicycle and pedestrian access to the Aston-Middletown Little League Fields and Linvilla Orchards with its surrounding hiking paths and swim clubs. Delaware County would like to see a connection to Upland County Park which is situated near the end of the Trail's southern phase.

The trail will promote healthy lifestyles, provide enhanced recreation opportunities and improve community cohesion. It also will generate jobs. As of 2014, the track area within the 2.8-mile first phase is being cleared of overgrowth and railroad ties must be removed from environmentally sensitive areas. Together with construction, the jobs will create an ADA accessible alternative transportation route in Delaware County that will allow walkers, runners, bicyclists and others to access to recreation and rail transit. (Alburger 2013)

Key Players and Stakeholders

So far, three governmental entities, one authority (SEPTA), and one not-for-profit corporation are involved in cooperatively moving this project forward. The Chester Creek Branch is owned by the Southeastern Pennsylvania Transportation Authority ("SEPTA"). After lengthy, but fruitful, negotiations, SEPTA leased the property to Delaware County for the purpose of converting it to a trail. The lease permits Delaware County to allow the management of the trail to be handled by the Friends of the Chester Creek Branch, Inc. ("Friends") – a not-for-profit organization founded in 1997. Both Aston and

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Middletown Townships voted early in 2005 to recommend that Delaware County enter into this lease agreement with SEPTA.

Planning and Design Process

The trail length was split into thirds for a phased design process. As of 2013, the middle section (Phase I) has been designed using a consultant contracted with the County of Delaware. Development of the trail is being coordinated by the Friends among the municipalities, the County Planning Department, and funding sources such as PA DCNR.

Because bridges and road crossings are involved, the Pennsylvania Department of Transportation (PennDOT) needed to be consulted for many permits, sign-offs and approvals. There were unexpected delays during planning for such reasons as funding for planning, hiring consultants, and having to figure out which parties (County, SEPTA, the Friends, or municipalities) were taking responsibility for various costs and responsibilities, and coordinating meetings and discussions.

Very few complaints came from neighbors the trail in the latter stages of the planning for Phase I. Planners made sure not to infringe on the property rights of adjacent property owners and kept trail facilities within the right-of-way. A major milestone came in 2012 when Middletown Township Council unanimously approved, with some conditions, a land development plan for the project. (Alburger, 2013)

Planners have learned that there is a lot involved in building a trail including land development approvals and designating parties for long term maintenance or insurance responsibilities of the trail surface, bridges, fences, trailheads. Safety and policing is also an issue that requires some attention especially since Middletown Township is within an area of the County where State Police have jurisdiction.

This project would not have succeeded up to this point without the significant partnerships that formed and intergovernmental cooperation that have taken place. The late Mike Fusco, who was the President of the Friends of the Chester Creek Rail Trail before his death in early 2014, was the primary non-governmental visionary and driving force behind the trail since the beginning. Once built, the trail will be his legacy, as the movement might never have gotten off the ground if not for him.

Next Steps

The first phase of construction should begin in 2014 or 2015, after the last odds and ends are squared away and a contractor is hired. Future trails projects that could connect to it include a rail-trail on the former Octoraro rail line right-of-way, a northern Chester Creek trail extension (bridge over Baltimore Pike to Middletown, Chester Heights, and Thornbury townships), and a Chester Creek trail through Chester City to connect to the East Coast Greenway. Planning for the other two phases of the trail is expected to go smoother after all the experience that was gained during Phase I.

APPENDIX I-L: MUNICIPAL RECREATION PROGRAMMING

Table L-1: Municipal Recreation Programs

Municipality	Active Recreation	Educational	Arts and Crafts	Special Events	Holiday Events
Aldan Borough	X			X	X
Aston Township	X			X	X
Bethel Township				X	X
Brookhaven Borough			X	X	X
Chadds Ford Township					
Chester City	X	X	X	X	X
Chester Heights Borough	X			X	X
Chester Township					
Clifton Heights Borough	X			X	X
Collingdale Borough	X			X	X
Colwyn Borough	X				
Concord Township		X		X	X
Darby Borough	X			X	X
Darby Township			X		
East Lansdowne Borough					X
Eddystone Borough	X				X
Edgmont Township	X				
Folcroft Borough	X			X	X
Glenolden Borough	X			X	X
Haverford Township	X	X	X	X	
Lansdowne Borough	X			X	X
Lower Chichester Twp.	X	X		X	X
Marcus Hook Borough	X	X	X	X	X
Marple Township	X			X	X
Media Borough	X			X	X
Middletown Township	X	X	X	X	X
Millbourne Borough		X		X	X
Morton Borough	X			X	X
Nether Providence Twp.	X	X	X	X	
Newtown Township	X	X	X	X	X
Norwood Borough	X	X	X	X	X
Parkside Borough		X	X	X	X
Prospect Park Borough	X		X	X	X
Radnor Township	X	X	X	X	X
Ridley Park Borough	X		X	X	X
Ridley Township	X	X	X	X	X
Rose Valley Borough					X
Rutledge Borough	X		X	X	X
Sharon Hill Borough	X			X	X

Appendix I-L: Municipal Recreation Programming

Table L-1: Municipal Recreation Programs (cont.)

Municipality	Active Recreation	Educational	Arts and Crafts	Special Events	Holiday Events
Springfield Township	X	X	X	X	X
Swarthmore Borough	X	X	X	X	X
Thornbury Township	X	X	X	X	X
Tinicum Township	X				X
Trainer Borough	X			X	
Upland Borough	X			X	X
Upper Chichester Twp.	X	X	X	X	X
Upper Darby Township	X	X	X	X	X
Upper Providence Twp.	X				
Yeadon Borough	X	X	X	X	X
Delaware County Parks and Recreation		X	X	X	X

Source: DCPD, 2014 (Based on survey responses from municipalities)

APPENDIX I-M: GRANT OPPORTUNITIES

Federal Grants

Federal Transportation Alternatives Program (TAP)

Administered by the Pennsylvania Department of Transportation's (PennDOT) central office and on a regional basis by the Delaware Valley Regional Planning Commission (DVRPC)

Sources: After the Moving Ahead for Progress in the 21st Century Act of 2012 (MAP-21), Transportation Enhancements (TE), Safe Routes to School (SRTS), and Scenic Byways (Byways) are consolidated under the TAP.

Project Types: building pedestrian and bicycle facilities, improving access to public transportation, creating safe routes to schools, preserving historic transportation structures, providing environmental mitigation, creation of trails projects that serve a transportation purpose

Website link: <http://www.dvrpc.org/tap/PA.htm>

National Fish Passage Program Grants

Administered by the U.S. Fish and Wildlife Service Fisheries Program

Project Type: projects which will remove or bypass artificial barriers that impede the movement of fish and other aquatic species

Website link: <http://www.grants.gov/web/grants/view-opportunity.html?oppId=58661>

National Park Service – Rivers, Trails, and Conservation

Project Types: planning and development of greenways, trails, and recreation program initiatives

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

Public Works Grants

Administered by: U.S. Department of Commerce, Economic Development Administration (EDA)

Sources: Public Works and Economic Development Act of 1965, as amended (PWEDA)

Project Types: Construction or rehabilitation of essential public infrastructure and development facilities necessary to generate private sector jobs and investment. Redevelopment of brownfields.

Website link:

<https://www.cfda.gov/index?s=program&mode=form&tab=step1&id=f860a3b8eeae5e8f25a41e38e511a72c>

Hazard Mitigation Grant Program

Administered by the U.S. Department of Homeland Security Federal Emergency Management Agency (FEMA)

Project Types: “grants to states and local governments to implement long-term hazard mitigation measures after a major disaster declaration” – potential to be used for open space

Website link: <https://www.fema.gov/hazard-mitigation-grant-program>

United States Environmental Protection Agency (EPA) Grants:

Targeted Watershed Grants Program

Project Types: “community-based approaches and management techniques to protect and restore watersheds”

Website link: http://water.epa.gov/grants_funding/twg/initiative_index.cfm

Brownfields Cleanup Grants

Project Types: cleanup activities at brownfield sites – which could lead to better access to waterfronts or places for trails and parks Website link: <https://www.epa.gov/brownfields/brownfields-cleanup-grants>

Appendix I-M: Grant Opportunities

Clean Water State Revolving Fund

Project Types: loans for projects that improve water quality and support local economies

Website link: <http://www2.epa.gov/region8/drinking-water-state-revolving-fund-dwsrf-clean-water-state-revolving-fund-cwsrf-programs>

Environmental Education Grants

Project Types: environmental education projects

Website link: <http://www.epa.gov/enviroed/grants.html>

Pennsylvania Grant Programs

Commonwealth Financing Agency (CFA) Grants Administered through the PA Department of Community and Economic Development (DCED):

Greenways, Trails and Recreation Program (GTRP)

Source: the Marcellus Legacy Fund established by Act 13 of 2012

Project Types: planning, acquisition, development, rehabilitation and repair of greenways, recreational trails, open space, parks and beautification projects

Website link: <https://dced.pa.gov/programs/greenways-trails-and-recreation-program-gtrp/>

Marcellus Legacy Fund, Watershed Restoration Protection (WRPP)

Source: the Marcellus Legacy Fund established by Act 13 of 2012

Project Types: "Projects which involve the construction, improvement, expansion, repair, maintenance or rehabilitation of new or existing watershed protection Best Management Practices (BMPs)"

Website link: <https://dced.pa.gov/programs/watershed-restoration-protection-program-wrpp/>

Department of Conservation and Natural Resources (DCNR) Grant Programs:

DCNR Community Conservation Partnerships Program Grants (C2P2)

Administered by the DCNR Bureau of Recreation and Conservation (BRC)

Sources: Keystone Recreation, Park and Conservation Fund, Environmental Stewardship Fund, Federal Land and Water Conservation Fund (LWCF), Federal PA Recreational Trails, PA Snowmobile/ATV Fund

Project Types: planning, land acquisition, park development, trails, and partnerships

Notes: The C2P2 program established Environmental eGrants, an online application which streamlined the process for seekers of grants from all DCNR and Department of Environmental Protection (DEP) funding programs and sources. These grants are typically 50/50 match, but projects eligible for the Federal PA Recreational Trail Grant are an 80/20 match with the grant awarding the 80%.

Website link: <https://www.dcnr.pa.gov/Communities/Grants/Pages/default.aspx>

DCNR Tree Vitalize Program Grants

Administered by the DCNR Bureau of Forestry

Project Types: Tree planting projects

Website link: <http://www.treevitalize.net/SubGrant.aspx>

Department of Environmental Protection (DEP) Grants

DEP Coastal Zone Grants

Administered by the PA DEP Coastal Resources Management Program

Source: Office of Ocean and Coastal Resources Management (OCRM), National Oceanic and Atmospheric Administration (NOAA), U.S. Department of Commerce

Project Types: planning, development, land acquisition, education, or programming for habitat connectivity, tidal wetlands, shoreline public access, recreation facilities, trails, historic building revitalization, and economic development and revitalization

Note: Eligible projects must take place within the Delaware Estuary Coastal Zone boundary.

Website link: <http://www.dep.state.pa.us/river/grants/crmgrants/crmgrants.htm>

DEP Environmental Education Grant Program

Administered by the Pennsylvania Department of Environmental Protection (DEP)

Sources: The Environmental Education Act of 1993 mandates that five percent of all pollution fines and penalties collected annually by DEP be set aside for environmental education.

Project Types: environmental education projects ranging from creative, hands-on lessons for students, teacher training programs, and outdoor learning resources to conservation education for adults.

DEP Growing Greener Program Watershed Grants

Administered by DEP

Sources: The Environmental Education Act of 1993 mandates that five percent of all pollution fines and penalties collected annually by DEP be set aside for environmental education.

Project Types: education, planning, construction, and studies for local watershed-based conservation projects

Website link: http://www.depweb.state.pa.us/portal/server.pt/community/growing_greener/13958

PENNVEST (Pennsylvania Infrastructure Investment Authority) Grants:

Green Initiatives

Project Types: “Green Initiatives that promote and encourage environmental responsibility in our communities that are creative and innovative with green solutions for water quality management.”

Examples include tree plantings, restoration of floodplains and wetlands, and construction and improvement of riparian buffers, rain gardens.

Non-Point Source Projects

Project Types: Brownfields remediation funding could be used to reuse properties in urban areas for recreation facilities.

Pennsylvania Fish and Boat Commission (PFBC) Boating Infrastructure Grant Program

Administered by PFBC in cooperation with the U.S. Department of the Interior’s U.S. Fish and Wildlife Service

Sources: excise taxes on motorboat fuel, from the Boating Infrastructure Grant (BIG) program authorized by the Sportfishing and Boating Partnership Act of 1998.

Project Types: grants for transient moorage (tie-ups) serving recreational motorboats 26 feet and longer

Website link:

<https://www.fishandboat.com/Transact/Grants/Pages/BoatingInfrastructureGrantProgram.aspx>

Appendix I-M: Grant Opportunities

Pennsylvania Historic and Museum Commission (PHMC) Grants

PHMC Certified Local Government Grant Program

Administered by PHMC

Source: U.S. Department of the Interior, National Park Service

Project Types: National Register nominations, Planning, Public Education and Training

Note: Award amounts are between \$3,000 and \$18,000 and require a 50/50 cash match.

Website link: http://www.portal.state.pa.us/portal/server.pt/community/grants/3794/certified_local_government_grant_program/417950

PHMC Keystone Historic Preservation Project Grants

Administered by PHMC

Sources: Pennsylvania's Keystone Recreation, Park and Conservation Fund

Project Types: National Register nominations, planning and studies

Note: Award amounts are between \$3,000 and \$18,000 and require a 50/50 cash match. Sites must be listed in or eligible for listing in the National Register of Historic Places.

Website link: http://www.portal.state.pa.us/portal/server.pt/community/grants/3794/keystone_historic_preservation_project_grants/426654

Delaware Valley Regional Planning Commission Funding Programs

Congestion Mitigation and Air Quality (CMAQ) Program

Administered by DVRPC

Source: CMAQ is a Federal Highway Administration Initiative

Project Types: "Transportation related projects that can help the region reduce emissions from mobile sources and meet the National Clean Air Act Standards," including bicycle and multi-use trails, and road improvements to better accommodate bicycles and pedestrians.

Note: Every few years DVRPC sets aside some of the region's CMAQ funding and awards it through a competitive grant process.

Website link: <http://www.dvrpc.org/CMAQ/>

DVRPC Regional Trails Program

Administered by DVRPC

Source: The William Penn Foundation has funded phases of this program since 2012

Project types: varies by phase of the program; has been for planning, engineering, and construction of trails which are part of the Circuit.

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

Non-Governmental Grants (Corporate, Foundation, and Other)

Do GOOD Outdoors

Project Types: For recreational programs, up to \$5,000.

Joint Use Playground Grants

Administered by Kaboom!

Project Types: The creation of joint use agreements for playground facilities. "A joint use agreement is a formal agreement between two separate government entities—often a school district and a city or county—setting forth the terms and conditions for the shared use of public property."

Website link: <https://jointuse.myreviewroom.com/>

Keep America Beautiful (KAB) Grants

Sources: Multiple grant opportunities each funded by a different KAB national sponsor.

Project Types: Examples include park facilities construction, cleanup, restoration, landscaping, community building restoration, and more.

Website link: <https://kab.org/grants/>

The Lorrie Otto Seeds for Education Grant Program

Project Types: Environmental stewardship.

Note: Successful non-school applicants often are a partnership between a youth group (scouts, 4-H, etc.) and a site owner

Website link: <http://www.for-wild.org/seedmony.htm>

PECO Green Region Grants Program

Administered by Natural Lands Trust

Source: PECO

Project types: planning, park development, land acquisition, and stewardship for passive recreation, open space preservation, and trails

Note: Up to \$10,000 may be requested, but if awarded, the grant amount may be smaller.

Website link: <http://www.natlands.org/services/for-municipalities/peco-green-region-program/>

Public Lands Every Day - Every Day Event Grants

Administered by the National Environmental Education Foundation (NEEF)

Sources: NEEF's National Corporate Sponsor Toyota Motor Sales USA, Inc.

Project Types: Events held at a public park. Grants help cover the cost of three events.

Note: Eligible applicants are community-based 501(c)(3) nonprofit organizations whose mission is focused on serving a public land site and have an established collaborative relationship with a local public land site (such as a friends group).

Website link: <http://publiclandseveryday.org/grants/every-day-event-grants-0>

PeopleForBikes Community Grant Program

Project types: "Funding for important and influential projects that leverage federal funding and build momentum for bicycling in communities across the U.S. These projects include bike paths and rail trails, as well as mountain bike trails, bike parks, BMX facilities, and large-scale bicycle advocacy initiatives."

Website Link: <http://www.peopleforbikes.org/pages/community-grants>

Robert Wood Johnson Foundation

Project Types: RWJF's funding opportunities change periodically. In the past, some programs have been aimed towards active living and obesity prevention through planning projects or local initiatives.

Website link: <http://www.rwjf.org/en/grants/>

Scotts Miracle-Gro - GRO1000 Grassroots Grants

Project Types: edible gardens, flower gardens and public green spaces

Website link: <http://grogood.com/GiveBackToGro/Gro1000/Grassroots#sthash.fuMtj7SK.dpuf>

Tony Hawk Foundation Skateboard Park Grants

Project Types: Permanent, concrete skateboard parks.

Grant amount limits: Between \$1,000 and \$25,000

Website Link: <http://tonyhawkfoundation.org/grant-application/>

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Water Resources Education Network (WREN) Grants

Administered by the League of Women Voters of Pennsylvania (LWVPA)

Sources: Citizen Education Fund of the LWVPA (LWVPA-CEF)

Project Types: Environmental Education “projects which educate about how to protect, improve or remediate the watershed from the impacts of nonpoint source (NPS) pollution”

Website link: <http://wren.palwv.org/grants/local.html>

Wells Fargo Grants

Project Types: Applicable categories include Community Development, Environment (conserve natural resources, preserve endangered species); and Civic Engagement (community beautification).

Website Link: <https://www.wellsfargo.com/about/corporate-responsibility/community-giving>

William Penn Foundation Grants

Project Types: funding priorities include planning, construction and education relating to great public spaces, watershed protection, and trails

Website link: <http://www.william penn foundation.org>