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September 26, 2022

SUBJECT: Draft Chapter 9: Environmental Management and Resilience

TO: Comp Plan Development Team

FROM: Mike Narcowich, AICP, Community Planning Assistant Manager

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Outline

Introduction
The Natural Environment
- Streams and Watersheds
- Wetlands
- Floodplains
- Riparian Corridors
- Tree Canopy
- Steep Slopes
- Soil Composition and Conservation
- Water Quality

Initiatives and Partnerships
- Urban Forestry
- Open Space Acquisition
- Stewards of Abington's Natural Environment

Resilience
- Environmental Sustainability and Adaptation to Climate Change
- Hazard Mitigation

Goals
Issues for Consideration

Introduction

This chapter will analyze issues of importance to the township's natural environment and the township's resilience. It will review hydrology; steep slopes, and soils; tree canopy; water quality; air quality; and environmental sustainability initiatives and stewardship.

Link to Plan's Vision

This chapter has important linkages with the following plan themes:

- *"A Thriving, Equitable Community"*
- *"Healthy People and Environment (think clean, green, and healthy)"*
- *"Desirable Residential Areas"*

Note: Much of the following narrative text about the township's natural features was originally prepared for the Abington Open Space, Recreational, and Environmental Resource Protection Plan.

The Natural Environment

Streams and Watersheds

The township is the site of the headwaters of several major streams or their tributaries, including the Tookany Creek, Pennypack Creek, and Sandy Run (a tributary of the Wissahickon Creek). The Tookany and Pennypack are tributaries of the Delaware River; Sandy Run is a tributary of the Wissahickon Creek, which in turn is a tributary of the Schuylkill River.

As seen in the map of watersheds, below, the Pennypack Creek drains over half of the township (the eastern and northeastern sections). Small tributary creeks in this area include Robinhood Brook, which flows into Meadow Brook. Meadow Brook and Rockledge Brook flow into the main branch of the Pennypack Creek. Jenkintown Creek, Burholme Creek, and Shoemaker Run flow through the southern section of the township before entering the main branch of Tookany Creek (which is part of the Tookany/Tacony-Frankford watershed).

Definitions

The following is how the U.S. Environmental Protection Agency defines "Headwaters":

Headwaters

"Headwater streams are the smallest parts of river and stream networks, but make up the majority of river miles in the United States. They are the part of rivers furthest from the river's endpoint or confluence with another stream. – Environmental Protection Agency
Source: www.epa.gov/water-research, accessed 12-30-2020

Protecting a stream's headwaters (for definition, see sidebar) is especially important. This portion of a stream's watershed is particularly vulnerable to chemical or biological pollution and thermal impacts; such damage to the headwaters affects the entire stream. Riparian buffers and on-site stormwater management facilities are important resources to use to protect or improve water quality. Both can filter pollutants and catch sediment before they reach the township's streams and creeks and help to mitigate impacts from flooding.

Stream quality impairments in the watersheds that are located in Abington primarily consist of sediment. Factors contributing to sediment in Abington's streams include:

- High levels of impervious surface coverage and land development. This has resulted in large areas converted into lawns on compacted soils and treated with lawn chemicals. That has had negative impacts on stormwater quality and runoff volume, and has elevated stream temperatures. This development has also destroyed many riparian buffers which used to exist and, as noted by the Pennypack Creek Watershed Study[1], "provided a venue for deer and geese, which have overpopulated the region and made ecological restoration activities and water quality improvement problematic."
- Wastewater treatment plant discharges—particularly inflow and infiltration issues occurring during storm events. However, the Abington Wastewater Treatment Plant has made major upgrades in recent years and is operating within its discharge permit from the Department of Environmental Protection.

Virtually every stream segment in Abington is classified as "impaired,"[2] with the exception of short segments (often short stream tributaries. These exceptions include some in Meadowbrook near Lorimer Park, land at Huntingdon Valley Country Club, and land near Alverthorpe Manor. In Abington, the U.S. Environmental Protection Agency has developed a Total Maximum Daily Load for sediment, nutrients, and phosphorus for the Sandy Run/ Wissahickon Creek. Abington is responsible for developing Pollution Reduction Plans for impaired streams that are not assigned TMDLs; in Abington's case, this is up to nine subwatershed areas.[3]

Pennypack Creek

The Pennypack Creek in Abington, between the Pennypack Trail on the northwest and the Philadelphia boundary on the southeast, is classified by the Pennsylvania Fish and Boat Commission as "stocked trout waters". This means it contains significant portions that are open to public fishing and are stocked with

Definitions

The following is how the U.S. Environmental Protection Agency (U.S. EPA) defines "Total Maximum Daily Load":

Total Maximum Daily Load (TMDL)

"…The calculation of the maximum amount of a pollutant allowed to enter a water body so that the water body will meet and continue to meet water quality standards for that particular pollutant. A TMDL determines a pollutant reduction target and allocates load reductions necessary to the source(s) of the pollutant. " – From EPA web page updated September 13, 2018. https://www.epa.gov/tmdl/overview-total-maximum-daily-loads-tmdls

[1] Meenar, Mahbubur, Dr., editor; Temple University, Center for Sustainable Communities, 2006.
[2] Abington Total Maximum Daily Load Plan, Draft, by BCM Engineers (posted to the web on July 12, 2017).
[3] Gaadt, John, AICP. "Municipal Actions to Protect and Improve Water Quality in the Delaware River Watershed: Abington Township Case Study," Delaware Valley Regional Planning Commission, 2017.

trout. Trout fishing is allowed during the "extended season." Unlisted tributary streams are not open during the "extended season." These waters are closed to all fishing (including taking of minnows) from March 1 to 8 a.m. on the opening day of the trout season.

2005, the Pennypack Creek Watershed River Conservation Plan[4] determined that 82 percent of the stream's length is impaired and is listed on the Pennsylvania 303d list of impaired waters. Monitoring by the state Department of Environmental Protection found that 66 of the stream's 79 miles do not support the biological communities protected by the Clean Water Act. It found that the majority of the stream's impairment is due to urban stormwater runoff, water flow variability, and flow and habitat variations.

Tookany Creek

The Tookany-Tacony/Frankford Creek Integrated Watershed Management Plan[5] identified numerous problems that impact water quality:

- Lack of healthy riparian habitat
- Impaired wetlands
- Erosion, sediment accumulation, and flow variability
- Poor in-stream habitat and biological impairment
- Trash, dumping, and odors

It noted concerns about water quality relating to metals, sediment, bacteria, and dissolved oxygen. The Tookany/Tacony-Frankford Watershed Act 167 Stormwater Management Plan noted that virtually the entire portion of the watershed in Abington is comprised of soils with low infiltration rates, which contributes to stormwater runoff volume and quality issues. It noted that streambank erosion due to accelerated stream velocities from increased runoff is a problem in Abington (and elsewhere). The plan noted that Abington Township had 101 homes with septic tanks, and that implementation of a septic tank management system might be appropriate to protect water quality.

Sandy Run

As with the other major creeks in Abington, flooding, erosion, and sedimentation are issues in the Wissahickon-Sandy Run watershed; non-point pollution is a problem; and the watershed has been increasingly developed, while riparian buffers have progressively been destroyed or diminished. As noted at the beginning of this "Water Quality" section, the Sandy Run – Wissahickon is the one creek for which Abington has been assigned a Total Maximum Daily Load (TMDL).

[4] F.X. Browne, Inc., Prepared for Philadelphia Water Department, 2005.
[5] Philadelphia Water Department, 2005.

According to the Wissahickon Watershed Stream Monitoring and Assessment Program[6], phosphorus levels increased from 2008 to 2016; it was the only location of the five monitored in the Wissahickon watershed that showed increased levels in that time. A habitat assessment of the stream from 2011 to 2016 found that the stream was only "marginal" as a habitat.

As part of the Wissahickon Water Quality Improvement Plan (WQIP) project, the Sandy Run has been the focus of a multi-year study to determine the causes of impairment in the watershed, and propose a plan of action to improve water quality that would replace the Environmental Protection Agency's proposed phosphorus TMDL. The WQIP is intended to improve water quality conditions in the Wissahickon Creek watershed through implementation of an adaptive management approach to controlling stormwater flow rates and volumes that is supported by local stakeholders, inclusive of municipalities, wastewater treatment plants, and key environmental partners. This adaptive management plan will continually incorporate new data and information and identify new opportunities and actions to positively impact the watershed over time.

Note: for more on water quality, see "Water Quality" section, below.

Wetlands

Wetlands are areas that have a predominance of hydric soils and that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of hydrophytic (water-loving) vegetation typically adapted for life in saturated soil (see also the official definition used by U.S. Environmental Protection Agency, in sidebar). Abington contains both forested wetlands and emergent wetlands which are dominated by grass or grass-like species. Wetlands are important groundwater discharge and recharge areas[7]. Wetlands support wildlife and fish and sometimes harbor endangered species.[8] Wetlands also reduce flooding by slowing or detaining stormwater. In

Definition

The following is how the U.S. Environmental Protection Agency defines "Wetlands":

Wetlands

"Wetlands are areas where water covers the soil, or is present either at or near the surface of the soil all year or for varying periods of time during the year, including during the growing season."

Environmental Protection Agency
Source: www.epa.gov/water-research, accessed 1-1-2021

[6] "Wissahickon Watershed Stream Monitoring and Assessment Program: A Summary of Data Collected by the Wissahickon Valley Watershed Association from 2004 to 2016," (May 2017).
[7] "Discharge" occurs when water rises from groundwater to the surface, and "recharge" occurs when water seeps down from the surface to subsurface areas where groundwater is present.
[8] United States Geological Survey, Water Supply Paper 2425

the process, wetlands filter impurities that might otherwise contribute to surface water and groundwater pollution. By federal law, wetlands may not be filled or built upon.

The Hydrology map shows wetland areas identified in the National Wetland Inventory (NWI) performed by the U.S. Fish and Wildlife Service. Many of the wetlands in the township are located along Meadow Brook near Lower Moreland. Small, isolated wetlands are located in areas such as the Ardsley Wildlife Sanctuary. Hydric soil types can also approximate areas that may include wetlands. Major concentrations of wetlands exist in the eastern corner of the township near Lower Moreland. The largest of these wetlands is known as the Bethayres Swamp. Wetland preservation is important to protection of the ecosystem; for this reason Abington uses its zoning and its subdivision and land development ordinance (SALDO) to restrict or prohibit development in their proximity (federal law prohibits certain types of development near wetlands as well).

Floodplains

Flooding is the most common natural hazard in Montgomery County and has been a serious problem in Abington, leading to property damage and loss of life. There are 76 buildings located in the 1% annual chance floodplain (a.k.a., the "100-year floodplain"). The township has regulated development in and around the floodplain to protect public safety, prevent the loss or damage of structures, and minimize disruption to peoples' lives.

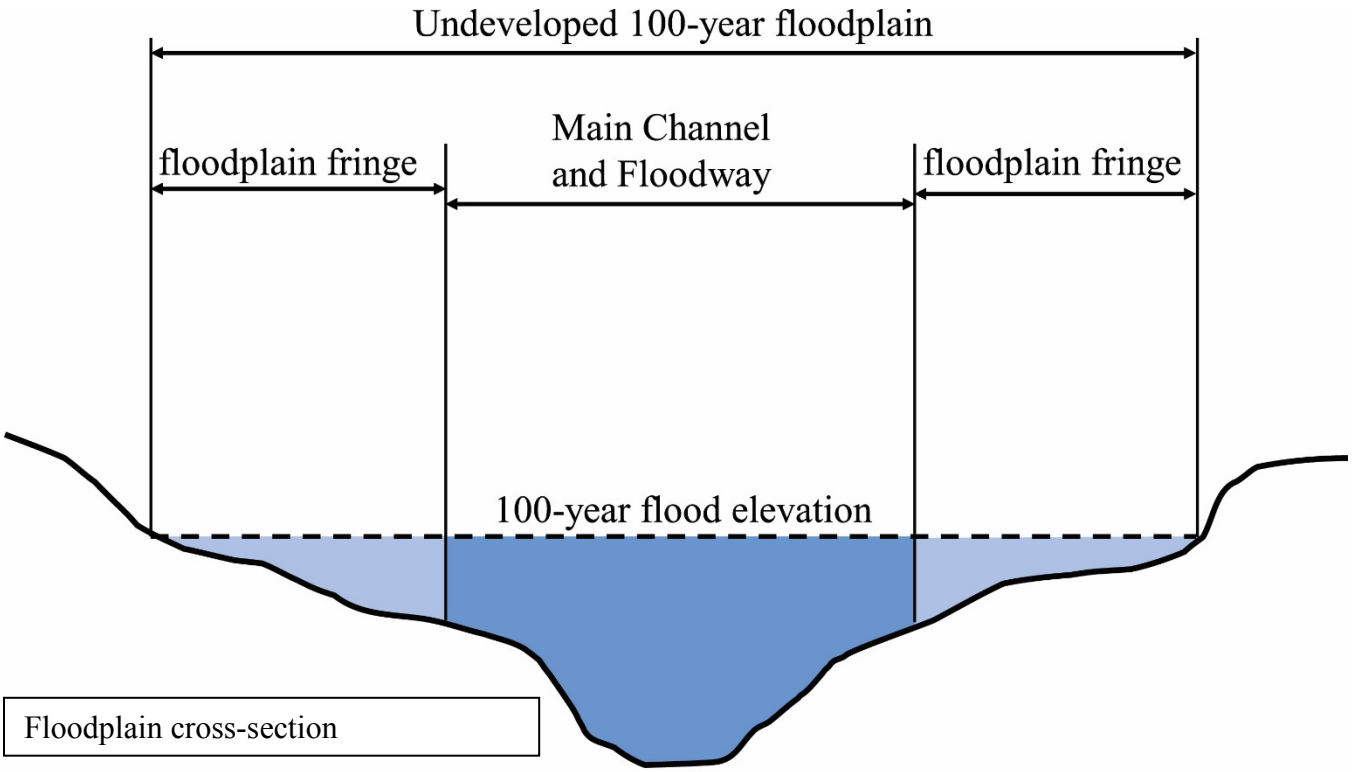
Minor flooding is common in the township during heavy rainfalls of short duration. But major floods have occurred in the past with varying degrees of damage. Floods with waters as deep as two-to-six feet above street level have occurred in the past. In particular, the floods of 1931, 1964, 1996, and 2001 played havoc in the suburban communities surrounding the Pennypack, Neshaminy, Sandy Run, and Perkiomen Creeks.

In Abington, the largest floodplain area lies in a hook shape, starting alongside Meadow Brook and Valley Road, and bending to meet the Pennypack Creek. Parts of this floodplain are preserved by Karebrook Nature Area, the Boy Scout Game Preserve, and Lorimer Park. There is also a significant floodplain along the Sandy Run, the headwaters of which start at Roy Chester Park in Willow Grove, that extends along Sandy Run through Crestmont and Roslyn to the Upper Dublin boundary. This floodplain was the site of lethal flooding and extensive damage in recent decades. Many homes are located in this floodplain (see map). Part of the floodplain is preserved in Grove Park and Roslyn Park. Another major floodplain with a large number of homes is that along the Tookany Creek (a.k.a., "Baeder Creek") in Glenside and skirts the municipal boundary with Jenkintown. Part of this floodplain is preserved in Baederwood Park.

Flood zone maps are periodically updated for all communities across the U.S. that participate in the National Flood Insurance Program (NFIP) as new or improved flood zone mapping data becomes available. Improved data typically comes from a FEMA-led study (or restudy) of

flood hazards, or from information collected at the local level that is then submitted to FEMA. In 2016 all counties in Montgomery County adopted updated flood zone maps.

For information on stormwater management, see Chapter 8: Infrastructure and Municipal Services.



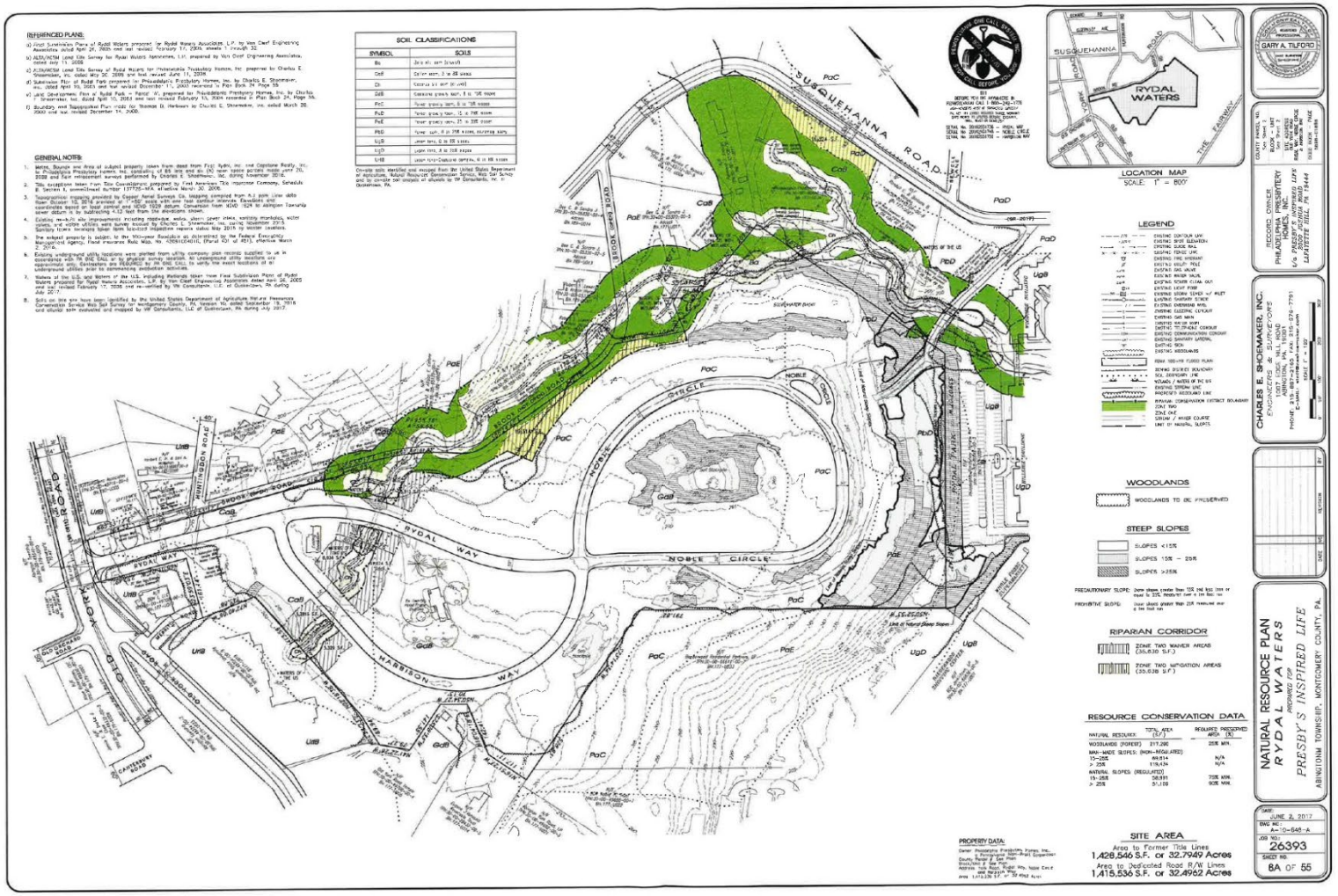
The Natural Floodplain

Riparian Corridors

A "riparian corridor" refers to the area alongside a stream. Natural or naturalized riparian corridors can take the form of dense strips of vegetation which serve multiple important functions, including helping to:

- Slow the velocity of surface runoff
- Limit the potential for streambank erosion
- Encourage infiltration
- Filter pollutants out of runoff before it enters the stream
- Provide habitat for a variety of species
- Keep surface water temperatures cool; and
- Protect aquatic life and habitat

The Montgomery County Planning Commission's model Guidebook for Riparian Corridor Restoration describes protected riparian corridors as "forested or vegetated lands on both sides of a Stream." In 2017, Abington adopted a Riparian Corridor Conservation District to



The green area on the land development plan for Rydal Waters, above (behind Rydal Park), represents the portion of the Meadow Brook riparian corridor that will be preserved (1,402 linear feet of stream corridor) as a result of the Riparian Corridor Conservation District

protect them.[9] These regulations are meant to restore riparian corridors where they are lacking and protect them from being disturbed in the future.

The Riparian Corridor Conservation District was enacted in 2017 (see Riparian Corridor Conservation District map). This ordinance protects riparian corridors in the township on lands one acre or greater in size. The district has a minimum width of 75 feet (shown on map), but widens to include certain sensitive natural features such as steep slopes, woodlands and floodplain.

Institutional land, such as that of educational institutions and cemeteries, includes a large proportion of the riparian corridor area in Abington. There are opportunities to work with these landowners to reestablish forest and riparian plantings in these locations.

Tree Canopy

Abington's urban forest- the collection of trees, other vegetation and water- is essential to sustaining ecosystem services—these involve the natural environment, public health, property values, and a vibrant community. A key measure is the tree canopy cover.

Urban Forests

Systems of trees, other vegetation, and water within any urban area.

Ecosystem Services

Relate to the varied and substantial benefits that urban forests deliver. Some (but not all) of these include economic benefits (trees reduce energy costs and raise property values), environmental benefits (trees clean our air and water, sequester carbon, capture and filter stormwater, reduce flooding), and social benefits (they enhance aesthetics and have positive impacts on mental health).

Note: Upon final formatting of this draft, the following footnote is to be added after "Ecosystem Services": [10]

Tree canopy is important in cooling homes and the built environment in summertime and reducing the "heat island" effect associated with buildings and impervious surfaces. As shown by the Abington Heat Map, cooler areas tend to be located in parks and low-density residential areas.

The tree canopy is not uniformly distributed among residential neighborhoods in the township. The western half of the township (which is more diverse and (relatively) less-

[9] The Riparian Corridor Conservation District Model Ordinance can be found at the following URL: https://www.montcopa.org/2448/Model-Ordinances-and-Design-Guidebooks

[10] https://www.theguardian.com/us-news/2021/mar/12/baltimore-study-trees-mental-health-study

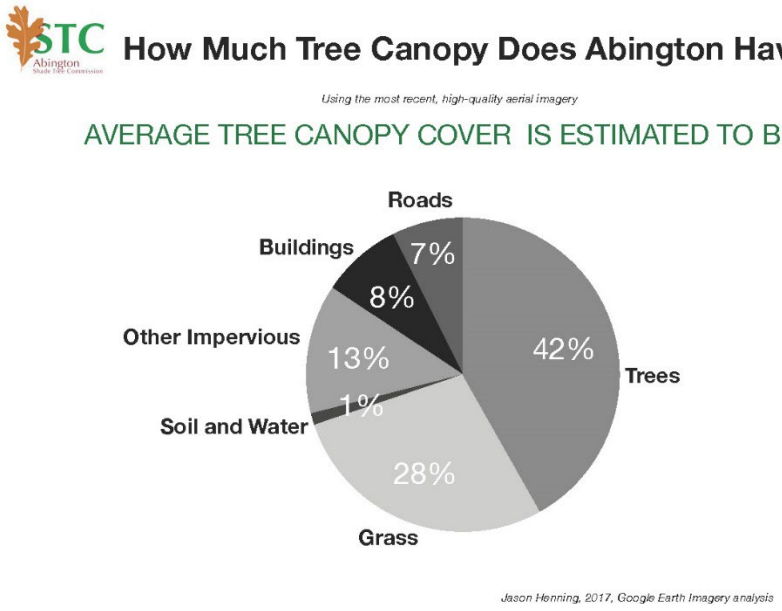
affluent) has a hotter relative temperature, relative to the wealthier, demographically whiter, eastern half of the township (tree canopy is 61%-65% near Meadow Brook and Robinhood Brook, but only 37% near the

CHANGE IN ANNUAL $ VALUE OF ECO BENEFITS

2017 VS 2004

	2017	2004	Change
Carbon- annual sequestration	$483,223	$552,585	-$69,362
Air Pollution- CO, NO2, O3, PM10*, PM2.5, SO2	$972,883	$1,112,532	- $139,648
Hydrology- avoided runoff	$379,439	$433,903	- $54,465
	$1,835,545	$2,099,020	- $263, 475

From Abington Urban Tree Canopy Analysis, 2020



Source: Abington Urban Tree Canopy Analysis, 2020; Jason Henning, Google Earth Imagery Analysis, 2017

Sandy Run)[11]. Less affluent areas might also be less apt to have air conditioning, making the situation all the worse. Abington's major road corridors and more densely developed areas tend to be hotter than parks and less densely developed areas. The township has areas which range from averaging one canopy tree per person to seven canopy trees per person.

Only 16% of the land in Abington is preserved (for more analysis of the open space system, see the Abington Open Space, Recreation, and Environmental Resource Protection Plan (2006)); this includes school properties, parks, cemeteries and temporarily protected private land. Parks, which are managed directly by township staff, comprise only 4% of the lands, or approximately 25% of the total preserved space. Seventy-one percent of the land is zoned residential. Therefore it is clear that private property owners must play a central role in sustaining the urban forest. Institutional landowners own large properties in Abington that the township could work with to reestablish or promote stewardship of forested areas (as noted, this is also true for riparian corridors).

Contiguous woodlands and meadowlands play an essential role in wildlife habitat and diversity, in stream and water quality, in public health and in stormwater management. Abington has approximately 700 acres of public parks, collectively owned and managed by the township, County, and, in the case of Fox Chase Farm, the City of Philadelphia. Aerial imagery[12] suggests that approximately 600 of these acres are natural (woodlands or meadowlands) and 100 acres are developed recreational areas.

The Abington Urban Tree Canopy Assessment (2020) found that Abington's average tree canopy cover is at risk. In 2017 average tree canopy cover was 42%, while in 2004 it was 48%. This 6 percentile loss in tree canopy cover represents an ongoing loss of $263,000 per year in just three ecosystem services: carbon sequestration, clean air and prevention stormwater runoff[13]. The benefit of the tree canopy, correspondingly, was quantified as $2.1 million in 2004; that dropped to $1.8 million by 2017. However, the positive news is that the township does have plantable spaces so that the tree canopy might be increased.

Natural Areas Inventory: "Pennypack Creek Conservation Landscape"

In the last *Natural Areas Inventory Update*[14], MCPC identified numerous "conservation landscapes" where significant areas of open space remain. These include large forested tracts, stream corridors, wetlands, known sites of rare plants and animals, and areas of high natural biodiversity. The conservation landscape that includes part of Abington is called the "Pennypack

[11] 2017 Estimates, Abington Tree Canopy Assessment.
[12] Source: Google Maps.
[13] Abington Tree Canopy Analysis; research provided by Jason Henning (2020).
[14] Natural Areas Inventory Update (2007), Chapter 11: Pennypack Creek Conservation Landscape, by Montgomery County Planning Commission: https://www.montcopa.org/DocumentCenter/View/3260/NatAreaInv2007_Chap11?bidId=

Creek Conservation Landscape" and is located in the eastern corner of the township. This includes lands protected by Lorimer Park. This conservation landscape includes numerous valuable resources:

- Forest Cover and Understory Vegetation – The landscape is 48.2 percent forested. Of the 1,342.7 acres of forest, 565 acres qualify as forest interior (applying a 50 m buffer from the nearest edge and including its aquatic habitat). One natural feature of Lorimer Park is a stand of mature forest on slopes along the Pennypack Creek and several small tributary ravines. Referred to as "Big Oak Woods," it was described as a site of local significance in the 1995 Natural Areas Inventory. The woods contain numerous large specimens of black oak, red oak, white oak, tulip tree, and black gum; the understory consists of spicebush, mountain laurel, and witch-hazel. Big Oak Woods was designated a "low" conservation priority since much of it already is protected by Lorimer Park. Vegetation (in addition to forest cover). Different forest characteristics exist depending on proximity to the creek. Mixed-oak forest predominates in the Conservation Landscape, but species such as sycamore, box elder and others predominate closer to the creek. Shrub species include blueberry, maple-leaf viburnum and others, with Jacob's Ladder and other species present in the spring.
- Floodplains, critical for attenuating stormwater flows (see "Floodplains" section of this chapter, above, for more information about the value of floodplains).
- Wetlands, critical for amphibian populations (see "Wetlands" section of this chapter, above, for more information about the value of wetlands)..
- Fishery (classified as "trout-stocked fishery, migratory fishes").

In the 1995 Natural Areas Inventory for Montgomery County prepared by the Nature Conservancy, Bethayres Swamp was identified as a high-priority site needing protection. It is located on the border between Abington and Lower Moreland Townships, just north of the Pennypack Trail. The swamp was inventoried as having 191 plant communities. Except for the wettest parts, the site is mostly palustrine red maple forest (Fike 1999). The wettest part of the swamp, which extends to the railroad tracks, is an example of a buttonbush wetland.

Notable environmental conservation measures undertaken in the area in the last twenty years include dam removal and establishment of an Important Bird Area (IBA). Dam removal was undertaken to promote fish passage, including removal of the Bethayres Dam in 2005. This dam was located just north of PA 63. That was followed by removal of the Huntingdon Pike Dam in Lorimer Park in 2007[15]. The establishment of the Important Bird Area (IBA)[16] by the National Audubon Society commits Audubon to monitor and protect this IBA. This is an extension of the

[15] Pennypack Creek Watershed Comprehensive Characterization Report, Philadelphia Water Department (2009).
[16] Important Bird Areas (IBAs): https://www.audubon.org/important-bird-areas/state/pennsylvania

"Fairmount Park and Benjamin Rush State Park Important Bird Area," which also includes areas in Fairmount Park in Philadelphia. This IBA provides important habitat for the Belted Kingfisher, Warbling Vireo and Louisiana Water thrush. It is also the site of a previously unknown population of Log Fern (a proposed PA endangered species).

Steep Slopes

Steep slopes are considered environmentally sensitive areas because they are more prone to erosion and landslides. Topsoil depth generally decreases as slope percentage increases, as does the soil's ability to support structures and vegetation. To protect steep slopes from vegetation removal and other disturbances which may lead to soil loss and even the loss of structures, Abington uses its zoning and subdivision and land development ordinance to limit, prohibit, and otherwise regulate development or redevelopment on steep slopes.

The largest concentration of steep slopes in the township are near the Pennypack Creek. There are also significant areas of steep slopes in the Rydal-Meadowbrook area, near Penn State University-Abington, and extending in a line along Edge Hill. The vegetation that grows on steep slopes is crucial in curbing erosion, slowing stormwater runoff, and maintaining scenic value on slopes with high visual prominence. Some slopes have little vegetation and are at risk of erosion.

As noted in the township's last comprehensive plan, Abington Township is located in the Piedmont Province of the Appalachian Upland. It is a gently rolling area with low rounded hills and scattered steep hills and ridges; the slope is generally southeastward, and averages approximately 3-4%. Moderate changes in slope may be found along ridges where slopes may range from 8% - 15% (and in some cases, greater than 15%). Steep slopes in excess of 25% can be found in wooded areas along stream banks.

Soil Composition and Conservation

The soils of Abington Township include man-made, prime agriculture, and hydric, with underlying geology including carbonate (e.g., limestone and dolomite), sand and clay, and metamorphic (e.g., gneiss, quartzite, and schist). They are described more fully in the Abington Township Open Space, Recreation and Environmental Resource Protection Plan (2006).

Native soils are the result of hundreds to millions of years of biological, chemical, and physical weathering of parent materials, underlying bedrock. Processes in urban development can permanently damage soils, rendering them incapable of supporting the urban tree canopy, stream health, and water quality. Therefore, Abington Township uses its subdivision and land development and zoning ordinances to actively protect soil from contamination, distribution, and compaction, and seeks to preserve adequate spaces to support large canopy trees.

Water Quality

As discussed above, protection of riparian areas, wetlands, steep slopes, and tree canopy are essential to sustaining water quality. Groundwater contamination is an important water quality issue that communities need to be aware of, especially in areas with on-lot wells. In recent years groundwater testing has confirmed that contamination exists nearby, on the site of the former Naval Air Station Joint Reserve Base Willow Grove (NASJRB) in Horsham Township.

The Environmental Protection Agency (EPA) has tested samples of groundwater and drinking water at the base; these tests confirmed the presence of perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA). PFOS and PFOA are types of perfluorinated chemicals (PFCFs), a group of compounds that are typically used in repellants for water, oil, grease, and other stains. PFCs are often used in common products like furniture upholstery, carpet, and floor wax, but in the case of the Willow Grove base, these chemicals were stored in large tanks and were used to make firefighting foam.

NASJRB Willow Grove was closed in 2011, but water quality concerns persist as the plume of contaminants has continued to spread away from the base. Since PFOS and PFOA were found at NASJRB Willow Grove, contamination has been found in 22 communities in Montgomery and Bucks counties, including Abington.

Currently, a study funded with $1 million of federal funds is occurring, that will involve 6,000 adults and 2,000 children. It will extend over a five year period, and will analyze linkages between PFAS contamination of water and soil and cancer. A new study will involve blood testing of 1,000 adults and 300 children.

The North Hills well is undergoing an upgrade to its filtration system. Aqua Pennsylvania is constructing a treatment facility that will remove Perfluorooctanoic acid (PFOA), Perfluorooctanesulfonic acid (PFOS), and Perfluorononanoic acid (PFNA), which are a part of the PFAS family of chemicals. Aqua removed this well from service in July 2018 due to test results involving those chemicals.[17]

The Township will monitor the situation and advocate for infrastructure upgrades to public water connections or for the addition of infiltration systems, as appropriate.

Initiatives and Partnerships

The Board of Commissioners relies on township staff, appointed boards, and community volunteers to plan and implement a range of environmental initiatives. These include environmental sustainability, urban forestry, and open space acquisition. These initiatives rely on close partnership with local and regional agencies.

[17] "Aqua to Construct a Treatment Facility for North Hills Well" By Kevin Tierney, *Glenside Local*, November 6, 2020

Urban Forestry

- Tree City USA: 2020 marked Abington Township's 14th year as a Tree City USA. Tree City USA recognizes municipalities with an active tree board, an ordinance that protects and promotes trees, a tree budget of at least $2 per capita and an Arbor Day celebration. In recent years, Abington's tree spending was approximately $10 per capita, with the single largest expenditure being leaf composting. Other significant categories are tree planting, maintenance and removal; and invasive plant management. Volunteers typically contribute in excess of 1,000 hours per year.
- Tree Preservation: In order to incorporate practical means for tree preservation and replacement, a comprehensive draft revision to the landscaping chapter of the zoning ordinance was developed and is in review. Funding for this project was made possible by the 2018 PA TreeVitalize Community Forestry Grant Program. For this work, Abington received a Tree Pennsylvania Award from the Pennsylvania Urban and Community Forestry Council.
- Tree Planting: Each year the Abington Shade Tree Commission and Parks Department sponsor tree planting events in public spaces. From 2004 to 2020, these programs resulted in the planting of approximately 1,000 trees on 20 public properties. These trees were planted by community volunteers, thereby providing hands-on skills that residents can use to plant trees on their own properties.

Woodlands Restoration

Abington Township has begun a systematic assessment and restoration of woodlands located on township lands. Invasive species management, forest regeneration and riparian restoration are top priorities. Notable projects include the ongoing restoration at the Ardsley Wildlife Sanctuary, Alverthorpe Park, and the Boy Scout Game Preserve. The Shade Tree Commission provides support for developing management plans and orienting volunteers. The Township Parks Department supports residents in forming Friends of Parks groups to assist in care of neighborhood parks.

- Master Tree Plan: A master tree plan is in draft form and under review by the township. The study analyzed the quantity, distribution, and change in the township's tree canopy, and recommended next steps for its protection and enhancement. It provides an integrated set of goals, objectives, and actions that will sustain Abington's urban forest for the coming decade. The plan's goals are to increase education and engagement; to grow canopy; and to improve canopy quality and location. Supporting strategies focus on the following topics:
    - Tree canopy targets,
    - Trees in parks and natural areas,

- Private trees and natural areas,
- Trees and stormwater,
- Trees and the built environment,
- Code,
- Permits and enforcement; and
- Structure and resources.

Environmental Partnerships

Following are some of the most important environmental partnerships that the township participates in:

- Abington School District Service Learning. The Abington School District requires students to perform community service to reinforce and strengthen learning in the classroom. This includes possible service with the Environmental Advisory Council and Briar Bush Nature Center.
- Briar Bush Nature Center[18]. This "backyard nature center" on Edge Hill Road is open to the public, and offers educational opportunities, exhibits, and collections that celebrate the natural environment.
- Bird Town USA. Abington Township is one of ten municipalities in Montgomery County that participates. The program is described on its website as "a working partnership of Audubon and municipalities in Pennsylvania to promote conservation and community-based actions to create a healthy, more sustainable environment for birds and people."[19]
- Watershed Associations (Pennypack Ecological Restoration Trust, Tookany/Tacony--Frankford Watershed Partnership, and Wissahickon Trails). The watershed associations mobilize volunteers for environmental restoration and management, and environmental education programs throughout the township's stream corridors. The township works closely with watershed organizations to identify collaborative projects and programs to improve watershed resources for the benefit of Abington's residents. They partner on grant applications and support projects via in-kind technical assistance.
- Pennsylvania Horticultural Society (PHS). PHS' Tree Tenders program has trained and organized volunteers who have planted trees in strategic locations in the township. PHS also has a presence in the township at its Meadowbrook Farm on Washington Lane, a free, 25 acre formal and informal public garden.

[18] https://www.briarbush.org/
[19] https://pa.audubon.org/conservation/bird-town, accessed December 4, 2020

Stewards of Abington's Natural Environment

There is a strong network of environmental stewardship groups with committed volunteers that are active in Abington. The two most significant are the Shade Tree Commission and Environmental Advisory Council, which are appointed by the Board of Commissioners.

Abington Shade Tree Commission (STC)[20]

The Commission is a body appointed by the Board of Commissioners. The mission of the commission is to "seek to preserve and enhance Abington's urban forest and the essential ecosystem services that trees uniquely provide."

- Urban Forests are systems of trees, other vegetation, and water within any urban area
- Ecosystem Services relate to the varied and substantial benefits that urban forests deliver. These include economic, environmental, and social benefits.

The Commission's base of operations is Grove Park, where the group maintains tools and materials to offer volunteer-staffed education and tree planting projects.

The Shade Tree Commission prepared the draft Abington Master Tree Plan[21] mentioned above in the Woodlands Restoration. Another important role of the STC is providing leadership, technical support, and stewardship for restoration of the Ardsley Wildlife Sanctuary.

Broadly speaking, the STC undertakes, and has undertaken, projects which further:

- Habitat restoration,
- Watershed restoration,
- Park rehabilitation,
- Environmental education,
- Nature trail development,
- Ongoing stewardship of natural areas (including trails, rain gardens, vegetated swales, soil conservation, weed and pest control, invasive vine cutting, native species planting, and deer protection measures)

Abington Environmental Advisory Council (EAC)[22]

The EAC consists of seven volunteer members appointed by the Board of Commissioners. Since 1974 the EAC has offered public programs that focus on practices that protect and preserve Abington's environmental resources. Programs range from park clean-ups to stream bank restorations to a rain barrel program (the last was initiated in 2011). In 2017, the

[20] https://www.abingtonpa.gov/government/shade-tree-commission
[21] funded by PA Treevitalize, Community Forestry Management Program
[22] https://www.abingtonpa.gov/ (Then type "EAC" in search box)

EAC received the Montgomery County Planning Advocate Award for its collaborative efforts in achieving national sustainability leadership designation.

Open Space Acquisition

The acquisition of open space is an important technique for preserving sensitive natural areas and facilitating the management of the natural environment. The Abington Open Space, Recreation, and Environmental ProtectionPlan (2006) selected several criteria important for consideration when identifying lands that should be considered acquisition priorities. They are:

1. Size: whether the property is at least 10 acres.
2. Development Potential: whether the property is at substantial risk for development, given its location, physical character, and zoning.
3. Woodland Value: whether a significant proportion of the property is wooded.
4. Open Space Connection Potential: whether the property is adjacent to or near another public parkland or other preserved land.
5. Waterway Location: whether the property is adjacent to a perennial stream.
6. Scenery: whether the property has special scenic value.

After the comprehensive plan is adopted, the township will undertake a new planning process to write and adopt an updated comprehensive recreation, parks, and open space plan.

Resilience

This section addresses resilience: specifically, as it relates to to environmental sustainability and hazard mitigation. It should be noted that these issues do not affect everyone equally. As noted by Montgomery County Planning Commission's Climate Change Vulnerability Assessment [23], "Some people are more exposed to climate-related health impacts, such as extreme heat, flooding from extreme weather events, and tickborne diseases. These include outdoor workers and hobbyists, homeless people, people living in flood plains, or people living in mobile homes or without air conditioning."

Environmental Sustainability and Adaptation to Climate Change

In order to make the township resilient to climate change, we need to assess risk and vulnerability. Heat is one indicator to consider. As seen on the Heat Risk Index Map, Huntingdon Valley and Meadowbrook (low-density suburban areas with relatively high tree canopy and relatively low impervious surface coverage) have a heat risk well below average. Conversely,

[23] From public presentation to the Montgomery County Planning Commission Board; May 5, 2021.

areas along the Route 611 corridor, at shopping centers, and in Roslyn and Crestmont, generally areas which have less tree canopy and more impervious surface coverage, have a heat risk that is above average. Identifying where the heat risk is higher helps us understand where measures to combat the heat risk, such as planting shade trees and removing impervious surface coverage, would be most beneficial.

Abington Township and groups like its Shade Tree Commission (STC) and Environmental Advisory Council (EAC), and numerous other groups, such as the Tookany-Tacony Frankford Watershed Partnership, Wyncote Audubon, Pennypack Ecological Restoration Trust, and Pennsylvania Horticultural Society have undertaken work in Abington to promote environmental sustainability. Some of the initiatives and recognitions that the township received for sustainability include the following:

- "Ready for 100 (RF 100)": Abington's Board of Commissioners endorsed the Sierra Club's Ready for 100 Renewable Energy Resolution (RF 100). Abington had previously committed to buying 100% green electricity through Renewable Energy Credits (RECs) for all municipal operations beginning in December 2018 (it established a contract with Constellation Energy). An EAC subcommittee is working on a municipal and community clean energy transition plan.
- LEED for Cities and Communities[24]: Abington Township is one of over 100 STAR (Sustainable Tools for Assessing and Rating)-certified cities and counties in the United States and second in Pennsylvania to join the family of LEED (Leadership in Environmental and Energy Design) for Cities and Communities. The LEED program helps cities and communities benchmark current performance, track performance metrics, communicate continuous improvement, educate residents, visitors and business owners to demonstrate commitment to sustainability, human health and economic prosperity.
- CDP (Climate Disclosure Project)[25]. Since 2016, the Township has been one of only six Pennsylvania municipalities that has disclosed environmental data, including greenhouse gas inventories, climate hazards, adaptation, and mitigation strategies to CDP (Climate Disclosure Project), the world's largest depository of climate data for businesses and cities. The Township garnered an Awareness score for its 2020 disclosure.[26] CDP uses the scoring methodology to incentivize the private sector and cities to measure and manage environmental impacts. These annual assessments

[24] In 2018, STAR Communities merged with the U.S. Green Building Council to develop the new LEED for Cities and Communities certification program.

[25] https://www.cdp.net/en/responses/58485

[26] https://drive.google.com/file/d/181p85fciJlywCyEIc2NPwUTGZ-2IvhcV/view?usp=sharing

provide a useful overview of the Township's climate action and environmental performance and how future township responses may be improved.

- 3 STAR Certification: In 2016, Abington Township, under the leadership of the Environmental Advisory Council (EAC), received a 3 STAR Communities certification. This certification evaluated the community on its economic, environmental and social factors to measure sustainability and quality of life. In 2018, STAR Communities merged with the U.S. Green Building Council. The township underwent a LEED for Cities recertification in 2021 to enable the township to forward its sustainability goals and remain a leader in the region.
- Tree City, USA: This Arbor Day Foundation program celebrates the importance of an urban tree canopy and promotes improved care of these vital city trees, in cooperation with the U.S. Forest Service and the National Association of State Foresters.
- Abington Township Green Program: is an award-winning community tree planting and greening program. The Green Program is used to beautify public parks and open spaces. Contributions from

A Time to Act

- "Growing Stronger: Toward a Climate Ready Philadelphia Climate Adaptation Plan (2015)," emphasized that climate change since 2010 for the region has been nothing short of historic. Consider that these included:
    - The warmest summers and wettest years on record.
    - An increase in hurricanes and a first-time derecho (a widespread, long-lived windstorm[1]). In 2020, a derecho killed three people in Montgomery County.
    - Projections by the end of the century of four to ten times as many days per year above 95 degrees Fahrenheit and as many as 16 days a year above 100 degrees Fahrenheit,
    - An increase in health-related problems such as asthma, cardiovascular disease, COPD, and other respiratory diseases from higher levels of ozone
    - Adverse effects on regional transit, watersheds, stormwater, and wastewater management.

individuals or groups are accepted to help buy trees, plants, benches, honorary plaques, and other items.

- In 2020, the PA Department of Environmental Protection, Energy Programs Office selected the Township for its 2020-2021 cohort of jurisdictions for its Local Climate emissions, conduct a climate change vulnerability assessment, and develop and quantify emissions reduction actions with broad based community involvement. Action Program. The program provides technical assistance to conduct a community greenhouse gas inventory (GHG) to create a Climate Action Plan to reduce GHG

Montgomery County adopted a resolution to establish Commercial Property Assessed Clean Energy Program (C-PACE) financing in 2020. This allows nonresidential property owners in Montgomery County to obtain low-cost financing for investments in renewable energy and energy conservation, with the financing providing up to 100 percent of project costs through a voluntary assessment on the property.[27]

Hazard Mitigation

- The township participates in and has adopted the *Montgomery County Hazard Mitigation Plan (MCHMP)*[28], which provides the county and each local municipality with a mitigation strategy for natural, human and technological disasters that could occur in Montgomery County at any time. It addresses the local government planning responsibilities established by the Stafford Act, (P.L. 106-390, the Disaster Mitigation Act of 2000) which requires state and local governments to develop and adopt an approved mitigation plan as a condition for receiving certain federal disaster grants and loans. Recent hazard events specific to Abington are highlighted in this most recent 2017 MCHMP to show the township's specific environmental vulnerabilities.

  This plan evaluated "Flood, Flash Floods, and Ice Jams" particularly in the "Wissahickon Creek, including the Sandy Run" and "Winter Storms" as the two highest perceived threats. Other climate hazards include extreme precipitation or rainstorms and flash or surface flood storms. The Increase in storm water runoff overwhelming local and downstream communities has increased the need to use taxpayer and federal, state, or local funding to add stormwater infrastructure. Increases in the Total Maximum Daily Loads deemed acceptable by the US EPA requirements has affected the environmental quality of local streams in the three Abington Township watersheds and impacts downstream communities, as Abington holds the headwater tributaries for all three watersheds. Sandy Run Creek's streambed erosion is considerable. The Comprehensive

[27] C-PACE Program: https://www.montcopa.org/DocumentCenter/View/31445/Montco-C-PACE-Progam-Guide?bidId=

[28] Montgomery County Hazard Mitigation Plan: https://www.montcopa.org/2873/Montgomery-County-Hazard-Mitigation-Plan

Stormwater Management Plan (currently being prepared by Wood Environment and Infrastructure Solutions, Inc.) is preparing hydraulic models for three priority flood-prone areas to assess if the township's current stormwater management program is adequate to meet future regulatory and environmental challenges.

Goals

1. Practice environmental conservation, restoration, and stewardship.
2. Conduct or promote environmental education and implement environmental demonstration projects.
3. "Green" the "gray" built environment by expanding the tree canopy, implementing naturalized stormwater management features, retrofitting parking lots, and increasing incentivizes for provision of open space. [29]
4. Act as a leader in environmental sustainability and adaptation to climate change.
5. Plan for and implement improvements in stormwater management, with improved impacts on water quality, infiltration, erosion, and flooding.[30]

Issues for Consideration

The following issues' perceived importance may influence the Environmental Management and Resilience chapter's recommendations:

- Adoption and implementation of the Master Tree Plan; a ten-year plan[31], which informs decision makers, and provides the township with an integrated approach to sustain the urban tree canopy.
- Enhancement of tree canopy in neighborhoods and areas of the township with the least tree canopy and least tree canopy per person.
- Planning, on a township-wide basis, for open space acquisition, protection, and enhancement; and conservation of natural resources.
- Planning for specific parks and open space areas.
- Monitoring of contaminants from the former Joint Reserve Base Willow Grove and its impact on drinking water, and advocating for infrastructure upgrades to public water systems that may be determined appropriate as a result.
- Environmental education of property owners (in cooperation with the township's environmental advocacy groups).

[29] See Chapter 13: Future Land Use for more detail
[30] See Abington Master Stormwater Management Plan.
[31] Funded by Pennsylvania Treevitalize, Community Forestry Management Program.

- Partnerships with institutional property owners to promote environmental restoration and stewardship (in collaboration with the township's environmental advocacy groups).
- Extension of protections of riparian areas to those below one acre in size (the Riparian Corridor Conservation (zoning) District currently applies only to properties one acre in size or greater), using a sliding scale (a narrower required buffer for a smaller property).
- Sustainability and resilience planning.
- Residential composting and the reduced use of plastics.

- Municipal transportation or infrastructure demonstration projects that exemplify best management practices (BMPs) in environmental projects (this could be undertaken in conjunction with environmental advocacy groups).

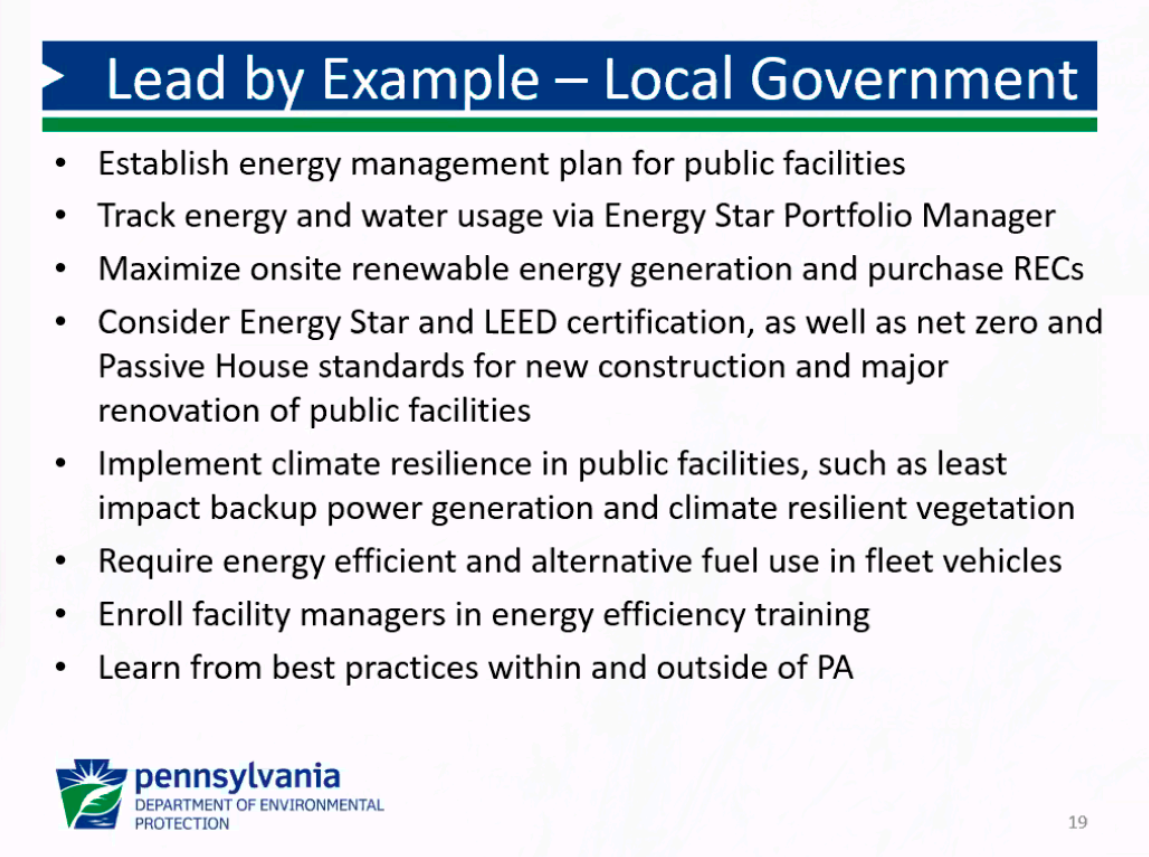
Zoning "bonuses" can be used to incentivize the provision of electric vehicle charging stations [pictured: charging station at Willow Grove Shopping Center]

- Demonstrating leadership in green, sustainable, and resilient building practices[32].
- Demonstrating leadership in combating climate change, consistent with the 2018 Pennsylvania Climate Action Plan.

[32] Examples: "Design for Enhanced Resilience" Pilot Credit, "Assessment and Planning for Resilience" Design Pilot Credit.

- Reducing township investments in fossil fuels and transitioning to clean energy, including planning.
- Environmental justice—including planning and promotion.

Note: Another policy which has positive impacts on the natural environment and environmental sustainability is a municipal "complete streets" policy. For more on this topic, including policies on implementing stormwater best management practices, street trees and other landscaping, please see Chapter 11: Transportation.



The Department of Environmental Protection's "Lead by Example Best Practices—Local Governments" recommendations for actions consistent with the 2018 Pennsylvania Climate Action Plan