

4 – Protecting Community Values: Goal 1

The first of Willistown's three fundamental planning goals is to protect the quality of Willistown's natural and man-made environments as a function of the community values and quality of life Township residents hold dear. Protection efforts should be concentrated on those natural and man-made resources that are limited and irreplaceable, and/or are ecologically sensitive.

This version of *Guidelines for Growth* is a direct outgrowth of the 2011 plan and its immediate predecessors, including the 1997 plan and the Township's 1993 *Open Space, Recreation, and Environmental Resources Plan*. The desire is to meld past planning efforts into a cohesive planning document oriented to the provision of growth management, environmental resource protection, and recreation planning.

General policies for protecting community values emphasize protecting those natural and man-made environmental features which either enhance the rural character, are limited and irreplaceable, offer recreation opportunities, or which are ecologically sensitive. Resource-based policies address such issues as natural topography, ground water, surface water, soils, vegetation and wildlife, historic and cultural resources, including local landmarks, parks and trails, and neighborhoods and housing stock.

4.1 General Policies for Preserving Environmentally Sensitive Lands and Natural Resources

- Continue to develop techniques by which to guide and encourage the conservation of land and promote its connectivity.
- Reexamine priorities for the conservation of land within the Township, e.g. woodlands and other vegetation, wetlands, habitat areas, surface water and ground water recharge/supply areas, steep slopes, etc. Consider partnering with local environmental and conservation organizations on a project-by-project basis to identify public rights-of-way and public easements that could be utilized to create and expand trail systems and connect public lands. Consider utilizing the Township Open Space Fund to acquire trail easements or land in fee simple to create and expand trail systems.
- Encourage creative and innovative site planning using conservation design principles that maximize the protection of key land and environmental resources; evaluate and maintain site hydrology; preserve and/or enhance significant concentrations of natural resources, open space, wildlife habitat, biodiversity corridors, and greenways (interconnected open space); incorporate unique natural, scenic, and historic site features into the lot configuration; preserve the integral characteristics of the site as viewed from adjacent roads; establish internal and connections to external trail systems and future trail systems; and ensure flexibility in development design to meet community needs for complementary and aesthetically pleasing development. Assist

property owners, as appropriate, with land conservation and development alternatives during the sketch plan review of subdivision and land development proposals.

- Continue to protect individual environmental resources such as wetlands, floodplains and other hydrological resources, areas of steep slope, and woodlands. Monitor efficacy of regulatory provisions and update and refine as needed.
- Continue maintaining, enhancing and expanding upon recreational resources that protect sensitive lands and natural resources while offering educational opportunities and public access.
- Continue to support the Environmental Sustainability Commission, Planning Commission, Open Space Review Board, and Parks and Recreation Board in appropriately filling their roles in a manner that protects resources. Consider training, workshops, and other techniques for ensuring these voluntary bodies have the support and tools they need.
- Continue to use Township preserve and park land as models of conservation, ecological improvement, and connectivity.

4.1.1 Water Resources

1. Resource-Based Policy

Continue to preserve and protect the Township's water resources, which include surface water resources (headwaters areas, flood plains, wetlands, hydric soils, and riparian buffer areas), and ground water resources.

2. Existing Conditions/ Background

Surface Water Resources

- Willistown Township falls within the headwaters of Ridley and Crum Creeks, both of which serve as significant sources of water for downstream urban areas (see Map 2: Water Resources). A small portion of the Township, the segment in the northeast corner which borders the borough of Malvern, drains into the Little Valley Creek. Headwaters areas include springs and marshes which exist at the uppermost terminus of stream corridors.

The water quality of the Township's streams and ponds has remained relatively high over the years, supporting healthy aquatic communities. As the Township comprises significant headwater areas, any man-induced impacts (primarily from land use practices, but also from microplastics and PFAS 'forever chemicals') will have significant impacts on the quality of its surface water, thus potentially impacting downstream users. Headwaters areas recharge streams during periods of low flow, but are susceptible to pollution impacts, sedimentation and erosion, and runoff.

Stream order in Willistown Township, as mapped by the U.S. Geological Survey, consists of first-order or perennial streams, which constitute the headwater areas discussed above; second-order streams, which have first-order stream tributaries; third-order streams, which have second order (and possibly first-order) tributaries; and fourth-order streams, often referred to as main stems, which are made up of third-order (and lower) tributaries. Four orders of the Crum Creek, two orders of the Ridley Creek, and one order of the Little Valley Creek exist in the Township. As first-order streams are fed by springs or ephemeral streams, these streams are more impacted by direct runoff than are higher order streams.

Water use designations, to which certain water quality criteria apply, have been established by the PA Department of Environmental Protection. The West Branch of the Crum Creek is designated as Exceptional Value (EV) (the highest designation possible and the one with the most stringent water quality criteria), while the remainder of the Creek in the Township is listed as High Quality (HQ). The majority of the Ridley Creek in Willistown is designated High Quality (HQ). Although the Valley Creek is designated EV, pollution has been a source of concern on the Valley and Little Valley Creeks (while all three streams show some impairments, the Valley and Little Valley are the only creeks to which a Total Maximum Daily Load (TMDL) standard has been applied).

- Floodplain areas, in particular the 100-year floodplain as mapped by the Federal Emergency Management Agency (FEMA) for the Flood Insurance Program, are areas considered by FEMA to be susceptible to flooding events (the 100-year flood is considered the base flood along streams, although flooding can and does occur beyond this boundary – it is more accurate to refer to the 100-year flood as a 1% annual chance of the area flooding *in any given year*). Alluvial soils are those soils that result from repeated deposition of flood waters throughout long periods of time; alluvial soils indicate not only past flooding events but probable future flooding events. In Willistown Township, alluvial soils are the Calvert, Chewacla, Guthrie, Wehadkee, and Worsham soils. It should be noted that FEMA published an updated flood insurance study in 2019 that revises and updates information on the existence and severity of flood hazards for Chester County.
- Wetlands have been increasingly recognized in recent years for their important ecological functions. They provide significant wildlife habitat and are important as storage areas for surface and ground water resources. Furthermore, such areas help filter and purify runoff that potentially enters streams and ground water aquifers. Wetlands also provide important nesting areas for birds and provide habitat for many other species of aquatic and terrestrial species. The U.S. Army Corps of Engineers and the Pennsylvania Department of Environmental Protection (PADEP) have established criteria for the delineation of wetlands; such criteria are based on soil type, hydrologic regime, and vegetation. Soils typical to wetland areas have been classified as hydric soils, e.g., those soils that have been formed under saturated (or anaerobic) conditions. In Willistown Township, hydric soils are the Calvert, Guthrie,

Watchung, Wehadkee and Worsham soils.

- Riparian buffer areas contribute significantly to the health of watersheds and stream ecosystems. Riparian areas consist of land which forms a transition zone between aquatic and terrestrial environments; such areas serve to filter and remove pollution-laden runoff from entering water bodies, protect against streambank erosion and tree loss, provide shade that maintains cool water for healthy aquatic ecosystems, promote stabilized streambanks which reduce downstream transport of eroded sediment and pollutants, and provide food, cover and thermal protection for aquatic organisms and other wildlife.

Ground Water Resources

- The Township is underlain primarily by Gabbro (g), Gabbroic Gneiss (g) and Granite Gneiss (gn), with bands of Serpentine (Xs) and Wissahickon formation (Xwc and Xw). Gabbro and Gabbroic Gneiss, while highly resistant to weathering, provide good surface drainage. Wells in these formations have been found to yield an average of 15 gallons per minute, adequate for domestic residential use at low to moderate densities.

The Township's Serpentine formations, while also resistant to weathering (and providing good surface drainage), are rare geologic formations due to their composition and the fact that they were heavily mined in years past. As serpentine bedrock weathers, it forms soils high in magnesium and heavy metals, including chromium, iron, cobalt and nickel, but lacking in other essential nutrients. Such limitations have resulted in rare flora being found to exist in areas of Serpentine rock. As such, portions of these areas have been placed on the Pennsylvania Natural Diversity Inventory (PNDI) (see discussion below).

Wissahickon formations are moderately resistant to weathering, provide good drainage and are capable of yielding an average of 75 gallons of water per minute.

The Township also contains several dikes and one fault. Due to the potential for increased fractures in fault zones, the ground water yields in these areas may exceed that of the surrounding areas. Conversely, such areas are more susceptible to ground water contamination and may pose stability questions for building foundations. Since such areas often indicate shifts in geology, care should be taken when digging or where other kinds of earth disturbance activities are anticipated.

As with any geologic structure, care must be taken to prevent pollution impacts to ground water.

- Radon has become an issue of concern in Chester County. In a study titled “Radon in Ground Water in Chester County, Pennsylvania,” (USGS, 1998) the median concentration of radon-222 in ground water from wells sampled throughout the county was 1,400 pCi/L (picocuries per liter). About 89 percent of the wells sampled

contained radon-222 at concentrations greater than 300 pCi/L, and about 11 percent of the wells sampled contained radon-222 at concentrations greater than 5,000 pCi/L. The highest concentration measured was 53,000 pCi/L. Radon is a naturally occurring gas formed from the decay of radium, a common element in soils and geologic rock structures. Radon is a colorless and odorless gas that can be found dissolved in ground water or can seep through building foundations into homes as a gas. It should be noted that other isotopes of radium in addition to radon-222 may also be found in ground water. As of now, the EPA recommends that individual water systems reduce radon levels in drinking water to 4,000 pCi/L or lower (public water supplies should reduce levels to 300 pCi/L or lower). Indoor airborne levels should be below 4 pCi/L; remedial action is suggested above this level.

As noted in the Chester County Hazard Mitigation Plan of April 2021, Chester County is considered a Zone 1 – High Radon Potential County. According to the plan, the “PADEP Bureau of Radiation Protection provides homeowners with information on how to test for radon in their houses. If results of a test reported to the Bureau exceed 4 pCi/L, the Bureau works to help the homeowner repair the house so as to mitigate high radon levels.” Because Chester County typically has high levels of radon, residents are encouraged to have their air and water tested.

3. Basis for Policy

- Surface waters provide amenity value, offer opportunities for recreation, help manage and channel flood waters, provide habitat for aquatic and terrestrial life, enhance biological diversity, and are sources of drinking water. Ground water is an important source of water supply and contributes to streamflow. Together, the Township’s water resources constitute a dynamic, interdependent system vital to the Township’s long-term welfare and quality of life.
- Headwaters areas should be protected from the negative impact caused by sedimentation, erosion, runoff, and pollution. Wetlands and hydric soils provide important ecological functions and should therefore remain substantially undisturbed. To the extent possible, floodplain areas should remain undeveloped and undisturbed - - for obvious safety reasons -- and to limit the potential for erosion, downstream sedimentation, and obstruction or alteration of the floodway.
- Water quality and quantity can be directly and indirectly impacted by land use development and the modification of natural patterns of runoff. Site grading, building elevations, imperviousness, and a host of other issues need serious consideration during the development process.
- Withdrawals and discharges of water directly affect surface and ground water resources. Ground water withdrawals should not exceed sustainable supplies or contribute to reductions in streamflow. Given ground water yield (average of 15 gallons per minute) in the majority of the Township, those areas not served by public water should maintain low to moderate zoning densities; without proper planning,

such areas' ground water needs could exceed available supplies, particularly during periods of prolonged drought.

- Riparian buffer areas contribute significantly to the health of watersheds and stream ecosystems.
- Significant analysis of and guidelines for water resources protection comes from *Watersheds*, the water resources element of the County's comprehensive plan prepared by the Chester County Water Resources Authority (CCWRA) in 2002. The plan outlines specific strategies, criteria, and recommendations for municipalities and others to protect water resources while accommodating for planned growth. To assist with implementation, CCWRA also prepared Watershed Action Plans (WAPs) "to assist municipalities, watershed and conservation organizations, and other stakeholders in understanding what needs to be done to protect and restore the water resources of each watershed." These documents indicate the need to protect the resources of the watershed at the municipal level through floodplain management, stormwater management, riparian buffer protection, cultural and recreational resource protection, source water protection, and integrated water resources planning. In addition, Townships are encouraged to increase public access to streams, where feasible, and assist in the restoration of impaired stream segments. It should be noted the County is currently updating *Watersheds*; as such, it is likely new strategies and recommendations for the County's municipalities will be forthcoming in 2023.

4. Township Planning and Regulation Today

- The Township's Environmental Protection Ordinance (EPO), Chapter 73, contains net-out provisions that assess potential impacts to sensitive natural resources through subdivision and land development and protects such resources by minimizing their disturbance. The provisions require the application of a resource protection ratio to protected land in order to calculate developable land. Natural resources protected through these provisions are: floodplains/floodways, wetlands, steep slopes, woodlands, hydric soils, and riparian buffer areas.
- Willistown Township has floodplain regulations that are also part of the Township's EPO. Floodplain regulations address the floodway, the flood-fringe, and the general floodplain area as documented in Flood Insurance Studies prepared by FEMA or as otherwise identified by alluvial soils. The Township's floodplain regulations were amended in 2017 to reflect updated FEMA floodplain maps and requirements.
- Wetland delineation and protection standards also exist within the Township's EPO. Delineation, as well as protection, is required for all wetlands in the Township.
- In 2000, the Township recognized the importance of riparian protection by enacting riparian buffer regulations. These standards, contained in the EPO, govern riparian corridor identification, permitted uses, corridor protection, riparian area management

plans and selective planting enhancements where disturbance occurs, or native vegetation does not exist.

- In recent years, the Township has been working to monitor and manage water resources on its own lands. For example, the Okehocking Preserve Management Plan (2006) contains water protection recommendations aimed at monitoring stream quality, eliminating invasive plant species, and installing riparian forest buffers along the Ridley Creek and Delchester Run (a first order tributary of the Ridley Creek). The Township coordinates with organizations such as the Willistown Conservation Trust and Drexel University on water quality testing and stream bed assessment in Okehocking along the Main Stem of Ridley Creek. Management strategies such as these, which also include educational components, are being considered for the Township's other preserves, parks and trails.
- Individual sewage disposal systems, a potential threat to both surface and ground waters, are addressed in the Township's Subdivision and Land Development Ordinance.
- Water supply testing, distribution, and maintenance requirements exist within the Township's Subdivision and Land Development Ordinance.
- The Township's sewage facilities planning, as mandated under Act 537, the Sewage Facilities Planning Act, is discussed in the community facilities and services section of Chapter 6.
- The Township has updated its stormwater management standards several times in recent years, the last effort being in 2013. As of the spring of 2022, Chester County released the latest version of its countywide model ordinance, the relevant portions of which were to be adopted by the Fall of 2022 pursuant to PADEP requirements. Among the items addressed in the Township's standards are water quality, peak rate control, volume and infiltration. The Township also continues to participate in Act 167 (the Pennsylvania Stormwater Management Act) planning efforts with Chester County and others; furthermore, the Township is an MS4 municipality (a population-based designation that requires the Township to maintain its inlets, pipes, swales, open channels, and other components of its public stormwater infrastructure). The MS4 program also required the Township to prepare a Pollution Reduction Plan (PRP) (a planning effort that estimates the pollutant loads generated by existing land cover within the Township and provides a 5-year plan to reduce these loads pursuant to a permit issued by PADEP). Also included in the plan is a public education component that obligates the Township to provide public outreach and other education about the MS4 program and the Township's efforts. The Township's most recent PRP was completed in 2018.
- The Township's EPO requires erosion and sedimentation control during land disturbance. Among other things are requirements for conservation plans, permits, preservation of topsoil, site grading, and sedimentation and erosion control. The

ordinance also contains additional conservation practices aimed at limiting the impacts of site construction activities; among these is the protection of vegetation and valued woodlands.

- The Township’s Zoning Ordinance, Chapter 139, provides protection for water resources (both ground and surface) in several ways: impervious cover standards were adopted to address research that suggests watershed imperviousness contributes to stream degradation (Schueler, 1995, et. al.); the Township’s agricultural zoning district (the RU Rural District) strives in part to facilitate the conservation and proper utilization of ground water supplies and control of surface water flooding; finally, the Township’s Open Space Conservation District provides incentives for recharge-based land treatment and stormwater management facilities, encourages less impervious surfaces than conventional development, contributes to a reduction in pollutants from surface water runoff and helps maintain high levels of ground water recharge.
- The Township’s Subdivision and Land Development Ordinance, Chapter 123, contains provisions for determining adequate water supply and sanitary sewage disposal.
- As is the case with water resources, regulation by the county (Public Health Department), the state (PA-DEP, PUC) and the federal government (US-EPA, DRBC) provide additional protection for water resources.

5. Recommendations for Policy Implementation/ Actions to Implement

- Continue to enforce the Environmental Protection Ordinance (EPO) and periodically refine and expand, as needed, the resource protection strategies contained therein. Educate public and private landowners on, and encourage them to adhere to, the management and protection strategies contained in the EPO, even on those lands not undergoing development; continue to promote wise land management practices.
- Review and, where necessary, revise the Township's development regulations to further encourage innovative site design, especially within headwaters regions.
- Consider additional public education and outreach activities specified as part of the U.S. EPA’s NPDES MS4 program for reducing pollutants and protecting water quality. The program’s Minimum Control Measures (MCMs) address this issue; specifically, MCMs 1 and 2 require municipalities to address public education, outreach, involvement, and participation as part of their stormwater planning. Consideration should be given to working with watershed organizations that have created programs to assist municipalities in meeting these requirements.

As background, the U.S. EPA’s NPDES Phase II rule identifies a specific management program for municipal separate storm sewer systems, or MS4s. Historically most stormwater systems discharged directly into local streams and rivers without water quality controls; as a result, the EPA made identified (MS4)

municipalities responsible for reducing pollutants and protecting water quality. While Willistown’s stormwater management ordinance and PRP go a long way towards achieving this goal, the Township will need to continuously educate the public about safe stormwater practices.

- Consideration as warranted must be given to Total Maximum Daily Load (TMDL) issues identified by the U.S. EPA and PADEP for impaired stream segments within the Township. Although neither the Ridley Creek nor Crum Creek currently have established TMDLs, the Little Valley Creek (and portions of Valley Creek) in the northern part of the Township have TMDLs established to address impaired water quality due to Polychlorinated Biphenyls (PCBs), pathogens, and storm sewer runoff. As such, the Township should continue to monitor and participate in the TMDL planning process as additional steps may be needed to mitigate pollution impacts to the Little Valley Creek.
- Utilize the findings of Chester County’s updated *Watersheds* plan (spring of 2023) to plan for the Ridley, Crum and Valley Creeks, further protect resources and promote a better understanding of surface and ground water resource issues.
- Maintain the Township’s current sewage treatment and disposal emphasis on land application in rural areas to avoid stream discharge, consistent with the intent of the NPDES program.

The National Pollutant Discharge Elimination System (NPDES) program was created initially to reduce the amount of sewage effluent going into the nation’s streams and rivers. The intent was to eventually eliminate all stream discharges in an effort to better protect streams from pollution. While numerous stream discharges exist today, the policy of reducing, if not eliminating stream discharges remains. As such, the Township should actively seek opportunities to minimize stream discharges and continue to encourage land application, where appropriate. This philosophy should be explicitly stated in the Township’s sewage facilities plan and pursued as appropriate.

- Encourage the donation of conservation easements in headwaters and flood plain areas.
- Expand the efforts at Okehocking Preserve regarding water resources management among the Township’s other preserves, parks and trails. For example, the Sugartown Preserve contains two unnamed first-order tributaries to the West Branch of Crum Creek and pond frontage. Continue and enhance collaboration with local university programs and conservation/ watershed organizations such as the Willistown Conservation Trust, which has a Watershed Protection Program that includes research, education, and monitoring of streams in partnership with the Stroud Water Research Center, Drexel University, and the Chester Ridley Crum Watersheds Association. Consider, and expand where needed, public education and volunteer efforts for each project area. Update current planning efforts for the Okehocking Preserve, as needed. Such efforts also contribute to the Township’s MS4 program

requirements.

4.1.2 Land Resources

1. Resource-Based Policy

Continue to guide and encourage the conservation of land. Continue to preserve and protect the natural resources of Willistown Township and promote techniques for land conservation, creative land planning and design.

2. Existing Conditions/ Background

Land resources of significance in Willistown Township include soils and steep slopes, as depicted on Map 3: Land Resources.

Soils

- The Township’s soils fall predominantly into sixteen soil series: Aldino, Brandywine, Calvert, Chester, Chewacla, Chrome, Conowingo, Edgemont, Glenelg, Glenville, Guthrie, Manor, Neshaminy, Watchung, Wehadkee, and Worsham. Several of these are alluvial soils (Calvert, Chewacla, Guthrie, Wehadkee, and Worsham); several of these are hydric soils (Calvert, Guthrie, Watchung, Wehadkee, and Worsham). Almost all of the upland soils of the Township are Class 1 and 2 prime agricultural soils.
- Soils generally have several properties which offer opportunities and constraints for their use. With regard to constraints, some soils have limitations for building, may be wet or flood-prone soils, may be indicators of wetlands and/or riparian areas, and may be subject to erodibility. Conversely, some soils are particularly suitable (opportunities) for construction and agricultural purposes.
- Prime agricultural soils are formed by processes of mineral weathering and decomposition of organic matter; formation of these soils takes place over centuries. Prime agricultural soils are extremely fertile and produce high yield crops. Unfortunately, what makes these soils suitable for crops also makes them attractive for development and on-site septic systems. Development atop fertile soils renders them incapable of supporting crops, other vegetation, and wildlife. Given the nature of such soils, their removal is an irretrievable loss.

Steep Slopes

- In Willistown Township, steep slopes are largely related to stream corridors. Moderate to severe erosion can result from development in areas of steep slope. Such erosion can increase sediment loads in nearby streams, thus negatively impacting aquatic life. In addition, undisturbed sloped areas adjacent to streams contribute both to ground water recharge and stream base flows.

Wooded slopes contribute immensely to Township character; furthermore, such slopes perform important natural functions, particularly in conjunction with stream corridors, by intercepting runoff, reducing erosion, shading streams, improving air quality, and providing habitat for terrestrial and aquatic species.

3. Basis for Policy

- Starting in 1982 there has been a series of Governor’s Executive Orders stating that the policy of the Commonwealth of Pennsylvania is to protect prime agricultural soils. Given the large amount of these soils and the steep slopes located in Willistown Township, the Township should continue to encourage innovative site design and the protection of prime agricultural lands.
- Use of land must take full account of the opportunities and constraints posed by the soils in the Township and seek to minimize soil loss under any circumstances.
- Development on sloped lands should only be done in accordance with standards that protect against structural instability, excessive erosion and sedimentation, and the loss of important ecological, visual, solar, and open space resources. On south-facing slopes, access to solar energy can represent a resource for which builders of new dwellings may, at their option, wish to avail themselves.
- Land preservation techniques can protect irreplaceable resources and be part of innovative site design that promotes resource conservation.
- Stewardship of land and environmental resources continues to be a major focus of Township efforts.

4. Township Planning and Regulation Today

- The Township’s Environmental Protection Ordinance (EPO), Chapter 73, provides protection to soils and slopes in numerous ways. Floodplain (alluvial) and wetland (hydric) soils are protected through the Floodplain Conservation District and Riparian Buffer Area Conservation District, respectively. In addition, standards also exist to protect topsoil during construction. Soil erosion and sediment pollution control standards work in conjunction with stormwater management standards to minimize the impacts of runoff, erosion, and sedimentation. As part of its stormwater management standards, the Township created a soil use guide to assist with proper facility design and construction. The steep slope conservation district provides protection to prohibitive slopes (those in excess of 25%) and precautionary slopes (those between 15% and 25%). Finally, other standards regarding conservation of vegetation, wetlands protection, and landscaping contribute to the protection of the Township’s soils and slopes.

With regard to the conservation of land and the protection of natural resources, the EPO also contains net-out provisions intended to calculate the amount of natural resource land that must be protected during the development process.

- The Township’s Zoning Ordinance, Chapter 139, contains both an agricultural zoning district (the RU Rural District) and an open space district (the OSC Open Space Conservation District). Among other things, the RU District is intended to facilitate agricultural, conservation and recreation purposes, and protect and preserve natural and historic resources. The OSC District provides opportunities for compact development using creative site design that conserves land and protects open space.

5. Recommendations for Policy Implementation/ Actions to Implement

- Continue to enforce the Environmental Protection Ordinance (EPO) and periodically refine and expand, as needed, the resource protection strategies contain therein.
- Encourage the donation of conservation easements in, and appropriate stewardship of, steeply sloping stream corridors, wetlands and agricultural lands containing prime agricultural soils.
- Continue to promote the use of alternative “green technology” stormwater best management practices (also referred to as green stormwater infrastructure or GSI) that promote infiltration and reduce runoff. Simple management techniques, such as disconnection (diverting downspouts to pervious surfaces so as to avoid concentrating storm flows) and rain gardens contribute to soil preservation and reduce soil compaction. Conservation Design and Low Impact Development, both concepts incorporated into the Township’s updated stormwater management ordinance, and promoted by Chester County and PADEP, should be given due consideration in all subdivision and land development projects in the future.
- Further promote the use of “minimum disturbance/minimum maintenance” as a methodology for limiting disturbance and compaction on development sites, thus preserving soils and natural site drainage characteristics.
- Review and, where necessary, revise the Township's development regulations to further encourage innovative site design, especially within sloped areas and on prime agricultural soils. Township efforts at promoting protection and regulating accordingly form the foundation for preserving remaining rural/agricultural lands.
- Promote the restoration of agricultural land that has a long history of chemical fertilizer use.
- Encourage the conversions of grass lawns to meadow lands, where feasible.
- Continue to support and fund the Township’s Open Space Fund for open space and conservation easement acquisition administered by the Open Space Review Board.

4.1.3 Biotic Resources

1. Resource-Based Policy

Continue to preserve and protect environmentally sensitive lands and areas of significant biotic resources.

2. Existing Conditions/ Background

Biotic Resources are depicted on Map 4: Biotic Resources.

Woodlands

- Willistown has a sizable number of woodlands scattered relatively evenly throughout the Township. A comparison of woodlands mapping from the 1980 comprehensive plan and subsequent plans and the aerial coverage utilized for this comprehensive plan indicates that woodlands have remained relatively stable over the last 42 years. While some loss has certainly occurred, such loss is relatively indiscernible. Today, woodlands comprise approximately 3,900 acres of Township land, or approximately 33% of the Township.

Much of the Township's woodlands are concentrated along Ridley and Crum Creeks and their associated tributaries. Trees play a particularly important role in these areas in terms of stabilizing slopes, protecting floodplains and providing riparian habitat for wildlife. Riparian areas also provide an important transition zone between the aquatic and terrestrial environments; such areas provide both food and shelter for the majority of the Township's remaining aquatic species.

Wooded areas provide critical habitat. Several of the larger, more mature forest stands in Willistown are likely to support a considerable variety of species. Certain species of forest plants and wildlife depend specifically on the unique conditions of a healthy forest ecosystem. For example, many species of songbirds, particularly the colorful warblers, are specifically adapted to forest-interior conditions and will not nest elsewhere. In addition, numerous species of spring ephemeral wildflowers only bloom on the rich, moist soils of the forest floor. Such examples underscore the critical role that woodlands play in sustaining the natural variety of the landscape.

Woodlands also fulfill numerous other ecological functions, including their ability to reduce the rate of surface runoff, filter nutrients and sediment that might otherwise pollute streams, reduce thermal pollution to streams, moderate wind speeds, reduce air temperatures, improve air quality, reduce climatic stress, and abate glare, dust and noise. Woodlands also offer opportunities for passive recreation and quiet reflection.

Pennsylvania Natural Heritage Program (PNHP)

- The Pennsylvania Natural Heritage Program collects and store’s location and baseline ecological information about rare plants, rare animals, unique plant communities, significant habitats, and geologic features in Pennsylvania. Data from the PNHP is used in the environmental review tool known as the Pennsylvania Natural Diversity Inventory (PNDI). The Township contains several areas of threatened and endangered species and species of special concern. Among the Natural Heritage Areas identified are the Crum Creek (its forested areas), the Clearview Road Barrens (off of Grubb Road), the Crum Creek Barrens (located below Malvern), the Ridley Creek Headwaters, the Ridley Creek-Hunters Run area, Goshen Road Woods, the Green Lane Woods, the Spring Road Wet Meadow, the Willistown Serpentine Barrens, and the Sugartown Serpentine Barrens. Two of these areas also contain impact zones for the Pennsylvania Natural Diversity Inventory. Both areas are geological structures known as serpentine barrens: the Malvern or Sugartown Serpentine Barren and the Willistown Serpentine Barren (also referred to as the Cedar Barren). Both of these also contain core habitat of regional and global significance. In order to preserve the integrity of such areas, the state does not generally give the exact location of such sites (and as such, these areas overlap with several of the other Natural Heritage Areas identified above). The sites indicated on the Biotic Resources Map are only approximations of the actual barrens themselves.

In general, the serpentine barrens are rare geologic structures that have a unique mineral content. These structures provide habitat for an assortment of rare plant species, as well as species in danger of extinction. In addition, periodic fires have historically served to minimize the dominance of woody shrubs and trees on barrens. The resulting plant community is a rare, sparse collection of grasses, wildflowers, and stunted conifers and oaks. Natural succession to hardwood forest is stalled on these sites, with the adapted vegetation more closely resembling a savannah landscape.

Important to remember is that the uncommon structure and assortment of plants growing in serpentine barrens provides important habitat for wildlife. Most local species of mammals, songbirds, and birds of prey frequent the barrens habitat. In addition, barrens favor fewer common species, particularly ring-necked pheasant, American woodcock, savannah sparrow, blue-winged warbler, and yellow-breasted chat.

Since Willistown contains multiple barrens, it is also worth noting that interrelationships among barrens can be important. The long-term survival of certain populations of endemic plants (common to these habitats but uncommon elsewhere) may depend on "genetic exchange" between barrens, including pollination and seed dispersal.

Chester County Natural Areas Inventory

- The *Chester County Pennsylvania Natural Areas Inventory*, published in 1994 and updated in 2000 and 2015, identified sites in the County that provide habitat for species of special concern or are considered exemplary natural communities. In 1994,

several sites of statewide significance were identified in Willistown Township: the Malvern or Sugartown Serpentine Barrens (which contains nine plants of special concern), the “Crum Creek Barrens” (containing small populations of two wildflower plant species along a very small serpentine outcrop), and the “Mill Road Site” (containing fair populations of a single wildflower plant species. This study also identifies one species of local significance in Willistown Township: the Dutton Mill Marsh (a small cattail-sweet flag marsh and wet meadow with a diversity of sedges and wildflowers). Information updated in 2000 indicated the identification of a new site of statewide significance, the “Dutton Mill Woods” (containing two plant species). Information updated in 2015 added the Clearview Road Barrens, the Goshen Roads Woods, the Green Lane Woods, the Ridley Creek-Hunters Run area.

Local Vegetation of Importance

- The Township also contains vegetation of local significance, e.g., specimen trees that are integral to the characteristic landscape of the Township. Defined as historic trees, these resources were identified by the Township’s Historical Commission in a publication entitled “Historic Trees in Willistown Township” and subsequently updated and refined as part of the Township’s Tricentennial Celebration in 2004 and subsequent evaluations by the Historical Commission. (See Map 4 - Biotic Resources and Appendix 1). The trees contained on this list are believed to add character, beauty and a “sense of history” to the Township.
- Exotic, invasive vegetation are biotic resources not considered desirable for protection; such species can impact ecosystem processes and thereby out-compete or make unsuitable native habitat. The addition of invasive species and the reduction in number of native plants can affect both the structure and function of biological communities. Invasive plants can exclude native plant species by crowding for space or competing for nutrients, moisture and other resources, or can exhibit other qualities that make conditions unsuitable for natives. In addition, the loss of native plants and the proliferation of exotics can often lead to a loss of cover, food sources, nesting sites and other uses critical to the survival of native fauna.

Upper Ridley/Crum Important Bird Area

Nearly all of Willistown Township is located within the National Audubon Society designated Upper Ridley/Crum Important Bird Area (IBA) #72. Audubon’s IBA program is a global conservation initiative that identifies and protects outstanding habitat for feeding, breeding, and migrating birds. The IBA, which was established in 2003, encompasses an area greater than 14,000 acres in Willistown and parts of neighboring townships, including all of Ridley Creek State Park, Tyler Arboretum, and a vast expanse of private land in Willistown Township. It is made up of the permanently conserved lands within the IBA, as well as unprotected large tracts deemed critical for conservation by municipalities and conservation organizations. The Upper Ridley/Crum IBA is one of 78 such areas in Pennsylvania, and is part of a global network of lands critical to bird habitat conservation. Audubon has identified the deciduous woodlands within the Township as

critical habitat for woodland dwelling bird species such as the Kentucky Warbler, Wood Thrush, Veery, and Scarlet Tanager. The old fields, hedgerows, and meadow habitats of the Okehocking Preserve are also home to important grassland bird species such as the Eastern Meadowlark, Field Sparrow, and Bobolink. Both woodland and grassland species are declining in population throughout southeastern Pennsylvania due to habitat fragmentation and loss caused primarily by suburban development. The size of protected habitat and its connectivity to neighboring natural areas are vital to the maintenance of these bird populations.

Deer Management

High deer populations have had dramatic negative effects on natural habitats in the form of degraded native plant communities, specifically woodland understory vegetation, which provides critical nesting and foraging habitat for migratory songbirds. Other challenging issues include increased deer-vehicle collisions, increased exposure to Lyme Disease and damage to crops and ornamental landscaping.

As reported in the 2011 plan, the Willistown Conservation Trust (WCT), in partnership with Audubon Pennsylvania and Willistown Township, initiated in 2007 a deer management plan covering nearly 7,000 acres of the Upper Ridley/Crum Important Bird Area (IBA) and including over 125 (primarily) private landowners. The program, while ambitious, was intended to use an ecosystem approach to deer management that required WCT to work with a wide range of professionals, stakeholders and organizations such as the Pennsylvania Game Commission, wildlife biologists, ecologists, landowners, hunters, and conservation partners. A steering committee was created to serve as ambassadors to local landowners and the Trust undertook outreach to the hunting community. Once up and running the program was very successful, culling upwards of 250-300 deer a year across the 7,000-acre management area. Unfortunately, the program also became quite labor intensive, requiring the kind of time and resources WCT did not have to manage the program effectively. Faced with the need to scale back, WCT began working with hunting groups to cull deer on their preserves alone. While not unsuccessful, this approach has not culled nearly the number of deer that took place when the prior program was in place (partially due to deer roaming off-site during hunting season).

WCT and the Township both believe a middle ground needs to be found that allows for an effective deer management program involving the stakeholders from the previous effort. However, it is important to understand the level of commitment and coordination needed to undertake such a venture. WCT suggests the Township start with a small defined area and engage with landowners about the importance of deer management (WCT is willing to help with this endeavor). Part of this outreach requires educating landowners about the importance of management, both in terms of the benefits to the deer population itself, and in terms of the damage associated with a high population. For example, overpopulation leads to starvation, increased disease, and suffering. Because landowners are the first line of communication with hunters operating on their properties, the Township's and the Trust's relationships with them must be based upon mutual trust and respect.

With this in mind, the Township’s Environmental Sustainability Commission (ESC) hopes to develop a new deer management plan to serve as the Willistown strategy for responsible deer management. The ESC will work with local and state organizations such as WCT, the Pennsylvania Game Commission, wildlife biologists, ecologists, landowners, hunters and conservation partners to begin to address and sustainably manage the white-tailed deer population in Willistown.

3. Basis for Policy

- The biotic resources of the Township represent valuable assets that sustain wildlife communities, contribute economic products, mitigate development impacts, offer recreational opportunities, and provide outstanding living environments that contribute to the character of the community. Residents should be encouraged to plant native species, in particular pollinator-friendly species, and limit the use of pesticides and other chemicals that reduce natural diversity.
- The Township’s biotic resources are a limited and indispensable element of its natural and rural charter and deserve protection.
- The Township’s natural diversity remains generally good despite human disturbance associated with settlement and development. Maintaining natural diversity requires both a concentrated effort to retain an abundance of natural areas and a desire to preserve the ecological interconnectedness of such areas; in other words, not only the existence of natural areas but how they interconnect to form habitat networks that contribute to species diversity. As such, the Township has an obligation to present and future residents to preserve its remaining biotic resources and sensitive natural habitats.
- In some parts of the Township’s woodlands invasive species such as Amur Honeysuckle have created monodominance, out-competing native species. Invasives took hold as a result of increased deer population browsing the natural understory. Shifts in understory, increased precipitation and temperature increases related to climate change may also be contributing in part changes experienced in the plant hardiness zone this region is experiencing (such zones are based on plant hardiness and are used as an indicator of the cold tolerance of plants).

4. Township Planning and Regulation Today

- The Township’s Environmental Protection Ordinance (EPO), Chapter 73, provides protection to biotic resources in numerous ways. Among other things, the ordinance contains standards for the conservation of vegetation; the protection of wetlands; the preservation and enhancement of riparian buffer areas; the protection of woodlands; and the provision of landscaping. Floodplain and steep slope regulations also contribute to the protection of sensitive habitat areas that are home to various flora and fauna.

With regard to the conservation of land and the protection of natural resources, the EPO also contains net-out provisions intended to calculate the amount of natural resource land that must be protected during the development process.

Finally, the Township’s new stormwater management provisions within the EPO encourage Conservation Design/ Low Impact Development and Green Stormwater Infrastructure (GSI) that promote the use of vegetation for water quantity and quality benefits, encourage minimum disturbance to soils and vegetation, and advocate low impact development practices that protect vegetation and reduce soil compaction.

- The Township’s Zoning Ordinance, Chapter 139, provides both a rural zoning district (the RU Rural District) and an open space district (the OSC Open Space Conservation District). Among other things, the RU District is intended to facilitate agricultural, conservation and recreation purposes, and protect and preserve natural and historic resources. The OSC District provides opportunities for compact development using creative site design that conserves land, protects open space, and provides opportunities for the interconnection of habitat areas (through the creation of biodiversity corridors).

5. Recommendations for Policy Implementation/ Actions to Implement

- Continue to enforce the Environmental Protection Ordinance (EPO). The ordinance provides direct protection of natural habitats through woodland/vegetation conservation standards, conservation plan requirements, and other related standards. Periodically assess and, if necessary, refine the resource protection strategies contained therein.
- Research and evaluate ordinance examples and/or landowner agreements that protect biotic resources after properties have been through subdivision and land development. Consider enforcement challenges through such approaches, including models of enforcement, inspection practices, and public (self) reporting. Consider public education appropriate to such an effort.
- Review and, where necessary, update the plant list contained in the Environmental Protection Ordinance (EPO)(Appendix B thereof) to reflect changes in hardiness zone, plant tolerance, and species diversity. Consider adding a list of invasive plants that should no longer be encouraged in the Township.

Continue to utilize this list as a reference to specify suitable native species for planting under varying site conditions; cross-reference this list, as needed, in other chapters of the Township Code. Consideration should also be given to updating invasive species lists (such as that contained in the Okehocking Preserve Management Plan of 2006) and providing guidance to manage and control the spread of such species.

- When configuring open space set-asides as part of development, consider ways to reduce wildlife habitat fragmentation and protect biodiversity corridors and riparian buffers along streams and elsewhere; consider these issues when configuring public trail systems.
- Encourage the reduction in use of chemical lawn fertilizers that impact wildlife and aquatic life.
- Continue to promote zoning, subdivision and land development, stormwater, and site design options that enhance the prospects for the retention of vegetation on sites undergoing development. Techniques such as “fingerprinting” (site planning techniques that limit the zones of disturbance), minimum disturbance/ minimum maintenance standards (which can reduce or eliminate the effects of land disturbance, clearing and grading), no-mow zones, vegetated filter strips, and other techniques should be encouraged.
- The Township should continue to encourage conservation easement donations that protect biotic resources.

4.2 General Policies for Preserving Areas of Significant Physical, Historic and Scenic Value

Encourage the dedication of protective easements for historic or cultural resources.

Encourage future development to reinforce the Township's historic settlement pattern and continued use of land for agricultural purposes.

Monitor efficacy of regulatory provisions related to scenic quality protection, including, for example, any landscaping, buffering and screening standards.

Monitor efficacy of regulatory provisions related to historic resource protection and documentation.

Monitor the usefulness of regulatory provisions related to historic resource protection and documentation.

Promote techniques for creative land planning and design consistent with the Township’s conservation design principles to preserve scenic resources in the Township

Continue efforts to implement the recommendations made in the 2006 Okehocking Preserve Management Plan and update the plan as necessary to reflect changing circumstances over time.

4.2.1 Scenic, Historic, Recreational, and Cultural Resources

1. Resource-Based Policy

Continue to protect the quality of Willistown's natural and man-made resource environments which enhance the overall character of the Township. Continue to preserve and protect areas of significant physical, historic, cultural, recreational, and scenic value. Minimize disturbance to scenic resources within the public viewshed as land undergoes change or is converted to other uses. Protect the integrity of sites and structures of historical, cultural, or recreational significance.

2. Existing Conditions/ Background

Scenic Resources

- The Scenic, Historic & Cultural Resources Map (Map 5) quantifies and depicts the visual landscape of the Township as seen from public roads. The full inventory, done in considerable detail, documents visually significant lands in the public viewshed, vista points, historic structures, and visual accents and intrusions. From a holistic perspective, the resources that comprise this landscape contribute significantly to the visual character of present-day Willistown and represent a significant component of the Township's heritage and sense of community. Further, the survival of such resources is a partial indication of Township and landowner commitment to preservation in light of continued growth. It should be noted that the Township's recreation land reflects the community's values as well, and therefore the Existing Recreation Sites, Publicly Accessible Open Space and Trails Map (Map 6) can also represent scenic resources of significance.
- Visually significant lands are documented with regard to a visual boundary (referred to as the scenic boundary). Vista points designate broad, expansive views. Arrows leading from the vista points show the direction of the viewing opportunity. Twenty-six vista points were selected on the basis of the depth and undisturbed quality of landscapes representative of Willistown Township's character. This represents a two-fold increase in vista points since the last plan, predominantly due to the addition of two new scenic road segments, changes in the scenic boundary along some roads (likely an opening in an otherwise previously buffered landscape), and the reevaluation of several previously identified scenic roads.

Visual accents are those manmade objects or structures (or natural habitats) which enhance or contribute to the landscape; visual intrusions are those manmade objects or structures which detract from the landscape. Examples of accents are stone walls, ruins and villages. Intrusions include such items as transformer facilities, silt fences and roadside trash. Twenty-seven accents and four intrusions were identified (see Appendix 2). This count remains the same from the last planning effort and closely matches those identified in 1993 for the Township's "Open Space, Recreation, and Environmental Resources Plan." The 2011 comprehensive plan eliminated the

intrusion identified on Devon Road in 1993, however added three intrusions, including: a utility station/transformer identified on the south side of West Chester Pike (Rt. 3) across from the intersection of Dutton Mill Road; a cell tower located on the north side of West Chester Pike (Rt. 3) just west of Plumssock Road; and a cell tower located on the south side of Paoli Pike just west of Sugartown Road (these intrusions remain in place today).

The visual landscape is highlighted by the natural, scenic, historic, cultural, and recreational resources of the Township within the context of public roads and vista points; contributing vegetation, topographic features, and man-made structures all influence the visibility of the landscape. Furthermore, the interrelatedness of these resources and their importance to the local community underscores the importance of continued protection efforts.

- For the purposes of identifying scenic roads, the Township utilized the methodology contained in its 1993 Open Space, Recreation and Environmental Resources Plan. This approach continues to provide a useful tool for evaluating scenic roads and resources; perhaps as significant, such an approach makes possible a clear evaluation of change over time.

Scenic roads are those roads having a high degree of natural beauty and historic or cultural value. As a first step in identifying scenic roads within the Township, criteria taken in part from the Federal Highway Administration (FHA) publication *Scenic Byways* (and subsequent publications of the FHA) and from the methodology used to develop the Scenic, Historic and Cultural Resources Map, were applied to the Township's roads through field investigations. These criteria were further refined as a result of the field investigations and are contained in Appendix 3.

Using the refined selection criteria, an analysis of the scenic, historic, recreational and cultural resources inventories (summarized on Map's 5 and 6) and the natural resources inventories (water, land and biotic resources)(summarized on Map's 2, 3, and 4) was next performed on each road that had been preliminarily identified in the field. The purpose of this analysis was to quantify the amount of scenic value each road possessed based on applying the refined selection criteria to the resource inventories prepared. Along with further fine-tuning of the preliminary designations, this analysis aided in pointing out the positive or negative attributes of each road and how such attributes contribute to or detract from the scenic quality of each road.

The result is a roster of twenty-one roads that are considered worthy of scenic road designation. It should be noted that two additional roads were added since the 2011 planning effort: the Willistown portion of Line Road from Paoli Pike to Goshen Road, and Barr Road, between Providence Road and Grubbs Mill Road (the 2011 plan eliminated Line Road but the current inventory again lists it as scenic, given the qualities noted in Appendix 3). Appendix 3 lists and describes all twenty-one roads, as well as points out the qualities or attributes that make these roads integral to the scenic fabric of the Township. To a degree, each has its own set of qualities worth

protecting; arguably, though, they collectively serve as a means of public enjoyment within the Township.

Although the road corridors identified on Map 5 portray a uniform width (which acknowledges the immediate frontage of each road), in reality the scenic perimeters of these roads are a function of the Township's rolling topography, vegetative features, and built environment (hence, the designation of scenic vistas or outlooks of significant depth).

Historic and Cultural Resources

Willistown Township has 201 documented historic structures, not all of which are located within the documented scenic viewshed (see Map 5). The structures were identified in part from Chester County's Historic Sites Survey, as amended, and through research undertaken by the Township's Historic Commission. While no individual resources are listed on the National Register of Historic Places, three historic districts do exist: the Sugartown Historic District, the Okehocking Historic District and the Whitehorse Historic District. Structures shown as Contributing Resources (Breou Map 1883, commonly referred to as the Breous Map or Farm Atlas) contribute to the historic character of the overall Township. Appendix 4 lists the Township's historic resources (the identification number also being used as the reference for each resource on Map 5).

Recreational Resources

Willistown Township has over 400 acres of passive and active recreation lands within its borders, 235 acres of which are owned by the Township, the remainder being owned by private non-profits who permit public access (including approximately 95 acres of the Kirkwood Preserve which was acquired in large part by using and leveraging the Willistown Township Open Space Fund). These recreational assets are critical to the mental, physical, and emotional wellbeing of Willistown residents and visitors and offer gathering places for the community (see Map 6).

3. Basis for Policy

Scenic, historical cultural, and recreational resources are irreplaceable to the community and add immeasurably to the Township's quality of life. These resources should be preserved for future generations. Where direct management of a resource is not feasible, creative regulatory approaches can provide preservation incentives to property owners and others.

4. Township Planning and Regulation Today

- The Township's Environmental Protection Ordinance (EPO), Chapter 73, provides protection to water, land and biotic resources that in large measure make up the scenic quality of the Township. Among other things, the ordinance contains standards for the conservation of vegetation, the protection of woodlands, the protection of

steep slopes, and the preservation of other natural resources that contribute to scenic quality. Furthermore, the ordinance contains provisions for landscaping and other land and resource management tools to enhance the natural (and scenic) landscape.

- The Township’s Zoning Ordinance, Chapter 139, provides both a rural zoning district (the RU Rural District) and an open space district (the OSC Open Space Conservation District). Among other things, the RU District is intended to facilitate agricultural, conservation and recreation purposes, and protect and preserve natural and historic resources. The OSC District provides opportunities for compact development using creative site design that conserves land, protects open space, and provides opportunities for the protection of scenic road corridors through setbacks, buffering and innovative design.
- As part of the Township’s Zoning Ordinance, Chapter 139, the Township adopted historic preservation ordinance provisions in 2001. The ordinance provides a “clear process by which proposed land use changes affecting historic resources can be reviewed by the Township”, encourage continued use and preservation of historic resources, discourage unnecessary demolition of historic resources, and provide guidance to help mitigate negative effects of proposed land use changes.
- Chapter 29, Open Space Review Board, Chapter 96, Parks, and Chapter 31, Park and Recreation Board, of the Township Code, provide for Township resident representation in the planning, acquisition, and execution of open space and recreation protection, maintenance, and programming.

5. Recommendations for Policy Implementation/ Actions to Implement

- Continue to enforce the Environmental Protection Ordinance (EPO) which regulates landscaping, buffering, and screening, among other things. Continue to enforce the Historic Preservation Ordinance, which provides a clear process by which to encourage protection of historic resources.
- Consider formal scenic road designation, either through local efforts or through the state scenic byway program; consider appropriate signage and education.
- Consider adopting a broad scenic roads overlay district which would address site planning and design within a scenic road corridor, primarily through the siting of common open space, landscaping/buffering measures, and sensitive treatment of visual accents.
- Consider preparation of a brochure intended to outline the scenic qualities of identified scenic roads, including possible Historic Commission research regarding the history and use of each road.
- Consider additional policies and/or ordinances to protect scenic, historic, recreational, and cultural resources and ensure enforcement, including:

- Additional landscaping policies or regulations designed to specifically protect or enhance existing viewsheds and scenic roads.
- Updates to the Township’s historic preservation ordinance to leverage new ideas and thinking for the protection of historic resources.
- Assigning enforcement to a specific Township department of staff member.
- Consider a scenic easement acquisition program and/or encourage the donation of conservation easements. Encourage the dedication or easement (including façade easements) of historic and cultural resources.
- Continue to actively engage Township residents on the open space and recreation missions of Willistown through its advisory boards and the Parks and Recreation Department.
- Map landmarks of historical or cultural significance.
- Review and update the 2006 Okehocking Preserve Management Plan; revise the plan’s recommendations, as needed, to address current issues, including stream water quality, climate change, and deer management.

4.2.2 Parks, Recreation, Preserves, and Trails

1. Resource-Based Policy

Preserve, protect, and expand the existing parks and recreation resources in Willistown Township through management, maintenance, and funding of these resources. Preserve the continuity of Willistown’s existing trail network. (Note: The term “trail” includes sidewalks in the more densely developed areas of the Township.) Connect recreational assets to each other and to neighborhoods through existing and proposed trails.

2. Existing Conditions/ Background

Park, recreation and trail resources in Willistown Township are depicted on Map 6: Existing Recreation Sites, Publicly Accessible Open Spaces, and Trails.

Existing park and recreation resources include Greentree Park, Duffryn Trail, Fox Hollow Trail, Mill Park, Crum Creek Lands (currently unnamed and consisting predominantly of wetland/riparian areas associated with sewer easements), Serpentine Preserve, Sugartown Preserve, Rita Reves Park, Okehocking Preserve, and Willistown Conservation Trust’s Kirkwood Preserve and Rushton Woods Preserve and Farm (see Appendix 5 for the location and description of each facility).

Existing trail resources in the Township include both public and private trails that provide for a variety of uses including pedestrian and/or equestrian trails. A number of private trails were historically intended for equestrian use only and a number of those are under conservation easements that dictate accessibility and type of use on each parcel. As time has passed, the equestrian land use in Willistown has changed. Many barns that once housed animals and cross-country horses are now show barns that rarely accommodate horses for riding across the countryside. Historically, the Radnor Hunt hounds went out fox chasing with equestrians three days a week. Due to significant increases in traffic, land development, a change in landowner access, and decreased local equestrians, the Radnor Hunt moved their outings to the Brandywine Valley two days a week. The sport is hosted in “Radnor Hunt Country”, or Willistown, only one day a week (Note: modern day fox “hunting” does not injure foxes and is referred to as “fox chasing”). This change in land use and diminished equestrian use has changed the equestrian trail network and poses great challenges to its integrity. Additionally, traffic volume and speed are impacting equestrian trail circulation safety (many trails have historically run along road rights-of-way).

The Township also contains a unique informal recreational ‘trail’ asset in its three unpaved, dirt roads: the southernmost section of Warren Avenue, the majority of Plumsock Road, and Green Lane. These roads are used by pedestrians, equestrians, and bicyclists and are important connections for existing and proposed trail networks.

As stated above, the term “trail” encompasses sidewalks in the densely populated portions of the Township. Public trails are composed of mown trails, gravel trails and paved trails, depending on location.

The rolling hills and bucolic views of Willistown continue to be a favored destination for road bicyclists; however, use has dropped due to heavy traffic volumes throughout the day. Risk is high on both narrow back roads (historic roads without shoulders, some of which remained unpaved) and high-speed state-owned roads (in part due to a rise in cut-through traffic). Additional risk in recent years is attributable to driver cell phone distraction and the use of global positioning systems (GPS) for vehicular navigation. There are no designated bike trails or bike lanes in Willistown Township.

3. Basis for Policy

Parks, recreation resources and trails provide an essential community service in Willistown Township and are valuable cultural assets that play an important role in enhancing the quality of life of Township residents and bringing the community together. Parks and recreation programs contribute to a healthy lifestyle and provide documented mental, physical, emotional and societal health benefits to individuals and communities. Access to trails and recreation lands promote physical activity and social gathering. Walking and very limited bicycling provide documented quality of life, health, economic, transportation, and environmental benefits. Many of these benefits apply to horseback riding as well. Trails also offer residents a choice in their mode of transportation. As such, parks, recreation resources and trails in Willistown Township warrant protection

and qualify as wise infrastructure investments. Together, they also create a sense of identity and place and make the Township an attractive place to live, work and visit. Additionally, the availability of recreational programs and facilities helps maintain community property values. For additional information regarding the benefits of recreation facilities, see Appendix 6: Benefits of Parks, Recreation Facilities and Trails.

4. Township Planning and Regulation Today

Parks and Recreation Resources

- Willistown Township Code Chapter 96, Parks and Chapter 31, Park and Recreation Board, identify use regulations, prohibitions, and enforcement; guide permitting; dictate violations and penalties; and define the powers and duties, composition, terms of office and business conduct of Park and Recreation Board members.
- Willistown Township Code Chapter 29, Open Space Review Board (OSRB), outlines the purposes of the Board to review, rate, value, and recommend fee simple land and/or easement acquisition expenditures to the Board of Supervisors; to review ordinance provisions relating to the protection, preservation and management of open space in the Township; and, to coordinate with the Parks & Recreation Board and Planning Commission in evaluating properties under consideration.
- The Willistown Township Comprehensive Plan Update Survey of 2020 provided resident opinions and desires by planning area on park and recreation issues. This survey is a powerful tool for future park, open space, and recreational planning efforts.
- Willistown Township incorporated its Open Space, Recreation, and Environmental Resources Plan into this document during a previous comprehensive plan update for efficiency purposes. Such plans focus on preserving and interconnecting critical open spaces and natural areas, expanding trails, increasing farmland preservation, and preserving historic landscapes.

An Official Map is a combined map and ordinance that helps municipalities plan for and make public improvements. An Official Map can designate areas for future roads or trails, or public grounds, such as parks, open space, or flood control areas. Willistown Township's Official Map and ordinance help guide planning and public improvements. The Map identifies Proposed Open Space Reservation, Proposed Township Park Lands, Restricted Open Space, Township Park Land, Township Owned Land, Conservation Organization Owned Lands, Lands under Agricultural Easement, Deed Restricted Lands, Lands Under Conservation Easement, Eased Township Lands, three Historic Districts, Class II Breou Map Historic Structures, and three Proposed Trail Corridors.

- Chester County's Comprehensive Plan, *Landscapes III* (2018), established a preservation and growth vision for the county and its municipalities, offering

guidelines for municipal government decision-making, planning, and implementation; Willistown Township employs these guidelines in its planning. With nearly 144,000 acres of permanently protected land, nearly 30% of the county is preserved as open space or agricultural land. Willistown has contributed to this effort in many ways through its preservation programs and continues to play an important role in the protection of open space. As with the County, the Township has placed emphasis on expanding its protection efforts, providing connectivity of protected open space and recreational assets, and further protecting farmland from development.

- The Department of Conservation and Natural Resources' (DCNR) Pennsylvania Statewide Comprehensive Outdoor Recreation Plans informs and guides Willistown Township's planning efforts. The most recent Plan, *Recreation for All 2020-2024*, provides a blueprint every five years for how to meet the outdoor recreation needs of Pennsylvanians. Although DCNR develops and administers the state's outdoor recreation plan, Pennsylvania's 2,561 municipalities are instrumental in implementing it.

Trail Resources

- The Planning Commission, in conjunction with other boards and commissions, plays an important role in protecting existing trails, including sidewalks, and assuring creation of new trails, trail connections, and sidewalks during the subdivision and land development process.

The Subdivision and Land Development Ordinance, Chapter 123, states that at the discretion of the Board of Supervisors, with recommendations from the Planning Commission, a system of bicycle, equestrian and/or pedestrian paths for public use generally unrelated to and separate from streets shall be established and secured by dedication or easement. The paths and trails are to encourage the formation of an interconnecting trail network both within and beyond the Township. The code further protects existing paths by stating a path may be relocated if a connection with a path on an adjoining property is established. The code also includes sidewalk specifications for all subdivisions and land development on Lancaster Avenue.

The Zoning Ordinance, Chapter 139, identifies specific policies directed toward the protection and continuity of the existing trail network, and opportunities for additions thereto. It also dictates that land designated as open space shall be configured so as to maximize conservation of site features identified as having recreational values, including pedestrian and equestrian trails. It further dictates that equestrian or pedestrian trail linkages identified by the Township shall not be disturbed unless the property cannot otherwise be developed and then only when relocation of the trails is approved by the Planning Commission. It states that specific uses are permitted in the common open space, including pedestrian or equestrian trails, and requires a management plan for the disposition, use, maintenance and insurance of the common open space; included here are provisions that funding be provided and approved by the Township Planning Commission and Township Solicitor prior to plan approval.

For unified development plans, the ordinance dictates that the applicant shall endeavor to incorporate a trail system through residential portions of the development. The Open Space Conservation District provides opportunities for, among other things, reduced sidewalk requirements, where appropriate (where the creation of trail systems are used to reduce impervious cover and provide alternative recreation and transportation opportunities).

- Chapter 73, Environmental Protection, provides for recreational trails as a conditional use in the Riparian Buffer Area Conservation District, provided such trails are no wider than eight feet and are not surfaced with impervious materials. Relocation of preexisting trails, where necessary, is at the discretion of the Board of Supervisors, with the advice of the Planning Commission.

5. Recommendations for Policy Implementation/ Actions to Implement

Park and Recreation Resources

- Monitor and update park planning efforts as needed to guide the management, maintenance and funding of existing park properties and trails.
- Coordinate with the Public Works Department in creating infrastructure management components of park plans that include timelines for maintenance and replacement work. Assign cost estimates to improvements and ongoing maintenance; insert in the Parks and Recreation Budget or Public Works Budget, as appropriate. Execute the plans.
- Consider incorporating a Willistown Township Parks and Recreation Board review function (concerning trail creation, open space protection, and park infrastructure) into the subdivision and land development plan review process.
- Continue to utilize the 2020 Comprehensive Plan Update Survey in planning and implementation efforts including the call for a Township-wide Master Trail Plan.
- Continue conducting surveys regarding parks and recreation program and facility needs and planning including need for a parks and recreation master plan.

Trail Resources

- Update existing trail planning efforts to identify existing and potential trails and guide the creation, linkage, management, maintenance and funding of existing trails and potential trails. Incorporate the Parks and Recreation Board in the various ordinances of the Township as appropriate to advise the Board of Supervisors. Consider pedestrian, bicycle, and equestrian mobility. Update the Willistown Township Code to reference trail planning maps and consider updating the Parks and Recreation code section with trail language.

- Consider the challenges to bicycle use throughout the Township and the desire of cyclists to ride both the scenic road network and into the neighboring business districts of Malvern Borough and Paoli, among others.
- Create a comprehensive Township trail plan as discussed in past planning efforts and called for in the 2020 Comprehensive Plan Update Survey. Establish a trail and sidewalk system that links neighborhoods with existing trails and sidewalks with such destinations as parks, public open space, shopping, mass transportation, schools, and other local nodes of activity. Identify all current trails, including sidewalks, and their public or private accessibility status.
- Coordinate with other Township boards and commissions, neighboring municipalities, local organizations such as the Willistown Conservation Trust, Natural Lands, and the Chester-Ridley-Crum Watersheds Association, as well as Chester County and other planning organizations regarding establishing a trail plan for the Township.
- Encourage select traffic calming, as appropriate, to accommodate non-vehicular activities. Consider cooperative ventures with equestrian groups and the Willistown Conservation Trusts’ “Slow Down in Willistown” communications program, among others.
- Establish a trail planning coordination program including representatives from appropriate groups.
- Establish a communication protocol between the Parks and Recreation Board, the Planning Commission, and the Board of Supervisors on issues regarding trails.

4.3 Protecting Neighborhoods and Housing Stock

4.3.1 Policies

Protect and enhance the established neighborhoods within Willistown Township.

Allow for a variety of housing types and densities in those areas where infrastructure exists to support such growth, consistent with existing and future land use policies and guided by the need to protect environmental resources and existing community character. Promote green building technologies intended to reduce consumption of energy and environmental resources, reduce the impacts of climate change, and encourage future development that is sustainable.

Promote safe housing conditions.

Continue promoting housing opportunities consistent with the 2001 Paoli Community Master Plan, as reflected in Chapter 139, Zoning, Article XXXI, Transportation District (TD) and Article XXXII, Town Center District (TCD).

Provide and protect adequate access to pedestrian trails, park facilities and open space to enhance neighborhood amenities.

4.3.2 Existing Conditions/ Background

As a composite of existing neighborhoods, the Township exhibits a reasonable degree of variety. Areas adjacent to Paoli contain some mixed-use development of a traditional village character, along with uniform tracts of single-family detached dwellings on relatively small lots. The 2001 Paoli Community Master Plan, and its resulting transportation and town center zoning districts, attempt to further facilitate this traditional village development pattern through consistent ordinance provisions regarding use, setbacks, and streetscape amenities. Further to the south, newer developments have been clustered on tracts at a low gross density, again with single-family detached dwellings the sole dwelling type. Interspersed are several townhouse communities with enough dwelling units to comprise their own neighborhoods. Each of these neighborhoods is unique, owing to its location, similarities in housing stock, and residents. Several easily identified neighborhoods in Willistown are Stonehenge, Ronnie Park, Willistown Acres, and Paoli Manor.

With few exceptions, each of these locations has a genuine neighborhood quality, both from a physical and structural standpoint and as a social entity forming at least a basic link among its segment of the Willistown population. Many of these neighborhoods have their own form of self-governance through a community or homeowner association; these groups, in turn, help facilitate two-way communication with the Township.

Data from the 2020 U.S. Census does indicate the overall stability of Willistown's neighborhoods and the quality of its housing stock. For example, in 2020, 87.5% of the Township's housing stock was owner-occupied, as compared to 75% for the County. One concern is that the vacancy rate among all units rose to 6.0% in 2020, a rise of 2.7% since 2000; considering that current population growth is outpacing housing unit growth, it may be worth considering whether the cost of housing (both for rental and ownership) may be starting to impact affordability in a way that contributes to housing availability and vacancy rates.

Willistown has a sizable inventory of historic structures, many of which are used for residential purposes. The attention given to their continued integrity can generate a corresponding sense of stewardship on the part of neighboring property owners.

4.3.3 Basis for Policy

The existence and direction of Township land use policy has a substantial bearing on a neighborhood's character and the quality of life of its residents. The effects can be positive or negative, and stem largely from the compatibility of adjacent land uses, the provision and maintenance of public services, and the approach (not always through public regulation) to individual property maintenance. Vehicular traffic volumes, both

within and in the vicinity of existing neighborhoods, have a similar potential for impact.

Township and other public and quasi-public service providers should experience fewer demands where neighborhoods are stable and well-designed and can communicate more effectively where residents participate in an established representative entity.

4.3.4 Township Planning and Regulation Today

Willistown's prior comprehensive planning efforts have addressed the importance of protecting neighborhoods and preserving the quality of existing housing stock. This plan carries a similar emphasis and recognizes the opportunities created for greater diversity in neighborhood makeup and dwelling types, while also recognizing that housing affordability is becoming an issue both in the Township and County-wide.

The Township Zoning Ordinance has been written and mapped to prevent incompatibilities among residential neighborhoods and between such neighborhoods and adjacent non-residential uses.

The Township provides, or seeks to assure the provision of by other responsible entities, those public improvements and infrastructure facilities necessary for the continuing quality of its residential neighborhoods.

The Township Code contains provisions related to property maintenance; given the strength and diversity of the Township's neighborhoods, these provisions should be reviewed periodically and revised as necessary to ensure their adequacy.

4.3.5 Recommendations for Policy Implementation/ Actions to Implement

- Administer and update the Township's Property Maintenance Code (the basis for which is the International Code Council's Property Maintenance Code, as amended) in a manner that minimizes regulatory impacts but also assures a sufficient standard of quality for residential structures and properties. The code aims to prevent "demolition by neglect" or the creation of unsafe, unhealthy, and/or visually detracting conditions.
- Zoning objectives that avoid land use incompatibilities but recognize the potential advantages of appropriate mixed-use settings should be sustained.
- Plan for the necessary and sufficient installation, maintenance, and/or refurbishment of public facilities that establish the optimum level of livability for all residential neighborhoods but do not result in unwanted growth inducement or strip/linear development.
- Maintain appropriate regulatory opportunities for accessory dwellings, conversion of single-family dwellings for multi-family use, and home occupations that protect the integrity of the neighborhood in which they may be proposed.

- Review the Zoning Ordinance and building/housing codes to maximize opportunities and incentives for green building technologies and sustainable development. Among the issues to be considered is the desirability of incorporating additional LEED (Leadership in Energy and Environmental Design – a certification program started by the U.S. Green Building Council) or LEED-type standards into the Township code, such as LEED-ND for neighborhood development.
- Consider housing affordability in the context of the Township’s housing stock, its neighbor communities, and the County as a whole; seek equitable solutions that potentially address housing mix and affordability through policies and regulations. Consider additional opportunities for mixed use and multi-family housing as appropriate to meet the needs of the community.
- Conservation Design and Low Impact Development, both concepts incorporated into the Township’s updated stormwater management ordinance, should be encouraged, not simply as tools to better manage stormwater, but as tools for reducing development costs, enhancing housing marketability, and, in some cases, contributing to housing attainability and value.

4.4 Composite of Resources and Priorities for Protection

Introduction

A large portion of this chapter is devoted to an analysis and inventory of the natural, scenic, historic, and recreation resources of Willistown Township. The result constitutes a resource base that should be considered for most any decision regarding the future use of land in the Township. Only with a clear understanding of these resources – their location and characteristics – can the potential impacts from land use and circulation changes be assessed.

In order to fully protect the Township’s community values and guide future growth, it is important to analyze where the Township’s resources fall in relation to each other, to areas already developed, to locations where resource protection has already been achieved, and to portions of the Township where future growth is anticipated. This type of refinement is the purpose of this section and culminates in a proposed set of resources considered priorities for protection.

Clearly, the types of resources and the methods by which to protect them can vary substantially; for example, the approach taken to protect a stream corridor generally will differ significantly from that used to protect an historic building. On the other hand, there are many areas where a convergence of mutually enhancing resources occurs and areas where sensitive development patterns can assist in interconnecting preserved and undeveloped lands and resources. Such areas of concentration and convergence become important focal points for protection strategies.

One other key determinant of priority within a protection strategy is the degree of protection already afforded a resource. While various levels of protection exist, from regulatory protection to public ownership, the focus of this section is on ownership patterns (or the existence of conservation or agricultural easements) as the basis for graphically depicting protected and non-protected lands. Lands already protected due to ownership or easements need little additional protection measures for the foreseeable future; on the other hand, lands not protected in this manner clearly can be prioritized for future protective actions.

To arrive at these priorities, the following steps were taken:

- The resource inventories were refined to depict those of greatest significance to the Township;
- A composite of the refined resource inventories was made to illustrate relationships and areas of overlap or “concentration”;
- Developed land and land protected through ownership or easement were identified to show areas that have some level of resource protection (included here are Township-owned and conservation organization-owned parks, preserves and trails); and
- The network of identified scenic roads was added as an additional resource category worthy of attention and protection.

The outcome of this process is a proposed set of targeted resources in need of protection.

Refinements to Resource Inventories

Natural Resources – undertaking a process similar to that used in the last plan, it is possible to identify *critical* resources and *sensitive* resources. Critical resources are those natural resources that place clear constraints on land use and development. Included here are water resources (stream corridors, floodplains and wetlands) and steep slopes over 15%. Sensitive resources, while not as constraining on land use, nevertheless are significant from the standpoint of resource protection and community character. These resources include significant woodlands, locally important vegetation (historic trees), and important Natural Areas Inventory sites (including PNDI sites).

Scenic Resources – the Township’s most significant visual landscapes are defined as the scenic vista points identified in this chapter and the corresponding scenic boundaries associated with them. Scenic roads are also considered a key element of the visual landscape.

Historic Resources – for the sake of this process, historic resources within the scenic boundary, as well as the Township’s National Register Districts, were identified.

Composite of Significant Resources

This process involved combining and overlaying the most significant resources described in the prior section to develop a Composite Map (see Map 7). Those areas where

concentrations of natural, scenic, and historic resources occur together are distinguishable on the map.

Protected and Developed Lands

The next step in the prioritization process involved essentially discounting lands depicted on the Protected and Developed Lands Map (Map 8). In this step, the composite map and the protected and developed lands map are compared: those resources found to exist on protected lands are eliminated (the assumption being that such resources receive some level of protection given their location, e.g., on protected lands); furthermore, those resources found to exist on developed land are also eliminated. Filtering out such lands allows the Township to focus protection efforts where needed. For example, this process outlines those resources immediately adjacent to properties defined as protected; the successful protection of these resources can then extend and enhance the security established on eased or publicly owned lands.

Resources Targeted for Protection

The final product of the prioritization process is Map 9, Resources Targeted for Protection. Shown herein are those first priority resources areas (be they natural, scenic, or historic resources) not currently protected, and the identified scenic road corridors.

It should be noted that this process does not attempt to evaluate regulatory protections offered under the Township's Code simply because such protections are not easily quantifiable or mapped. Clearly, however, the Township Code does provide significant protections for many of the resources prioritized herein. For example, the Environmental Protection Ordinance (EPO) provides significant protection for an array of natural resources: §73-11.1 provides full (100%) protection to floodplains/floodways, wetlands, steep slopes (greater than 25%), and riparian buffer areas; in addition, partial (50-75%) protection is provided to steep slopes (15-25%), woodlands, and hydric soils.

At its core, the prioritization process attempts to highlight areas of resource concentrations and underscore the potential for additional protection measures, be they public purchase, easement acquisition or new regulatory approaches that can essentially protect resources and associated landscapes or contributing resources (e.g., resources within a broader context that provide interconnection or connectivity; examples include publicly accessible open spaces (park land, Okehocking Preserve, etc.), biodiversity corridors and habitat.).

Consideration must also be given to improving pedestrian circulation where linkages remain to be secured. Such interconnections are discussed in more depth in Chapter 6 but are mentioned here in the context of their need for planning and protection.