

The *Lehigh Valley Greenways Plan* begins with the understanding that there are many valuable natural and cultural resources worthy of discovery and preservation throughout Lehigh and Northampton counties. This two-county region, located in eastern Pennsylvania (Map 1) is rich with high quality waterways. Its history and development were shaped by the Lehigh and Delaware rivers. Also situated between two large Pennsylvania mountain ranges, our residents and frequent visitors enjoy breathtaking views of fertile stream valleys, bountiful fields and deep woodlands. The Kittatinny Ridge and Pennsylvania Highlands create a beautiful backdrop to the viewpoints of the cities of Allentown, Bethlehem and Easton where culture and history abound.

Lehigh Valley residents have long been interested in parks, recreation, open space and farmland preservation. This has been documented through regional public opinion surveys conducted by the Lehigh Valley Planning Commission (LVPC) in 1974, 1988 and 1999. The latest survey revealed that nearly 70% of the Lehigh Valley population agreed that more parks, recreation facilities and open space should be acquired and/or developed in their county. Lehigh Valley voters also have strongly supported state and county referendums to fund the creation of parks, protect important natural areas and preserve farmland. Recent trends in population growth and land use change show the region is experiencing a development boom that threatens to destroy much of what residents find appealing about the Lehigh Valley. The development of a sound greenways network will go a long way to preserve many of the remaining features Lehigh Valley residents treasure.

The *Lehigh Valley Greenways Plan* is being funded, in part, by a grant from the Pennsylvania Department of Conservation and Natural Resources (DCNR), Bureau of Parks and Recreation. The Commonwealth of Pennsylvania has long been committed to the protection of its natural, cultural and historical assets and has designated DCNR as the lead agency responsible for implementation of this initiative. DCNR identifies greenways by the following definition:

"A greenway is a corridor of open space. Greenways vary greatly in scale, from narrow ribbons of green that run through urban, suburban, and rural areas to wider corridors that incorporate diverse natural, cultural and scenic features. They may follow old railways, canals, or ridge tops, or they may follow stream corridors, shorelines, or wetlands, and include water trails for non-motorized craft. Some greenways are recreational corridors or scenic byways that may accommodate motorized and non-motorized vehicles. Others function almost exclusively for environmental protection and are not designed for human passage. Greenways differ in their location and function but, overall, a greenway will protect natural, cultural, and scenic resources, provide recreational benefits, enhance natural beauty and quality of life in neighborhoods and communities, and stimulate economic development opportunities."

The *Lehigh Valley Greenways Plan* incorporates the statewide vision for Pennsylvania's greenways into a regionally specific and valuable network of corridors, hubs and nodes. Our goal is to provide the municipalities, government entities, conservation organizations, the business community and citizens alike with a visually enhanced look into the greenways of the Lehigh Valley and concise recommendations for success and improvements.



Lehigh River Greenway — looking north from Catasauqua Borough to the Kittatinny Ridge

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Greenways are a critical component of any landscape. They protect the environment, provide alternate routes of transportation, supply recreational opportunities, and connect natural and cultural areas to one another providing a linear resource for a variety of users. A greenway is defined as a corridor of open space, that may vary greatly in scale from narrow strips of green that run through urban, suburban and rural areas to wider corridors that incorporate diverse natural, cultural and scenic features.

Connectivity is the defining characteristic that distinguishes greenways from isolated paths and pockets of open space. While individual parks, preserved lands, undisturbed natural areas and waterways are valuable resources in and of themselves, their conservation and recreational value is compounded when they are linked together.

Types of Greenways

Greenways come in a variety of forms and serve many functions. The Pennsylvania Greenways Program identifies three major types of greenways: 1) cultural/recreational greenways, which support human activity; 2) conservation greenways, which support ecological and conservation purposes; and 3) multiuse greenways, which support a combination of human and conservation activities. The LVPC has identified a fourth type of greenway present in the Lehigh Valley; 4) scenic greenways, which provide a visual connection for humans to enjoy. Using these categories as a guide, the following is a comprehensive description of each type of greenway found in the Lehigh Valley:

Cultural/Recreational Greenways

Cultural/recreational greenways supply the human population with an array of low-impact recreational opportunities and quality of life benefits. They provide solace from the hustle and bustle of city life and undisturbed interfaces with nature. In suburbanized areas subject to sprawl, they offer alternative transportation routes and provide linkage to close-to-home exercise opportunities. Natural, cultural and historical areas of interest can be preserved, interpreted and enjoyed through these corridors. Types of cultural/recreational greenways are:

Trails

Trails are the most widely recognized recreational feature associated with greenways; however, some greenways do not include trails. They are normally described by the predominant activity taking place, such as hiking, biking or horseback riding. Trails range from long corridors that connect residential and commercial areas with natural, recreational, cultural and historical amenities to a small paved loop in a local park. Their designation depends on a variety of factors from type, length, location, access and jurisdiction. Types of trails found in the Lehigh Valley and identified by the Pennsylvania Greenways Partnership in *Creating Connections, The Pennsylvania Greenways and Trails How-To Manual* include the following:

Bike Trails

Bike trails are flat, wide trails with improved surfaces that appeal to bicycles, skates and other users on wheels but not motorized vehicles. Designated bike paths provide cycling opportunities without vehicular interference. A successful bike path in Northampton County is the Palmer-Bethlehem Bikeway.

Another type of bike trail is known as a bike route. A bike route is typically found alongside a street or highway. The routes are often scenic and engage the user with local culture and history. In 1996, the LVPC combined efforts with the Lehigh Wheelmen Association to create *Bike Rides The Lehigh Valley*, a publication featuring 17 bike rides throughout the Lehigh Valley. A popular ride begins at the Lehigh Valley Velodrome and travels westward into Berks County before returning to the Velodrome in Upper Macungie Township.

Exercise Trails

Exercise trails are generally much shorter in length than hiking trails. These trails are used primarily for exercise and often contain workout stations with equipment designed to provide a complete workout. Many of the larger county and municipal parks in the Lehigh Valley have exercise trails that often form a loop. Examples include the 1.5 mile walking/jogging loop trail in the City of Allentown's Trexler Memorial Park and the Rodale Cycling and Fitness Park in Lower Macungie Township.

Heritage Trails

Heritage trails are designed to educate the user on the cultural and historical heritage of a region or community. They follow paths of history through interpretive signage and destinations. The Slate Heritage Trail in Lehigh County follows along the former Lehigh Valley Railroad right-of-way from lower Slatington Borough to the Village of Slatedale in Washington Township. The trailhead in Slatington Borough is located near and will eventually connect with the developing Delaware and Lehigh National Heritage Corridor.

Heritage corridors are areas designated by the United States Congress where "natural, cultural, historic and recreational resources combine to form a cohesive, nationally distinctive landscape arising from patterns of human activity shaped by geography." However, heritage corridors are not necessarily greenways. They are considered a type of greenway when they run along a physical spine, such as a canal path or stream corridor. An example is the Delaware and Lehigh Canal Heritage Park Corridor (referred to locally as the D&L Trail) which travels throughout Lehigh and Northampton counties. The D&L Trail is both a National Heritage Corridor and a Pennsylvania State Heritage Park.

Hiking Trails

Hiking trails are designed to provide adventure and challenge; they are often found in the wilderness and are several miles in length. The footpath commonly follows a natural landform, such as a ridgeline or stream. Hiking trails are known for their spectacular scenery and opportunity for escape from day to day life. Most trails are used by the day hiker; however, backpackers seeking a multi-day hiking experience can find longer hiking trails with places to set up camp. The best example of a hiking trail in the Lehigh Valley is the Appalachian Trail.



Rodale Cycling and Fitness Park

Tom Gettings, Wildlands Conservancy

Nature Trails

Nature trails are designed to engage the user with nature. These trails are enhanced with interpretive signage designed to educate and entertain. Locally, nature trails can be found at the Rodale Cycling and Fitness Park in Upper Macungie Township, the Pool Wildlife Sanctuary in Lower Macungie Township, and at Bear Swamp Archery Complex and Minsi Lake in Upper Mt. Bethel Township. Many nature trails are developed and maintained by popular outdoor organizations such as the Audubon Society, e.g., the Lehigh Gap Nature Center trails at the Lehigh Gap Wildlife Refuge.

Rail-Trails

Rail-trails are trails that have been built on abandoned railroad rights-of-way. These trails are designed for use by an array of users from hikers and bikers to horseback riders and nature watchers. The Lehigh Valley has many rail-trails; examples in Lehigh County include the Ironton Rail-Trail and the Slate Heritage Trail, and in Northampton County the Nor-Bath Trail and the Forks Township Recreation Trail. A number of other rail-trails are in the planning and development stage.



Ironton Rail-Trail

Tom Gettings, Wildlands Conservancy

Another type of trail in this category are the lesser known rails-with-trails. Unlike rail-trails, rails-with-trails occur along active rail lines. The closest example is the Heritage Rail-Trail in southern York County. This trail runs beside the active line of a seasonally operated scenic train ride. Once completed, this trail will extend over twenty miles, connecting the historic district of York, PA with Maryland's Northern Central Railroad Trail. The development of a rail-with-trail has been considered for a section of the RJ Corman rail line along the Lehigh River in Whitehall Township.

Towpaths

A towpath is a road or trail that runs along the banks of a river, canal or stream. The towpaths of the Delaware Canal and Lehigh Canal were once used by mules or land vehicles to tow a boat or barge and have since provided recreational opportunities to area residents for many years. These two canal towpaths are an important part of the D&L Trail. The trail will be a 165-mile path for hikers and bikers, that extends from Bristol Borough in lower Bucks County to Wilkes-Barre in Luzerne County. Through much of our region the D&L Trail follows the towpaths of the Delaware and Lehigh Navigation Canals.

Utility Corridors

Utility corridors are continuous and often managed for vegetation growth. Since both overhead and underground utility lines lend themselves to trail development, they can be good opportunities for trail implementation in suburbanized areas. Many utility companies will work with municipalities or private agencies to either donate the corridor or the right-of-way for recreational activity. An example in Northampton County is the Plainfield Township

Recreation Trail. The municipality worked in concert with the Transcontinental Gas Pipeline Corporation and the GPU Energy Company to create this widely used trail.

Water Trails

Water trails are primarily recreational corridors that occur through streams and rivers. Water trails are suitable for canoes, kayaks and small motorized watercraft. Each trail is designed to be a reflection of the region's diverse history, ecology, geology and wildlife. The Lehigh and Delaware rivers are designated Pennsylvania Water Trails.

Conservation Greenways

Conservation greenways exist primarily to protect natural resources. They are undisturbed corridors that fulfill their ecological potential by serving as habitat, buffers, filters, sources and/or destinations. Enabling greenways to fulfill their conservation role depends on a thorough understanding of landscape ecology. A useful resource on the ecological functioning of greenways is *How Greenways Work: A Handbook on Ecology* by Jonathan Labaree. According to the handbook, a conservation greenway can operate in six basic ways:

1. as **habitat** for plant and animal communities;
2. as a **conduit** for plants, animals, water, sediment and chemicals;
3. as a **barrier** preventing movement;
4. as a **filter** allowing select things to pass while inhibiting others;
5. as a **source** for animals or seeds moving to other parts of the landscape; and
6. as a **sink** for trapping sediment.

Conservation greenways represent the majority in the Lehigh Valley network. Many of these corridors are the streams and rivers and their associated woodlands. Types of conservation greenways found in the Lehigh Valley are:

Blueways

Blueways are essentially rivers and streams which are effective wildlife corridors in areas where they remain undisturbed by development. Many species of wildlife utilize the forested banks of rivers and streams as a place of refuge and a primary food source. An example of a blueway is the Slateford Creek in Upper Mount Bethel Township, Northampton County. This Exceptional Value waterway is lined on both sides with deep woodlands.

Natural Areas

Natural areas are primarily greenspaces along greenways that provide flood control, habitat or water resource protection functions. Examples of natural areas are floodplains, wetlands, riparian habitat and forest patches. These natural resources are incorporated into conservation greenways enabling them to be used as habitat, open space, or nature observation and environmental education sites. Local examples of natural areas with an educational component are Jacobsburg Environmental Education Center in Bushkill Township and the Mariton Wildlife Sanctuary in Williams Township.

Ecological Functions of Corridors

Greenways as habitat:

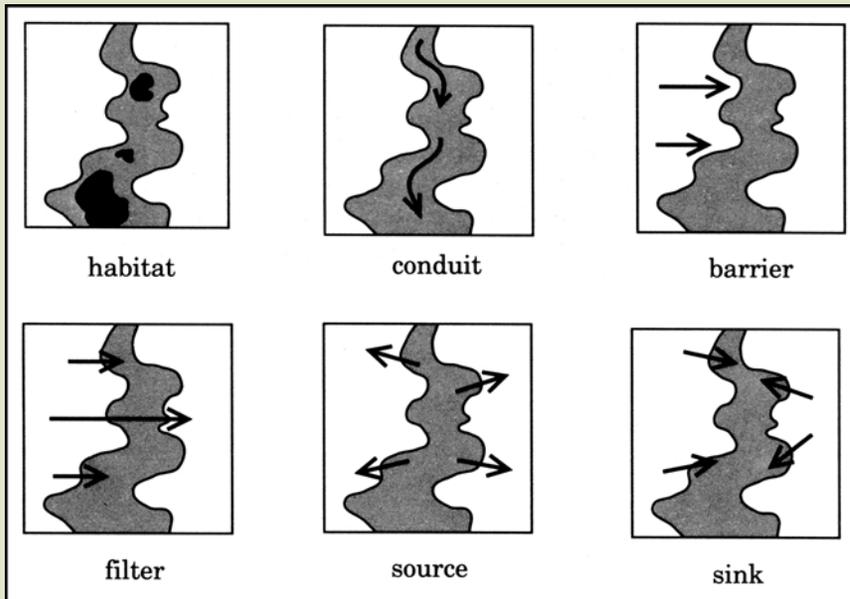
A species' habitat may include many different types of vegetation and geography, such as wetlands, upland forests, and fields. A greenway's ability to provide habitat will depend upon its size, location and the needs of native species. A greenway that is 200 feet wide will generally contain habitat for fewer species than one in a similar location that is half a mile wide.

Greenways as conduit:

Conduits are areas in the landscape along which water, animals, plants, and people move. A river is among the most obvious examples of a conduit. Water carries sediment, nutrients, leaves, insects, bacteria, and plankton along with it. Acting as a conduit to connect otherwise isolated parts of the landscape is an important function of greenways.

Greenways as barrier:

While a greenway may be a conduit to some things, it presents a barrier to others. Again, a river or stream serves as an example. Small animals or those that prefer a drier habitat may be unable to cross a river. Even very narrow corridors, such as hedgerows, can present a physical barrier of impassable habitat for some species.



Greenways as filter:

A filter prevents the passage of some things but allows the passage of others. Filtering can occur in a greenway either perpendicular to its axis or along its length. Large animals, able to traverse a river, for example, can pass across a riparian greenway, but small ones may not. Additionally, is the greenway's potential to filter sediments and nutrients from surface and groundwater.

Greenways as source:

A greenway may act as a source, providing the surrounding land with a variety of things. For example, a riparian greenway may be the only source of water in an otherwise arid landscape. In human-dominated areas, even narrow strips of relatively undisturbed land, such as hedgerows or steep slopes, may be a source of seed or habitat for native species.

Greenways as sink:

A greenway acts as an ecological sink when something moves into it but does not travel back out into the surrounding land. Perhaps the most significant way a greenway can be a sink is by trapping sediments and nutrients carried in surface and groundwater. This function is, however, dependent upon a specific time frame because sediments may eventually wash downstream during a dramatic flood, or nutrients absorbed by vegetation will re-enter the soil and atmosphere when the plant decays.

Source: *How Greenways Work: A Handbook on Ecology*, Jonathan Labaree, National Park Service

Riparian Buffers

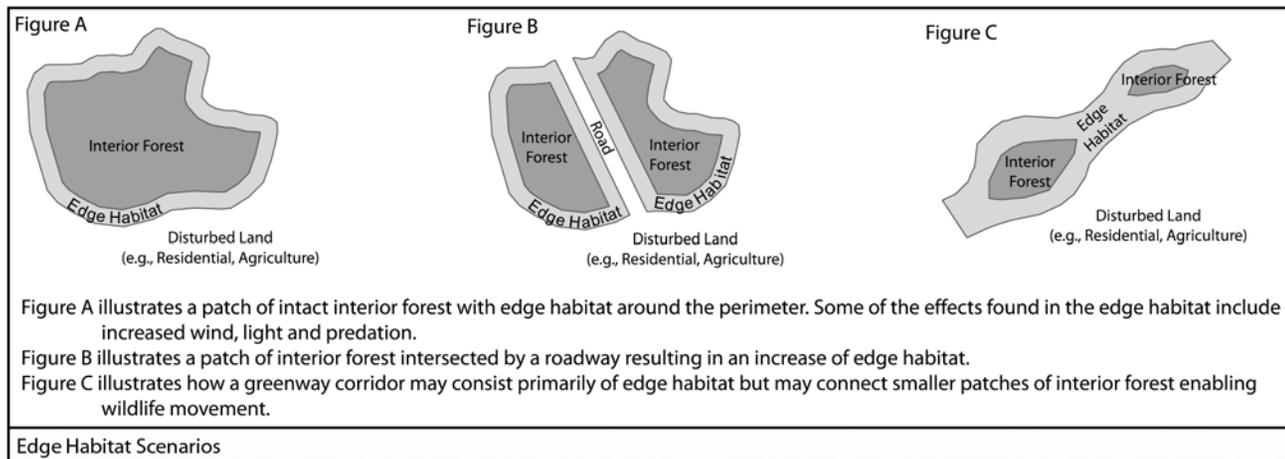
Riparian buffers play a major role as conservation greenways in the Lehigh Valley. A riparian buffer is an area of trees and other natural vegetation adjacent to a watercourse that forms a transition area between the aquatic environment and the adjacent disturbed land. Generally, the greater the width, the greater the protection; the LVPC recommends buffer widths of 100 feet along rivers and major streams and 50 feet along all other waterbodies. Buffers should be based on the site and designed accordingly incorporating a variety of native plants and sustainable practices. Establishment of conservation greenways along waterways can protect water quality, provide flood protection, and act as a water recharge area. Encouraging farmers and private landowners to incorporate riparian buffers between active agricultural land or residential development and waterbodies can protect environmentally sensitive areas and restore wildlife habitat. Riparian buffers of varying width and quality exist along many of our rivers and streams.



Riparian Buffer on the Bushkill Creek

Wildlife Corridors

Wildlife corridors provide natural pathways connecting larger habitat areas to one another allowing species movement, such as migration or dispersal of young. Depending on the corridor's width, the pathway may consist of both interior and edge habitat or only edge habitat. The edge habitat is created where the natural areas of the greenway meet the adjacent disturbed land. Many wildlife species use the unique conditions found in edge habitats as their preferred or secondary habitat. A good example of a wildlife corridor is the Jordan Creek and surrounding riparian woodlands between Blue Mountain and the State Game Lands No. 205/Trexler Nature Preserve.



Multi-Use Greenways

Multi-use greenways accommodate a multitude of recreational activities and provide cultural and/or conservation opportunities. Multi-use greenways are multipurpose since they serve both human and wildlife interests. These greenways are not only valued for their recreational, conservation and cultural functions, but for their ability to connect people to the many features that make a community unique providing a much needed and desired sense of place in a rapidly developing region.

Scenic Greenways

Scenic greenways enhance the quality of life by providing scenery for residents and visitors to enjoy. Greenways provide connections linking origins to destinations, and scenic greenways provide visual connections across the landscape so people can enjoy the natural environment around them. The Lehigh Valley is framed by the Kittatinny Ridge, locally known as the Blue Mountain, and the South Mountain, a ridge of the Pennsylvania Highlands region. These geographic assets are local examples of scenic greenways that span the width of both counties, and they provide a beautiful backdrop to almost any view in the Lehigh Valley.

The Lehigh Valley also has an abundance of scenic resources that form and reinforce the Valley's identity. They include scenic waterways, roads, views, features and areas. Scenic resources differ from scenic greenways in that they are scenic from specific vantage points and do not provide the long range connectivity that defines a greenway.

Another corridor concept in the scenic greenway category is a scenic byway. Scenic byways, also known as scenic drives, are either roadways that have cultural or historical significance where the view provides a glimpse of this heritage or roadways where the surrounding landscape is natural and pastoral,

and the area is relatively protected from visual clutter. The Pennsylvania Department of Transportation has initiated the Pennsylvania Scenic Byways program, which designates “independent routes that have scenic, historic, cultural, archeological, natural or recreational features that are considered representative, unique, irreplaceable or distinctly characteristic of an area.” The 14th Pennsylvania Scenic Byway located in Lower Mount Bethel Township, Northampton County, includes Route 611, the Martins Creek-Belvidere Highway and Little Creek Road. Tourist stops along the roads include the Delaware River, the Hunter Martin Settlement Museum, Martins Creek Ferry, Hunters Ferry and outdoor recreational opportunities, such as boating, biking, hunting, fishing, walking and many acres of preserved farmland.

Greenway Components

Pennsylvania’s greenways network will ultimately take the form of “hubs and spokes.” The “hubs” of this network will include national, state, or local parks, forests and gamelands, lakes and headwaters, and historical, cultural and other significant destinations, including our communities. The “spokes” will be corridors connecting these destinations to our communities, including greenways of statewide significance, as well as local and regional networks.

The Lehigh Valley greenways network has taken a similar shape and will include hubs: large centers of activity focused around recreational, cultural and/or historical destinations, including densely populated communities; nodes: natural, recreational, cultural and/or historical places of interest, origin or destination; and corridors: greenways connecting natural areas, recreation facilities, cultural and historic sites, and other significant destinations with the places where we live and to one another.

Hubs

Hubs are large centers of activity, including parks, forests, game lands, conservation areas, lakes, cities and boroughs. These areas feature a large agglomeration of resources and facilities that serve to anchor the greenways network and provide an origin or destination for humans and wildlife. The hubs of the Lehigh Valley greenways network naturally developed around the cities and in areas where a concentration of community, natural, historical and scenic elements are found.

The three major cities (Allentown, Bethlehem and Easton) found in the Lehigh Valley are mixed-use and multifunction hubs which developed along auto accessible corridors. Key issues involving cities include redevelopment, urban infill, pedestrian oriented activity and economic development. These traditional downtowns offer recreational, cultural, historical, residential and retail opportunities for locals and visitors alike. Other hubs include activity centers which entail a variety of resources that create an attraction for people and a destination for wildlife. These areas of regional importance affect the surrounding community and environment in positive ways. They not only provide a destination and habitat, they improve the overall quality of life by furnishing open spaces for scenic, recreation, and environmental preservation.

Nodes

The nodal concept is mainly a subset of hubs. Nodes also exist where there are natural, recreational, cultural and historical places of interest, origin or destination. They differ from hubs in that they are smaller destinations and typically contain only one facility in addition to the greenway it enhances.

Many nodes in the Lehigh Valley greenways network are parks or other outdoor recreation sites that fall in or near the greenway corridors. However, they can also be historic districts and structures or cultural places of interest, places that people want to go to add to their quality of life experience. Nodes can also represent wildlife destinations, or habitat areas that are currently protected or are recommended for future preservation. These nodes supply a much-needed resource for wildlife in a rapidly developing region such as the Lehigh Valley.

Corridors

Corridors are linear connecting elements that act as linkages between the hubs and nodes of the region. They connect cities and boroughs, residential areas, nodes, natural areas and other greenway corridors to one another. They also serve as buffers helping to define and separate communities and natural areas from adjacent noncompatible land uses. The Lehigh Valley's corridors relate directly to the high priority natural, recreational, cultural, historical and/or scenic resources which they follow or support and are divided into the following four categories (detailed above): cultural/recreational, conservation, multiuse and scenic.



Delaware and Lehigh National Heritage Corridor Towpath