

## Chapter 10

### **Natural Resources Plan**

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Natural resources contribute to the economic activity, environmental health, and quality of life of a community. Parks, open space, woodlands, steep slopes, streams, wetlands, and farmlands are all resources that are aesthetically pleasing, and provide economic as well as environmental benefits. One example of this is the way that floodplains and wetlands act as natural storage basins in periods of high water and help to improve water quality by filtering out sediment and pollutants.

**Natural Resources Goal:** Protect the sensitive natural features that characterize so much of the area's natural landscape.

#### **Objectives:**

- Direct growth away from areas with sensitive ecological resources.
- Strengthen zoning and subdivision regulations that conserve steep slopes, animal habitats, wooded areas, stream buffers and flood prone lands.
- Strive to maximize preservation of permanent natural areas within residential developments.
- Look for opportunities to initiate a linked network of greenways, open spaces, and green infrastructure.
- Protect the supply and quality of groundwater and surface water.
- Protect woodland.
- Continue to support the efforts of the Pike /Oley District Preservation Coalition.
- Protect important Natural Areas identified in the Berks County Natural Areas Inventory.
- Preserve watersheds, stream corridors, floodplains, wetlands, and recharge areas.
- Protect steep slopes. Determine appropriate approaches toward development on ridgelines.
- Preserve natural wildlife habitats.
- Prevent deterioration of air quality.

## **Scenic Resources**

Preservation of scenic resources can be accomplished through broad land use policies, such as open space and woodland preservation and through attention to developments as they are proposed. Performance and design standards for developments, including siting of buildings and protection of woodland can encourage retention of scenic areas.

**Scenic Resources Goal:** To protect the Scenic Resources within the Region.

### **Objectives:**

- Protect scenic views, features and landscapes, and ensure for future generations views of the scenic and natural beauty of the Region.
- Protect the night sky from excessive light pollution.

## **Physical Characteristics**

Physical Characteristics of an area are an important aspect in the planning process. Specific features found in an area can determine where development is best suited or where it should be limited.

Oley, Alsace, and Ruscombmanor Townships are located within the physiographic region known as the Appalachian Highlands Region, Great Valley Section of the Ridge and Valley Province. The Appalachian Highlands Region is one of eight physiographic regions found in the United States. These Regions are based on features such as terrain, rock type, and geologic structure and history.

## **Geology**

The geology of an area dictates its groundwater potential and is an important determinant of soil types. The Region is underlain by three geological groupings: Ordovician, Cambrian and Precambrian formations. These formations represent different geological time periods, with Ordovician being the most recent and Precambrian being the oldest. Each municipality contains a sampling of all three types of geological formations.

Ordovician formations consisting of shale, dolomite and limestone are the predominate formations that underlie Oley. These Ordovician formations are found throughout most of the central portions of Oley. Cambrian formations of dolomite and limestone can be found along the east and northeast edges of the Township. The northwest corner of Oley, along the border with Ruscombmanor Township, contains Precambrian Gneiss mixed with some small pockets of Cambrian quartzite.

Alsace and Ruscombmanor Townships are underlain primarily by Precambrian Gneiss formations. Small pockets of Cambrian Quartzite and Dolomite exist in the western portion of Alsace Township. Along Alsace's eastern border with Oley lies a small area of Ordovician Shale and Dolomite/Limestone.

The following geological formations, their characteristics and their effect on planning are described below:

### *Ordovician Formations*

Ordovician formations are composed of gray shales, sandstone interbeds and crystalline limestones. Ordovician shales are non-permeable and cause poor drainage. Ordovician dolomite and limestone are both calcium carbonate bedrock, are highly porous, soluble and easily weathered. Both dolomite with its magnesium component and limestone are associated with the highly productive agricultural soils of the Oley Valley. Limestone has also supplied lime and other stone for the area's quarries. Because carbonate geology is porous, it does not filter pollutants through slow percolation to the extent that more solid rock does. This tendency for carbonate geology to rapidly transport pollutants in groundwater should be a consideration in limiting permitted densities where development is served by conventional on-lot septic systems. Ordovician formations tend to be small to moderate suppliers of ground water, but adequate for residential uses.

### *Cambrian Formations*

Cambrian formations are composed of quartzite, dolomite and limestone. The Cambrian formations tend to have an abundance of surface depressions and sinkholes due to the relative purity of the limestone bedrock found here. Their high porosity and solubility make them easily weathered and provide similar concerns regarding transporting pollutants to the ground water as Ordovician limestones. Likewise, limiting development densities where conventional on-lot septic systems are used should be a strong consideration. The relative purity of these limestone formations increases chances of sinkholes forming as the limestone forms a solution when water comes into contact with it, washing away and forming larger and larger cavities below ground until the surface collapses. Like Ordovician dolomite and limestones, these formations are generally associated with productive farm land.

### *Precambrian Formations*

Precambrian formations were the earliest to form in Berks County. They are composed of Hornblende and Granite gneiss, a very hard and compact rock which resists erosion. These underlie the area's hills and ridges found in Ruscombmanor, Alsace and the northwestern border of Oley Township. Precambrian formations tend to be poor aquifers

and finding and sustaining high yield wells can be difficult, although flows are usually sufficient for residential uses.

On a larger scale, the Region is near the Reading Prong, a geological region that extends along the Blue Mountain corridor from Reading to the Lehigh Valley. The Reading Prong produces a high level of radon gas, an invisible, tasteless and odorless gas that can pose health risks when concentrations build up in enclosed areas, like basements. Houses vary significantly in their ability to resist radon. Yet there is no reliable way to predict where, within the radon-prone areas, that radon is likely to accumulate to dangerous levels.

## **Soils**

Soil is a naturally occurring loose covering of broken rock and decaying organic mineral matter on the earth's surface. Soils are derived from the parent material, or geology that underlies them. This geology gives the soil its specific characteristics as described above.

Several soil types exist within the Region. Analyzing soil type is important to evaluate how well the soil can support septic systems or agriculture. Soils are classified into eight classes, beginning with I and ending with VIII. Class I soils are the highest rated and have few restrictions on uses. Class VIII soils are limited in use based on severe slope and their propensity towards erosion.

Agriculturally productive soils are Class I through IV. Class I and Class II agricultural soils are considered prime agricultural soils and indicate where the best farmland is located. Class III soils have limitations in their ability to support certain crops and require additional conservation practices. Classes IV-VII are considered the least favorable for agricultural use because of their severe limitations to farming.

The definition of "prime farmland" has been established nationwide by the U.S. Department of Agriculture to include Class I and Class II soils. These are the classifications used by the Agricultural Preservation Board to determine eligibility in the Berks County Agricultural Easement Program. Prime farmland has the combination of soil properties, growing season, and moisture supply needed to produce sustained high yields of crops in an economic manner if it is managed according to acceptable farming methods. In general, prime farmland has an adequate and dependable water supply from precipitation or irrigation, a favorable temperature and growing season, an acceptable level of acidity or alkalinity, an acceptable content of salt or sodium, and few or no rocks. Its soils are permeable to water and air. Prime farmland is not excessively eroded or saturated with water for long periods of time, and it either does not flood frequently during the growing season or is protected from flooding. Figure 10.2 identifies prime farmland as well as soils defined by the

Commonwealth of Pennsylvania as “farmland of statewide importance” based upon conditions specific to Pennsylvania.

Stewards of prime farmland soils should recognize that soil properties are only one of several criteria that make for “prime” soil. Other factors include land use, frequency of flooding, irrigation, water table, and susceptibility to wind erosion.

- **Land use** - Prime farmland is designated independently of current land use, but it cannot be areas of water or urban or built-up land.
- **Frequency of flooding** - Some soil types include both prime farmland and land not prime farmland because of variations in flooding frequency.
- **Irrigation** - Some soil types include areas that have a developed irrigation water supply that is dependable and of adequate quality along with areas lacking such a supply. For these soil types, only the irrigated areas meet the prime farmland criteria.
- **Water table** - Some soil types include both drained and undrained areas; only the drained areas meet the prime farmland criteria.
- **Wind erodibility** – Susceptibility to erosion by wind is determined by a combination of soil characteristics and the climate. Due to varying climatic conditions, it is possible for a single soil type to be prime farmland in one part of a survey area but not in another.

On-site sewage disposal systems should not be located within areas containing hydric soils that are subject to flooding because of the danger of contamination of the stream and the groundwater due to the proximity of the stream and the presence of the high water table. There may not be an adequate distance between the on-site facility and surface water to permit renovation of sewage effluent prior to its reaching the stream. In some instances, soils found in the floodplains are very porous and the movement of sewage effluent is too rapid to allow for the renovation of the effluent prior to reaching the groundwater table or the stream. In other situations, the soil near the surface may be saturated with water or become readily saturated with sewage effluent, resulting in effluent remaining near or rising to the surface of the land. When flooding occurs, sewage effluent could then contaminate the surface water. The efficiency of filter fields of septic tanks can be impaired or destroyed as a result of flooding.

The hydric soils and floodplains found along the tributaries and watercourses within watersheds should be preserved. Serious consideration should be taken to limit development on hydric soils. These floodplains and hydric soils act like a sponge when floodwaters rise and, when coupled with established wetlands, can filter nutrients and

pollutants to protect the surface and ground water that feed the various streams and lakes within the Region.

In general, soils which are steeply sloped, shallow, stony or poorly drained are considered unsuitable for on-lot systems. Soil suitability for on-site septic systems is not an important issue in areas served by public or private community sewage systems. Soil suitability for on-site septic systems is a critical issue for existing and future development within the Region.

### **Prime Agricultural Soils**

The U.S. Soil Conservation Service has established soil capability classes based on each soil type's agricultural productivity. Capability classes range from Class I, soils with few limitations for farming, to Class VIII, soils generally unsuitable for farming. Class I and Class II are considered prime agricultural soils, and Class III soils are considered of statewide importance for agriculture. When evaluating farmland soils for potential purchase of development rights, Berks County also considers Class III and Class IV soils although more value is assigned to Class I and Class II.

Class I and Class II soils are abundant in Oley. According to Berks County, the Township has more Class I soils than any other Berks County municipality. Class I soils are relatively rare in Berks County outside of Oley. Outside of Oley, Class II and Class III soils predominate among the Berks County farms whose development rights have been sold to the State. There are no Class I agricultural soils in Alsace or Ruscombmanor. The eastern part of Alsace Township has significant concentrations of Class II and Class III soils while Ruscombmanor has a fair amount of Class II and Class III soils scattered throughout the Township.

### **Soil Suitability for On-Site Septic Systems**

Soil suitability for on-lot septic systems is based primarily on a soil's depth to bedrock, depth to groundwater, soil permeability and the presence of slopes. Septic systems in soils that percolate too rapidly can degrade groundwater because impurities are not sufficiently absorbed before reaching the water table. Conversely, soils that do not drain properly can cause the unhealthy surface ponding of wastewater. These soil characteristics are important to consider for development that relies on private wells and private septic systems rather than public water and sewer service.

Much of Oley Township has only slight limitations for septic systems. These areas of slight limitations lie primarily in the eastern and southern portions of the Township. Many of the areas in Oley that are suitable for septic systems are on farms protected from development either permanently or temporarily. Soils with moderate limitations for septic systems lie directly to the west of the Village of Oley and near Oley Furnace. The

soils found in the Village of Oley, areas north of the village and southwest to Alsace Township border are generally not suited for septic systems.

Most of Alsace Township contains soils that severely constrain the safe use of septic systems because of steep slopes, poor drainage and shallow depth to both bedrock and the water table. Areas in Alsace with concentrations of soils that have only slight or moderate limitations for septic systems include the following:

- a scattering between the base of Irish Mountain and Temple Quarry
- the east side of Pricetown Road
- both sides of Basket Road
- the east side of Antietam Creek
- the Five Points area near Exeter Township

The majority of the soils in the Region are unsuitable for on-site sewage disposal due to steep slopes, the depth of the water table and/or slow permeability. On-lot septic soil Suitability can be seen on Figure 10.4.

### **Topography**

The accompanying Topography map shows two categories of slopes within Oley and Alsace: land between 15 and 25% grade (steep slopes) and land over 25% grade (very steep slopes). It is important to know where steep slopes are located because steep slopes are susceptible to erosion when soil and vegetation are disturbed. Steep slopes can add significantly to the cost of constructing and maintaining roads and buildings. Steep slopes also limit the placement of on-site sewage systems.

Most of Oley is a flat to gently rolling agricultural valley. Steep slopes in Oley are concentrated along in the western part of the Township near the Monocacy and Limestone Creeks and in the Township's northern sector, near Oley Furnace. Alsace has very little flat land compared to Oley. Most of Alsace is hilly, including large areas of both moderately steep slopes and very steep slopes. Over half the land area of Alsace is in steep slopes.

Ruscombmanor has elevations from 492 feet adjacent to Fleetwood to approximately 1,000 feet around the Seidel School.

### **Streams**

Streams are valuable aquatic habitats that provide both active and passive recreation. The major streams in Oley Township are the Monocacy Creek, Limekiln Creek, and Manatawny Creek. Limekiln Creek and Monocacy Creek each have several unnamed tributaries. In addition to unnamed branches, tributaries to Manatawny Creek include

Little Manatawny Creek, Furnace Creek, Furnace Run, Bieber Creek and Oysterville Creek.

The primary streams in Alsace Township are the Willow Creek, Laurel Run, Bernhart Creek and Antietam Creek. Within Alsace, each of these streams is a designated Cold Water Fishery. Laurel Run is also designated a Migratory Fishery. Unnamed tributaries from the Monocacy Creek, Willow Creek and Little Manatawny Creek also extend into Alsace.

Ruscombmanor streams include Little Manatawny Creek, Furnace Creek,

Pennsylvania's Water Quality Standards designate protection categories for streams and water quality criteria for each category that are used in limiting the discharge of effluent into streams. Within Oley, Bieber Creek is classified as a waterway of Exceptional Value, a designation for streams that should receive special protection because of their outstanding water quality and other environment attributes. Several streams in Oley are designated as Cold Water Fisheries, streams that should be protected as habitat for cold water fish and other fauna and flora indigenous to cold water. These include Furnace Creek, Manatawny Creek, Little Manatawny Creek, Oysterville Creek and Furnace Run. Monocacy Creek is designated as a Warm Water Fishery, a waterway that should be preserved as a warm water habitat. Furnace Creek is also designated by the State as a Trout Stock Fishery.

### **Drainage Basins**

Drainage basins are stormwater catchment areas. Watershed boundaries for drainage basins are delineated by ridge lines. All stormwater runoff in a particular drainage basin eventually flows to the same waterway, either directly or via one or more other waterways. Drainage basins are logical service areas for sanitary sewer systems because lines that carry wastewater by gravity do not require pumping stations. For these reasons and others, drainage basins are important to consider in comprehensive planning.

The Manatawny Creek system forms a major watershed that drains most of the eastern and northern portions of Oley Township. Tributaries of the Manatawny, including Little Manatawny Creek, Furnace Creek, Bieber Creek and unnamed branches form sub-basins within the Manatawny Watershed. The Limekiln Creek and Monocacy Creek drain most of the southwestern quadrant of Oley Township. The Monocacy Creek's watershed extends on both sides of the Oley/Alsace municipal boundary. Most of the central portion of Alsace is drained by Antietam Creek, with a small northern portion drained by the Manatawny Creek. The western side of Alsace is divided into three major watersheds. From north to south these include watersheds formed by Willow Creek, Laurel Run and Bernhart Creek. Each of the major watersheds in the Oley/Alsace area



drain to the Schuylkill River, which empties into the Delaware River in South Philadelphia.

## **Floodplains**

Floodplains are areas adjacent to rivers and streams which are subject to flooding during periods of excessive precipitation. The floodplain holds the excess water allowing it to seep into the groundwater and slowly drain back into the waterway.

100-year floodplains are areas that, on average, have a one in one hundred chance of flooding in a given year, according to the Federal Emergency Management Agency (FEMA). Besides providing natural habitat, floodplains carry floodwaters and help moderate flood heights. Interfering with these natural functions can result in more severe flooding, costly property damage, and loss of life. A 100-year floodplain is the area adjacent to a river or stream which has a one percent chance of being flooded during any one year, and is typically used for regulatory purposes. Floodplains should not be developed, due to the potential for damage to persons and property. If development occurs within the floodplain, it may limit the floodway, resulting in increased damage downstream because of resulting increased velocities of the floodwater downstream. Outdoor storage of materials within floodplains is not desirable because of the possibility of the materials being swept into the stream when flooding of the banks occurs. One hundred-year floodplains are shown from Federal Emergency Management Agency (FEMA) Maps. Detailed studies and calculations have not been performed to establish the extent of the 100-year floodplains for all watercourses. Any development proposed in the vicinity of watercourses would require the developer to obtain a calculated study of the 100-year floodplain if such studies have not been performed by FEMA. The 100-Year Floodplain for the Region is depicted on Figure 10.1, The Natural Resources Map.

Care must be taken in disturbing areas along watercourses because increased sedimentation within the stream (increased depositing of soil within the stream) can occur. Increased impervious cover along watercourses typically increases the volume of storm water runoff into the streams. This additional runoff can erode stream banks and channels. If sedimentation increases, streambeds may fill, causing floodwaters to affect a larger area.

## **Wetlands**

Wetlands are defined by the U.S. Army Corps of Engineers as: “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.”

Wetlands have three major characteristics which include vegetation, soil, and hydrology. Wetlands are generally found along rivers and streams or in other areas subject to frequent flooding, and are characterized by soil type and the presence of hydrophytic (“water-loving”) vegetation, in addition to the presence of visible surface water. Wetlands are typically rich in plant growth and provide habitat for a variety of animals. Furthermore, wetlands can protect water sources by acting as a natural filter, removing pollutants such as bacteria and sediment from surface water before it enters the ground. Development activity, including the placement of fill material, is regulated by the Pennsylvania Department of Environmental Protection and the U.S. Army Corps of Engineers.

The wetlands depicted on the Natural Resources Maps (Figure 10.1) are from the National Wetlands Inventory, prepared by the Office of Biological Services, U.S. Fish and Wildlife Service. The wetlands inventory was prepared by stereoscopic analysis of high altitude aerial photographs, with the wetlands identified based on vegetation, visible hydrology, and geography. The National Wetlands Inventory does not necessarily show all wetlands that exist within townships along stream corridors and other low lying areas. A detailed ground level analysis of any site may result in a revision of the wetland boundaries, and it is possible that small wetlands and those obscured by dense forest cover may not be identified. Wetlands are dispersed throughout the Region.

## **Hydric Soils**

Hydric soils are soils that are flooded, ponded or saturated long enough during the growing season to develop anaerobic (without oxygen) conditions. They are typically poorly drained and have a shallow water table. Lack of oxygen in the soil leads to certain characteristics of wetlands soil such as: non-decomposed plant material, oxidized root channels, and concentrations and depletions of iron and other elements. These soils, if undrained, may exhibit wetland vegetation and be an indicator of wetlands. Hydric Soils are noted on the Natural Resources Maps.

## **Unique Natural Areas**

In 1991, the Pennsylvania Science Office of the Nature Conservancy prepared the Berks County Natural Areas Inventory, a list and mapping of rare and endangered plants, animals and natural habitats in Berks County. The Natural Areas Inventory contains a)

sites of local importance and b) sites of statewide significance as listed on the Pennsylvania Natural Diversity Index (PNDI).

The Lobachville Floodplain Forest, which is in Oley and Pike Townships, is the only site in the Oley/Alsace area noted to be of Statewide Importance. It is a mature woodland with extensive wetlands. Beech, white ash, tulip poplar, sugar maple and spice bush are its most prevalent vegetation. While development of the area appears unlikely, the Natural Areas Inventory recommends that logging and other forms of human disturbance be minimized so the area can continue to provide open space, wildlife habitat and flood storage. The Lobachville Floodplain Forest is an area of local importance in addition to its designation of Statewide Significance.

The Chapel Hill Forest, which is on the south side of Mexico Road in central Alsace Township, is noted as a natural area of local importance, although it is not designated as a site of Statewide Significance. The Chapel Hill Forest is a mature forest with an 80-foot canopy of oak, beech, hickory, birch, maple, tulip and sour gum. A diversity of birds occupies this site and its ponds support aquatic life. The Natural Areas Inventory recommends against logging or other forms of disturbance and development.

Ruscombmanor Township had two areas which were identified as Natural Areas Inventory.

There is a special plant, Boyers Junction Seeps (SP503) which is described as: “A population of a state endangered grass grows in Ruscombmanor Township. The population grows in a seepage wetland near the village of Boyer’s Junction. The seep occurs along a stream flowing through a closed-canopy forest of red maple (*Acer rubrum*), common alder (*Alnus serrulata*), and skunk cabbage (*Symplocarpus foetidus*). If roads and ditches in the woods were made more extensive, the resulting change in hydrology could threaten the plant. Otherwise, the plant appears relatively secure. The Inventory recommends protection by seeking an agreement with the landowner.”

Lake Ontelaunee Watershed:

“Ruscombmanor is partially located in the Lake Ontelaunee Watershed. The watershed needs protection from additional intrusion by housing and other forms of development. The agricultural industry should be encouraged to use best management practices (BMPs), to minimize soil erosion and sedimentation, and the resulting nutrient and pesticide run-off. Limiting development and providing the agricultural industry with incentives to control soil erosion, will help avoid more costly remedies in the future, i.e., desilting Lake Ontelaunee.”

An animal species of concern was found in the “Little Manatawny Creek Watershed” in 1994 in an extensive wetland area. It was determined that additional survey work is

needed. This affects Oley, Alsace, and Ruscombmanor Townships. A plant species of concern was found in a nearby area in 1996. The population occurs in an alluvial bottomland woods. The open canopy includes sugar maple, bitternut hickory, red maple, ash, and beech. The population is healthy but possibly threatened by woody, exotic species. A 2003 update notes disturbances including exotic species invasion and dirt bike trails.

## **Woodlands**

Woodlands are wildlife habitats that, if destroyed, take decades to replace. The root systems of trees and other vegetation stabilize the soil against erosion, particularly in steep areas. Woodlands are also a scenic resource that provide visual relief from the built environment.

Large concentrations of woodlands are scarce in Oley because so much of the Township is cleared for farming. Most of Oley's woodlands are in the northwestern quadrant of the Township, particularly north of Oley Village and in the Oley Furnace area. Woodlands also exist along several miles of stream corridor in Oley. In contrast, Alsace is predominantly wooded. Wooded hillsides exist throughout the Township. Woodlands cover almost all the undeveloped lands in the western portion of Alsace. In the eastern portion of Alsace, woodlands are less concentrated but still very prevalent.

## **SIGNIFICANCE OF NATURAL AREAS**

The importance of protecting natural resources is summarized below:

### **Steep Slopes**

Steep slopes of 15 to 25% have 15 to 25 feet of vertical change in elevation over 100 feet of horizontal distance. Very steep slopes of greater than 25% have a vertical change greater than 25 feet over 100 feet of horizontal distance.

### **Steep Slopes Importance**

- Erodible if vegetative cover is removed.
- Stormwater runoff problems can result if vegetative cover is removed.
- Severe limitations for on-site sewage disposal.
- Driving hazards can result from development of roads and driveways.
- Difficulty in road maintenance and plowing.
- Higher building costs.

Areas of steep slopes within the Region are generally found in Alsace Township.

### **Woodland**

### **Woodland Importance**

- Wildlife habitats.
- Stabilize soil against erosion.
- Scenic resources.
- Provide visual relief.
- Birding and hunting areas.
- Buffer development.
- Absorb stormwater runoff.
- Cleanse air.
- Moderate water temperatures along streams

Woodlands are scattered through the Region, and are more concentrated in Alsace and Ruscombmanor Townships. For the reasons noted above, as development occurs, efforts should be made by developers to minimize clearance of wooded areas. The contiguous wooded areas of the Region are particularly valuable in providing wildlife habitat and scenic amenities.

## **Floodplains**

Areas adjacent to watercourses which are covered by flood water. 100-year floodplains mapped by the Federal Emergency Management Agency (FEMA) on average have a 1 in 100 chance of being flooded in a given year. If detailed studies along watercourse have not been done by FEMA, they are necessary from developers.

## **Floodplains Importance**

- Development poses danger to people and property.
- Can constrict floodwater flow, increasing flood velocities downstream and increasing flood damage.
- Outdoor storage can be washed downstream.
- Wildlife habitats.
- Development can increase sedimentation and stormwater runoff in streams, thus erosion of stream banks and channels, filling of streambeds, meandering of streams, and choking of aquatic life.
- Development can detract from esthetic value.
- Development can detract from recreational value.
- Absorb surface runoff, thus replenish ground and surface water and reduce flood peaks. Increased surface flow can reduce concentration of pollutants and maintain stream flow in dry weather.
- On-site sewage disposal can contaminate ground and surface water

Floodplains along the Region's streams and creeks should incorporate riparian buffers as explained below.

## **Wetlands**

From National Wetlands Inventory, does not include wetlands which cannot be identified from high altitude aerial photography. Detailed analysis of sites proposed for development is necessary. Wetlands are areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, prevalence of vegetation typically adapted for life in saturated soil conditions.

Wetlands along the Region's waterways and their tributaries should be incorporated into riparian buffers.

## **Hydric Soils**

Have shallow depth to seasonally high water table. Potential wetlands, with need for further analysis.

Areas of hydric soils need to be analyzed when development is proposed near them to determine the presence of wetlands. Generally, areas of hydric soils should be avoided, and areas along streams and tributaries should be incorporated into riparian buffers.

## **Wetlands Importance**

- Store water which can replenish groundwater and surface water supplies (recharge areas).
- Plant and animal habitats.
- Breeding places and sources of food for organisms.
- Natural filters of pollutants from waters via actions of plants.
- Reduce flooding by detaining stormwater.
- Unsuitable for development and on-site sewage disposal.

## **Hydric Soils Importance**

- Unsuitable for development and on-lot sewage disposal.
- Flooded basements and poor foundation stability if built upon.
- Natural recharge areas which can reduce flooding and manage stormwater runoff.
- Filter surface water.

## **Watercourses Importance**

## **Watercourses**

Watersheds can be planning and management areas for stream conservation and protection, stormwater management planning, water supply budgeting planning, watershed based zoning, and integrated resource planning.

- Recreational resources.
- Scenic resources.
- Aquatic habitats.

## **Groundwater Supplies**

Groundwater enters through the soil and creeks.

## **Groundwater Importance**

- Public water systems and private wells are usually dependent upon groundwater supplies.
- Groundwater supplies are affected by development which reduces recharge and pollutes groundwater.
- High water withdrawals can affect other water supplies.

## **Natural Resources Actions:**

- A. Update zoning ordinances as necessary, and consider adopting official maps to reflect the resource protection Goal and Objectives of this Plan and to be consistent with the Future Land Use Map (Figure 6.1). The resource protection provisions of municipal zoning ordinances vary, and the approach taken by each Township will vary. Options include:
  1. Adopt Natural Resource Protection Standards and/or Net-Out Provisions for the following resources:
    - a. Floodplains
    - b. Wetlands
    - c. Wetland Margins (buffers)
    - d. Watercourses
    - e. Water bodies
    - f. Greater than 25% slope
    - g. 15-25% slope



2. Adopt Steep Slope Protection Provisions:
  - a. Control and limit development on steep slopes
    - Require larger lot sizes and impose stricter impervious restrictions for steep slopes of 15 to 25%
    - Prohibit or severely restrict development on slopes greater than 25%
3. Adopt Groundwater Protection Provisions:
  - a. Protect aquifers through design standards, construction guidelines, use restrictions, impervious limits, and permit submission requirements.
4. Adopt Tree and Woodland Protection, Management and Planting Provisions:
  - a. Limit clearance for development in both subdivisions and land developments.
  - b. Require tree protection and replacement during development.
  - c. Encourage the use of native species in landscaping. Discourage invasive species.
  - d. Establish limited clearance buffer zones around the perimeter of new developments
5. Adopt provisions for Wetland, Wetland Buffer, and Hydric Soil Protection:
  - a. Restrict development in wetlands.
  - b. Establish consistent wetland, wet area, and water body buffer (margin) requirements, such as 50 feet or 100 feet.
  - c. Require wetland delineation in hydric soil areas.
6. Adopt Floodplain Protection Provisions:

- a. Severely restrict development in floodplains to compatible open space uses.
7. Establish Stream Corridor Overlay Zoning and require Riparian Buffers:
    - a. Restrict development and impervious surfaces.
    - b. Require riparian (vegetative) buffers to moderate water temperatures, protect wildlife habitats, control sedimentation, and reduce pollution.
    - c. Require greenways.
    - d. Utilize the Best Management Practices where practical, and implement the Manatawny Creek Watershed Act 167 Stormwater Management Plan.
    - e. Protect the Region's streams.
  8. Adopt Outdoor Lighting Standards to control light pollution and protect the night sky:
    - a. Establish illumination levels that are adequate but not excessive.
    - b. Require impacts on surrounding streets and properties to be mitigated by directing light down, not up or out to sides of fixtures.
    - c. Control glare.
  9. Adopt Forestry Regulations:
    - a. Require accepted silvicultural (forestry) practices.
    - b. Require a forestry management plan.
    - c. Require stormwater and erosion and sedimentation control.
    - d. Require properly constructed internal logging roads and protection of public roads.
    - e. Require soil erosion protection during steep slope forestry.

B. Update subdivision and land development ordinances as necessary. Options include the following:

1. Expand plan data requirements to include a specific listing of environmental, scenic, historic, and cultural resources.
2. Require developers to identify the resources within their tracts, analyze the impacts of the development, and mitigate those impacts.
3. Require environmental assessment studies; hydrogeologic studies; scenic, historic and cultural resources impact studies; plans for preservation of environmental, historic, and cultural resources; and analysis of the site's ability to support the proposed use and intensity.
4. Require developers to identify natural, historic, scenic, architectural and cultural resources in their tracts and incorporate them into the open space system. Require management plans for open space as well as mechanisms to ensure the continuation as open space.

In review of Subdivision and Land Development Plans, requirements for setting aside open space can be used to preserve conservation corridors and provide for greenways.

Requirements for setting aside open space can also be used to protect targeted undeveloped areas and identified natural areas pursuant to municipal plans.

5. Establish development guidelines for development in groundwater recharge areas, including limits on impervious cover and limits on on-site sewage disposal.
  6. Require protection of vegetation during site work.
  7. Limit clearance on approved, but not developed, lots. Potential techniques include tree clearance ordinances, deed restrictions, net-out provisions, and identification of permissible clearance areas during the development process.
- C. Create municipal Environmental Advisory Councils to work with Township Supervisors to preserve key tracts of open space, protect environmental resources in the Region, and implement open space and recreation plans.

Act 148 of 1973 authorizes any municipality or group of municipalities to establish, by ordinance, an Environmental Advisory Council to advise the local planning commissions, park and recreation boards, and elected officials on matters dealing with the protection, conservation, management, promotion, and use of natural resources located in the municipality's territorial limits.

Act 148 empowers Environmental Advisory Councils to:

- Identify environmental problems and recommend plans and programs to the appropriate municipal agencies for the promotion and conservation of natural resources and for the protection and improvement of the quality of the environment within its municipal boundaries;
  - Keep an index of all open space, publicly and privately owned, including flood-prone areas, and other unique natural areas, for the purpose of obtaining information on the proper use of such areas;
  - Advise the appropriate local government agencies, including, but not limited to, the planning commission and park and recreation board or, if none, the elected governing body, on the acquisition of property, both real and personal.
- D. Encourage formation of groups within the community to adopt a stream and provide monitoring and oversight along the stream corridor.
- E. Pursue joint watershed planning opportunities under the Growing Greener initiative and other programs in order to protect community water resources.

**Scenic Resources Actions:**

- A. Update zoning ordinances as necessary to protect scenic resources. Options include the following:
1. Scenic Road and Scenic Viewshed Overlay Zoning:
    - a. Require greater setbacks from scenic roads.
    - b. Require additional landscaping, trees and screening on site.
    - c. Establish standards for siting buildings and building height.
    - d. Require retention of existing desirable vegetation when it will not conflict with road safety concerns.

- e. Impose sign limitations.
- f. Require access management.
2. Adopt ridgeline protection zoning.
3. Update Sign Regulations:
  - a. Regulate billboards.
  - b. Adopt consistent and appropriate signage standards along road corridors in the Region.
  - c. Encourage appropriate signage in villages with consideration of the following:
    - Sign materials compatible with the building style.
    - Sign colors that complement building façades.
    - Hardware for projecting signs integrated into the building architecture.
    - Lettering compatible with the building façade.
    - Purpose of sign for identification only.
    - Restrict signs with off-premises advertising.
    - Lighted signs should illuminate the sign area only.
    - Signs do not obscure architectural features or windows.
    - Prohibition of roof-top signs.
    - Window signs should not obscure displays.
    - Prohibition of flashing lights, neon lights, moving lights, and unshielded light bulbs.
4. Require landscaping and buffering in commercial and industrial Developments.

- B. Update subdivision and land development ordinances as necessary. Options include the following:
1. Establish guidelines for development near scenic roads and vistas.
  2. Require tree plantings along streets in both major and minor developments and both residential and non-residential developments.
- C. Minimize visual blight along the road corridors in the Region to enhance the business climate. Work with the Berks County Planning Commission and PennDOT to identify illegal or non-compliant signage and driveways and enforce applicable regulations. Establish responsibility in each Township for addressing this issue.

### **Green Infrastructure**

Green Infrastructure is a strategically planned and managed network of wilderness, parks, greenways, conservation easements, and working lands with conservation value that supports native species, maintains natural ecological processes, sustains air and water resources, and contributes to the health and quality of life of the community.

The Green Infrastructure network encompasses a wide range of landscape elements, including natural areas such as wetlands, woodlands, waterways, and wildlife habitat; public and private conservation lands such as nature preserves, wildlife corridors, greenways, and parks; and public and private working lands of conservation value such as forests and farms. It also incorporates outdoor recreation and trail networks.

The contiguous woodlands found throughout the Region, particularly in Alsace Township, as well as the stream corridors are examples of parts of the green infrastructure network that should be protected.

### **Riparian Buffers**

A riparian buffer is an area of vegetation that is maintained along the shore of a water body to protect stream water quality and stabilize stream channels and banks. The buffers provide the following benefits:

- Filter runoff – Rain that runs off the land can be slowed and infiltrated in the buffer, settling out sediment, nutrients and pesticides (nonpoint source pollution) before they reach streams.

- Take up nutrients – Fertilizers and other pollutants that originate on the upslope land are taken up by tree roots. Nutrients are stored in leaves, limbs and roots instead of reaching the stream. Through a process called “denitrification,” bacteria in the forest floor convert nitrate to nitrogen gas, which is released into the air.
- Provide shade – The leaf canopy’s shade keeps the water cool, allowing it to retain more dissolved oxygen, and encouraging growth of plants and aquatic insects that provide food for fish.
- Contribute leaf food – Leaves that fall into the stream are trapped on fallen trees and rocks where they provide food and habitat for organisms critical to the aquatic food chain.
- Provide habitat – Streams that travel through woodlands provide more habitat for fish and wildlife. Woody debris provides cover for fish while stabilizing stream bottoms.
- Provides migration corridors for wildlife.
- Safeguard water supplies by protecting groundwater recharge areas.
- Provide flood control.
- Provide stormwater management potential – Natural vegetation provides a basis for innovative stormwater management systems. Stormwater flows from retention basins can be directed to, and allowed to flow through, buffers to reduce nutrient and sediment loads.
- Improve water and air quality.
- Stimulate economic opportunities such as providing valuable open space which may increase land values and, therefore, the tax base.
- Provide some federal tax incentives to landowners (depending on a landowner’s financial situation) willing and able to place some of their lands under conservation easement.
- Reduce grounds maintenance.
- Provide recreational opportunities, and associated economic benefits for recreation-related businesses.
- Provide educational and research opportunities for local schools and colleges.

- Provide windbreak, shade, and visual buffer.

## **Energy Conservation**

The Oley, Alsace, Ruscombmanor Region is growing, and with this growth comes the increased reliance on energy sources. Energy conservation is becoming a high priority because the way we use our resources today will have a profound effect on future generations. Land use plans, land development regulations, building codes, and transportation policies should be implemented to support the policy of energy conservation.

As the environmental impact of buildings becomes more apparent, a new field called *green building* is arising to reduce that impact at the source. *Green* or *sustainable building* is the practice of creating healthier and more resource-efficient models of construction, renovation, operation, maintenance, and demolition.

**Goal:** Conserve energy through appropriate land use and transportation planning techniques and public education efforts.

### **Objectives:**

- Promote alternatives to motor vehicle use to improve air quality and conserve fossil fuels.
- Maximize recycling as the markets become available.
- Promote mixed-use development patterns and densities that result in more compact communities, encourage fewer and shorter vehicle trips, and limit the need to extend infrastructure.

### **Actions:**

1. Educate residents and businesses regarding the benefits of energy conservation.
2. Review and update ordinances to include regulations for energy efficient building and design techniques. Encourage the use of renewable sources of energy, including solar, wind, and biomass (energy from organic matter).