



## CHAPTER 9: NATURAL & AGRICULTURAL RESOURCES

### GOALS

As previously detailed in Chapter 2, Union Bridge has set forth the following goals:

- To mitigate the impacts of flooding on community residents and businesses
- To mitigate the impact of mineral resource mining on community residents and businesses
- To support farmland preservation as a means of preserving community heritage and small-town atmosphere

### CURRENT CONDITIONS

In 1997, the Town of Union Bridge adopted the "Environmental Resources Element" as an amendment to their comprehensive plan. The information, analysis and recommendations contained in this chapter incorporate what was contained in that amendment and satisfy the state requirements for a "sensitive areas element."

#### 1 *Environmental Resources*

##### **A ENVIRONMENTAL RESOURCES DESCRIPTION**

The environmental resources which are required to be protected under the Planning Act are streams, stream buffers, steep slopes, 100-year floodplains, and habitats of threatened and endangered species, wetlands, and agricultural and forested lands intended for resource protection or conservation. The areas are shown on the "Environmental Resources" map (map number 11). The Planning Act of 1992 does not specify the extent or degree of protection to be accorded to each environmental resource. Therefore, the definitions developed for each environmental resource identify this level of protection. To adequately provide consistent protection, the best course of action suggests adoption of uniform definitions among the County and the municipalities. Definitions are included for both the sensitive areas required to be protected under the Planning Act as well as the additional environmental resources the jurisdictions are addressing. They are defined as follows:

**STREAM** means part of a watercourse, either naturally or artificially created, that contains intermittent or perennial base flow of groundwater origin. Ditches that convey surface runoff exclusively from storm events are not included in this definition.

**STREAM BUFFERS** are areas which extend a minimum of 100 feet from the top of each stream bank along both sides of a stream unless modified by the Planning Commission.



**STEEP SLOPES** are defined as areas with slopes greater than 25 percent.

**ONE HUNDRED-YEAR FLOODPLAINS** are those areas which, after ultimate development of their watershed based on current zoning, would be inundated by water runoff from the 100-year storm.

**HABITATS OF THREATENED AND ENDANGERED SPECIES** are areas which, due to their physical or biological features, provide important elements for the maintenance, expansion, and long-term survival of threatened and endangered species listed in COMAR 08.03.08. This area may include breeding, feeding, resting, migratory, or over wintering areas. Physical or biological features include, but are not limited to, structure and composition of the vegetation; faunal community; soils, water chemistry and quality; and geologic, hydrologic, and microclimatic factors.

**WETLANDS** (defined under COMAR, Title 08.05.04.01) are generally areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions, commonly know as hydrophytic vegetation.

**AGRICULTURAL LAND** is land used for all methods of production and management of livestock, crops, trees and other vegetation, as well as aquiculture. This includes the related activities of tillage, fertilization, pest control, and harvesting as well as the feeding, housing, training and maintaining of animals such as cows, sheep, goats, hogs, horses, and poultry. (Source: <http://www.dnr.state.md.us/met/model.html>)

**FOREST LAND** is a biological community dominated by trees and other woody plants covering a land area of 10,000 square feet or greater. Including: areas that have at least 100 trees per acre with at least 50 percent of those trees having a 2-inch or greater diameter at 4.5 feet above the ground and larger. A forest may include duff, leaf litter, understory, and forest areas that have been cut but not cleared. Forest does not include orchards or Christmas tree plantations. (Source: Carroll County Maryland Code of Public Local Laws and Ordinances, 115-1 Definitions)

The County and towns have identified additional environmental resource areas which they feel are worthy of protection under the Environmental Resources Element as well. These resources include wetlands, wellhead buffers, carbonate rock areas, reservoir watersheds, and Use III waters.

**WELLHEAD BUFFERS** are areas which extend a minimum of 100 feet around any existing or proposed community water supply well or well site, unless modified by the Planning Commission, as may be designated on the adopted Water and Sewer Master Plan or the County Comprehensive Plan, or identified during the development process.

**CARBONATE ROCK AREAS** are areas which are currently known or suspected to be underlain by carbonate rock. This includes the Wakefield Marble and Silver Run Limestone geologic units, as well as unnamed calcareous zones within schist and phyllite areas.

**RESERVOIR WATERSHEDS** are areas which drain into an existing or proposed water supply reservoir.

**USE III WATERS** (defined under COMAR, Title 26.08.02) are protected for the propagation of natural



trout populations. These waters are governed by more stringent dissolved oxygen, chlorine, and temperature standards than other waters.

**TIER II WATERS** (defined under COMAR 26.08.02.04-1) are high quality waters. Where water quality is better than the minimum requirements specified by the water quality standards in the Clean Water Act, these waters are listed by the Maryland Department of Environment as Tier II waters. Based on Maryland's antidegradation policy, that water quality shall be maintained. An antidegradation review of new or proposed amendments to water and sewer plans (county plans) and discharge permits is required to assure consistency with antidegradation requirements.

The Union Bridge Community Planning Area is located within the fertile Piedmont Plateau, which extends between southeastern Pennsylvania and northeastern Alabama. The rolling, undulating topography of the Union Bridge GA is present throughout the Piedmont region. While the average elevation is approximately 440 feet, the topography ranges between 400 and 600 feet.

The Union Bridge community is located in the Potomac River drainage basin and is drained by Sam's Creek and Little Pipe Creek, major tributaries of the Monocacy River to the west. Little Pipe Creek runs through the current corporate limits, while Sam's Creek and a portion of the Cherry Branch of Little Pipe Creek run through the GA but do not currently go within corporate limits. Due to annexations, another section of Cherry Branch is within the corporate limits and is dedicated to conservation uses. Little Pipe Creek's broad, flat floodplain is zoned Conservation, and the portion located in the town is mostly owned by the Town. The planning area is subject to periodic flooding, particularly along the Little Pipe Creek. The existing design of the MD 75 bridge appears to aggravate flooding of Little Pipe Creek. This may be addressed after modifications to the bridge and culvert system are completed in conjunction with the Jackson Ridge project. Little Pipe Creek and its tributaries are the principal surface waters receiving treated wastewater. All of the streams are Use IV streams, which means they are of a sufficient quality to support put-and-take trout fishing but not of a suitable quality to support trout reproduction. Non-tidal wetlands and hydric soils occur in the floodplain areas.

Union Bridge GA is located on the northwestern edge on the Piedmont Upland portion of Carroll County. The geology of the GA is the most complex in Carroll County. The geological make-up consists of bands of phyllite and metavolcanic bands underlying the saprolite aquifer. Below these bands are numerous bands and lenses of carbonate rocks sandwiched between schist and phyllite rocks.

The aquifers in the area are the saprolite, triassic, and carbonate rock types with the carbonate rock being the most prolific source of water. According to the R. E. Wright report on countywide water resources, the drought recharge in this 2-square-mile area is approximately 520,000 gpd, mostly due to the elevated recharge rates of the dominant aquifers beneath the GA. Groundwater available within 2,000 feet of the Union Bridge GA is approximately 14,000,000 gpd. The wellhead for the Town's water supply is located in a well house on the property where the new town hall is now located.

The Community Planning Area does not contain many large tracts of forested land. Some forested area can be found on gently rolling land northeast of Phillips Lane and in the area around Main Road. Wooded areas also exist on some of the steep slopes located within the corporate limits on the south side of Little Pipe Creek. In recent years the Town has begun to seek opportunities to accept reforestation areas and conservation buffer planting areas along its watercourses.



The community is not currently located within a reservoir watershed and contains no Use III waters. Any potential identified habitats of threatened and endangered species in the Union Bridge GA will be included on the Sensitive Species Project Review Area Map.

## **B CURRENT ENVIRONMENTAL RESOURCES PROTECTION MEASURES**

Carroll County currently provides a great deal of protection to the area's environmental resources. Substantial revisions and additions to existing regulations were not needed to meet the requirements of the 1992 Planning Act, since environmental resources are already being afforded significant protection under existing ordinances. The Planning Commissions have also been given the ability to require further protection measures where appropriate. However, to address any inconsistencies of protection and lack of protection in some areas, some revisions and text amendments may be necessary.

Environmental resources in Carroll County currently are protected during the development process through several different regulations, ordinances, and authorities. The Code of Public Local Laws and Ordinances of Carroll County contains the following chapters that relate to or have an impact on environmental resources:

- Chapter 97 – Construction Codes
- Chapter 103 – Subdivision of Land
- Chapter 105 – Environmental Management of Storm Sewer Systems
- Chapter 114 – Floodplain Management
- Chapter 115 – Forest Conservation
- Chapter 121 – Grading, Erosion and Sediment Control
- Chapter 134 – Landscape Enhancement of Development
- Chapter 191 – Stormwater Management
- Chapter 218 – Water Resource Management
- Chapter 223 – Zoning

Additionally, the County Landscape Manual, Water Resource Management Manual, and the Design Manual for Roads and Storm Drains contain additional guidance on and provisions for the protection of environmental resources.

The Town of Union Bridge has adopted or follows many of the County's ordinances or regulations. For those County ordinances made applicable in the Town, the County administers and enforces the law the same as in the County. They include the Grading and Sediment Control Ordinance, the Construction Codes, Livability Code, Cable Television Law, and the Forest Conservation Ordinance. The County's road and storm drain construction standards have been adopted by reference. The Town has adopted its own Animal Control, Stormwater Management, Floodplain Management, Storm Sewer Systems, Water Resources and Landscaping Ordinances using language nearly identical to the corresponding County laws as amended from time to time, except that these ordinances are administered and enforced by the Town, and the County provides advisory comments in these areas.

The Town has adopted its own subdivision regulations and zoning ordinance. Provisions are made in the Zoning Ordinance of Union Bridge for a Conservation Zoning District. The purpose of the zone is to regulate development in areas where it is desirable to conserve certain natural resources. There is a limited



amount of land in this district and much of it is in floodplain where it is subject to additional restriction under the Town's Floodplain and Stormwater Management Ordinances. It has limited permitted and conditional uses. Single family dwellings are principal permitted uses and must have a minimum lot size of 3 acres. Clustering to provide open space and protect natural resources is not required in the Conservation zone; however, it is required as part of the Subdivision and Development Controls and Priorities (Sect. 13-5.0) in the R-6,000, R-10,000, and R-20,000 districts.

## 2 Mineral Resources

The Land Use section (Article 66B) of the Annotated Code of Maryland calls for the identification of mineral resources within a given study area in order to: identify undeveloped land that should remain undeveloped until the land can be used to provide or assist in providing a continuous supply of minerals; identify appropriate post-excitation uses for the land that are consistent with the county's land planning process; and incorporate land use policies and recommendations for regulations to balance mineral resource extraction with other land uses and to prevent the preemption of mineral resources extraction by other uses.

When developing the Mineral Resource Element of the Carroll County Master Plan (originally adopted February 27, 1992), mineral resources in the entire county were studied to determine what areas might be viable for future extraction. As a result, a Mineral Resources Overlay Zone was created (see "Mineral Resource Overlay Areas" map). Areas currently owned by a mineral extraction company or already in use for that purpose were zoned Mineral Resource Recovery Area (MR). Areas for which the underlying mineral was economically viable for recovery, but not necessarily owned by a quarry company were zoned Viable Resource Areas (VRA). Both of these zones were meant to prohibit any preemptive development.

The Union Bridge Community Planning Area is underlain by a complex variety of rock types. The valleys in the area are generally located over carbonate rocks, which include the Silver Run limestone east of town and lenses of Wakefield Marble in the central and eastern portions of the planning area. The Wakefield Marble bands trend in a north-south direction from Cherry Branch to just west of Shepherd's Mill Road and is the western extension of a relatively large area of carbonate rock which reaches to Westminster. Hills are generally underlain by metavolcanic and phyllite in all locations, which may form boundaries to groundwater flow.

Although Lehigh Portland Cement Company is located partially within the Town, no actual quarrying takes place within the corporate limits. Therefore, a plan is not required to address this activity in the Town. Those areas of the Community Planning Area which fall under County jurisdiction which have current or future potential mining operations are addressed by the Carroll County Comprehensive Mineral Resources Plan and Implementation Mechanisms. This document may be referenced under separate cover.

## 3 Agricultural Resources

Although the Union Bridge Community Planning Area as a whole remains primarily rural in character, the overall landscape of the farming community has continued to evolve over time. In recent years, the County has seen a significant decline in dairy operations. Although some dairy operations are becoming larger in size, their overall numbers are decreasing. Today, small grains and vegetables seem to be more marketable for both corporate and independent farmers in the area. The most common crops produced throughout the



area are corn, soybeans, wheat, green beans, peas, and barley. Hay production, particularly alfalfa, is also on the rise due to better profit margins and the increasing number of horse farms and horse boarding facilities throughout the County and surrounding areas.

In order to retain the overall character of the region, both the State and the County have taken significant steps toward the permanent preservation of farmland. In the past, Carroll County has had remarkable success in attracting landowners to participate in the Agricultural Land Preservation Program. As of FY 2006, a total of 43,654 acres of farmland throughout the County have been permanently preserved through the Maryland Agricultural Land Preservation Foundation (MALPF) and the Rural Legacy Program. An additional 52,716 acres are currently in MALPF agricultural districts, while 5,678 acres of farmland have permanent easements held by either the Maryland Environmental Trust or the Carroll County Land Trust. The majority of easements and districts are located in the northern half of the County, more specifically in the northwestern sector. The participation rate within the Union Bridge area is high (see “Land Preservation” map).

As stated previously, the Union Bridge Growth Area (GA) consists of approximately 1737 acres in total; with roughly 116 acres actually zoned Agricultural. However, about 1073 acres are currently being used for agricultural or resource purposes. There are 3 partial agricultural easements and 1 partial Rural Legacy easement in the GA totaling approximately 97 acres.

It is difficult to assess the worth of agricultural products in a specific area such as the GA due to the fact that statistics for individual farms or blocks of farms are not available through the Agricultural Census. However, it is possible to interpolate the relative worth of agriculture in the GA based on the total worth of agriculture countywide. The 2002 Agriculture Census estimated the total worth of agricultural products sold by farmers in Carroll County to be around \$68,956,000 per year. With 147,252 acres in farmland at that time, this equated to an approximate worth of \$468 per acre for agricultural products. When applied to the acreage currently in agricultural use in the GA, this would estimate the value of all agricultural products there to be approximately \$502,164 per year.

However, the worth of agricultural products does not reflect some of the public benefit that can be derived from the agricultural industry. Soil and water quality can be profoundly affected by agricultural practices. Farmers throughout Carroll County have made significant contributions to maintaining a high quality of soil and water through participation in state and federal cost-share programs that encourage the implementation of soil and water conservation practices. Up to 87.5 percent of these cost-share expenses can be covered by the state and federal government, with the remaining difference being paid by the farmers themselves. Clearly, protecting land in the watershed will not only protect the economic returns that can be realized from the land, but will also protect the tremendous investment that has already been made in maintaining the viability of farming here for future generations.

## ANALYSIS OF COMMUNITY NEEDS

The loss of remaining productive agricultural land as well as open space is a concern countywide. There are many permanent agricultural easements and agricultural districts, essentially temporary preservation agreements, surrounding the town and environs. However, a large amount of unprotected land still remains. As land values continue to increase, it will become increasingly difficult to permanently preserve farmland and environmentally sensitive areas.



Low-density residential development has also been prevalent throughout the unincorporated areas of the county and sometimes even within the municipalities themselves. Maximizing lot sizes accounts for more grading and other resulting disturbances, such as runoff, to the natural environment. Developers are still not required to cluster or minimize disturbance in many instances, nor are they required to adhere to a set of design standards.

The Little Pipe Creek watershed contains most of the county's carbonate rock formations. The watershed is underlain by 6,579 acres of carbonate rock. Carbonate rock produces high-yield aquifers, but is also extremely environmentally sensitive. The carbonate rock is characterized by high solubility, transmissivity and storativity, which makes it an excellent source of water but also makes it prone to subsidence (sinkholes) and the rapid contamination of groundwater by pollutants. As human activity increasingly impacts the sensitive characteristics of these areas, the occurrence or probability of contamination increases as well.

The area is not only rich in ground water, but also contains a number of surface water streams and creeks. The abundance of streams in the watershed has a significant impact on the nature of the area. Because Union Bridge lies at the foot of the Little Pipe Creek watershed, it receives floodwaters from Westminster, New Windsor, and beyond. Flooding is a regular occurrence, particularly along Little Pipe Creek itself and specifically at the MD 75 bridge over the creek. This affects the amount of land in floodplains and wetlands, and consequently, the amount of land available for other uses. Among the many challenges this causes for the community temporary routing and marking of alternate routes remains a community-wide problem.

## RECOMMENDED ACTIONS

### *1 Continue to Support Little Pipe Creek Rural Legacy Area applications.*

The Town of Union Bridge and the Union Bridge environs are surrounded by the Little Pipe Creek Rural Legacy area. This area contributes to the character of the environs by setting its context within the rest of the county. Preserving land within this area will accomplish several things to the benefit of the environs as well: help preserve the watershed, its headwaters, and other resources and culture of the area; enforce the Growth Area Boundary; and provide a buffer between New Windsor, Westminster, and Union Bridge.

### *2 Work with the County to draft, ~~and~~ adopt **and implement** a Water Resources Element.*

HB 1141 requires that all county and municipal governments in the State adopt a Water Resources Element as part of their comprehensive plan by October 1, 2009 **or in accordance with agreed on extensions**. This element is designed to express the relationship between planned growth, as identified in the plan, and the water resources that will serve and be affected by it. The Water Resources Element will: 1) ~~Identify~~ **Identifies** drinking water and other water resources adequate for the needs of existing and future development proposed in the land use element of the comprehensive plan; and, 2) ~~Identify~~ **Identifies** suitable receiving waters for both wastewater and stormwater management to meet the needs of existing and



projected development proposed in the land use element of the comprehensive plan.

Because of the scope of this element's components and the interjurisdictional nature of watersheds and aquifers, the County and its municipalities ~~have~~ ~~are working~~ jointly ~~drafted~~ ~~to draft~~ the element and incorporated **it by reference** into the County and **all** municipal comprehensive plans to meet the requirements of the law. The County and its towns, including Union Bridge, ~~are partnering~~ **partnered** with the State to develop a Water Resources Element (WRE) as a pilot project example for the State. The Town ~~intends to adopt~~ **adopted** the WRE as an amendment to the comprehensive plan **in accordance with the state-authorized** ~~by the October 2009~~ deadline. **As a result, the 2009 Carroll County Water Resources Element is hereby incorporated by reference into this plan.** It is recognized that other aspects of the plan may need to be amended **in the future given** ~~depending upon~~ the results of the analysis and recommendations contained in the WRE.

### *3 Identify any agricultural or forest lands intended for resource protection or conservation.*

Although the very nature of a growth area contradicts the idea of identifying agricultural lands within it that are intended for conservation, there may be forest lands within the growth area worthy of protection and conservation. Likewise, the town may wish to identify agricultural or forest lands outside of the growth area that are important for implementation of other aspects of the plan, such as water resource protection of the creation of a greenbelt. HB 1141 requires local governments to identify these areas, but as of the writing of this plan, no guidelines were available to assist in the process. Therefore, the town should identify these areas when guidelines are available.

### *4 Protect wellheads, especially those in the vicinity of known carbonate rock areas*

Aquifers that are made up of carbonate rock have a relatively high capacity to move and store groundwater. These areas form some of the most productive land in Carroll County from a water supply perspective, but they are also highly susceptible to environmental contamination. Due to the nature of the aquifer materials, sinkholes are a common feature of this terrain. It is critical, due to the nature and extent of carbonate rock formations in the Union Bridge community, that particular care is taken to protect an adequate buffer area surrounding all sources of groundwater supply.

### *5 Implement the redesign of the MD 75 bridge per the Jackson Ridge subdivision approval*

As part of the plan development for the Jackson Ridge subdivision, extensive studies were undertaken to determine the source of floodwaters along Little Pipe Creek and various ways in which the flooding at the MD 75 bridge over the creek could be lessened. It was determined that adding twin box culverts to the existing structure would facilitate the flow of water under the bridge substantially enough to make flooding a much less frequent occurrence. This work was a condition of subdivision approval and, should the development of the subdivision not proceed for any reason, should be a condition of any other approvals. If the subdivision does not proceed, the Town may wish to explore with the State Highway Administration options for undertaking the bridge work independently. Another pressing issue is the clear marking of temporary alternate routes during flood situations, which must be addressed with the State separate from any



discussions of infrastructure improvements.

*6 Implement proposed greenways along the GA's streams to mitigate runoff and reduce impacts from flooding*

Due to the location of Union Bridge, flooding is a frequent and inevitable occurrence. One of the most effective ways to limit the amount of problems that occur with flooding is not to try to contain the water, it is to get out of the way. By setting strict building standards and anticipating flood conditions, much has been accomplished to prevent property loss during high water events. Measures can also be taken to create additional capacity through the maintenance and enhancement of stream corridors and buffers that allow the environment to absorb additional flood waters.

## FISCAL IMPLICATIONS & ANTICIPATED CIP PROJECTS

*The recommendations contained in this plan may be policy-oriented or action-oriented, and their implementation may be the responsibility of the Town, the County, other public agencies, private landowners and developers, or a combination of these. This section is designed to identify the potential fiscal impacts to the Town and/or County of each of the recommendations. There could be "No Fiscal Impact," meaning the Town or County would not incur direct or predictable expenses as a result of implementing the recommendation, an "Undetermined Impact," meaning there likely would be a cost associated with implementing the recommendation but that cost can not be determined at this time for various reasons, or a "Fiscal Impact," which likely would be incurred by the Town or County if the recommendation were implemented. For recommendations that have an identified fiscal impact, the cost of implementing that recommendation is estimated to the best degree possible.*

*1 Continue to Support Little Pipe Creek Rural Legacy Area applications*

Undetermined Impact: While there likely would be a cost associated with the implementation of this recommendation, the scope would need to be further developed before a reasonable cost estimate could be determined

*2 Work with the County to draft, ~~and~~ adopt **and implement** a Water Resources Element.*

No Fiscal Impact

*3 Identify any agricultural or forest lands intended for resource protection or conservation.*

No Fiscal Impact

*4 Protect wellheads, especially those in the vicinity of known carbonate rock areas*



Undetermined Impact: Sufficient data may be available by the completion of the Water Resources Element to indicate key parcels that may be desirable to protect. Costs may be involved if acquisitions of easements or fee-simple purchases are required to protect highly sensitive areas. The Town also has worked with developers of certain parcels to receive needed environmental resource protection areas through donations.

*5 Implement the redesign of the MD 75 bridge per the Jackson Ridge subdivision approval*

Undetermined Impact: If the improvements are not realized with the Jackson Ridge project, there may be a cost-sharing discussion required to realize the needed improvements. Possible funding partners may involve the County, SHA, the Town or even Federal-level offices.

Fiscal Note: Approximately \$100,000 in design and engineering services already have been expended on this project, and permits and approvals from the Army Corps of Engineers have been obtained. The remaining construction costs for the box culverts and all associated improvements are estimated at \$300,000. As part of the current preliminary plan approval, all costs are to be borne by the developer of Jackson Ridge.

*6 Implement proposed greenways along the GA's streams to mitigate runoff and reduce impacts from flooding*

Undetermined Impact: Thus far, needed buffers and greenways have been able to be acquired via donations in conjunction with the subdivision and site development process. Future areas may also be acquired in the same manner or may require funding to complete easement or fee simple purchase of needed areas.