

*The song of the river ends not at her banks,  
but in the hearts of those who have loved her.*

*Buffalo Joe*





# LAND USE PLANNING AND WATER RESOURCES MANAGEMENT

MD 80, Fingerboard Road

## Introduction

The future of the Monocacy River and its tributaries will be determined by proper land use planning and water resources management. Frederick and Carroll Counties have comprehensive plans, TMDL restoration plans, stormwater plans, and land preservation plans to address community growth, economic development, and environmental protection. The Comprehensive Plans for Frederick County, the Town of Walkersville, and the City of Frederick, and Carroll County's Master Plan are planning tools that provide direction for accommodating desirable development and employment opportunities while maintaining the quality of life. The plans address many concerns, including transportation, schools, parks and open space, different types of development and agriculture. An understanding of existing local land use and water resources management plans and related state and federal programs is an important component of the Monocacy River Management Plan.

The existence of significant natural resources---like an officially designated scenic river---should be a primary factor in how decision makers determine the location, extent, and type of land use, future growth and development in a community. The City of Frederick, Frederick County, Carroll County, and the town of Walkersville each have different visions, adopted plans, policy guidance, and land management to address the Scenic Monocacy River and its corridor.

Historically, towns and communities were located in the River Corridor out of necessity for transportation and early industrial opportunities. While smart growth principles efficiently focus our human settlement into existing established communities and wisely-located growth areas, sustainable development in the River corridor should seek to impose limited or no ecological degradation or limited or no environmental externalities.

*The alteration, conversion, and development of land in close proximity to the River conveys permanence to the lost opportunity for establishing a healthy, vibrant, scenic, and resilient natural environmental corridor along the Monocacy River*



## Monocacy River Resource Protection

The costs and impacts of permanent conversion and encroachment of the River's natural riparian landscape are imposed on and borne by society as a whole. For example, replacing forests or natural fields next to the River with structures and impervious surfaces prevents infiltration of groundwater, exacerbates stormwater runoff, increases flooding risks, eliminates wildlife habitat, and lessens the River's scenic qualities. River encroachments degrade the overall River resource and ecology.

As discussed throughout this Plan, enhancement and protection of the River corridor has multiple social, economic and environmental benefits. From maximizing ecosystem services (water quality and flood protection, nutrient uptake, and habitat provision) to a display of community stewardship and pride, or natural 'asset' management, with its accompanying economic return, the Monocacy River has stature and standing and deserves a prominent place in land use decisions. The River should not be viewed as a secondary afterthought in land use planning or a hindrance in land use.

The resiliency and sustainability of the entire Monocacy River ecosystem is a public good; collective action is needed to ensure a resilient and sustainable Monocacy River, either directly through policy and regulation or indirectly through incentives to market actors to maintain a healthy, productive, functioning River system. Focus on the River as an ecological asset and social resource necessitates the adoption and implementation of River-affirming and promoting policies, sufficient regulatory structures, and political will.

This Plan delineates and proposes a Monocacy River Resource Protection Area (MRRPA) for consideration, which is described in the River Resource Protection Area section (page 10-1) and graphically identified on the River Resource Panel Maps in the Appendix of this Plan. The MRRPA is an area that comprises the Monocacy River's unique environmental, cultural, scenic, and historical qualities, including but not limited to, forestlands, topographic gradients, FEMA floodplain, scenic vistas, wetlands, and Ecologically Significant Areas. The overall goal of the Monocacy River Resource Protection Area is to:

**Protect, conserve, and enhance significant Monocacy River resources, and their ecological functions and values that provide environmental, social, and economic benefit to Frederick and Carroll County residents.**

The proposed MRRPA includes sensitive River front land where ecological restoration activities such as reforestation, wetland enhancement and habitat improvements would be targeted. The proposed MRRPA could also function as a setback line whereby the Scenic Monocacy River is separated or 'buffered' from land development activities, including land grading and construction. These functional applications would eliminate, minimize or mitigate impacts to the Monocacy River, its water quality, resources, wildlife habitat, and scenic qualities, as described throughout this plan. The creation of a Monocacy River Resource Protection Area is fully consistent with state law, as contained in

Maryland's Wild and Scenic Rivers Act (§8-401, NATURAL RESOURCES ART., MD Code Ann.): *The policy of the State is to preserve and protect the natural values of these rivers, enhance their water quality, and fulfill vital conservation purposes by wise use of resources within their surrounding environment.*

A Monocacy River setback or buffer line is a direct and straight-forward land management tool to help achieve the goals for protection, conservation and enhancement of the MRRPA. Application of a River setback would require a portion of a parcel or lot that provides important natural processes and environmental protection to remain unimpacted by land development and conversion. These natural, beneficial processes include buffering flood impacts, providing water filtration, protecting water quality, and wildlife habitat. Adoption of regulatory mechanisms to provide protection of the MRRPA through a river setback or buffer would require legislative action by the River jurisdictions.

Frederick County acknowledges, through adopted policy guidance, the importance of protecting the Monocacy River Corridor. Action Item NR-A-07, from the Frederick County Comprehensive Plan, states the following: *"Establish a new variable-width development setback/buffer area, specific to Catoctin Creek and the Monocacy River, which addresses water quality protection, topography and other landscape elements, wildlife habitat, historic and archaeological resources and scenic viewsheds."*

## History of State Land Use Planning

Maryland has a very long history of state level planning dating back to the 1920's with the establishment of a State Planning Commission and the adoption of Article 66B, which provided local governments that implement planning and zoning with guiding legislation. Since the 1990's the State has taken a proactive role in implementing smart growth principles on a statewide level and mandating the inclusion of new comprehensive plan elements. Some notable State legislation addressing land use is summarized below:



### Planning Act of 1992

The Economic Growth, Resource Protection and Planning Act, amended Article 66B of the Annotated Code of Maryland (now referenced as the Land Use Article of the Annotated Code of Maryland), which centered on concentrating development in suitable areas, protecting sensitive natural resources, and establishing funding mechanisms to achieve the following Planning visions:

1. Development is concentrated in suitable areas.
2. Sensitive areas are protected.
3. In rural areas, growth is directed to existing population centers and resource areas are protected.
4. Stewardship of the Chesapeake Bay and the land is a universal ethic.
5. Conservation of resources, including a reduction in resource consumption, is practiced.
6. To assure the achievement of items (1) through (5) of this section, economic growth is encouraged and regulatory mechanisms are streamlined.
7. Adequate public facilities and infrastructure under the control of the county or municipal corporation are available or planned in areas where growth is to occur.
8. Funding mechanisms are addressed to achieve these Visions.

The 1992 Planning Act also required local governments to review and, if necessary, update their Comprehensive Land Use Plans on a six-year cycle, and to incorporate and implement the Planning Visions through the Comprehensive Plan.

### **1997 Priority Funding Areas Act**

The 1997 Priority Funding Areas Act directs State funding for growth-related infrastructure to Priority Funding Areas (PFAs), providing a geographic focus for State investments in growth. PFAs are existing communities and places where local governments want State funding for future growth. Growth-related projects include most State programs that encourage growth and development, such as highways, water and sewer system construction, economic development assistance and State leases or construction of new office facilities. The 1997 PFA Act also established the Rural Legacy Program that provides funding to identify and protect the State's most valuable farmland and natural resource areas.

### **2006 Land Use Planning Initiatives**

The 2006 Maryland Legislative session produced several planning related requirements that modify the way Maryland's counties and municipalities exercise planning and zoning authority. The specific legislation was House Bill 1141 and House Bill 2, described below:

- Water Resources Element (WRE)—addresses the relationship between water and wastewater capacities with planned growth. The three components of the WRE include drinking water supply; wastewater treatment and disposal; nonpoint source pollution and stormwater management
- Municipal Growth Element—requires municipalities to identify areas for future growth consistent with a long-range vision, coordination with County governments and recommends the use of joint planning agreements between the municipality and the county
- Priority Preservation Element—for counties with certified agricultural land preservation programs, it requires 'priority areas' to be identified, prioritized, and targeted for preservation

### **Smart Growth and Sustainable Growth Act of 2009**

These amendments to the Land Use Article were geared towards protecting Maryland's environment and natural resources and to promote sustainable growth in Maryland. In addition, the new Planning Visions law modernizes the State's eight existing planning visions with 12 new visions that reflect more accurately Maryland's ongoing aspiration to implement sound growth and development policy.

**QUALITY OF LIFE AND SUSTAINABILITY:** a high quality of life is achieved through universal stewardship of the land, water, and air resulting in sustainable communities and protection of the environment;

**PUBLIC PARTICIPATION:** citizens are active partners in the planning and implementation of community initiatives and are sensitive to their responsibilities in achieving community goals;

**GROWTH AREAS:** growth is concentrated in existing population and business centers, growth areas adjacent to these centers, or strategically selected new centers;

**COMMUNITY DESIGN:** compact, mixed-use, walkable design consistent with existing community character and located near available or planned transit options is encouraged to ensure efficient use of land and transportation resources and preservation and enhancement of natural systems, open spaces, recreational areas, and historical, cultural, and archeological resources;

**INFRASTRUCTURE:** growth areas have the water resources and infrastructure to accommodate population and business expansion in an orderly, efficient, and environmentally sustainable manner;

**TRANSPORTATION:** a well-maintained, multimodal transportation system facilitates the safe, convenient, affordable, and efficient movement of people, goods, and services within and between population and business centers;

**HOUSING:** a range of housing densities, types, and sizes provides residential options for citizens of all ages and incomes;

**ECONOMIC DEVELOPMENT:** economic development and natural resource-based businesses that promote employment opportunities for all income levels within the capacity of the State’s natural resources, public services, and public facilities are encouraged;

**ENVIRONMENTAL PROTECTION:** land and water resources, including the Chesapeake and coastal bays, are carefully managed to restore and maintain healthy air and water, natural systems, and living resources;

**RESOURCE CONSERVATION:** waterways, forests, agricultural areas, open space, natural systems, and scenic areas are conserved;

**STEWARDSHIP:** government, business entities, and residents are responsible for the creation of sustainable communities by collaborating to balance efficient growth with resource protection;

**IMPLEMENTATION:** strategies, policies, programs, and funding for growth and development, resource conservation, infrastructure, and transportation are integrated across the local, regional, state, and interstate levels to achieve these Visions.

**2012 Sustainable Growth and Agricultural Preservation Act**

Commonly known as the ‘Septic Bill,’ this law addresses rural land development that utilizes on-site sewage disposal systems—septic systems, and requires the identification of “Tiers” that describe the locations where the use of septic systems for residential subdivision is more tightly managed.

**Frederick County**

Frederick County’s Comprehensive Plan, Many Places, One Community, was adopted in 2010, with revisions made in 2012. The Comprehensive Plan, as required by State law, is a grand, comprehensive vision of the future of the County and is designed to guide all decisions regarding land use and development. The Plan recognizes the uniqueness of the County, its assets and history that make Frederick County what is today.



The Comprehensive Plan contains the following themes, which act as chapter headings for the document. Within each chapter, there are numerous goals, policies, and action items for implementing the Plan.

- Introduction
- Planning Framework and Background
- Conserving our Natural Resources and Green Infrastructure
- Protecting and Preserving our Heritage
- Preserving our Agricultural and Rural Communities
- Providing Transportation Choices
- Serving our Citizens
- Supporting a Diversified Economy
- Assessing our Water Resources
- Managing our Growth
- Community and Corridor Plans
- Implementation

The Monocacy River flows for most of its 58 miles through Frederick County, meandering through fertile agricultural land, rich floodplain forests, unique topography and geology, past parkland (e.g., Monocacy Battlefield, Pinecliff Park), historic villages (Bridgeport, Ceresville, Buckeystown, Greenfield), and under 25 bridges. The River is a defining landscape element that knits the fabric of both Frederick County's and Carroll County's histories and communities. Approximately 75 percent of the County's land area is located within the Monocacy River Watershed. Over the years, population growth and land development has moved outward from Frederick City into the County and crossed and engulfed the Monocacy River.



The County's Natural Resource land use designation is described in the 2010 Comprehensive Plan and is used "to identify significant natural resource features to provide guidance for the application of the Resource Conservation Zoning District and other resource protection strategies." The primary features designated Natural Resource, according to the Comprehensive Plan, include mountain areas and the extent of contiguous forest, major streams defined by the County's 20 subwatersheds, and the State's Green Infrastructure features. The Natural Resource land use designation is applied to the entirety of the FEMA 100-year floodplain along the Monocacy River and much, but not all, of the forestlands directly adjacent to the River and its floodplain in Frederick County.

The County's Comprehensive Plan also states, "Natural Resource areas would also support the delineation of natural boundaries for Community Growth Areas." Frederick County's Community Growth Areas include the Monocacy River's floodplain and steep, forested slopes directly adjacent to the River. The River Board questions the delineation of the Community Growth Area as an inclusive boundary, one that incorporates Natural Resource-designated sensitive River resources within areas indicated for growth and development. A Monocacy River-affirming policy is the exclusion of River resources from the County's Community Growth Areas.

The Resource Conservation (RC) zoning district in Frederick County generally matches, within the River Corridor, the areas where the Natural Resource land use plan designation is applied. The RC zoning district is defined in the County Zoning Ordinance as follows: "The purpose of the Resource Conservation Zoning District is to allow low intensity uses and activities which are compatible with the goals of resource conservation to be located within mountain and rural wooded areas. Areas within this district include mountain areas, rural woodlands, and cultural, scenic, and recreation

resource areas. Environmentally sensitive areas within the resource conservation zone, including FEMA floodplain, steep slopes, wetlands and the habitats of threatened and endangered species, will be protected from development” (§ 1-19-5.210, Frederick County Code). The RC zoning district permits subdivision of land and requires a 10 acre minimum lot size. Lots to be used for building must contain an area outside of the floodplain sufficient for placement of structures, septic systems, and wells (§ 1-16-200, Frederick County Code).

The RC zoning district also prohibits buildings and structures on slopes greater than 25% and forest clearing is limited to an area of 40,000 square feet for each home site. Commercial logging is permitted in the RC zone subject to review and approval by the Frederick County Forestry Board. No new public streets are permitted within the RC zone.

Other existing environmental regulation in Frederick County include the following:

**Waterbody buffer**—a variable width buffer of 100-150 feet from the bank of any stream, pond, lake or river (including the Monocacy River) is required when land undergoes subdivision in any zoning district. Development activities, including grading and construction, on parcels not subdividing are subject to a 50-ft waterbody buffer.

**Floodplain and wetland regulations**—Frederick County does not permit grading, impervious surfaces or construction within floodplain areas and wetlands. A 25-foot setback for both wetlands and floodplains is required. Minor wetland and floodplain alterations are allowed with applicable federal and state approval (§ 1-19-9.110, Frederick County Code).

The MRRPA encompasses features listed in the RC zoning district, including 100-year floodplains, slopes, wetlands, woodlands, as well as Ecologically Significant Areas (ESAs), which include the habitat of threatened and endangered species, and other River-related resources. However, not all River-related environmental, cultural or scenic resources, indicated as appropriate for RC zoning, are zoned RC in the County. These resource areas lack measures to fully maintain and protect their integrity, function and role in the Frederick County environment.

## Carroll County

Adopted in February 2015, the 2014 Carroll County Master Plan is the second revision to the original 1964 plan. The quality of life afforded to County residents has and continues to entice new residents to the County today as evidenced by safe neighborhoods, good schools, relatively uncongested roads, and attractive, less expensive housing and cost-of-living compared to surrounding jurisdictions.

Carroll County is bordered to the north by Pennsylvania, to the west by Frederick County, to the south by Howard County and the east by Baltimore County, Maryland. It encompasses approximately 456 square miles. Carroll County has a population of 172,098 people and 62,193 households as of November 2015. (<http://ccgovernment.carr.org/ccg/complanning/Demographics/HouseholdByElectionDistrict.pdf>)

### Carroll County's Future Vision

Carroll County is a great place to live, work, and play. The County conserves and promotes its unique rural agricultural heritage, protects its environmental resources, and promotes a balanced approach to new development and economic opportunities consistent with the fabric of its communities.



Carroll County values, and citizens' unalienable rights of life, liberty, and property, are respected, protected, and sustained.

The 2014 Master Plan outlines 15 goals to promote the public health, safety, and welfare. The vision of the Master Plan is achieved through these goals. Of the 15 goals, nine relate to the County's commitment to conservation and coordination of these efforts. These goals are as follows:

**Goal 1**

Promote communication and coordination between and among the County, the municipalities, and state and regional jurisdictions on projects and issues of mutual concern. Encourage the involvement of the community in developing, amending, and implementing the Master Plan.

**Goal 2**

Ensure respect for unalienable individual rights; encourage community involvement in planning in an open two-way communication process; encourage the involvement of the community in planning and implementing the Master Plan; provide participants with a balanced perspective on planning goals while promoting the need to respect private property rights; and accurately advise participants of the tradeoffs between various forms of development based on real-world effects.

**Goal 3**

Protect and enhance the water quality of Carroll County's rivers, streams, reservoirs, and aquifers; comply with applicable state and federal requirements related to water quality and quantity; and maintain and protect adequate water supplies to serve current and planned development.



Starner's Dam

**Goal 7**

Preserve at least 100,000 acres of agricultural land to support the production of agricultural products and promotion of related agribusiness.

**Goal 8**

Preserve 80 percent of undeveloped land in the Priority Preservation Area, as adopted by the Board of County Commissioners.

**Goal 9**

Provide an affordable, coordinated and comprehensive system of public and private parks, recreational facilities and programs, and open space that will enhance our communities.

**Goal 10**

Preserve the county’s historic, cultural, scenic, and architectural heritage.

**Goal 11**

Protect, maintain, and restore, where feasible, the environmental resources and natural ecosystems in the County by promoting land use practices that are in balance with, and minimize the effects on the natural environment, subject to appropriate cost/benefit analysis.

**Goal 14**

Facilitate a development pattern that remains consistent with the fabric of our communities, is in harmony with the surrounding built and natural environments, encourages community interaction and, in rural areas, preserves the County’s rural character.

**Goal 15**

Pursue policies that facilitate development in appropriate areas, including the Designated Growth Areas, thereby protecting and conserving agricultural and environmental resources, preserving open space, and providing public facilities and services efficiently and cost-effectively.

Development in Carroll County has been guided by a master plan since 1964. The basic premise of the plan has been to direct development into and around the County’s nine Designated Growth Areas (DGAs) while retaining the rural character and agricultural use of the surrounding land. Implementation of that premise was strengthened in 1978 through the adoption in the subdivision regulations of a lower density lot yield calculation formula for properties in the Agricultural Zone.

The 2014 Carroll County Master Plan designates over 88 percent or approximately 203,000 acres, of the land to Agriculture and Resource Conservation uses. These designations will then equate to Agricultural and Resource Conservation Zoning districts with the implementation of the Plan. The majority of the Monocacy River Watershed in Carroll County is comprised of these lands.

Carroll County’s Master Plan designation of resource conservation is applied to the majority of the land and resources adjacent to the Monocacy River and extends eastward to include the entirety of many large agricultural properties.

The agricultural land use designation is shown on the final 4.3 miles of the River in Carroll County (from approximately Sixes Bridge Road to Double Pipe Creek), which includes the same resources ---FEMA floodplain, forestlands, agricultural properties, etc---as the northern portion of the River that has a resource conservation land use designation.



The 2014 Carroll County Master Plan defines resource conservation areas as “land that is occupied by natural or environmental resources, including wooded areas and forests, wetlands, streams, ponds, steep slopes, floodplains, natural vegetation, fish and wildlife and their habitat. These are areas where, because of natural geographic features, it is considered feasible and desirable to conserve open spaces, water supply sources, woodland areas, wildlife, and other natural resources. This may include extensive steeply sloped areas, stream valleys, water supply sources, and adjacent wooded areas. Residential, commercial, and industrial development should be directed to areas with a land use classification for that purpose.”

The agricultural land use designation is defined as “the use of land for growing of crops, dairying, pasturage, horticulture, floriculture, viticulture, or animal/poultry/honeybee husbandry.”

The County’s conservation zoning district permits subdivision of land with a three acre lot size for residential uses and a five acre lot size for all other permitted uses within the conservation zone (§1-158.071 Carroll County Code). The County is currently revising its conservation zoning regulations as well as undertaking a countywide comprehensive rezoning to implement the 2014 Master Plan.

The Carroll County Water Resources Code (Chapter 154) is designed to protect and maintain ground and surface waters of the County. The variable width buffer has a required minimum width of 50 feet from streams, and wider widths where wetlands and steep slopes are present. Carroll County’s Floodplain Management Code (Chapter 153) provides a unified, comprehensive approach to protect the 100-year floodplain from grading and/or development impacts.

Stormwater runoff associated with new development---in both Carroll and Frederick Counties---is managed by using environmental site design (ESD) to the maximum extent practicable. These concepts attempt to maintain, as closely as possible, natural landscape runoff characteristics after a site is developed with rooftops, roads, and parking lots.

### **The City of Frederick**

Established in 1745, The City of Frederick is the County seat of Frederick and is the third largest municipality in Maryland. Its location in the geographic center of Frederick County, with the convergence of several major interstate highways, makes the City the economic, cultural, and population center of Frederick County. The Monocacy River winds through the City for approximately nine miles.



Photo by Kai Hagen



The City's population has nearly doubled in 25 years since the original Monocacy River Plan was published, increasing from 40,148 (1990 Census) to the City estimate of 70,400 persons in 2015. Municipal annexations, whereby a city or town enlarges its borders by adding land adjacent to its current borders, has been the primary driver of population growth in the City of Frederick. The City projects a 2030 population of 92,000.

The City of Frederick acknowledges that the Monocacy River is "one of the City's most important natural resources" as stated in their 2010 Comprehensive Plan. However, the list of the Sensitive Areas addressed in the City's 2010 Plan does not specifically include the Monocacy River (page 76, Chapter 4, Municipal Growth Element). Detailed mention of the River is subsumed by the statement about the River's watershed, contained in the Municipal Growth Element of the 2010 Plan: "Given the Monocacy River watershed's importance to Frederick and the diversity of its sensitive areas, this habitat should continue to receive special consideration." The critical reader may ask to where "this habitat" is referring—the sensitive areas within the River corridor or the sensitive areas in the River's watershed (the entire City is located within the River's watershed).

The City has secured land along the Monocacy River for trails, open space, public parkland, and forest protection as part of the land development process, but results are somewhat inconsistent and lack coherence, with widely varying widths of open space along the River. In some cases, land development has encroached within 20 feet of the Monocacy River, impacting the health, productivity, and resiliency of the River corridor, the River's water quality, and wildlife habitat.

The City has laudable goals and policies relating to water quality, environmental protection, and parkland contained in their 2010 Plan, including the following notable adopted policies:

- Provide an adequate and safe drinking water supply to serve the existing and future residents of the City of Frederick (WRE 2)
- Encourage protection and restoration of ecologically sensitive lands to protect water quality and to conserve and increase forest canopy (EN 2)
- Minimize the environmental impacts of development through Best Management Practices (EN 3)
- Continue to identify opportunities for additional parks and open space (PR 1)

There is no policy in the City's Comprehensive Plan that specifically addresses protection, enhancement or management of the Monocacy River, a State-designated Scenic River that flows for approximately nine miles through the City. However, two City policies regarding annexations and land development are clear and could easily be interpreted and implemented to better address River corridor management and protection. Chapter 6 of the City's Comprehensive Plan states, "Development plans for annexed area should take into consideration the effects of new development on surrounding natural resources." An implementation item under Environmental Policy No. 5 states, "Increase the amount of dedicated recreation land located outside of floodplain areas." The City (and all jurisdictions with Monocacy River-front land within their borders) should recognize that the River's riparian environment and related resources are comprised of more than just the 100-year FEMA floodplain, which is the minimal default regulatory element. The Monocacy River Resource Protection Area encompasses steep and moderate slopes, wetlands, forest lands, viewsheds, and ecologically sensitive areas.

Since 1990, the City has annexed into their borders approximately 700 acres along the Monocacy River, including two recent River-front areas: 110 acres along the River at Biggs Ford Road, and 52 acres on the west side of the River, south of I-70. While these 2 recent annexation areas remain

undeveloped in 2015, the City, during its future development review and approval process, has an opportunity to actively engage and apply its land use policies to ensure a productive and healthy River ecology, protect sensitive River resources and enhance the scenic and recreational features of the River's riparian corridor.

### Walkersville



The Town of Walkersville (2010 population: 5,800) also borders the Monocacy River, with just 1.5 miles of River-front land within its current borders. The Town's 2011 Comprehensive Plan describes and depicts a future Town boundary--annexation limit-- that extends further westward and runs nearly 3.5 miles north along the Monocacy River to Devilbiss Bridge Road. The vast majority of the lands within the future annexation limit, now in the County, are enrolled in the County's Agricultural Preservation Program. The Town's Plan describes these preserved farms as its "Agricultural Buffer," which will act as a permanent development buffer between the City of Frederick and the Town.

Another small area extending 0.80 miles along the River south of the existing Town boundary is also shown for future annexation, which would bring the total Monocacy River-front land within the Town of Walkersville (after annexation) to 5.9 miles, from Devilbiss Bridge Road south to MD 26, Liberty Road. This southern annexation area is part of the 290-acre "Monocacy River—Waterside" Ecological Significant Area (ESA).

The Town's Plan has very succinct descriptions of floodplains, aquatic and terrestrial resources, as well as 'conflicting activities.' The Natural Features chapter, page 38, states:

"The areas along rivers and streams require careful management, not only to protect property from damaging floods, but also to avoid overburdening or losing these resource areas. Potentially conflicting activities, such as agriculture, recreation, manufacturing and wastewater treatment often depend on nearby water sources. Streams and rivers, along with their associated floodplain and woodland areas, are also environmental resources, serving as wildlife habitats and corridors for wildlife movement."

The Town's Plan also identifies the Monocacy River's (and Glade Creek and Israel Creek) corridor as a priority area for forest plantings as part of the Forest Conservation Act (administered by Frederick County).

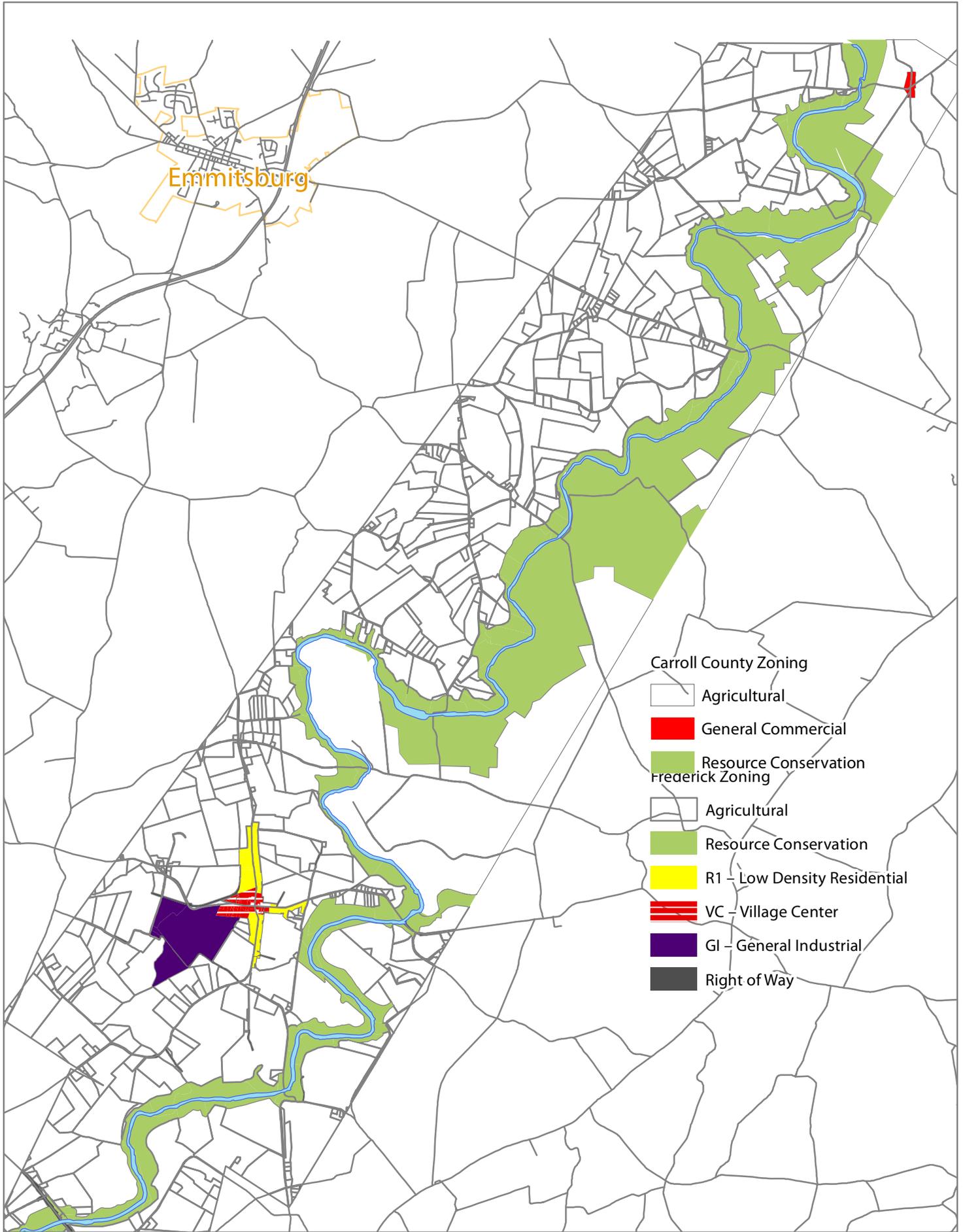
### Adams County, Pennsylvania

#### Land Use and Water Resources

Adams County is located in south-central Pennsylvania (PA) along the Maryland border, surrounded by Cumberland, Franklin and York Counties in PA, and Carroll and Frederick Counties in Maryland.

The county covers a total of 526 square miles which is divided between two major watersheds. The southwestern half drains into the Potomac River by the Monocacy tributaries. Approximately 44 percent of the county falls within the Monocacy Scenic River Watershed area; the Rock and Marsh Creek Watersheds cover about 143 square miles, or about 27 percent of the county. The Monocacy's headwaters begin in Adams County, Pennsylvania. Land use and water resource management in this part of the upper watershed does effect the River's water quality and quantity.

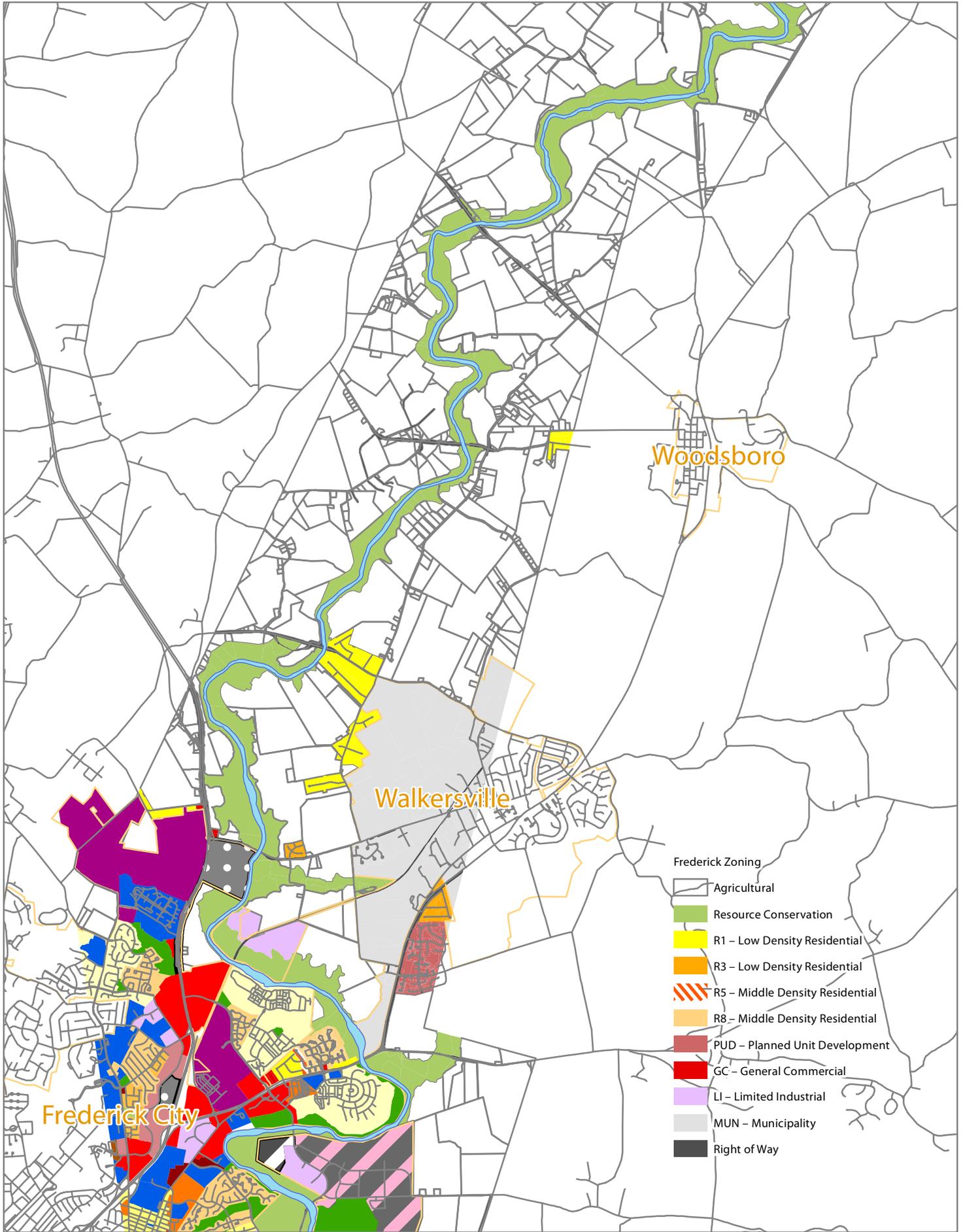
# Monocacy Zoning Section 1



0 0.5 1 2 Miles  
Projection: NAD 1983 State Plane Maryland FIPS 1900 Feet



# Monocacy Zoning Section 2



0 0.5 1 2 Miles

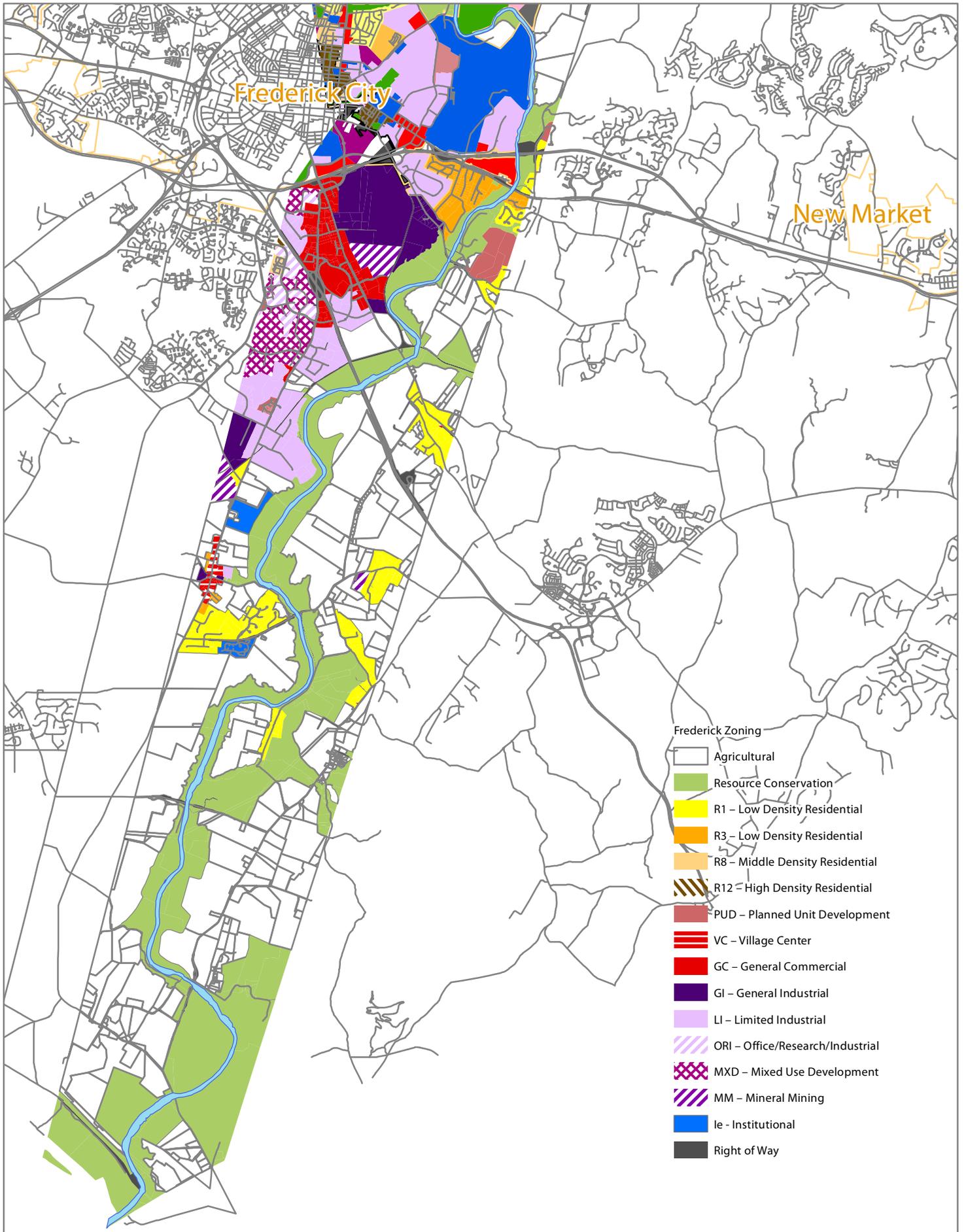
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Source: Frederick County Division of Planning and Permitting, Carroll County Department of Planning.





# Monocacy Zoning Section 3



### Frederick Zoning

- Agricultural
- Resource Conservation
- R1 - Low Density Residential
- R3 - Low Density Residential
- R8 - Middle Density Residential
- R12 - High Density Residential
- PUD - Planned Unit Development
- VC - Village Center
- GC - General Commercial
- GI - General Industrial
- LI - Limited Industrial
- ORI - Office/Research/Industrial
- MXD - Mixed Use Development
- MM - Mineral Mining
- Ie - Institutional
- Right of Way

0 0.75 1.5 3 Miles  
Projection: NAD 1983 State Plane Maryland FIPS 1900 Feet





**Adams County Population**

Year	Population
1990	78,274
2000	91,292
2010	101,407
2030 (projected)	128,893

Adequate water supply, water quality, and the protection of water resources have been ongoing concerns in Adams County for many years. Since counties are only advisory due to the governmental structure in PA, the State and local municipalities are charged with enacting and enforcing regulations on water supply, water quality or prevention of water resources.

Surveys by the Pennsylvania Department of Environmental Protection have been completed to see if the streams were attaining the water quality standards based on the designated or existing use(s) of each stream. Some sections of the streams have been found not to meet their designated use (also known as "impaired"). Little Marsh Creek, Marsh Creek, Mummasburg Run, Plum Run, Rock Creek, Stevens Run, White Run, and Willowby Run all have sections that are considered impaired. The sources for impairment are listed as Agriculture, Industrial Point Sources, Small Residential Runoff, Urban Runoff/ Storm Sewers. The causes of the impairments are from excess nutrients, siltation, and unknown toxicity. The streams are resurveyed when necessary.

In 2012, Toms Creek and Middle Creek were surveyed for the abundance of Fecal Coliform Bacteria. Elevated levels of bacteria

*Primarily the 100-year floodplain area has the most regulation in terms of construction, uses, and activities around a waterway but, as the two accompanying images of the September 1975 Hurricane Eloise show, land around the River was inundated beyond the 'boundary' of the FEMA 100-year floodplain (shown by blue line). Protection of infrastructure, properties, structures as well as the health, safety and welfare of residents requires resiliency planning with bold and progressive land management for adaptation to more impactful and altered weather regimes.*



## Safe Yield of a Public Water Supply

According to the American Society of Civil Engineers' *Water and Wastewater Control Engineering*, the safe yield of a public water supply is the maximum dependable draft (withdrawal) that can be made continuously on a source of water supply during a period of years during which the probable driest period or periods of greatest deficiency in water supply is likely to occur.<sup>1</sup>

1) Joint Committee of American Public Health Association, ASCE, American Water Works Association, and Water Pollution Control Federation, New York, NY: American Society of Civil Engineers, 3rd ed.



Front page from *The News*, September 12, 1966

were present throughout most of the two watersheds as they passed through residential and agricultural areas. However, the sources of the bacteria have not been identified.

Two of the biggest changes in agricultural practices in Adams County since 1990 has been the change towards “no till planting” and new nutrient management regulations. No till has been increasing in popularity with the local farmers. Also, State nutrient management regulations have become more stringent, specifically dealing with phosphorus application.

In 2013, the Adams County Conservation District adopted Well and Geothermal Standards for private wells and started endorsing a model well ordinance that could be adopted by local municipalities.

In an effort to better understand the quantity of water available in Adams County, different water quantity programs have been created: monthly groundwater levels are being collected by the Conservation District, a volunteer precipitation monitoring program has been established, and staff are providing gauge monitoring by the Watershed Alliance of Adams County.

Adams County plans containing general policies regarding conservation, water quality, and environmental protection include the following:

- Adams County Comprehensive Plan (1991)
- Monocacy River Watershed Stormwater Management Plan (2002)
- Adams County Stormwater Management Plan (2012)
- Adams County Greenways Plan (2010)
- Adams County Water Supply and Wellhead Protection Plan (2001)
- Critical Area Resource Plan-Marsh and Rock Creek Watersheds (2012)



Inundation area for the Sixes Bridge Dam.

In 1999, the Watershed Alliance of Adams County (WAAC) was incorporated into the Pennsylvania Department of State. It is a non-profit organization whose goals are:

- Help residents better understand the complex watershed issues affecting Adams County
- Encourage sound water management and land use practices that will promote a sustainable watershed resource
- Support a county-wide water monitoring program and database for use for evaluating water resources
- Identify and carry-out watershed improvement projects
- Maintain the viability and sustainability of the WAAC

### Water Impacts

Watershed-wide water quality impacts are varied and occur over a huge land area, impacting hundreds of miles of streams in the Monocacy's watershed and the Monocacy River directly. The Monocacy River is the end-point for all the streams in the watershed that drain the land and collect pollutants along the way.

Protecting water quality and controlling water pollution from all land uses is, essentially, a human health and safety issue. We all have a stake—a responsibility—in maintaining the Monocacy River's

health and protecting its water, as we depend on it as a source of drinking water and a resource for fishing, boating, and swimming. If sediment or other pollutant or toxin in the Monocacy River increases, additional strain will be placed on expensive water treatment processes and facilities; the River's aquatic biology will be harmed and the River negatively impacted. There is unassailable logic in long-term investments in the protection of a vital community and ecological asset like the Monocacy River.

Investment, incentives, regulation, and management actions for water quality and environmental protection in a watershed can decrease treatment costs of water for public consumption. The most famous example of this is the public water supply for New York City which is protected at the source in the Catskill Region of New York State.

### **The Declaration from Maryland's Wild and Scenic Rivers Act ( §8-401, Annotated Code of Maryland)**

*States, "Many of the rivers of Maryland or portions of them and their related adjacent land areas possess outstanding scenic, geologic, ecologic, historic, recreation, fish, wildlife, cultural, agricultural and other similar values. The policy of the State is to preserve and protect the natural values of these rivers, enhance their water quality, and fulfill vital conservation purposes by wise use of resources within their surrounding environment."*

#### **Water Use**

The Monocacy River is used by the US Army Garrison at Ft. Detrick through Water Appropriation and Use Permit FR1943S001(03) issued by the Maryland Department of the Environment (MDE). Ft. Detrick is permitted to withdraw an average of 2.0 Million Gallons per Day (MGD) from the Monocacy River, with a maximum withdraw of 2.6 MGD.

The City of Frederick uses the Monocacy River as one of its four (4) sources of public drinking water, supplying approximately 27 percent of the City's total public drinking water. The City's Water Appropriation and Use permit (FR1961S001) allows for withdraws of 3.0 MGD, but contains a flow-by requirement whereby withdrawals must cease in order to maintain the health of the River's aquatic ecology: If the River's flow rate falls below 29 cubic feet per second (cfs) at the Jug Bridge Gauge, the City cannot withdraw water from the Monocacy. River flows below 29 cfs at Jug Bridge have been recorded for only 27 days during the 1929—2003 historical record, occurring during the droughts of 1966 and 2002.

The droughts of 1999 and 2002, coupled with the City's overallocation of the Monocacy River's water in the 1990's for land development approvals, led the MDE to declare the Monocacy River to have no safe yield as a public water source for the City of Frederick. A Consent Order (CO-02-01-WS, June 28, 2002) from MDE reduced the City's usage of the Monocacy River from 5.7 MGD (average annual) and 8.5 MGD (maximum day) to 3.0 MGD, with the new 'low-flow' or flow-by requirements previously mentioned.

In 2006, the City and County signed the Potomac River Water Supply Agreement which allocates and sells up to 8.0 MGD (maximum day, with ultimate procurement of 12 MGD) of water from the County's Potomac River supply for use by the City of Frederick. Prior to this 2006 agreement that supplied the City with additional water capacity, the Monocacy's use as a public water supply during droughts was severely constrained.

### Water Supply

The Monocacy River is a fragile resource and crisis management to ensure public health, safety, and welfare (as well as River ecology) has been employed to ensure the sustainability of this resource.

One of the most severe droughts in Maryland occurred in 1966, when the Monocacy River reached a low of 17 cfs (or 11 MGD) below Frederick at the Jug Bridge Gauge on September 13, 1966. The 1966 drought prevented the City from using the Monocacy River for 56 days, when the River's flow rate fell below its then historical flow-by rate of 45 cfs (29 MGD). As a comparison, the 86-year average Monocacy River flow at Jug Bridge is 1030 cfs (665 MGD); the highest recorded flow was 81,600 cfs (52,739 MGD), which occurred during Hurricane Agnes on June 23, 1972.

Another drought in 1999 reduced the City's use of the Monocacy for 12 days (Frederick News-Post) and in 2002, the City was considering planned water outages as the River's flow was predicted to be below the flow-by rate for 60 to 70 days (Frederick News-Post)

### Sixes Bridge Dam

Historical attention to water quality issues originated from health impacts on humans. By the 1890's epidemics of cholera and typhoid led public health officials to begin bacteriological testing. Legal issues with controlling pollution soon became interstate issues.

Filtration and chlorination of drinking water for urban areas ensued. Long before larger public awareness resulted in Chesapeake Bay regulations and concerns, the property rights movement fought to protect landowners whom pollutions effected. Early movements by groups like the Izaak Walton League in the 1920's for water quality led to initial conservation efforts.

Studies and reports continued to demonstrate issues with national waters until Congress began to notice and react. By 1940 Federal water quality regulations were adopted nationally, and in our region the Interstate Commission on the Potomac River Basin (ICPRB) was formed to address issues of supply and quality (more details about the ICPRB are located in Chapter 9, Water Quality). By the early 1960's Federal studies by the Army Corps of Engineers demonstrated the need to allocate water resources and address adequate supply of potable water supplies for the region. A 1958 study by HHS led to a 1962 report by the Corps to develop future supply sources.



**PACKED HOUSE** — More than 400 persons heard the testimony of speakers Friday night at Catoctin High School as they questioned the need for the proposed Army Corps of Engineers' Sixes

Bridge Dam. A Corps official noted the opposition and said that feeling would be noted in the report to the Division Engineer. (News-Post Photo)

Photograph from the early 1970's, courtesy of the Frederick News Post

The Corps recommended a series of twenty-two regional dams to augment supply. One of these was to be a dam on the Monocacy River near Sixes Bridge Road where natural topography suggested that the damming of a large reservoir was an easily obtainable project that could supply Frederick, Gettysburg and Washington, DC.

Local officials and at first Federal officials supported the project, but local citizens activated against the project plan. For a decade the newspaper accounts argued for and against the project. Local leaders such as Bob Fischer developed a grassroots campaign by citizens called Save the Monocacy.

The Corps declared the project an emergency need for the region. Initial attempts to halt it by U.S. Representative Goodloe E. Bryon were rebuffed in Congress.

Initially positive of a Federal project that appeared to yield Federal dollars and natural and recreational benefits, U.S. Senator Charles Matthias championed the halting of the dam. It was halted in 1974.

By the 1980's, as the Chesapeake's issues gained prominence and regional agreements, groups in Frederick like Community Commons developed to support water quality.

Citizens looked for a platform to turn the efforts for the Monocacy's natural features into a commission to advise local governments in Frederick and Carroll counties on water issues. Local leaders like Jim Gilford campaigned the state to designate scenic rivers, including the Monocacy. Upon designation, a MSRB was created and a management plan adopted in 1992. This plan is an update and extension of that first *Monocacy Scenic River Study and Management Plan*.



Ballenger-McKinney Wastewater Treatment Plant

### **Wastewater Treatment**

Wastewater treatment plants are considered a 'point-source' (where a specific outfall to a waterbody is visible) discharge of pollution and must receive a National Pollutant Discharge Elimination System (NPDES) permit from the Maryland Department of the Environment. These permits specify the allowable ranges for chemical, physical (quantities), and biological parameters of discharge, designed to protect the aquatic life in streams and rivers. Such parameters may include biochemical oxygen demand, total suspended solids, total residual chlorine, coliform organisms, pH, dissolved oxygen, and in most cases, nitrogen, phosphorus, temperature, flow, and other by-products of the wastewater treatment process.

The Monocacy River, as well as many of its tributary streams receives treated effluent from multiple wastewater treatment plants throughout the watershed. The three major wastewater treatment plants (WWTP) discharging directly into the Monocacy River are:

- Ballenger-McKinney (NPDES Permit MD0021822; State Discharge Permit No. 03-DP-0809A)
- Frederick City (NPDES Permit MD0021610; State Discharge Permit No. 90-DP-0801)
- Ft. Detrick (State Discharge Permit No. 08-DP-2527)

Frederick County's main, regional WWTP—Ballenger McKinney—is permitted to treat 15 million gallons per day (MGD) of sewage utilizing Enhanced Nutrient Removal (ENR) and membrane bioreactors, a state-of-the-art treatment system that results in significant reductions in the discharge of pollutants, primarily nitrogen, and phosphorus to permit levels of 3 mg/L total nitrogen and 0.3 mg/L total phosphorus.

The City of Frederick's WWTP is designed and permitted for treatment up to 8 MGD of sewage, with ENR technology.

The US Army Garrison-Ft. Detrick is a federal government facility where biomedical research and development, medical logistics, materials management, and global US Dept. of Defense telecommunications activities occur. The Army's WWTP at Ft. Detrick is designed and permitted to discharge up to 2 MGD of treated effluent into the Monocacy River. The Ft. Detrick WWTP also uses ENR technology.

## Recommendations

### Frederick County

- 6-1) *As part of the preparation and adoption (in 2018) of "Livable Frederick," the Frederick County Comprehensive Plan, the County should critically examine the removal of the Monocacy River and all its resources and attributes, as described in this Plan, from the County's Community Growth Areas*
- 6-2) *As part of the preparation and adoption (in 2018) of "Livable Frederick," the Frederick County Comprehensive Plan, the County should uniformly apply the Natural Resource land use plan designation and the Resource Conservation zoning district to the full array of River-related resources, as described in this Plan*
- 6-3) *Consider the introduction of legislation for adoption of a Monocacy River Resource Protection Area setback line*
- 6-4) *Frederick County should fully support and continue membership in the Potomac River Basin Drinking Water Source Protection Partnership and support the work of the Interstate Commission on the Potomac River Basin*
- 6-5) *Consider the adoption of an official County policy of non-support and non-funding for any future water impoundment on the Monocacy River*
- 6-6) *The River Board should request and review maintenance and inspection reports and hazard mitigation plans from CSX Corporation and the State of Maryland and Walkersville Southern Railroad for all railroad crossings of the River to ensure the health and protection of the Monocacy River is and remains a high priority in such reports and plans*
- 6-7) *The River Board should contact and request that Potomac Edison's utility line right-of-way vegetation management plans include environmentally-sound riparian vegetation management adjacent to the Monocacy River*

- 6-8) *Consider the adoption and incorporation of the Monocacy River Resource Protection Area Boundary in current and future plans, programs, and functions*
- 6-9) *Consider additional operational or regulatory mechanisms to critically examine and limit impervious surfaces and stormwater runoff that will directly impact the Monocacy River*

**Carroll County**

- 6-10) *Consider the adoption and incorporation of the Monocacy River Resource Protection Area Boundary in current and future plans, programs, and regulatory structures*

**City of Frederick**

- 6-11) *Add the 'Recreation' land use designation to the west side of the Monocacy River from the Airport Park Subdivision south to Old National Pike to reflect the existing 'Riverwalk Reservation Easement' and the planned River corridor trail on the Landmark parcel, south of I-70, during the next City Comprehensive Plan update*
- 6-12) *Critically examine requests for alterations to the FEMA 100-year floodplain, especially in the River corridor, in order to maintain riparian function, health, and robustness, and adopt a 'no adverse impact' decision making policy for down-River properties and structures*
- 6-13) *The City of Frederick's Sustainability Plan should be reviewed by the River Board to ensure the Monocacy River receives greater focus, status and attention, above what's included in the City's 2010 Comprehensive Plan*
- 6-14) *"Areas of Interest" on the City of Frederick's 2010 Comprehensive Plan should include specific River corridor protection narratives and policies, as the "Areas" encompass all the land (not already in the City) on the east side of the River from Biggs Ford Road south to Old National Pike*
- 6-15) *Consider the creation and application of a development incentive for future platting and development of lots 9 and 10 in the Airport Park Subdivision in order to obtain a wider River setback, with Forest Conservation Act plantings, beyond the steep forested gradient that exists adjacent to the River*
- 6-16) *Engage and employ Environmental Policy No. 5 from its Comprehensive Plan to "increase the amount of dedicated recreation land outside of floodplain areas" and to create a forested buffer along the Monocacy River to protect River resources during the review and approval of subdivision and development proposals and the "Landmark" property (south of I70) and the "Thatcher/COPT" property (Biggs Ford Rd.)*
- 6-17) *Consider the adoption and incorporation of the Monocacy River Resource Protection Area boundary in its current and future Plans, programs, and functions*
- 6-18) *Consider additional operational or regulatory mechanisms to critically examine and limit impervious surfaces and stormwater runoff that will directly impact the Monocacy River*

**Town of Walkersville**

- 6-19) *To implement policies contained in its 2011 Comprehensive Plan, the Town of Walkersville should rezone the approximately 84-acre portion of Parcel 325 off Retreat Road that contains FEMA 100-year floodplain from Limited Industrial to Agricultural (or some other non-development zone), and consider purchasing the 84-acre floodplain portion for reforestation and habitat improvements, or as a Forest Resource Ordinance 'banking' site.*
- 6-20) *The River Board encourages the Town of Walkersville to require, in conjunction with future annexation agreements, the planting of forest buffers along the Monocacy River to enhance riparian habitats and functions when land is annexed into the Town, with special focus on reforestation of lands in its southern annexation area located within the Monocacy River-Waterside Ecologically Significant Area.*
- 6-21) *Consider the adoption and incorporation of the Monocacy River Resource Protection Area boundary in current and future plans, programs, and regulatory structures.*
- 6-22) *Establish the Monocacy River Corridor as a priority area for land acquisition for open space, parkland, habitat and resource protection*
- 6-23) *Consider additional operational or regulatory mechanisms to critically examine and limit impervious surfaces & stormwater runoff that will directly impact the Monocacy River*

**Adams County, PA**

- 6-24) *Foster more effective communication among Frederick and Carroll Counties with Adams County, Pennsylvania and its Watershed Alliance*