

## Chapter 3

### NATURAL FEATURES/SENSITIVE ENVIRONMENTAL AREAS

The purpose of the Natural Features/Sensitive Environmental Areas chapter is to identify those physical characteristics, natural resources and sensitive areas existing within the Middletown area and to formulate policies and proposals to protect them. The Economic Growth, Resource Protection and Planning Act of 1992, amended Article 66B of the Code of Maryland to require local jurisdictions to incorporate a sensitive areas element into their plans and to adopt corresponding implementing regulations.

#### Background Information

The use and intensity of development on land is often a function of the land itself. Physical characteristics of land such as steep slopes, floodplains and wetlands help determine the pattern of development. Middletown is fortunate to have physical characteristics that have minimal constraints on development. However, the variation of relief and physical features require careful development design in order to protect and enhance the property. Some physical features such as wetlands and woodlands serve an important ecological function and, therefore, should be protected from development. Other features such as floodplains should be protected from development due to the potential hazards from natural disasters. Some physical features can influence what land use types are appropriate for an area of Town. The purposes of this chapter will be to provide basic background information; identify constraints to development; identify issues and make proposals.

Topography/Steep Slopes: The Town of Middletown is centrally located in the Middletown Valley which is best described as an inter-mountain area of steeply, rolling land, narrow streams and rapid fall from north to south. The fall is about 14 ft. per mile (Catoctin Creek) or about five times that for the Frederick Valley. Surrounding the Middletown Valley on three sides are the Catoctin and South Mountains with elevations over 1,700 ft. above sea level.

The land within the corporate limits is rolling with elevations from 430 ft. along Catoctin Creek in the south west part of Town to 660 ft. above sea level, near Middletown High School in the northeast part of Town. There are several large areas on the east side of Town both north and south of Main Street which are relatively level.

The steepest slopes in Middletown occur in the stream valley areas. Because of the proximity to streams, protection of steep slopes as a sensitive area is extremely important. Slopes provide the environment for soil and pollutants to move into the stream system very quickly and at great speeds which can increase erosion and increase the dangers of flooding to human life and property values. Protection of steep slopes along the stream valley is the first step in protecting water quality. Steep slopes with undisturbed vegetative cover slows runoff, filters sediment and can provide cooler streams by the presence of shade. In addition, the steep slopes along the

floodplains provide a natural area for the Town to obtain the benefits of re-forestation. Reforestation along steep slopes also provides aesthetically pleasing areas and habitats for the local plant and animal populations.

The general slopes in Middletown are in the direction of two areas, Catoctin Creek on the west and Cone Branch which flows through the eastern-central portion of Town. The easternmost area of Town slopes to Hollow Creek which is a tributary of Cone Branch. There are two tributaries to Catoctin Creek - Wiles Branch and Tanners Branch, which parallels Main Street and Washington Street and runs from Main Alley to Walnut Street. Most of the undeveloped land in and around Middletown is open with very little tree cover due to the existing farming in the area. Most of the tree cover is found along the stream valleys.

### Floodplains & Wetlands

Identification of floodplain/wetlands is important since these are areas that perform important functions such as water recharge, diversified habitat for plants and wildlife, and storage and channeling of water during high stream flow. Floodplains are defined in several ways and two types of floodplains are used in the Middletown area; the one hundred year floodplain and the annual floodplains. One hundred year floodplains are defined as those floods that could occur once in 100 years on average. One hundred year floodplains are delineated by the Federal Emergency Management Agency (FEMA) for inclusion in their flood insurance program. Middletown adopted the State Model Floodplain Ordinance on April 13, 1992. The annual floodplain is the area which includes soils identified in the Soil Conservation Survey as soils of generally wet land which provides natural water retention.

The four major streams through Middletown all have floodplains. Catoctin Creek and Hollow Creek have been categorized as having a 100 year floodplain. One hundred year floodplain information also exists for Cone Branch and Wiles Branch up to the southern limits of Middletown. All three streams also have associated floodplain soils.

Wetlands are those areas which are inundated with water for a significant part of the year and/or the plant species and soils are typical of those found in wet areas. Frederick County's wetlands are non-tidal wetlands. Non-tidal wetlands perform an important function in controlling floods, supporting wildlife and filtering runoff before it enters the groundwater system. Non-tidal wetlands can also retain water like sponges through the dry times of year.

There are six major areas in Middletown which have been identified as wetlands. These include: two areas along Wiles Creek both north and south of West Main Street; an area along Cone Branch on the north side of Town, west of Coblenz Road; an area south of East Main Street, along Hollow Creek, areas throughout the Glenbrook Subdivision and Foxfield at Hollow Road and Layla Drive. See Figure 3-1 for wetland and floodplain locations.

It is important to note that additional wetlands may be identified through the development review process as specific properties develop and engineering is undertaken.

Soils: The soils in and around Middletown are classified as prime soils. These are the lands best suited to producing food, feed forage, and fiber. The predominate soil types in Middletown are from the Myersville and Fauquier soil series which makes up over 90% of the soil in Middletown. Both the Fauquier and the Myersville Fauquier soils are described as deep, well-drained and highly productive. These soils are commonly associated with the Catoctin soils. There are four areas in Middletown with soils which are classified as floodplain soils and these naturally are along the five streams running through Town: Catoctin Creek; Cone Branch; Wiles Branch; Hollow Creek; and Tanner's Branch. Soils in the Middletown area have been mapped and categorized in the Frederick County Soil Survey according to productivity, resistance to erosion and other factors. A breakdown of these soils indicate that nearly 70% of the land in Middletown is in Class I and II soils which are the two best agricultural soil types.

Streams & Buffers: Streams and buffers are valuable to people and vital to our natural resources. They provide drinking water, recreational fishing, water for irrigation, and habitat for local plant and animal species. The streams which flow through Middletown are part of the larger network of streams which flow to the Potomac River and to the Chesapeake Bay. Protection of stream quality on the local level is important in preserving not only the local resource but the regional resources such as crabs, clams and rockfish. Stream buffers are essential to preserving stream quality. As stated earlier, vegetative buffers provide soil stabilization, filtration of sediment and shading of the stream which maintains stream quality.

The primary waterbody in the Middletown Region is Catoctin Creek which is a winding stream with a 30 year average flow of 72.3 cubic feet per second. In comparison, the Monocacy River in the Frederick Region has a 50 year average flow of 931 cubic feet per second. Although Catoctin Creek is a significant perennial stream, historical records show a low flow of zero during the drought of 1966.

The Catoctin Creek watershed contains 121 square miles and drains 78% of the Middletown Valley. All of those areas around Middletown are within the Catoctin Creek watershed with only those areas in the very southern portion of the Middletown Valley not in this watershed. Catoctin Creek and Hollow Creek serve as the Town discharge for sewage effluent. Catoctin Creek also serves as a recreational resource. Tributaries of Catoctin Creek include Middle Creek, Bolivar Branch, Frostown Branch, Little Catoctin Creek, Hawbottom Branch, Wiles Branch, Tanner's Branch, Cone Branch, and Hollow Creek.

Little Catoctin Creek meets Catoctin Creek just west of Middletown. This area has been proposed in the past for a possible dam site. However, no further studies have been done on this proposal since 1981. The 1969 Frederick County Water & Sewerage Plan included a recommendation for a reservoir on Little Catoctin Creek. However, the 2008 Frederick County Water and Sewerage Plan does not contain a recommendation for a reservoir on Little Catoctin Creek.

Groundwater: The other important water source in the Middletown Valley is groundwater. The Middletown water supply comes from a series of 4 springs and 20 wells located on the western ridge of Catoctin Mountain near Coxey Brown Road. These springs and wells are carried by a pipe to the Town's water reservoir off Hollow Road. It should be noted that soils of the valley

are generally of low porosity and, therefore, unable to store quantities of water large enough to adequately feed the streams during long extended periods of drought. Well yields in the entire Region range from 1 to 225 gallons per minute. The two rock formations, the Catoctin Metabasalt and Mica Schist, have average well yields of 14 and 7 gallons per minute respectively. The Catoctin Metabasalt rock formation is in Hydrologic Unit II which is an average water bearing rock formation. The Mica Schist is in Hydrologic Unit III which is a poor water bearing rock formation.

Habitats of Threatened & Endangered Species: The Maryland Natural Heritage Program has identified a number of rare plant and animal species in Frederick County. Rare species which occur in Frederick County are often found in wetlands and rich forest lands. Some of the rare species are on the State's official threatened and endangered species list, and others are proposed to be added to it. According to the Maryland Department of Natural Resources, there are no known threatened or endangered plant or wildlife species in the Middletown area.

Geology & Mineral Resources: Geologic information is important in several ways. First, rock structure influences land form and drainage pattern. Secondly, rock structure also determines groundwater availability. Geology also determines the available resources for mining purposes.

The Middletown Valley is part of the Blue Ridge Province which is one of two major physiographic regions in Frederick County. There are two predominate geologic strata in and around the Town of Middletown. The Catoctin Metabasalt formation (MB) comprises 80% of the sub-strata north of Middletown and the Mica Schist comprises 80% of the sub-strata south of Middletown. In addition, there is a narrow band of Rhyolite tuff which cuts through the center of Middletown.

Many geologic resources in Frederick County are currently mined, although none are located in the Middletown Region. Limestone, shale, and stone aggregate are mined in the Frederick Valley, east of Catoctin Mountain. No mineral resources in the Middletown Region have been identified as having commercial value in the Frederick County Comprehensive Plan.

### Natural Features Issues

As development interest increases in Middletown and the value of natural resources becomes more widely known, the potential for conflict will arise. One of the purposes of this plan is to identify issues which may need to be addressed. Some of the natural resource issues in Middletown are as follows:

1. The primary tools for protecting natural resources are the Open Space Zoning District and specific restrictions applied during the subdivision review process. One of the purposes of the Open Space District is to preserve natural resources, and prevent erosion and limit development on excessive slopes and floodplains. The Open Space District up to this point has been used primarily for large institutional and park properties. The Open Space District could also be applied more to areas which meet specific criteria for floodplain and steep slopes.

2. The Town of Middletown relies on ground water resources in the Catoctin Mountains east of Middletown. As additional areas are considered for development, large areas should be reserved for future water needs. Identification of these areas would occur through the planning process and review of the water and sewer plan.
3. The Town has adopted a wellhead protection policy to protect our water resources. This policy needs to be further supported by the County strengthening its wellhead protection program as most of our resources exist outside of the municipal boundaries, in the County. The Town has acquired land around its wells and springs outside of the town limits to protect its groundwater resources, however this is a costly endeavor and a stronger county wellhead protection ordinance is needed.
4. New forest conservation laws have been enacted by the State which require implementation by the Town.
5. The Town enacted the State required floodplain regulations which cover FEMA 100 year floodplains. There are additional areas in Town which are floodplain soils such as along Cone Branch. Additional regulations should be enacted to protect this area.
6. To the extent possible, the natural resource areas such as stream valleys should be incorporated into recreational uses and as areas for reforestation to meet forestry regulations.
7. The water quality standards for sewage discharge to Catoctin Creek and Hollow Creek need to be identified to determine the constraints to development potential.
8. The Environmental Protection Agency approved on July 31, 2009, a Total Maximum Daily Load (TMDL) for sediment in the Catoctin Creek Watershed to reduce sediment runoff and discharges into Catoctin Creek and its tributaries. This TMDL could have future quantitative sediment loading limits or caps for all land uses in the Catoctin watershed.

#### Natural Features, Objectives & Policies

Two of the goals of the Middletown Comprehensive Plan are to: Provide for a Quality Living Environment, and Protection of Important Natural Resources and Landmarks. Certainly both of these goals are related to any policies regarding the natural environment. More specific objectives for these goals are as follows:

- A. Protect and Conserve Water Resources

1. The Town shall review development plans outside municipal limits which may impact Town water sources. The Town will keep the County informed of Town's interest in the Middletown Watershed and Catoctin Creek Watershed as an area of critical concern to the Town to protect water resources.
2. The Town shall require environmental waterway easements or designation of open space setbacks along all perennial streams for the purpose of natural resource protection and potential recreational use during the development review process.
3. The Town shall continue to encourage use of water conservation practices through various techniques and devices to promote on-site groundwater recharge to lessen the overall demand on the aquifer.
4. The Town shall regulate development in the floodplain according to the adopted Town floodplain regulations.

B. Encourage Compatibility with Man-Made Development & Natural Environment

1. New development shall minimize the extent of grading and tree cutting as much as possible.
2. Development plans for new development shall indicate the extent of all natural features in order for the Planning Commission to consider the impact.
3. Annexation policies should encourage continued agricultural uses until development occurs.
4. Town shall encourage an agricultural or environmental buffer around the corporate limits.

Natural Features/Sensitive Areas Implementation Recommendations

In order to carry out the goals and policies of the Natural Features/ Sensitive Areas element, the following actions are proposed:

1. Town shall restrict development along all creeks and streams and require a minimum 100 ft. buffer from each bank. This shall be carried out through site plan review by the Planning Commission and adoption of an amendment to the Town Zoning and Subdivision Regulations. The buffer shall include the 100-year floodplain, adjacent non-tidal wetlands, annual floodplain soils, adjacent steep slopes, and in the absence of any of those sensitive areas, a setback measured from the centerline of the stream channel.
2. No development shall be allowed on floodplain soils, or on non-tidal wetlands.

3. Steep slopes along streams shall be priority areas for reforestation under the Middletown Forest Resource Ordinance. This shall be implemented by identification of reforestation areas.
4. The zoning ordinance and subdivision regulations shall be examined for other possible protections for steeply sloped areas.