

# ENVIRONMENTAL RESOURCES PLAN

## **Goals:**

*Protect the region's drinking water supply in the Patuxent River watershed, protect headwaters of streams in the Southeast Quadrant, and conserve natural resources throughout the planning area by minimizing the impacts of human activity on natural resources.*

## **INTRODUCTION**

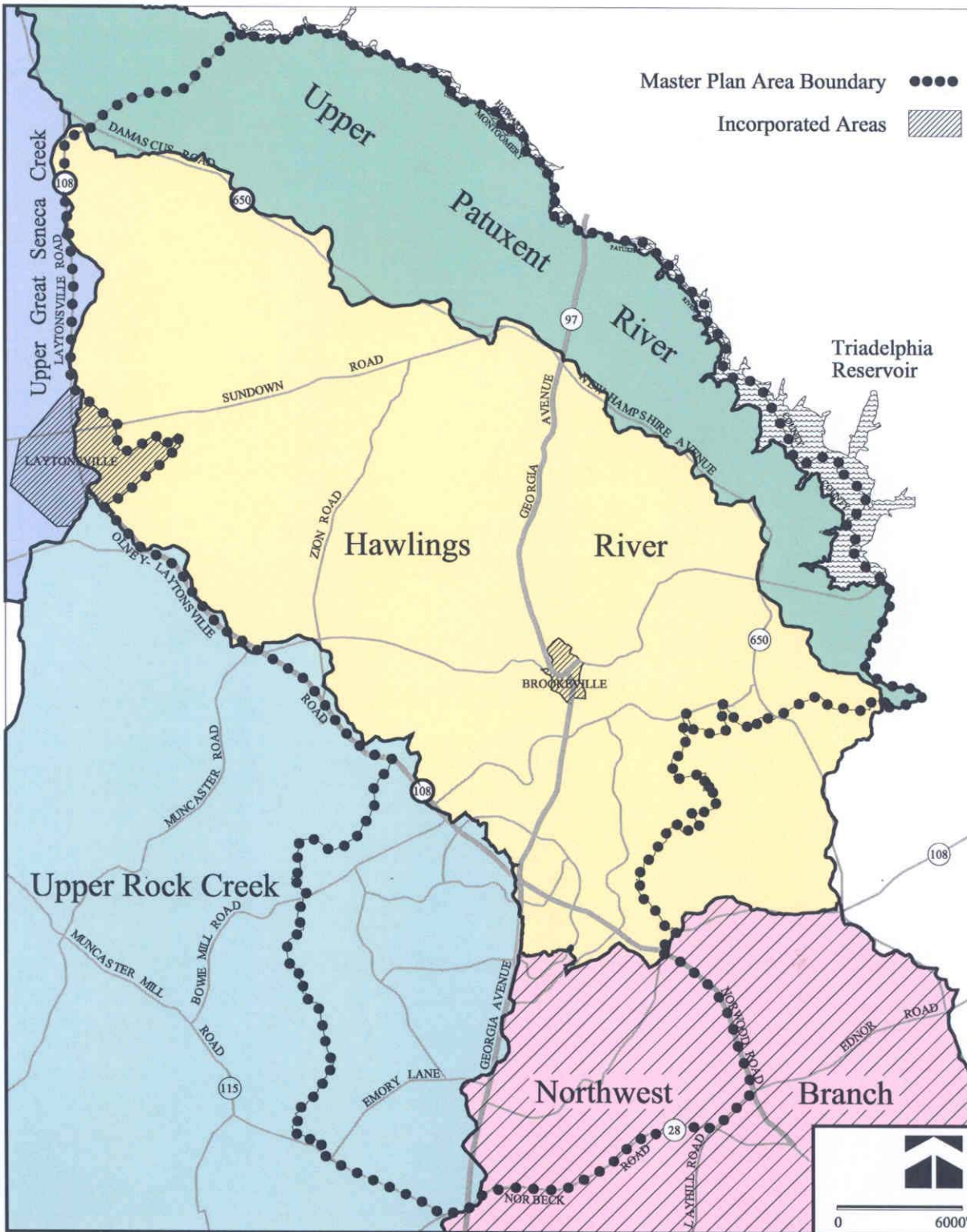
The Olney Master Plan Area is centered on the ridges of three major watersheds: The Patuxent River, including the Hawlings River; Rock Creek; and Northwest Branch. It includes a major part of the drinking water reservoir watersheds of Patuxent and Hawlings Rivers. Overall, most of the subwatersheds in the planning area exhibit healthy environmental conditions. The denser development pattern in and around the Town Center has resulted in poor stream conditions and an absence of significant forest and wetlands in the headwaters of James Creek and parts of the North Branch of Rock Creek. The remaining forest and wetland resources elsewhere are of generally good quality. While many of these resources have been protected in parkland, particularly North Branch Stream Valley Park, the Hawlings River Stream Valley Park, Rachel Carson Conservation Park and Reddy Branch Stream Valley Park, there are still significant environmental resources that need protection from potential development in the future.

This chapter summarizes the conditions of environmental resources in Olney and makes general recommendations regarding their protection and restoration. It fulfills the requirement of The Maryland Planning Act of 1992 that all local plans address protection of environmentally sensitive areas. More detailed information on the existing conditions and environmental policy current as of 2002 is available in a separate publication, *Olney and Vicinity Environmental Resources Inventory* (April 2002). Recommendations on specific properties are contained in the Land Use Chapter of this Plan. More specific actions regarding implementation of some of the recommendations are included in the Implementation Chapter. Potential impacts of a roadway in the Intercounty Connector (ICC) right-of-way, no-build, and an alternate alignment are detailed in the 2004 Draft Environmental Impact Statement.

## **HABITAT RESOURCES**

The forest and wetland areas provide habitat for a range of plants and animals and recreation and educational resources for people. Along streams and waterways, forests and wetlands play a vital role in maintaining water quality by filtering and reducing surface runoff, helping to alleviate flooding, and moderating stream temperature fluctuations. Forests enhance air quality, filtering particulates, absorbing nitrogen oxides, and reducing energy needs by reducing the need for cooling and heating. They also enhance the quality of life of communities by adding natural beauty to the landscape.

# Watersheds



## **FOREST RESOURCES**

Approximately forty percent of the forest resources of the study area are within existing parkland. Deciduous species are the predominant forest type (90%) within the Master Plan area. In the North Branch of Rock Creek, and some areas of the Hawlings and Patuxent Rivers, successional forest is also an important component. Large coniferous forest stands are present in the Hawlings and Patuxent River areas. Several significant coniferous stands exist on land bordering the Triadelphia Reservoir.

A forest resources inventory was conducted in Olney to aid in identifying priority forest stands and locating forest enhancement and reforestation areas in the Master Plan. The existing forests were analyzed to determine their distribution and amount, and to classify them by forest type. The approach and methodology used are described in *the Olney and Vicinity Environmental Resources Inventory* (April 2002).

The forest resources in the planning area were evaluated and priorities set according to the size of forest stand, amount of interior habitat, associated stream resources and other factors. Each forest stand was given a priority and preservation strategies for each were tailored according to the importance of the stand and the ability of the current zoning and regulations to protect it (see Technical Appendix for detailed findings). These findings were instrumental in identifying key forests for protection through acquisition, dedication or conservation easement. In addition, the analyses identified gaps in existing forest where reforestation would significantly enlarge or enhance interior forest stands. It also identified areas of inadequate stream buffer where new forest planting, at time of subdivision or as part of park improvements, will greatly enhance the habitat and water quality benefits of existing forest.

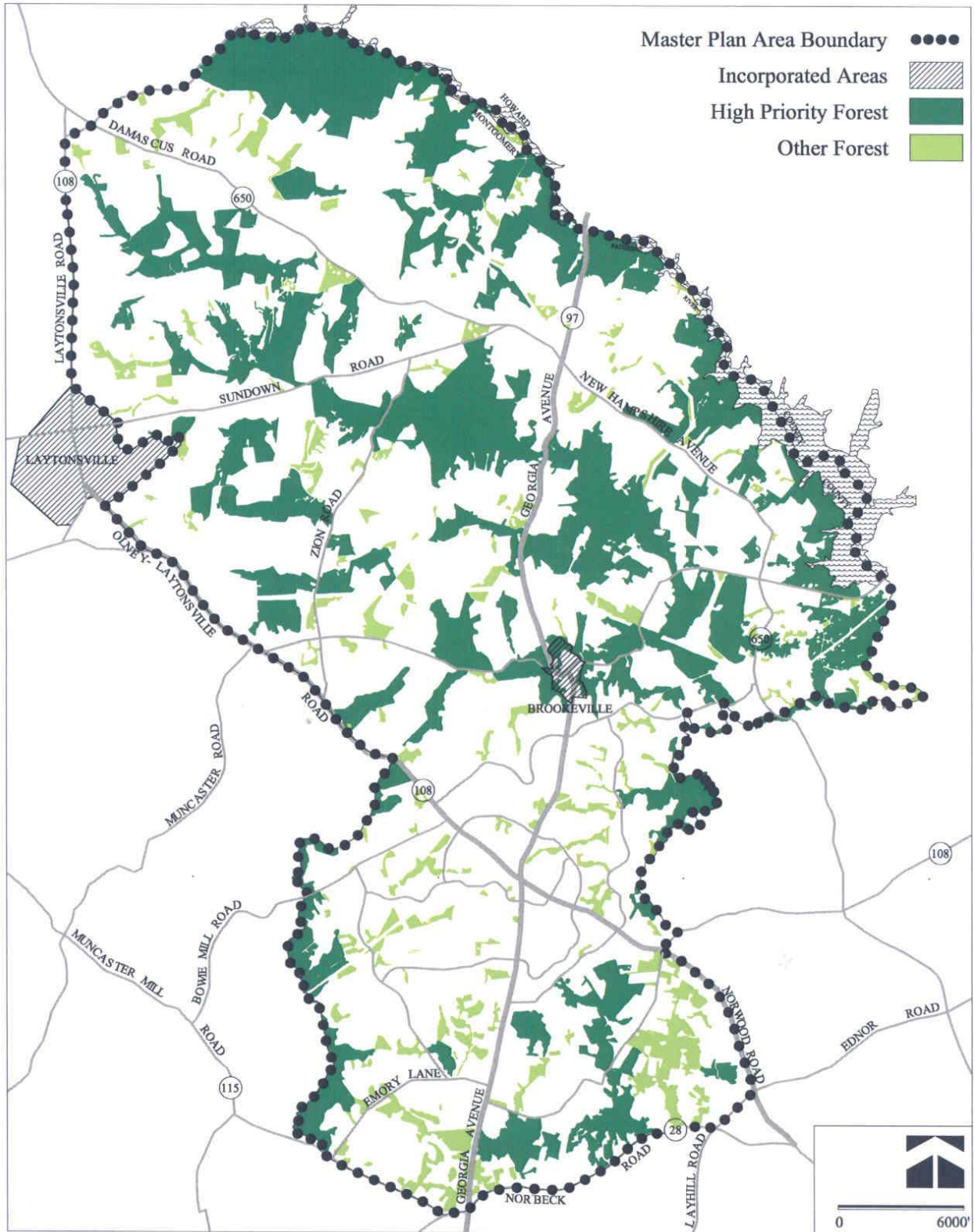
Recommendations for forest resources are combined with those of other habitat resources following the Green Infrastructure section.

## **WETLAND RESOURCES**

Recent concern within the scientific community about the global decline of amphibian populations increases the value of good amphibian breeding habitats. Maintenance of these habitats requires protection of the natural conditions that support their existence and high quality. Forested wetlands with high wildlife values can only be maintained by keeping the surrounding forest intact. These and other types of wetlands depend on hydrologic conditions that support saturated soil conditions.

Most of the wetlands in the Olney Planning Area are concentrated in the headwater areas and floodplains of the North Branch of Rock Creek and Batchellors Forest tributaries of Northwest Branch, and throughout the Hawlings River. The North Branch of Rock Creek harbors a rich variety of high-quality wetlands. The combination of large forested wetlands, high-quality scrub-shrub and emergent wetlands, and large vernal pool areas make the wetlands of the North Branch especially valuable for the provision of habitat for aquatic, semi-aquatic, and terrestrial life forms.

# Forest Preservation Priorities





By far, the greatest amounts of wetlands occur within the Hawlings River portion of the study area. Compared to the other watersheds in the study area, this watershed has the lowest proportion of its wetlands within public lands. High quality wetlands lie throughout the Hawlings River valley around Brookeville Road and north. These wetlands are associated with the mainstem, Reddy Branch, and some of the first and second order tributaries at the extreme western headwaters of the watershed. Many of these wetlands are forested and cover extensive areas. Many of them lie within Rachel Carson Conservation Park and the Hawlings River Stream Valley Park and are part of large forest stands. There are also large forested wetlands on private property, especially at the extreme western headwaters of the watershed. In contrast, there are groups of wetlands in this watershed that lie within the areas around the Town Center. Such wetlands show substantial characteristics of adverse impacts due to urbanization. Generally, these wetlands are small, highly fragmented, and populated by non-native, invasive plant species.

The watershed of the Patuxent River mainstem contains some large areas of forested wetlands. Many of these wetlands are adjacent to or are near the mainstem and lie within the Patuxent River State Park or the WSSC Triadelphia watershed properties. One large forested wetland, which may be of high quality, lies on private property within the Hights Branch stream valley (a tributary of the Patuxent River) north of Damascus Road (MD 650), just east of Bridgeton Lane.

In the headwaters of Northwest Branch, about half the wetlands are associated with man-made ponds. Only about one-third of the wetlands lie within public lands. There are relatively few wetlands (by acreage and proportion of watershed coverage) within this portion of Northwest Branch. Some of these wetlands are part of a larger network of forested stream valley features of floodplains, vernal pools and springs that provide valuable habitat for wildlife, including amphibians such as frogs and salamanders.

Recommendations for wetland protection are combined with those of other habitat resources following the Green Infrastructure section.

## **BIODIVERSITY AREAS**

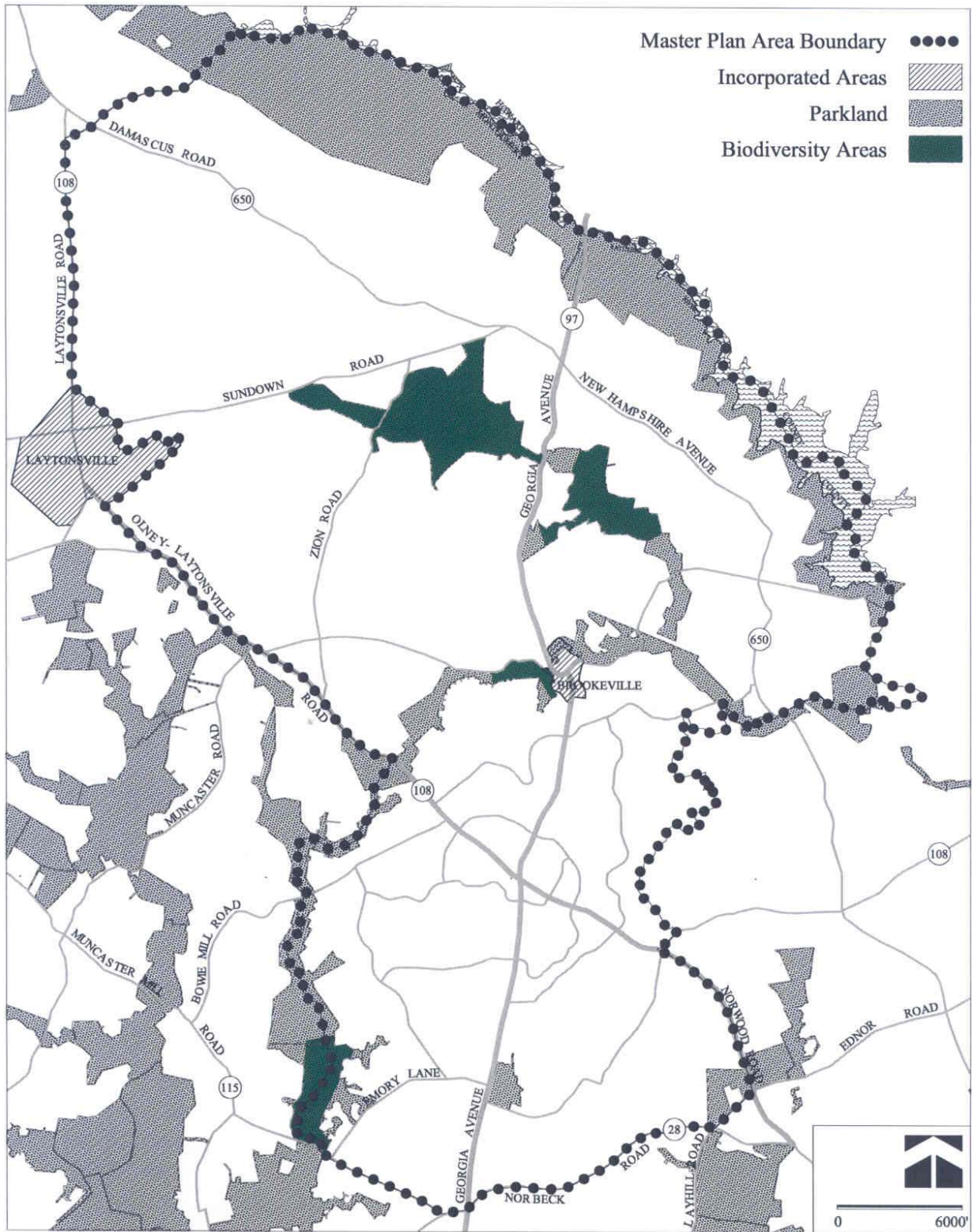
The Park and Planning Commission has been working with the Maryland Department of Natural Resources Natural Heritage Program to survey parkland for areas containing unusual plant communities or plants considered rare, threatened or watchlist species on lists maintained by the state. Such areas within parkland are identified as biodiversity areas. Fragmentation of these areas or disturbance of their edges leads to displacement of the native plants with non-native invasive species. Master plans consider ways to protect buffer areas around these areas through clustering or protection of additional parkland. Five biodiversity areas are present in the Master Plan area: 1) Rachel Carson; 2) Hawlings River; 3) Reddy Branch; 4) North Branch Valley; and 5) North Branch.

The Rachel Carson biodiversity area supports many diverse habitats with five watchlist species and multiple species of orchids. The Maryland Natural Heritage program considers this an exceptional natural area for Montgomery County. The Hawlings River biodiversity

area is just east of Rachel Carson and supports a maturing second growth, mixed deciduous forest with two watchlist species. The western biodiversity area is located in Reddy Branch Stream Valley Park and supports one of the largest concentrations of shingle oak known in Maryland. Significant stands of black walnut, tulip poplar and red oak occur in different parts of the area. The North Branch Valley area is at the eastern most headwaters of the North Branch of Rock Creek, extending beyond Olney into the Upper Rock Creek Planning Area. This area supports a good quality forest with forest interior species and a small population of chinquapin. The North Branch area extends north from Muncaster Mill Road along the stream valley to Norbeck Country Club. This is a good quality, maturing forest that supports larger trees with wide-spreading canopies suitable for forest interior dwelling species, as well as a well-developed understory. At least four watchlist species occur here including shingle oak and chinquapin. A large floodplain wetland occurs here containing a diversity of wetland plants.

The recommended approach to protection of these areas (which are already in parkland) is to minimize disturbance to the ecology as much as possible. When similar conditions occur on adjacent private land, these areas should be evaluated for the same features and protected as a buffer to the biodiversity areas in parks. Buffer areas should be protected and enhanced to compliment the biodiversity area, providing additional habitat, if appropriate. Any park facilities should be limited to trails, and alignments chosen to avoid or minimize impacts.

# Biodiversity Areas Within Parkland



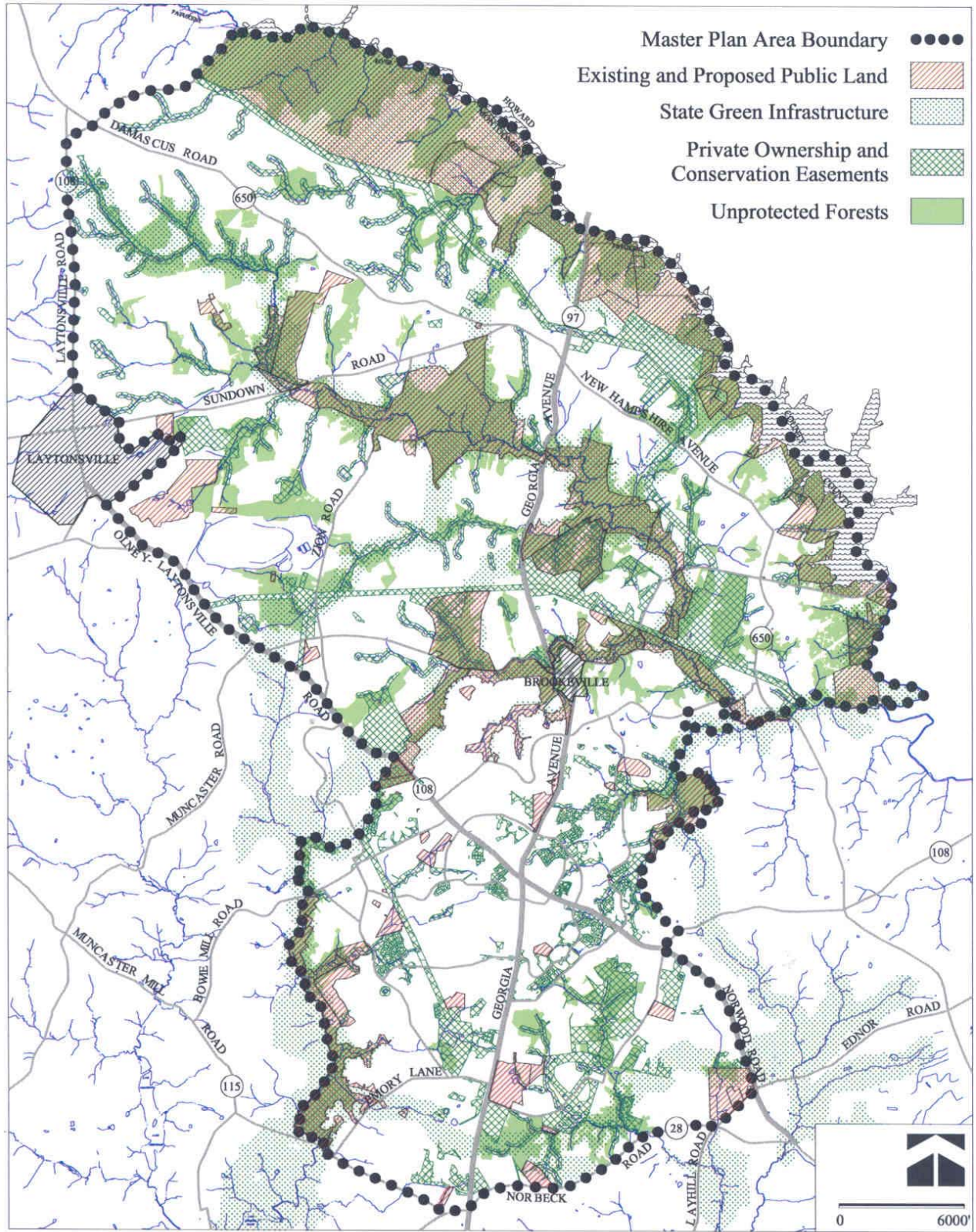
## **GREEN INFRASTRUCTURE AND GREENWAYS**

Forests, fields and wetlands all provide wildlife habitat for nesting, feeding and migration. As future development occurs, it is important to protect not only the distinct areas, but also important connections between these areas. The free movement of animals to and from feeding and nesting areas, as well as a route for flight from threats, is essential in maintaining healthy ecosystems. Plant species also require a variety of habitats and areas for seeds to seek new ground as conditions change. Isolated populations can be easily damaged or eliminated. The State of Maryland has prepared a map showing the “green infrastructure” of open space in Montgomery County as part of a statewide effort. This information was examined in light of the detailed, updated information available as part of the Master Plan. The areas shown on the Green Infrastructure figure in this chapter depict a network of public and private lands that constitute the green infrastructure of Olney. The most important of these green corridor connections are in existing and proposed parkland. These areas are recommended as greenways so that they are eligible for State funding for protection and public access, where appropriate.

The green infrastructure includes open spaces on public and private land. While there are regulatory programs to protect the green infrastructure on developing properties, protection on lands already developed relies on the awareness and stewardship of the landowner. Recommendations to protect and enhance a network of connected greenways and stream valleys for protection of forests, wetlands and biodiversity are grouped into three parts: 1) land under development; 2) voluntary opportunities available for landowners to provide protection and enhancement of the resources on their already subdivided private property; and 3) public parkland. Areas proposed for parkland protection are shown in the Parks and Recreation Chapter.



# Green Infrastructure



## **Recommendations:**

### **A. Habitat Protection on Lands Proposed for Development:**

- 1. Protect forest areas on developable properties to prevent fragmentation of upland forests and to preserve forested stream valley buffers. Where sewer service is available, cluster homes to preserve priority forests intact. Where development would involve clearing high priority forests, acquire parkland as recommended in the Land Use and Parks chapters of this Plan.**
- 2. Restore wetlands and forest in stream buffers and restore forest gap areas as part of development plans.**
- 3. Minimize adverse impacts to wetland systems due to disturbance, fragmentation, or reduction of water supporting these systems.**
- 4. Preserve wetland groups identified in the environmental resources inventory as having high functional value, protecting or enhancing the land immediately surrounding these wetlands as natural areas, and placing appropriate uses on the land draining to these wetlands to maintain adequate surface and groundwater flows to the wetlands.**
- 5. Protect other wetland resources on developable or redevelopable properties, through the application of conservation easements on environmental buffers as part of the development process.**

### **B. Habitat Protection on Private, Subdivided Lands**

- 1. Encourage the establishment of reforestation banks or voluntary reforestation in non-wooded stream valleys on existing Homeowners Association (HOA) properties.**
- 2. Encourage forest and wetland banking or voluntary protection on properties already subdivided and HOA properties.**
- 3. Protect wetlands on already developed properties through public education and the voluntary stewardship activities of property owners.**
- 4. Encourage managers of golf courses, properties containing conservation easements, and homeowner associations to manage properties to support a diversity of wildlife habitats and species.**

### **C. Habitat Protection on Public Land**

- 1. Protect priority forest preservation areas on parkland to minimize fragmentation of upland forest and preserve forested stream valley buffers.**
- 2. Encourage WSSC and Pepco to manage properties to support a diversity of wildlife habitats and species.**
- 3. Identify wetland resources in Olney's public lands, including M-NCPPC parkland, that have low overall wetland functional values and identify and implement restoration projects for these resources.**
- 4. Restore forest and wetlands to enhance park resources on newly acquired parkland where appropriate.**
- 5. Evaluate non-forested parcels acquired as parkland, especially former cropland, pasture, and hayfields, for possible restoration and management by the M-NCPPC as grassland and/or shrub habitat to promote a diversity of wildlife species.**
- 6. Minimize impacts to biodiversity areas due to disturbance, fragmentation, or damage to buffer areas.**
- 7. Avoid damage to groundwater resources for biodiversity areas by limiting imperviousness in areas that drain to biodiversity areas.**
- 8. Designate the Hawlings River, Reddy Branch, the Northwest Branch and North Branch Rock Creek Stream Valley Parks as greenways for purposes of State and federal funding for park acquisition or trail construction.**

### **WATER RESOURCES**

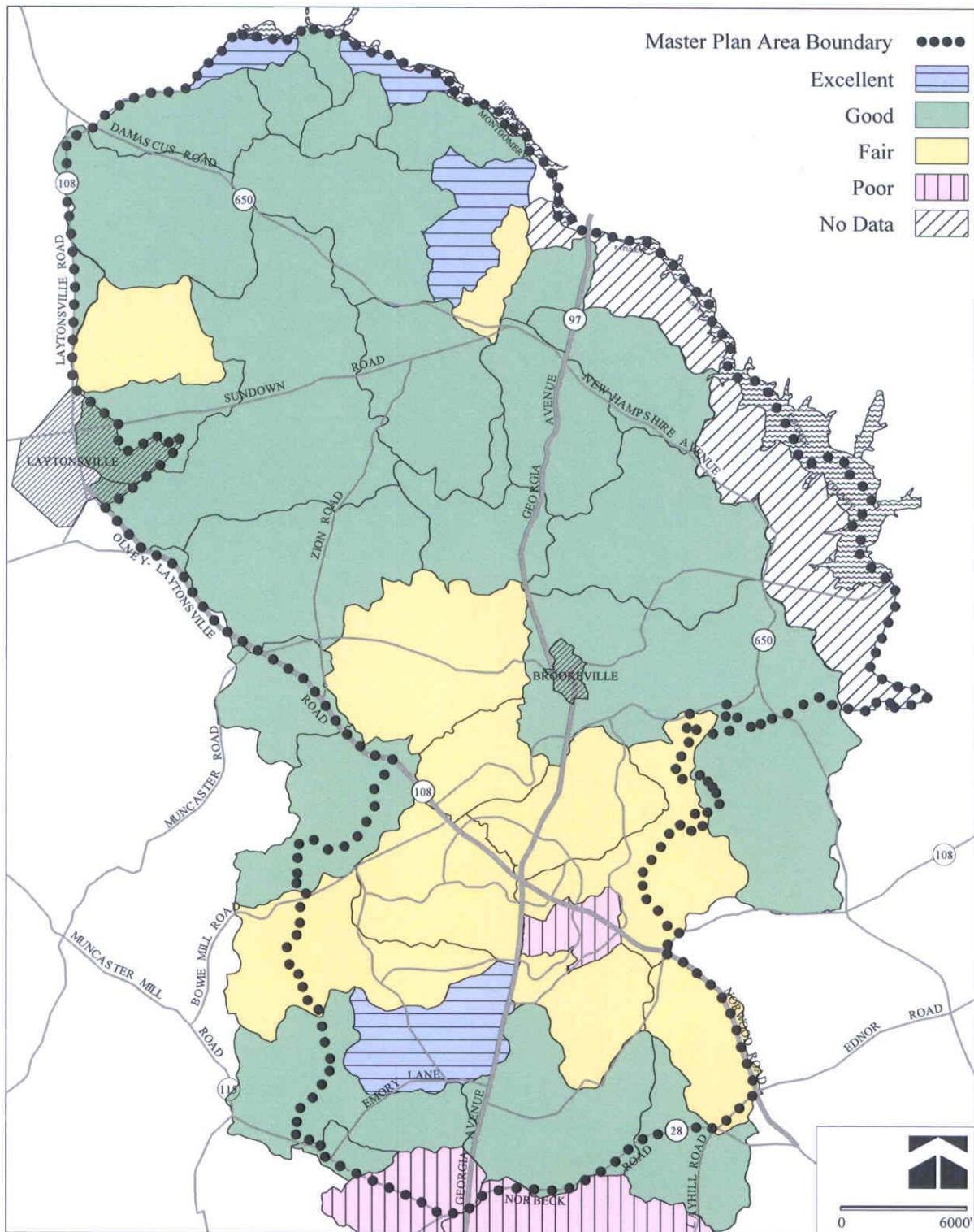
Stream quality varies throughout the Master Plan area, with generally better water quality than in many developed areas of the County. County and statewide efforts to improve water quality in tributaries have influenced the general approach to water resource protection in the area. These efforts include the 1983 Chesapeake Bay Agreement and subsequent agreements, the 1992 State Planning Act, and the 1997 Smart Growth Act that gives financial incentives to local governments to promote concentrated growth and avoid sprawl.

Montgomery County has undertaken a number of measures to protect water quality. The 1998 Countywide Stream Protection Strategy (CSPS) and the 2003 Update evaluated water quality conditions throughout the County, placing each subwatershed in a management category with corresponding tools to address stream conditions. The CSPS designates management categories that indicate the degree of protection or restoration needed. Management strategies recommended for watershed protection areas in the CSPS and employed in this Master Plan include: expanded stream valley park acquisition or dedication, increased forested buffer requirements, expanded protection for wetland

recharge and hydrology, and impervious surface reduction strategies.



# Stream Quality



Source: Countywide Stream Protection Strategy, 2003 Update



Management strategies for restoration and agricultural watershed management areas in this Plan include support for County efforts in stream restoration and retrofit projects; measures to increase forested buffers and wetland habitat and function; application of existing stormwater, sediment control, wetlands and forest conservation regulations; and targeting of priorities for Best Management Practice cost-sharing and forested buffer establishment.

Relatively little new development is proposed by this Master Plan. The existing zoning and land use policies have served to limit development in the drinking water reservoir watersheds. The majority of the potential residential development is in the Southeast Quadrant, which contains the headwaters of the Northwest Branch. The North Branch of Rock Creek in Olney contains only a small amount of developable area. One of the goals of this Master Plan is to control water quality impacts of new development by adopting land use and zoning recommendations that result in imperviousness levels compatible with the existing water quality in each subwatershed.

Since 1980, much progress has been made in stormwater quality and quantity management. New techniques and options now exist that integrate innovative BMP's with site design to limit imperviousness and maximize the infiltration and treatment of runoff. Development using these new techniques is generally known as Environmentally Sensitive Development (ESD) or Low-Impact Development (LID). This new approach to development is generating much interest throughout the country and has been recognized by the state of Maryland in its new Stormwater Management regulations. These regulations have been adopted by Montgomery County. ESD is recommended in this Master Plan to afford a higher level of environmental protection, especially in more sensitive areas, than has been available in the past.

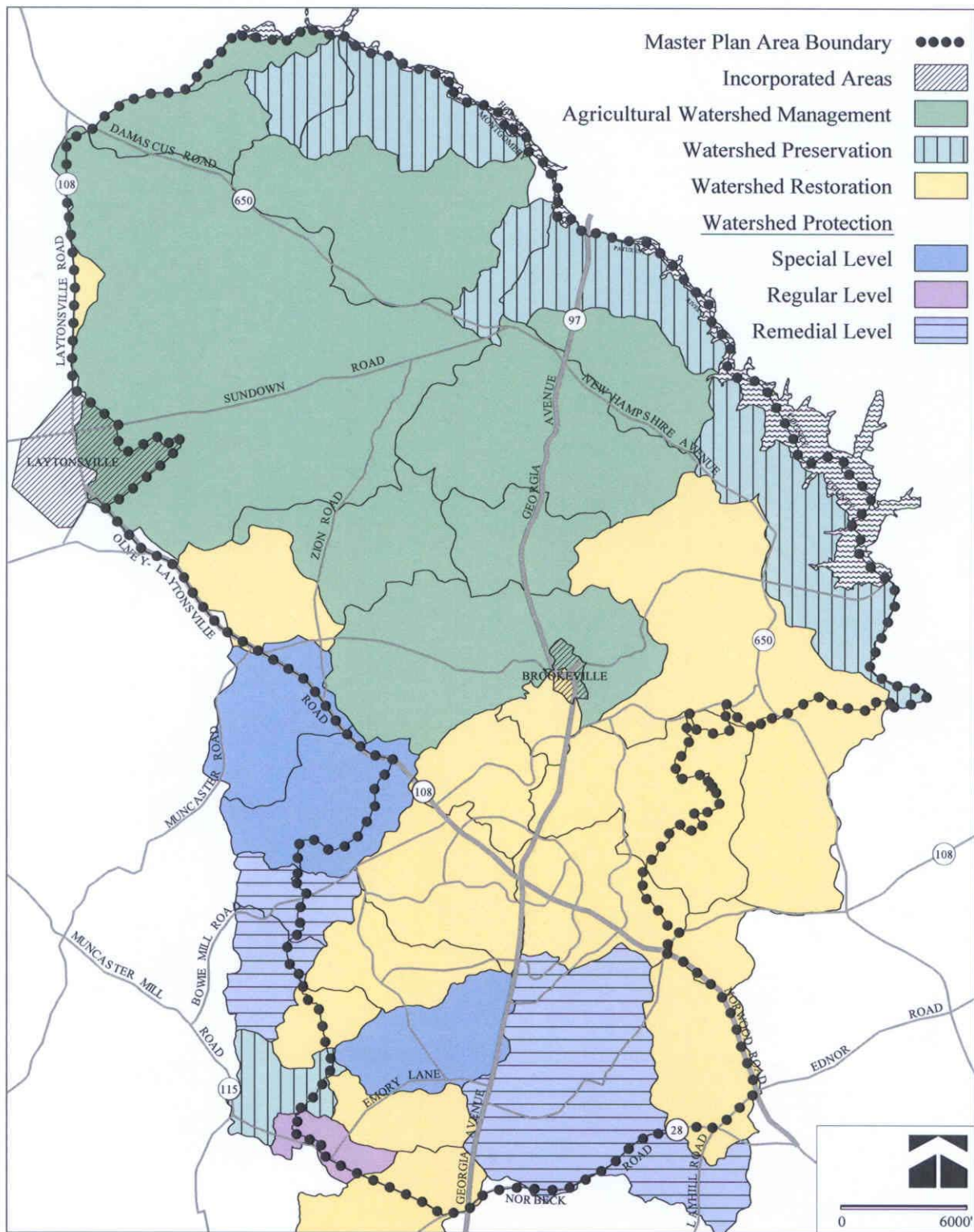
The Montgomery County Department of Environmental Protection (DEP) has undertaken a series of studies to determine how to address existing stream quality problems in various watersheds. The Upper Rock Creek Restoration Study (DEP, 2001) and the Hawlings River Watershed Restoration Study (DEP, 2003) both have recommendations for stream restoration and stormwater management improvements that could reduce damage done by past development. These improvements, complimented by the land use recommendations of this Plan and existing environmental regulations, should combine to minimize the impact of new development on the streams of Olney.

The Northwest Branch of the Anacostia River is part of a long-standing effort on the part of the U.S. Army Corp of Engineers, State and local agencies to improve conditions in this largely developed watershed. Several projects are underway and more are planned, mostly downstream of the Master Plan area.

## **Recommendations:**

- 1. Encourage new developments to use environmentally sensitive development techniques that integrate BMP's that maximize stormwater treatment and infiltration, such as:**
  - a. Minimization of impervious surfaces;**
  - b. Disconnection of runoff, sheet flow to buffers, grass channels; and**
  - c. Bioretention**

# Stream Management Strategy



Source: Countywide Stream Protection Strategy, 1998.

- 2. Encourage pollution prevention measures in conjunction with these techniques, to further enhance their effectiveness.**
- 3. Endorse the Montgomery County Department of Environmental Protection efforts to restore streambanks and to control stormwater from existing development.**

### **Patuxent River and Hawlings River Watersheds**

The Olney Master Plan Area includes a portion of the Patuxent River mainstem watershed and the entirety of the Hawlings River watershed, a major tributary of the Patuxent River. The planning area portion of the Patuxent River mainstem watershed drains to the Triadelphia Reservoir and the Hawlings River joins the mainstem downstream of the Triadelphia Reservoir. Water from the Hawlings River combines with that from the mainstem to fill the Howard T. Duckett Reservoir further downstream, outside the Master Plan area. Both reservoirs are part of the drinking water system maintained by the Washington Suburban Sanitary Commission for service to Montgomery and adjacent counties.

The Patuxent River and Hawlings River watersheds are the focus of a multi-jurisdictional effort to protect the area draining to the reservoir watersheds. Montgomery County has adopted the Patuxent River watershed Functional Master Plan that delineates a Primary Management Area (PMA) limiting use within 1/4 mile from the Mainstem and 1/8 mile from all tributaries. In low-density zones, this area is restricted to 10 percent imperviousness. In areas with existing zoning allowing densities greater than one dwelling unit per two acres (RE-2), best management practices are required to mitigate the impacts of higher densities. See the Land Use Chapter for more detailed discussion of protection of environmental resources in the Patuxent watershed.

### **Recommendations:**

- 1. Protect forested areas and wetlands that contribute to the health of the drinking water supply through the development process and applicable conservation programs.**
- 2. Encourage application of agricultural conservation measures and best management practices.**
- 3. Support efforts to restore stream and retrofit stormwater facilities through the Department of Environmental Protection watershed restoration program.**
- 4. Endorse the Montgomery County stream restoration and retrofit projects proposed by the Hawlings River Watershed Restoration Study.**
- 5. Encourage application of agricultural conservation measures and best management practices.**

- 6. Coordinate the Legacy Open Space Program with the Washington Suburban Sanitary Commission and the Patuxent Reservoir Protection Group to identify properties for potential purchase in fee or easements that contribute to protection of the drinking water reservoirs.**
- 7. Work with the Maryland Department of Natural Resources to develop an agreement to assure that farming leases in the Patuxent State Park do not contribute substantially to the sediment and nutrient loads to the reservoir.**

### **Northwest Branch**

Protection of the current low-density, semi-rural nature of the Southeast Quadrant of the Master Plan area is particularly important because it contains two of the main tributaries forming the headwaters of the Northwest Branch: Batchellors Forest and Batchellors Forest East Tributaries. These stream systems are in relatively good condition and are supported by relatively uninterrupted forested stream valley buffers with forested areas in the headwaters of the first order streams.

Management strategies recommended in the Countywide Stream Protection Strategy include restoration of stream conditions to address problems caused by past development and to provide the stability to accommodate the small, incremental impacts of expected development. Protection of these resources is essential to the health of the stream and wildlife habitat. Many interruptions in the stream buffer can be restored as part of the development process on vacant and redevelopable property. This effort, along with projects identified in the Anacostia River Restoration Study, will provide the remedial management indicated in the CSPS.

Two small streams that flow into the Batchellors Forest tributary from the west will be affected by any construction in the Intercounty Connector (ICC) right-of-way. At least three separate stream crossings will be required, depending on the roadway design. In addition, the right-of-way parallels two stream segments in the headwaters of these streams, potentially affecting large portions of the stream buffer. Forest loss and fragmentation will result from any construction, particularly in the westernmost tributary, further affecting the water quality.

The Batchellors Forest tributary is the westernmost tributary headwater watershed of the Northwest Branch and a Use IV stream. Stream conditions and projected imperviousness are similar to those in other parts of the Northwest Branch headwaters in Sandy Spring and of lower quality than those in Cloverly which were not designated SPA's in previous master plans. The Batchellors Forest tributary is listed as fair and good (although the good scores are low in the good range), and is not considered as "high quality or environmentally sensitive" as currently interpreted. In terms of the CSPS, its quality is similar to many subwatersheds in suburban and rural areas of the County. While the amount of change in imperviousness could be significant between now and build-out, the stream quality should easily stay within the fair range given the relatively low build-out imperviousness. Unfortunately, many of the increases in imperviousness are associated with major road projects as well as private institutions that have been approved or have applied for approvals under the existing Master Plan.

The environmental protection strategy in the Batchellors Forest tributary includes the application of the RNC Zone to secure almost all of the existing forest, planting of new forest along unprotected stream buffers through development and forest banking, and wetland and forest habitat enhancement associated with the redevelopment of the Trotter's Glen Golf Course. The application of the RNC Zone also allows more units to be constructed with less imperviousness than the existing zoning would have yielded. While some benefits would result from application of a Special Protection Area with an 8% imperviousness cap, it would not significantly reduce the potential imperviousness in this subwatershed nor likely affect the overall stream conditions. An SPA or overlay zone with an imperviousness cap is not recommended for this area.

Recommendations regarding specific actions to protect water quality on particular properties are included in the Land Use Chapter.

### **Recommendations:**

- 1. Restore stream buffers and wetlands through the development process.**
- 2. Maximize forest retention and new forest planting in and adjacent to environmental buffer areas through conservation easements as part of the development process.**
- 3. Improve and restore parts of the Batchellors Forest stream valley by reducing or eliminating invasive plants and removing old dumping areas. Encourage voluntary stewardship efforts by property owners in areas in need of restoration that lie on already subdivided private land. Some areas (such as a possible dumping area on the 75-acre Casey property on the west side of Batchellors Forest Road) should be evaluated in more detail; restoration measures should be implemented as part of the development process if needed.**
- 4. Support federal, state, and local efforts to improve stream conditions through the Anacostia Restoration Project.**
- 5. Protect a green corridor along the streams of the Batchellors Forest tributary with voluntary conservation easements, possibly using forest banking as an incentive.**
- 6. Avoid and mitigate impacts of any new roadway in the ICC right-of-way.**



## Upper Rock Creek

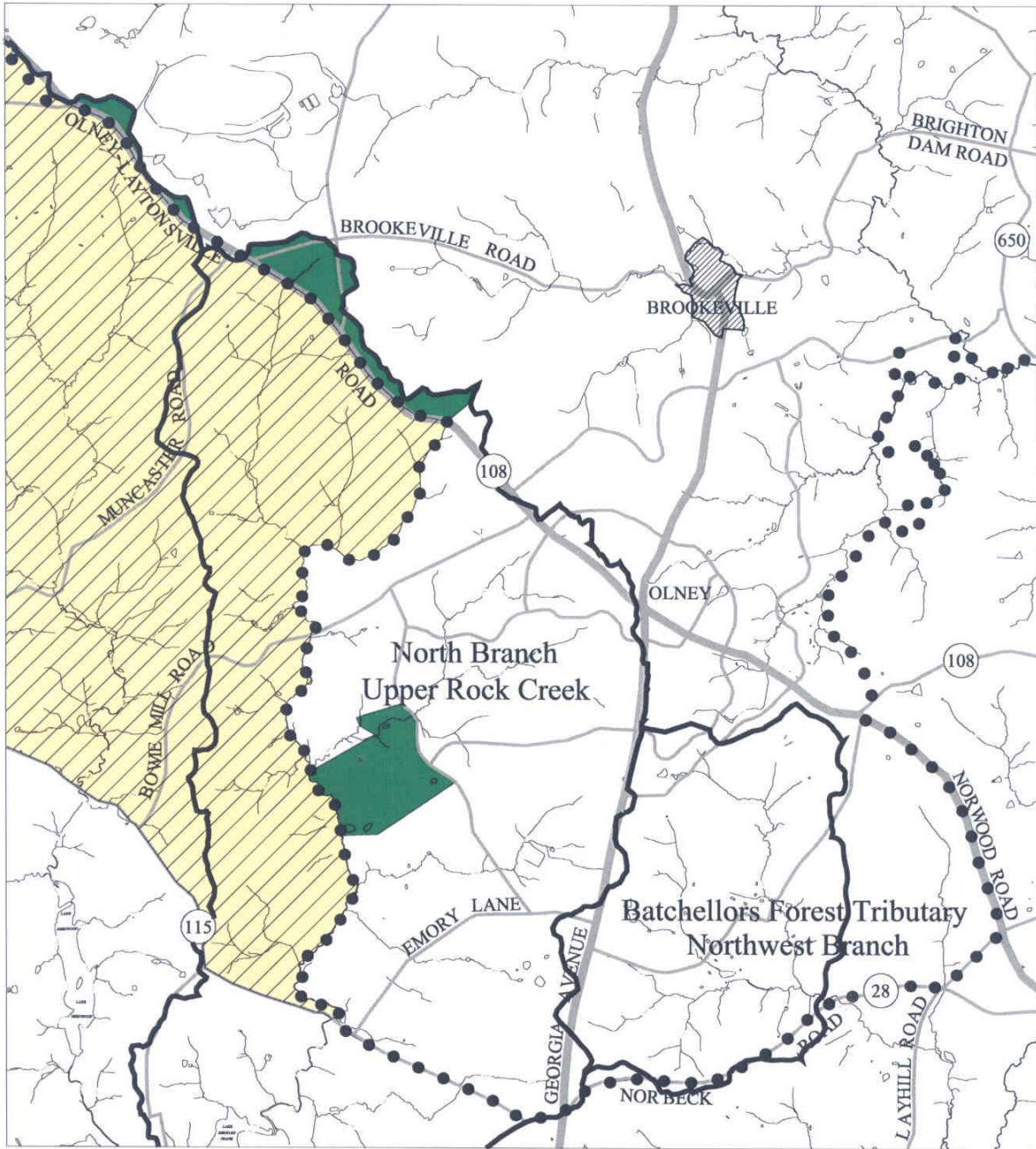
The portion of the North Branch of Rock Creek in the Olney Planning Area is almost completely developed. Continuation of the protection provided by the North Branch Stream Valley Park is essential for the health of this area. Any potential redevelopment of the Norbeck Country Club should include dedication and restoration of a substantial buffer area along the stream and Williamsburg Run.

The ICC right-of-way parallels the Brook Manor Country Club tributary to the North Branch. The construction of any roadway in this area would have significant impacts on this tributary as well as on the North Branch biodiversity area. A new road crossing of the North Branch would divide a priority forest and the biodiversity area, significantly reducing the amount of interior forest habitat and directly affecting a unique ecological community. The Plan recognizes that environmental impacts and possible mitigation of any road construction in the ICC right-of-way will be evaluated in the context of a Countywide study and a Federal Environmental Impact Statement.

The Upper Rock Creek Master Plan (2004) establishes a Special Protection Area with an 8% imperviousness cap to protect the high quality areas of the Use III stream that were threatened by the significant amount of new development planned for this area. The Upper Rock Creek watershed in Olney **north** of Route 108 upstream of the existing SPA has the same qualities as the area the County Council designated in the Upper Rock Creek Master Plan. Existing imperviousness and stream quality (CSPS rates as good) is similar to that on the opposite side of Route 108. Protection of the headwaters of the Use III stream certainly meets the "high quality or unusually sensitive" criteria established in the County Code. While the RDT zoning with a few smaller lots around the Mt. Zion community does not immediately threaten the resources in the watershed, some special exceptions exist here now and the potential exists for the intensification of these and additional uses and institutions along Route 108. This kind of intensification could threaten the resource and could be limited by the extension of the SPA and imperviousness caps of Upper Rock Creek. This area is designated a Special Protection Area with an overlay zone to be consistent with the Upper Rock Creek Master Plan.

The North Branch portion of the Upper Rock Creek in Olney **south** of Route 108 exhibits very different characteristics from that portion in the Upper Rock Creek Master Plan Area. The area is much more densely developed, having received density transferred from the Patuxent River watershed in order to protect drinking water and agricultural uses. Forest cover and wetlands are mostly limited to slender stream buffers, some of which have been dedicated as parkland. Remaining developable and redevelopable land is limited to two large parcels and a scattering of smaller parcels, less than 5% of the North Branch Rock Creek watershed area. Existing hard surface imperviousness in the Olney tributaries to the North Branch ranges from 10% in Brooke Manor Country Club Tributary to 17% in Williamsburg Run, which includes part of Olney Town Center.

# Special Protection Area



- Add to Upper Rock Creek SPA and Environmental Overlay Zone
- Streams
- Watershed Boundary
- Upper Rock Creek SPA
- Master Plan Area Boundary



Imperviousness will increase only slightly in the tributaries in the Olney Master Plan area, with the exception of the Brooke Manor Country Club Tributary, which is expected to increase from 10% to over 12.5% due to construction of the ICC. This Plan recommends RNC zoning for the Norbeck Country Club and designates it as part of the Upper Rock Creek Special Protection Area. The property should also be included in the Upper Rock Creek Environmental Overlay Zone with an eight percent imperviousness cap, significantly reducing the potential for imperviousness increase on the largest redevelopable property in the Olney Planning Area portion of the Rock Creek Watershed. Imposition of an SPA or an imperviousness cap on other new development would not have a measurable impact on the watershed and could make almost all existing uses non-conforming (due to their more intense zoning, existing imperviousness and sewer service). Subwatershed monitoring would not produce meaningful data, due to the amount of upstream development. This area is not recommended as a Special Protection Area. SPA requirements (in particular, the application of an imperviousness cap) are not intended to preclude the construction of any public project including those designated in this Master Plan, such as the Intercountry Connector, public schools and park facilities. However, this Plan supports the avoidance of environmentally sensitive areas, minimization, and mitigation and recommends that these be thoroughly examined in the earliest stages of project development.

Recommendations regarding specific actions to protect water quality on particular properties are included in the Land Use Chapter.

#### **Recommendations:**

- 1. Maintain and enhance the stream buffer forest and wetlands along the North Branch.**
- 2. Avoid and mitigate impacts of any new roadway in the ICC right-of-way.**
- 3. Support County efforts to restore areas of the North Branch through the Rock Creek Watershed Restoration Action Plan.**
- 4. Designate two areas within the Olney Master Plan as Special Protection Areas and an overlay zone with an 8% imperviousness cap: 1) the Upper Rock Creek Watershed within the Olney Master Plan boundaries north of Route 108 and west of Reddy Branch Stream Valley Park; and 2) the Norbeck Country Club property on Cashell Road.**

#### **AIR QUALITY**

Ground-level ozone is an invisible gas formed when two pollutants, volatile organic compounds (VOC) and nitrogen oxides (NOx), react in sunlight. The primary sources of these pollutants are utilities and other industries, motor vehicles, small gasoline powered engines, and small businesses using solvents, cleaning solutions, paints, and insecticides. Motor vehicles account for 30-40 percent of the pollutants that cause ozone in the Washington region.

After they are emitted, these pollutants can travel miles before reacting to form ozone. On a typical summer day, over half the pollutants that cause ozone in the Washington region come from sources outside the region, including other states, hundreds of miles away. Likewise, sources in the Washington area emit pollutants that travel and eventually affect ozone concentrations in other regions and states.

In 1997, the EPA strengthened ozone and particulate matter standards in light of new scientific evidence that federal standards were insufficient to protect public health. As a result, the one-hour ozone standard was replaced with a stricter eight-hour standard, and the particulate matter standard was supplemented with twenty-four hour and annual limits for very small particulate matter. The Washington region is classified as a “moderate” non-attainment area under these new standards, which will not be effective until June 2005. The region will have to prepare a new State Implementation Plan (SIP) by April 2007, and show attainment of the new standards by April 2010. Over the 1993-2003 period, there have been an average of 28 days per year when the Washington region’s ozone level would have exceeded the new eight-hour standard.

Under the current one-hour standard, the federal Environmental Protection Agency (EPA), in January 2003, downgraded the Washington metropolitan region, which includes Montgomery County, from “serious” to “severe” non-attainment area. Over the 1993-2003 period, there have been an average of five days per year when the Washington region’s ozone levels exceeded the one-hour standard. Federal air quality laws permit only one violation per year of the one-hour standard, averaged over three years, at any monitor location in the region.

The new ozone standards pose additional challenges for reducing air pollution. To help meet those challenges, the EPA is requiring twenty-two states in the eastern third of the country to substantially cut their NO<sub>x</sub> emissions to reduce the amount of pollutants that drift from state to state. It has established a National Low-Emission Vehicle Program to further reduce the amount of pollutants emitted from cars and car manufacturers have voluntarily agreed to build cars with more stringent tailpipe emission standards. The EPA is proceeding to implement new emission reduction standards for diesel trucks, buses, and off-road heavy equipment, requiring manufacturers to produce motor vehicles that are 77-95 percent cleaner than those on the road today. In addition, the nation’s refiners will be required to reduce gasoline sulfur levels by 90 percent.

The Washington region continues to update its ozone reduction strategies through its State Implementation Plan (SIP), a multi-jurisdiction master plan and program for attaining air quality standards. Once approved by EPA, SIP is enforceable through state and federal laws. The region continues to make considerable progress in reducing VOC and NO<sub>x</sub> emissions through actions of federal, state, and local governments. The biggest improvements have come from high-tech motor vehicle inspection and maintenance programs, vapor recovery nozzles at service stations, reformulated gasoline, reformulated surface coatings, and new federal emission standards for both small and large engines. The Washington region’s air quality plans also set an upper limit on the overall tons of pollutants that motor vehicles can emit in the region. The region’s Transportation Improvement Program and Constrained Long-Range Plan must conform to this limit.

Since ozone is an area-wide phenomenon and a multi-jurisdiction strategy is needed, it is essential that Montgomery County do its part. At the Countywide level, some very important initiatives should include: 1) transportation demand management (TDM) strategies that influence people to reduce motor vehicle trips and miles traveled, 2) installation of less-polluting engines and control equipment in the County fleet of vehicles, 3) use of pollution prevention techniques by power plants and other local industries, and 4) cash incentives to residents who purchase vehicles and machinery, such as boats and lawn mowers, that have less polluting engines.

At the local level, the Master Plan recommends the following:

### **Recommendations:**

**Support strategies to reduce air pollution, including placing a high priority on funding for transportation demand management (TDM) projects and programs, such as:**

- 1. New and improved network of sidewalks and bikeways.**
- 2. Enhanced bus services, including new routes, higher frequency of buses, improved pedestrian access to transit stops, more bus shelters, and real-time bus information for bus customers via electronic displays at bus stops, personal computers, and portable hand-held devices.**
- 3. Priority bus lanes on major roads, such as the Georgia Avenue Busway.**
- 4. Park-and-ride lots for carpools, vanpools, and transit users.**
- 5. More intensive assistance and marketing of alternative modes of transportation, including incentives for purchasing and using hybrid vehicles and other low-polluting vehicles.**
- 6. New development and redevelopment designed to minimize the need for motor vehicle trips and to prevent conditions that may create local air pollution nuisances.**

### **NOISE**

High traffic volumes on three major state roads, Georgia Avenue, MD 108, and Norbeck Road affect noise levels in their respective corridors. In addition, any new roads in the ICC right-of-way could have significant noise impacts. Protection from excessive noise helps maintain the community as a desirable place to live, work, and experience a high quality of life. Effective noise compatibility planning involves the placement of noise compatible land uses in the highest noise locations, and application of noise mitigating measures and site design techniques where necessary to meet appropriate exterior noise guidelines. Guidelines for compatibility can be found in the Staff Guidelines for the Consideration of Transportation Noise Impacts in Land Use Planning and Development (June 1983).



**Recommendations:**

- 1. All new development and redevelopment should be designed to meet the property line standards contained in the adopted County Noise Control Ordinance (Chapter 31B of the County Code) as a minimum. The ordinance controls noise emanating from one property to another, exclusive of noise from public rights-of-way.**
- 2. Design new development and redevelopment to meet appropriate noise guidelines and ordinances to prevent conditions that may create local noise impacts.**