# *Environmental Concerns*

Germantown's natural setting can, and will, greatly enhance the quality of life, if properly respected. To derive the maximum potential from these important natural assets, the community and government must insist upon their proper conservation and use.

The recommendations expressed in this Plan are intended to respect the natural environment and to protect its most sensitive elements. An extensive environmental analysis was undertaken in Germantown to help formulate the land use and zoning recommendations. These recommendations also propose special regulatory and performance measures which are needed to protect stream quality.

The components of the environmental analysis include soil conditions, water quality, wetlands and floodplains, existing vegetation, slopes, noise attenuation, energy efficiency, and water supply and sewerage systems. In addition, a specific analysis of environmentally sensitive sites was conducted; the land use and zoning recommendations which resulted from this study are included in the Land Use and Zoning chapter.

### Objectives

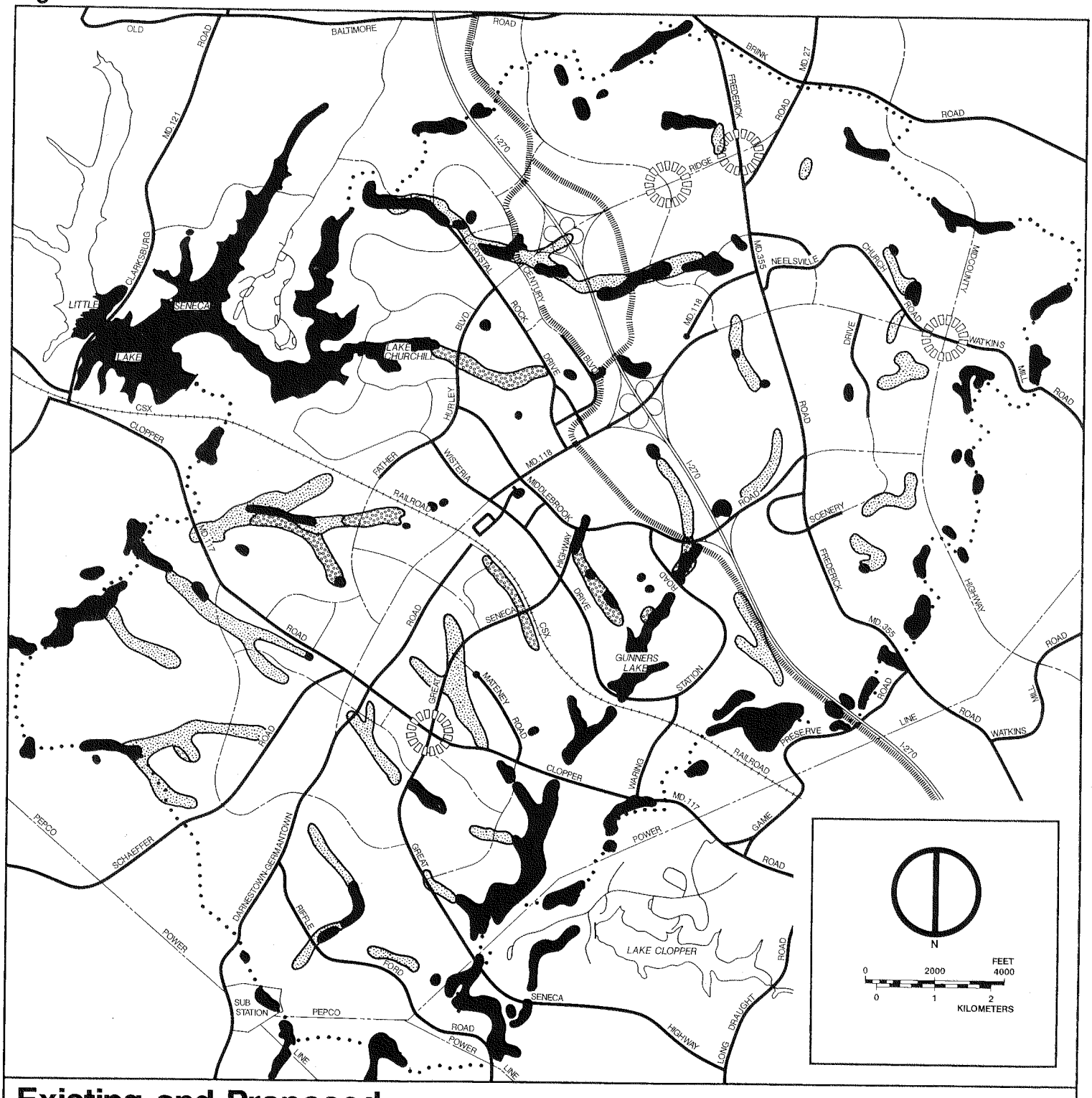
To protect and preserve the area's environmental resources, this Plan:

- Maintains the planning area's natural features, particularly stream valleys and other environmentally sensitive areas.
- Maintains and enhances the environmental, recreational, and scenic qualities along Great Seneca Creek and Little Seneca Creek and their tributaries.
- Maintains the environmental qualities of headwaters of stream basins to prevent increases of water pollution, flooding downstream, and stream erosion.
- Assesses, controls, and mitigates the environmental impacts of development to preserve natural features and ecological quality.
- Recommends a comprehensive system of stormwater management facilities in developing areas that preserve the natural stream environment and provide wildlife and recreational opportunities.
- Recommends protecting the other environmentally sensitive areas such as mature hardwood forests, wetlands, areas of unique vegetation, and prime wildlife habitat.
- Recommends providing for the employment of stringent erosion/sediment control and stormwater management and water quality best management practices (BMPs) for new developments within selected areas of the Little Seneca Creek Watershed.
- Recommends employing agricultural BMPs that are in strict accordance with the practices prescribed by the Montgomery Soil Conservation District.
- Recommends adequate noise attenuation for residences adjacent to major transportation facilities.

## Environmentally Sensitive Areas

Every parcel of land proposed for development must be analyzed carefully to assure appropriate protection of environmental features and systems. A number of parcels requiring special care have been identified in the Land Use chapter. These environmentally sensitive areas tend to be those located near the headwaters of streams (Figure 24). Development in headwaters areas can increase water pollution and flooding impact at downstream locations. The planning area includes the headwaters of Gunners Branch and several unnamed tributaries of Great Seneca Creek and Little Seneca Creek. Where appropriate,

Figure 25




# Existing and Proposed Conservation Areas,Easements and Nontidal Wetlands

Existing and/or Committed Common Open Space Areas

Proposed Conservation Areas and Easements

Nontidal Wetlands

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lower development densities are recommended for these areas, taking into account other policy objectives of the Plan. In these areas, the use of best management practices (BMPs) are especially important, but the use of BMPs are considered essential for all development. Any relaxation in the application of these practices would adversely affect stream quality.

Environmentally sensitive areas also include aquatic and wildlife habitats, wetlands, mature woodlands, and unique vegetation. Both the *Functional Master Plan for Conservation and Management in the Seneca Creek and Muddy Branch Basins* (referred to as the *Functional Plan*) and the *Seneca Phase II* and *III Watershed Studies* indicate various areas recommended for protection. These recommendations are incorporated by reference in this Plan.

Appendix E describes the guidance and regulations for land development contained in several local, state, and federal regulations, plans, and guidelines. All development proposals should be carefully evaluated before approval to assure their compliance with these documents.

Two large areas that are important future housing resources have been identified as having special environmental sensitivity. These are Analysis Areas KI-2 in Kingsview Village and NE-1 in Neelsville Village. Residential development in low to medium densities is recommended only if strict adherence to environmental guidelines can be assured.

## WATERSHED DEVELOPMENT GUIDELINES (Figure 25)

Since the adoption of the 1974 *Master Plan*, the Little Seneca Creek Watershed has been designated as a Class IV Watershed by the Maryland Water Resources Administration (see Appendix D for descriptions of watershed classifications). The Class IV designation was made by the State in recognition that the stream is of sufficiently high quality to sustain a "put and take" trout population. Recent studies by State Fisheries indicate that the stream quality is at the high end of the range for Class IV streams, and the portion downstream from Lake Seneca might qualify for the higher quality Class III designation.

Lake Seneca, an emergency water supply reservoir, is located in the Seneca watershed. Although Lake Seneca is a major recreational and visual asset, it functions primarily as an emergency raw-water storage facility to supplement other regionally owned water storage facilities in case of a drought.

Maintenance of the high water quality in Little Seneca Creek and its tributaries, and Lake Seneca, requires extreme care in the formulation of land use, zoning, and stormwater management decisions affecting the watershed.

Accelerated land surface and stream channel erosion and deposition constitute two major problems which can result from development in the Little Seneca Creek Watershed. Although erosion and sedimentation occur at natural levels in the complete absence of human disturbances, it becomes a problem of greater intensity as human activities modify the landscape. In addition, development activities, particularly at levels allowed in the R-200 and higher density zones, can result in increased peak flows and nonpoint source pollutant loadings in receiving streams.

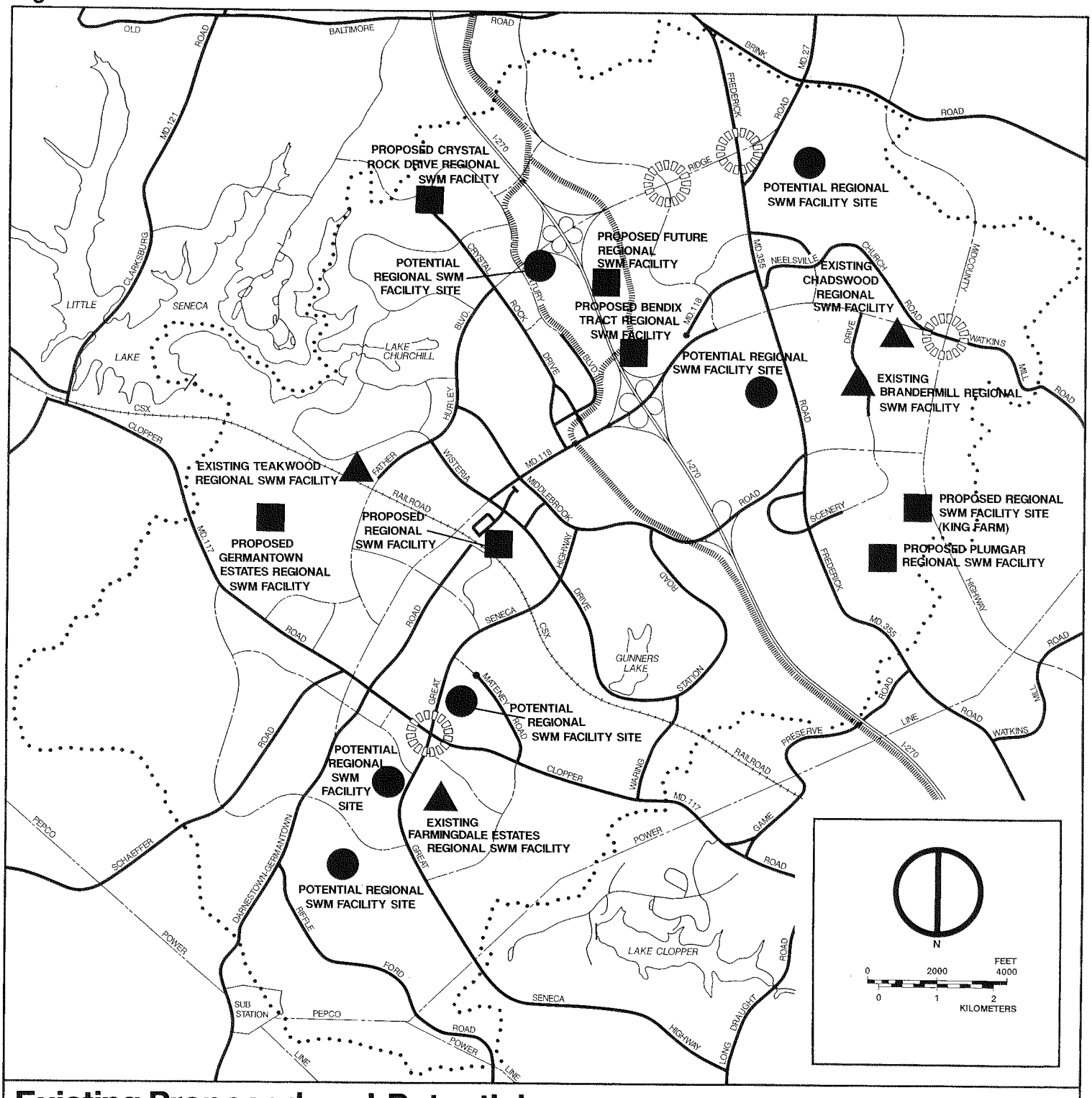
The land use and zoning recommendations of this Plan reflect the importance of the KI-2 and NE-1 Analysis Areas as valuable resources for achievement of the housing objectives of this Plan. They establish the maximum acceptable levels of development, taking into account the special environmental sensitivity of these areas. Actual development levels may need to be further constrained to avoid environmental degradation.

To ensure that development does not degrade the Class IV water or impair the quality of the Lake Seneca water supply, stringent watershed development guidelines and criteria are necessary. The stringent requirements include establishment of vegetated buffers along streams, stormwater management controls, best management practices, erosion and sedimentation control measures, water quality monitoring requirements, and environmental impact analyses. This Plan sets forth such guidelines and criteria and requirements in Appendix D.

The Planning Board and Department of Environmental Protection are directed to require strict adherence to the guidelines and criteria set out in Appendix D in their approval of development and stormwater management practices and in their enforcement of development sediment control and environmental regulations. If these criteria cannot be met, then the development intensity must be reduced to a level consistent with these criteria. The following are the objectives of this system of environmental controls:

- Determining the baseline stream water quality and maintaining and enhancing it through continuous monitoring, site inspection, and maintenance programs.
- Ensuring that environmental resource constraints are fully considered in establishing land use patterns in the stream corridors.
- Maintaining water quality and associated resources through the implementation of best management practices.
- Preventing the pollution of streams and lakes from runoff containing nutrients, pathogenic organisms, organic substances, heavy metals, and toxic substances.
- Maintaining and restoring a natural vegetative canopy along streams to ensure that, to the degree possible, summer stream tempera-

Figure 26




# Existing,Proposed and Potential Regional Stormwater Management (SWM) Facilities

Existing Regioal SWM Facility

Proposed Regional SWM Facility (by DEP)

Potential Regional SWM Facility Site (Identified by M-NCPPC & DEP)

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tures do not exceed tolerance limits of desirable aquatic organisms.

- Minimizing the disturbance of the streambeds and preventing streambank erosion and sedimentation of waterways, and where feasible, restoring eroding streambanks to a natural or stable condition.
- Ensuring that runoff from developing areas is controlled such that it does not increase the frequency and intensity of flooding and the risk of threatening life and property.
- Retaining and preserving water quality attributes, open space, and visual amenities by establishing and maintaining buffer areas along stream corridors.

## CONSERVATION EASEMENTS (Figure 25)

Conservation easements are generally recommended along the smaller stream valleys and other areas where important environmental assets exist and where park acquisition is not programmed. Conservation easements are intended to protect environmentally sensitive features in their natural state by restricting inappropriate uses within the area. They can usually be established without loss of the development density that would otherwise meet the environmental guidelines. Figure 25 illustrates the general location of the proposed conservation easements.

Protection of these sensitive areas will: (1) provide additional stream quality protection; (2) preserve woodlands, wetlands, specimen trees, and other natural features; (3) provide needed open space; and (4) protect wildlife habitats. The intended use of these areas is passive. Whenever possible, conservation easements should be included within the common open space of a subdivision. Where a conservation easement is partially on a private lot, the following restrictions should apply:

- No tree measuring over six (6) inches in diameter at breast height or thirty (30) feet in height and no mature and stable shrubs, except those which are diseased or dead, may be removed, cut down, or destroyed without prior written consent of the Planning Board.
- No structure(s) may be erected within the easement area.
- The dumping of grass clippings, leaves, brush, or any other foreign materials in these areas is prohibited, as is its use for designated pet walking areas.
- The use of existing open, non-wooded areas for small garden plots which do not exceed 1,000 square feet per lot and are not within 50 feet of a flowing stream, spring, wetland or other body of water is permitted.
- No alterations, excavations, grading or other changes shall be made to the general character and topography of the landscape without prior written consent of the Planning Board.
- The use of pesticides and fertilizers should be restricted to garden plots only.

The conservation easement will be conveyed to the M-NCPPC at the time of recordation of the subdivision. The Commission will become involved in compliance issues if a violation is reported. Once a violation is verified, the Commission will have the right to enforce the provisions of the easement by injunction or other appropriate mechanisms.

## STORMWATER MANAGEMENT RECOMMENDATIONS (Figure 26)

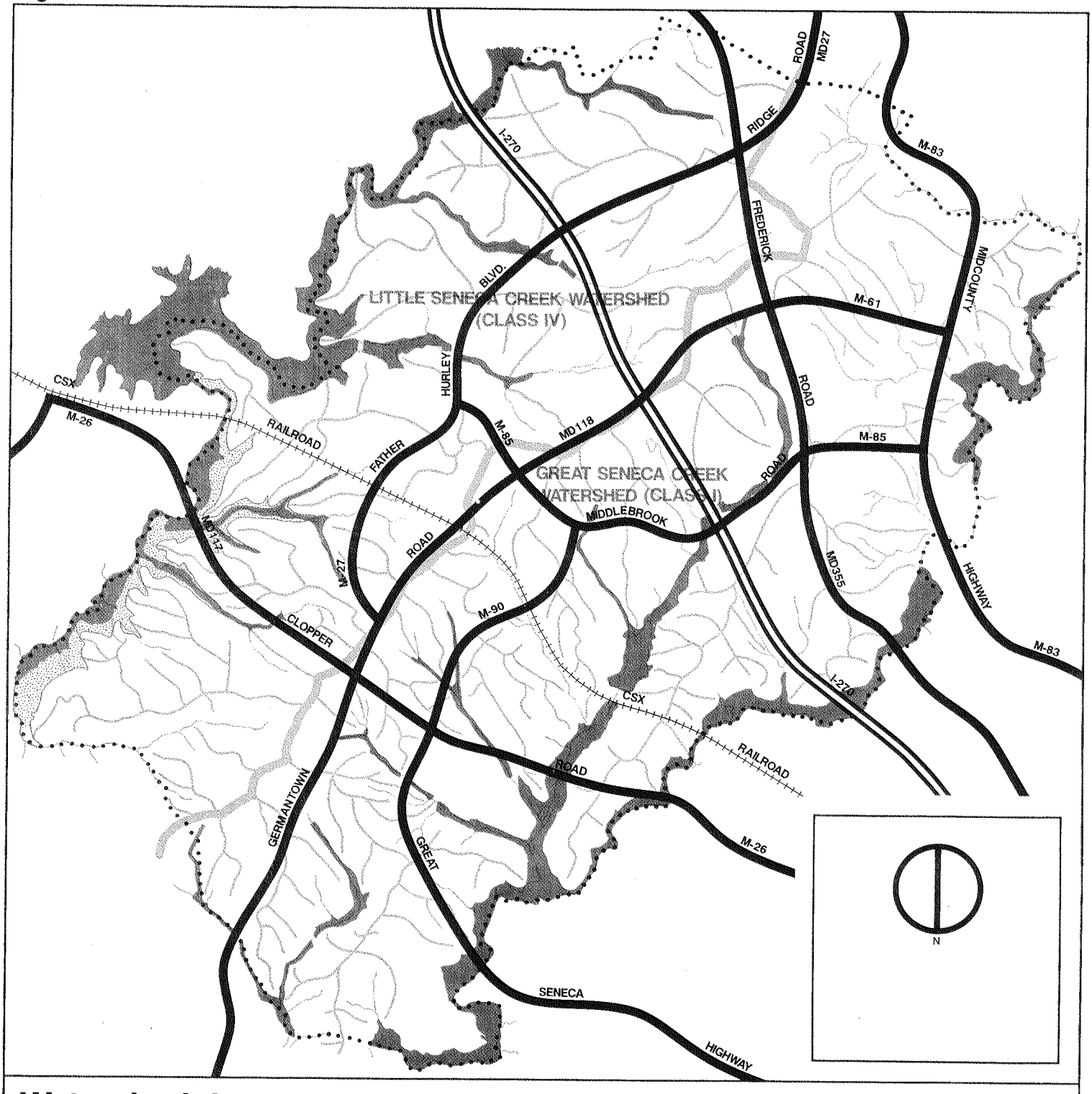
The recommendations in the *Functional Plan* use both the preventive approach, which manages the watershed to prevent problems before they occur, and the remedial approach, which attempts to solve existing problems. The *Functional Plan* includes such recommendations as:

- the employment of small and large scale stormwater management facilities;
- the acquisition or dedication of public parkland and conservation easements;
- structural improvements to bridges and conveyance systems;
- structural improvements to protect developed areas subject to flooding; and
- provision of remedial stream channel protection and/or water quality enhancement where deemed appropriate or necessary.

The locations of existing, proposed, and possible regional stormwater management facilities are shown on Figure 26. These facilities should be located and designed so that they may also function as scenic amenities. Site-specific analyses, with respect to cost-effectiveness and other considerations, will be needed prior to their inclusion in the County's Capital Improvements Program. Stormwater management facilities should be designed so as to fit into the natural contours of their location and, whenever possible, provide both wildlife habitat and recreational opportunities. For those areas where regional stormwater management facilities are not currently planned or recommended, the use of on-site controls must be comprehensively evaluated at the time of subdivision plan review.

Extraordinary BMPs are recommended for development in the Little Seneca Creek Watershed to protect and enhance stream water quality. State and County guidelines require a strict hierarchy in choosing appropriate BMPs. Infiltration practices should be considered first, then other off-line attenuation methods, retention (wet ponds) and finally detention (dry ponds). Since wet ponds are generally discouraged for Class III and Class IV watersheds because of thermal impacts, a combination of several BMPs or new

Figure 27




# Watershed Areas, Floodplains and Danger Reach

100 Year Floodplain

Danger Reach of Little Seneca Lake

Ridges

Streams

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design approaches for wet ponds may be required to achieve necessary stormwater management.

### DANGER REACH (Figure 27)

A small portion of Kingsview Village would be subject to flooding if the Lake Seneca dam were to fail. If this extremely unlikely event were to occur, the water behind the dam would flow down Little Seneca Creek, and up the tributaries. The projected highest elevation of the water establishes the edge of the danger reach.

Most of the Lake Seneca danger reach is not subject to residential development since it is within the park system and/or the 100-year floodplain. There is, however, land in Germantown, Boyds, and the Lower Seneca Basin Planning Area that could be developed despite its location within the danger reach.

This Plan recommends that future development adhere to the Dam Break Analysis Guidelines developed by the Environmental Planning Division of the M-NCPPC. These guidelines recommend that all dwelling units be located outside the danger reach; areas within the danger reach should be dedicated for use as open space or parkland.

An Emergency Warning Plan has been developed for Lake Seneca by the Washington Suburban Sanitary Commission, and approved by the State Department of National Resources which provides for notification and evacuation of residences located within the danger reach.

## Water Supply and Sewerage Policies

In general, water and sewer service should be extended in accordance with the recommendations in this Plan and in conformance with the policies contained in the Montgomery County Comprehensive Water Supply and Sewerage Systems Plan.

### WATER SUPPLY FACILITIES (Figure 28)

Community water service in Germantown is provided by the Washington Suburban Sanitary Commission (WSSC). Most of the water mains greater than 16-inch diameter proposed to serve Germantown have been installed. As development proceeds, additional water mains will be constructed where needed.

CIP projects W-37.27 and W-142.01 are included in the approved FY 1990-1995 CIP. Project W-37.27, Great Seneca Highway Water Loop, involves the extension of the 16-inch water main along Great Seneca Highway to its intersection with Mateney Road and will increase reliability of water service to the surrounding area. Project W-142.01, Crystal Rock Drive Water Main, involves the extension of a 36-inch water main along Crystal Rock Drive for service to development north of Lake Seneca.

In order to increase the number of single-family detached residential units, this Plan recommends the expansion of community water service to all areas recommended for development in Germantown. The extension of water lines has little potential for stream degradation. Unlike gravity sewers, water is forced under pressure; it can flow uphill. Thus, it is not necessary to lay water mains in stream valleys. Generally, water mains are placed along streets and cause little, if any, stream disruption. Water mains are also placed at a shallower depth than sewer lines, which results in less potential for stream degradation. Furthermore, the provision of community water eliminates potential health risks associated with well contamination by septic system failures and provides protection against fire hazards.

In general, water and sewer service should be extended simultaneously into areas recommended for development. Development not recommended for community sewer service is recommended, however, to receive community water service.

Any future needs for water storage facilities in Germantown will be identified through the Montgomery County High Zone Supply Facility Plan (W-90.01).

### SEWERAGE FACILITIES (Figure 28)

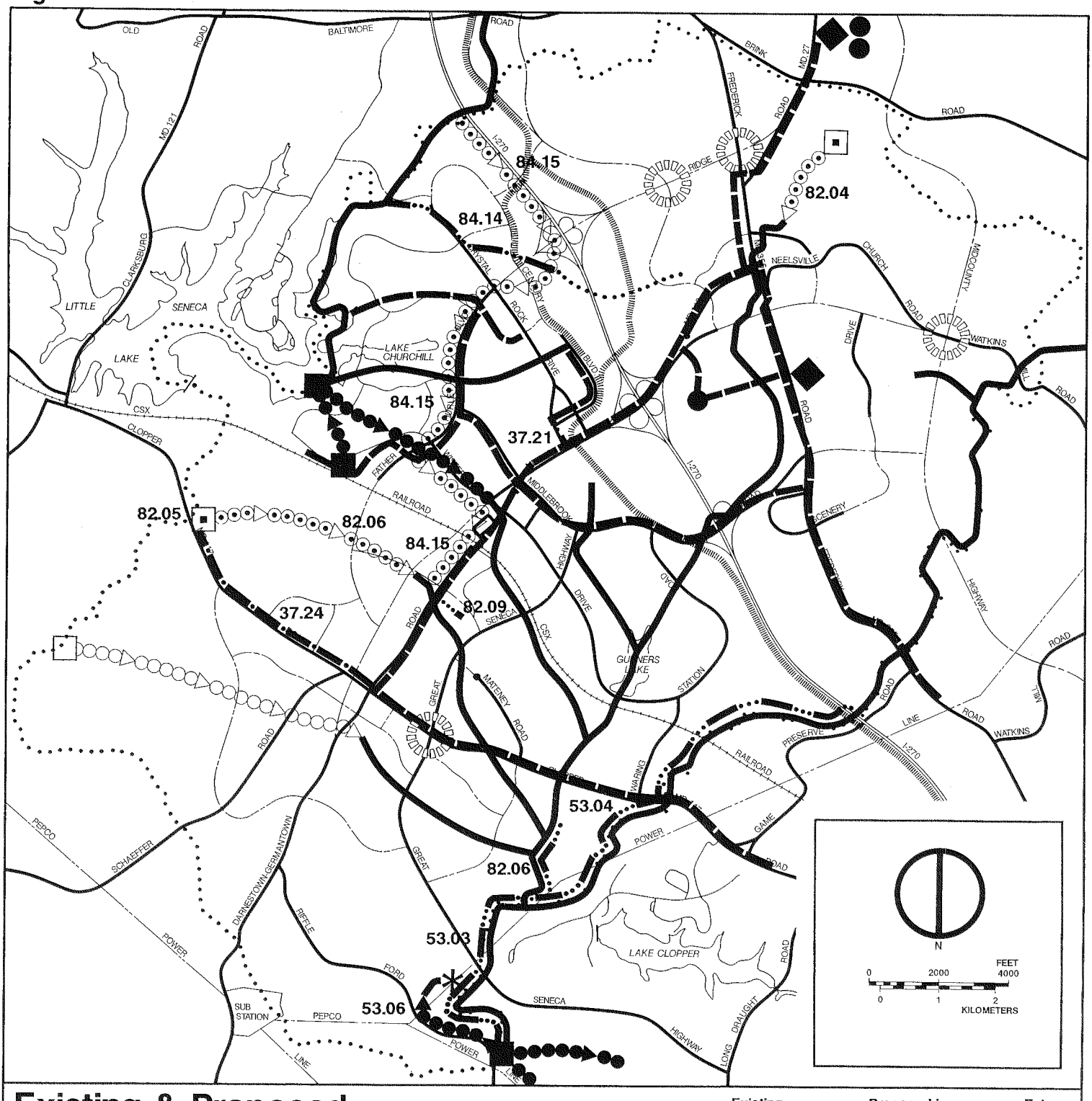
Community sewerage facilities in Germantown are owned and operated by the WSSC. Most of the major sewer facilities needed to serve Germantown are built or are currently programmed. As development proceeds, additional sewers and related facilities will be constructed as needed.

The Western Montgomery County Sewerage Facility Plan (Fall, 1988) addresses future sewer service in the Seneca and Muddy Branch Basins. A component of this plan is the rerating of the capacity of the Seneca Wastewater Treatment Plant from 5 mgd to 10 mgd (S-53.06). The existing plant is located adjacent to Riffle Ford Road at the southern edge of the planning area. The Seneca Creek Wastewater Treatment Plant is also programmed for two major improvements, including a new influent system (S-53.09) and a 3.2 million gallon retention basin (S-53.10). In order to provide an adequate buffer and land for possible future expansion, WSSC has acquired Analysis Area CL-10.

The Little Seneca Creek Branch "G" Part 1 sewerage line (S-84.17) is programmed in the current CIP. The facility consists of 1,040 feet of 18-inch sewer and is authorized for service to the Waters Landing portion of Churchill Town Sector.

In addition, Little Seneca Creek Branch "G" Part 2 (S-84.14) is currently shown on the dependent list of the CIP. However, the construction project has been recommended for the development authorization process in the proposed 1990-1995 CIP. The 1,660 feet

Figure 28




# Existing & Proposed Major Sewer & Water Facilities

| | Existing | Proposed in FY's 87-92 CIP | Future |
|---|---|---|---|
| WSSC Project Number | | 21.07 | |
| Sewerage Treatment Plant | ▲ | | |
| Sewerage Pumping Station | ■ | ▣ | □ |
| Water Pumping Station | ◆ | | |
| Sewerage Discharge Points | ✳ | | |
| Water Storage Tanks | ● | | |
| Sewerage Intercepter Outfalls | ——— | ———·——— | ····· |
| Treated Water Transmission Mains | ——— | ———·——— | |
| Sewer Force Mains | ●▶●●● | ●●▷●● | ○○▷○ |

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of 18-inch diameter sewer would serve the Employment Corridor and the western portion of Neelsville Village.

Facilities that have been recommended for the proposed FY 1990-1995 CIP are the Great Seneca Creek Relief Sewer Part 1 (S-53.03) and the Little Seneca Creek Branch "G" Part 3 (S-84.14). The Great Seneca Creek Relief Sewer would consist of 1,374 feet of 42-inch sewer and 4,953 feet of 48-inch sewer along Great Seneca Creek from its confluence with Gunners Branch to the Seneca Creek WWTP. This relief sewer would serve the entire Germantown Planning Area. The Little Seneca Creek Branch "G" Part 3 would consist of 5,850 feet of 18-inch sewer main to serve the Employment Corridor and the western portion of Neelsville Village.

The provision of sewer facilities should be consistent with policies to protect the physical attributes of the watershed, sensitive headwater areas, and the character of the proposed low density residential areas. Since the Little Seneca Creek Watershed is of high quality and is classified as a Class IV Watershed (see Appendix C), strong protective water resource measures are needed. Major sewer extensions could result in detrimental, short-term impacts from construction and possibly long-term secondary impacts, depending on the density of the resulting development. Although community sewer service may well be extended in Little Seneca Basin, the design and location of the gravity sewer lines, force mains, and the pumping station must minimize the negative impacts on the water quality of Little Seneca Creek and the limited wooded areas in and adjacent to the stream valleys. Innovative design and extraordinary care in the construction of sewers will be needed if these objectives are to be meet. (See Appendix D for specific performance criteria regarding development in Analysis Areas KI-2 and NE-1.)

# Noise Concerns

This Plan recommends the reduction of noise impacts from transportation-related activities through the use of setbacks, building placement, site design, and noise performance guidelines enforced through the subdivision and site plan review processes. Figure 29 illustrates projected roadway noise contours from I-270 and selected major highways.

## ROADWAY NOISE (Figure 29)

Traffic on a number of roads in Germantown, both existing and proposed, will create noise impacts on adjacent parcels. Figure 29, Projected Roadway Noise Contours, provides a general indication of areas of maximum roadway noise impacts, based on anticipated traffic conditions with end-state development as recommended in this Plan. These contours do not take into account potential attenuation through natural or man-made features.

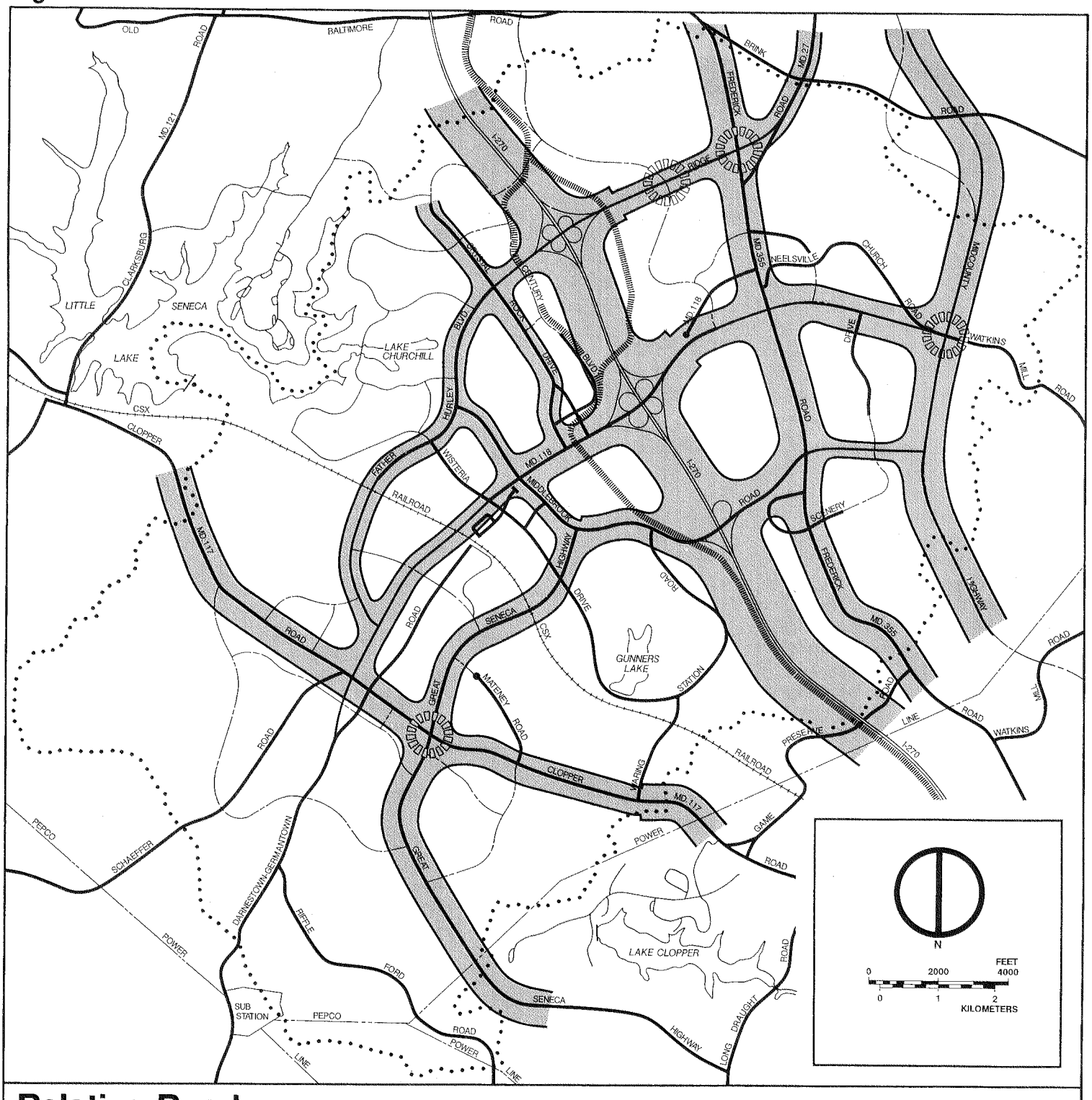
Provision of noise mitigation measures are the responsibility of State and County highway agencies, and private developers. As a general policy, the design of new and widened major highways will include an evaluation of noise attenuation measures to protect existing and approved developments. Cooperation and coordination between agencies and private developers are essential to the provision of cost-effective highway noise mitigation. The Montgomery County Planning Board will continue to include roadway noise as a consideration in its review of roadway design and throughout the land use planning and development approval processes. New development near existing and planned highways shall be guided by the techniques listed below, in priority order, to achieve the 60 dBA $L_{dn}$ level:

- In high noise areas locate site-specific, noise-compatible land uses such as parking lots, garages, storage sheds, recreation areas, open spaces, stormwater management facilities, or any other use so that noise-sensitive residential dwellings may be placed away or buffered from highways.
- Recommend, when possible, development of non-residential land uses (commercial, office, industrial, recreation, and open space) in high noise areas.
- Construct landscaped berms or man-made barriers such as walls or acoustical fencing to reduce noise to acceptable levels.
- Orient multi-family and other attached structures so that the building acts as a barrier and buffers private outdoor areas (patios) from roadway traffic.
- If measures designed to produce a suitable exterior noise environment are infeasible or insufficient, interior levels of 45 dBA $L_{dn}$ should be maintained through the provision of acoustical treatment of the building shell at the time of construction.
- Provide information to future residents of potential noise impacts. Under the master plan disclosure provisions of the Montgomery County Code, a home buyer has the opportunity to review the applicable master plan. Thus, the information provided in this Plan will assist in notifying prospective home buyers of proximity to noise generators.

## RAILROAD NOISE

Noise impacts in Germantown are compounded by noise from the B&O Railroad, which passes through the area. Although a portion of the rail corridor has already been developed, there are undeveloped parcels adjacent to the right-of-way. On the average, 30 trains pass through the area on a typical weekday, each of which produces the most signifi-

Figure 29




# Relative Roadway Noise Contours

24-hour unattenuated equivalent sound levels based on FHWA highway traffic noise prediction model results. Inputs include average daily traffic volumes and speeds from the EMME-2 transportation model. Shaded areas indicate sound levels of 65dBA LDN or higher from I-270 and all other shaded areas indicate sound levels of 60dBA LDN or higher from major highways.

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cant noise peaks in the area, ranging from 80-90 dBA at 150 feet. For the undeveloped parcels, this Plan recommends the same guidelines provided for highway noise plus a minimum building restriction line for both residential and nonresidential uses of 100 feet from the tracks, due to a vibration hazard, as recommended by U.S. Department of Housing and Urban Development.

# Natural Features

## THE LAND

All of the Germantown Planning Area lies within a physiographic region called the Piedmont Plateau. This region is characterized by a rolling to hilly topography which, in the planning area, ranges in elevation from 300 to 500 feet above sea level. Rock out-croppings are evident and a number of minor drainage channels cross the area, many of which contain spring-fed streams. Both the Great Seneca and Little Seneca Creeks have headwaters in the northern portion of the County and maintain year-round flows through the area.

Soils in the area are considered to be only moderately good for farming, since they are susceptible to erosion and can be cultivated only part of the time. These soils are not highly productive, but can be used for all common crops and for pasture. Suitability of soils for residential development using individual sewage disposal systems is limited to areas with slopes of less than 15 percent. Reforestation may be possible in areas proposed for permanent open space as most soils will support stands of pine and hardwood.

At the time of Preliminary Subdivision Plan review, the Montgomery County Planning Board may restrict construction on lands unsafe or unsuitable for development because of soil limitation. Limitations include seasonal high water table, poor drainage, wetland/hydric conditions, high shrink/swell potential, shallow depth to bedrock, extensive slopes, high susceptibility to erosion, or any combinations of these conditions. These conditions may well also restrict approval of individual residential sewage disposal systems.

A northeast-southwest trending ridge runs through the center of the area and is bounded on the east by the Great Seneca Creek and on the west by the Little Seneca Creek. The two major slopes which flank this central ridge are dissected by a number of small tributaries which flow away from the ridge to the two streams. This creates a general pattern consisting of a central ridge with several "finger" ridges extending out away from it on both sides, each separated by a small stream.

The upland slopes in the Germantown area along the central and finger ridges tend to be flat to gently sloping. The degree of slope increases toward the stream bottom and finally becomes level in the flat stream valleys. Because of the intense erosive action of the two bordering creeks and their adjoining tributaries, most of the steep slopes occur along their edges.

## VEGETATION

The natural vegetation of the Germantown area is mixed hardwood forest. At one time the entire area consisted of mature hardwoods with the dominant species being white and red oak with some yellow-poplar, locust, hickory, and black walnut intermixed. Now relatively few areas remain in forest.

Most of the present mature growth forests are found on rough or steep areas, on areas that have become too eroded for cultivation, and on poorly drained soils on bottomlands and the floodplains of streams. (See Figure 24.) Agricultural activities resulted in a significant loss of forest.

Some areas which were cleared are now under going natural revegetation. These are primarily old fields that have become too depleted and eroded to support crops or pasture and are being allowed to revert to forest.

Forest vegetation is important for several reasons:

- visual quality,
- recreation potential,
- ameliorating effects on microclimate,
- erosion control,
- soil stabilization,
- wildlife habitat, and
- groundwater recharge.

This Plan encourages the preservation of existing forest areas, including preserving as many trees as possible on development sites, and recommends the reforestation of open space areas where possible.

## WETLANDS

Wetlands in Germantown occur almost exclusively in the valley floors of streams. Some isolated wetland areas exist in and around individual ponds in the area. A wetland area of particular importance, containing rare plant communities, occurs in Analysis Area NE-3. The wetlands extend beyond the boundaries of the 100-year floodplain and include the area within the floodplains. The wetlands that are not on parkland are recommended to be protected by conservation easements and/or future park acquisition. (See Figure 25.)