

***TECHNICAL
APPENDIX***

Appendix A

Master Plan Amendments: 1979-1986

Description of Major Land Use and Zoning Effects of Each Amendment	Date of Council Actions
1. Established floating park symbols on village and neighborhood centers.	9/74
2. Changed staging and zoning recommendations in a portion of Clopper Village.	1/76
3. Changed staging and zoning recommendations in portions of Clopper and Kingsview Villages.	12/77
4. Changed staging and zoning recommendations in portions of Neelsville Village.	6/79
5. Changed staging and zoning recommendations in portions of Churchill, Gunners Lake, and Kingsview Villages.	8/79
6. Deleted Proposed Road B-4 in Town Center.	2/80
7. 1982 Amendments: changed staging and zoning recommendations in Clopper and Neelsville Villages and changed land use and zoning recommendations for a portion of Middlebrook Village.	10/82 and 2/83
8. 1985 Amendments: changed staging and zoning recommendations in a portion of Town Center, and in portions of Churchill, Clopper, and Neelsville Villages.	11/86

Appendix B

Retail Trends and Implications

The nature and location of retail services constitute a major component of the quality of a community. Residents need to be able to purchase the goods they desire at locations that are convenient and accessible.

Except for previously existing retail facilities, the 1974 *Master Plan* recommends that retail services be concentrated in Village Centers and in the Town Center. Convenience goods, those which are generally purchased at least once a week, should be sold in Village Centers, while comparison items should be sold in the Town Center and the proposed Regional Mall. This Master Plan recommends continuing this organization of retail locations.

Changes have occurred since the adoption of the 1974 *Master Plan* that are responded to in this Plan. These changes include the increase in two-income families and other changes to our lifestyles, the increase in the number of goods available, a local decrease in the number of supermarket chains, and the construction of retail centers at locations that were not anticipated in the 1974 *Master Plan*.

Convenience Retail in Village Centers

Village Centers are designed to meet more than just the retail needs of the community. Social, recreational, educational and civic activities are planned to occur in Germantown's village centers. The Village Center retail activities are generally anchored by a major supermarket complemented by several other convenience stores and family restaurants, which focus on a pedestrian area.

This concept of clustering retail uses serving a similar market area has grown out of the new commu-

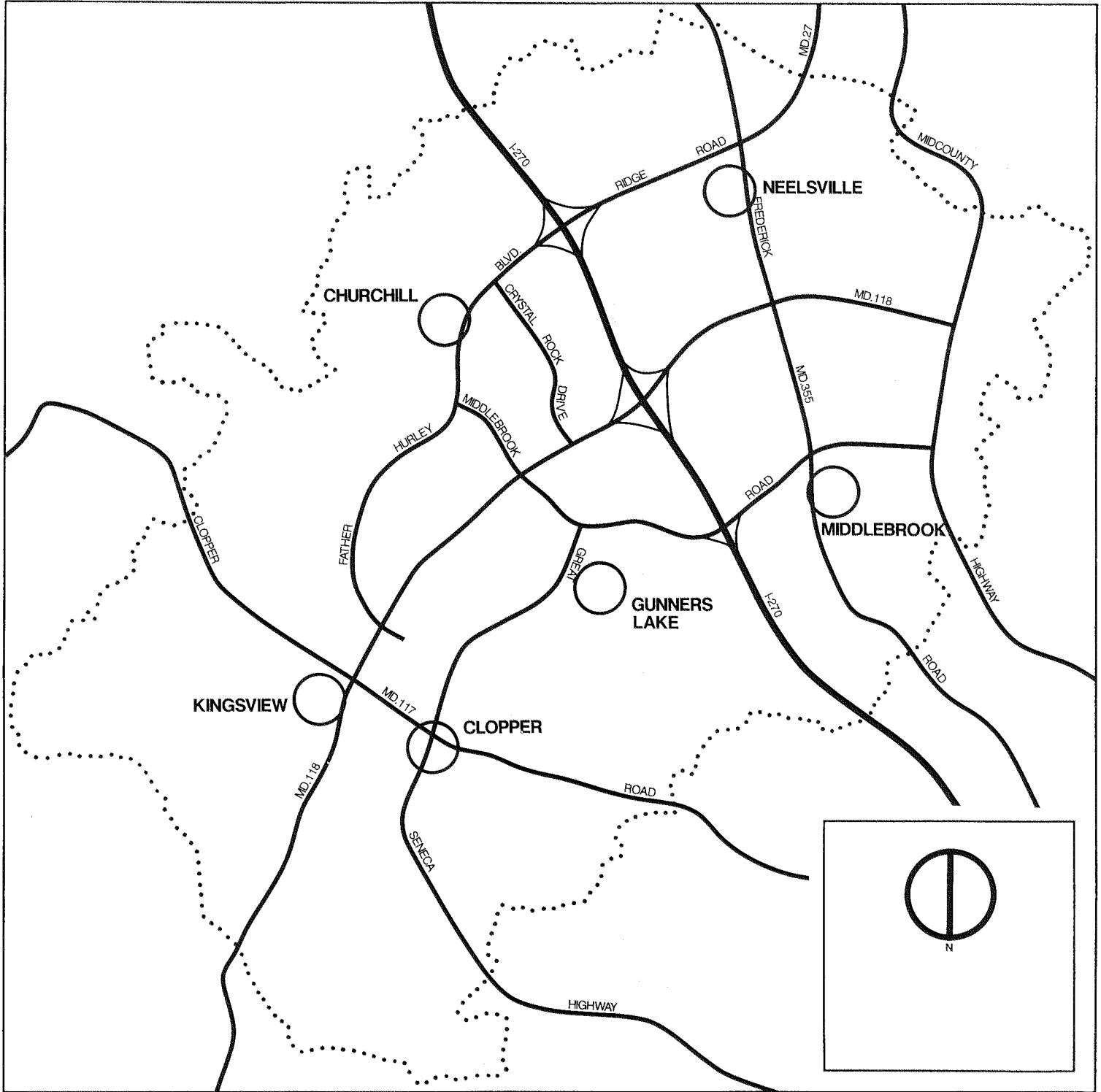
nity planning of the late 1960s. It differs from the small to medium sized "informal" groups of stores located along roadways prevalent into the 1980s. These scattered centers often lack any cohesive identity other than the limited range of products and services they offer.

The Village Center concept has evolved dramatically over the past ten years in response to changes in the American lifestyle and shopping patterns. We now demand more variety of products, more convenience and increased amenities. This evolution has resulted in retail centers occupying 10 to 15 acres of land rather than the 8 to 10 acres seen in the early 1970s. The increased building and site requirements of these centers are in response to the following factors:

- increases in the variety of goods and services provided at a center and within each store;
- increased demands for improved vehicular, and pedestrian circulation within the site;
- increased demand for aesthetic design, including landscaped areas around the edges of the center, in the parking areas, and within the pedestrian areas;
- provision of properly located parking in sufficient supply; and
- inclusion of amenities including community meeting facilities, active recreational facilities, religious facilities, elderly and child day-care facilities, and medical facilities.

As a result of this evolution, consumers have come to expect variety, convenience, beauty and safety in retail facilities. The prototype stores have also responded with combined food and drug stores now typically occupying buildings over 50,000 square feet in area. Further, the 70,000 to 100,000 foot retail center

Figure B-1



1974 Master Plan- Village Center Locations

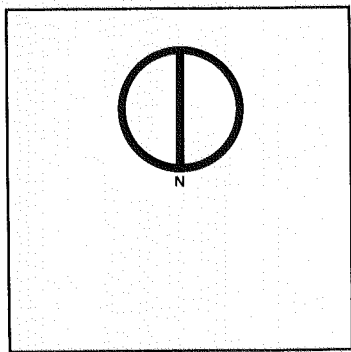
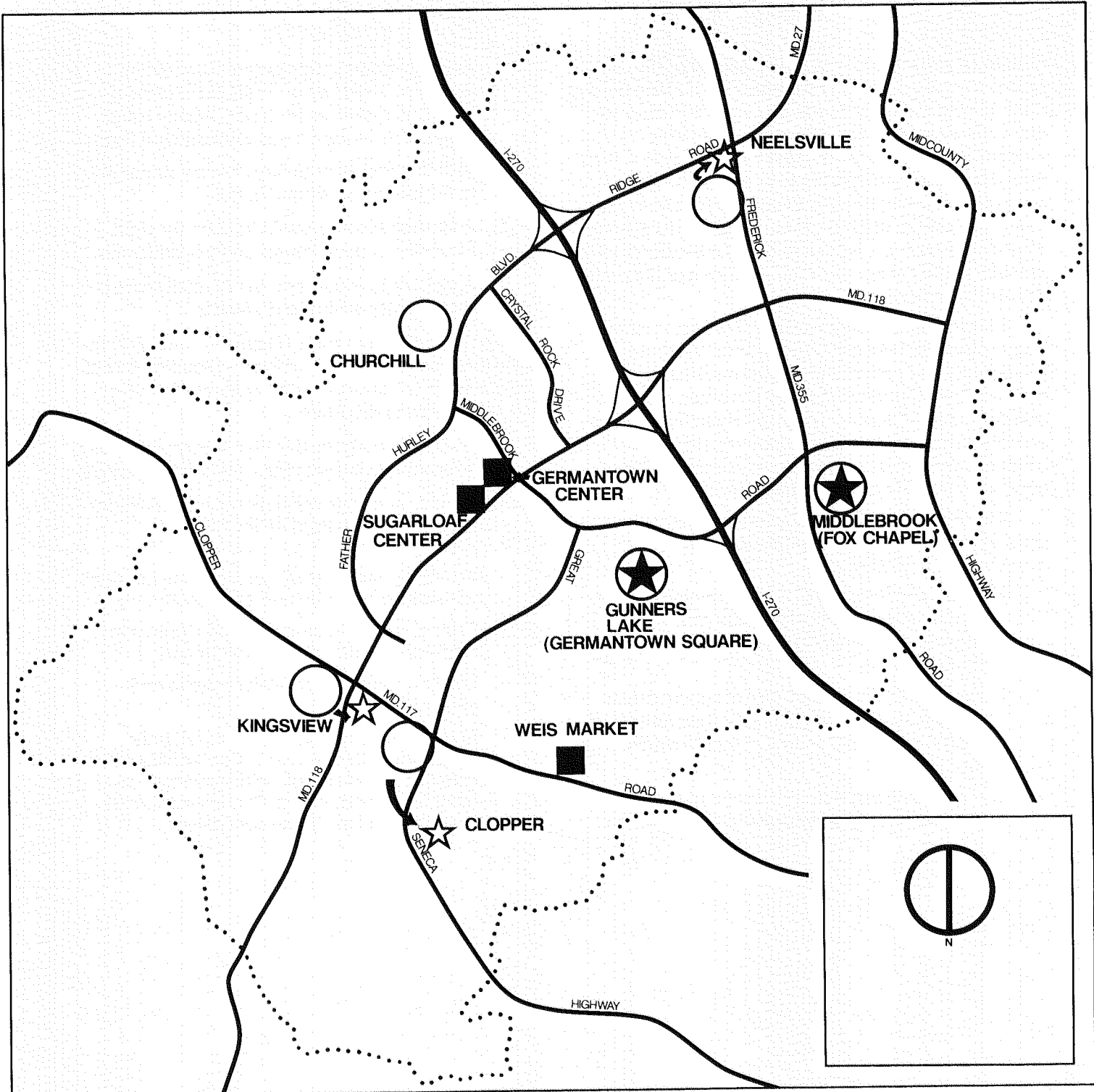
Village Center Locations



Comprehensive Amendment
to the Master Plan for Germantown

Montgomery County, Maryland

The Maryland-National Capital Park and Planning Commission



1989 Master Plan- Village Center Locations

- Village Centers**
- Existing Location
- 1989 Master Plan-Recommended Location
- 1974 Master Plan-Recommended Location
- Other Convenience Retail Centers**
- Existing Location

of 10 to 15 years ago is now in the 100,000 to 150,000 square foot range. In order for retailers and land developers to respond to the needs and expectations of today's consumer and still achieve an acceptable economic return, a larger market base population than that of ten years ago appears to be required. Given a constant household density, the geographic trade area today will tend to be larger for a village center than it would have been ten years ago because the stores individually are larger and the total retail area of the center has also increased.

Larger centers with increased trade areas result in longer distances between centers. Thus, vehicular accessibility and convenience to the resident shopper become more important. As time has become an increasingly scarce resource, particularly to two-income and single-head-of-household families, the ability to combine trips to one location is very desirable. This trend reinforces the village center concept.

The following sets forth the major observations regarding the evolution of convenience retail centers over the past 10 to 15 years:

1. The trend in neighborhood shopping centers (those anchored only by a supermarket) is toward larger centers at greater distances from each other.
2. Since 1972, the median size of supermarkets nationally has increased by 33.5 percent (from 17,600 square feet in 1972 to 23,500 square feet in 1987).
3. The increase in size is the result of supermarkets becoming more specialized and respon-

sive to consumer demands and providing items previously only available in specialty food stores, such as fresh fish, freshly baked goods, delicatessen items, and gourmet foods.

4. Visibility and accessibility are very important in the location of a retail center.
5. A location before a traffic light on the right hand side of homebound traffic is preferable.
6. A yield of 10,000 square feet of retail space per acre remains an industry standard.

The following two maps (Figures B-1 and B-2) indicate the changes in the planning and construction of convenience retail centers in Germantown from the 1974 *Master Plan* to this Plan.

Based on this analysis, this Plan incorporates the following recommendations regarding Village Centers:

- Provide adequate convenience retail facilities that can be supported by the resident population.
- Relocate remaining village centers to locations with higher visibility and accessibility.
- Enlarge retail building area and site area in response to national and local trends.
- Locate a convenience retail center in each village.
- Integrate other facilities such as religious institutions, daycare, recreation, service office uses, parks and schools with convenience retail facilities in Village Centers to improve community identity and convenience.

Appendix C

Explanation of Water Class Uses

The Maryland Water Resources Administration has established four distinct water class uses for the surface waters of the state, each having a specific set of standards. The water class uses are:

CLASS I: WATER CONTACT RECREATION & AQUATIC LIFE

Waters which are suitable for water contact sports, play and leisure time activities where the human body may come in direct contact with the surface water, and the growth and propagation of fish (other than trout), other aquatic life, and wildlife.

CLASS II: SHELLFISH HARVESTING (None in Montgomery County)

Waters where shellfish are propagated, stored, or gathered for marketing purposes, including actual or

potential areas for the harvesting of oysters, softshell clams, hardshell clams, and brackish water clams.

CLASS III: NATURAL TROUT WATERS

Waters which are suitable for the growth and propagation of trout, and which are capable of supporting natural trout populations and their associated food organisms.

CLASS IV: RECREATION TROUT WATERS

Waters which are capable of holding or supporting adult trout for put-and-take fishing, and which are managed as a special fishery by periodic stocking and seasonal catching.

Appendix D

Water Quality Standards and Criteria for Development

The quality of Little Seneca Creek, particularly the segment downstream of Lake Seneca, will be directly affected by development of the land area that drains to it. The quality and use of this stream will be directly affected by development that occurs on Analysis Areas KI-2 and NE-1.

The intent of the Master Plan is to establish a balance between two objectives in Germantown—first, to provide housing at appropriate Corridor City densities, and secondly, to protect the high water quality of selected streams. Environmental performance criteria have been established in response to both of these objectives. In Analysis Areas KI-2 and NE-1 these criteria require the use of extraordinary best management practices.

Without adherence to the performance criteria and extraordinary best management practices, the maximum residential density recommended for Analysis Area KI-2 would be one unit per two acres.

The intent of the performance criteria is to permit residential development to occur up to the density limit of the R-200 or PD-2 zoning classification (2.4 units per acre), if a package of environmental mitigation measures is implemented which meets the stated criteria. *If the performance standards and criteria cannot be met, then the mitigation measures must be strengthened and/or the development intensity reduced to a level consistent with the criteria.* This site-specific approach provides developers an opportunity to develop a package of mitigation measures that will allow more dwelling units than could be built without those mitigation

measures. The mitigation package would respond to the unique environmental characteristics of the property: soils, slopes, geology, extent and nature of vegetation, relationship to natural drainage courses, etc.

Development and other land disturbances in Analysis Areas KI-2 and NE-1, because of their proximity to and potential impact on the existing high water quality of Little Seneca Creek, deserve special attention and should be conducted in accordance with the guidelines and requirements set forth below.

These guidelines and requirements are organized in three sections:

- D-1 Those which are specific to the environmental situation of Analysis Areas KI-2 and NE-1.
- D-2 Proposed additions to the subdivision regulations and related "Guidelines for the Protection of Slopes and Stream Valleys," to be renamed "Guidelines for Environmental Management in Montgomery County."
- D-3 Proposed amendments to the County's Stormwater Management and Sediment Control Regulations administered by the Department of Environmental Protection.

Sections D-2 and D-3 are incorporated in this Master Plan until such time as new regulations incorporating the substance of these amendments are officially adopted.

D-1: Master Plan Specific Guidelines

MASTER PLAN PERFORMANCE STANDARDS¹

The following standards shall be met by the developer in Analysis Areas KI-2 and NE-1 to assist in maintaining the existing high water quality.

Imperviousness

Overall, development shall not result in more than 20 percent total impervious surface (e.g., structures, roadways, parking areas, paths).

Stream Buffer

- a. A minimum stream buffer of 150 feet on each bank of a tributary perennial stream and a minimum stream buffer from each bank of the mainstem of Little Seneca Creek are required.
- b. Additional buffer width greater than the minimum set forth above may be required based on factors including:
 - protection of mature forest stands or other areas of environmental value such as wetlands;
 - types and density of vegetative cover and soil holding ability; and
 - slope of land adjacent to the stream or defining the stream valley.
- c. The stream buffer shall remain undisturbed, with the exception of reforestation, bank stabilization, stormwater management facilities, and road and utility crossings. Stream access should be carefully managed to protect water quality.

Vegetation and Tree Cover

- a. All disturbed areas shall be revegetated as soon as possible as recommended by the Montgomery County Soil Conservation District. Emphasis should be placed on reforestation of disturbed areas.
- b. In cooperation with the M-NCPPC Environmental Planning Division and the forestry and fisheries divisions of the Maryland Department of Natural Resources, the devel-

oper shall prepare and implement a reforestation plan for the stream buffer area. The primary objectives of reforestation are to provide shade and cooler water temperature and additional sediment and nutrient removal from stormwater runoff. Standards for revegetation of the stream buffer are set forth in the Subdivision Regulations.

Steep Slopes

- a. Physical development should avoid areas where the slope equals or exceeds 15 percent. Steep slopes (i.e., 15 percent or more) should be incorporated into the site's open space. Wooded slopes equal to or greater than 15 percent should not be disturbed.
- b. Additional measures (as recommended by M-NCPPC in consultation with DEP) may be required where moderately or severely erodible soils exist.

SUGGESTED BEST MANAGEMENT PRACTICES

Best management practices (BMPs) shall be utilized, as outlined in the "Guidelines for Environmental Management in Montgomery County," to reduce sediment and pollutant loading in receiving streams.

IMPACT ASSESSMENT REQUIREMENTS

Performance Monitoring

Performance monitoring and reporting must be conducted by the developer or his agent to ensure that existing high water quality is maintained. The scope, location and timing of such monitoring and reporting is set forth in the proposed "Guidelines for Environmental Quality in Montgomery County."

Environmental Impact Analysis

In order for the Montgomery County Planning Department to evaluate a development proposal, applicants for development in the KI-2 and NE-1 analysis areas shall submit an environmental analysis of the natural features, the impact of the proposed development on water quality, and the proposed mitigation measures. The scope of the analysis is set forth in the environmental impact analysis requirements of the proposed "Guidelines for Environmental Quality in Montgomery County."

¹ Variances from the Master Plan Standards, Best Management Practices, and Impact Assessment Requirements may be granted on a case-by-case basis by the Montgomery County Planning Board if it can be demonstrated that other measures, with innovative BMP's, would maintain the existing high water quality of Little Seneca Creek.

D-2: Proposed Amendment and Guidelines

This section sets forth a proposed amendment to the Montgomery County Subdivision Regulation and the establishment of "Guidelines for Environmental Management in Montgomery County."

SUBDIVISION REGULATIONS

The following paragraph is recommended by staff for inclusion in the Subdivision Regulations. Guidelines for achieving County-wide watershed objectives will be adopted by the Planning Board with specific reference in Section 50-32(e) of the Subdivision Regulations.

The Board may require environmental management measures that it finds necessary to protect the water quality of County streams in the context of the development density proposed or approved. Such measures may include the delineation and protection of slopes, stream buffers, and wetlands, as well as the utilization of best management practices. For areas designated in area or functional master plans as requiring special protection, or in other areas defined in the Guidelines as environmentally sensitive, additional measures such as environmental impact analysis, afforestation/ reforestation,² and performance monitoring may be required. Where appropriate, enforcement shall be through binding agreement between the applicant and M-NCPPC ensuring implementation of all required measures. The Board shall publish "Guidelines for Environmental Management in Montgomery County" to provide guidance for the implementation of these measures.

GUIDELINES FOR ENVIRONMENTAL MANAGEMENT IN MONTGOMERY COUNTY

The current staff slope and stream buffer guidelines will be expanded and retitled, "Guidelines for Environmental Management in Montgomery County."

The following guidelines are divided into two sections based on the following criteria of applicability: Section I shall be required for all preliminary subdivision and site plans. Section II would only be required when an environmentally sensitive or special protection area has been identified in:

- 1) A master plan, functional master plan, Comprehensive Ten-Year Water and Sewerage Plan, or watershed technical study;
- 2) Areas that are within Class III watersheds and/or subwatersheds;
- 3) Within the Little Seneca Creek Watershed; and
- 4) In proposed subdivision plans where field investigations have identified the presence or predominance of any of the following environmental features:
 - unique wetland, seeps, springs, bogs, recharge areas, or sole source aquifer.
 - tree coverage on more than 30% of the site and this environmentally sensitive area cannot be incorporated into open space.
 - steep areas with erodible soil, including an area with 20% of the land having greater than 25% slope, and an area with 30% of the land being greater than 15% slope.
 - where dwellings are proposed on fill or floodplain soil.
 - proposal associated with high degree of imperviousness (greater than 30%) that will result in further deterioration of the receiving waters, especially where state's anti-degradation policy may apply.
 - subdivision proposals greater than 100 acres in size and with 400 feet of Class III and Class IV streams.
 - commercial, industrial, and institutional development dealing with hazardous substances.

GUIDELINES FOR ALL AREAS

(Required for all subdivisions)

Performance Standards

The following standards shall be applied to all plans:

- Streams, springs, and seeps shall be maintained in a natural condition whenever possible so that the hydraulic regimen and State water quality standards for receiving waters can be maintained.
- Deposition of any material such as excavated rock, topsoil, stumps and shrubs, and building material within the designated stream buffer on the preliminary/site plan is prohibited.

2 Afforestation means the establishment of a tree cover on an area from which it has always or very long been absent, or the planting of open areas which are not presently in tree cover. Reforestation means the replanting of trees on recently forested land.

Best Management Practices

As required under, and to conform to, applicable County and State laws and regulations, the applicant shall identify best management practices (BMPs) to reduce sediment and pollutant loading in receiving streams. Additional BMPs may be recommended on a case-by-case basis. The BMPs shall be incorporated into the Stormwater Management Concept Plan required with the preliminary plan submission:

- A State waterway permit from the Water Resources Administration must be obtained before any construction or alteration:
 - (a) in Class III streams;
 - (b) in Class IV streams with watersheds greater than 100 acres; or
 - (c) in Class I streams with watersheds greater than 400 acres.

Any necessary permits from federal or state government (e.g., Section 401 or 404 permits) must be obtained before any disturbance of wetlands or waters.

- To maximize the potential use and success of infiltration techniques, buildings, parking lots and other development should be located on soils with a low infiltration capacity, to the extent feasible. Pervious soils should be maintained as open space, conservation easements, parkland, or stormwater facility sites to the greatest extent consistent with other land use and zoning objectives. Parking lots should not be located within the stream buffer or 100 year ultimate floodplain.
- When a development site consists of both cropland and forestland, it is preferable to develop the area of cropland.
- Road and public utility stream crossings and stream buffer encroachments should be minimized. Where stream crossings and buffer encroachments must occur, they should be placed away from environmentally sensitive areas, and combined to minimize disruption in the stream valley. Clear bridge spans should be used to cross watercourses whenever possible, particularly in Class III and IV watersheds. Culverts may be permitted on a case-by-case basis if it can be demonstrated that the benefits would outweigh any negative impacts.
- Sewer mains and pumping stations should be sited and constructed in such a manner as to protect ground and surface waters. Sewer lines and pumping stations should be located as far as practical from streams while still maintaining needed elevations and gradients to provide reliable service.
- Wherever possible, natural drainage systems should be utilized instead of hydraulically efficient structural drainage. No modification of existing natural drainage should occur except for bank stabilization,

swales, habitat improvement measures, and unavoidable infrastructure improvements (roads, sewer lines, stormwater management, etc.).

- To the extent feasible, natural drainage ways should be shaded in Class III and IV streams to prevent high temperature stormwater from being discharged into the receiving streams.
- Additional erosion control measures (as recommended by M-NCPPC staff in consultation with DEP) may be utilized where moderately or severely eroded soils exist.
- Use of porous materials is encouraged in large parking areas to limit impervious surface, particularly in areas of occasional use.

GUIDELINES FOR SENSITIVE AREAS (Required only under certain circumstances)

The items contained in this section would only be required when an environmentally sensitive or special protection area has been identified in a master plan, functional master plan, Comprehensive Ten-Year Water and Sewerage Plan, or watershed technical study; or

Any combination or all of the following items may be required depending on the specific property being evaluated.

Environmental Impact Analysis

In order for the planning staff to evaluate a development proposal, applicants for development may be required to submit an environmental analysis of the natural features, the impact of the proposed development, and the proposed mitigation measures. Appropriate analyses and models should be utilized to assess impacts and efficiency of mitigation measures. Depending on the location and type of development, the applicant may be required to provide information including but not limited to any or all of the following items:

Analysis of Natural Features

- a. Topography:
 - natural terrain of the site; and
 - slopes that equal or exceed 15 percent.
- b. Soils/Geology:
 - soil types including drainage characteristics, susceptibility to erosion, and areas of moderate and severe erodibility, including erodibility factor (K);
 - depth of seasonal high water table (for individual water and sewerage systems);
 - geologic conditions; and
 - areas suitable for infiltration.
- c. Vegetation:
 - inventory of site vegetation emphasizing streamside vegetation; and
 - wetland areas, mature wooded areas, and areas demonstrating stress (erosion, poor soils, steep slopes, etc.).

- d. **Physical Habitat (Stream Environment):**
- presence or absence of perennial/intermittent streams;
 - stream characteristics:
 - location and base flow of receiving stream;
 - stream gradient;
 - substrata;
 - habitat suitability for trout, other game fish, and their supporting organisms;
 - biological conditions, including existing macroinvertebrate populations (i.e., species composition and abundance) and phytoplankton populations;
 - stream bank condition; and
 - areas of channel or streambed erosion.
- e. **Groundwater:**
- groundwater characteristics (e.g., depth, yield, and storage) for individual water systems;
 - location and characteristics of springs and recharge areas.
- f. **Hydraulics:**
- existing drainage area and drainage characteristics of the site;
 - existing and future channel velocities; and
 - ultimate 100-year floodplain as defined by M-NCPPC/FEMA 1"=200' maps plus 25' building restriction line.
- g. **Water Quality:**
- existing water quality data through baseline monitoring.

Analysis of Proposed Development

- a. **Size and Location of Development:**
- proximity of physical development to the stream channels;
 - proximity to headwaters for perennial/intermittent streams, springs and wetlands;
 - area of physical development (i.e., ground coverage including buildings, roads, parking areas, walks, and other transportation ways); and
 - estimate of impervious surface.
- b. **Proposed Stormwater Management Plan:**
- stormwater management concept plan including the types of conveyance and measures to augment groundwater recharge to maintain sufficient base flow of streams.
- c. **Proposed Sewerage and Water Systems:**
- proximity of water and sewer lines to the stream channels; and
 - location of pumping stations and force mains.
- d. **Proposed Site Maintenance Plan:**

- erosion and sediment control measures recommended for use during and after construction; and
 - proposed management plans for land application of substances (e.g., fertilizers, pesticides, etc.) and the deposition of residuals (e.g., refuse, vegetative debris, etc.).
- e. **Impact on Water Quality as Measured by the Following:**
- temperature;
 - dissolved oxygen concentration;
 - turbidity;
 - fecal coliform density;
 - biological oxygen demand;
 - nutrients (soluble and insoluble);
 - pH;
 - toxics (including heavy metals); and
 - total residual chlorine.

In addition, the analysis should identify and describe proposed measures to mitigate or eliminate impacts of the above parameters due to the development.

Afforestation/Reforestation

- At the direction of the Board, the applicant shall develop and implement an afforestation/reforestation plan for the stream buffer area, in cooperation with the M-NCPPC Environmental Planning Division, Montgomery County Department of Parks, and the Forestry, Park, and Wildlife Service of the Maryland Department of Natural Resources. The primary objectives of afforestation/reforestation are to provide shade and cooler water temperature, additional sediment and nutrient removal from stormwater runoff, and improved wildlife habitat. The emphasis shall be placed on locating larger caliper trees and dense shrubs within the buffer area closest to the stream. Other areas of the buffer shall be allowed to reforest naturally.
- Where development occurs on cropland, former croplands outside of the developed areas should be afforested. The type and extent of afforestation/reforestation would be reviewed on a case-by-case basis and during the preliminary/site plan stage.

Performance Monitoring

Performance monitoring and reporting may be required of the applicant or his agent at the direction of the Planning Board to ensure that existing high water quality is maintained during and after development activity. The monitoring results shall be used to collect baseline data on existing water quality, to estimate the likely impact of development on water quality, and to assess actual impact on water quality during construction and at project completion. Monitoring data shall be reported to the M-NCPPC Environmental Planning Division. The scope, location and timing of monitoring

and reporting is provided below. The Board may at its discretion waive or add other requirements to the scope.

- The applicant (or the M-NCPPC as an agent of the applicant with applicant funding) shall provide bi-monthly (i.e., every two months) grab samples with field measurements of flow, pH, turbidity, temperature, and dissolved oxygen; and laboratory analyses of major pollutant constituents as specified by prior agreement in the approval of preliminary/site plans. Quarterly reports shall be provided to the M-NCPPC Environmental Planning Division.
- For projects constructed in the Class III and IV watersheds, monitoring and reporting shall begin at the initiation of grading and continue for a period of 18 months after the development is completed.
- Monitoring and reporting will be conducted in a manner to provide needed data on best management practices. A minimum of three samples will be collected during each sampling session, including one at the upper reaches of the development site, one at the development site, and one at the lower reaches of the development site. At least eight of the bi-monthly samples must be collected during storm flow resulting from rainfall events of 0.75 inches or greater.
- The applicant may be required to conduct biological monitoring in combination with physical monitoring. Biological monitoring shall be conducted for aquatic invertebrates to determine the overall impact of development on the stream system (indicator organisms can provide information of the extremes of pollution experienced by a stream system). Bio-assay testing shall be conducted prior to grading, during construction and at completion of the development project. Scheduling of testing during construction shall be determined as part of the subdivision/site plan approval.
- The analysis shall be conducted at the applicant's expense and in coordination with the M-NCPPC. The applicant will be responsible for selecting a state certified analytical laboratory and for using standard field sample collection methods.

Sediment and Erosion Control Best Management Practices

All disturbed areas should be revegetated as soon as possible as recommended by the Montgomery County Soil Conservation District. Emphasis should be placed on reforestation of disturbed areas.

Development Agreement

When required by the Planning Board, the applicant/owners of the property shall enter into a binding agreement with the M-NCPPC to ensure that the development is constructed in accordance with the appropriate standards and requirements contained herein and other County environmental standards, and the stormwater management facilities are properly constructed and maintained.

The monitoring, maintenance, and enforcement agreement is to be submitted for approval with the record plat submission. An executed copy is to be recorded with the first record plats. In addition, there is to be appropriate language included in the Homeowners Association documentation referencing the covenant and the obligations to be undertaken by the Homeowners Association. During construction, and for the first four years following of construction, the responsibility for compliance with the agreement will remain with the developer. Thereafter, the Homeowners Association shall assume responsibility.

As part of this agreement:

The applicant must:

- provide bi-weekly certification to M-NCPPC (with copy to DEP) during construction from an independent professional engineer that the clearing, grading and stabilization of the site are proceeding in accordance with the Maryland Standards and Specifications for Soil Erosion and Sediment Control.
- establish and maintain a cash escrow fund to finance the inspection and maintenance of the stormwater management (SWM) facilities.
- initiate and pay for bi-annual inspection, maintenance, and certification to DEP, ensuring that the facilities remain in proper working condition in accordance with the approved design standards.
- ensure that the stormwater management facilities are constructed in accordance with State and County sediment control practices and with the performance criteria and standards listed herein.
- grant the necessary easements allowing the county access to the facility in order to inspect and/or repair the facilities and verify engineer's certification.

The homeowners association must:

- maintain the stormwater maintenance fund at a predetermined level by assessing homeowners a portion of the association dues; measures to protect the water quality from misapplication of fertilizer and pesticide, improper refuse collection, vegetative debris, and animal wastes should be considered and adopted into the operating policies or covenants of the homeowner's association.

Both applicant and homeowners association must agree to:

- conduct conveyance system cleaning as often as necessary so the catch basins and ditches perform according to design standards.
- maintain the facilities in accordance with the agreement.

If not, the County may perform all necessary repair and maintenance work, and the County may assess the developer/homeowners association or the cash escrow fund for the costs of the work and any applicable penalties.

D-3: Proposed Stormwater & Sediment Control Amendments

RECOMMENDED CHANGES TO STORMWATER REGULATIONS

Recommendation #1: Amend Section 1.8 to include the following definitions: (Definitions Apply to ALL WATERS)

Stream Buffer—An undisturbed strip of natural vegetation contiguous with and parallel to the bank of a perennial stream (base flow channel) which is intended to:

- Protect hydraulically adjacent slope areas;
- Maintain or improve the water temperature regimen/water quality of a stream;
- Protect wetlands;
- Complement regulations pertaining to the 100-year ultimate floodplain;
- Provide or maintain wildlife habitat, open space, or both;
- Complement on-site erosion/sediment control measures and stormwater management measures by serving as a backup natural filter/trap; and
- Provide for the esthetic enhancement of stream valley areas.

Nontidal Wetland—An area that is inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions, commonly known as hydrophytic vegetation.

Recommendation #2: Amend Section 2.A.1.b to add a sentence at the end of the first paragraph (ending with the word "Manual") to read:

The Director may require applicants to submit soil boring information sufficient to demonstrate thorough analysis of the feasibility of stormwater management infiltration practices.

Recommendation #3: Amend Section 2.A.1. to add a new Subsection 2.A.1.c as follows:

c. Protection of Stream Buffer Areas

(1) Applicants are required to delineate stream buffer areas on stormwater management (SM) Concept Plans and

related SM structural design documents submitted to DEP. (ALL WATERS)

- (a) For those properties that go through M-NCPPC subdivision review and/or site plan review, the delineated stream buffer area shall be that approved by the Montgomery County Planning Board as part of subdivision or site plan approval.
- (b) For lots recorded prior to April 1983, applicants must delineate stream buffer areas on the SM Concept Plan. Applicant proposed stream buffer delineations must be based on and consistent with the County's adopted "Guidelines for the Protection of Stream Buffer Areas." The Director may, after opportunity for comment from the M-NCPPC, waive this requirement in cases where its imposition would eliminate opportunities for development of previously approved and recorded lots or when other circumstances warrant.³

(2) The SM Concept Plan submission shall include information necessary to document compliance with the County's "Guidelines." (ALL WATERS)

(3) Grading and construction work involving permanent disturbances to stream buffer vegetation is prohibited in stream buffers delineated pursuant to Section 2.A.1.c.(1).(b). Construction of roads, bridges, drainage and stormwater management facilities, sewer lines, other utilities, trails, bike paths, etc. is exempt from this restriction. The Director may also waive this restriction if unusual circumstances warrant and stream protection objectives will not be jeopardized. (ALL WATERS)

(4) Reforestation, through natural succession, is required within stream buffers delineated pursuant to Section 2.A.1.c.(1).(b). As considerations of water quality, steep slopes, or other environmental conditions warrant, the Director may require additional plantings to accelerate reforestation within sensitive portions of the buffer area. Reforestation needs on M-NCPPC managed parkland will be determined by the Montgomery County Department of Parks. On other public lands, reforestation requirements for stream buffers, delineated in accordance with Section 2.A.1.c.(1).(b), will be determined by DEP upon consultation with the cognizant public agency.

(5) DEP may require the applicant to install preventative and/or remedial stream channel protection measures, such as gabions and other stream bank stabilization techniques, upstream and downstream of stormwater manage-

³ Criteria defining conditions for the granting of waivers to stream buffer requirements will be developed by DEP in consultation with M-NCPPC staff.

ment facilities. DEP will coordinate, with the Department of Parks, the review of stream channel protection measures proposed for location on or adjacent to M-NCPPC managed park property. For facilities proposed for location on M-NCPPC managed park property, the Department of Parks will review and approve SM facilities before final approval by DEP. (ALL WATERS)

(6) Stream buffer requirements in the adopted "Stream Buffer Guidelines" apply to all streams which either produce a perennial flow, have greater than 30-acre drainage areas, or are designated on the latest operative version of the 1": 200' scale topographic maps prepared by the M-NCPPC. In cases where more than one of these conditions exist, the most restrictive condition applies. (ALL WATERS)

Recommendation #4: Amend Section 2.A.1 to add a new Subsection 2.A.1.d. as follows:

d. Protection of Natural Springs and Seeps

(1) Stormwater Management (SM) Concept Plans shall identify all natural surface springs and seeps on the development site. Surface springs and seeps will not be piped unless extraordinary circumstances warrant the granting of a waiver of this requirement by the Director. DEP will inform applicants and closely coordinate with the M-NCPPC in instances where pending decisions on waivers could affect an applicant's ability to meet applicable conditions of subdivision as approved by the Planning Board. (ALL WATERS)

(2) Wherever feasible, surface springs and seeps should be diverted around SM structures and designs incorporated into SM Concept Plans that prevent temperature elevation of natural spring and seep discharges. (ALL WATERS)

e. Control of Runoff Velocities

Drainage systems shall be designed to reduce runoff velocities at outlets to non-erosive rates down to 4 feet/second or less as conditions warrant. Drainage systems may include: dutch drains; drainage swales with check dams; stone-filled ditches; use of log check dams in small streams; and parallel pipes. (ALL WATERS)

f. Protection of Habitat Access for Aquatic Life

Construction of SM structures in wetlands and/or construction of in-stream SM structures which may prevent or impede natural movement of aquatic life will be done in conformance with State and Federal statutes and regulations. (ALL WATERS)

g. Coordination of SM Facilities Impacting Public Park Lanes

DEP will coordinate, with the Department of Parks, the review of SM facilities proposed for location on or adjacent to M-NCPPC-managed park property. For SM facilities which have discharge outfalls on or within 50' of tributary drainage to M-NCPPC-managed park property, Department of Parks approval of the discharge outfall is required prior to final approval by DEP. For SM facilities proposed for location on M-NCPPC-managed park property, the Department of Parks

will review and approval SM facilities before final approval by DEP. (ALL WATERS)

Recommendation #5: Amend Section 4.B.2 to revise coverage of fee structure for water quality waivers. Revisions would be based upon the following concept: (ALL WATERS)

- Revise regulations affecting water quality waivers to include fees covering all residential land use densities equal to or greater than 1.0 dwelling units/2.0 acres. (ALL WATERS)
- DEP will develop a new table for assessing waiver fees based upon zoning, related typical imperviousness, estimated runoff, and/or estimated pollutant loading (in lbs./acre/year).

Recommendation #6: Move Sections 5.B and 5.C to become new Sections 5.D and 5.E respectively. Create a new Section 5.B as follows:

B. County Stormwater Management Objectives by Water Use Class

1. General Water Use Protection Objectives

County water quality control requirements are designed to support water use classifications designated in State Water Quality Standards and the nutrient reduction goals of the 1987 Chesapeake Bay Agreement. This is accomplished through: (a) policies set forth in the Comprehensive Ten-Year Water Supply and Sewerage Systems Plan; (b) County approved and adopted master plans, functional master plans, and watershed studies; (c) stream valley park acquisition; (d) careful siting of development through application of zoning powers and subdivision regulations; and (e) implementation of County Stormwater Management and Sediment Control regulations. Maryland also exercises regulatory and programmatic responsibilities in some of these areas. (ALL WATERS)

2. Class I Streams

Class I streams are protected to support general aquatic life, recreational opportunities, and agricultural, industrial and public water supply. County SM requirements seek to control peak runoff flows while removing nutrients, sediments, and other pollutants to the extent practicable. Infiltration measures, flow attenuation using swales and natural depressions, and "wet" ponds are the preferred order of SM controls. Where such measures are infeasible or impractical and wetlands protection considerations outweigh the benefits of wet ponds, "dry" SM ponds are generally acceptable. (CLASS I)

2a. Class I Watersheds Draining Public Water Supply Reservoirs

In watersheds which drain both to Class I streams and to public water supply (PWS) reservoirs, the primary concerns are the control of excessive sediment and nutrient

discharges. Sedimentation reduces reservoir storage capacity. Excess nutrients accelerate reservoir eutrophication, increase drinking water treatment costs, and reduce sport fishery potential and general recreational appeal. Preferred solutions are infiltration practices, capable of maintaining high levels of sediment and nutrient removal over a long term, and wet ponds. (CLASS I Waters That Are Also Tributary to PWS Reservoirs)

3. Class III and Class IV Trout Waters

Watersheds draining Class III and Class IV streams, require special SM approaches. In Class III streams, maintenance of high dissolved oxygen levels and cool temperatures is critical throughout the spring and summer seasons due to the permanent and reproducing nature of the trout fishery. Emphasis is on maximum use of on-site infiltration controls to remove pollutants and moderate temperatures before runoff is returned, as groundwater inflow, to streams. Other cooling techniques include reducing site impervious area and increasing shade area. (CLASS III)

Wet and dry ponds may not be located to discharge to Class III waters except as authorized by the Water Resources Administration of the Maryland Department of Natural Resources (DNR). The Director may further restrict the use of DNR-approved wet ponds unless the applicant can demonstrate that discharges will not adversely affect stream temperatures, significantly disturb wetlands, or impede fish migration and spawning. (CLASS III)

In Class IV streams, dissolved oxygen and temperature concerns are limited primarily to early spring when trout are annually restocked to support recreational fishing. SM control methods are similar to those used to protect Class III streams. Infiltration remains the preferred SM method. However, wet ponds or other control measures are not generally discouraged if designs and shading techniques provide a necessary level of temperature moderation. (CLASS IV)

The issuance of stormwater management waivers for areas tributary to Class III watersheds is strictly limited and, for Class IV watersheds, discouraged. (CLASS III AND IV)

3a. Watersheds Having Class III or Class IV Designations Which Drain to Public Water Supply Reservoirs

Where a Class III or Class IV watershed drains to both a trout stream and a PWS reservoir, the trout stream classification is applied in developing a SM Concept Plan. Infiltration is the preferred management method for temperature moderation and reduction of sediment and nutrient inputs. If acceptable to the state regulatory agencies, the Director may agree to the applicant's use of other alternate innovative SM controls (e.g., wet ponds with special discharge controls to moderate temperature). (CLASS III and IV Waters Which Are Also Tributary to PWS Reservoirs)

Recommendation #7: Create a new Section 5.c. as follows:

C. Requirements and Criteria for Areas Tributary to Class III and Class IV Waters and to Public Water Supply (PWS) Reservoirs

(NOTE: A table would be used here that includes the specific requirements listed below and identifies the applicable water use class as noted here at the end of each proposed requirement here in the margin: III, IV, and PWS.)

1. The Stormwater Management (SM) Concept plan shall indicate the selection of infiltration or other appropriate SM measures leading to drainage conveyance systems. These measures shall be designed to infiltrate the "first flush" of runoff (initial 1/2" runoff) to capture and remove pollutants dissolved or suspended in runoff to the extent feasible. SM measures such as infiltration trenches, vegetated swales with check dams, vegetated filter strips, and oil and grit separators are acceptable to DEP. Infiltration measures acceptable to DEP are identified in Maryland's Standards and Specifications. (All CLASS III Waters Plus CLASS IV Waters in Little Seneca Watershed)

2. Wet or dry ponds cannot be located to discharge to Class III Waters unless specifically authorized by MD DNR. Temperature and dissolved oxygen content from proposed pond discharges may not cause violations to stream receiving water standards specified in Maryland Water Quality Standards. For DNR-approved wet ponds discharging to Class III waters and for all wet ponds discharging to Class IV Waters, the Director may further regulate the placement, design, and maximum drainage areas served as follows:

- a. SM Concept Plans shall place emphasis on maximum use of on-site control options. (CLASS III)
- b. Drainage areas serving wet ponds shall not exceed 250 acres. (CLASS III and IV)

3. If wet ponds are proposed in the SM Concept Plan, they shall be designed, where feasible, to facilitate shading by tree canopy to help lower pond and discharge temperatures as needed to maintain downstream receiving water standards. DEP may also require mature tree preservation and/or reforestation with specified species, sizes, and densities. (CLASS III and IV)

4. Because of the high levels of nutrient and sediment control provided, the use of wet ponds and SM infiltration measures is encouraged in watersheds that drain to public water supply reservoirs and that are not also designated as Class III streams. (CLASS I and IV WATERS Tributary to PWS Reservoirs)

5. Extended detention times for SM impoundments without a permanent pool (e.g., "dry ponds") must not exceed 24 hours. (CLASS III and CLASS IV Waters in the Little Seneca Watershed)

6. When dry pond structures are proposed for construction in open wetlands or in open stream valleys with

perennial base flows, special additional measures may be required to ensure the integrity of the natural ecosystem. These measures may include:

- a. leaving the existing land contours, natural vegetation, and base flow channels undisturbed wherever feasible;
- b. limiting land disturbance areas to construction of the embankment and release structures only; and
- c. shading of the base flow channel with special plantings. (CLASS III and IV)

7. The installation of any in-stream structures that will prevent or inhibit the natural movement of aquatic life is prohibited, unless it can be demonstrated that the benefits of such in-stream structures would significantly outweigh any negative impacts.

(Applies to all CLASS III and CLASS IV Waters in the Little Seneca Watershed. On a case-by-case basis, the Director may also apply this requirement to other Class I or Class IV waters where severe impediments to unique spawning or aquatic life migration needs may result.)

8. Fines for violation of SM requirements in Class III or Class IV waters or in areas with drainage to public water supply reservoirs are double the fines for first time violations of these regulations. (CLASS III and IV Waters; ALL WATERS Tributary to PWS Reservoirs)

(NOTE: The County lacks authority, under the current County Code, to enforce this. A Code amendment would be needed.)

9. Use of maximum landscaping is encouraged, to the extent feasible, to reduce runoff and increase shading of impervious areas. For residential subdivisions having lot sizes of two (2) acres or greater, use of open section roads is also required. (All CLASS III Waters Plus CLASS IV Waters in Little Seneca Watershed)

10. Off-site SM structures must be dry ponds that include additional design features and/or facilities which protect or provide natural or man-made wetlands, shallow ponded areas, marsh, etc. (CLASS III)

11. When preferred SM practices are provided infeasible or impractical, DEP may require the applicant to install oil and grit separators as part of public storm drainage systems. If DEP requires this, the applicant will be required to sign a maintenance agreement which assigns all long-term maintenance responsibilities to an appropriate organization having a direct interest in the affected property. (CLASS III and IV Waters; ALL WATERS Tributary to PWS Reservoirs)

RECOMMENDED CHANGES TO SEDIMENT CONTROL REGULATIONS

(NOTE: Amendments in these areas are under consideration. However, suggested phrasing of regulatory language has not yet been developed.)

1. Require that stream buffer areas, designated on Stormwater Management (SM) Concept Plans be also designated on sediment control (SC) plans submitted to DEP (ALL WATERS)

- a. For those properties that go through M-NCPPC subdivision review and/or site plan review, the designated stream buffer area shall be that officially adopted by the Montgomery County Planning Board as part of subdivision or site plan approval.
- b. For lots recorded prior to April, 1983, applicants must identify, on the sediment control plan, proposed stream buffer areas. Applicant proposed stream buffer delineations must be based upon and consistent with the County's adopted "Guidelines for the Protection of Stream Buffer Areas." The Director may, after opportunity for comment from the M-NCPPC, waive this requirement in cases where its imposition would eliminate opportunities for development of previously approved and recorded lots or when other circumstances warrant.⁴

2. Temporary sediment control in stream buffer areas is discouraged. However, temporary SC controls may be acceptable to DEP when applicants clearly demonstrate that use of the buffer area represents the best method of sediment control and that reforestation provisions will be implemented. (ALL WATERS)

3. Indicate that DEP is responsible for enforcing the stream buffer areas as designated on the applicant's sediment control plan and SM Concept Plan. (ALL WATERS)

4. Increase trapping storage volume requirements to 3600 cu. ft./acre (1800 cu. ft./acre to be temporarily stored for 24 hours; 1800 cu. ft./acre to be permanently stored in pipe outlet traps, sediment basins, and rip-rap outlet traps with dewatering devices). (ALL WATERS)

5. Explore possible avenues for tripling of fines for violations in drainage to special waters. There would appear to be good environmental justification for this in Class III waters and economic justification as well in drainage up-

4 Criteria defining conditions for the granting of waivers to stream buffer requirements will be developed by DEP in consultation with M-NCPPC staff.

stream of water supply reservoirs and County off-site SM facilities. (CLASS III and IV Waters; All WATERS Tributary to PWS Reservoirs)

(NOTE: County lacks authority, under the current County Code, to enforce this. A Code amendment would be needed.)

6. Add the below regulations to implement the recommendations previously stated in this Appendix concerning sediment control that are not already addressed in existing sediment control regulations, in draft floodplain and SM regulations (regarding stream buffer protection), or in M-NCPPC draft tree preservation legislation and regulations.

- a. Clearing and grading shall be planned and phased to expose the minimum practicable land areas at any one time during development. (ALL WATERS)*
- b. Avoid unnecessary clearing. (ALL WATERS)*
- c. Require that topsoil temporarily removed from a construction site be stored and re-distributed in accordance with practices*

approved by the Montgomery Soil Conservation District. (CLASS III and IV Waters; ALL WATERS Tributary to PSW Reservoirs)

7. Require special plantings on graded slopes in excess of 25%. Require use of graded slope benches for every 15 feet in elevation change. Review grading plans to limit concentrated flows and provide sheet flow drainage. (ALL WATERS)

8. Prohibit, except for road embankments, constructed slopes in excess of 3:1 located in or immediately adjacent to stream buffer areas (CLASS III and IV Waters; ALL WATERS Tributary to PWS Reservoirs)

9. Indicate that DEP will coordinate, with the Montgomery County Department of Parks, the review of sediment control devices proposed for location on or having drainage immediately adjacent to M-NCPPC managed parkland. The Department of Parks will review and approve SC devices proposed for location on M-NCPPC managed park property before final approval by DEP. (ALL WATERS)

Appendix E

Summary of Environmental Regulation and Guidelines for Development Proposals

Development proposals are carefully evaluated before approval to ensure that they:

- (1) minimize potential noise impacts;
- (2) avoid floodplain impacts;
- (3) protect and improve the quality of stream systems;
- (4) conform to state and federal requirements in wetland areas;
- (5) minimize erosion and sedimentation in receiving water bodies during construction;
- (6) provide for proper management of stormwater to minimize long-term erosion of land surfaces and stream channels and promote water quality; and
- (7) provide wildlife habitat and/or vegetated open space along stream valleys.

M-NCPPC STAFF GUIDELINES FOR TRANSPORTATION-RELATED NOISE

These guidelines present several approaches to minimize noise impacts from roadways and railways adjacent to proposed residential developments. The preferred approach uses site design to set back or buffer residential structures from noise impacts. When this is not feasible, earthen berms are recommended to act as physical barriers. Berms are preferred over acoustic walls and fences as physical barriers because they reduce noise more effectively, require less maintenance, and are more attractive. However, site constraints sometimes dictate the use of acoustic fences and walls. When the combined effect of the preceding approaches fails to meet appropriate standards, architectural techniques to minimize interior noise levels are specified. Each site requires careful analysis to iden-

tify the best approach; developers should consult with staff for assistance in meeting these guidelines.

FLOODPLAIN CONTROLS

Floodplain controls include: (a) Subdivision Regulations, Floodplains and Unsafe Land, MCC Section 50-32, and (b) *The Functional Master Plan for Conservation and Management in the Seneca Creek and Muddy Branch Basin*, M-NCPPC, October 1977.

Montgomery County Subdivision Regulations prohibit issuance of building permits within 25 feet of the 100-year floodplain. This floodplain is defined as the area inundated by stormwater runoff equivalent to that which would occur on the average of once in every hundred years after total development of the watershed. Maps of the 100-year floodplain are available for the areas shown in Figure B; floodplains not already mapped must be computed as part of any application for development in accordance with the "Staff Guidelines for the Delineation of One-Hundred Year Floodplains and Dam Break Analysis" (January 1988).

The Maryland Water Resources Administration regulates changes in the course, current, or cross-section of state waters through a permit program. In the Germantown Planning Area, streams are categorized by the state as either Class I (usable for water contact recreation and aquatic life) or Class IV (usable as recreational trout waters), as shown in Figure A. State waters include all Class I streams with drainage areas of 400 acres or more and all Class IV streams with drainage areas of 100 acres or more. Any development involving filling or modifications to the floodplains of state waters must receive a permit before proceeding.

The *Adopted and Approved Watershed Plan for Seneca Creek* provided the technical basis for the controls incorporated in the Subdivision Regulations Section 50-32, as well as clearly defining County floodplain policies discouraging the modification of these important public resources.

M-NCPPC STAFF "GUIDELINES FOR THE PROTECTION OF SLOPES AND STREAM VALLEYS" TO BE RENAMED "GUIDELINES FOR ENVIRONMENTAL MANAGEMENT IN MONTGOMERY COUNTY"

The guidelines provide specific strategies to meet watershed management objectives. They: (a) require undisturbed stream buffers along perennial streams; (b) strongly discourage any clearing or grading of slopes in excess of 25 percent; (c) specify that all development must strictly adhere to state erosion and sediment control requirements (see below); (d) underscore the state's prohibition against septic fields on slopes greater than 25 percent; (e) underscore the County's prohibition against structures within 25 feet of the 100-year floodplain; and (f) prohibit septic fields within 100 feet of perennial streams.

The guidelines specify wider buffers where streams are more environmentally sensitive or adjacent slopes are steeper. Recommended minimum stream buffers vary from 50 feet to 150 feet from each stream bank in Class I streams, and 75 feet to 175 feet in Class IV streams. Exact boundaries of stream buffers are determined during plan review, based on field inspections. Buffers are not to be cleared or graded and no structures may be located in these areas. Retention of recommended buffers is ensured through one or more of the following methods: preliminary or site plan conditions, dedication as parkland, inclusion in homeowners' open space or application of a conservation easement.

WETLAND REGULATION BY THE US ARMY CORPS OF ENGINEERS (COE) AND THE MARYLAND OFFICE OF ENVIRONMENTAL PROGRAMS

Section 404 of the Clean Water Act requires a COE permit to alter or fill waters of the U.S., including tidal and non-tidal wetlands. In conjunction with this permit, the Maryland Office of Environmental Programs issues Section 401 water quality certifications, to ensure that the project will not cause a violation of the state's water quality standards. Both approvals are necessary for fill activities such as road and bridge construction, culvert placement and filling for development if these activities occur in tidal or nontidal wetlands and waters. The nontidal wetland areas covered by this law include marshes, bogs, swamps,

springs, intermittent streams, perennial streams, rivers, lakes, and adjacent wetlands.

STORMWATER MANAGEMENT REGULATIONS, EXECUTIVE REGULATION 93-84A

These regulations, based on state law and administered by the County Department of Environmental Protection, require stormwater management as an integral part of the development process. Stormwater management must accomplish two objectives: controlling the erosive force of stormwater runoff and reducing the level of pollutants contained in these discharges. On-site management of stormwater can sometimes be waived in exchange for a contribution to help meet County stormwater management costs or on proof of participation in a regional facility downstream. In developing a stormwater concept plan, control practices are to be considered in the following order: infiltration of runoff, flow attenuation using vegetated swales and natural depressions, retention facilities (wet ponds) and detention facilities (dry ponds). However, in the portion of Little Seneca Creek below Little Seneca Lake, wet ponds are discouraged in order to minimize the elevation of water temperatures unless they can be designed to maintain or reduce water temperatures to that of the receiving stream. Due to special concern for maintaining water quality through nutrient control in the watersheds of Little Seneca and Churchill Lakes, projects involving significant areas of paving may be required to incorporate best management practices such as oil and grit separators in excess of the minimum regulatory requirements. Guidance on preparing stormwater management concepts should be sought early in the development process through staff from both the Montgomery County Department of Environmental Protection and the M-NCPPC.

SEDIMENT AND EROSION CONTROL REGULATIONS, THE NATURAL RESOURCES ARTICLE, COMAR SECTIONS 8-1101 AND 8-203

These regulations administered by the County Department of Environmental Protection, require approval of an erosion and sediment control plan prior to any land clearing, grading or other earth disturbance, with exceptions for small projects, agricultural activities, single-family residences on lots larger than two acres, utilities, and certain federal and state projects. In the Germantown Planning Area, special attention is paid to minimizing impacts to Little Seneca and Churchill Lakes. This can sometimes require sediment control measures in excess of the minimum required by regulations. Guidance in preparing plans is contained in "Standards and Specifications for Soil Erosion and Sediment Control in Developing Areas," as well as from staff from both the Montgomery County Department of Environmental Protection and the M-NCPPC.

Appendix F

Using Models for the Transportation Analysis⁵

The interactions between transportation and land use reflect the behavior patterns of people. These interactions and behavior patterns have been observed for many decades throughout the United States and in many other countries. When looked at broadly and quantitatively in a metropolitan area, the collective patterns of people's interaction are repetitive and are, therefore, generally predictable. This general predictability can be used to develop analysis models that can be applied to predict future travel behavior in a Master Plan area such as Germantown.

Since the 1950s and 1960s regional planning agencies have been devising computerized transportation models of daily traffic for their regions. Computers have been needed to manage the large amount of data and calculations related to the forecasting of traffic. These forecasts are usually based on detailed estimates of the locational pattern of future households and jobs and assumed future transportation networks and services. The level of mathematics used in the modeling is generally quite basic, usually simple algebraic statements understandable to most people with high school and college educations. The large amounts of data being handled in the calculations, the many steps involved in linking parts of the models, and the use of jargon have often given the impression that these models are exceedingly complex. While the models may be thought of as complex in that they are constructed of many parts, with the investment of some time and effort they should be easily understandable by most

Montgomery County residents. This Appendix has been written with that in mind.

An Overview of How Transportation Models Work

Figure F-1 presents the analysis context in which the transportation modeling system is being used in the Germantown Master Plan analysis. This figure represents several components of the process that is used in planning analyses. The relationship among these component parts would be the same irrespective of whether a computerized model or hand calculations are being used in the second box. Figure F-1 identifies six basic components:

Inputs. This includes data, assumptions and alternatives being analyzed.

Analytical Model. This is described in a subsequent section.

Outputs. Various tabular and graphical summaries of the results of the model analysis.

Evaluation. Interpretation of the results by comparing them to some previously defined expectation.

Feedback. This is used when the expectation of the previous component has not been met and a modification is made either to the assumptions or alternatives and the first four components of the process are repeated.

5 This appendix is an adaptation of the chapter describing the transportation model used in the Annual Growth Policy process, which was presented in the Planning Board's report: *Alternative Transportation Scenarios and Staging Ceilings*, December, 1987.

Figure F-1

COMPONENTS OF
THE PLANNING PROCESS

a. Inputs

Inputs
1. data
2. assumptions
3. alternatives

b. Analytical Model

EMME/2
Transportation
Model

c. Output

Output of Results
of the Analysis

d. Evaluation

Evaluation

e. Feedback

Feedback to Modify
Either Assumptions
or Alternatives

f. Conclusions

Conclusions/Decisions

Analysis Context in Using Transportation Model



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Conclusion/Decisions. At some point in the process, conclusions and decisions need to be reached based upon the results and evaluation of the analysis outputs.

The General Structure of Transportation Models

Transportation models are generally structured to analyze the flow of trips of people and/or vehicles over highways and/or transit networks throughout a specified geographic area. The geographic area is usually divided into many small sub-areas, termed transportation zones. The networks are usually identified by (a) points of intersection on the network, termed "nodes," and (b) segments of the networks between the nodes, termed "links." These terms are schematically illustrated in Figure F-2. This structure of transportation models, of zones and networks, results in two basic sets of data, assumptions, and alternatives as input components of the modeling process. Some specific examples related to the model are given next.

Zone Data. The primary model data relating to zones is the number of households and the amount of employment, divided into four types (office, retail, industrial, and other). This primary zone data is supplemented by other data or assumptions, such as parking cost, access and egress times, or land area.

The model systems used by the M-NCPPC since the 1970's have been based on a 351-transportation-zone system describing the Washington metropolitan region. This consists of (1) 15 external stations, (2) 246 zones within Montgomery County, and (3) 90 large zones encompassing the remainder of the region. Figure F-3 shows the 246 zones within Montgomery County. The 90 zone regional geographic system is an aggregation of the approximately 1,200-zone system used by COG for the entire region.

The zone system has been broken into small sub-zones in order to be applied to the Germantown Master Plan analysis. The 9 zones within the Germantown area used in the County-wide zone system have been broken up into 41 smaller sub-zones, as shown in Figure F-4. In order to better model traffic in the Germantown area, zones in the adjoining Gaithersburg and Clarksburg areas were also divided up into smaller zones.

Network Data. The highway network database contains more than 8,000 one-way links describing the region's transportation system. Each link has numerous attributes coded to it describing, for example, its capacity, speed, length, and location. Roughly half of these links are within Montgomery County, where the network provides a moderate level of detail including all major and many secondary roads. As applied to the Germantown Master Plan analysis, additional detail has been coded into the highway network for the Germantown area as well as the adjoining areas in Gaithersburg and Clarksburg.

The more detailed network for Germantown is shown in Figure F-5 and generally corresponds to each of the existing and proposed elements of the Master Plan roadway system described earlier in this report and in Appendix I.

In work still to be completed, the transit network will be coded "on top of" the highway network links. Transit speeds have, in most cases, been determined as a function of simulated automobile travel times on links and a unit of stop delay per mile of link distance. Rail lines are coded on their own right-of-way. Speed and delay factors are calibrated to observed transit schedules. About 350 to 400 transit lines, including some lines that are composites of several routes, have been coded for different years, including 1980, 1985, 1987, and 1993. Significant work is still needed to refine this network coding before a full transit model will be available for analysis. However, the current model system provides sufficient information to support a transit-sensitive AM peak hour highway model. In the interim, until the work on the transit model is ready, default mode shares are being used in the Germantown Master Plan analysis, as discussed in more detail below.

Specific Techniques Used Within the Transportation Model

Like most conventional regional transportation planning modeling systems, the model used in the Germantown analysis uses a four-step modeling procedure. These four-step procedures are common to most transportation planning analysis, whether it is done by computer or by hand calculations. The analysis techniques followed in these four steps are generally termed: (1) trip generation; (2) trip distribution; (3) modal choice; and (4) trip assignment. These steps are generally carried out in a sequential interrelated manner. However, there are many different techniques that can be used in each of these four steps. As such, a particular transportation model is composed of a specific set or combination of techniques that distinguish it from another model. Irrespective of which particular technique is used in a particular modeling step, each of the four steps is intended to answer one of the following basic questions, respectively:

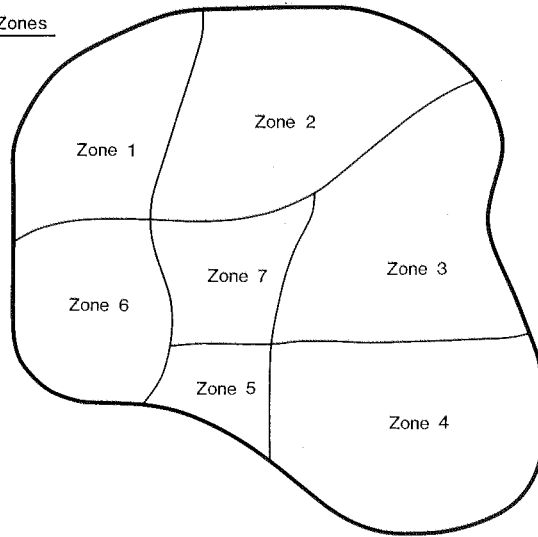
Trip generation. How many trips are there beginning and ending in each zone?

Trip distribution. What is the pattern, or distribution of trips, beginning in a zone and ending in each of the other zones?

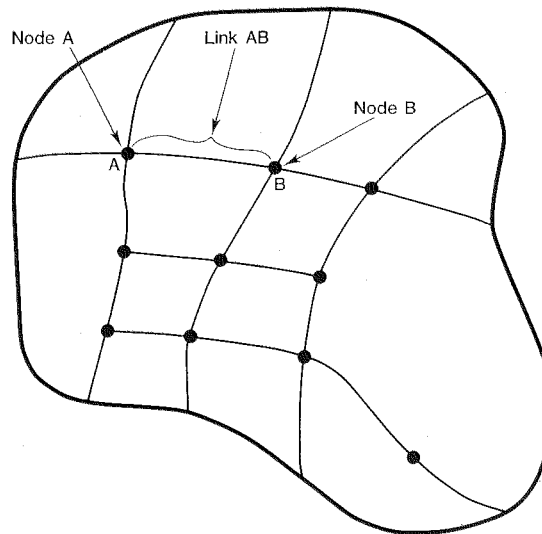
Modal choice. What proportion of the persons going between any zone pair will choose among the available modes of transportation? How many occupants will each vehicle trip have?

Figure F-2

A:Transportation Zones



B:Transportation Network



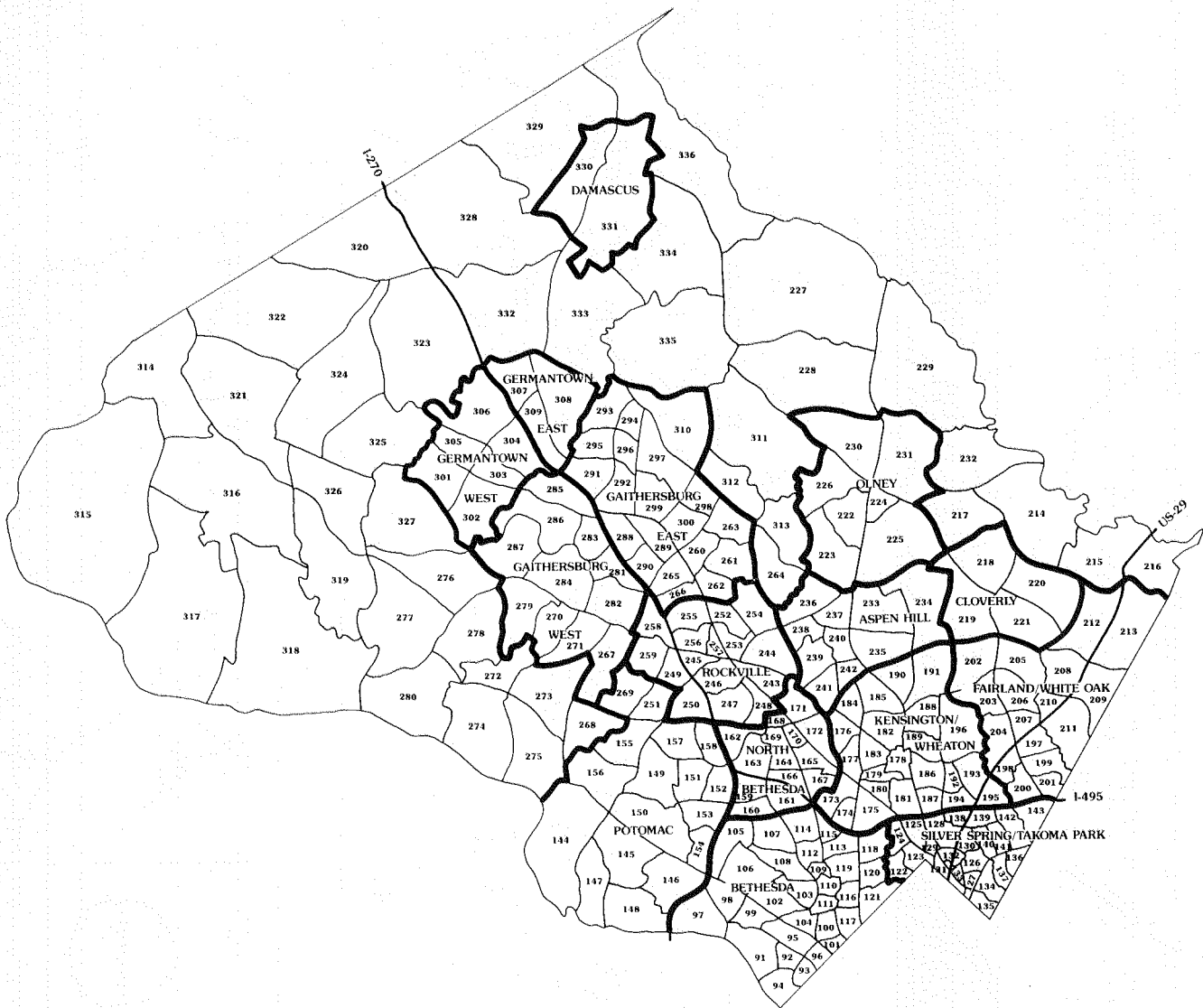
Schematic Structure of Transportation Model



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Policy Areas and Traffic Zones

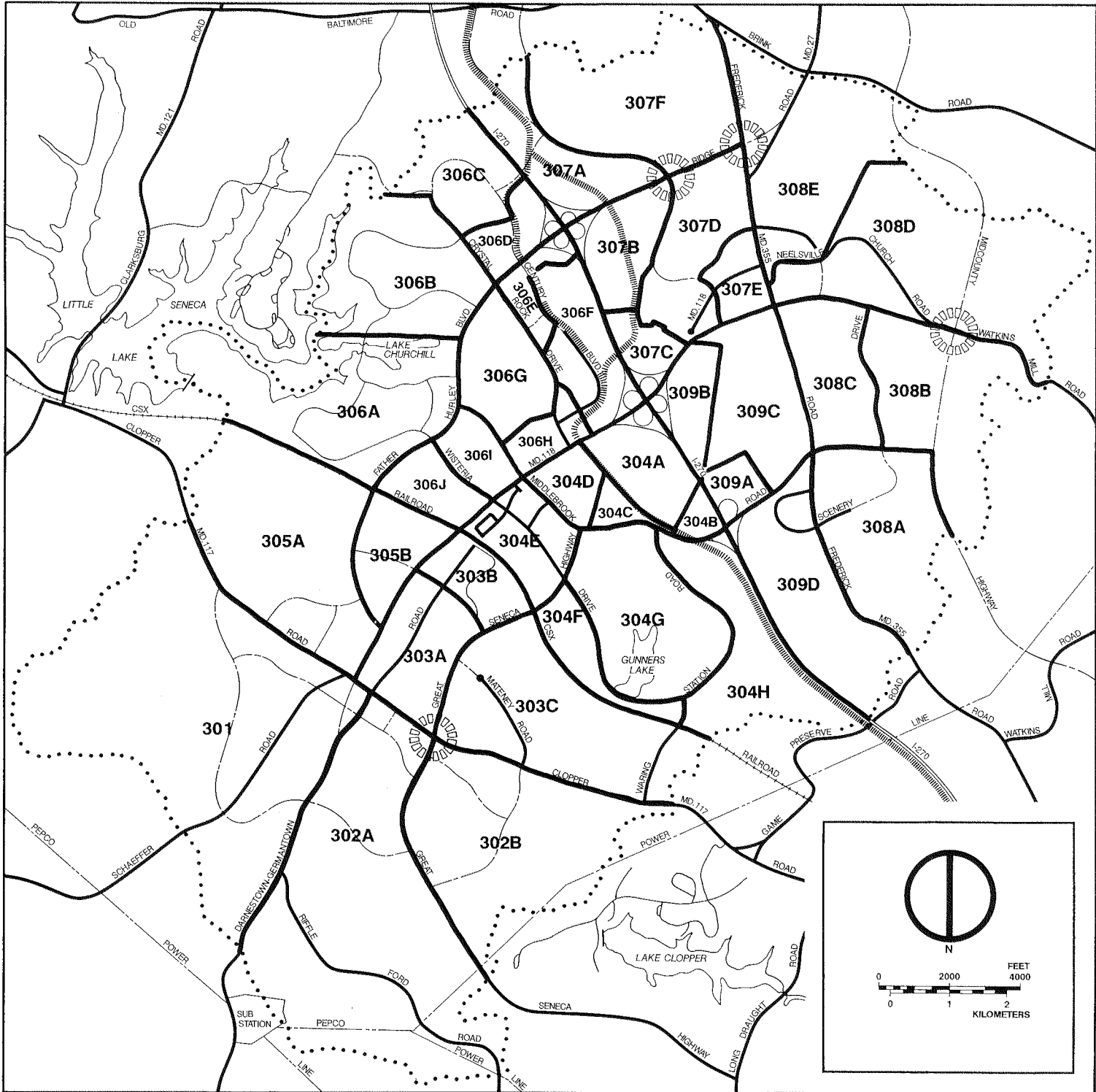


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Figure F-4



Traffic Analysis Subzones



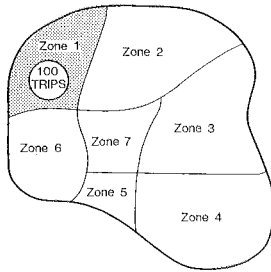
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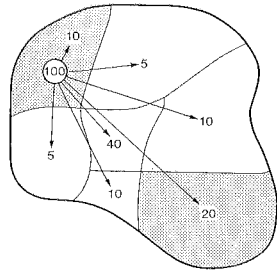
Figure F-6

1. Trip Generation:



Zone 1 generates 100 person trips productions

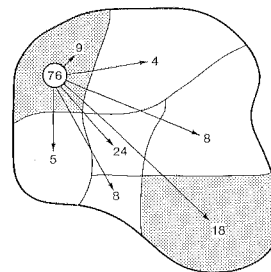
2. Trip Distribution:



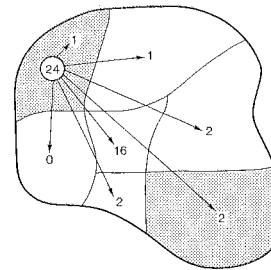
20% of the trips from Zone 1 are distributed to Zone 4, for example

3. Mode Choice:

A. Person Trips in Cars



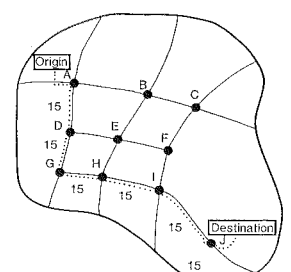
B. Transit Trips



2/20, or 10%, of the trips from Zone 1 to Zone 4 choose to use transit

4. Trip Assignment:

A. Vehicle Trips on the Network



15 vehicle trips are assigned to each link along route A-D-G-H-I-J between Zone 1 and Zone 4

Schematic Illustration of a Four Step Transportation Model



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Trip assignment. To what particular path or route on the transportation networks should the trips between any zone pair be specifically assigned?

Figure F-6 schematically illustrates these four steps for a simple model structure. This illustration shows that: (1) in the first step of trip generations, 100 trips are produced in zone #1, (2) in the second step of trip distributions, that 20 percent of the 100 trips produced in zone #1 have been distributed to zone #4, for example, (3) in the third step of mode choice, three-twentieths, or 15 percent of the trips from zone #1 to zone #4 choose to use transit, and with an auto occupancy of 1.2 the remaining 18 person trips would result in 15 vehicle trips, and (4) in the fourth step of trip assignment that the 15 vehicular trips going from zone #1 to zone #4 have been assigned to each link in the path through the network that goes from nodes A to D to G to H to I to J. Doing that process over and over, until all zone-to-zone pairs have been accounted for, results in an estimate of the traffic volumes on each link in the network.

As stated above, a particular transportation model is composed of a specific combination of techniques for each of these four steps that distinguishes it from another model. The modeling system used in the Germantown analysis allows for different techniques to be used for each of the steps. The following briefly describes some of the specific techniques that so far have been incorporated into the modeling system.

Trip generation takes land use data on households and jobs, by zone, and calculates daily zonal trip productions and attractions for several trip purposes (e.g. Home-Based Work, Home-Based Shop, Home-Based Other, and Non-Home-Based). The total number of trips is dependent upon what trip generation rates are used.

Trip distribution evaluates the relative attractiveness of each destination to all others and distributes the trips on the basis of a "gravity" technique. Zone-to-zone travel times are used by the gravity technique to convert generated trips into a pattern of trips between all zone pairs. Like Newton's Law of Gravity, from which the name of the technique is derived, the number of trips between an origin A and a destination B is inversely proportional to the travel time between A and B and proportional to the attractiveness of B relative to all other destinations. Socio-economic adjustment factors (K-Factors) are also applied in this step to account for interactions not readily captured by the simple assumption that travel time is the only determinant of people's behavior in establishing their patterns of trip making.

Modal choice techniques generally first evaluate the relative time and cost of traveling between each origin-destination zone pair. Then, using other empirical

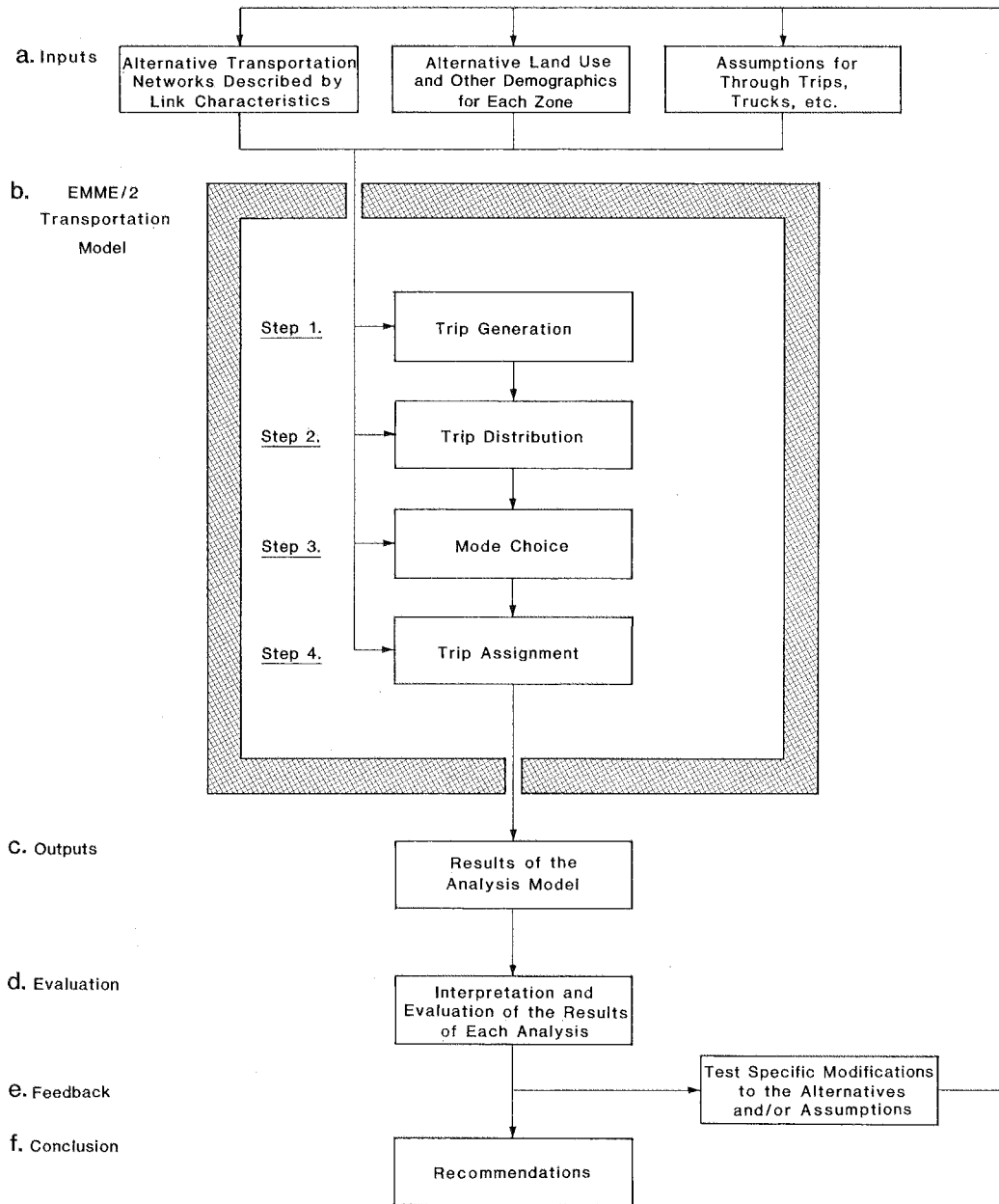
observed relationships, this technique calculates the percent of trips between each zone pair that will likely be made by automobile or by transit. These factors are used to split the Home-Based Work (HBW) person trip table into a HBW auto driver table and a HBW transit passenger table. The key components generally used to assess transit use and automobile occupancy are the relative travel time and travel costs from A to B by auto and transit, including parking and fares, for each mode.

In the application for the Germantown Master Plan, the mode choice technique of this type has not yet been used. In the interim analysis, default mode choice assumptions have so far been applied. They have been used to directly produce a trip distribution table representative of auto driver trips by modifying the person trip table by the assumed mode choice default values. The assumed default values were derived from several sources including: a) the 1980 Census, b) a recent simulation by COG of 1985 mode shares, and c) an earlier simulation by COG of an analysis of Metro-rail build-out representative of conditions perhaps in the late 1990's.

Network assignment is accomplished by first combining the trip tables for the various trip purposes into composite daily or peak hour trip tables for highway vehicles and transit passengers and then assigning these to the highway and transit network, respectively. Different techniques exist for assigning these trips to individual roads or transit services, but these generally seek to minimize delay or travel time in selecting travel paths, including considerations of link capacity and congestion effects. The equilibrium traffic assignment technique is used in the modeling system used in the Germantown analysis.

Figure F-7 shows how these four basic steps within the transportation model relate to the analysis context previously given in Figure 1. The inputs involve: (1) network descriptions for each link, (2) land use and various demographic information for each zone, and (3) assumptions or data relating to items such as through traffic or the number of truck trips. As schematically shown in Figure F-7, these inputs can go to any combination of the different steps within the transportation analysis model depending upon the specific techniques used in constructing the model. This diagram of the general relationship among the analysis processes and model steps may appear to be complex to those not that familiar with analytic models. However, compared to the specific diagrams needed to develop the actual logic of the computer programs to do the modeling, this is a gross simplification. Various intermediate schematic diagrams of the modeling steps can be drawn, for technical review, that more clearly show the interrelationship among various specific inputs and steps of the modeling.

Figure F-7



Relation of the EMME/2 Model to the Analysis Context



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Appendix G

Summary of Transportation Model Analysis

As part of the Germantown Master Plan transportation analysis, over 50 transportation/land use alternatives were tested using the EMME-2 transportation model. For the most part, these alternatives looked at different assumptions regarding employment densities in the Germantown Planning Area and for the County as a whole. All land use assumptions for areas outside of Germantown were developed in the same context as that used in the Planning Board's General Plan analysis, which assumed a full buildout of the County. A selected number of these model runs looked at alternate road network assumptions within the context of the Master Plan of Highways network. For example, (1) Crystal Rock Drive Extended through Black Hill Regional Park to Clarksburg, and (2) a partial interchange at a crossing of I-270 north of Father Hurley Boulevard were two projects tested and subsequently dropped from consideration. Throughout the entire analysis, mode share (transit and rideshare) assumptions were consistent with those employed in the Planning Board's General Plan analysis.

Table G-1 presents a summary table of results from a selected set of the alternatives analyzed. The seven alternatives presented are those which staff considers most relevant in terms of providing the reader with a sense of the breadth of the work performed to date and an understanding of the overall results of the analysis. The following narrative discusses the results of each alternative and compares them to the standard of acceptable congestion for the Germantown Planning Area.

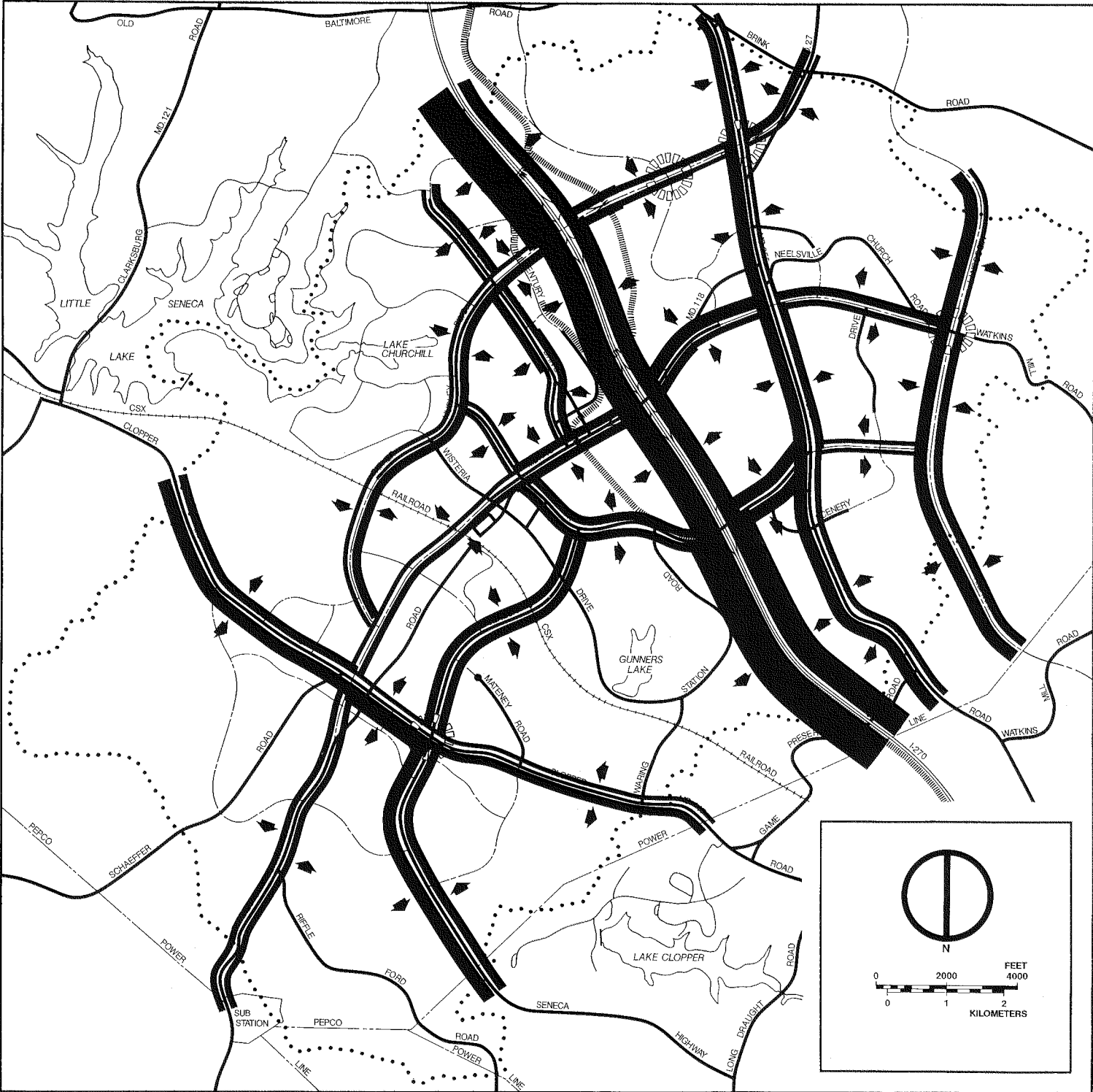
Alternative 1, which assumes a job yield in the Germantown area of 0.7 FAR, would result in about 80,000 jobs in Germantown. The resulting Average Level of Service of D would be more congested than the standard of an average LOS C/D.

Alternative 2 used the same basic assumptions of employment density in Germantown as Alternative 1, and looked at the effect in Germantown of combining that employment level with a 20 percent reduction of housing and employment densities in Clarksburg. That would reduce the jobs in Clarksburg from about 45,000 to 36,000 and the dwelling units from about 30,000 to about 24,000. The areawide analysis showed that the overall average Level of Service would still be at Average LOS D, more congested than the standard of Average LOS C/D. Examination of some of the details of the transportation analysis does indicate some marginal reductions in average level of service. They are not large enough by themselves, however, to reduce and change the basic result of the previous Alternative.

Alternative 3 examined a reduction in the employment density within the Germantown Planning Area to a level of about 0.5 FAR. That level was derived by: (1) performing a local intersection congestion analysis on the results of Alternative 1, using the methodology discussed previously in the text; and then by (2) determining what employment level would result if those selected intersections were operating at acceptable levels of service. A level of about 0.5 FAR employment density would result in about 65,000 jobs in Germantown. Most of these jobs would be in the Germantown Employment Corridor, about 57,000 of the total. The resulting Average Level of Service was an Average LOS D, which would still be unacceptable.

Alternative 4 used the same basic assumptions of employment density in Germantown as Alternative 3, and looked at the effect of combining that with a 25 percent reduction in job and housing densities in Clarksburg. That would reduce the jobs in Clarksburg from about 45,000 to about 34,000 and the dwelling units from about 30,000 to 22,500 dwelling units. The areawide analysis showed that the overall Average

Figure G-1



**Anticipated AM Peak Hour
Patterns of Movement**

Arrow Width Indicates Relative Traffic Volumes Based on Direct Output from the EMME-2 Transportation Model Based on End-State Development.

The Value Range from Less Than 500 for the Thinnest Line to over 7000 for the Widest.

**TABLE G-1
SUMMARY OF SELECTED RESULTS OF AREAWIDE TRANSPORTATION ANALYSIS**

Analysis Alternative Based on Employment Density	Transportation Network Alternatives	Approximate Number of Jobs		Approximate Number of Households		Resultant Areawide LOS in Germantown
		County	Germantown	County	Germantown	
1) 0.7 FAR	Preliminary Draft	1.1 mil.	80,000 ⁵	.44 mil.	28,000	D
2) 0.7 FAR ¹	Preliminary Draft	1.1 mil.	80,000 ⁵	.44 mil.	28,000	D
3) 0.5 FAR	Preliminary Draft	1.1 mil.	65,000 ⁶	.44 mil.	28,000	D
4) 0.5 FAR ²	Preliminary Draft	1.1 mil.	65,000 ⁶	.44 mil.	28,000	almost C/D
5) 0.5 FAR ³	Preliminary Draft	0.75 mil.	65,000 ⁶	.44 mil.	28,000	C/D
6) 0.5 FAR ⁴	Final Draft	0.75 mil.	72,500 ⁷	.44 mil.	36,000	C/D

¹ With modification resulting in 36,000 jobs and 24,000 households in Clarksburg.

² With modification resulting in 34,000 jobs and 22,500 households in Clarksburg.

³ See footnote 2 plus higher transit use.

⁴ With modification resulting in 34,000 jobs and 30,000 households in Clarksburg.

⁵ Including 72,000 jobs in the Employment Corridor.

⁶ Including 56,000 jobs in the Employment Corridor.

⁷ Including 55,500 jobs in the Employment Corridor.

Level of Service almost reaches the standard of acceptability of an Average LOS C/D.

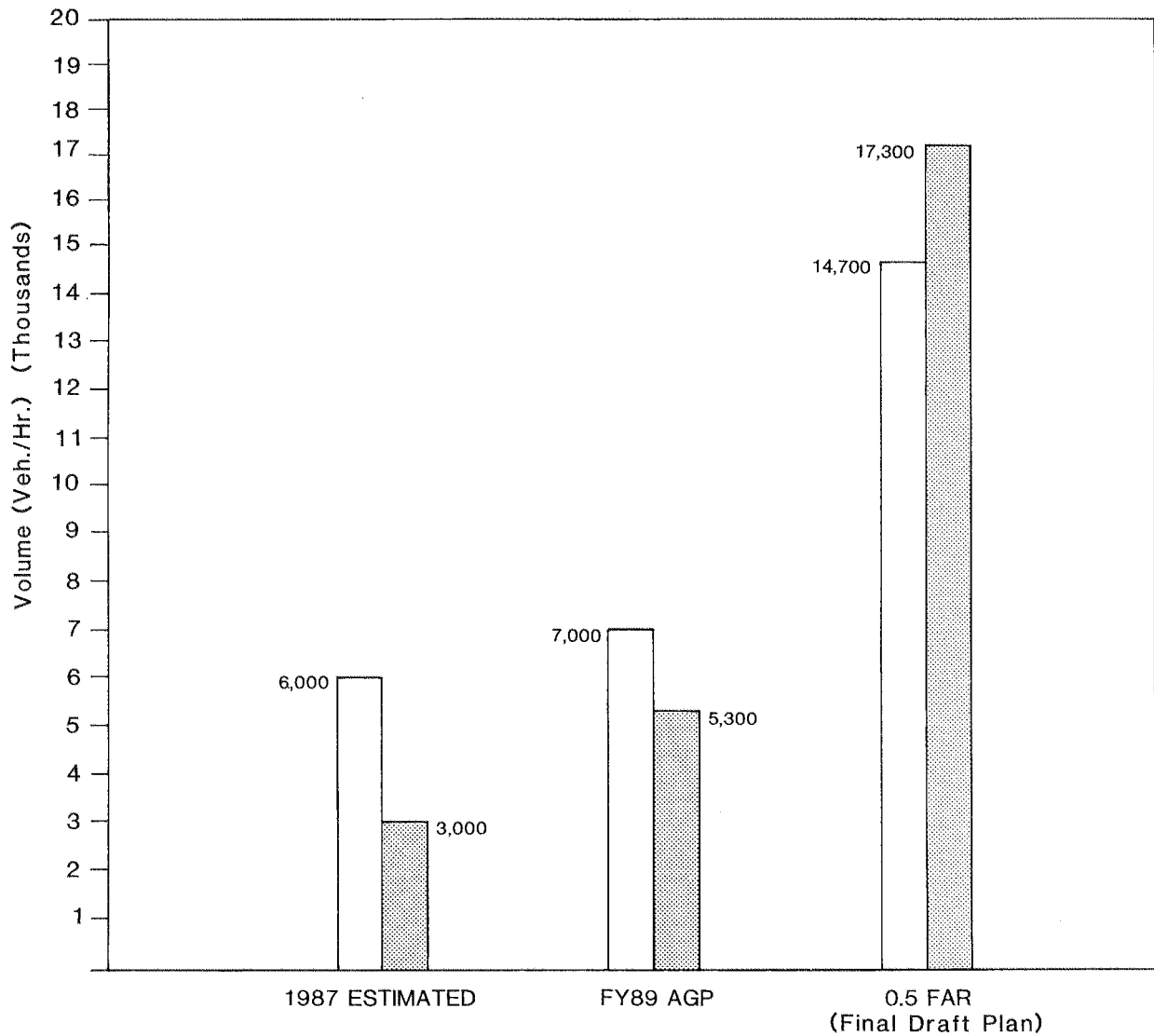
Detailed review of the results of the analysis shows that high levels of through traffic in the Germantown area, primarily coming from Frederick County, contributed significantly to those estimated future congestion conditions being higher than the standard in this alternative.

Alternative 5 also used the same basic assumptions of Alternative 3 in the Germantown Planning Area, but this time combined it with the assumptions that: (1) the County-wide employment yield would be about three quarters of a million jobs and that there would be the same assumptions in Clarksburg as Alternative 4; and (2) that there would be somewhat higher assumptions of transit use. The County-wide employment level assumption would be consistent with there being a job in the County for each of the resident workers which could be expected from the number of County-wide households. The results of this alternative indicate that the areawide Average Level of Service conditions in the Germantown Planning Area would be at the standard of acceptability of an Average LOS C/D. This Alternative was used as the "Base Test" in order to evaluate subsequent variations.



Alternative 6 assumed a higher level of development in the Germantown Planning Area than that assumed in Alternative 5. However, a somewhat lower job-to-household density mix was also assumed. This change resulted in an increase in jobs in Germantown from 65,000 to about 72,550, as well as an increase in households from 28,000 to about 36,500 dwelling units. In addition, several refinements were incorporated in the model system to reflect more accurately the Master Plan road system and account for the transportation capacity it would provide in Germantown and adjacent planning areas. Employment densities in Clarksburg, as well as County-wide employment and household yields, were the same as those specified in Alternative 5. Mode share assumptions were assumed consistent with those used in Alternatives 1 through 4. The results of this alternative indicates that the areawide average level of service conditions in the Germantown Planning Area would be at the standard of acceptability of an average LOS C/D.

Figure G-1 delineates the anticipated A.M. peak hour traffic volumes resulting from the master planned land uses.

GERMANTOWN AM PEAK HOUR TRIPS



Trip Generation Results

Outbound Totals 
 Inbound Totals 



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Appendix H

Future Travel Characteristics

This Appendix presents some of the results from the transportation analysis that illustrate several important characteristics of future travel associated with the Germantown Planning Area. These travel characteristics are discussed according to the four basic steps of transportation planning analysis: trip generation, trip distribution, mode choice, and trip assignment.

Trip Generation. How many trips in total are there beginning and ending in the Germantown Planning Area?

Trip Distribution. What is the pattern, or distribution, of those trips between Germantown and other parts of the region?

Modal Choice. What proportion of the persons going between Germantown and other locations will choose which of the available means (modes) of transportation? How many occupants will each automobile trip have on the average?

Trip Assignment. To what particular path or route on the transportation networks should the trips between Germantown and other areas be specifically assigned?

The following discussions generally answer these questions, in order to give a picture of future travel in the Germantown Planning Area. The detailed answers formed the basis on which the areawide and local intersection transportation analysis for the Germantown Planning Area was carried out.

Trip Generation

Figure H-1 shows the number of trips generated in the Germantown Planning Area for several development conditions. The figure shows three development levels: a) an estimate of 1987 conditions; b) that associated with the FY 89 Annual Growth Policy (AGP) Stag-

ing Ceilings; and c) the recommended Final Draft Master Plan alternative. There are several observations that can be made regarding these trip generation results.

The 1987 Estimated bars show that the majority vehicle trips are outbound in the morning, by nearly two to one over the inbound trips. While that situation is obvious to people familiar with Germantown traffic conditions today, it is shown here as a point of comparison with the projections of future trip generation results shown in the other bars in Figure H-1. The reason that the outbound trips are greater is the relatively higher amount of residential than commercial or employment land uses that have so far been built in Germantown.

The development level associated with the approved pipeline in the FY 89 AGP shows that the morning inbound trips will increase more than the outbound trips when compared to 1987 conditions. That will provide for a more balanced use of the available transportation capacity in both the morning and evening peak periods. However, because the inbound and outbound trips are more nearly equal, there will also likely to be more turning movement conflicts at the intersections within the area.

The resulting trips generated from the recommended Final Draft Master Plan Alternative at 0.5 FAR shows approximately a 100 percent increase over the outbound trips and approximately a threefold increase over the inbound trips when compared to the trips generated by the approved pipeline of the FY 89 AGP. This Alternative shows a predominance of inbound trips, reflecting Germantown's character as an employment center.

Trip Distribution

The previous section outlined the trip generation results: how many trips in total are there beginning

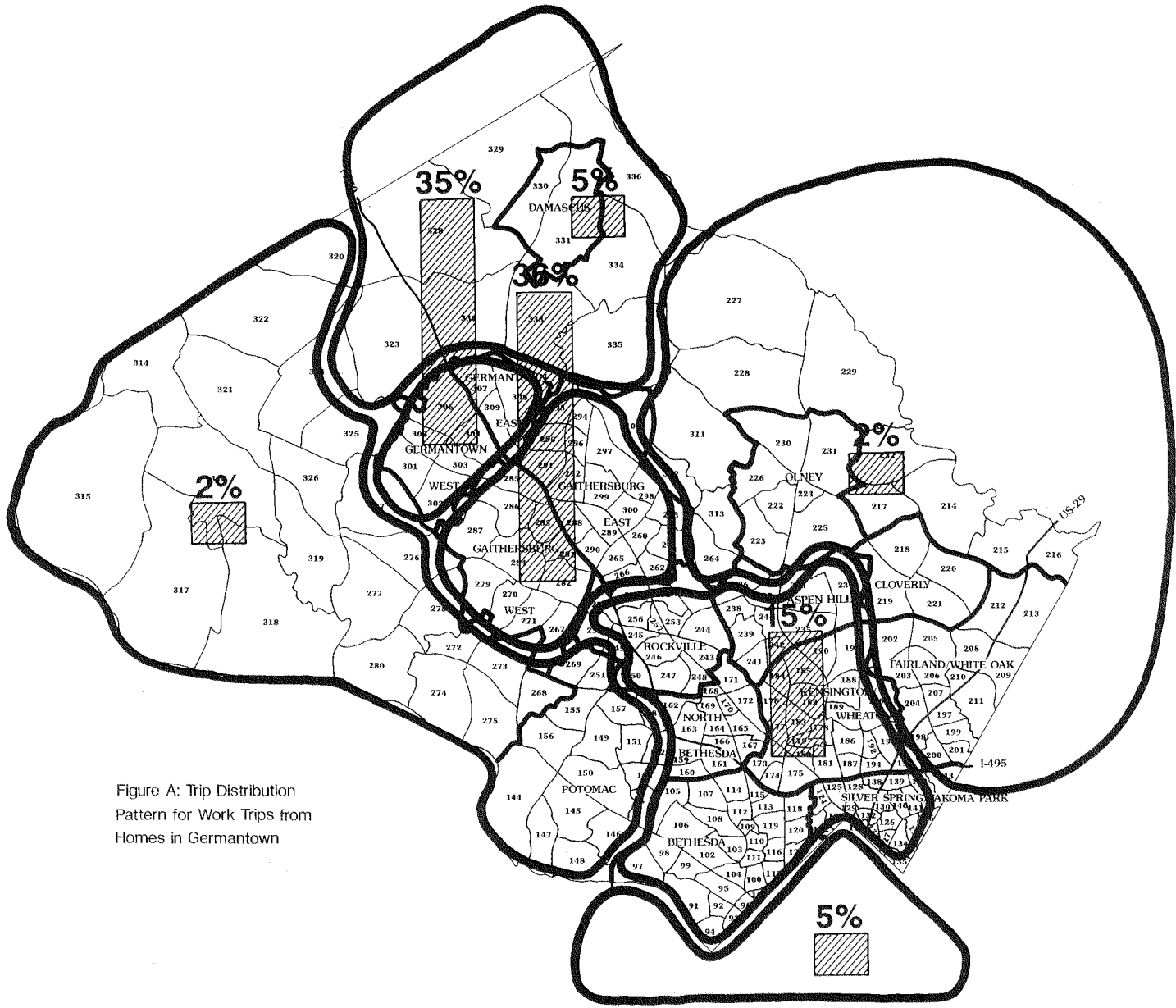


Figure A: Trip Distribution Pattern for Work Trips from Homes in Germantown

Projected Trip Distribution Patterns

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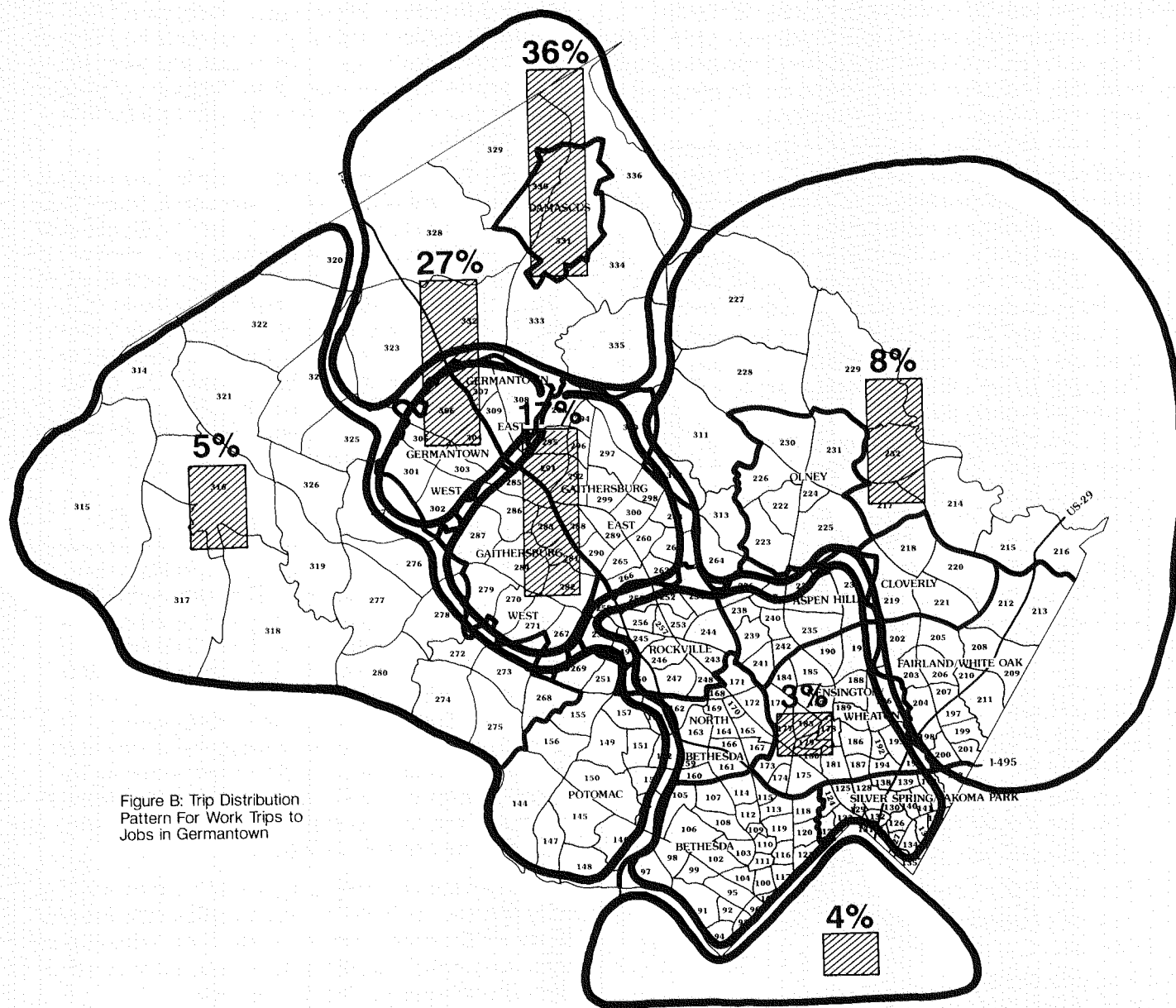


Figure B: Trip Distribution Pattern For Work Trips to Jobs in Germantown

Projected Trip Distribution Patterns



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and ending in Germantown? This section describes the pattern, or distribution, of those trips between Germantown and other parts of the region. While the transportation model develops independent trip distributions for each of the several types of trip being generated, this discussion focuses on the characteristics of trips between home and work locations.

Table H-1 gives a summary of the trip distribution results for the recommended Final Draft Alternative. It lists the percent distribution of home-to-work trips between Germantown and six other aggregations of geographic areas. The table also distinguishes between trips being produced by Germantown residents and traveling to other locations as shown in the first column, and trips being attracted to Germantown jobs by residents of other areas shown in the second column. These results are also given in Figure H-2, which graphically shows the pattern of trips from people living in Germantown and for people coming to jobs in Germantown.

Secondly, for the people with jobs who live in Germantown, about 36 percent would work in Gaithersburg and 15 percent in the down-county area. The remainder of about 10 to 15 percent would be scattered to other areas to the north, south, east, and west. In other words, approximately 85 to 90 percent of people living in Germantown who work, will work in the I-270 Corridor.

Thirdly, for the people who work in Germantown, about 36 percent will come from the north, from Clarksburg, Damascus, and Frederick County, while about 17 percent will come from Gaithersburg and 3 percent from down-county. A relatively high proportion, about 8 percent, will come from eastern Montgomery County and Howard County. About 5 percent will come from the western wedge and about 4 percent from the District of Columbia and Northern Virginia. This shows overall that about 80 percent of the people who will work in Germantown will come from the upper part of the I-270 Corridor of Gaithersburg and north.

Mode Share Assumptions

Non-auto-driver mode share percentages that have been used so far in this analysis are termed default mode shares. They were derived based on estimated impact of ridesharing and on utilization of Metrorail, commuter rail (MARC line), and transit facilities along the Corridor Cities Transit Easement extending north from Shady Grove to Clarksburg. A 34 percent non-auto-driver mode share was assumed for trips within Germantown and for trips occurring between Germantown and Gaithersburg. A 15 percent assumption was used for trips between Germantown-Gaithersburg and the Clarksburg policy areas.

When the mode share portion of the model is fully operational, it will be used to estimate future transit use. In the interim, transit use has been treated as an input assumption to the transportation analysis rather than as an output result of the analysis.

Trip Assignment

As a final step for transportation modeling, the sub-area transportation model assigns peak hour traffic volumes to the highway network. These assigned traffic volumes on several major roadways using the Great Seneca Creek as a screenline are shown in Figure H-3. It indicates that the proposed end-state land uses provide a somewhat more balanced directional traffic flow than 1987 estimates. The results of tests indicate that the proposed Master Plan land uses would result in about the same directional balance of traffic flow at the southern boundary of the Germantown Planning Area as those forecast under the Annual Growth Policy development level.

TABLE H-1

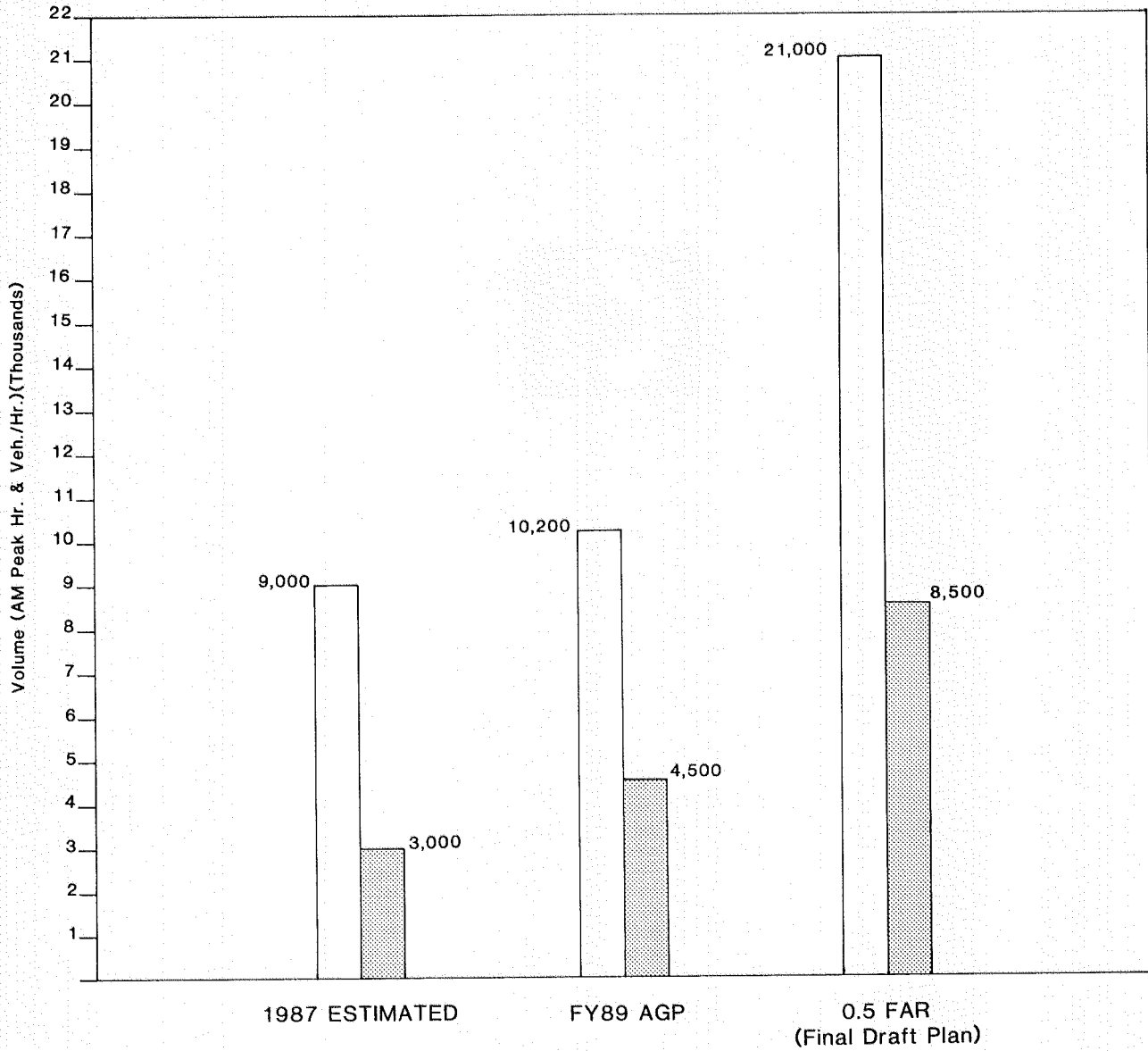
A SUMMARY OF THE TRIP DISTRIBUTION RESULTS FOR FINAL DRAFT ALTERNATIVE

Between Germantown and the Following Areas	Percent Distribution of Home-to-Work Trips	
	Productions from Germantown	Attractions to Germantown
Germantown Area	35%	27%
Damascus, Clarksburg including Frederick County	5%	36%
Gaithersburg Area	36%	17%
Prince George's County	2%	8%
Western County including Potomac	2%	5%
Rockville, Bethesda, Kensington-Wheaton and Silver Spring Area	15%	3%
D.C. and Virginia Area	5%	4%
Total Trips	100%	100%

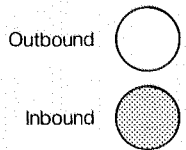
This material shows several important future travel characteristics. First, by the time of the buildout of the Germantown Plan, approximately 35 percent of the people who have jobs and live in Germantown will also work in Germantown. That contrasts with approximately 10 percent resident workers, as observed in 1987 by the Census Update. Correspondingly, those workers who live in Germantown would constitute nearly 30 percent of the job holders of people working in Germantown.

Figure H-3

GERMANTOWN SCREENLINE VOLUMES (EAST-WEST ALONG GREAT SENECA CREEK)



Screenline Volumes



Appendix I

Roadway Descriptions and Changes of Alignment

This Appendix contains verbal descriptions of the major highways and arterial roadways contained in the Germantown Master Plan. These are followed by descriptions of the changes in roadway alignments recommended by this Plan.

Roadway Descriptions

MAJOR HIGHWAYS⁶

MD 355 — Frederick Road (M-6): A north-south roadway, MD 355 is a continuation of Wisconsin Avenue and Rockville Pike. It parallels I-270 for its entire length in Montgomery County from Bethesda and Rockville north to the Frederick County line. In Germantown, it traverses Middlebrook and Neelsville Villages on its way north from Gaithersburg to Clarksburg. An interchange is recommended at its crossing of Ridge Road (M-27).

MD 117 — Clopper Road (M-26): MD 117 is another north-south roadway extending from Gaithersburg in the south through Clopper and Kingsview Villages to Boyds, north of Germantown. An interchange is recommended at its intersection with Great Seneca Highway (M-90).

Father Hurley Boulevard/Ridge Road (M-27): Father Hurley Boulevard/Ridge Road is a relocation of MD 27 from east of MD 355 across Neelsville, Churchill, and Kingsview Villages to its intersection with MD 118. A full-movement interchange is planned with I-270. This interchange will provide access primarily to

the northern portion of Germantown and the Employment Corridor. It will also serve much of the through-traffic to and from Damascus, Frederick County and Carroll County, which now uses the interchange at MD 118. Additional interchanges are recommended at MD 355 (M-6) and Observation Drive (A-19).

MD 118 — Germantown Road (M-61): MD 118 provides east-west travel through Germantown from Midcounty Highway west to MD 28 beyond the edge of the planning area. Its interchange with I-270 provides access primarily to the central portions of Germantown, including the Town Center and the Employment Corridor.

The alignment north of MD 118 (M-61) has been modified as described below.

Midcounty Highway (M-83): Midcounty Highway, previously referred to as the Eastern Arterial, skirts the eastern edge of Germantown, just inside the greenbelt. It provides additional access to Montgomery Village and Gaithersburg as well as to the Shady Grove Metro station. Major connections to Midcounty Highway occur at its intersections with MD 118 and Middlebrook Road. An interchange is recommended at Midcounty Highway and MD 118 (M-61).

Crystal Rock Drive (M-84): Crystal Rock Drive forms the edge between Churchill Village and the Employment Corridor between MD 118 and Father Hurley Boulevard.

⁶ The letters and numbers in parentheses, such as (M-61), denote the unique designation for each of the roads in Montgomery County's *Master Plan of Highways*. (See Table 17 of the Master Plan Text.)

Middlebrook Road (M-85): Middlebrook Road extends from Midcounty Highway northwest to its intersection with Father Hurley Boulevard, providing internal access for Germantown. A partial interchange with I-270 is programmed for Middlebrook Road. This interchange will provide access to the southern portion of Germantown, thus reducing reliance on the MD 118 interchange.

Great Seneca Highway (M-90): Great Seneca Highway, once referred to as the Western Arterial, will extend from Middlebrook Road in Germantown through Gunners Lake and Clopper Villages on its way south to Ritchie Parkway at MD 28. This highway will provide a parallel route to I-270 between Gaithersburg and Germantown. It will enable residents of the two "corridor cities" to take advantage of the employment opportunities in either area without adding further to the traffic volumes on I-270 or MD 28 west of I-270. Residents in Germantown will easily get to the Shady Grove Metro station via this highway and I-370. With the link to Ritchie Parkway, employment opportunities in Gaithersburg and Germantown will also become more accessible to Rockville residents. An interchange is recommended at Great Seneca Highway and Clopper Road (M-26).

ARTERIAL ROADWAYS

Watkins Mill Road (A-17) extends east from Midcounty Highway through Montgomery Village to MD 355, crossing Midcounty Highway.

Observation Drive (A-19) extends through the western portion of Neelsville Village from the northern edge of the planning area, crossing Ridge Road and passing the Regional Shopping Mall on its way to MD 118 and the entrance to Montgomery College. Two alternative alignments are indicated on The Highway Plan at the northern edge of the planning area. The selection of an alternative will be made as part of the Clarksburg Master Plan.

Germantown Road (A-20) is the portion of existing MD 118 between Sunnyview Drive and MD 355 in Neelsville Village.

Scenery Drive (A-21) provides internal circulation through the eastern portion of Middlebrook Village connecting MD 118 Extended to Middlebrook Road and MD 355.

Gunners Branch Way (A-21) extends Scenery Drive across MD 355 and forms a loop which ends at MD 355 1,000 feet to the north.

Crystal Rock Drive (A-22/I-1) extends north from its intersection with Father Hurley Boulevard along the western edge of the Employment Corridor and looping back to connect with Century Boulevard at Proposed Road I-4.

Wisteria Drive (A-74/B-2) extends through the Town Center, connecting Father Hurley Boulevard, the southern portion of Churchill Village to Great Seneca Highway and Middlebrook Road in Gunners Lake Village. In Gunners Lake Village it provides a loop road in conjunction with the eastern portion of Waring Station Road.

Waring Station Road (A-74/A-289) connects Middlebrook Road and Clopper Road through the southern portion of Gunners Lake Village.

Hopkins Road (A-80) connects Clopper Road and Father Hurley Boulevard in Kingsview Village.

Riffle Ford Road (A-103) extends southeast from MD 118 through the southern edge of Clopper Village on its way to MD 28.

A New Road (A-254) connects Father Hurley Boulevard, crossing MD 118, with Great Seneca Highway.

A New Road (A-270) extends between Clopper Road and proposed Hoyles Mill Road in Clopper Village.

Dairymaid Drive (A-271) connects Great Seneca Highway and Mateney Road in Clopper Village.

Old Ridge Road (A-273) is a portion of existing Ridge Road that will connect MD 355 with the realignment of MD 27 in Neelsville Village.

Mateney Road (A-290) extends in an arc from Great Seneca Highway south across Clopper Road to meet Great Seneca Highway again southeast of Clopper Road.

Shakespeare Boulevard (A-291) forms a loop connecting MD 118 Extended in the eastern portion of Neelsville Village to MD 355 and the Regional Shopping Mall in the western portion of Neelsville Village.

A New Road (A-297) will provide access to the western portions of Clopper and Kingsview Villages.

Hoyles Mill Road (A-298) is a realignment and extension of existing Hoyles Mill Road from Proposed Road A-297 in Kingsview Village south crossing MD 118 to Great Seneca Highway.

Waters Landing Drive (A-299) connects Crystal Rock Drive to Century Boulevard through the west Urban Village.

Crystal Rock Drive (B-1) connects Middlebrook Road and Wisteria Drive along the southern edge of the Town Center.

Walter Johnson Drive (B-3), a portion of the previous alignment of MD 118, extends approximately 750 feet east of Wisteria Drive to approximately 750 feet east of Wisteria Drive.

Locbury Drive (B-5) extends southwest from Middlebrook Road crossing Wisteria Drive and provides access to the properties southwest of Wisteria Drive.

Crystal Rock Drive (B-6) extends south from MD 118 for approximately 400 feet.

Aircraft Drive (B-7/I-5) extends north from MD 118, crossing Century Boulevard to Crystal Rock Drive.

Brink Road (B-8) extends south from Middlebrook Road at approximately 600 feet east of MD 355 to its end in a cul-de-sac.

Century Boulevard (I-1) provides access to the office buildings in the western portion of the Employment Corridor north of MD 118. This road extends from Crystal Rock Drive, paralleling I-270, north under Father Hurley Boulevard connecting with Crystal Rock Drive again at Proposed Road I-4.

Waters Landing Drive (I-2) connects Crystal Rock Drive and Century Boulevard.

Goldenrod Lane (I-3) provides access to the portions of the Employment Corridor east of I-270 north and south of MD 118.

A New Industrial Road (I-4) provides access across I-270, connecting Crystal Rock Drive and Century Boulevard on the west to Observation Drive on the east.

CHANGES OF ALIGNMENT

Although this Plan recommends retaining the major elements of the roadway system recommended in the 1974 *Master Plan*, it does propose some modifications to it. These changes are in response to a number of factors, including reductions of residential density, environmental considerations, need for additional local capacity and through capacity, and problems with existing grades and the intent to improve the visual quality of Germantown. The road alignment changes are described below:

Interchanges with I-270: The 1974 *Master Plan* recommends that two full I-270 interchanges be built at Middlebrook Road and Germantown Drive. Since the spacing between the existing interchange at MD 118 and a full movement interchange at Middlebrook Road would not meet federal spacing requirements, the MD 118 ramps were recommended to be removed when the southern interchange was built. Since the adoption of the 1974 *Master Plan*, however, the Maryland State Highway Administration has included a partial interchange at Middlebrook Road in its I-270 widening project. The partial interchange removes the spacing issue. This Plan, therefore, indicates the retention of the MD 118 interchange as well as the addition of a full-movement interchange at Germantown Drive and the partial interchange at Middlebrook Road.

Number of Lanes of Major Highways: The 1974 *Master Plan* recommends that several major highways be built to eight lanes. Such wide roadways create barriers between Germantown's communities; in fact,

they would splinter and further fragment the Villages and would be dangerous to cross by bicycle. They are difficult to cross by automobile or on foot. In order to mitigate this negative community impact, this Plan reduces their maximum width to six lanes. These roadways include Middlebrook Road from MD 118 to MD 355, MD 355 from Middlebrook Road to MD 118, and MD 118 from MD 355 to Middlebrook Road.

Interchanges: Grade-separated interchanges are recommended to be built at four intersections in order to accommodate peak-hour turning movements that would create unacceptable levels of services. The four intersections are located at:

- Great Seneca Highway and Clopper Road
- Ridge Road and Observation Drive
- Ridge Road and MD 355
- Midcounty Highway and MD 118

Midcounty Highway: The 1974 *Master Plan* and the 1968 *Clarksburg Master Plan* recommend that Midcounty Highway (M-83) intersect and join MD 355 at Brink Road, just north of the Germantown Planning Area. This Plan recommends changing the proposed alignment of M-83 so that it parallels MD 355 through Clarksburg. This alignment change increases the potential traffic capacity in Clarksburg. Related to this change is the reclassification of MD 355 to a major highway through Clarksburg and of Brink Road to an arterial roadway between MD 27 and MD 355.

Riffle Ford Road: The 1974 *Master Plan* indicates the alignment of Proposed Road A-103 (Riffle Ford Road), north of Schaeffer Road, as an arterial road through the western portion of Kingsview Village. The proposed alignment crosses three tributaries of Little Seneca Creek and would be needed to accommodate the traffic generated by the residential density recommended in the 1974 Land Use Plan. This Plan, however, recommends a New Road (A-297) that reduces the negative impact on the stream valleys. Roads connecting to A-297 should run along the ridges and not across the stream valleys.

Riffle Ford Road (A-103), south of MD 118, may not continue as a public roadway through Seneca State Park once Great Seneca Highway is open to traffic from Clopper Road to Quince Orchard Road. Given the residential densities west of Clopper Road that are recommended by this Plan, the deletion of Riffle Ford Road's crossing of the State Park should not create increased congestion on other roads in Germantown.

Mateney Road and New Road (A-297): The 1974 *Master Plan* recommends that Analysis Areas CL-8 and CL-9 be a scenic easement. In order to provide vehicular access to the residential and commercial development recommended by this Plan in these areas, an arterial roadway is recommended to traverse each of these areas. One roadway will be an extension of

Mateney Road (A-290) to Great Seneca Highway and serve Analysis Area CL- 9. The other (A-297) will serve Analysis Area CL-8 and start at Great Seneca Highway and extend north crossing M-61 at the edge of the area and continue across Schaeffer Road to Clopper Road.

The 1974 *Master Plan* recommends that Mateney Road end in a cul-de-sac north of its intersection with Cinnamon Drive. This recommendation results in no direct connection to Great Seneca Highway, the Commuter Rail Station, and the Town Center for three subdivisions of more than 1,000 households. This Plan recommends extending this roadway to the northwest, intersecting Great Seneca Highway west of A-254.

Century Boulevard: Proposed Road I-1 (Century Boulevard) is recommended in this Plan to extend north of Proposed Road M-27 (Father Hurley Boulevard) through the Employment Corridor, connecting to Proposed Road A-22 (Crystal Rock Drive). This roadway will provide additional capacity to the employment areas north of Germantown Drive (M-27). The 1974 *Master Plan* recommended that this road stop at Germantown Drive. Due to the limited distance between Crystal Rock Drive and the ramps of the M-27 Interchange with I-270, an at-grade intersection of Century Boulevard (I-1) with Father Hurley Boulevard cannot be accommodated. Therefore, a grade-separated intersection is recommended by this Plan.

Relocated MD 118: The alignment of Proposed Road M-61 (Relocated MD 118) is recommended to be slightly realigned just west of Clopper Road so that it intersects the existing alignment of MD 118 closer to Clopper Road.

Walter Johnson Drive: Within the western portion of the Town Center, the alignment of existing MD 118 (Walter Johnson Drive) is recommended to be changed into a one-way loop road serving Analysis Area TC-6. This change will help assure the preservation of two historic resources which are close to the existing right-of-way.

Scenery Drive: The 1974 *Master Plan* alignment of Scenery Drive, between MD 355 and Proposed Road M-85, crosses a portion of the Middlebrook Mobile Home Park. When the 1974 *Master Plan* was adopted, this area was undeveloped. Since then, mobile homes have been located in the area. Therefore, this Plan recommends a change in the alignment to avoid those homes.

Shakespeare Boulevard: A master plan amendment was approved in 1979 which changed the alignment of A-291 (Shakespeare Boulevard) east of MD 355. A complementary change is made in this Plan to the western portion of A-291.

Observation Drive: This Plan recommends that Observation Drive (A-19) be extended north from MD 118 (M-61), crossing Ridge Road (M-27) and extend to Clarksburg. In the 1974 *Master Plan*, this road became part of Shakespeare Boulevard. The alignment of A-19 is also amended to intersect M-27 further west to provide an appropriate separation from the ramps of the M-27 Interchange with I-270. The intersection of A-19 is recommended to be a full movement interchange in order to accommodate the anticipated high traffic volumes.

As A-19 approaches the northern planning area boundary, two alternative realignments are recommended. One is realigned further to the west in order to reduce the negative environmental impact of its construction. The other is realigned further to the east in order to intersect West Old Baltimore Road sufficiently far from I-270 to accommodate a potential interchange. The selection between the alignments will be made as part of the Clarksburg Master Plan process.

Goldenrod Lane: The alignment of proposed road I-3 (Goldenrod Lane) is recommended to end within the southern portion of Analysis Area EC-6, north of MD 118.

Appendix J

School Needs

The following tables have been prepared in order to provide further information regarding school need projections in Germantown. The results of this study indicate that the twelve elementary schools (grades K-5), three middle schools (grades 6-8), and two high schools (grades 9-12) shown in the Final Draft Plan are adequate to serve the projected public school population of Germantown.

Analysis

The demand for school capacity was calculated in three ways. One uses the yields (average number of school children per household) from the 1987 Census Update Survey for those who have recently moved into Germantown (movers). The second used the yields from a combination of movers and non-movers. These yields combine new residents and more long-term residents into one group. The third method used the demographic model to project the number of school children over time using the Intermediate Round 4 projection of residential development. The number of public school students is based on 94 percent of the highest projection of total children in the appropriate grade levels. The results of these three approaches are shown in Table J-1. The background data used in developing these numbers are shown on Tables J-2, J-3, and J-4.

The supply of school capacity is based on the aggregate capacity of the existing and programmed schools and the capacity of the additional schools planned in Germantown. These figures are shown on

Tables J-1 and J-5. The combined capacity exceeds the highest projected demand in elementary schools. The supply of middle schools is 362 students less than the maximum projected, and the supply of high school space is 739 students less than the maximum projected.

The projected need for six elementary schools in addition to the six existing schools also appears reasonable when one compares the ratio of existing residential development to plan end development with the ratio of current school capacity to projected demand. At present, approximately 41 percent of the planned number of dwelling units (15,000 of 36,700) are occupied. See Table J-6. The present elementary school capacity represents 45 percent of the highest projection of elementary school students (3,396 of 7,569). These percentages are reasonably similar, indicating that the additional six schools, with larger capacities, should accommodate the children from the future residential development in Germantown.

The demographic model indicates that there is a peak demand which declines over time once Germantown is fully developed (see Table J-4). This decline creates a capacity to accommodate a rise in school child yields. Therefore, even if school child yields increase over time, the twelve elementary schools should provide adequate capacity. Further, it is possible to provide for a higher or earlier peak through the use of relocatable modular classrooms. For example, two modular classrooms at each of the twelve schools would provide additional capacity for 600 students, with each classroom having a capacity to accommodate 25 students.

**TABLE J-1:
PROJECTED SCHOOL ENROLLMENT AND
CAPACITY OF PUBLIC SCHOOLS**

	K-5	Grades 6-8	9-12
PROJECTED SCHOOL ENROLLMENT:			
Movers	7569	2635	3219
Movers/Non-Movers	7122	2719	3683
Demographic Model	6668	3527	4449
PROJECTED SCHOOL CAPACITY:			
Existing and Programmed schools	5408	1055	1855
Master Planned Schools	2960	2110	1855
Total	8368	3165	3710
DIFFERENCE:			
Between <u>highest</u> enrollment and capacity	799	-362	-739

**TABLE J-2
PROJECTED SCHOOL ENROLLMENT:
SCHOOL CHILD YIELDS FROM MOVERS**

1. Total School-Age Children from each housing unit (1987 Census Update Survey)

	K-5	Grades 6-8	9-12
Single-family Detached	.3997	.1557	.1795
Single-family Attached	.2514	.0702	.0928
Multi-family	.0747	.0278	.0358

2. Children in Public School from each housing unit (1987 Census Update Survey)

	K-5	Grades 6-8	9-12
Single-family Detached	.3580	.1394	.1608
Single-family Attached	.2370	.0662	.0875
Multi-family	.0715	.0266	.0343

Projected K-5 Students

$$7,569 = (.3580 \times 10,735) + (.2370 \times 11,258) + (.0715 \times 14,790)$$

Projected 6-8 Students

$$2,635 = (.1394 \times 10,735) + (.0662 \times 11,258) + (.0266 \times 14,790)$$

Projected 9-12 Students

$$3,219 = (.1608 \times 10,735) + (.0875 \times 11,258) + (.0343 \times 14,790)$$

**TABLE J-3
PROJECTED SCHOOL ENROLLMENT:
SCHOOL CHILD YIELDS FROM MOVERS AND NON-MOVERS**

1. Total School-Age Children from each housing unit (1987 Census Update Survey)			
	K-5	Grades 6-8	9-12
Single-family Detached	.3368	.1595	.2094
Single-family Attached	.2603	.0706	.1132
Multi-family	.0758	.0294	.0313
2. Children in Public School from each housing unit (1987 Census Update Survey)			
	K-5	Grades 6-8	9-12
Single-family Detached	.3039	.1440	.1890
Single-family Attached	.2469	.0670	.1074
Multi-family	.0730	.0283	.0301
<u>Projected K-5 Students</u>			
$7,122 = (.3039 \times 10,735) + (.2469 \times 11,258) + (.0730 \times 14,790)$			
<u>Projected 6-8 Students</u>			
$2,719 = (.1440 \times 10,735) + (.0670 \times 11,258) + (.0283 \times 14,790)$			
<u>Projected 9-12 Students</u>			
$3,683 = (.1890 \times 10,735) + (.1074 \times 11,258) + (.0301 \times 14,790)$			

**TABLE J-4
PROJECTIONS OF DWELLING UNITS AND SCHOOL-AGE CHILDREN
DEMOGRAPHIC MODEL**

Year	Housing Units			School Children		
	Single-Family	Multi-Family	Total	K-5	6-8	9-12
1985	6,776	2,254	9,030	2,221	541	1,054
1990	12,126	4,504	16,630	4,765	1,627	1,653
1995	15,926	6,504	22,430	6,372	2,493	2,500
2000	19,026	8,204	27,230	6,839	2,973	3,318
2005	21,926	8,504	30,430	7,094	3,156	3,602
2010	22,876	8,804	31,680	7,055	3,186	3,696
2015	22,876	8,804	31,680	6,836	3,158	4,106
2020	22,876	12,253	35,129	6,960	3,752	4,594
2025	22,876	12,253	35,129	6,337	3,158	4,733
2030	22,876	12,253	35,129	5,085	2,861	4,228
2035	22,876	12,253	35,129	4,505	2,388	3,658
Master Plan	21,993	14,790	36,783			
94% of Peak Number				6,668	3,527	4,449

**TABLE J-5
CAPACITIES OF EXISTING AND PROGRAMMED SCHOOLS**

School Type	School Capacity*
<u>Elementary (Grades K-5)</u>	
Germantown	488
Fox Chapel	618
Lake Seneca	631
Clopper Mill	654
S. Christa McAuliffe	797
Waters Landing	740
Capt. James Daly, Jr.**	740
Hopkins Road***	740
	5408
<u>Secondary</u>	
M.L. King, Jr. (Grades 6-8)	1055
Proposed Middle School (Grades 6-8)	1055
Seneca Valley (Grades 9-12)	1855
	1855

* Based on Board of Education Requested FY 90 Capital Budget.
 ** To open Fall 1989.
 *** To open Fall 1990.

**TABLE J-6
COMPARISON OF PLANNED DWELLING UNITS
AND ELEMENTARY SCHOOL CAPACITY**

<u>Dwelling Units</u>	
Occupied (7/88)	15,000
Planned	36,783
Ratio of Occupied to Planned Units	41/100
<u>Elementary School Capacity</u>	
Existing Enrollment (2/89) (Grades K-5)	3,396
Highest Estimated Demand	7,569
Ratio of Existing Enrollments to Estimated Demand	45/100

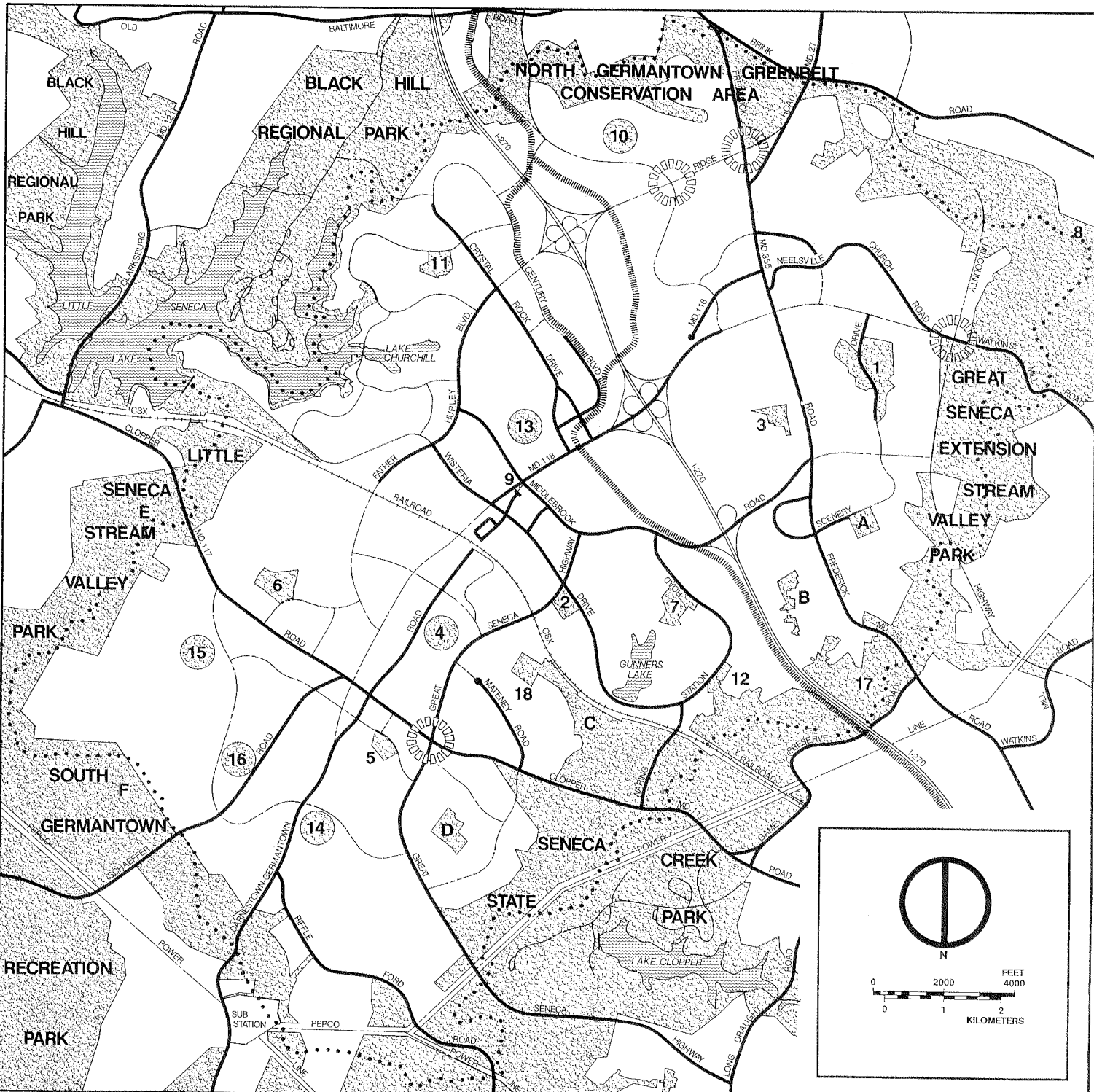
Appendix K

Existing and Programmed Public Parks⁷ (Figure K-1)

NAME OF PARK (with map designation)	EXISTING FACILITIES
<i>LOCAL PARKS - Developed</i>	
<u>Middlebrook Village</u>	
A. Plumgar Local (10 acres)	Recreation building, lighted basketball court, playground, softball field, and a fitness trail.
B. Fox Chapel Local (16 acres)	Multi-use courts, 2 tennis courts, 2 football/soccer fields, an open shelter, and a hiker-biker trail.
<u>Clopper Village</u>	
C. Gunners Branch Local (55 acres)	Playground, softball field with football/soccer overlay, basketball court, open shelter and 2 tennis courts.
D. South Gunners Branch Local (15 acres)	One football/soccer field, and playground equipment.
<u>Kingsview Village</u>	
E. Camp Seneca (15 acres)	<u>Existing:</u> Swimming pool, recreation building, open shelter, 1 playfield, lodge/dormitory, 1 multi-use court, and play equipment. <u>Programmed:</u> Construction of 5 campground cabins. (FY 93)

⁷ Park proposals reflect the facilities included in the Adopted FY 90-95 Capital Improvements Program. Facilities and acquisition programmed after FY 89 reflect current proposals and are subject to change. New proposals recommended in this Plan are not included in this Appendix.

Figure K-1



Existing and Proposed Public Parkland

EXISTING LOCAL PARKS

- A Plungar
- B Fox Chapel
- C Gunners Branch
- D South Gunners Branch
- E Seneca Day Camp
- F South Germantown

PROPOSED LOCAL PARKS

- 10 Millwood
- 11 Waters Landing
- 12 Gunners Village
- 13 Germantown Center
- 14 Cedar Creek
- 15 Kingsview
- 16 Schaeffer Road
- 17 Middlebrook Hill N.C.A.
- 18 Bellefields N.C.A.

PROGRAMMED LOCAL PARKS

- 1 Clear Spring
- 2 Gunners Lake
- 3 Germantown East
- 4 Clopper
- 5 Old Germantown
- 6 Germantown Estates
- 7 Waring Station
- 8 Blunt Road
- 9 Germantown Square

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The Maryland-National Capital Park and Planning Commission

NAME OF PARK (with map designation)	EXISTING FACILITIES
<u>Kingsview Village (Cont'd.)</u>	
F. South Germantown Recreation	<u>Existing:</u> 2 softball fields, 2 baseball fields, 2 football/soccer overlays, 2 tennis courts, multi-use court, playground. <u>Programmed:</u> Shelter with restrooms. (FY 93)
<u>Town Center</u>	
G. Germantown Square	<u>Existing:</u> Gazebo, walkways, and sitting area.
LOCAL PARKS - Capital Improvements Program Proposals	
<u>Gunners Lake Village</u>	
(2) Gunners Lake Local Park (9 acres)	(FY 89) - 1 recreation shelter, 2 soccer fields, and play equipment.
(7) Middlebrook South Local Park (11 acres)	(FY 90) - Soccer fields, multi- use court, and play equipment.
<u>Clopper Village</u>	
(4) Clopper Local Park (proposed acquisition of 10 acres in FY 91)	(FY 94) - Shelter, athletic fields, lighted multi-use court, and play equipment.
(5) Old Germantown Local Park (8 acres)	(FY 89) - 10-acre land acquisition; (FY 94) - A multi-use court, tennis courts, athletic field, and play equipment.
<u>Kingsview Village</u>	
(6) Germantown Estates Local Park (18 acres, park- school site)	(FY 91) - Athletic fields and play equipment.
<u>Middlebrook Village</u>	
(1) Clear Spring Local Park (39 acres)	(FY 87/88) - Recreation shelter, multi-use court, soccer field, softball field, play equipment, and fitness trail.
(3) Germantown East Local Park (8 acres)	(Beyond FY 95) - Athletic field, recreation shelter, multi-purpose court and play equipment.
(8) Blunt Road Local Park (part of Great Seneca Extension Stream Valley Park)	(FY 93/94) - Athletic fields, multi-use court, archery range, play equipment, picnic areas, tennis courts, and a shelter.

NAME OF PARK (with map designation)	EXISTING FACILITIES
CONSERVATION AREAS AND REGIONAL PARKS	
North Germantown Greenbelt	<u>Acquisition:</u> 197 acres existing, 338 acres proposed. <u>Development:</u> None currently proposed.
Little Seneca Creek Stream Valley	<u>Acquisition:</u> 448 acres existing, 552 acres proposed. <u>Development:</u> Proposed beyond 1995.
Great Seneca Extension Stream Valley	<u>Acquisition:</u> 1,324 acres existing, 779 acres proposed. <u>Development:</u> Proposed beyond 1994.
Black Hill Regional Park	<u>Acquisition:</u> 1,855 acres acquired, 57 proposed in FY 90; 505-acre lake owned by WSSC. <u>Existing facilities include:</u> lake, comfort station, boat ramp, boat rental, parking area, picnic area, play equipment, trails, shelters. <u>Proposed facilities:</u> Visitor center, additional picnic areas, playground, additional comfort stations, trails, additional shelters, docks, boat rental building, visitor center auditorium, and handicapped fishing pier.

Appendix L

Historic Resources

The Comprehensive Amendment to the Germantown Master Plan includes the resolution of the historic status of a number of historic resources in the Germantown Planning Area. The analysis of these sites within the area Master Plan will also serve as an amendment to the *Master Plan for Historic Preservation*.

Germantown historic resources are quite a varied collection of sites: everything from early log houses to mill site ruins to elaborate Victorian farmhouses to viaducts. The entire history of this part of the County is represented by the remaining structures—including its agricultural past, its economic development through the railroads and mills, and its growth as a residential community. It is essential that the best examples representing each era be preserved for future generations to interpret and appreciate.

There are many benefits to doing an analysis of historic resources in an area while simultaneously working on the broader land use, zoning and transportation issues within the same geographical boundaries. In addition to simply designating historic resources, the Plan can study, analyze and comment on the various planning issues which will influence the historic resources in the future.

The discussion in this appendix on Master Plan status for each historic resource in the Germantown Planning Area will, thus, include comments on (1) architectural/historical significance, (2) environmental settings, and (3) related planning issues.

This appendix also addresses planning issues that relate to historic resources already included in the *Master Plan for Historic Preservation*. Additional comments on Germantown historic resources are also included in appropriate sections of the land use chapters of the

Germantown Master Plan and in the Historic Resources chapter.

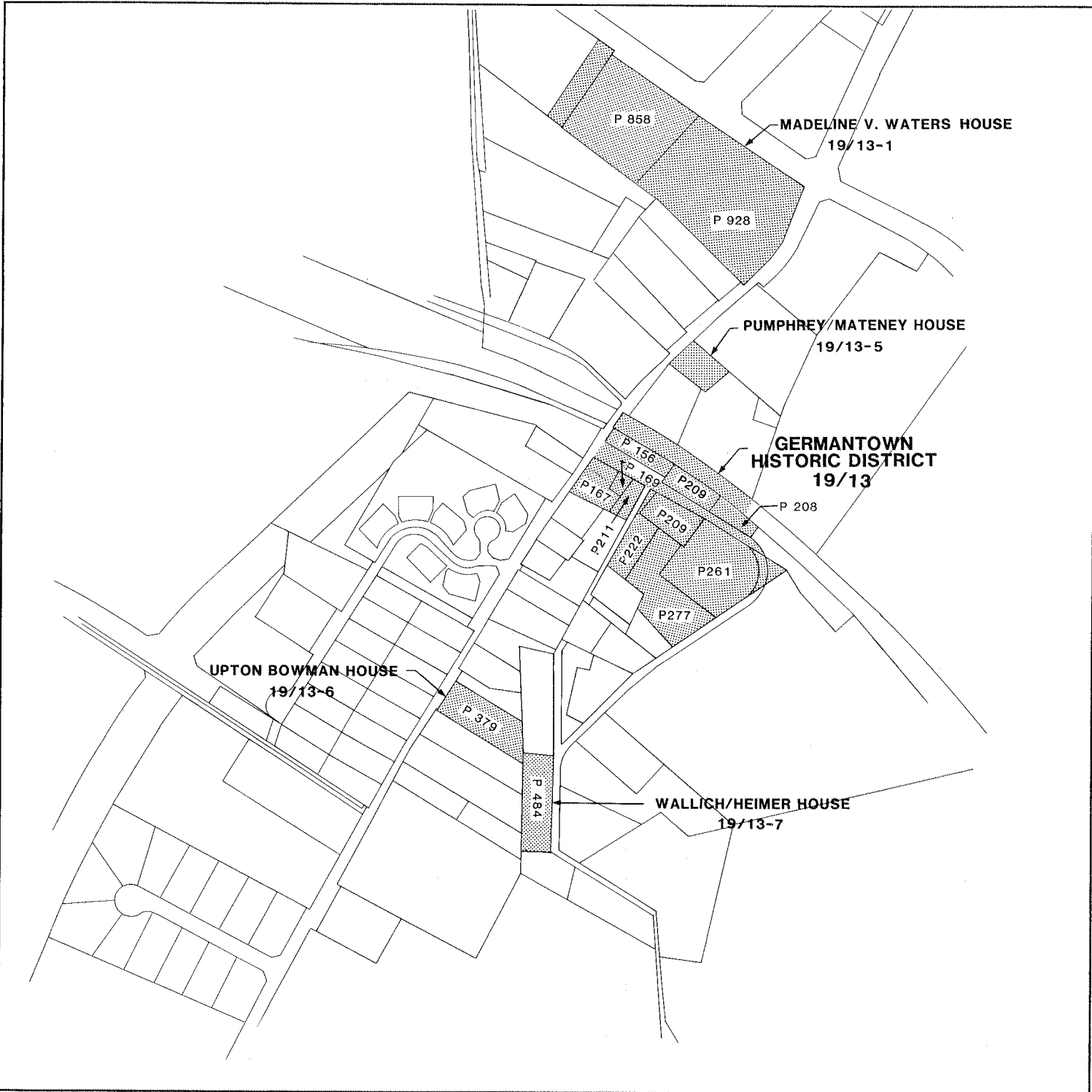
Several of the general concepts that directed the analysis of Germantown's historic resources were:

- the acknowledgment that the number of remaining historic resources in the Germantown area are not sufficient to create an overall historic ambiance, but that, instead, a number of "oases" that recall different aspects of the area's architectural and historical past can be created;
- the need to look at Germantown as a distinct community with a unique historical development that can be remembered and interpreted through the preservation of a representative set of historic resources; and
- the need to evaluate carefully and designate environmental settings around historic resources that will help to assure that future development can be coordinated sympathetically with the resources.

Through this comprehensive analysis it has become clear that there is one common denominator among all of Germantown's historic resources—they are all changing and being affected by the rapid growth of the Germantown area. If progress is to be made in maintaining—on a long-term basis—some sense of the historic and architectural character of the Germantown area, this analysis and designation of historic resources must be seen as only a first step in a larger process of preservation.

Some of the long-range issues which should be addressed in relation to Germantown's historic sites include the creation of buffers and sympathetic environments surrounding the sites, which will necessitate careful evaluation of subdivision plans that involve historic sites, and more efforts to development

Figure L-1



Germantown Historic District And Adjacent Historic Resources



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incentives which encourage the preservation and active use of historic structures, such as transfers of development rights, additional tax incentives, and preservation easements.

Historic District

#19/13 Germantown Historic District

This Plan recommends the Germantown Historic District for *Master Plan* designation. It is the one area in Germantown with an intact ensemble of historic resources that recall an overall historic ambiance. It is the heart of late 19th Century-early 20th Century Germantown and should be preserved as a important reminder of the area's history and identity. The collection of buildings—both commercial and residential—which remain in this proposed historic district today are the physical evidence of where, why and how Germantown originated.

The Germantown Historic District is important as it portrays a 19th Century rural railroad town. The 1873 opening of the Metropolitan Branch of the B&O Railroad was the primary factor for the shift of the Germantown settlement from the intersection of Germantown and Clopper Roads to the present location. Accessibility to the railroad enabled area farmers to more easily ship produce, grain, and milk to Washington. The milling and banking activities near the railroad added to the importance of Germantown as a center for economic activity.

Although several buildings have been lost through arson and neglect, there are enough intact historic structures remaining in the Germantown district to justify its designation. In particular, the 1922 bank and the 19th century Pumphrey House/Store are noteworthy. The collection of residential structures is also particularly outstanding, with strong uniformity of design and repetition of detail among the late 19th Century vernacular houses. These houses represent an important component of the Germantown settlement and typify the lifestyle of the townspeople. Each house with its associated outbuildings represents a person who worked in and was a part of this early town: Carlton Browning, the local postman; Upton Bowman, the mill owners; Henry Mateney, the local cattle dealer, etc.

The Germantown Historic District consists of the following properties:

19390 Mateney Road, Harris/Allnutt House (P 261)

19310 Mateney Road, Anderson/Johnson House, including scale (P 277 & 209)

19215 Blunt Avenue, Rayfield/Browning House, including board and batten shed (P 222)

East side of Mateney Road, former Mill Site (P 156)

West side of Mateney Road, Old Germantown Bank building (P 168 & 211)

East side of Mateney Road, B&O Railroad Depot (P 208)

It is recommended that any subdivision or site plan in the areas bordering on and adjacent to the historic district be given careful consideration in terms of its impact on the historic district. In addition, more detailed consideration of the buffering issue is needed, and the development of a "buffer" zoning classification or overlay zone to provide the necessary design guidelines and review may be warranted in the future.

A map of the district boundaries is in this appendix.

Individual Historic Resources

#19/1 Pleasant Fields/ 21200 Waters Road Dr. William Waters House

This site was included on the *Master Plan for Historic Preservation* in 1979. Pleasant Fields is an extremely important historic site. It is significant to the County both architecturally and historically, and great efforts should be made to encourage the preservation and sensitive adaptive reuse of Pleasant Fields.

A preliminary plan has been filed for a residential subdivision that includes Pleasant Fields. In reviewing this plan, special attention should be given to the proposed integration of this historic resource into the overall scheme and to the potential uses proposed for the house.

#19/2 Waters Log House Waters Road near I-270

This 19th Century log house is not recommended for historic designation. In a recent field check, remnants of the log house—specifically, a chimney—were located.

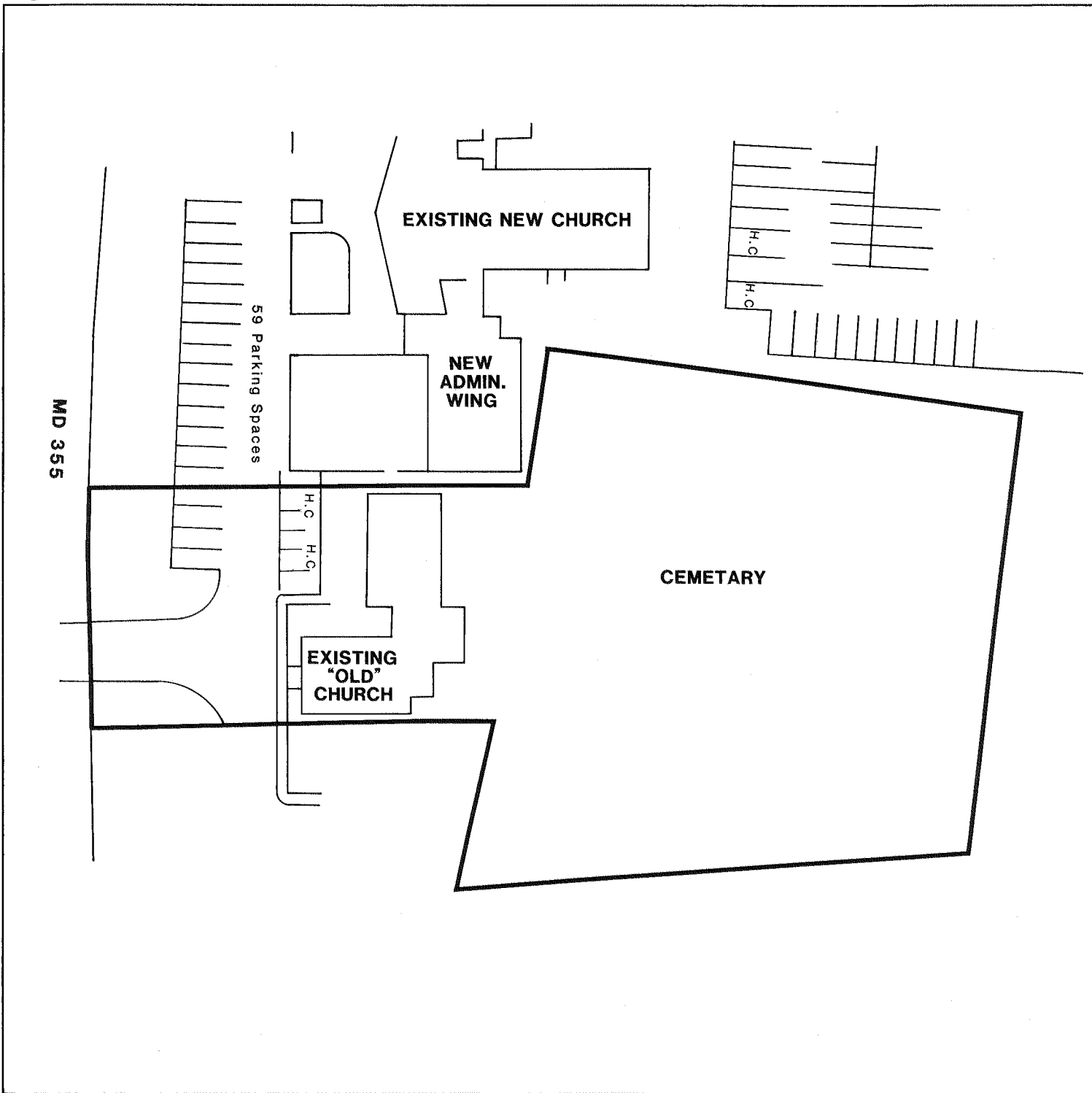
#19/3 Horace Waters Waters Landing Brick House

This resource was included on the *Master Plan for Historic Preservation* in 1979. The house subsequently burned and was demolished with Historic Preservation Commission (HPC) approval. The foundations of the house have been made into a park/amenity for the surrounding townhouses and apartments. There are no major planning issues related to this site.

#19/4 Londonderry 21100 Frederick Road

Londonderry was built circa 1850 by Rev. James Sebastian Hamilton Henderson (civic leader and second pastor of the Neelsville/Darnestown Presbyterian Church). The house has been substantially altered and was relocated from the east to the west side of Rt. 355. Therefore, it is not recommended for placement on the *Master Plan for Historic Preservation*.

Figure L-2



Environmental Setting for Neelsville Presbyterian Church

(Site #19-5)



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Although Londonderry may not warrant historic designation, it is a relatively attractive structure which is located at an important intersection. This Plan suggests that some adaptive reuse of the house—as a restaurant or inn, for example—could be appropriate. The retention of Londonderry as part of the retail center is encouraged.

#19/5 Neelsville Presbyterian Church 20701 Frederick Road

This Plan concurs in the HPC's recommendation to designate this fine example of Gothic Revival design on the *Master Plan*. The Neelsville Presbyterian Church was built in 1877 with a sympathetic addition to the structure in 1929. Not only is this church significant for its place in the development of Presbyterianism in Montgomery County, but it is also unique architecturally. Gothic Revival detailing is evident in the steeply pitched roof, the arched windows, and the ornamental bargeboard in the front gable area. Of particular interest are the wooden buttresses which align both sections of the church building. Although these buttresses do not in all likelihood provide structural support to the building, they are a unique interpretation of a Gothic—and, usually, stone—design element in a wooden medium. In addition to the architectural and historical significance of the church, it is also important as a well-known landmark along Frederick Road.

The HPC recommended an environmental setting for this site of 2.5 acres, including the cemetery. This Plan recommends a reduced environmental setting of approximately 1.7 acres, a map of which is included in this appendix.

The widening of Route 355 will have no impact on the historic church or cemetery, since they are set well back from the right-of-way. There are a number of major developments planned for the portion of Germantown east of I-270. This proposed development will significantly change the existing character of this area. Thus, this Plan feels that the protection of Neelsville Presbyterian Church, through its designation as a landmark site and as a reminder of Germantown's past, is all the more important.

#19/6-1 Trundle Farmhouse 11200 Neelsville Church Road

The Trundle Farmhouse is a turn-of-the-century rural vernacular dwelling that has undergone considerable alterations, including the addition of aluminum siding and new bay and sash windows. These alterations have had a negative impact on the historical integrity of the house and it is not recommended for historic designation.

#19/6-2 Briggs Farmhouse 11301 Neelsville Church Road

This structure is an early-20th Century, wooden American Foursquare house. It is a good example of

the style and is relatively unaltered, except for a large addition to the rear of the house. It is very well-maintained.

After careful analysis of this resource—taking into account the detrimental impact of the addition and the proliferation of wooden American Foursquares in other parts of the county—this Plan has not recommended the Briggs Farmhouse for historic designation.

#19/7 Watkins Mill Site Watkins Mill Road

According to the 1974 research, only a shallow section of the race is visible and the mill building burned years ago. This is not one of the better mill sites in the County. This Plan finds this site does not warrant historic designation.

#19/8 Ward (E.G.) Log House Route 355

This resource was removed from the *Locational Atlas* in 1984.

#19/9 Rickett's Cemetery End of Rambling Road

Rickett's cemetery is an old family burial ground, but no structure is associated with it. No further concise history is referenced in the research. This resource is not recommended for placement on the *Master Plan for Historic Preservation*.

#19/10 Waring Viaduct B&O Railroad near Waring Station Road

This triple-arched viaduct over Great Seneca Creek is recommended for placement on the *Master Plan*. It was constructed in 1906 and is an excellent example of this type of bridge. This viaduct was built to replace an earlier wood trestle bridge as a result of the straightening and double tracking of the line between Germantown and Gaithersburg. It is important for its association with the B&O Railroad, the construction of which was instrumental in the development of Montgomery County.

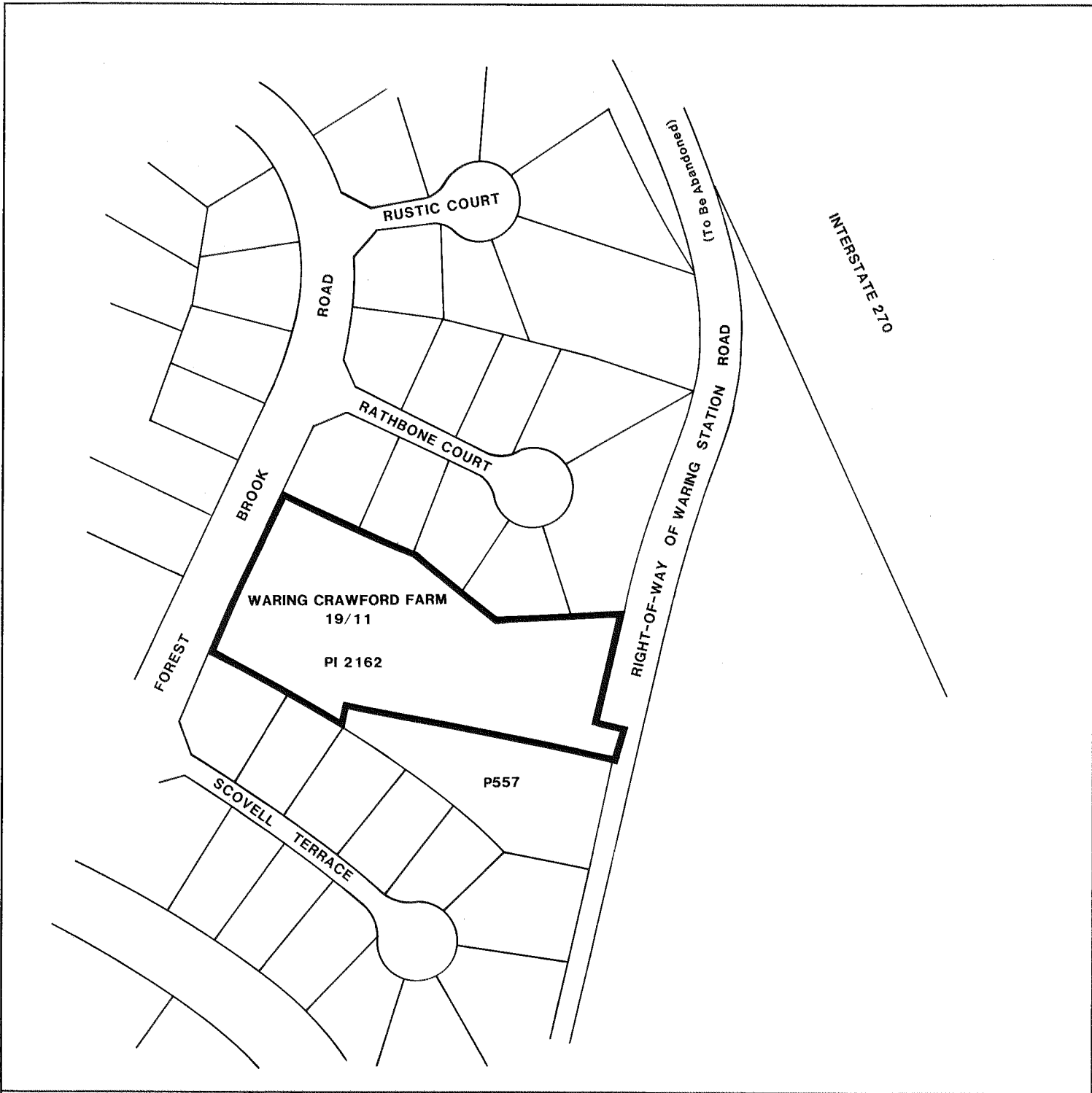
The environmental setting for this resource should include only the footprint of the viaduct structure. There are no significant planning issues related to this historic resource.

#19/11 Waring-Crawford Farm 19100 Waring Station Road

This Plan recommends the Waring-Crawford Farm for placement on the *Master Plan*. This is a particularly distinguished farmhouse with a number of unique architectural features: the front facade bay, the two-story tower with pyramidal roof, and the turned column posts with decorative brackets. Like many farms in the area, the Waring-Crawford house started as a log and frame structure and evolved into a more architecturally sophisticated residence. The original portion of the property was probably built in 1881.

The original environmental setting recommended by the HPC was the 84.88 acre parcel. Since the HPC's evaluation, this parcel has been subdivided and devel-

Figure L-3



Environmental Setting for Waring Crawford Farm

(Site #19-11)



Comprehensive Amendment
to the Master Plan for Germantown

Montgomery County, Maryland

The Maryland-National Capital Park and Planning Commission

oped. The Waring-Crawford house has been included in this development on a larger-than-normal lot: approximately 1.7 acres. This lot is recommended as the environmental setting for the property and a map of this setting is included in this appendix.

The relocation of Waring Station Road will mean that access to the Waring-Crawford house will be from Forest Brook Road. This will reverse the orientation of the house so that the rear of the structure only will be visible from the public street. This orientation is unfortunate as the front of house is particularly interesting from an architectural standpoint. The concept of incorporating an historic property into a new development scheme is positive; however, it should be implemented in the future with greater sensitivity.

#19/12 Log Cabin/Middlebrook Middlebrook Road Road

In 1983, the HPC found that this log house did not meet any criteria of the Ordinance. In a recent field check, it was found that the cabin no longer exists. Thus, this resource is not recommended for historic designation.

#19/13-1 Madeline V. Waters House 19500 Germantown Road

This resource was included on the *Master Plan for Historic Preservation* in 1985. The Madeline V. Waters House burned soon after designation and was demolished. There are no remnants of the foundation of the house, although the allee of trees, which had led to house, remains.

This Plan strongly recommends that this site be retained on the *Master Plan for Historic Preservation* for two reasons:

1. The *Master Plan for Historic Preservation* has never been "re-amended" to remove a resource—even after that resource has been damaged or destroyed by fire (for example, the Horace Waters Brick House described above). To do so at this time would set a very dangerous precedent which could potentially encourage the neglect and destruction of other *Master Plan* sites in the County.
2. The Madeline V. Waters House site is a strategic location which, if handled carefully, can be an important area of visual transition between the Town Center and the historic district. Historic designation does not preclude the development of the Waters House site, but it does provide an opportunity to guide that development in a way which will be an asset to the historic district and to Germantown as a whole.

#19/13-5 Pumphrey/Mateney House 19401 Germantown Road

This is a two-story frame house with Carpenter Gothic detailing. It has a gable roof with decorative trim at the gables and a front gable arched window. There is a projecting bay on the west side and a side porch with decorative trim.

Robert H. Pumphrey purchased the property in 1883 and built this structure soon after. He ran a store here during the 1890's until a separate building was constructed next door. The Pumphrey family lived in the house and were succeeded by the Mateney family, Mrs. Mateney being the daughter of Robert Pumphrey.

#19/13-6 Upton Bowman House 19219 Germantown Road

The Bowman House is a two-story, stuccoed, cross-gable house with decorative bargeboards in the gable ends. It was built around 1901.

This structure is historically important as the home of Upton Bowman, builder and owner of the first Germantown mill. This steam-operated flour mill was located next to the railroad tracks and Bowman, along with his two brothers, operated this business from 1888 to 1917.

#19/13-7 Wallich/Heimer House 19120 Mateney Road

This residence was built in 1913 and is a fine example of a vernacular house with Queen Anne influences. Particularly notable are the turreted projecting bay at the front corner, the shingle sheathing on the second story, and the classical columns supporting a pedimented front porch.

John Wallich, the original builder and owner, was a local carpenter.

#19/14 Henry Musser Farmhouse 14615 Hoyles Mill Road

This Plan does not designate the Henry Musser Farmhouse on the *Master Plan*. This structure is a vernacular farmhouse built about 1890. Although it does exhibit elements of the Gothic Revival style, it is not unique or a particularly outstanding example of this locally common architectural type.

A preliminary subdivision plan has been filed on this property for a large residential subdivision. This subdivision plan does not propose the retention of the Henry Musser Farmhouse.

#19/15 Richter Farmhouse 15000 Hoyles Mill Road

This house is a late example of the rural vernacular Gothic Revival style of architecture. It has been substantially altered with the addition of siding and a picture window. In addition, it is not a unique or outstanding example of the Gothic Revival style. It is not recommended for historic designation.

#19/16 Richter/King Farm 14210 Schaeffer Road

This structure is no longer standing. According to the research, this house was architecturally significant as a late Victorian building and is historically associated with the Lincoln assassination plot. One of the conspirators fled to this farm, where he was eventually captured by Union soldiers. HPC's research indicates that the house was badly damaged by a fire in 1982 and appeared beyond any reasonable expectation of repair. The house was evaluated by the HPC at the request of Housing Code Enforcement which wanted the owner to either repair it or tear it down.

The Richter/King Farm is not recommended for placement on the Master Plan. However, since it is evident from the research that this site bore significance for its architecture and still bears significance for its historical association with the Lincoln assassination, this Plan recommends that a plaque commemorating the site and its history be erected on the site.

#19/17-1 Leaman Farmhouse 13820 Clopper Road

This Plan finds that the Leaman Farmhouse does not warrant designation on the *Master Plan*. The original section of this two-story farmhouse was built of logs in the 1860's, probably by John Frederick Richter. It has been enlarged over the years and is a good example of a vernacular Victorian structure. Architectural features which are significant include a narrow, two-story projecting bay on the southeast corner of the house with a semicircular window in the gable end and a three-bay, one-story porch on the front facade which is supported by classical columns.

#19/18 Snyder/King Barn #1 MD 118, South of Clopper Road

This resource was removed from the *Locational Atlas* in 1984.

#19/19 Grusendorf Log House 13315 Clopper Road

The Grusendorf Log House was placed on the *Master Plan* in 1981. This resource has subsequently burned and is in very deteriorated condition. This Plan recommends that the log structure be renovated and integrated into any new development planned for the property. Moving the structure to a new location, for example, the Seneca Creek State Park, has been suggested. Although this is a possible option, it is less preferable than retaining the structure at its present location. The Grusendorf Log House is one of the last vestiges of Old Germantown and, if at all possible, should remain in its original location as a visual reminder of the small crossroads community that was the antecedent of Germantown today.

#19/20 Musser Barn and Cemetery 12811 Clopper Road

This resource was removed from the *Locational Atlas* in 1984.

#19/21 Clopper's Mill Ruins Clopper Road at Great Seneca Creek

This Plan recommends this site for designation on the *Master Plan for Historic Preservation*. The Clopper's Mill ruins are located within Seneca State Park and are the only remnants of the extensive holdings of Francis C. Clopper—an outstanding businessman in Montgomery County in the mid-1800's. Clopper was a prosperous owner of land, a woolen factory, and mills. He was also one of the principal backers of the Metropolitan Railroad in the 1850's and was instrumental in persuading the B&O to take over construction of the Metropolitan Branch after the original railroad failed. These ruins are significant as one of the few remaining distinguishable mills in the county, as a representation of the importance of mills in the agricultural development of the County, and for their association with Clopper.

The environmental setting is a rectangle of approximately 1 acre, extending from Clopper Road to the creek and including the mill and millrace.

The widening of Clopper Road could have a detrimental impact on the historic site. This Plan recommends that an effort be made to adjust the proposed alignment of Clopper Road to avoid the mill ruins.

#19/22 Strider Log Meathouse Clopper Road

The 1974 research indicates that this was a hewn-log meat house and the only remains of the old Taney farm. There is no remnant of the structure at the location designated on the *Locational Atlas*. However, a representative of the Maryland State Department of Natural Resources asserted that the structure was disassembled and moved to a location within the Montgomery County park system. Efforts to track down this structure have so far been unsuccessful. It is not located at the Brookside Nature Center—the log meathouse there was moved in from a different location. The Park Historian does not know the location of the Strider Log Meathouse and feels that it probably disintegrated.

This resource is not recommended for designation.

#19/23 Samuel Williams House Williams Range off MD 118

The HPC found that the Williams House was too greatly altered by deterioration to warrant placement on the Master Plan. According to the research, this circa 1860 house is a rural vernacular farmhouse associated with the Williams family, early settlers of the Germantown region. This Plan concurs with the HPC recommendation to not designate this resource.

#19/24 Snyder/King MD 118 at Riffleford Road Barn #2

The Park Historian reports that this barn "disappeared" 4-5 years ago. It is not recommended for historic designation.

#19/25 Germantown Baptist Church 17640 Riffleford Road

This church is a 1958 replacement of the original 19th century church and meets none of the Ordinance criteria. It is not recommended for *Master Plan* designation.

#19/26 C.T. Leaman House 17600 Riffleford Road

The Leaman House was built in 1867, with an addition built around 1895 by Christian Leaman, one of the early settlers of Old Germantown. The house is a good example of a rural vernacular farmhouse, but has been substantially altered by several major new additions. These additions have changed the basic form of the house and, for this reason, this Plan is not recommending the C.T. Leaman House for *Master Plan* designation.

#19/27 John H. Gassaway 17200 Riffleford Road Farm

This Plan recommends the Gassaway Farm for historic designation. This structure, built in 1872, is an unusual Victorian farmhouse with many fine decorative elements. Two two-story gabled sections are joined by a two-story galleried center section in an "H" plan. Some of the interesting architectural features include bracketed porch posts, scalloped bargeboards, and elaborate window treatments on the north facade. In addition to its architectural interest, the house is important for its association with John Hanson Gassaway. Mr. Gassaway was a leading citizen in the western part of the county in the 19th Century. He was president of Montgomery County Agricultural Society and operated a successful grain and fertilizer store in Germantown.

The environmental setting is the entire parcel of 6.95 acres, including the house, the bank barn, the corncrib, the fireplace, the windmill, and the slave quarters.

There are no potential land use or transportation conflicts associated with this property.

#19/33 Cider Barrel 20410 Frederick Road

This Plan recommends the Cider Barrel for placement on the *Master Plan*. This distinctive roadside landmark was built in 1926 as a retail outlet for Andrew Baker's agricultural products: primarily cider and fresh apples. The Cider Barrel has been well-known county feature for many years—the 1920's was a boom period when touring the countryside in private automobiles became a popular pastime and the Cider Barrel was always a favorite place to visit. It remains a successful business today. The structure is significant for its association with Andrew Baker, who was a prominent Germantown entrepreneur and who spearheaded the move to build the Germantown Bank in 1922, serving as one of its first trustees. The Cider Barrel was noted as a unique resource in the HPC's recent survey of 20th Century historic sites: "No examples of auto-related 'signature architecture' have been found in the County except for the Cider Barrel on Frederick Road north of Gaithersburg...".

The environmental setting is the footprint of the Cider Barrel and adjacent fruit stand, including the sign for the Cider Barrel.

The widening of Route 355 may have a detrimental impact on this historic resource.

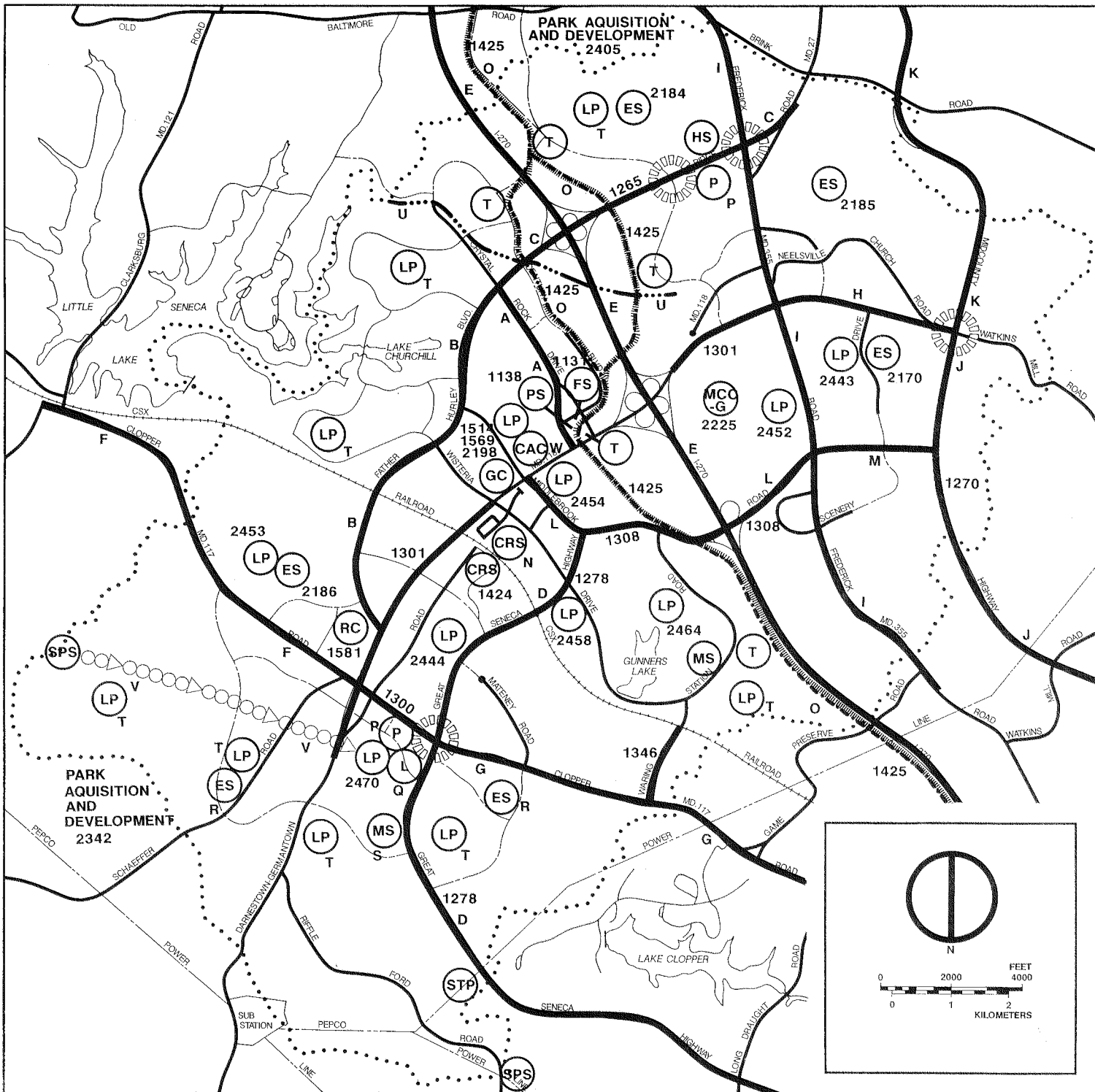
Miscellaneous Cemeteries

Citizens in Germantown have pointed out several old cemeteries: the Old Methodist Church cemetery on Clopper Road, the Musser cemetery near Weis Market, and the Arnold cemetery. None of these sites have structures associated with them.

It has been a general policy to not designate cemeteries which are not associated with a building of some sort and which are not noteworthy or unusual. This Plan reaffirms this policy, but notes that each cemetery should continue to be evaluated on a case-by-case basis.

Although this Plan does not recommend the designation of the Germantown cemeteries mentioned above, they should be taken into consideration and State laws governing cemeteries should be followed if new development will affect the plots.

Figure M-1



Capital Projects



**Comprehensive Amendment
to the Master Plan for Germantown**

Montgomery County, Maryland

The Maryland-National Capital Park and Planning Commission

- Roads
- Transit Easement Line
- Sewer Line(Gravity)
- Sewer Line(Force Main)
- Transit Station
- Park-n-Ride
- Local Park
- Elementary School

- Middle School
- Senior High School
- Library
- Sewage Pumping Station
- Sewage Treatment Plant
- Recreation Center
- Government Center
- Cultural Arts Center

Appendix M

Capital Projects

(See Figure M-1 for Locations)

Map Number ¹	Description ²	Responsible Agency	Estimated Project Cost (FY 90 Dollars) ³	Status
PROJECTS IN CURRENT PROPOSED CAPITAL IMPROVEMENTS PROGRAM (FY 89-96)				
1131	Hyattstown Fire Station 29: Addition	County	\$ 1,275,000	Design Stage
1138	Germantown Police Station: Renovation and addition	County	\$ 3,539,000	Design is scheduled to begin in FY 90 with completion expected in FY 91.
Not Applicable	State I-270 Widening Project: Construct partial interchange at Middlebrook Road and widen I-270 from 6 to 8 lanes north to Middlebrook Road and from 4 to 6 from MD 118 to MD 121	State	\$16,950,000	Final Design; advertised for bids July, 1988; estimate open to traffic summer of 1991
Not Applicable	Crystal Rock Drive: Construct 4 lanes between MD 118 and Germantown Drive	Private	\$ 3,406,000	Completed
1270	Germantown/Montgomery Village Connector: Construct 4 lanes from Montgomery Village Avenue to MD 118 Extended (M-61), and 2 lanes to MD 355	County/ State	\$26,102,000	Planning Stage
1265	Father Hurley Boulevard: 3 Phase Project to extend to MD 27 and widen to 7 lanes and construct full movement interchange with I-270	County	\$12,118,000	Planning Stage

NOTES:

- ¹ These numbers are the page numbers of the project description forms of the approved FY 89-94 CIP.
- ² Project names, scopes, and descriptions are as they appear in the approved FY 89-94 CIP, and may be changed in future CIPs.
- ³ Certain projects may be funded and/or constructed in whole or in part by private developers.

Map Number ¹	Description ²	Responsible Agency	Estimated Project Cost (FY 90 Dollars) ³	Status
Not Applicable	Father Hurley Boulevard Widening: Widen from 2 to 4 lanes from Wynnfield Drive to Crystal Rock Drive	Private	—	Completed
1278	Great Seneca Highway Phase III: Construct 4 lanes from Middlebrook Road to Quince Orchard Road	County	\$26,488,000	Phase IIIA is Operational: Phase IIIB is under construction between Great Seneca Highway and Quince Orchard Road
1300	MD 117 (Clopper Road): Widen to 6 lanes between Relocated MD 118 and Great Seneca Highway	County	\$1,882,000	Preliminary Design Stage
1301	MD 118 Relocated: Construct 6 lanes from west of Clopper Road to Wisteria Drive and from I-270 to MD 355	County/State	\$20,950,000	Detailed Design Stage
1308	Middlebrook Road from Great Seneca Highway to MD 355: Widen from 2 lanes to 6 lanes from Great Seneca Highway to I-270 and construct 3 lanes from I-270 to MD 355; Construct Partial Interchange at I-270	County	\$ 9,760,000	Phase I - Preliminary Design Stage Phase II - Construction Stage
1346	Waring Station Road: Widen from 2 lanes to 4 lanes from CSX Railroad to MD 117	County	\$ 2,505,000	Phase I - Preliminary Design Stage Phase II - Planning Stage
1424	Germantown Commuter Rail Station: Construct new parking area and construct replica of 1891 Station	County	\$ 1,946,000	Phase II - Parking Lot Completed July 1987 Phase III scheduled for completion Fall 1988.
1425	Shady Grove/Clarksburg Transitway Study	County	\$ 250,000	Conceptual
1514	Upcounty Government Center	County	\$ 7,686,000	Construct FY 89: Complete FY 90
1569	Germantown Library (co-location with the Upcounty Government Center)	County	\$ 2,497,000	Design Stage Underway: Construction to begin in mid FY-89
1581	Germantown Recreation Facilities	County	\$ 5,775,000	Site selection will be completed FY-90

NOTES:

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² Project names, scopes, and descriptions are as they appear in the approved FY 89-94 CIP, and may be changed in future CIPs.

³ Certain projects may be funded and/or constructed in whole or in part by private developers.

Map Number ¹	Description ²	Responsible Agency	Estimated Project Cost (FY 90 Dollars) ³	Status
2170	Clear Spring (Lake Seneca Area) Elementary School	MCPS	\$ 7,655,000	Furniture and equipment.
2184	Germantown Area 1991 (Fox Chapel) Elementary School	MCPS	\$ 8,008,000	Construction
2185	Germantown Area Elementary School 1993	MCPS	\$ 7,069,000	Planning
2186	Waters Landing Elementary School	MCPS	\$ 6,890,000	Planning
2190	Quince Orchard High School	MCPS	\$25,987,000	Planning
2191	Kentlands (Quince Orchard Area) Elementary School	MCPS	\$ 8,040,000	Planning
Not Applicable	Germantown Middle School	MCPS	\$14,909,000	Planning
Not Applicable	Area 3 High School	MCPS	\$ 1,125,000	Planning
2198	Administrative Office, Area 3 of Montgomery County Public Schools (Co-location with the Upcounty Government Center)	MCPS	\$ 2,658,000	Planning
2225	Germantown Building No. 4, High Tech Instructional Building	Montgomery College	\$11,248,000	Conceptual Stage
2443	Clear Spring Local Park	M-NCPPC	\$ 270,000	Acquisition
2444	Clopper Local Park	M-NCPPC	\$ 326,000	Acquisition and Development at the Conceptual Stage
2452	Germantown East Local Park	M-NCPPC	\$ 352,000	Acquisition: Land in Parkland Status Development Deferred Pending Adequate Access
2453	Germantown Estates Local Park	M-NCPPC	\$ 472,000	Acquisition: Completed Development: Conceptual Stage
2454	Germantown Square Park	M-NCPPC	\$ 152,000	Acquisition: Property was transferred to M-NCPPC at no cost Development: Engineering Stage

NOTES:

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Map Number ¹	Description ²	Responsible Agency	Estimated Project Cost (FY 90 Dollars) ³	Status
2458	Gunners Lake Local Park	M-NCPPC	\$ 492,000	Acquisition: Completed through Dedication Development: Engineering Stage
2464	Middlebrook South Local Park	M-NCPPC	\$ 447,000	Acquisition: Complete Development: Preplanning Stage
2470	Old Germantown Local Park	M-NCPPC	\$ 374,000	Acquisition: 8 acres in Park Status, 10 acres pending FY-88 Development: Conceptual Stage
2405	North Germantown Conservation Park	M-NCPPC	\$ 899,000	Acquisition: 197 of the ultimate 535 acres Development: Not applicable
2342	South Germantown Regional Park	M-NCPPC	\$ 2,946,000	Acquisition: 549 of the ultimate 657 is already in Parkland Status
2627	Seneca Creek Wastewater Treatment Plant (WWTP) Upgrade	WSSC	\$25,552,000	Construction underway
2630	Seneca Creek WWTP Retention Basin	WSSC	\$ 3,370,000	Under Construction
Not Applicable	Clarksburg WWPS Force Main	WSSC	\$ 407,000	Preliminary Design
Not Applicable	Great Seneca Highway Water Loop	WSSC	\$ 124,000	Preliminary Design

NOTES:

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³ Certain projects may be funded and/or constructed in whole or in part by private developers.

Map Number	Description ¹	Responsible Agency	Estimated Project Cost (FY 90 Dollars) ²	Location ³	Status
PROJECTS NOT INCLUDED IN CURRENT CAPITAL IMPROVEMENTS PROGRAM					
A	Crystal Rock Drive (M-84): Widen from 4 lanes to 6 lanes from MD 118 to Father Hurley Boulevard	County		TC EC CH	Expansion to support growth in the employment corridor.
B	Father Hurley Boulevard (M-27): Construct 6 lanes from M-61 to Wisteria Drive and widen to 6 lanes from Wisteria Drive to Crystal Rock Drive	County		TC CH KI	New construction from Relocated MD 118 to Wisteria Drive and widening from 4 to 6 lanes from Wisteria Drive to Crystal Rock Drive
C	Father Hurley Blvd./Ridge Road (M-27): Widen from 4 lanes to 6 from Crystal Rock Drive to MD 27	County		EC CH NE	Partially covered by Stage III of project described on Page 1263 of approved FY 89-94 CIP
D	Great Seneca Highway (M-90): Widen from 4 lanes to 6 lanes from planning area southern boundary to Middlebrook Road	County		GL CL	Expansion to support growth and reduce congestion
E	I-270: Widen from 6 lanes to 8 lanes from Middlebrook Road to Clarksburg; extend collector-distributor roads from Gaithersburg to Clarksburg	State		EC	State will begin project planning in FY 90
F	MD 117 (Clopper Road; M-26): Widen from 2 lanes to 6 lanes from Bouds, beyond planning area western boundary, to relocated MD 118	State		KI	State controlled expansion project
G	MD 117 (Clopper Road): Widen from 2 lanes to 6 lanes from Great Seneca Highway to planning area southeastern boundary, and beyond to Longdraft Road	State		CL	State controlled expansion project
H	MD 118 Extended (M-61): Widen from 4 lanes to 6 lanes from MD 355 to M-83	County		MI NE	Widening, to be constructed initially as a 4-lane highway (see page 1270 of FY 89-94 CIP)

NOTES:

¹ Project scopes, and inclusion in future CIP budgets, are subject to the approval process for public projects.

² Certain projects may be funded and/or constructed in whole or in part by private developers; costs, where available, of projects not included in the current Capital Improvements Program are based on comparable projects in the FY 89-94 CIP.

³ TC = Town Center; EC = Employment Corridor; CH = Churchill; GL = Gunners Lake; CL = Clopper; KI = Kingsview, MI = Middlebrook; NE = Neelsville.

Map Number	Description ¹	Responsible Agency	Estimated Project Cost (FY 90 Dollars) ²	Location ³	Status
I	MD 355 (M-6): Widen from 2 lanes to 6 lanes throughout the planning area	State		MI NE	State controlled expansion project to address north/south congestion
J	Midcounty Highway (M-83): Widen from 4 to 6 lanes from Montgomery Village Avenue, beyond planning area eastern boundary, to MD 118 Extended (M-61)	County		MI NE	Expansion to support growth (see page 1270 of FY 89-94 CIP)
K	Midcounty Highway: Widen from 2 lanes to 6 lanes from M-61 to planning area northern boundary and beyond to Clarksburg	County		NE	Expansion to support growth
L	Middlebrook Road: Widen from 4 lanes to 6 lanes from MD 118 to MD 355	County		TC GL MI	Expansion to support access to Town Center
M	Middlebrook Road: Widen to 6 lanes from MD 355 to Midcounty Highway	County		MI	Widening, to be constructed initially as a 4-lane highway (see page 1270 of FY 89-94 CIP)
N	Expand MARC Commuter Rail Station	State		TC	Additional expansion beyond 250 car lot and station replica under construction in Fall 1988
O	Construct Transitway north from Shady Grove Road Metro Station, beyond planning area southern boundary, to Clarksburg, beyond planning area northern boundary, stations with parking in Germantown	County		TC EC GL NE	Proposed 70 ft. right-of-way, and 4 transit stations south (GL-2), Town Center (TC-2) and north EC-6)
P	Construct 2 Park-and-Ride Facilities	County	\$615,000 each	CL NE	2 sites; adjacent to Regional Mall, and along Clopper Road (M-26) near Great Seneca Highway
Q	Expand Library or construct new Branch Library in Clopper Village, if needed	County		TC KI	Library is component of Upcounty Government Center, which may limit expansion

NOTES:

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Map Number	Description ¹	Responsible Agency	Estimated Project Cost (FY 90 Dollars) ²	Location ³	Status
R	Construct 2 elementary schools	MCPS	\$ 7,330,000 each	KI CL	Actual sites, capacity, and timing subject to growth and inclusion in future CIP proposals from MCPS
S	Construct one middle school	MCPS	\$11,662,000 (\$14,989,000 MCPS FY 90 CIP request)	KI CL	Actual site, capacity, and timing, subject to growth and inclusion of future CIP proposals from MCPS
T	Construct 7 local or community parks	M-NCPPC	\$ 400,000 each	TC All villages	Actual sites to be designated
U	Extend sewer lines into Employment Corridor and Neelsville Village	WSSC		EC	Additional information may be provided in the recommended FY 90-95 CIP budget
V	Construct sewage pumping station and force main to serve Analysis Area KI-2	WSSC		KI	Additional information may be provided in the Recommended FY 90-95 CIP Budget
W	Cultural Arts Center			TC	Possibility exists for private development of this public facility
Not Applicable	Complete needed sidewalk and pathway connections	County		TC EC All villages	Future CIP road projects should include sidewalks as described in plan

Additional projects to correct existing problems

Construct sidewalks on both sides of Waters Landing Drive from Hazelnut Court to Crystal Rock Drive.

Construct sidewalks on both sides of Father Hurley Boulevard from Middlebrook Road to Wynnfield Drive.

Construct a sidewalk on the east side of Middlebrook Road from Father Hurley Boulevard to MD 118.

Construct a sidewalk along existing MD 118 from railroad tracks to Germantown Elementary School.

Plant street trees along Middlebrook Road from MD 118 to Great Seneca Highway.

Plant street trees along Crystal Rock Drive from Father Hurley Boulevard to MD 118.

Install landscaping along Great Seneca Highway from Middlebrook Road to Dairymaid Drive.

NOTES:

¹ Project scopes, and inclusion in future CIP budgets, are subject to the approval process for public projects.

² Certain projects may be funded and/or constructed in whole or in part by private developers; costs, where available, of projects not included in the current Capital Improvements Program are based on comparable projects in the FY 89-94 CIP.

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Appendix N

Market Analysis - Germantown Town Center

Legg Mason Realty Group, Inc. (LMRG) was retained to advise the Montgomery County Council on whether the proposed Milestone Mall would seriously undermine the downtown focal point for the Town Center location specified in the Germantown Master Plan. Based upon the scope of work agreed upon and the documentation reviewed, LMRG has prepared a report of findings and recommendations. That report is summarized in this Appendix.

Study Purpose

The main purpose of the study is to provide the Montgomery County Council with an objective analysis concerning the viability of the proposed Town Center as it may be affected by the development of the proposed Milestone Mall. The County Council has expressed concern that a regional mall could detract from the Town Center and affect its viability as an appealing focal point for Germantown.

However, in addition to this main question, several secondary questions were raised during the development of the work statement for this project, which the study has attempted to answer.

Summary

1. The Germantown area is currently one of the fastest growing areas in Montgomery County. Population, income and employment growth are projected to continue in this area into the next century.
2. The Final Draft of the Comprehensive Amendment to the Germantown Master Plan provides an excellent framework from which a Germantown Town Center can be developed.
3. LMRG defines a Town Center as a compact and contiguous, high density, mixed use area which includes a balance of retail, office, entertainment and residential uses along with public open space.
4. The Town Center Core (TC-1) is not an appropriate site for the development of a regional mall.
5. Due to changes in consumer spending patterns and the retail industry, the Town Center Core would probably not attract large department stores, even if Milestone Mall is not developed.
6. Retail market supply and demand measurements are used to test general market support. These measurements are not meant to test the ultimate success of specific projects, which depends on a multitude of other factors including location, access, management, lease rates, and market perceptions.
7. The supply of neighborhood/community level shopping centers in Germantown will likely total 743,000 square feet by 1990.
8. Germantown and the surrounding market areas will support 796,800 square feet of neighborhood/community shopping center space by 1990.
9. Growth trends in Germantown indicate that almost 925,000 square feet of additional neighborhood/community retail space will be supportable by 2005.
10. Growth trends in Montgomery and Frederick Counties indicate that there is sufficient market support for the Milestone Mall. If the

Kentlands Mall is also developed, the market will support both malls by 2005.

Conclusions

The analysis performed by LMRG has resulted in the following conclusions, based on the questions included in the County Council's February 16, 1989, Request for Proposal.

1. **Can the Town Center function as a viable focal point of community activity as envisioned in the Master Plan, or will the regional mall be so dominant that the Town Center cannot serve its intended function?**

LMRG concludes that the Town Center Core area (TC-1) can function as a viable focal point of community activity as envisioned in the Master Plan if it is developed as a balanced, mixed-use center. Retail uses should include a strong entertainment and restaurant presence in order to specialize this area and diminish the competition between the Town Center and the Mall.

If entertainment and restaurant uses are not limited in the Milestone Mall, they may have a negative impact on the Town Center Core. However, if these uses could be phased properly in both locations, the negative impact and restaurant uses are limited in the Mall during the first several years that the Town Center is being developed, these uses will have the opportunity to establish a broad client base in the Town Center Core before competition can be placed in the Milestone Mall.

2. **If the Milestone Mall is not built (and no other land is designated for similar commercial use), to what extent will this enhance or diminish the viability of the town center?**

Due to the current nature of retail operations and tenancing strategies, it is not likely that the absence of the Milestone Mall would significantly enhance retail development in the Town Center Core. As the study documents, the Town Center Core would probably not attract the general merchandise tenants originally envisioned in the 1974 Master Plan, even if the Milestone Mall was not developed.

The study concludes that, if developed as a mixed use center, the Town Center will function separately from the Milestone Mall. Also, if Milestone is not developed, Germantown residents will continue to frequent Lakeforest Mall for their general merchandise and apparel needs.

3. **What are the specific conditions needed to make a Town Center viable?**

The specific conditions needed to make a Town Center viable are detailed in the Town Center Section of the report and include the following:

- an active and growing market;
- a compact area uninterrupted by other uses;
- a diverse and concentrated mix of uses that promotes weekday, weeknight and weekend activities; and
- a quality environment that establishes a distinct sense of place.

All of these conditions can be met by carefully planning the development of the Town Center Core parcel (TC-1).

4. **What types of retail, commercial, residential, and cultural development would result in a unique environment so as to achieve a viable Town Center?**

The types of retail, commercial, residential, and cultural uses that would result in a unique environment include the following uses:

- Retail — convenience and personal services for Town Center area residents and workers; entertainment uses such as movie theatres, dinner theatres, and health clubs; and synergistic uses such as eating and drinking establishments, both formal sit-down and informal ice cream and pizza parlors, and delicatessens;
- Commercial — mid-rise office buildings offering retail on the first floor;
- Residential — high-rise and mid-rise apartments and condominiums;
- Cultural — a cultural arts center, an amphitheatre, public open space in parks, pedestrian paths and biketrails, and a water feature;
- Hotel — a first-class high rise project.

5. **What is the market area for the Town Center and the Milestone Mall and what patronage is likely to come from Frederick County for each?**

The market area for the Town Center Core encompasses all of Germantown, northwest Gaithersburg, and the outlying areas of northwestern Montgomery County including Boyds, Poolesville, Barnsville, Comus, Clarksburg, and Damascus. The Milestone Mall's market area includes all of these areas along with Rockville, Olney, Potomac and all of Frederick County. This larger market area reflects the significant attraction of consumers from a large area to a mall of the size planned at Mile-

stone. Due to the types of uses supportable within the Town Center (mostly entertainment, restaurants, convenience and personal service users), the market area is smaller for the Town Center.

LMRG estimates that patronage from Frederick County would account for approximately 10 to 15 percent of sales at the Milestone Mall. However, if the existing malls in Frederick County are not expanded and no new malls are developed, the rapid growth in southern Frederick County could greatly enhance sales in the Milestone Mall.

6. **In general, will there be sufficient market demand within the time-frame of the Master Plan to support those existing and planned commercial centers in the Germantown/Gaithersburg area (Town Center, Milestone Mall, the Kentlands project, Lakeforest Mall, and others)?**

In general, LMRG projects that there will be sufficient market demand within the time-frame of the Master Plan to support the existing and planned commercial centers in the Germantown area. Based upon the supply and demand figures we generated, along with reviewing the existing supply of retail space, LMRG concludes that Germantown will continue to grow as a vibrant, healthy retail market. In addition, the firm feels that the mall, either Milestone or Kentlands, that can attract anchor stores first may preclude or delay the development of the other project.

Analyzing the projected demand for hotels in Germantown, LMRG concludes that while a first-class high rise hotel would be an excellent use for the Town Center Core, demand may be lacking into the early 2000s when market support would be sufficient to accommodate such a facility.

7. **What effects are the master planned Village Centers likely to have on the Town Center? To what extent will the Village Centers adversely impact the viability of the current Town Center (especially the Dunns Cabin proposal and the proposed center in the Kingsview Village)?**

If the Village Centers had been developed as proposed in the 1974 *Germantown Master Plan*, the effect on the Town Center would have been minimal. The tenants currently located in the Sugarloaf and Germantown Commons Shopping Centers will have a negative effect on the development of retail and entertainment space in the Town Center.

However, over the next 10 years, the demand should be more than sufficient to support the retail envisioned for all of central Germantown. The other Village Centers are intended to serve the needs of their neighborhoods and should not significantly impact the viability of the Town Center.

Town Center Critical Issues

After reviewing the current literature concerning successful, vital downtowns, and analyzing the recommendations and intent of the *Germantown Master Plan*, LMRG concludes that the Germantown Town Center Core should be developed according to the Town Center concept outlined in Table N-1. This balanced land use mix is outlined further in the Town Center Section of the report.

A development mix including the densities and uses proposed will create a small, economically supportable Town Center Core (TC-1) and provide for additional retail development opportunities on TC-5.

Since the development in the TC-1 area is considered the most critical aspect in creating a "vital" Town Center, LMRG recommends that the County Council consider the following issues:

1. The development of a cultural area center on the TC-1 parcel will have a considerable, positive impact on retail and related entertainment activity in the Town Center. This facility should be included in the initial phase of development on TC-1.
2. A public open space area in a central location of the TC-1 parcel will create a sense of place within the Town Center Core. A small lake on the parcel surrounded by pedestrian trails and small sitting areas will allow residents and employees to engage in outdoor activities during the warm weather months. If possible, an ice skating rink or other recreational facilities could be included to provide year-round activities.
3. Retail space should include a heavy emphasis on nightlife activities such as sit-down restaurants, a large movie theatre complex and a dinner theatre. These uses will create pedestrian traffic in the evenings and on weekends.
4. Other retail activities should include convenience goods and personal services for Town Center residents. Examples of these include a convenience food store, video rentals, dry cleaning, florists, drug stores, beer & wine stores, deli's, book stores, beauty salons, banks, travel agencies, and real estate offices.

**Table N-1
GERMANTOWN TOWN CENTER CONCEPT LAND USE MIX**

Area	Size (acres)	Office (sq. ft)		Retail (sq. ft.)		Residential (units)		Other Uses	
		Master Plan ¹	LMRG	Master Plan ¹	LMRG	Master Plan ¹	LMRG	Master Plan ¹	LMRG
TC-1	58	400,000	400,000	A.N.S.	125,000-175,000	800	800	Cultural Arts Center, Hotel	Cultural Arts Center, Public Park, Outdoor Skating
TC-2	10	0	0	0	15,000	600	400	Transit Station	
TC-3	8	A.N.S.	75,000	A.N.S.	5,000	0	0		
TC-4	1	A.N.S.	A.N.S.	0	0	0	0		
TC-5	76	0	0	400,000	400,000	1,000	400		
TC-6	23	A.N.S.	125,000	0	0	0	0	Pedestrian Enclave	Pedestrian Area with Low-Rise Offices
TC-7	11	0	0	0	0	0	0	Post Office	
TOTAL	187	400,000 +	600,000	400,000 +	550,000 - 595,000	2,400	1,600		

A.N.S. = Amount Not Specified

Sources: Legg Mason Realty Group, Inc.

The Maryland-National Capital Park and Planning Commission

¹ Refers to the Final Draft Germantown Master Plan.

5. General merchandise and apparel tenants should include retailers such as women's clothing, shoes, home accessories, records and tapes, jewelry and gift shops.
6. Professional services such as physicians and law offices could be located on the street level or above retail stores.
7. On-street parking should be provided on all streets within TC-1 to provide easy access to retailers. Public or private parking structures should be hidden from view, if possible, and walkways from any parking areas should be heavily landscaped and well lighted.
8. One of the critical aspects of successful Town Centers has been the management and promotion of activities. Scheduling events such as festivals, outdoor concerts and other promotional activities will draw people to the Town Center area. In Germantown, this could be accomplished through a coordinated public and private effort to attract performers and events to the cultural arts center and the public open space areas.
9. A plan that encourages pedestrian activity should include wide sidewalks and sidewalk

cafes, which would attract people to the Town Center.

LMRG concludes that the development of the remaining TC parcels will probably not directly affect the success of the Town Center Core. The development parameters and recommendations provided in the *Germantown Master Plan* suggest that these areas be developed with a mix of uses compatible with areas surrounding the Town Center Core.

The following uses are appropriate for the remaining TC parcels:

<u>Area</u>	<u>Use</u>
TC-2	Transit station and high rise residential development
TC-3	Low-rise office space or office condominiums
TC-4	Low- to mid-rise office
TC-5	Retail and service park including automobile dealerships and freestanding buildings with retailers such as Hechingers, Toys-R-U's, auto parts, muffler shops, lube and oil shops, etc.
TC-6	Low- to mid-rise offices along with open space adjacent to the pedestrian promenade
TC-7	Post Office

Appendix O

Roadside Character

The following guidelines should be used for the review of development proposals which do not require site plan review. These guidelines should be considered by the Planning Board at subdivision. The Board may modify these guidelines to more appropriately address the needs of the individual site.

The roadway system provides more than linkages within and beyond the planning area; the view from the road forms the impression of the visual quality of a community. How a community appears from its roads often determines one's positive or negative perception of that community.

The setback of development from the public right-of-way and the landscape treatment within both the right-of-way and the setback area are elements that determine the character of roadways. The Transportation Chapter contains a Roadway Classification table (Table 17) that sets out the right-of-way widths as well as the elements within the right-of-way—street trees, location and width of sidewalks and bikeways, and landscaping treatment for the median. The setback and the landscape treatment outside the right-of-way for major road types in Germantown are discussed below.

I-270 (Figure O-1)

The existing development along the Germantown portion of the I-270 corridor has a building setback of 100 feet or greater. Where the I-3 zone abuts I-270, a setback of 100 feet for all buildings and parking is required. This plan recommends a setback of 200 feet for buildings and 100 feet for parking in the portion of the Employment Corridor zoned I-3. This will provide a consistent appearance for the majority of properties along I-270. Future residential development should also be located at least 200 feet from I-270. The landscape

treatment should be carefully considered along I-270 as a part of the regulatory review process to create an appropriate roadside character.

Major Highways (Figure O-2)

All the major highways are planned for a cross-section of six lanes with a median. Where residential land uses abut these roads, noise intrusion and buffering of private outdoor areas are issues of concern.

Adjacent to residential uses, a landscaped earth berm is the preferred treatment to provide noise mitigation and opportunities for landscaped buffer. The alternative treatment is the use of noise walls and landscaping. Noise walls have structural integrity limitations and, whether made of wood or concrete, will have to be replaced eventually. For this reason, every effort should be made to use earth berms for noise attenuation adjacent to residential uses.

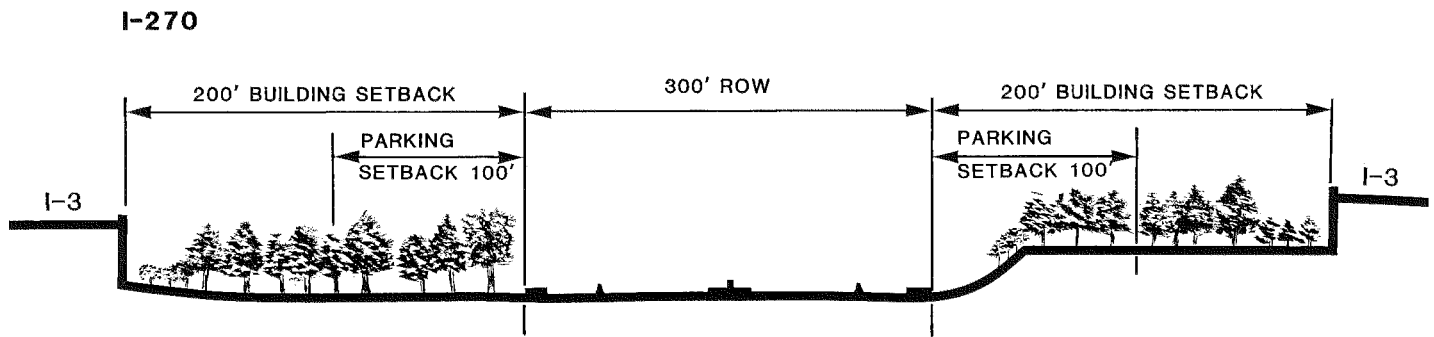
Forty feet is the minimum distance needed to accommodate a six-foot berm at a 3:1 slope. Topographical relationships between the road and the abutting property vary. More or less width may change the height of the berm necessary for noise attenuation.

Through the site plan review process, a setback of 100 feet or more should be considered where rear yards abut major roads. The space within the setback may include parking, roads, or rear yards. The intent is to provide sufficient distance between private yards and the street to allow for noise mitigation and for an area for landscaping.

Employment Access (Figure O-2)

The employment access streets of Observation Drive, Century Boulevard, and Crystal Rock Drive are planned with rights-of-way of 100 feet with medians.

Figure O-1



Setbacks From I-270



Comprehensive Amendment
to the Master Plan for Germantown

Montgomery County, Maryland

The Maryland-National Capital Park and Planning Commission

For arterial roads with an ultimate width of four lanes, the right-of-way is 100 feet, and for an ultimate width of six lanes, the right-of-way is 120 to 150 feet. Where these roads separate I-3 land uses from single-family residential land uses, an opportunity exists to create roads with unique character that can be implemented through the site plan review process. Buildings and parking in the I-3 Zone are required to be set back 50 feet from roads separating residential zoning uses from I-3 zoning; from single-family zoning and development, buildings should be set back 100 feet. During the site plan review process, residential properties should also be set back 100 feet to create space for private yards, opportunities for landscape, and noise attenu-

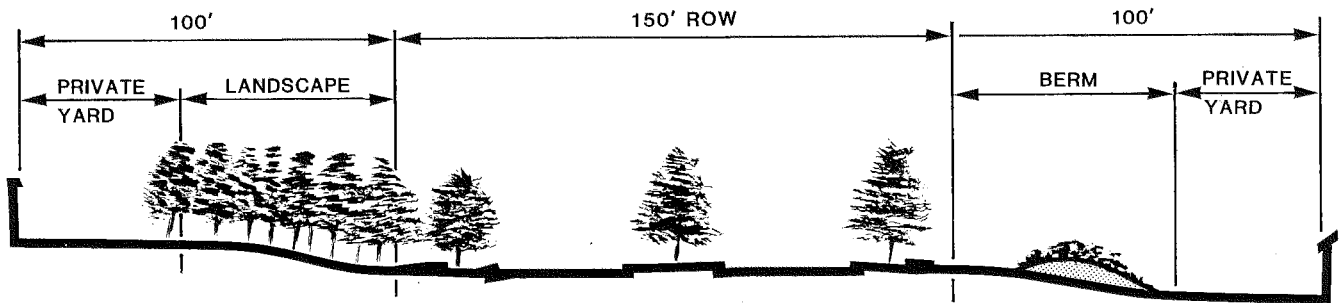
ation to reduce the impact of these roads on adjacent residential development.

Residential Arterials (Figure O-2)

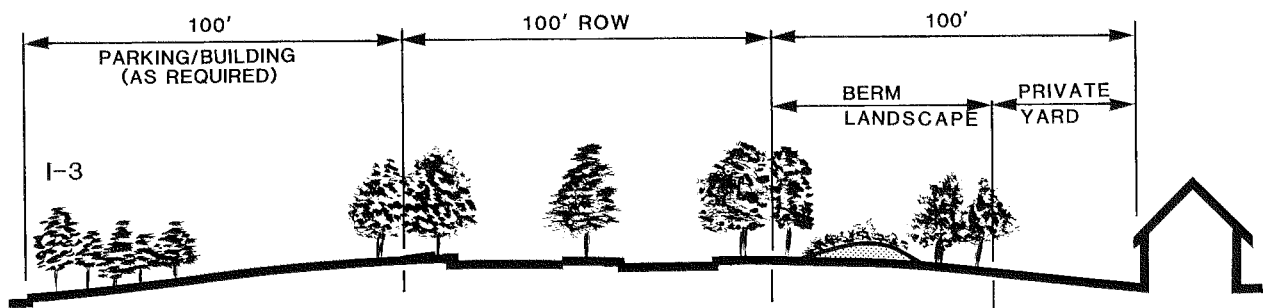
Residential arterials are planned with a right-of-way of 80 feet. An additional setback of at least 80 feet from any residential units abutting the road should be considered during the site plan review process to provide noise attenuation, setbacks for private yards, and landscape treatment. This will also help to establish a distinctive road character in Germantown. These highways, in contrast to major roads, generally will have less traffic and fewer residences on both sides.

Figure O-2

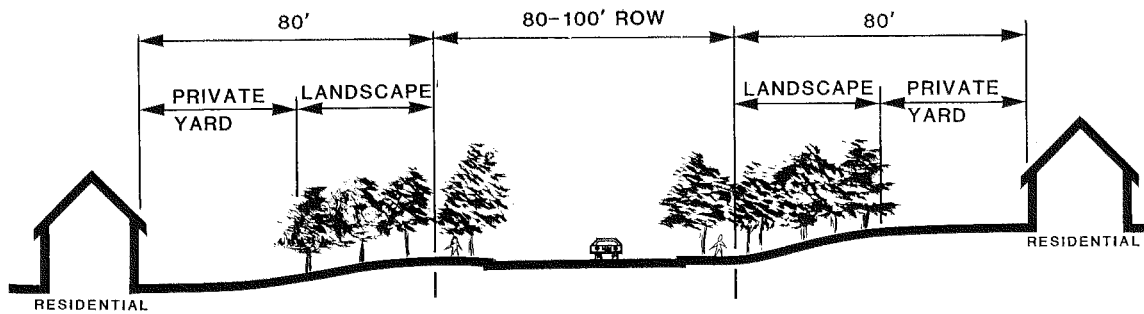
MAJOR HIGHWAY



EMPLOYMENT ROAD



RESIDENTIAL ARTERIAL



Residential Setbacks from Roadways



Comprehensive Amendment
to the Master Plan for Germantown

Montgomery County, Maryland

The Maryland-National Capital Park and Planning Commission