Regulation No. 01-10

RESOLUTION OF THE MAYOR AND CITY COUNCIL ADOPTING AMENDMENTS TO THE ENVIRONMENTAL STANDARDS FOR DEVELOPMENT REGULATION AS PROVIDED BY CHAPTER 2 OF THE CITY CODE ENTITLED "ADMINISTRATION"

WHEREAS, the City's Environmental Standards were adopted on October 11, 1995 by the resolution of the City Planning Commission in accordance with Economic Growth, Resource Protection, and Planning Act of 1992 and Article 66B of the Maryland State Code, § 3.05;

WHEREAS, the Mayor and City Council decided in 2000 that the Environmental Standards should be adopted as regulations;

WHEREAS, Chapter 2 of the City Code of the City of Gaithersburg, entitled "Administration" provides for the establishment of rules and regulations;

WHEREAS, Chapter 2, Article III, Section 2-10 of the said rules and regulations require approval by the Gaithersburg City Council;

WHEREAS, the City's Environmental Standards for Development Regulation was adopted on November 19, 2001, known as Regulation No. 01-01; and

WHEREAS, the Mayor and City Council have determined that modifications to the existing Regulation are in the public interest:

NOW, THEREFORE, BE IT RESOLVED, by the Mayor and the City Council of the City of Gaithersburg, that the Environmental Standards for Development Regulation of the City of Gaithersburg, as amended and attached hereto, are hereby adopted by the Mayor and City Council.

ADOPTED this 5th day of April 2010 by the City Council of Gaithersburg, Maryland.

SIDNEY KATZ, MAYOR and
President of the Council

DELIVERED to the Mayor and City of Gaithersburg, Maryland, this 5th day of April 2010. APPROVED by the Mayor and City Council of Gaithersburg, Maryland.

SIDNEY KATZ, MAYOR

THIS IS TO CERTIFY, that the foregoing REGULATION was adopted by the City Council of Gaithersburg, in a public meeting assembled, on the 5th day of April 2010 and the same was approved by the Mayor and City of Gaithersburg on the 5th day of April 2010. This Regulation will become effective on May 4, 2010.

Angel L. Jones, City Manager

Regulation No. 01-10

ENVIRONMENTAL STANDARDS FOR DEVELOPMENT REGULATION

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Boldface	*Heading or defined term.*
Underlining	*Added to existing law by original bill.*
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Article I. In General

Sec. 1. Introduction

Increasing demands upon the City of Gaithersburg's natural resources have inspired environmental standards and regulations to be established. If preserved and maintained in their natural condition, resources such as streams, stream valleys, wetlands, forests, and trees constitute important physical, aesthetic, educational, recreational, and economic assets to the City.

Decreased native vegetative cover, flooding, accelerated land surface and stream channel erosion, and sediment deposition constitute some of the major interrelated effects experienced during and after development. Erosion and sedimentation exist at natural background levels in the absence of human activities. Of special concern are ~~the~~ disturbances to ~~of~~ steep slopes, especially those adjacent to or in close proximity to the streams or drainage courses, and the disturbance of natural stream channels, floodplains, and wetlands. The alteration of these areas exacerbates watershed erosion/sedimentation and contributes to water quantity and quality problems.

Increases in land surface imperviousness can have significant effects on the City's stream systems through the alteration of the natural stormwater infiltration processes and significant increases in the natural levels of overland flow. The alteration to natural infiltration and overland flow processes results in an increase in the velocity, volume, and peak discharge of stormwater discharged to streams and decreased lag time between the onset of rain events and delivery of peak discharge to the stream system, as storm flow is concentrated and rapidly transported to the stream systems via impervious surfaces and storm sewers. The effects on the stream system include enlargement of the channel cross-section and reduced channel efficiency as well as increased water temperature, resulting in impairment of water quality and stream habitat. In addition, the decrease in infiltration of stormwater can result in decreased groundwater recharge and decreased stream base flow levels, which also has an effect on stream temperature and low flow in-stream habitats. Significant impacts to riparian habitats, including wetlands, result from the extreme variation of water level caused by increased peak discharges and velocities. Impervious surfaces also transport sediment and other pollutants, such as heavy metals and salts associated with roadways, to City and County streams. Increased sediment and pollutant loads impair stream habitats and water quality.

Heretofore, the City has addressed the issue of stream quality deterioration through legislation, such as forest conservation regulations, erosion and sediment control regulations, and stormwater management regulations; and, more particularly, through environmental protection conditions imposed through the site plan review process. In order to encourage a comprehensive program for watershed protection, environmental standards regulations have been adopted which establish a "benchmark" level of environmental protection to be achieved through adherence to the standards or through other appropriate environmental practices in conjunction with a waiver request.

These *Environmental Standards* are based on the principles of comprehensive watershed management and protection but are more comprehensive in that they relate to other important environmental concerns including:

(a) The recognition of wildlife corridors as an important avenue for the movement of wildlife and the consideration of wildlife problems that are created as a result of urbanization.
(b) The improvement of the degraded nature of many of the City's existing streams through various stream channel improvement techniques.
(c) The documentation of important ~~cultural~~ historic resources, views and vistas for preservation and enhancement.
(d) The recognition of the adverse impacts created by noise from transportation facilities and the incorporation of mitigation techniques to address them.

The *Environmental Standards* attempt to address the problems and opportunities encountered in watershed development and identify management strategies designed to minimize adverse impacts. Among the management strategies are:

(a) The encouragement of the judicious use of land to allow for limiting impervious surfaces and maintaining wetlands, floodplains, seeps, bogs, etc. in their natural condition.
(b) The establishment of protected slope areas which address slope gradient, soil erodibility, and proximity to stream channels.
(c) The use of stream buffers, the widths of which depend upon the stream's Maryland Department of the Environment (MDE) use designation, the gradient of adjacent slopes, and the presence of erodible soils.
(d) The administration and application of the standards so that new or creative techniques that can be demonstrated to accomplish the same goals as the specific standards can be considered in conjunction with waiver requests.
(e) The protection of both upland and riparian forest resources.
(f) The recognition and protection of the ecological significance and functions of headwater uses.
(g) The consideration of cumulative impacts.
(h) The provision of healthy forest and tree cover for the purpose of maintaining water quality, preserving wildlife habitat, preventing erosion, mitigating air pollution, controlling temperature, and enhancing community amenit~~y~~ies in an urbanized environment.
(i) The application of State erosion and sediment control standards to land disturbing activities, or City Codes and regulations if more restrictive.
(j) The provision of environmental site design practices (ESD), stormwater management structures, storm drainage systems, and other facilities in a manner that respects the integrity and does not upset the natural equilibrium of stream systems.
(k) The incorporation of best management practices into land disturbance activities.

Sec. 2. Federal, State, and ~~County~~ City Requirements

In situations where Federal, State, or ~~County~~ City requirements conflict with these *Environmental Standards*, the more stringent (i.e., more inclusive) requirement prevails.

Compliance with the City's *Environmental Standards* does not remove the applicant's necessity to obtain appropriate Federal, State, or County approval or permits.

Sec. 3. Legislation

These *Environmental Standards* are a result of the Economic Growth, Resource Protection, and Planning Act of 1992 as codified in Article 66B of the *Maryland State Code*, Section 3.05. This legislation granted planning commissions the authority to adopt policies and standards to protect sensitive environmental areas from the adverse effects of development. These *Environmental Standards* have been adopted by the Mayor and Council and are enforceable under Section 2-10 of the Gaithersburg City Code.

Additionally, the *Environmental Standards* provide detailed support for the ~~"Sensitive Areas"~~ "Environment" ~~e~~Element of the City *Master Plan* as amended by neighborhood land use plans. In the City of Gaithersburg, the Environment Element of the Master Plan is intended to fulfill the "sensitive areas" requirements of the Planning Act as well as address the health of the urban environment and public welfare considerations. Sensitive area elements are required in all local jurisdiction plans pursuant to Article 66B and are to contain goals, objectives, principles, policies, and standards designed to protect sensitive areas from the adverse effects of development, sensitive areas, including the following:

(a) Streams and their buffers.
(b) 100-year floodplains.
(c) Habitats of threatened and endangered species.
(d) Steep slopes.

The *Master Plan* Process and Overview Element ~~and neighborhood land use plans~~ articulates city-wide goals, objectives, principles, and policies for the protection of sensitive areas as identified by Article 66B of the *Maryland State Code*. These *Environmental Standards* provide the criteria and methods for implementation of the goals, objectives, principles, and policies identified in the *Master Plan* Process and Overview Element ~~and neighborhood land use plans~~. The *Environmental Standards* may eventually contain an additional "Environmentally Sensitive Areas" section, which describes additional review elements for areas that are determined to require special protection (Art. 66B-3.05.a.2). These special protection areas ~~will~~ may be determined by the City in ~~its final adoption of~~ the ~~"Sensitive Areas"~~ Environment ~~e~~Element of the *Master Plan*.

The *Environmental Standards* incorporate State wetland and dam breach/danger reach regulations and City floodplain and forest conservation regulations. The City wetland standards prohibit certain types of disturbance within wetlands and include the use of wetland buffers. The City's goal is to obtain no net loss of wetland acreage and function as mandated by the State Nontidal Wetlands Act. In cases dealing with such issues as floodplain protection, dam/breach reach analysis, and stormwater management/sediment and erosion control where the City Planning and Code Administration is not the lead enforcement agency, the information needed for City staff use in making recommendations to the City Council or the Planning Commission will be required and reviewed in coordination with the lead agency. The exception to this practice is when wetlands are being delineated only for the purpose of avoiding disturbance and are separate from the wetland disturbance permitting process.

Forest conservation requirements are in accordance with State and City Forest Conservation Laws and are dealt with in detail in Chapter 22, "Trees and Forest Conservation" of the Gaithersburg City Code, the State *Forest Conservation Manual*, and the City *Tree Manual*. Floodplain requirements are in accordance with Federal and State laws and are dealt with in detail in Chapter 10 of the City Code, "Floodplain Management".

The *Environmental Standards* also support erosion and sediment control and stormwater management requirements. The Maryland Stormwater Act of 2007 requires all new development and redevelopment to implement environmental site design (ESD) practices to the maximum extent practicable (MEP). The specific requirements are outlined in Chapter 8 of the City Code, "Erosion and Sediment Control and Stormwater Management". The *Environmental Standards* support an integrated site planning approach that is necessary to implement ESD practices. As the first step of the development review process, existing natural and man-made features, such as streams, wetlands, topography, forests, soils and infiltration capacity, existing drainage patterns, storm drain infrastructure, and utilities, are required to be identified and mapped in the Natural Resource Inventory/Forest Stand Delineation (NRI/FSD); thereby, ensuring the early assessment of the opportunities and challenges for ESD implementation.

Sec. 4. Applicability

These regulations are applicable to all properties undergoing new development and redevelopment, annexation, and rezoning applications. (Redevelopment is defined in Section 5). The owner or developer of a property, or the applicant must comply with these regulations.

Sec. 5. Definitions

Afforestation. The creation, on a tract that is not presently in forest cover, of a biological community dominated by trees and other woody plants, at a density of at least 100 trees per acre with at least 50 percent of the trees having the capability of growing to a diameter, at 4.5 feet above the ground (diameter at breast height), of two inches or more within seven years.

Applicant. ~~Person or persons submitting~~ Any person who executes the necessary forms to procure official approval of a project or a permit to carry out construction of a project. Projects may include, but are not limited to the following: site plan, variance, conditional use, special exception, rezoning applications or annexation petitions.

Best Management Practices (BMPs). ~~Structural or non-structural devices designed to temporarily store and treat urban stormwater runoff in order to minimize pollution, mitigate flooding, and provide other amenities~~ Any schedules of activities, prohibitions of practices, maintenance procedures, and other structural or nonstructural management techniques to prevent or reduce pollution to waters of the State. BMPs may include, but are not limited to treatment requirements, operating procedures, or practices to control site runoff, spillage, leaks, sludge or waste disposal, or drainage from material storage (See Appendix F).

Conservation easement. A restriction on the land and the natural features on the land. This easement is shown on the record plat and its terms and conditions are recorded in the County's land records. Most commonly, the agreement prohibits removal of healthy mature

trees and shrubs, and changes to the scenic character of the land without written permission from the City of Gaithersburg.

Danger reach. An area subject to unusual and rapid accumulation or runoff of surface water as a result of an upstream dam failure.

Development. A project consisting of buildings, structures and other improvements, or components thereof, upon any lot, tract or parcel which is either subdivided or unsubdivided, including redevelopment projects.

Diameter at breast height (DBH). The diameter of a tree as measured at a height 4.5 feet from the ground.

Drainage area. The area contributing runoff to a single point measured in a horizontal plane, which is enclosed by a ridgeline.

Drainage course. A natural or man-made drainage network having a defined channel which appears on either M-NCPPC 200-foot scale topographical coverage, a developer's field topographic, or is located in the field.

Edge to area ratio. Ratio of the forest edge to the total forest area (See Appendix A).

Environmental site design (ESD). Small-scale stormwater management practices, nonstructural techniques, and better site planning to mimic natural hydrologic runoff characteristics and minimize the impact of land development on water resources. Methods for designing ESD practices are specified in the 2000 Maryland Stormwater Design Manual, and all subsequent revisions.

Environmental Standards. Environmental Standards means the *Environmental Standards for Development Regulation*, and all subsequent amendments, that are enforced in accordance with Chapter 20-9 of Gaithersburg City Code, as amended.

Ephemeral channel. A naturally occurring channel that has flow only in direct response to precipitation. An ephemeral channel is always above the water table.

Erodibility Coefficient (k factor). Value assigned to soil types by the USDA Natural Resources Conservation Service that identifies the susceptibility to erosion based on topography and various soil characteristics.

Final site plan. A package of multiple plans for a subject site. All the information and submittal requirements are shown on the Planning and Code Administration checklist and submitted for Planning Commission review.

Floodplain. ~~A relatively flat or low land area adjoining a river, stream, pond, stormwater management structure, or watercourse subject to periodic, partial or complete inundation; or an area subject to unusual and rapid accumulation or runoff of surface water as a result of upstream dam failure.~~ The land typically adjacent to a body of water with ground surface elevations that are inundated by the base flood.

Forest. A biological community dominated by trees and other woody plants covering a land area of 10,000 square feet or greater. Forest includes:

1. Areas that have at least 100 trees per acre with at least 50 percent of those trees having a two inch or greater diameter at breast height; and
2. Forest areas that have been cut but not cleared. Forest does not include orchards.

Forest conservation. The retention of existing forest or the creation of new forest at the levels prescribed by the Planning Commission or the City Manager or his or her designee ~~Planning and Code Administrator~~.

Forest conservation plan. Outlines the strategies and specific plans proposed for retaining, protecting, and reforesting and/or afforesting areas on a site.

Forest stand delineation. A detailed summary of existing forest and trees on a site, prepared by identifying forest stands based on methodology detailed in the *State Forest Conservation Technical Manual* and the *City of Gaithersburg Tree Manual*, and amendments thereto. The information gathered in the forest stand delineation is overlaid with the natural resources inventory and becomes the basis for determining priority areas for forest and tree retention.

Geotechnical report. A report prepared by a professional engineer or geologist discussing the existing soils, geology, drainage, and groundwater conditions on a site with respect to structural safety and stormwater management feasibility and provide~~s~~ing more detail of soil and geologic characteristics in order to determine that soils can support development using suitable engineering measures.

Headwater. The source and upper part of a stream or river, which may include seeps, wetlands, intermittent streams, and perennial streams.

~~*Heritage resources.* Museums, districts, sites, buildings, structures, monuments or objects significant to the prehistory, history, archaeology, architecture, engineering and culture of the City of Gaithersburg.~~

Highly erodible soils. Soils listed as having a "severe hazard of erosion" in the most recent version of the *Soil Survey of Montgomery County, Maryland*, prepared by the United States Department of Agriculture Natural Resources Conservation Service (NRCS) and/or identified in Appendix B of this document.

Historic resources. A site or group of sites, buildings, structures or objects, including appurtenances and environmental setting, which is significant in national, state or local history, architecture, archaeology or culture.

Hydraulically adjacent slopes. Slopes lying within 200 feet from the bank of a stream/drainage course, which drain directly to the stream/drainage course or its associated floodplain. When the stream buffer encompasses the toe of a steep slope within the 200-foot section, adjacency will apply to the entire slope even if the 200-foot cutoff is in the middle of the slope.

Hydraulically remote slopes. Slopes lying beyond the area designated as the stream valley buffer of a stream/drainage course, or slopes lying beyond 200 feet from the bank of a stream/drainage course if the stream buffer is less than 200 feet, which may or may not drain directly to the stream/drainage course or its associated floodplain.

Intermittent stream. A stream in which surface water and base flow is absent during a portion of the year. An intermittent stream, for purposes of these guidelines, includes one or more of the following characteristics: 1) hydric soils or wetlands within or adjacent to a channel; and/or 2) hydraulically sorted sediments; removal of vegetative litter; or loosely rooted vegetated by the action of moving water.

Local genetic origin. Plants whose seed source is from an area within a 150-mile range of Montgomery County.

Native. Plant or animal species whose geographic range during pre-colonial times includes the Piedmont of Maryland. Information on native plants can be found in Woody Plants of Maryland (Brown and Brown, 1972) and Herbaceous Plants of Maryland (Brown and Brown, 1984), as well as other literature sources.

Natural resource inventory (NRI). A complete analysis of existing conditions, natural features, forests and tree cover on site that is used as a screening tool for site specific assessments, identification of forests and habitat, and the basis of stormwater and environmental site design. The natural resource inventory must cover the development site and first 100 feet of adjoining land around the perimeter or the width of adjoining lots, whichever is less. Information pertaining to streams and drainage courses on or within 200 feet of the property must also be provided. Existing n~~N~~atural and man-made features should be shown; include~~d~~ing, but not limited to: topography, steep slopes, perennial and intermittent streams and major drainage courses, one hundred-year floodplain, wetlands, soils and geologic conditions, critical habitats, aerial extent of forest and tree cover, cultural features and historic ~~sites~~ resources, ~~and~~ necessary buffers~~.~~, above ground and underground utilities, easements, right-of-ways, natural drainage patterns, drainage areas, and existing storm drain systems.

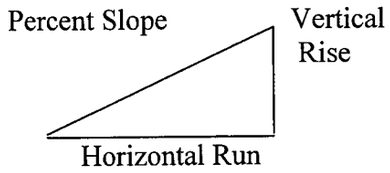
100-year flood. A flood that has a one percent statistical probability of being equaled or exceeded in a given year (or that would occur on the average of once in every 100 years). Unless otherwise stated, this calculation is based on the contributing watershed being completely under existing zoning.

100-year floodplain. The area along a river, stream, pond, stormwater management structure, or watercourse that would be inundated by a 100-year flood, based on ultimate development of the watershed under existing zoning.

One year storm. A stormwater event that occurs on average once every year or statistically has a 100 percent chance on average of occurring in a given year.

Overlighting. Illumination levels higher than recommended.

Percent slope. Defined as vertical rise in feet divided by horizontal run in the steepest 100-foot segment multiplied by 100 percent.



$$\text{Percent slope} = \left[\frac{\text{Vertical rise}}{\text{Horizontal run in the steepest 100 foot segment}} \right] \times 100\ \%$$

Perennial stream. A stream that has base flow all year.

Preliminary subdivision plan. A plan subject to the review and approval procedures of Chapter 20, "Subdivision" of the Gaithersburg City Code.

Redevelopment. Any construction, alterations, grading, or improvement of a property that changes the "footprint" of the ~~site~~ impervious area or building in such a way that results in a disturbance of land greater than or equal to ~~40,000~~ **5,000** square feet of land. The term is not intended to include activities such as interior and exterior remodeling, or residential deck building.

Reforestation. The creation of a biological community dominated by trees and other woody plants containing at least 100 trees per acre with at least 50 percent of those trees having the potential of attaining a two inch or greater diameter at breast height within seven years.

Riparian Buffer. Another term for stream buffer (defined below).

River outwash savanna. A plant community formed on extensive deposits of the Potomac and dominated by grasses, with hardwoods (often oaks) interspersed. River outwash savannas often provide habitat for many of Maryland's uncommon and State listed (by Department of Natural Resources) plant species.

Seeps and springs. Continuous or ephemeral groundwater flow exiting from slopes or ground surfaces under artesian pressure or gravity flow.

Serpentine barren. A plant community underlain by serpentine soils, i.e., rich in chromium and magnesium, poor in essential plant nutrients, and dominated by grasses, often with pines interspersed. Serpentine barrens often provide habitat for many of Maryland's uncommon and State-listed (by Department of Natural Resources) plant species.

Shale barren. A plant community occurring on Triassic red shale outcrops and often containing uncommon and State-listed (by Department of Natural Resources) plant species.

Shrub. A woody plant, usually with multiple stems, each of which has a diameter at breast height of less than three inches. Shrubs are generally less than 20 feet tall at maturity.

Significant views and vistas. Views of significant land features, such as Sugarloaf Mountain, and views of significant buildings or focal points in the urban landscape.

Site plan. A plan subject to review and approval procedures of Chapter 24, "Zoning," of the City Code.

Specimen tree. A tree that is part of a historic site; or has been designated as a champion tree by the State, County or City; or, has a diameter at 4.5 feet above the ground of 24 inches or more; or, has exceptional canopy shape and beauty; or, is a threatened, endangered species, or is individually identified on an approved forest conservation plan, or is 75 percent or more of the diameter at breast height of the current State Champion of that species.

Steep slope. A slope in which the percent slope equals or exceeds 25 percent.

Stream buffer. An undisturbed strip of natural vegetation contiguous with and parallel to the bank of a perennial or intermittent stream, which may be designed to:

(a) Protect hydraulically adjacent slope areas.
(b) Maintain or improve the water temperature regimen/water quality of the stream(s).
(c) Protect natural wetlands.
(d) Provide groundwater storage/recharge for a stream.
(e) Complement regulations pertaining to the 100-year ultimate floodplain.
(f) Provide wildlife habitat, open space or both.
(g) Complement on-site erosion/sediment control measures by serving as a back-up natural filter/trap.

SWM. ~~A s~~Stormwater management ~~facility~~.

Tree. A large, woody plant having one or several self-supporting stems or trunks and numerous branches that reaches a height of at least 20 feet at maturity.

Waiver. The grant of relief from a term[s], provision[s], or requirement[s] identified in the *Environmental Standards.*

Water uses. The distinct designated water uses for the surface waters of the State, each having a specific set of standards applied by the Maryland Department of the Environment. The designated water uses and their standards are defined in Appendix C.

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 hydrologic vegetation.

Sec. 6. Purpose

The intent of the *Environmental Standards* is twofold; the first is to describe the process of identifying and preparing a Natural Resource Inventory for development sites, and the second is to establish standards for the protection of natural resources being adversely affected by

construction activities during development and redevelopment. The *Environmental Standards* have been prepared to ensure that development plans include adequate consideration of the following environmental management objectives:

(a) Maintenance of biologically viable and diverse streams and wetlands.
(b) Protection of stream water quality.
(c) Improvement of degraded streams.
(d) Reduction in flood potential.
(e) Conservation of forest and trees.
(f) Protection of steep slopes.
(g) Preservation/protection of wildlife habitat and exemplary communities, including rare, threatened, and endangered species.
(h) Protection against development hazards on areas prone to flooding, soil instability, etc.
(i) Provision of visual amenities and areas for recreation and outdoor education activities.
(j) Reduction of the negative impacts of noise and light pollution.
(k) Preservation/protection of important ~~cultural~~ historic resources.
(l) Preservation and enhancement of important views and vistas.
(m) Implementation of environmental site design (ESD) practices to the maximum extent practicable.

Sec. 7. Administration

The *Environmental Standards* and applicant compliance with the specific requirements contained in this document form the basis for City staff recommendations to the development approval authorities, such as the City Council and the Planning Commission. The development approval authority may then choose to waive or modify these recommendations on a case-by-case basis. The *Environmental Standards* are not meant to preclude innovation and technology advances in the development field. They are meant to be flexible. A waiver may be granted where other mitigating measures such as stream rehabilitation, bioengineering, additional forest conservation, ~~or~~ riparian forest restoration, or implementation of innovative green building practices, etc., can be demonstrated. Exceptions to the *Environmental Standards* may be given on a case-by-case basis where strict compliance with the recommendations herein would result in unreasonable hardship; and when it can be demonstrated that safety, City road standards, storm drainage, stormwater management, erosion and sediment control, engineering, design or planning issues can be satisfactorily addressed to benefit the environment, the general public, or both. Furthermore, City staff is receptive to other ideas and techniques that enhance environmental compatibility.

Through the identification of existing natural resources and the application of the *Environmental Standards*, it is expected that a balance between accommodating the level of development permitted in a zone and protecting the City's existing natural resources will be achieved. Unlike some jurisdictions, these standards do not delete the environmentally sensitive lands from density calculations; however, the amount of constrained area should be considered during the master plan and zoning process to assure that intended densities and housing types can be achieved on the unconstrained areas.

Sec. 8. Penalty.

This regulation may be enforced in accordance with Gaithersburg City Code as amended, Chapter 20-9, and violators shall be subject to any penalties provided therein for non-compliance with these regulations.

Sec. 9. Severability.

If any portion of this regulation is found to be invalid by a court of competent jurisdiction, the remainder of this regulation will remain in effect.

Article II. Natural Resource Inventory

~~Natural resource and environmental~~ ~~I~~information regarding natural resources and existing conditions is to be gathered by conducting a Natural Resource Inventory (NRI) of all development and redevelopment sites that meet the requirements in Section 4. The applicant is responsible for collecting and submitting the NRI data to the Planning and Code Administration. The NRI is a complete analysis of existing natural resources and must contain specific information covering the development site and the first 100 feet of adjoining land or the width of the adjacent lot, whichever is less (Figure 1). Information pertaining to streams and drainage courses on or within 200 feet of the property must also be provided and the applicant shall make every effort to get permission from adjacent property owners to perform a site inspection. Unless otherwise indicated, the inventory must be done for all development applications at the first stage of review, which is usually concept plan review. The Natural Resource Inventory includes all information required on the Forest Stand Delineation (FSD) and additional material. The NRI shall be submitted in topographical map form, or GIS layers, along with any required narrative reports. Maps should be at least 1" = ~~200~~ 30' scale. Maps of greater enlargement may be more appropriate. Preference is for the NRI maps to be of the same scale as the site plans.

The applicant shall submit NRIs to the Planning and Code Administration at least 30 days prior to the submittal of concept plan reviews, site plans, and schematic development plans (SDP). The City shall notify the applicant of approval or request additional information within 30 days after submission of the NRI. If a decision is not made within 30 days, the City shall inform the applicant of the status of the review process and the anticipated completion date. The NRI shall not be considered approved without the inclusion of the signature and date of signature of the City Manager or his or her designee ~~City's Environmental Specialist~~. The City will not review site plans or SDPs without an NRI approved by the City. Once approved the NRI is valid as long as the site complies with Section 22-7(b)(3) and Section 24-173 of Gaithersburg City Code. ~~NRIs submitted for preliminary and final site plan approval must also include property lines, lot lines, utility lines, existing buildings and structures.~~

The NRI shall include the following information, as detailed below:

- Stream and floodplains
- Stream buffers
- Topography
- Soils
- Wetlands
- Forest and trees
- Danger reach/dam break analysis
- Threatened and endangered species and species in need of conservation
- Existing wildlife
- Special protection areas
- Historic resources
- Stream quality
- Noise and light pollution
- Significant views and vistas
- Public utilities, property lines, existing buildings and improvements, transportation rights-of-ways, existing easements, and/or existing stormwater infrastructure.

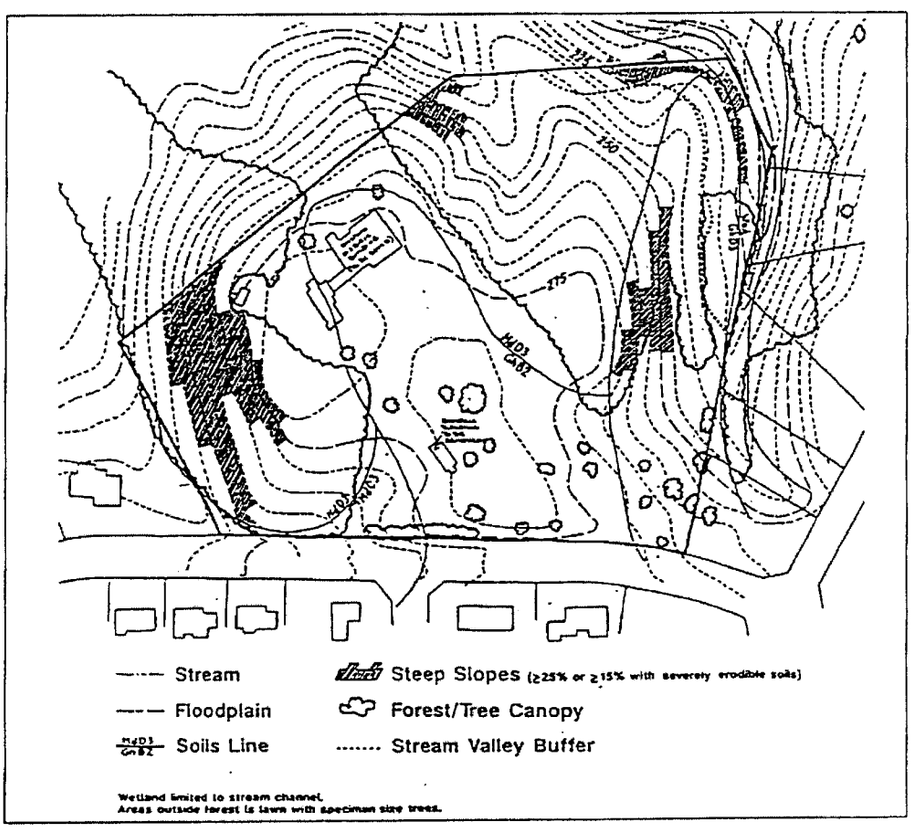
Note: The City, at its discretion, may determine that other significant site conditions exist that should be included on the NRI.

Approved NRIs are required for all properties undergoing new development and redevelopment, annexation, and rezoning applications, including:

(a) Concept/preliminary/final site plan submittal.
(b) Amendment to final site plan applications.
(c) Special exception and conditional use applications.
(d) Preliminary subdivision applications.
(e) Sketch plan applications.
(f) Schematic development plan applications.

The following topics shall be addressed as part of the NRI to provide information necessary to assure compatibility between the natural and man-made environment.

Figure 1. Natural Resource Inventory.



Source: Maryland-National Capital Park and Planning Commission

Sec. 10. Streams and Floodplains

All streams and/or drainage courses located on or within 200 feet of the subject property must be shown including the off-site drainage areas for all streams entering the subject property. Streams will be classified as either perennial or intermittent. The "Classification of Wetlands and Deepwater Habitats of the United States" (Cowardin, 1979) determines the classification of all streams. If necessary, the applicant shall contact the U.S. Army Corps of Engineers or the State of Maryland Department of Environment (MDE), Nontidal Wetlands Division to verify the determination of stream classifications. Ephemeral channels shall be shown on the NRI when they are associated with wetlands, steep slopes, or highly erodible soils. (See Section 5 for the definition of perennial and intermittent streams, and ephemeral channels).

Floodplains for drainage areas over 30 acres must be shown on the inventory map. Sources of floodplain information may include, but are not limited to, Federal Emergency Management Agency (FEMA) Flood Insurance Rate maps, ~~Flood Boundary Map and~~ FEMA Flood Insurance Study ~~Floodway~~, City of Gaithersburg topographic maps, and engineers' floodplain studies. City of Gaithersburg topographic maps can be used to determine the drainage area. Final approval of engineer's studies must be given ~~to~~ by the Department of Public Works~~, Parks Maintenance and Engineering~~ prior to Planning Commission approval of the preliminary plan (or its equivalent).

For drainage areas less than 30 acres, a drainage study including delineation of flowpath and limit of flooding may be required with concurrence from the Department of Public Works~~, Parks Maintenance and Engineering~~. These cases will be determined on an individual basis.

The floodplain must be shown on the inventory map by topographic delineation in accordance with Chapter 10 of the City Code, "Floodplain Management" with a 25-foot building restriction line (BRL) in accordance with Chapter 20 of the City Code, "Subdivision of Land". For an engineer's floodplain study, computations and all other information necessary to support the 100-year ultimate floodplain elevations shall accompany the concept site plan (or equivalent) submission and be reviewed at that time. Appendix D contains the requirements for floodplain documentation and delineation.

Sec. 11. Stream Buffers

Stream buffers are required to be shown on the inventory map in accordance with Table 1 for all perennial and intermittent streams and will include seeps and springs. The percent slope range for use with this table will be determined by taking representative 200-foot cross sections on both sides of the stream, drawn perpendicular to the direction of flow, and measuring the gradient of slope in the steepest 100-foot horizontal run from the top of the stream bank. This procedure is illustrated in Figure 2. For hypothetical examples of stream buffer delineation, see Appendix E. The stream buffer will include steep slopes as defined below in the Section on Topography, 100-year floodplains, and wetlands with wetlands buffer.

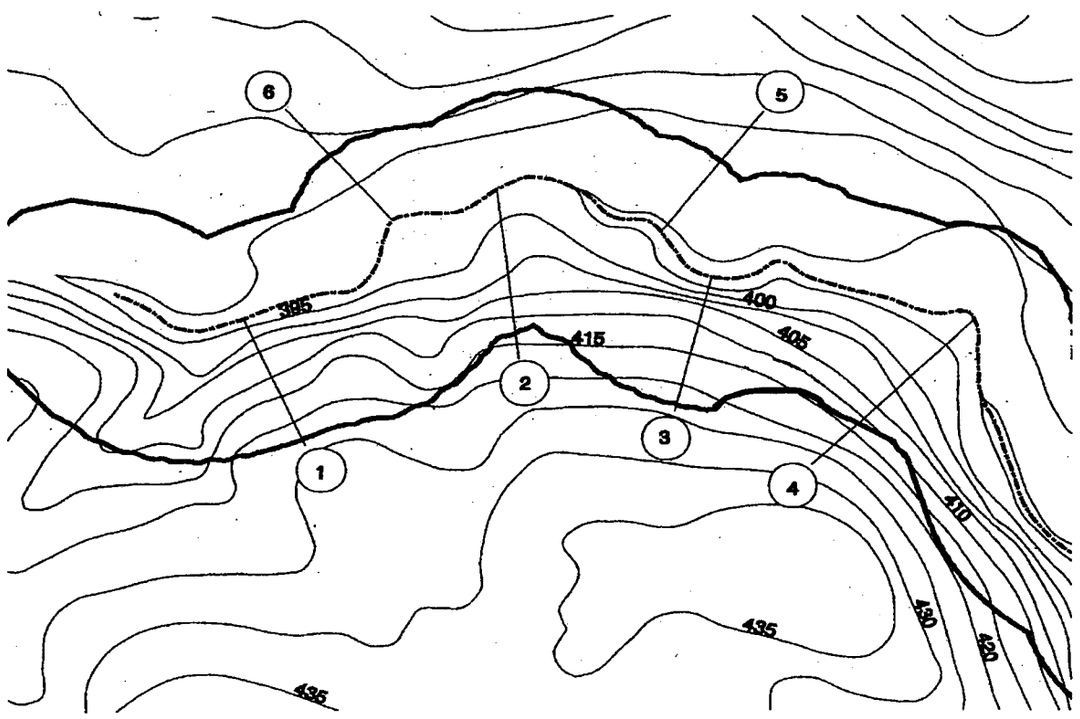
Table 1
Recommended Minimum Stream Buffer Widths*
In Feet from the Stream Bank and Stream Water Use Classification**

Percent Slope Range	Use I/I-P (Water Contact Rec. and Aquatic Life)	Use IV/IV-P (Rec. Trout Waters)
0 to <15	100	125
15 to <25	125	150
25 and greater	150	175

* Stream buffer widths may be greater if floodplains, wetlands or steep slopes extend beyond the buffer line.
** Stream Water Use Classification will be determined by the MDE Water Use designation (for definition, listing, and map see Appendix C).

Figure 2
Buffer Determination Using Both Sides of Stream Band Slope for a Use I/I-P Stream

Cross Section Number	Maximum Slope (steepest 100')	Percent Slope Range	Recommended Stream Buffer Width (feet)
Right Bank (looking downstream)			
1	30%	>25	150
2	17%	15-25	125
3	31%	>25	150
4	17%	15-25	125
Left Bank (looking downstream)			
5	7%	0-15	100
6	8%	0-15	100



Note: See Section 5 on how to calculate the slope percentage.
Source: Maryland-National Capital Park and Planning Commission. 1999. Environmental Guidelines: Guidelines for Environmental Management of Development in Montgomery County.

Sec. 12. Topography

Slopes shall be classified and shown on the inventory map for the first 200 feet on both sides of the stream, measured from the top of the stream bank. All slopes greater than 15 percent must be shown. Slopes equal to or greater than 25 percent will be considered steep and must be highlighted on the inventory map.

Slopes are treated differently with respect to stream buffers depending on their proximity to the stream. Slopes are either considered "hydraulically adjacent" (within 200 feet of the stream) or "hydraulically remote" (outside the stream buffer or at least 200 feet from the stream). If the stream buffer, as determined by Table 1, encompasses the toe of a steep slope, the buffer must be expanded beyond the width required in Table 1 to include the entire slope. Where the toe of the slope exists outside the stream buffer or is at least 200 feet from the stream, it is considered "hydraulically remote."

Sec. 13. ~~Highly Erodible, Unsuitable and Unsafe~~ Soils

Environmentally sensitive site design depends on knowledge of the nature and degree of constraints and opportunities offered by a given site. Identification of soil type, erodibility, permeability, hydric conditions, and unsafe or unsuitable land is an integral part of this analysis.~~,~~ ~~both from standpoint of providing~~ Proper identification of soil conditions provides safe and habitable buildings, ~~and for providing~~ protects~~ion~~ and conserves~~ation~~ ~~of~~ natural resources such as streams, wetlands, floodplains, forests, and trees, and facilitates the proper placement and design of environmental site design (ESD) stormwater practices.

The primary reasons for classifying land as unsafe or unsuitable for development ~~has to do with~~ are to protect public safety ~~or~~ and to prevent unacceptable environmental degradation. Therefore, soil boundaries and other geological features (e.g., rock outcroppings) must be identified on the inventory map. In addition, development limitations must be provided as a note on the inventory and concept plan. Severely limited areas must be highlighted on the plan drawing. Soils with severe limitations for development are those which have one or more of the following characteristics as identified in the most recent version of the *Soil Survey for Montgomery County, Maryland*, prepared by the United States Department of Agriculture Natural Resource Conservation Service:

(a) Seasonal high water table
(b) Subject to flood control
(c) Poor drainage
(d) Wetland/hydric soil conditions
(e) High shrink/swell potential
(f) Shallow depth to bedrock
(g) Excessive slopes
(h) High susceptibility to erosion.

One of the most common of these characteristics is highly erodible soil. Highly erodible soils are those listed as having a "severe hazard of erosion" in the ~~*1995*~~ most recent version of the *Soil Survey of Montgomery County, Maryland* (see Appendix B for a complete list of

highly erodible soil types). Erodible soils on slopes over 15 percent must be delineated on the NRI and highlighted for potential inclusion in the protected area of the site.

A geotechnical report prepared by a registered professional engineer or certified geologist may be required by City staff at the preliminary plan (or its equivalent) stage of review. A report is required w~~W~~hen it is determined that additional information is necessary for stormwater management design or the developer cannot avoid building on soils with severe limitations as identified above, and there are concerns with respect to structural safety and/or environmental degradation ~~such a report is required~~. The report will provide more detail of soil and geologic characteristics in order to determine that soils can support development using suitable engineering measures. Geotechnical investigations may also include soil maps, borings, site specific recommendations, and any additional information necessary to support the design of the project and the stormwater management system.

Sec. 14. Wetlands

All wetlands, as defined by the U.S. Army Corps of Engineers or the Maryland Department of the Environment, and wetland buffer areas, as defined by the Section 26 of this regulation, must be shown on the concept plan and inventory map. Prior to the submittal of a natural resource inventory, an applicant must have a qualified individual (pursuant to State requirements) perform a wetland assessment based on field investigations to verify the location of all wetlands. The results of the assessment must be a line denoting the boundary of wetlands on the plan and inventory map, or a note stating that no wetlands exist on the site. The City staff may waive this requirement if the site has already been developed and wetlands are known not to exist. Elaboration on the wetland functional values will be provided as a part of the assessment when permit applications are proposing removal or impact to wetlands. Criteria for assessment will include: (1) floral diversity and integrity, (2) wildlife and fish habitat, (3) flood and stormwater attenuation, (4) ground water recharge, (5) water quality enhancement, and (6) aesthetics, recreation, and education. The name and address of the individual who conducted the wetland assessment shall be on the plans. Copies of any applications for authorization to impact or alter wetlands will be submitted including the water quality certification application to the City with the preliminary plan (or its equivalent) application.

NOTE: Approved wetland permits and water quality certifications must be submitted to the City prior to the issuance of a grading permit.

Sec. 15. Forest and Trees

Natural forest and tree cover from recent aerial photos shall be shown on the inventory map as a circumferential line around all forest and tree stands which includes the outer perimeter of the branches of the individual trees. Recent aerial photography is available at City Hall.

A detailed delineation of forest and trees with these boundaries must also be provided. The requirements and methodology for this delineation are contained in the *State Forest Conservation Manual* and the *City Tree Manual* adopted as part of the Chapter 22 of the Gaithersburg City Code titled "Trees and Forest Conservation." The purpose of the forest

stand delineation is to determine the most suitable and practical areas for tree and forest conservation. By providing information on sensitive environmental areas at the beginning of the development process, this component of the NRI can serve as the base plan for the conceptual development plan.

Sec. 16. Danger Reach/Dam Break Analysis

A complete danger reach/dam break analysis shall be incorporated into the NRI submittal to identify areas where land may be inundated by dam failures from existing ponds that are upstream of the new development. Danger reach/dam break information for proposed ponds shall be submitted with the preliminary site plan, or its equivalent.

For all development applications where the property is one mile or less downstream of a dam, an applicant must show the entire Danger Reach (area inundated by the Dam Break Flood), footprints of existing structures, and spot danger reach water surface elevations on the inventory map. This information will be subject to verification by the Department of Public Works (DPW), ~~Parks Maintenance and Engineering (DPW&E)~~, who may consult with the Maryland Department of the Environment, Montgomery Soil Conservation District, or other agencies, regarding the technical aspects of the analysis.

Additional information, which may also be required with the preliminary site plan in consultation with the DPW~~&E~~, includes:

(a) Information on the dam itself, including storage volume and the hazard classification.
(b) Dam break analysis using HEC-1, DAMBRK, TR-66, or other appropriate models.
(c) Flow path/channel to carry such a flood (including any proposed easements).

For the purposes of regulatory review by the Planning and Code Administration (in consultation with the DPW~~&E~~ and the Montgomery Soil Conservation District), a dam breach analysis will be required:

(a) When the failure of the dam will result in loss of life, in damage to homes, commercial or industrial buildings, main highways, or railroads; or interruption of the use or service of public utilities.
(b) When the effective height of the dam is 20 feet or greater. (The effective height is the difference in elevation, in feet, between the emergency spillway crest and the lowest point in the cross section taken along the centerline of the dam. If there is no emergency spillway, the top of the dam becomes the upper limit for determining the storage and effective height.)
(c) When the product of the storage times the effective height of the dam is 3000 or more.
(d) When the drainage area to the impoundment is 400 acres or greater.

Sec. 17. Threatened and Endangered Species and Species In Need Of Conservation

The habitat location of flora and fauna that are designated as rare, threatened, endangered, in need of conservation, and watchlist species (as designated by the Maryland Natural

Heritage Program, Department of Natural Resources), if identified during the review process, shall be shown on the inventory map. To determine if a property contains any significant species, send a vicinity map with a letter requesting identification of significant species to the DNR Natural Heritage Program at the following address:

DNR Natural Heritage Program
Tawes State Office Building
580 Taylor Avenue, E-1
Annapolis, MD 21401

DNR will check their database for known occurrences of significant species and will send a response letter. A copy of the response letter must be submitted with the NRI map.

The City's Planning and Code ~~Enforcement~~ Administration, M-NCPPC Department of Parks, and the State of Maryland Department of Natural Resources should be consulted when the proposed development is adjacent to any special habitat areas that may require special buffering and/or protection measures.

Sec. 18. Existing Wildlife

The NRI map shall indicate the location of all beaver dams located on the site as well as known nesting, breeding, and hibernation sites for rare, threatened, watchlist or endangered species. The note section of the NRI map shall include a listing of all wildlife species seen or known to exist on the property.

Sec. 19. Special Protection Areas

Areas identified as Special Protection Areas in the ~~"Sensitive Areas"~~ Environment Element of the City *Master Plan*, and located on or within 200 feet of the subject property, must be shown on the inventory map. These areas will be identified in an appendix to the *Environmental Standards* following their identification as an element of the City's *Master Plan.*

Sec. 20. ~~Heritage~~ Historic Resources

All ~~heritage~~ historic resources found on the site are subject to the historic preservation requirements of Chapter 24 of the City Code and must be identified on the inventory map. Examples include, but are not limited to: dwellings, outbuildings, trees, cemeteries, neolithic and archaic Indian sites, monuments, markers, boundary posts, toll roads, fords, mills, slave quarters, wells, graves, archeological, etc.

Sec. 21. Stream Quality

Information pertaining to the quality of existing streams and the location of areas identified as candidate stream restoration sites, as available from the City's stream inventory must be provided on the inventory map. Additional stream quality information may be required by City staff if the City's inventory is outdated or if conditions have changed with respect to the stream(s) in question. Any additional monitoring data requested will be collected using

Montgomery County's Countywide Stream Protection Strategy monitoring protocols and include all variables monitored in the countywide strategy.

Sec. 22. Noise and Light Pollution

Existing and adjacent sources of noise and light pollution that may affect the subject site must be identified on the inventory map. These sources may include, but are not limited to the following: (a) highways and roads, (b) airports, (c) industrial facilities, (d) gun clubs, (e) athletic fields, (f) transportation facilities, (g) mass transitways, and (h) commercial areas.

Sec. 23. Significant Views and Vistas

Significant views or vistas identified in the City's *Master Plan* or known to exist must be identified on the inventory map.

Sec. 24. Public Utilities, Property Lines, Existing Buildings and Improvements, ~~and/or~~ Transportation Rights-Of-Way, Existing Easements, and/or Stormwater Management Infrastructure

The NRI shall document other existing site conditions that should be considered in the site development process. The NRI shall delineate existing or planned utility rights-of-way and dedicated, or to be dedicated, transportation rights-of-way for transit roadways, bikeways, and pedestrian walkways. In addition, all property lines, lot lines, utility lines, ~~and~~ existing buildings and structures, existing impervious areas, amount of existing impervious surface lot cover, retaining walls, drainage patterns, drainage areas, storm drain systems, and outfall pipes will be included in the NRI map. ~~submitted for preliminary and final site plan approval~~. The City, at its discretion, may determine that other significant site conditions exist that should also be included on the NRI.

Article III. Environmental Standards for Development

In the City of Gaithersburg, protecting and improving the water quality of our streams is a major planning goal. This goal is particularly important because the City is part of the Chesapeake Bay watershed. Preservation and clean up of the Bay is a major State priority. In support of this goal, Maryland established stormwater management legislation that requires the implementation of environmental site design (ESD) to the maximum extent practicable (MEP); such that after-development conditions maintain stream channel stability, promote groundwater recharge, and minimize nonpoint source pollution. Therefore, the *Environmental Standards* are largely based upon the principles of comprehensive watershed and stream valley management and ESD planning techniques.

The *Environmental Standards* have been developed, and updated, with consideration of existing policies and practices in other jurisdictions, such as Montgomery County and the City of Rockville. An attempt has been made to remain consistent with these other areas. Additionally, the *Environmental Standards* attempt to consolidate and coordinate environmental site development issues, which impact and are impacted by land use decisions. The standards are intended to promote and encourage interagency cooperation at the earliest planning stage possible.

The following standards will be applied to protect environmental features on development plans, as identified by the Natural Resources Inventory. They will be the basis for formulation of City staff recommendations to the City Council and the Planning Commission.

Sec. 25. Stream Valley Protection

The slope classification and stream buffer widths outlined in Table 1 are the basis for the following recommended standards which address stream buffers. These include hydraulically adjacent slopes, hydraulically remote slopes, and approved clearing and grading within these areas that affect these areas. The standards are designed to provide greater protection, through use of stream buffers, for the more environmentally sensitive, hydraulically adjacent steep slope areas.

1. Recommended Standards for Stream Buffers

a. Streams, natural springs, and seeps will be maintained in a natural condition so that the hydraulic regimen and State water quality standards can be maintained.

b. No buildings, structures, impervious surfaces, or activities requiring clearing or grading will be permitted in stream buffers~~,~~; except for public uses such as infrastructure, bikeways, and trails found to be necessary and unavoidable or necessary maintenance or minor changes to existing impervious areas that are identified on an approved site plan where impacts are minimized. Intrusions into the stream buffer may only be approved by the granting of a waiver on a case-by-case basis pursuant to Section 38 of this Regulation. The applicant shall provide rationale for stream buffer intrusions addressing at a minimum the factors below. The extent to which the proposal meets the following factors will form the basis of whether or not a waiver is approved:

1. Reasonable alternatives for avoidance of the buffer are not available.
2. Encroachment into the buffer has been minimized.
3. Existing sensitive areas have been avoided (forest, headwaters, and wetlands and their designated buffers, floodplains, steep slopes, and habitat for rare, threatened, and endangered species and their associated protection buffers).
4. The proposed use is consistent with the preferred use of the buffer (e.g., pervious areas such as tie-outs to existing grades, slope stabilizing BMPs, etc.).
5. The plan design provides compensation for the loss of buffers.

c. Sediment and erosion control facilities are allowed as a temporary use in unforested areas of the stream buffer when the Department of Public Works~~, Parks Maintenance and Engineering~~ finds that performance of the overall site sediment control system will be measurably improved by placement of the facility at that location. At a minimum, grading must not occur within 25 feet of the stream bank, ~~of~~ wetlands and their defined buffer, and forest and critical root zone areas. Preference is given to the placement of these temporary structures outside the stream buffer. If such structures are placed in the stream buffer, the area must be regraded, revegetated, and reforested as soon as possible. Once the site is regraded, it must be covered with a temporary cover immediately, and permanent revegetation or trees planted by the next planting season. Emphasis is on reforestation of disturbed areas with two-inch caliper trees. In many instances, disturbed areas may need replenishment of topsoil before successful reforestation or revegetation can be implemented.

d. Stormwater management (SWM) facilities are discouraged within stream buffers since, as a general rule, location of this permanent use within the buffer does not allow maximized accomplishment of all environmental management objectives for the stream buffer. However, maximum long-term effectiveness of the SWM facilities is also an important objective of an overall stream protection strategy, and must be considered together with the buffer objectives in siting decisions. Waivers for minimal buffer intrusions may only be approved by the granting of a waiver on a case-by-case basis pursuant to Section 38 of this Regulation for construction of suitable SWM facilities, non-erosive storm drain outfalls, and unavoidable and consolidated sanitary sewer connections. The extent to which the proposal meets the following factors will form the basis of whether or not a waiver is approved:

1. Documented and measurable improvement in the effectiveness of the SWM control system if placed in the buffer.
2. Minimization of encroachment into the buffer.
3. Avoidance of existing sensitive areas (forests, headwaters and wetlands and their designated buffers, floodplains, steep slopes, and habitat for rare, threatened, and endangered species with their associated protection buffers).
4. Extent of which the SWM <u>ESD</u> or BMP design is consistent with the preferred use of the buffer (for example, preservation of existing forest and natural vegetation within part or all of the flood pool; naturally contoured and vegetated infiltration areas or filter strips; etc.)

5. Excessive grading caused by an uphill SWM location.
6. Existence of severely degraded conditions within the buffer area that could not be improved if the SWM facility is outside the buffer area.
7. Presence of man-made structures (e.g., farm ponds) in the buffer area under pre-development conditions that can be converted to SWM use without excessive stream disturbance.
8. Ability to provide full or partial compensation for the loss of buffer function from the disturbance and permanent absence of forested areas.

City ~~Planning and Code Administration and the Department of Public Works, Parks Maintenance and Engineering~~ staff will evaluate the SWM alternatives that provide effective SWM in a manner closest to the preferred use of the buffer as a stable forested area. City staff will jointly determine where SWM facilities are appropriate in stream buffers. When a SWM facility is allowed in the buffer, an area that is of comparable or greater size than that used for the SWM facility and not otherwise protected will be required as a replacement buffer.

e. Where feasible, utility easements shall be set back a minimum of 50 feet from all stream banks or outside wetlands and their designated buffers. In-stream placement of sediment control devices, stream crossings, and channel modifications must be avoided whenever possible. Following the clearing of existing trees and/or forest within stream buffers for the installation of utilities, reforestation of the cleared area must be accomplished pursuant to the State and City technical manuals to the extent practical.

f. Deposition or stockpiling of any material such as excavated rock, topsoil, stumps and shrubs, grass clippings, and building material within the designated stream buffer is prohibited. Activities, such as composting or topsoil stockpiling, that are necessary to restore an area within a utility easement may be approved on a case-by-case basis by the Planning Commission prior to approval of the plan when no other alternative is available.

g. The applicant must analyze the impact the development will have on ephemeral channels and the water quality impact in the receiving waters through the loss of ephemeral channels. If necessary, City staff may recommend the protection of ephemeral channels. If protection is recommended, the City Council or Planning Commission shall require the land adjoining the ephemeral channels to be undisturbed or designated as open space with a buffer to be determined by staff.

h. Stream buffers shall be delineated on all new record plats to ensure the public and subsequent property owners are informed of their existence and location.

2. Recommended Standards for Steep Slopes Outside the Stream Buffers (Hydraulically Remote)

Hydraulically remote steep slope areas should be incorporated into the site's open space and/or remain undisturbed. However, development of these areas may be approved by the Planning Commission on a case-by-case basis, where the developer

can demonstrate that safety, City road standards, storm drainage/stormwater management, erosion and sediment control, engineering, tree preservation, soil stabilization, design, and planning issues are satisfactorily addressed. Sediment and erosion control measures will be approved by the appropriate agency, either Department of Public Works~~, Parks Maintenance and Engineering~~ or Montgomery Soil Conservation District (MSCD).

3. Recommended Standards for both Stream Buffers and Hydraulically Remote Slopes

In instances when a limited amount of clearing and grading is approved within the stream buffer area or in areas of hydraulically remote steep slopes, and when clearing and grading of surrounding areas may impact these areas, the following standards must be strictly adhered to:

a. All clearing and grading activities shall strictly adhere to the Maryland State standards and specifications. Furthermore, it is strongly recommended that phased clearing and grading be used whenever feasible. Phased clearing and grading may be required for plan approval by the Planning and Code Administration staff in consultation with the Department of Public Works~~, Parks Maintenance and Engineering~~ and Environmental Services. The sediment and erosion control measures will also be approved by the appropriate agency. Close coordination shall be maintained with the Washington Suburban Sanitary Commission (WSSC). All disturbed areas shall be revegetated, and reforested/afforested, as soon as possible as required by the Maryland Standards and Specifications for Sediment and Erosion Control. Emphasis shall be placed on reforestation/afforestation of disturbed areas. In many instances, disturbed areas may need replenishment of topsoil before successful reforestation or revegetation can be implemented. Emphasis is on reforestation/afforestation with two-inch caliper trees.

b. Stormwater management plans, which address water quantity and quality, must be approved by the appropriate agency. These plans shall incorporate best management practices (see Appendix F), and/or respect natural stream channels.

c. The location, design and construction of all development activity will be carefully reviewed to avoid introduction of pollutants and toxic materials into stream systems.

d. In instances where a master plan or City-wide program identifies a need for water quality or other monitoring, or in environmentally sensitive watersheds, City staff may recommend to the City Council or the Planning Commission performance monitoring to evaluate impacts of development proposals on the environment (see Appendix G).

e. Monitoring should not be considered a BMP or measure that, in itself, can maintain or improve environmental conditions.

Sec. 26. Wetlands, Ponds and Lakes, and Floodplain Protection

1. Wetlands

The wetland standards are based on the Maryland State Nontidal Wetlands Protection Act. It is the goal of the State's program to attain no net overall loss in nontidal wetland acreage and function and to strive for a net resource gain in nontidal wetlands over present conditions. In support of this goal, the following wetland standards will be followed during review of plans:

a. Wetlands will be regulated in accordance with applicable State and Federal law. A minimum buffer of 50 feet will be established around nontidal wetland areas. The buffer will be expanded to 100 feet around wetlands of special State, County, or City concern, and around wetlands with adjacent areas containing steep slopes or highly erodible soils. City staff may recommend the expansion of the wetland buffer, to the Planning Commission, for the protection of ephemeral channels. When a wetland buffer extends beyond the stream buffer that would be required according to Table 1 of these standards, the stream buffer will be expanded to the wetland buffer line. For example, see Figure 3.

b. The Planning and Code Administration and Environmental Services evaluates proposed wetland impacts under the Federal/State avoidance standards that are listed in order of preference as follows:

   (1) Avoiding the wetland impact altogether by not taking a certain action or parts of an action.
   (2) Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
   (3) Rectifying the impacts by repairing, rehabilitating, or restoring the affected environment.
   (4) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
   (5) Compensating for the impact by replacing or providing substitute resources or environments.

c. Wetlands and their associated buffer areas shall be maintained in their natural condition unless the proposed disturbance is for a project determined to be necessary and unavoidable for the public good, such as:

   (1) Road crossing, sewer lines, and storm drain outfalls for which no alternative exists.
   (2) Stormwater management facilities, when it can be demonstrated that upland areas are infeasible or would severely limit the effectiveness of the facility.
   (3) Park projects for wildlife and habitat.
   (4) Wetland quality improvement projects.

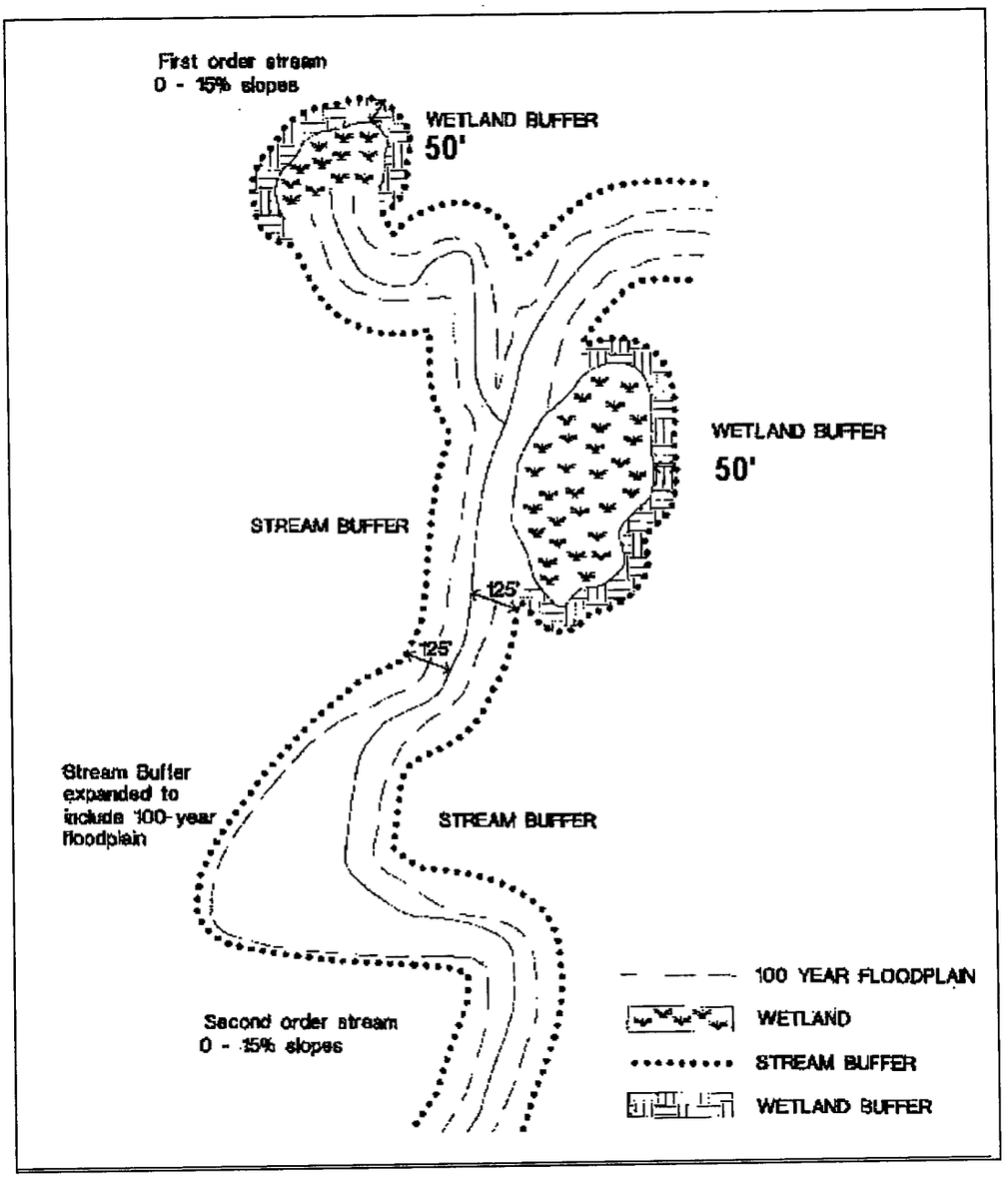
d. Proposed alterations to areas designated as wetlands must be reviewed and approved by the Maryland Department of the Environment, and the U.S. Army

Corps of Engineers, as appropriate, prior to commencement of any alteration activities. The Planning and Code Administration and Environmental Services staff may recommend deferral of final approval of development plans pending the permit decision for disturbance of wetlands of extraordinary quality or environmental sensitivity. These include:

(1) Nontidal wetlands with threatened or endangered species or species in need of protection.
(2) Nontidal wetlands of special State concern.
(3) Nontidal wetlands identified by the City *Master Plan.*

It is strongly recommended that permit applications are submitted and preliminary comments are received from these agencies prior to development of a preliminary (or its equivalent) site plan.

Figure 3
Illustration of Stream Buffers with Wetlands and Floodplains



Source: Maryland-National Capital Park and Planning Commission. 1999. Environmental Guidelines: Guidelines for Environmental Management of Development in Montgomery County.

2. Ponds and Lakes

Ponds and lakes are inland bodies of standing water. Water quality buffers of 100 feet are required for ponds and lakes that are directly connected to an intermittent or perennial stream. The buffer is measured from the 100-year base flood elevation, as defined by Chapter 10 of the City Code. For a pond or lake to be directly connected to a stream, an intermittent or perennial stream must discharge into the pond or lake and the pond or lake must then discharge into a stream. Water quality buffers of 100 feet are not required for isolated ponds or lakes that were originally constructed in upland areas solely for the purposes of stormwater quantity or quality control that outfall to a stream. No buildings, structures, impervious surfaces, or activities requiring clearing or grading will be permitted in the buffer without the approval of a waiver; except for public uses such as infrastructure, bikeways, and trails found to be necessary and unavoidable or necessary maintenance or minor changes to existing impervious areas or structures that are identified on an approved site plan where impacts are minimized.

~~2.~~ 3. Floodplains

Floodplain standards are based on existing Federal, State, and City regulations, which govern development activities in these areas. City floodplain management regulations are located in Chapter 10 and Chapter 20 of the Gaithersburg City Code.

a. No building/structure will be permitted within a minimum horizontal distance of 25 feet of the 100-year ~~ultimate~~ floodplain (except as permitted in Chapter 10 and Chapter 20 of the Gaithersburg City Code).

b. In general, building near or within the 25-foot building restriction line (BRL) for floodplains will be governed according to the regulations set forth in Chapter 10 and Chapter 20 of the Gaithersburg City Code.

   A person must not engage in any land-disturbing activity within the floodplain district or within 25 feet of any boundary of the floodplain unless the Planning and Code Administration issues a floodplain permit or exemption from the permit requirement.

c. To ensure that the public is informed of the existence of a floodplain, it will be delineated on the record plat, with reference elevations at critical locations. Reference elevations will normally be required only when there is a critical need, such as when a danger reach from a dam exists, or when an existing structure is proximate to, partially in, or entirely in a floodplain boundary.

d. When the floodplain extends beyond the stream buffer that would be required according to Table 1 in these standards, the stream buffer will be expanded. For example, see Figure 3.

e. Floodplains shall be delineated on all new record plats to ensure that the public and subsequent property owners are informed of their existence.

Sec. 27. Forest and Tree Conservation

The conservation requirements for forest and tree conservation are contained in the City's "Forest Conservation Ordinance" (Chapter 22). A Forest Conservation Plan is required as part of the preliminary and final site plan. Standards for determining priority areas and details for submission of Forest Conservation Plans are included in the most recent version of the City and State technical manuals.

Tree and forest conservation areas shall be delineated on all new record plats to ensure that the public and subsequent property owners are informed of their existence.

Sec. 28. ~~Unsafe and Unsuitable~~ Soils and Land Protection

1. Soils with Severe Limitations, or Highly Erodible

   Development on highly erodible soils and other unsafe and unsuitable lands should be carefully managed to avoid erosion problems and sediment transport to streams and storm sewer systems. In some cases, development may be prohibited or restricted in areas of soils with severe limitations, high erosion potential, and ephemeral channels, as a condition of plan approval. Restrictions can include the requirement for implementation of engineered solutions, the use of building restriction lines, restriction of housing types (such as prohibiting basements), and relocation or deletion of lots. Plans showing development on highly erodible soils will be required to propose management strategies in the following order of priority:

   a. Avoidance and ~~minimum~~ minimization of disturbance, including expansion of stream buffer.
   b. Environmentally sensitive site design.
   c. Reforestation/afforestation and vegetative stabilization.
   d. Best management practices including expansion of stream buffer and cluster design.

   At a minimum, on-site stormwater BMPs shall be used, inspected, and properly maintained, on each lot, to limit the off-site transport of sediment from the grading and construction activities on soils with severe limitations, or when the slope is between 8 and 25 percent.

2. Soil Best Management Practices

   Soil quality is directly related to stormwater infiltration and retention capacity, pollutant removal, healthy streams, and healthy landscapes. Compacted urban soils with low permeability do not support groundwater recharge, stormwater management, or healthy landscapes. These soils typically produce unhealthy plants that require excessive fertilizers, pesticides, and irrigation—further increasing surface water pollution. Given that soil quality is essential for the

proper implementation of environmental site design stormwater management practices, the utilization of soil best management practices and engineered soils may be required. Soil best management practices (BMPs) include preserving native soil and restoring soils disturbed during development with organic or structural soil amendments in order to meet the engineering, environmental, and green space management needs in urban areas.

~~2~~ 3 Required Geotechnical Report

When no other options exist and development on problem soils cannot be avoided, a geotechnical report prepared by a certified geotechnical engineer will be required. This report will describe the soil limitations and the engineering measures necessary to protect against development hazards. When suitable measures are available that City staff is convinced will mitigate the soils constraints over the long term, development will be allowed. Should unforeseen soil problems become evident during construction, a stop-work order may be issued until the necessary geotechnical reports are submitted to the City and suitable measures to mitigate the problems are determined.

~~3~~ 4 Development Agreement

An agreement between the builder/developer of the property and the City will be required to ensure that development occurs according to the recommendations of the geotechnical report.

Suggested versions of the language of this agreement may be obtained from the Planning and Code Administration. In addition, disclosure will be made to prospective homeowners.

Sec. 29. Danger Reach

It is the policy of the City ~~Planning and Code Administration, Department of the Public Works and Engineering, and Planning Commission~~ to prohibit any dwelling units within the area inundated by the Dam Break Flood (Danger Reach), in order to ensure that a minimal risk is posed to public well-being and property. In order to achieve this, the following techniques are employed where appropriate.

(a) Low density zoning.
(b) Use of cluster provisions in the Zoning Ordinance.
(c) Dedication/park acquisition/easement.
(d) Regulatory review.

Development in the danger reach of existing and proposed dams requires a waiver and is also subject to the dam safety requirements of Chapter 10 of the City Code, "Floodplain Management". To ensure that the public is informed as to the existence of a dam and potential to fail or breach, the danger reach area will be delineated on the record plat, with reference elevations at critical locations. In the event that the dam is classified by the Maryland Department of the Environment (MDE) as "High Hazard" or "Significant Hazard",

the property owner(s) must coordinate with the provisions of the Emergency Action Plan (EAP), as required and approved by MDE.

Sec. 30. Threatened and Endangered Species and Species in Need of Conservation

When a rare, threatened or endangered species, a species in need of conservation, or a watchlist species (as designated by the Maryland Natural Heritage Program, Department of Natural Resources) or its habitat is identified at a site, the applicant must avoid these areas unless an alternate plan is approved by the State and/or the City Council or City Planning Commission. This includes the applicant devising programs for the protection of identified species or habitat in conjunction with the Maryland Department of Natural Resources.

Sec. 31. Existing Wildlife

Where development is expected to impact wildlife or their habitats on a site, wildlife management recommendations shall be incorporated into the site development package as a wildlife management report or plan. The wildlife management plan shall address:

(a) Habitat analysis and forage availability.
(b) Vegetation, bird, and large and small animal surveys.
(c) Identification of potentially problematic species.
(d) Options for managing potentially problematic species.
(e) Short and long-term success of these options in managing the potentially problematic species.
(f) Human-wildlife interactions before development, particularly with medium to large sized mammals.
(g) Changes in the edge-to-area ratio proposed by the development plan (see Appendix A).
(h) Identification on how the development will minimize "pinch-points" in wildlife movement corridors.
(i) Identification of linkages for isolated wildlife habitat areas.
(j) Landscape design and natural resource management practices that would provide habitat enhancement if appropriate.
(k) Schedule for grading activities so as to have minimal disruptions ~~on~~ to wildlife. Preferably, the schedule shall show blackout dates indicating breeding, nesting, or hibernation periods when grading should not occur. Grading activities will be permitted during the blackout dates, provided grading minimizes wildlife disruptions. The wildlife management plan shall identify time frames when grading activities has the least impact on wildlife.
(l) Recommendations on ~~which is~~ the most appropriate wildlife techniques considering existing wildlife populations, habitat, linkages to other wildlife corridors, public safety, and public concerns.

After the receipt of the wildlife management plan from the applicant, ~~the~~ City Staff will make recommendations to the Planning Commission for the appropriate wildlife management techniques to be implemented by the applicant. If necessary, the City may consult with other public agencies, outside organizations, or consultants prior to making a decision. Also, City

staff may request additional information from the applicant before making a recommendation to the Planning Commission.

Sec. 32. Preservation of ~~Cultural~~ Historic Resources

The existence of ~~heritage~~ historic resources on a site is subject to the historic preservation requirements of Chapter 24 of the City Code and shall be referred to the City's ~~Historic Preservation Advisory Committee~~ Historic District Commission for a ~~recommendation~~ decision as to their historic and cultural significance to the area. Examples include, but are not limited to dwellings, outbuildings, trees, cemeteries, neolithic and archaic Indian sites, monuments, markers, boundary posts, toll roads, fords, mills, slave quarters, wells, graves, and archeological sites~~, etc.~~.

Sec. 33. Stream Quality Enhancement

In cases where an existing stream area near the site is being impacted by run-off due to development or in cases where an existing stream on the site is degraded and experiencing erosion, bank failure, undercutting of adjacent trees, or other problems related to the integrity of the stream channel, a plan addressing bioengineering or stream stabilization must be submitted for Planning Commission approval. This requirement will be applied on a case-by-case basis to correct existing stream problems.

Sec. 34. Noise Abatement

There are two basic noise related conditions that are of concern in the development review process. The first is a noise condition emanating from a proposed use on a single parcel, or an individual source. This condition is currently controlled by laws enacted at the federal, state, and local level. Noise emanating from a proposed use under review by the Planning Commission must adhere to the latest Noise Ordinance in effect at the time of Planning Commission review. (A copy can be obtained from the Planning and Code Administration.)

The second is a noise condition emanating from existing public or quasi-public facilities such as highways, arterial roads, and railroads. Controlling the impact from those sources of noise pollution remains largely uncontrolled at present, in spite of their widespread impacts. The purpose of this section of the standards is to address this type of noise by requiring compliance with the *Staff Guidelines for the Consideration of Transportation Noise Impacts in Land Use Planning and Development*, June 1983, prepared by the Environmental Planning Division, Montgomery County Planning Board. When the County develops more recent noise guidelines, these new guidelines will take precedence over the 1983 guidelines. In some cases it maybe necessary to conduct noise monitoring to determine ambient and peak noise levels prior to the submittal of a concept or preliminary site plan.

Sec. 35. Preservation of Significant Views and Vistas

Significant views and vistas shown on the Natural Resource Inventory should be preserved, enhanced, and utilized through various planning principles. Street design, layout, and alignment can be used to capitalize on a significant view or vista from one site to another. The use of prominent public or private buildings, sited on high elevation points or

strategically located so as to create a focal point or a public space for the enjoyment of prominent views and vistas, is recommended. The placement of buildings so as not to block or disrupt established views and vistas should also be taken into account. This guideline applies more to the general site planning than to the protection of natural resources, but is nonetheless an important issue if development is to recognize the importance of its impacts on the surrounding environment.

Sec. 36. Light Pollution Abatement

Site and construction design shall require compliance with the technical standards of the Building Officials and Code Administrators (BOCA) National Electrical Code edition and the International Code Council (ICC)/Council of American Building Officials (CABO), One and two-family dwelling code, as adopted by the Mayor and Council, in effect at the time of construction permit issuance. Forested lighting buffers are strongly encouraged for adjoining properties with different land uses. Nuisance spill lighting from residential or commercial properties will not be permitted, pursuant to Section 24-117 of the Gaithersburg City Code.

Sec. 37. Public Utilities, Property Lines, Existing Buildings and Improvements, ~~and/or~~ Transportation Rights-Of-Way, Existing Easements, and/or Stormwater Management Infrastructure

All utilities, existing and proposed right-of-ways, existing easements, and stormwater management infrastructure must be considered in the planning process as they relate to stream buffers, ~~and~~ reforestation/afforestation areas, and environmental site design practices.

Sec. 38. Waivers from Environmental Regulations

Requests for waivers from the *Environmental Standards* shall be submitted as soon as possible and preferably prior to final site plan approval. Waivers will be reviewed on a case-by-case basis by either the City Council or the Planning Commission as specified below.

1. Reasons for Granting Waivers

   The waiver will be of the minimum necessary to accord relief. Waivers may only be granted upon:

   a. Completion of required approvals, rulings, permits, or waivers from all appropriate State and Federal findings agencies.
   b. A showing of good and sufficient cause and meeting the criteria outlined in Article III of this regulation.
   c. A determination that failure to grant a waiver would result in unnecessary or undue hardship to the applicant.
   d. A determination that the granting of the waiver will not result in increased flood heights, additional threats to public safety, extraordinary public expenses, or the creation of nuisances.
   e. A determination that there are no conflicts with existing local and State laws or ordinances.

If waivers are granted and compensation required, compensation shall be directed to stream buffer areas, floodplains, connections and additions to forested areas, critical habitat areas, ~~and~~ steep slopes, or the implementation of innovative green building practices. Preference is for compensation to occur onsite within the stream buffer zone, within other City of Gaithersburg stream buffers, elsewhere within Gaithersburg City limits, or in-lieu fee.

2. Authority to Grant Waivers

The City Council shall have the authority to review waiver applications and grant waivers where the Council finds that the public interest benefits of the project outweigh the risks to the environment and there are no other feasible alternatives. In cases where a waiver would cause a minor impact[1], the applicant may request that the City Council delegate the authority to the Planning Commission to review and grant the waiver during the site plan review process. When delegated the authority, the City Planning Commission shall conduct a separate vote on the waiver of any Environmental Standard rather than simply approving the waiver as part of a site plan approval.

[1]The review of the magnitude of impact should consider the degree of change from the current land use and the absolute quantity of the impact. When forwarding an applicant's request to the City Council, staff will provide a recommendation based on the following criteria: the size of area disturbed, the current stream quality, the presence of sensitive areas (e.g., forests, wetlands, high quality streams, headwaters, special habitats, etc.), potential hazards and downstream impacts, and the degree of change from the current land use.

Article IV. Implementation

Protection of natural features, as outlined in the *Environmental Standards*, relies on adherence to construction standards and requirements and the establishment of undisturbed natural buffers. In order to provide identification of these measures and ensure that they are carried out during development, the City Council or Planning Commission may include one or more of the following methods of enforcement into the site development plan approval.

Sec. 39. Development Agreements

When required by the City Council or the Planning Commission, the applicant/owners of the property shall enter into a binding agreement with the City to ensure that the constructed development meets appropriate standards and requirements defined in the conditions of approval for the plan. It is assumed that all County and State environmental standards and regulations will be met through normal regulatory and permitting processes. A development agreement may be required to ensure adherence to:

Noise mitigation requirements.
Forest and tree conservation and maintenance and management agreement (as addressed in the *State Forest Conservation Manual* and the *City Tree Manual*).
Requirements for engineering measures to address soil constraints.
Construction and maintenance requirements for off-site stormwater management facilities with parkland.
Homeowners Association (HOA) maintenance requirements for stormwater management facilities.
Homeowners Association (HOA) adherence to the City's "Integrated Pest Management Plan".
Stream restoration requirements.

The agreement shall be submitted for approval with the final site plan or prior to the final plat recordation. An executed copy is to be recorded with the first record plats and any subsequent plats. In addition, there is to be appropriate language included in the HOA documentation referencing the agreement and the obligations to be undertaken by the Homeowners Association.

During construction and until the property and/or facility subject to the agreement is conveyed to the HOA, the responsibility for compliance with the agreement will remain with the developer. The developer shall convey such property/facility to the HOA with all customary warranties as to its fitness for the intended usage. When appropriate thereafter, the Homeowners Association shall assume responsibility.

Appropriate language for the development agreements will be worked out between the Planning and Code Administration staff and the City Attorney. Examples of the agreement language can be obtained from the Planning and Code Administration staff.

Sec. 40. Conservation Easements

Protection of natural features, as outlined in these *Environmental Standards*, relies heavily on the establishment of undisturbed natural areas. A problem associated with the establishment of these natural areas is finding the appropriate method of enforcement. The lowest level of protection is implemented through development agreements or conditions of approval, which control the limit of grading during the construction process. Permanent easements would be recorded on the plat.

In some instances however, the value of a resource requires a more permanent or long-term protection mechanism. In these cases, a written conservation easement may be required to prohibit actions compromising the natural area both during and after construction. The limits of the easement shall be recorded along with the easement agreement. Versions of the easement agreements prepared and approved by the City Attorney will be recorded in the Montgomery County Office of Land Records. These versions may be rewritten to suit specific circumstances and recorded by the applicant, following review and approval by the City Attorney, through the Planning and Code Administration and Environmental Services.

In general, situations for which long-term protection in the form of a conservation easement is necessary include:

(a) All buffers identified for nontidal wetlands.
(b) Stream buffers identified in the Use I/I-P streams where the City Council or Planning Commission finds that resources of exceptional quality exist, and/or the likelihood of buffer compromise is great.
(c) Forest conservation areas (as detailed in the *State Forest Conservation Manual* and the City *Tree Manual*).

Conservation easements may also be required to protect trees along the property boundaries of adjacent land for compatibility reasons. Appropriate long-term protection measures may be determined on a case-by-case basis. Applicants are encouraged to suggest methods other than conservation easements for long-term protection of natural areas.

References

Cowardin, L.M. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Department of the Interior, Fish and Wildlife Service. Washington, D.C.

Langbein, W.B. and Kathleen T. Iseri. 1995. General Introduction and Hydrologic Definitions: Manual of Hydrology: Park 1, General Surface Water Techniques. U.S. Geologic Survey. Geological Survey Water Supply Paper 1541-A.

Maryland - National Capital Park & Planning Commission's Environmental Guidelines, 1993.

Water Resources Map of Montgomery County, Sept. 1988, Montgomery County Planning Department, Environmental Planning Division.

Annotated Code of Maryland, Environment, Title 3. Noise Control.

Maryland Code of Regulations, Title 4, Water Management, Subtitle I – Sediment Control and Subtitle 2 - Stormwater Management.

Maryland Department of Natural Resources Natural Heritage Program.

"Maryland's Other Goose Population," Mark Burchick, Environmental Quality Resources, Inc.

Gaithersburg City Code: Chapter 8 - Erosion and Sediment Control and Stormwater Management; Chapter 10 - Floodplain Management; Chapter 22 - Trees and Forest Conservation; Chapter 20 - Subdivision of Land; Chapter 24 - Zoning.

Annotated Code of Maryland, Subtitle 2A. Nongame and Endangered Species Conservation Act.

Annotated Code of Maryland, Title 8, Subtitle 5, Water Resources Administration, Chapter 3 - Construction on Nontidal Waters and Floodplains.

Montgomery County Regulation on: Procedures Governing the Measurement of Noise Levels in Montgomery County, Maryland, Department of Environmental Protection.

Appendix A
Analysis of Forest Edges and Borders

Mark Burchick
EQR, Inc.

The following statistics about the edges and borders of forest standards within a study area provides useful information related to its inherent value or priority ranking for preservation nomination.

Stand #	Area (acres)	Edge (feet)	Miles	Edge to Area Ratio
1	23.60	4,241	0.80	180
2	6.30	2,191	0.42	348
3	46.66	5,964	1.13	128

The edge to area ratio is expression of the average number of feet in the edge to every acre in the forest stand. For some animal species, the more edge the better. For bird species, nesting at the edge can be wasteful because of parasitism by predators. Birds and mammals seem to "work" the edges eating eggs and nesting.

How far into a forest stand pest and predators penetrate is still being investigated. If the distance is 300-feet as some citations reference, then a stand must be at least 6.5 acres if any portion is to "safe" from such losses. Smaller areas do have more edge per unit area, and these edge zones are excellent foraging areas and are used in many ways other than nesting. The topic of edges and their effect is very complicated.

Forest edges next to fields are good for some wildlife, but bad for others. Similarly, edges can have drying winds that reduce the quality of forest growth, alien plant intrusion, and other conditions at the edges. The phenomena at the forest edge are very complex. Forest structure in Montgomery County is highly fragmented and linear, hence, any circular or block stands with maximized area versus edge is inherently more valuable for preservation through ecological time.

Appendix B
Erodible Soils List

Source: U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), *1995 Survey of Montgomery County, Maryland*

The following soils are classified as having a severe hazard of erosion by the Natural Resource Conservation Service, based on the erodibility index of a soil map unit. These soils are severely erodible and should be incorporated into the property's open space and carefully managed during construction.

16D	Brinklow-Blocktown channery silt loams, 15 to 25% slopes
18E	Penn silt loam, 15 to 45% slopes, very stony
21D	Penn silt loam, 15 to 25% slopes
21E	Penn silt loam, 25 to 45% slopes
21F	Nestoria-Rock Outcrop Complex, 25 to 50% slopes
57D	Chillum silt loam, 15 to 25% slopes
61D	Croom gravelly loam, 15 to 25% slopes
61E	Croom gravelly loam, 25 to 40% slopes
109E	Hyattstown channery silt loam, 25 to 45% slopes, very rocky
116E	Blocktown channery silt loam, 15 to 25%, very rocky

Appendix C
Water Use Classification for City of Gaithersburg
State Water Use Classification and Anti-Degradation Policy

Use	Streams	Limits
Use I	None	
Use I-P	Whetstone Run	Kelly Park to Midcounty Highway and from Watkins Mill Road to City limits
	Muddy Branch	MD Route 355 to MD Route 128
	Long Draft Branch	I-270 at MD Route 117 to Longdraft Road
	Great Seneca Creek	A short section along Game Preserve Road
	Shady Branch	From Great Seneca Highway at Muddy Branch Road to Muddy Branch
Use II, III, IV	None	

Use I-P: Water contact recreation, protection of aquatic life, and public water supply. Waters which are suited for all used identified in Use I and use as a public water supply.

Criteria for Use I-P waters:

The criteria for Use waters (a)-(e)

Toxic Substances –all toxic substance criteria for protection of fresh water aquatic organisms and to protect public water supplies and the wholesomeness of fish for human consumption apply.

COMAR 26.08.02.04 Anti-Degradation Policy

A. Certain waters of this State possess an existing quality, which is better than the water quality standards established for them. The quality of these waters shall be maintained unless:

(1) The Department determines a change is justifiable as a result of necessary economic or social development; and
(2) A change will not diminish uses made of, or presently possible, in these waters.

B. To accomplish the objective of maintaining existing water quality:

(1) New and existing point sources shall achieve the highest applicable statutory and regulatory effluent requirements; and
(2) Nonpoint sources shall achieve all cost effective and reasonable best management practices for nonpoint source control.

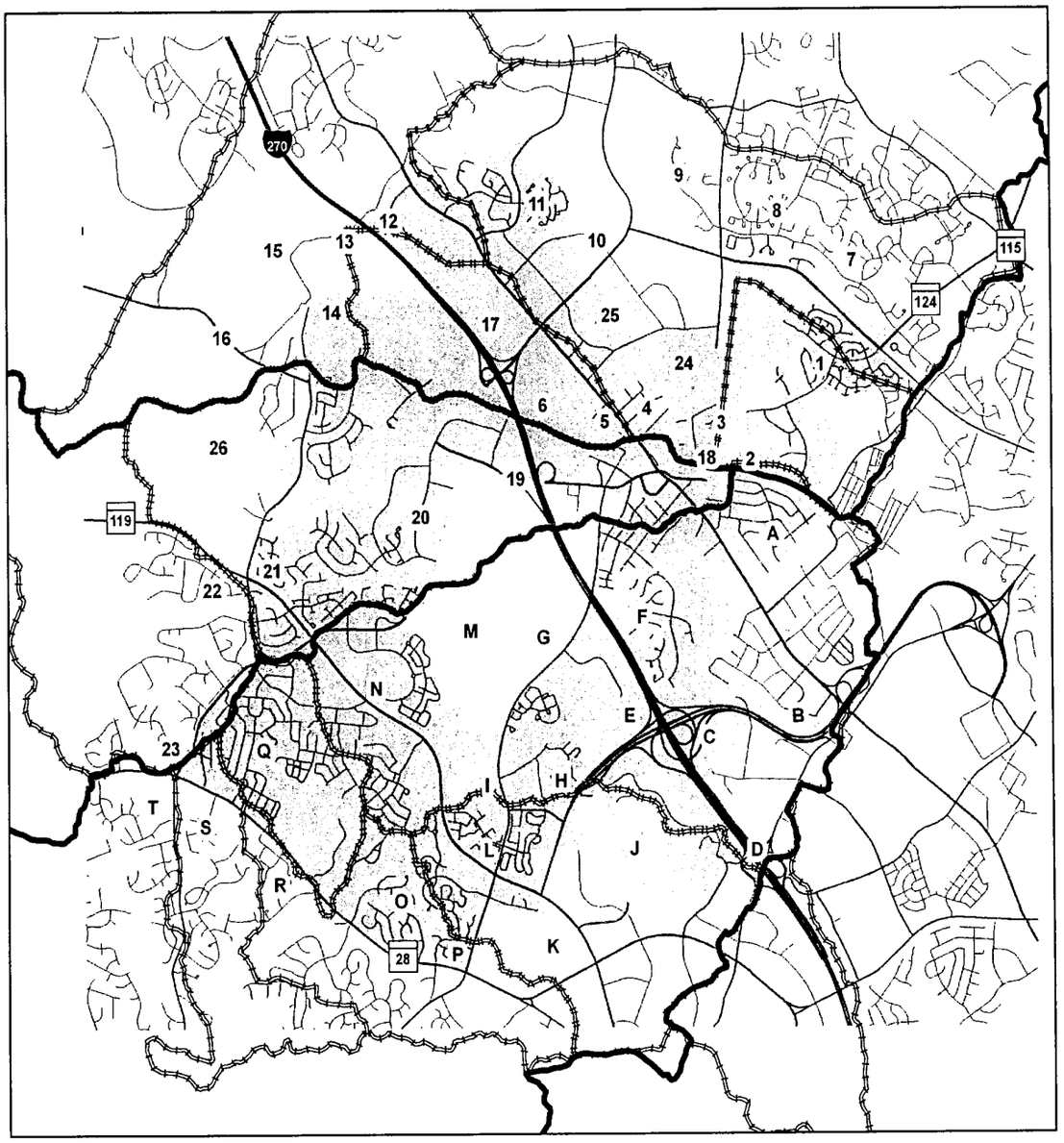
C. The Department shall discourage the downgrading of any stream from a designated use with more stringent criteria to one with less stringent criteria. Downgrading may only be considered if:

(1) The designated use is not attainable because of natural causes;
(2) The designated use is not attainable because of irretrievable man-induced conditions; or
(3) Controls more stringent than the effluent limitations and national performance standards mandated by the Federal Act, and required by the Department, would result in substantial and widespread economic and social impact.

D. The Department shall provide public notice and opportunity for a public hearing on the proposed change before:

(1) Permitting a change in high quality waters; or
(2) Downgrading any stream use designation.

E. Water that does not meet the standards established for it shall be improved to meet the standards.



MUDDY BRANCH SUB WATERSHEDS

A. Deer Park
B. Rosemont
C. Summit Hall
D. Washingtonian
E. Interstate
F. Brighton
G. NIST-East
H. Shady Grove Village
I. Izaak Walton
J. Crown
K. Bel-Ward
L. Washington National
M. Nist-South
N. Quince Orchard
O. Hunting Hill
P. Westleigh
Q. Kentlands
R. Dufief
S. Quince Orchard Knolls
T. Quince Orchard High

GREAT SENECA SUB WATERSHEDS

1. Victory Farm
2. Audobon Square
3. North Summit
4. Realty Park
5. North Frederick
6. Fairgrounds
7. Emory Grove
8. Cox
9. Lake Whetstone
10. Village Overlook
11. Watkins Mill
12. Game Preserve
13. Great Seneca
14. McGowan
15. Seneca Creek Park
16. Clopper Road
17. Casey-IBM
18. Olde Towne
19. West Diamond Avenue
20. Long Draught
21. Pheasant Run-Fernshire
22. Quince Orchard
23. Orchards
24. Asbury
25. Lake Forest
26. Clopper Lake

City Boundary Watershed Sub-Watershed

Appendix D
Requirements for Floodplain Delineation

For detailed floodplain studies, an applicant is required to use step-back water calculations to determine water surface profiles. Representative cross sections shall be taken at each significant change in the regime of the stream (i.e., change in slope, channel width, or stream roughness). Normal depth computations are acceptable for approximate floodplain studies.

Where appropriate, applicants shall use a starting water surface elevation and a cross-section taken from approved engineering studies downstream of the subject property. In situation where upstream analysis by private engineers has been approved, this information may be considered as input to analysis of downstream properties under super critical flow regimes. Sufficient cross-sections shall be included between the existing study and the subject property to maintain accuracy of backwater calculations. The ultimate one hundred-year flood event discharge may be determined by using any of the following:

1. TR-55
2. TR-20
3. HEC-1
4. Rational Method (in special cases only, determined on a case-by-case basis).
5. Or other method(s) approved by FEMA.

The hydraulic computations to determine water surface elevations shall be preformed using either of the following models:

1. HEC-2 (preferred)
2. WSP-2

Four cross sections will be taken at each structural crossing, such as bridges or culverts, as follows:

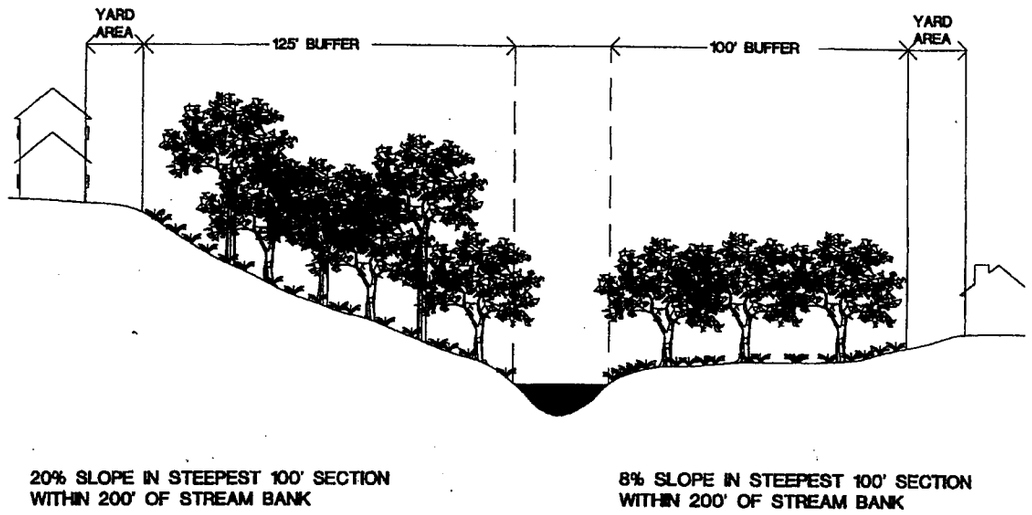
1. A distance upstream of the crossing equal to the width of the structural opening;
2. At the upstream face of the crossing;
3. At the downstream face of the crossing; and
4. A distance downstream of the structure equal to four times the width of the structural opening.

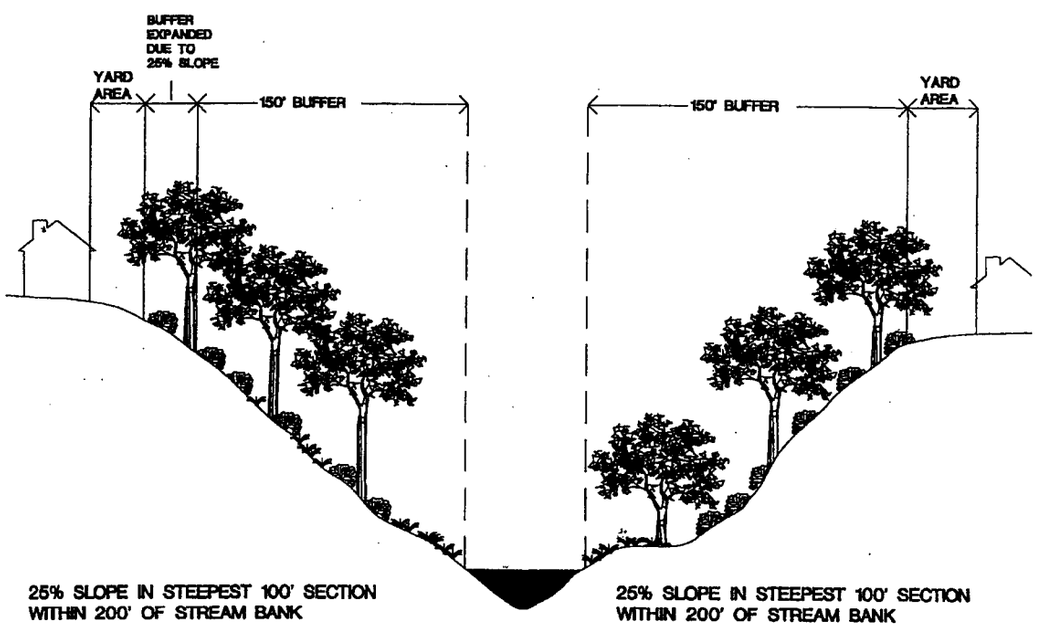
Appropriate values of Manning's "n" will be determined (see watershed studies) for use in modeling. For HEC-2 use, recommended expansion and contraction coefficients are as follows:

	Expansion	Contraction
Gradual Transitions	0.3	0.1
Bridge and Culvert Sections	0.5	0.3
Abrupt Channel Transitions	0.8	0.6

Calculations and/or computer printout must be provided for staff's review, as well as a map showing floodplain delineation and cross-section locations. Other methods approved by FEMA may also be utilized.

Appendix E
Hypothetical Subdivision Showing Stream Buffer Delineations





Source: Maryland-National Capital Park and Planning Commission. 1999. Environmental Guidelines: Guidelines for Environmental Management of Development in Montgomery County.

Appendix F
Best Management Practices

As required under, and to conform to applicable City ~~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 ~~in coordination with Montgomery County Department of Environmental Protection~~. The BMPs shall be incorporated into the Stormwater Management Concept Plan required with the preliminary plan submission. Some possible BMPs are~~a~~ as follows:

To maximize the potential use and success of infiltration techniques, buildings, parking lots, and other impervious 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 environmental site design (ESD) stormwater practices ~~facility sites~~ to the greatest extent consistent with other land use and zoning objectives. Parking lots may not be located within the stream buffer or 100-year ultimate floodplain.

When a development site consists of both cropland and forest, it is preferable to develop the area of cropland.

Road and public utility stream crossing and stream buffer encroachments should be minimized. Where stream crossing and buffer encroachments must occur, they should be placed away from environmentally sensitive areas, and combined to minimize disruption of the stream valley. Clear bridge spans should be used to cross watercourses whenever possible, particularly in Use III/III-P and IV/IV-P watersheds. Culverts may be permitted on a case-by-case basis if it can be demonstrated that the benefits would outweigh any negative impacts. Culvert inverts should be located at least one foot below invert of the stream to all fish passage. Bottomless culverts should be utilized in all instances practicable.

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 (minimum of 50 feet where possible) from streams while still maintaining needed elevations and gradients to provide reliable service.

Whenever 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.). Non-structural methods such as grass swales and stream stabilization that conform~~s~~ to the stream's dynamics are preferred over structural measures such as concrete channels or typical riprap projects.

To the extent feasible, natural drainage ways and stormwater basins should be shaded in Use III/III-P and IV/IV-P streams to prevent high temperature stormwater from being discharged into receiving streams.

Headwater areas are~~a~~ more sensitive to land use changes and should be protected by buffering and minimizing impervious surfaces in order to maintain stream base flow and control temperatures.

Additional sediment and erosion control measures may be recommended by City staff, where slopes exceed 15 percent and soils are highly erodible (Appendix B), or where environmentally sensitive features warranting extraordinary controls have been identified.

Use of porous materials is encouraged in large parking areas to limit impervious surface, particularly in areas of occasional use.

Rain gardens, ~~and rooftop gardens~~ green roofs, and other environmental site design (ESD) practices are encouraged for large impervious areas and buildings.

Appendix G
Performance Monitoring

The City of Gaithersburg supports long term, continuous monitoring of stormwater management structures and their impacts on streams. However, the proposed performance monitoring will be limited to a period ranging between 18-24 months from the date of project completion, or more if required by the State. Its primary purpose is to evaluate responses of tributary streams to various land uses, BMPs and actual construction practices.

The monitoring program could be biological, chemical, ecological, and/or physical. In the case of physical or chemical monitoring, selected parameters and criteria would be targeted towards the determination that existing State water quality goals/standards are being met. The monitoring results will also be used to evaluate baseline data on existing water quality, estimate the likely impact of development on water quality, and assess the actual impacts on water quality during construction and at project completion. Results will be used to evaluate the effectiveness of stormwater management controls and BMPs.

Monitoring data shall be reported to the City ~~Planning and Code Administration, Environmental Services, and the Department of Public Works and Engineering~~. If during the construction period, on the basis of monitoring results, it is determined that State's water quality standards are not being met and failure to meet these standards can be attributed to the monitored development, staff would meet with the applicant to determine what other steps could be mutually agreed upon to ensure compliance with State water quality standards, in consultation with the Maryland Department of the Environment. Following project completion, the applicant will not be expected to address ~~any~~ additional water quality problems.

Performance monitoring and reporting may be required of the applicant or applicant's agent at the direction of the City Council or the Planning Commission to ensure that existing water quality is maintained during and after development activity. The monitoring results will be used to collect baseline data on existing water quality, estimate the likely impact of development on water quality, and assess actual impact on water quality during construction and at project completion. Results will also be used to evaluate the effectiveness of stormwater management controls and BMPs. The scope, location and timing of monitoring and reporting are provided below. The City Council or Planning Commission may at their discretion waive or add other requirements to the scope.

The applicant (or the City with applicant funding) shall provide grab samples every month with field measurements of flow, pH, 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 Planning and Code Administration, the Montgomery County Department of Environmental Protection, and the Maryland Department of the Environment.

For projects constructed in Use III/III-P and IV/IV-P watersheds, monitoring and reporting shall begin at least three months prior to initiation of grading and continue for a

period of 18-24 months after the development is completed, (to include two summers for critical water quality information.)

Monitoring and reporting will be conducted in a manner to provide needed data on best management practices. A minimum of three stations will be sampled during each sampling session. At the discretion of the City, this may involve either 1) sampling upstream, downstream, and within a particular BMP to evaluate its performance effectiveness; or 2) monitoring upstream of the development site, within the development site, and downstream of the development site to assess the relative pollutant contribution to the affected stream system. At least eight of the samples must be collected during storm flow resulting from rainfall events. If the site is not directly on a stream, sampling stations will be chosen in relation to key storm drain outfall points. This program may be modified to require automated monitoring. In-lake monitoring may also be required where applicable.

The applicant may be required to conduct biological and stream habitat monitoring in combination with physical/chemical monitoring. Biological monitoring shall be conducted for aquatic macro invertebrates to determine the overall impact of development on the stream system (indicator organisms can provide information about the quality of a stream system). Bioassay testing shall be conducted prior to grading, during construction and after 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 City. The applicant will be responsible for selecting a State certified analytical laboratory and for using standard field sample collection methods for physical and chemical water quality parameters and rapid bioassessment techniques for biological and habitat monitoring that are consistent with Montgomery County Protocol.

Performance monitoring requirements and results will be periodically reviewed by the City's Environmental Affairs Committee ~~County's interagency Water Resources Planning Group, comprised of representatives from the DEP, the M-NCPPC, the WSSC, the MSCD, and a representative from the environmental and development communities~~. The committee may make periodic suggestions to the Planning Commission concerning the efficiency of these performance monitoring requirements and any recommended changes. (The Planning and Code Administration will recommend a water quality monitoring protocol suitable for use in the development review process.)

Appendix H
Endangered Species of Gaithersburg

Maryland Department of Natural Resources has provided the following information on endangered species of the Gaithersburg area and their preferred habitats:

1. Calystegia spithamea, Low Bindweed - rare (1951)
   Preferred habitat: old, dry fields; open, dry, deciduous woods on limestone; shale barren; oak-pine woods margin; and gravel/sand railroad embankment.

   Source: various occurrence records in the Maryland Natural Heritage Program database.

2. Cistathorus platensis, Sedge Wren - threatened (1978)
   Preferred habitat: wet or boggy meadows, sedge marshes; streamside thickets in grasslands or fields.

   Source: Committee on classification and nomenclature. 1983. Checklist of North American birds, 6th ed. Amer. Ornithologists Union, Allen Press, Inc., Lawrence, KA.

3. Lygodium polmatum, Climbing Fern - threatened (1907)
   Preferred habitat: wet thickets in sandy or acid soil; low shaded, moist to wet, high acid soils of open woods and watersides; borders of low woods.

   Sources: Radford, A.E., H.E. Ahles, and C.R. Bell. 1964. Manual of the vascular flora of the Carolinas. University of North Carolina Press, Chapel Hill.

   Hough, M.Y. 1983. New Jersey wild plants. Harmony Press, Harmon, N.J.

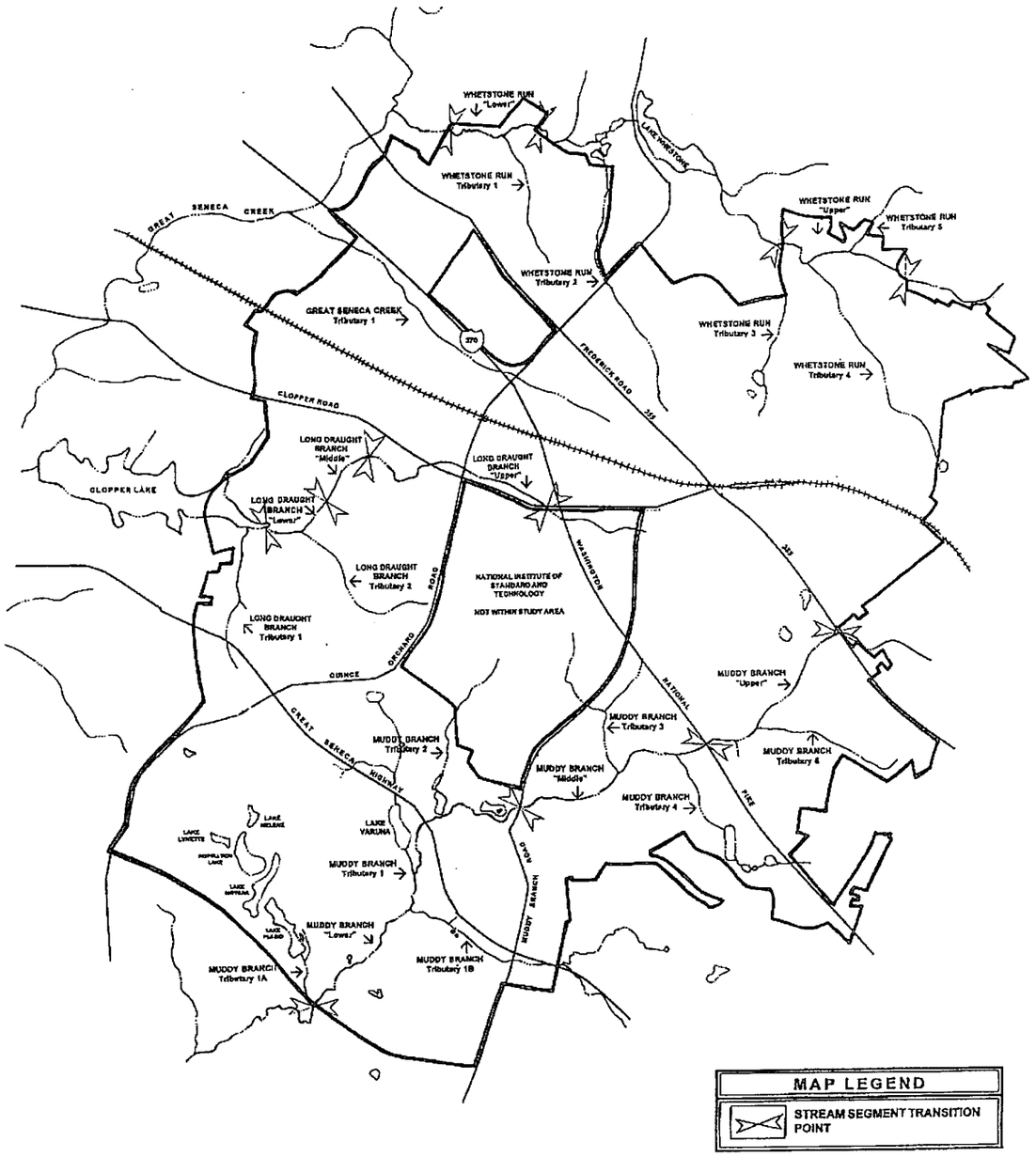
   Maryland Natural Heritage Program botanists.

4. Scutellaria leonardii, Leonard's Skullcap - threatened (1939)
   Preferred habitat: dry rocky soil, low woods and fields, usually on basic soils.

   Sources. Tatnall, R.R. 1946. Flora of Delaware and the Eastern Shore: an annotated list of the ferns and flowering plants of the peninsula of Delaware, Maryland, and Virginia. Soc. Nat. Hist. Del. (Address not given).

   Radford, A.E., H.E. Ahles, and C.R. Bell. 1964. Manual of the vascular flora of the Carolinas. University of North Carolina Press, Chapel Hill.

Appendix I
Stream Segments in Gaithersburg



Appendix J
Staff Guidelines for the Consideration of Transportation Noise Impacts in Land use Planning and Development, June 1983.

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