ENVIRONMENT

OBJECTIVES

The Sector Plan Area affords a unique opportunity to integrate natural resources with development and transportation needs. This sentiment has been expressed and endorsed repeatedly throughout the planning process. Based on the Vision, Goals and Concepts developed during the Greenbelt Metro Area Study, recommendations and guidelines were formulated for the environmental aspects of the Sector Plan Area to:

- Protect unique and high quality environmental features
- Provide guidance for environmentally sensitive and responsible development and redevelopment
- Create a distinct destination that integrates development opportunities and environmental needs
- Develop an environmentally sound transportation network
- Implement the environmental goals of Smart Growth and Chesapeake Bay Initiatives, as well as the standard Federal, State and local environmental regulations and policies

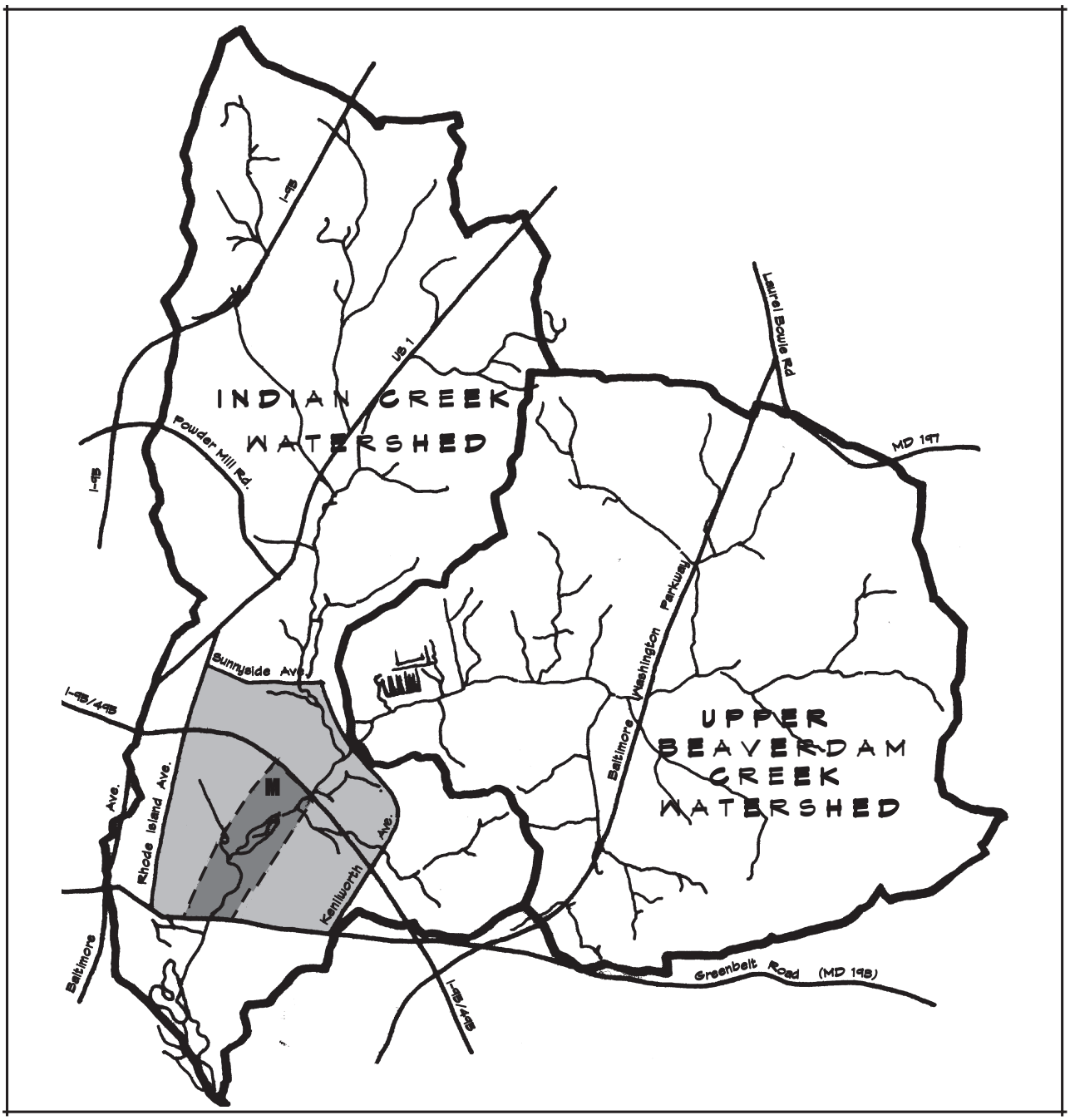
These objectives also apply the vision, goals and concepts of established regional and watershed-based environmental programs at the local level. The success of these various programs begins with their application within each piece of the sector, the cumulative effect of which will ultimately achieve the desired results at the watershed and regional level.

The recommendations at the end of this chapter address the Sector Plan's environmental objectives as part of a sustainable development, defined as development which meets current needs without compromising the ability of future generations to meet their own needs. In particular, development is sustainable if it can maintain a desired standard and style of living and conduct business and commerce without using up or degrading the natural resources, thereby allowing future generations to utilize all of these things. At the broadest level, the Land Use Concept and subarea recommendations, standards and guidelines achieve the principles of sustained development as well. The actual implementation of the principles will occur during the development review process.

EXISTING SITUATION AND ISSUES

The most prominent environmental concerns for the Sector Plan Area are direct impacts to the stream systems and their associated floodplain and wetland, stormwater runoff, sedimentation issues and woodland conservation. The Sector Plan Area is situated within the Anacostia Watershed, near the bottom of the Indian Creek and Upper Beaverdam Creek subwatersheds (see Map 9). Currently, there is a major initiative to restore the functionality of the Anacostia Watershed by improving the water quality, controlling stormwater runoff and increasing biodiversity within its subwatersheds.

Environmental Features and Formation of an Environmental Envelope—The Land Use Concept (Map 2) contains an Environmental Envelope to protect the sensitive, unique and high quality environmental features of the Sector Plan Area. The envelope is based on the environmental features discussed below, and includes areas of



Watershed Boundaries

Sector Plan Area

Core Area

No Scale	Indian Creek & Upper Beaverdam Creek Watersheds	Map 9

preservation, conservation and environmental restoration. It allows for recreational opportunities and limited disturbance for access and circulation.[1]

Local, State and Federal environmental regulations and policies were considered and applied to the design of the envelope as well. As development occurs, the exact boundaries of the Environmental Envelope will be finalized, based on site-specific inventory.

Within the Environmental Envelope, this plan designates a central piece of the Core Area as a Preservation and Conservation Management Area (PCMA). The purpose of the PCMA is to preserve the most sensitive features such as wetlands, streams, special habitat and exemplary forest stands, while accommodating passive recreation in certain areas.

The Environmental Envelope is part of the larger "green network" for the Sector Plan Area, defined as the physical connection of natural and open space areas, including resource protection areas, restoration areas, public spaces, trails and recreational facilities. The green network connects the biological community with the residential/working community within the Sector Plan Area and beyond.

Streams, Open Water, and Water Quality—Indian Creek, a major tributary of the Northeast Branch of the Anacostia River, flows through the Sector Plan Area from north to south. It is a braided stream system within a large floodplain. Beaverdam Creek joins Indian Creek just south of Edmonston Road in the northeast part of the sector.

Indian Creek.

Together, these streams drain approximately 29 square miles. There are two smaller tributaries in the sector: Walker Brook flows from the Greenbelt Lake on Crescent Road to Indian Creek after passing under Kenilworth Avenue, the Beltway and through Springhill Lake, and Narragansett Run flows along Narragansett Parkway in North College Park, passes under the CSX tracks through culverts and then into a wetland area south of the Metro station before entering Indian Creek. (See Map 10.)

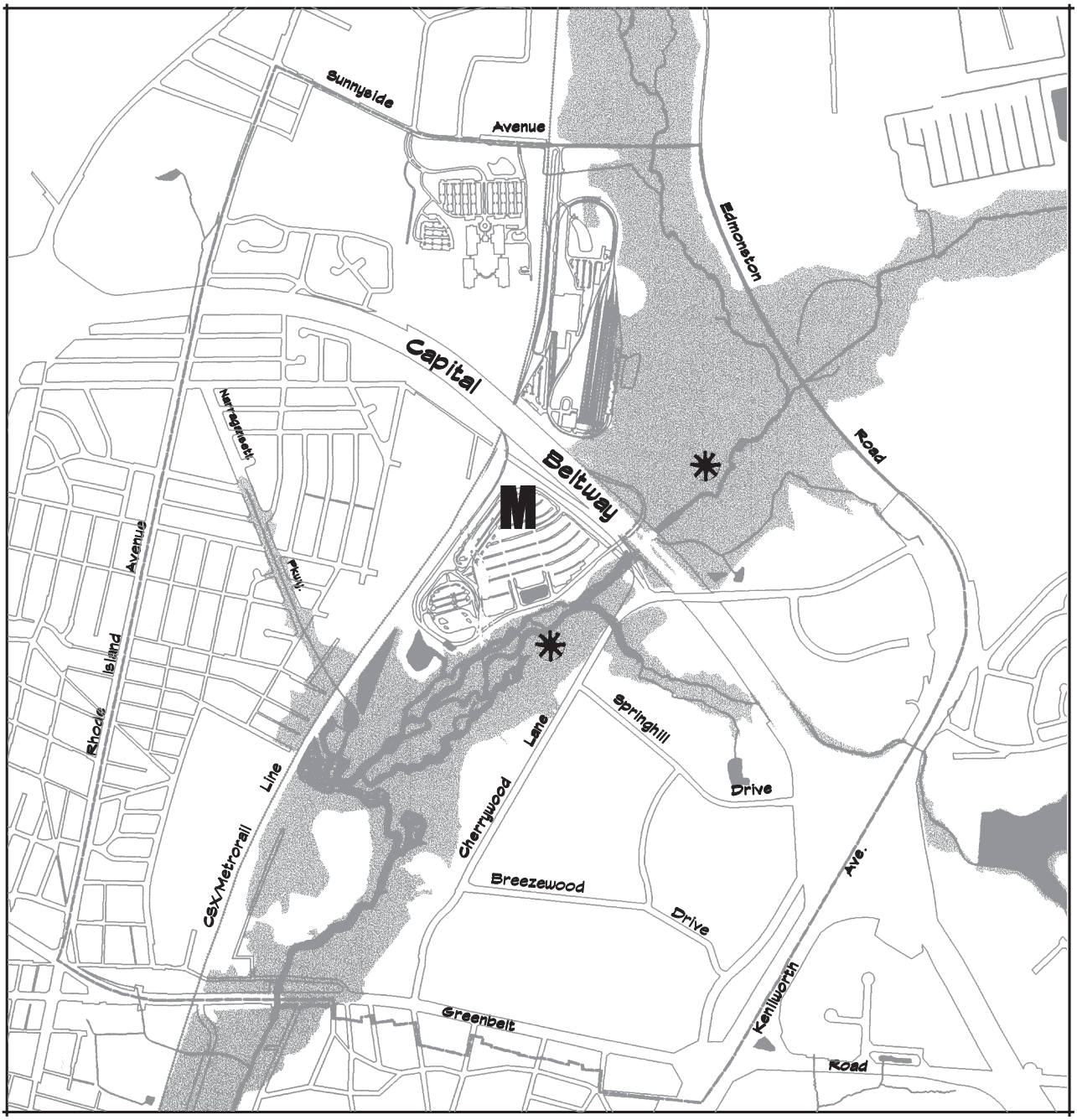
These streams and tributaries are all classified as perennial streams and are regulated under State and Federal laws. The State of Maryland has classified these streams, and all others within the Anacostia Watershed as "Class I, Water Contact Recreation and Aquatic Life." Unfortunately, the water quality and fish/wildlife blockages of Indian Creek and its tributaries need attention to maintain this classification.

Water quantity and quality are important issues that need careful consideration within the Sector Plan Area. Due to the size of the drainage area, a huge volume of water is carried by Indian Creek on its way to the Anacostia River. Peak flow rates are estimated at 9,517 cubic feet per second for the 100-year storm. Braided stream channels within the Core Area are evidence of a hydrologic history of the large flows and flooding that move sediment and change stream courses. The braided stream system and its floodplain allow the water to spread laterally and slow down.

At the south end of the Sector Plan Area, for about 200 feet prior to crossing under Greenbelt Road, Indian Creek has been contained in a concrete channel for flood control purposes. Such channelization is often installed to correct a bad flooding or erosion problem that the natural system can no longer handle. South of Greenbelt Road, Indian Creek has been almost totally channelized for the duration of its flow to the Northeast Branch. When a stream is channelized, the natural biological characteristics of the stream section are often sacrificed.

The biologic integrity of Indian Creek on the south part of the Core Area has also been impaired by the industrial uses adjacent to it. For many years, wash water from the sand and gravel processing plant on the Smith property was discharged into Indian Creek after treatment in settling ponds. Inspections and routine monitoring by the Maryland Department of the Environment (MDE) revealed that the levels of suspended solids and turbidity often exceeded those allowed by

[1] The term "preservation" is used to describe areas where there should be no disturbance, while "conservation" implies a multiple use situation, such as for passive or active recreation and other human activities that can occur within the Environmental Envelope without destroying the environmental features. Restoration involves the improvement of a deteriorated environmental feature so that it again functions within the ecosystem.



100 - Year Floodplain
(From Anocostia River Watershed Study)

Wetlands and Associated Streams
(Delineated in the Core Area in 1999 by McCarthy and Associates. Undelineated wetlands may exist in other parts of the Sector Plan Area.)

Pond

Historic Hollywood Swamp

0 200' 600' 1000'

Wetlands, Open Waters and Floodplain

Map 10

Industrial uses on A.H. Smith other South Core properties.

the discharge permit. The permit violations were resolved with litigation and fines, but the damage to Indian Creek is not easily measured nor rectified.

Residues from emptying and washing out concrete trucks formed a very large cement and concrete wasteland on the Smith property, on the east side of the Indian Creek near Cherrywood Lane. Substances carried by surface runoff from the wasteland enter and degrade the stream system directly from this area. Monitoring wells near the above- and underground storage tanks on the Smith property were found to be contaminated with petroleum hydrocarbons (motor oils and diesel fuel) in the early 1990s. Although the tanks and contaminated soil have since been removed, it is possible that pollutants from these areas reached Indian Creek. Site contamination was also discovered at the Prince George's Scrap property during the environmental review for their expansion project. At present, it is subject to a remediation plan.

There are several ponds within the Sector Plan Area: four ponds constructed by WMATA for treating stormwater runoff from the Greenbelt station and the Service and Inspection Yard, and a pond within Springhill Lake development. There is also an area of wetlands south of the Greenbelt station and along the tracks that frequently contains open water.

Wetlands—In general, wetlands occur within a floodplain, or develop on areas containing saturated soils or a perched water table. Their preservation and protection from disturbance is a basic principle of sound environmental planning. Wetlands are invaluable in their natural filtering and pollution reduction functions. In addition, wetlands are important as water storage areas, especially when occurring at the lower end of a watershed or drainage basin, such as in the Sector Plan Area. Typically, wetlands include a large diversity of plant and animal species. (See Map 10.)

Approximately 80 acres of wetlands have been previously removed from the local ecosystem by construction of the Greenbelt station, the Metrorail yard, Lake Artemesia and the rail line itself. Further disruption of the remaining wetlands and/or replacement by manmade wetlands is not a desirable option for future development in the area. Manmade substitutions rarely replace the natural system in terms of effectiveness and functionality. An example of such a failure is the wetland mitigation area installed south of the existing rail station parking lot and stormwater pond to compensate for wetland disturbed during the Greenbelt station's construction.

The Sector Plan Area contains palustrine (forested) as well as emergent (non-forested) wetlands. The exact extent of wetlands within the entire Sector Plan Area cannot be determined without precisely defined delineations involving site specific analysis of soils, vegetation and hydrology. Such a delineation was completed in February 1999 for the Core Area by *McCarthy and Associates* and was verified by the U.S. Army Corps of Engineers and the State of Maryland Department of the Environment. There are actually fewer wetlands than originally estimated for the Core Area, due to local topography and the site specific drainage characteristics of the soils. Although much of the Core contains floodplain, the localized soil type and topography in many places do not allow water to saturate the soils long enough to create true wetland conditions. Even so, there are several acres of wetlands along and adjacent to the braided stream system. There are some particularly high quality wetland meadow areas in the Core's midsection, which are reported to contain some unique plant species.

Wetlands also exist north of the Beltway. These wetlands are within the floodplain area on the BARC property. An exact delineation has not been prepared, but the area is shown on the 1996 *BARC Master Plan* as wetlands to be preserved. This wetland/floodplain, and those in the Core Area, are known historically as "Hollywood Swamp," in archival literature. Other wetlands within the Sector Plan Area may exist, such as along the stream in Springhill Lake, and in small areas of North College Park. The precise delineation of these

Open marsh wetlands in the Core Area.

wetlands would be required during any proposed development activities affecting those areas.

100-Year Floodplain and Stormwater—Floodplain holds and carries excess water from storm events. Floodplain areas are adjacent to streams, rivers and other water bodies and their preservation is imperative to water quantity and quality control within any given watershed. This becomes more critical in watersheds such as the Anacostia that were heavily developed prior to today's floodplain restrictions. As established in the County Floodplain Ordinance, the 100-year floodplain is used for regulatory purposes. It is defined as the area where there is one chance in one hundred (1 percent) that flooding will equal or exceed its upper limit in any given year. As a result of a Statewide grant from the Department of Natural Resources, the Anacostia River Watershed Study (1993) was conducted which determined the 100-year floodplain for the Anacostia Watershed. The study reflects ultimate buildout conditions under the current zoning. Map 10 shows the 100-year floodplain for the general area of the sector plan. The floodplain for Indian Creek reflects the Anacostia study and the floodplain for Upper Beaverdam Creek is based on information from Federal Emergency Management Agency. Since the Sector Plan Area is at the lower end of a large drainage area (29 square miles), preservation of the 100-year floodplain is critical. This is especially important where it corresponds with other natural features, such as woodlands and wetlands, because they contribute to floodwater dissipation. Floodplain areas that have been disturbed previously and do not contain environmentally sensitive features could be developed, provided that an equal volume of floodplain is created nearby to offset the lost storage area for floodwater and there is no increase in peak discharge. However, in some cases the cost of providing compensatory storage may be prohibitive.

The 100-year floodplain considerations are only one aspect of stormwater management. The stormwater runoff from the 2- and 10-year storms are also part of standard environmental review. In general, it is County policy that a development proposal cannot increase the 2-, 10- or 100-year storm runoff as compared to the predevelopment situation. The increased flow due to impervious surfaces must be attenuated to pre-development levels. This is for stormwater quantity control. For stormwater quality, the first ½-inch of stormwater must be treated before it leaves the developed area. This is usually accomplished with small ponds, bioretention areas or other techniques. On a broad level, the Prince George's County Department of Environmental Resources (DER) found the sector plan's Land Use Concept to be feasible in terms of stormwater management and water quality. However, future development projects will require site-specific technical planning and review.

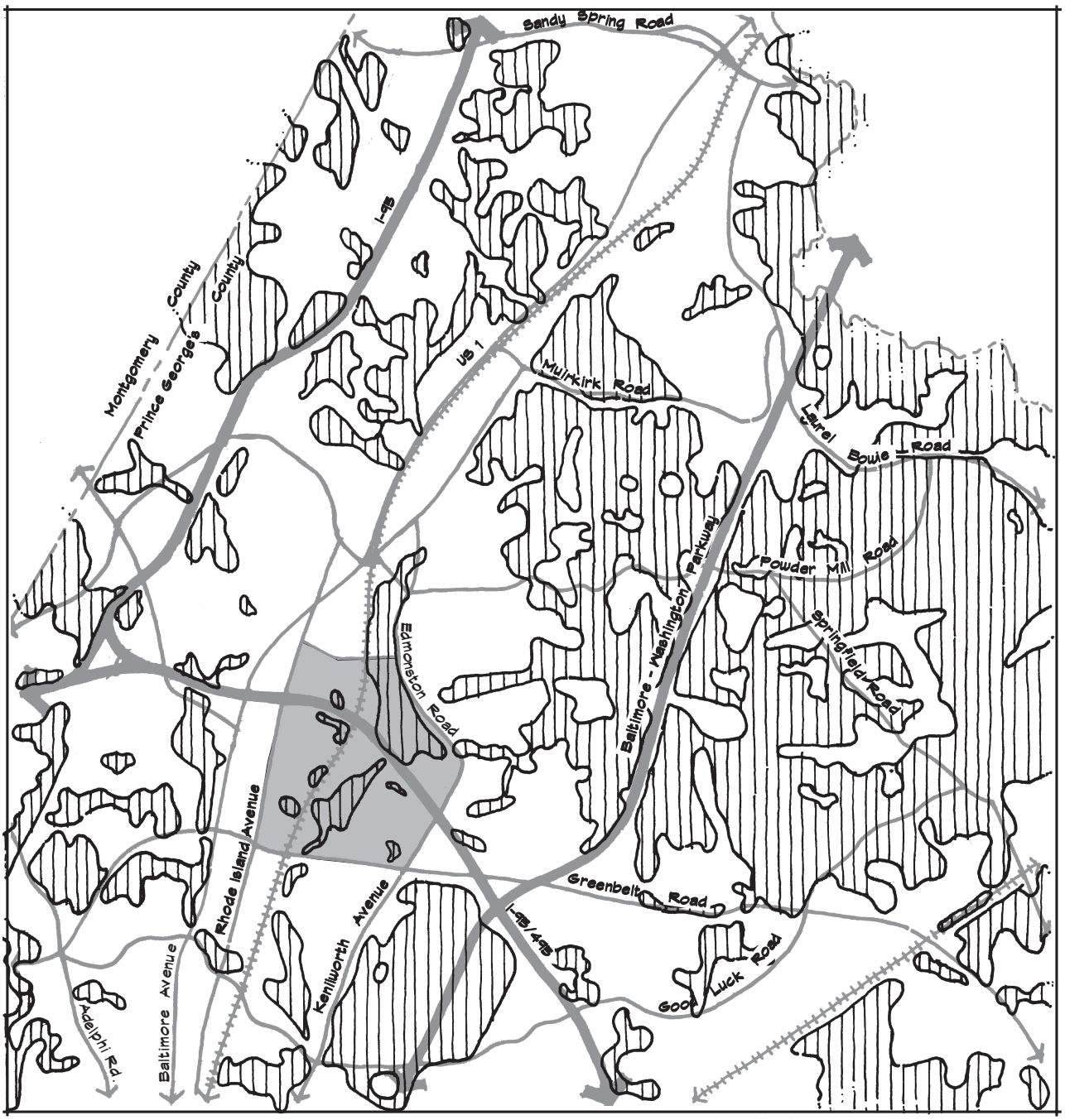
Concerns from the surrounding communities have been raised regarding an increase in flooding and a higher water table in recent years in North College Park, the area south of Greenbelt Road and various places higher in the sub-watersheds. Although there are no studies to document these phenomena, it is possible that the increase in impervious surface from development, the filling of floodplain and recent changes in meteorological trends have resulted in an inability for the existing floodplain to handle flood volume. Environmental analysis of future development must include a consideration of these recent concerns.

Woodlands—Woodlands provide many benefits to both the ecosystem and its inhabitants, including reduction in runoff and erosion, improvement of air and water quality by assimilation and filtering of pollutants, provision of food and shelter for wildlife, reduction of air temperature in the summer, and insulation from cold winter temperatures. Some of these benefits have actually been quantified in scientific studies as providing cost savings for developers. Aside from the scientific and economic advantages provided by trees and woodlands, they also contribute an intangible aesthetic benefit to the community-at-large.

The Sector Plan Area contains a wooded corridor that extends from the midsection of the Core Area, north to Edmonston Road and Sunnyside Avenue (Map 11). Except for the Beltway, the woodlands are continuous and extend out of the Sector Plan Area into the Federal properties to the north. Much of the existing woodlands are "priority woodlands," as defined by the Prince George's County Woodland Conservation and Tree Preservation Ordinance and the State of Maryland Forest Conservation Act, because it protects floodplain, wetland, a riparian zone, and forest interior dwelling bird habitat. From the Core Area's midsection south to Greenbelt Road, the woodlands have been removed to develop industrial uses. South of Greenbelt Road, the woodland canopy is more or less continuous within the stream valley to East West Highway (MD 410). Wooded areas also extend from the Core Area to North College Park and Springhill Lake, and there are some scattered stands of trees in the adjacent communities. Street tree programs exist in College Park, Greenbelt and Berwyn Heights. Map 12 illustrates the Sector Plan Area in the context of regional woodlands.

In Prince George's County, forest fragmentation inside the Beltway is extensive, and it is unusual to find a large forested area, such as that in the Core Area, still intact. Although connectivity of the Sector Plan Area to other large forested tracts is interrupted, its prominence in the Indian Creek Stream Valley can be protected through comprehensive planning. Figure 9 illustrates the strategic importance of the sector plan woodlands. Sector Plan Area woodlands form a link in the


Sunnyside
Avenue
Edmonston
Road
Capital
Beltway
Kenilworth
Avenue
Springhill
Drive
Cherrywood
Lane
Breezewood
Drive
Greenbelt
Road
Woodlands
Pond
Streams
0' 200' 600' 1000'
Woodlands
Map 11



Woodlands (greater than 5 acres)

Sector Plan Area

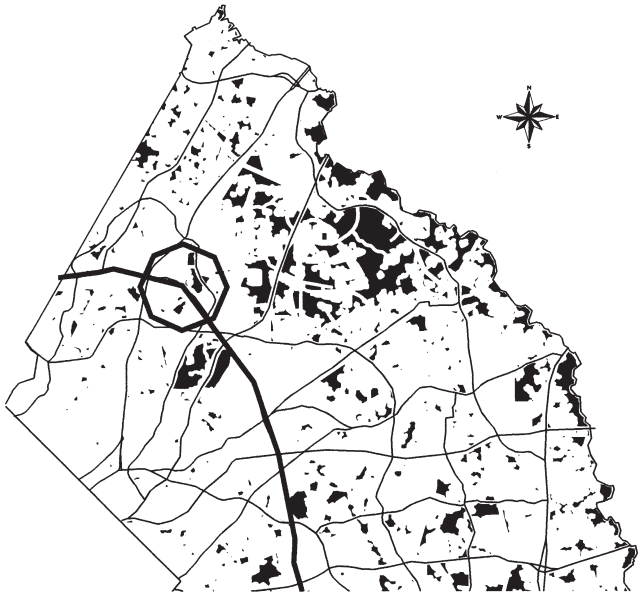
0 850' 1700' 3500'

Regional Woodlands

Map 12

wooded stream valley corridor, and the regional system of interior woodland, and are a rarity worth preserving in the urban zone. In the urban zone, or the area inside the Beltway, only five percent of the woodlands are classified as interior woodlands, or those having a large enough size to support a viable diversity of species and habitat. Out of 3,192 woodland areas in the urban zone, only 173 had an interior. Of these interior woodlands, only 4 were larger than 100 acres. Countywide, 18 percent of the woodlands contain interior areas. (Source: Woodland Conservation Strategy Project 1998-1999)

Recently, the State of Maryland initiated their Green Infrastructure Assessment (GIA) planning concept. The purpose of the new program is to protect and link remaining ecologically valuable lands that are significant in a regional and State context. The program's approach is to identify large contiguous blocks of significant natural resource lands (hubs) with a network of corridors. The corridors would be comprised of the most ecologically valuable areas between the hubs, such as stream valleys, wetlands, floodplain and forest. In its draft stage, the GIA concept has identified the wooded wetland north of the Beltway on the BARC property as a hub, as well



	Within County	
	# woodland areas	acreage
Woodlands (in acres)		
<1.00	4,843	2,231.8
1.0 - 9.99	4,408	11,725.4
10.00 - 19.99	463	6,010.1
20.00 - 99.99	638	24,306.9
>100.00	551	104,154.7
Total	9,905	148,428.9
	Within Urban Zone (inside Beltway)	
	#woodland areas	acreage
<1.00	1,554	823.4
1.0 - 9.99	1,520	4,024.3
10.00 - 19.99	95	1,318.5
20.00 - 99.99	115	5,244.9
>100.00	23	4,343.1
Total	3,192	15,754.2

	Within County	
	# woodland areas	acreage
Interior Woodlands (in acres)		
<1.00	692	173.9
1.0 - 9.99	540	1,962.5
10.00 - 19.99	152	2,100.1
20.00 - 99.99	235	9,516.6
>100.00	148	26,648.5
Total	1,767	40,401.6
	Within Urban Zone (inside Beltway)	
	#woodland areas	acreage
<1.00	77	20.0
1.0 - 9.99	66	236.1
10.00 - 19.99	13	183.7
20.00 - 99.99	13	416.6
>100.00	4	851.8
Total	173	1,708.2

Figure 9. Strategic importance of interior woodlands

as several adjacent areas to its north. The Indian Creek Stream Valley is envisioned as a connecting corridor to these hubs. The Green Infrastructure network is not intended to be a plan or mandate, but a tool to facilitate cooperative regional environmental planning efforts. Protection and restoration of the wooded stream corridor in the sector plan supports this effort.

Soils and Slopes—The Prince George's County Soil Survey (1967) shows large areas of hydric and floodplain soils within the undeveloped part of the sector plan. Most of these areas correspond with the floodplain and are included in the Environmental Envelope, where minimal development would occur. Soils studies would be required for proposed development within areas noted as hydric in order to assess the extent and characteristics of the soils on that particular site, and to recommend sound construction techniques. There is a concern with localized clay deposits in the Sector Plan Area which can cause dangerous slumping under certain conditions; this occurred at Beltway Plaza during its construction. There are also areas within the sector plan that have been filled or used as wash ponds or settling ponds in the past. Construction on these sites, as well as those containing clay, should occur only after a thorough geotechnical evaluation has been performed by a qualified professional to address issues of drainage, stability and excavation/replacement of fill (Map 13).

The topography within the Sector Plan Area is fairly flat. It varies from approximately 65 - 70 feet along Indian Creek to 180 feet above mean sea level at Greenbelt Middle School. There are only a few areas where slopes exceed 15 percent. Where these occur with erodible soils or problematic clays, a soils and/or geotechnical study would be required prior to development.

Rare, Threatened and Endangered Species (RTEs)—It is possible that rare, threatened or endangered species (RTEs) exist within the Sector Plan Area. In particular, the swampy wooded area in the central part of the Sector Plan Area is a unique ecosystem warranting a biological survey for RTEs. This area, lying next to Indian Creek on both sides of the Beltway (BARC and Core Area) is known historically as the Hollywood Swamp (Map 10) according to correspondence from the Maryland Forest Wildlife and Heritage Service. Hollywood Swamp has been of interest to botanists and naturalists in the Washington, D.C., area for over a century. The area is specifically noted in the *Flora of the District of Columbia and Vicinity*, published in 1919 by Hitchcock and Stanley, and in the *Guide to the Flora of Washington and Vicinity*, published by Ward in 1881.

A State Endangered wildflower was observed on this site in 1998, and submitted to the Smithsonian Institution for its collection. The State also has records of an endangered extirpated rush species on the site from 1950. Aside from these official records, RTE plant species have been recently observed within the area, and at least two other RTE plant species have been reported but not yet documented. The Maryland Heritage database for Prince George's County contains records of several species that are known to occur in the general vicinity.

Biodiversity and Ecological Integrity—The concepts of biodiversity and ecological integrity are basic components of environmental planning and are an inherent part of several of the environmental, open space and recreational objectives in this sector plan.

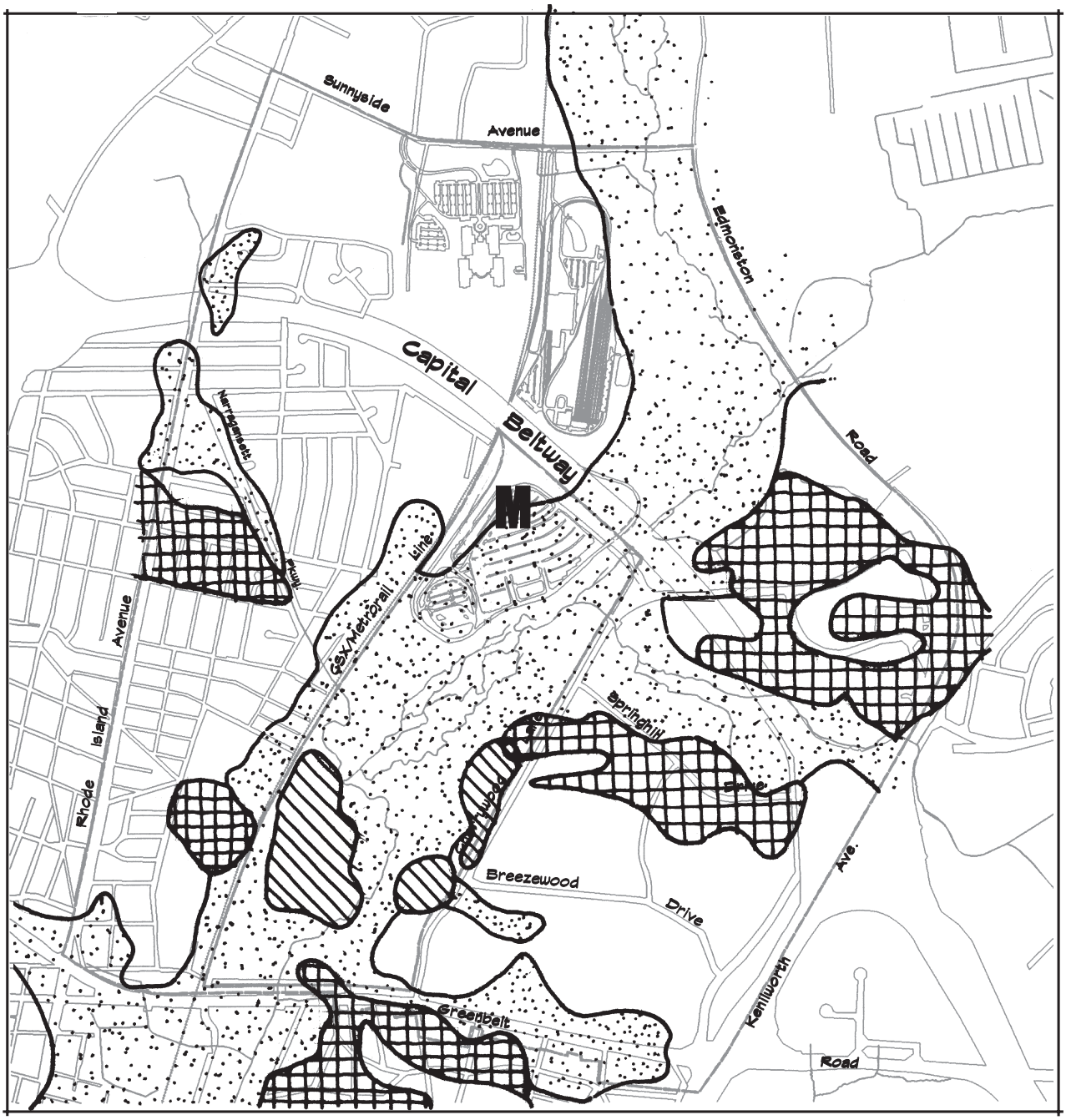
Definitions of these terms can be found in modern literature. Perhaps the best definition for biodiversity is presented in *Saving Nature's Legacy* by Reed F. Noss and Allen Y. Cooperrider (1994), which states:

> *"Biodiversity is the variety of life and processes. It includes the variety of living organisms, the genetic differences among them, the communities and ecosystems in which they occur, and the ecological and evolutionary processes that keep them functioning, yet ever changing and adapting".*

The reasons for maintaining biodiversity are many, but the primary rationale is to reduce the continual loss of species around the world, some of which may be critical to our human existence. As land areas are developed, lose their soils thorough erosion, or are influenced by other pressures resulting from man's activities, the environment is irreversibly changed. It is a fundamental obligation for our generation to begin to turn the tide of these losses for our future generations. Biodiversity values go beyond the simple idea of conserving aesthetic areas when one considers the total package of benefits that biodiversity provides.

In addition, the mere presence or absence of species, plants, animals, insects, etc., is not as important as having a "native" biodiversity. Exotic species introduced by humans contribute nothing to biodiversity, and cause communities to lose their distinctive characteristics. In many cases, exotics are introduced, invade an ecosystem, and take vital nutrients, sunlight and water from native plants, thus impacting the system in a negative manner. In the southern part of the Core Area, *Phragmites australis* (common reed) is one such exotic plant species. This species, thought to be an exotic variety by botanists, has become an extremely disruptive and invasive plant in the metropolitan area. This and other exotics are listed on The State of Maryland *List of Invasive Exotic Species*.

The preservation of native plants is an important element of biodiversity. These are the plants that are best suited to the



Hydric Soils (possible high water table and drainage problems)

Highly Erodible Soils "Shrink Swell" Soils Unstable Clays

Settling Ponds, Wash Ponds, Filled Areas, Concrete Dump Site

Other Soils (generally stable except on steep and severe slopes)

Note:

Above information is derived from The 1967 Soil Survey, Prince George's County, Maryland and The M-NCPPC 1998 Aerials and Topography Maps

0 200' 600' 1000'

Soils & Areas of Possible Instability

Map 13

particular physical characteristics of a piece of land. The conservation goal at the species/habitat level is to maintain and encourage viable populations of the native species in natural patterns of abundance and distribution. This is the most effective way to focus conservation efforts on the ecosystem itself and the integrity of the ecosystem. Aside from isolated landscape plantings, native plants will be required for all planting projects that could influence the local ecosystem. Reference is made to the document *Native Plants of Prince George's County, Maryland* for species selection and general information regarding native plants.

Every place on earth is part of an ecosystem, and protecting ecosystem integrity is an ultimate broad-based goal of environmental planning.

> *"Ecosystem: A dynamic and complex set of natural interconnected elements (plant, animal, fungal and microorganisms and their associated non-living environment) on which a habitat's survival depends directly or indirectly."* (Conserving Biodiversity on Military Lands by the U.S. Dept. of Defense and The Nature Conservancy (1996) and Green Development by the Rocky Mountain Institute).

> *"Ecosystem Integrity: The ability to support and maintain a balanced, integrated, adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of the natural habitat of the region."* (Conserving Biodiversity on Military Lands by the US Dept. of Defense and The Nature Conservancy (1996).

The Sector Plan Area is a piece of a large ecosystem that includes the local and regional watersheds and the regional woodlands (Maps 9 and 12). Its geographic position is an important link in these ecosystems.

There is currently a healthy biodiversity in the undeveloped areas of the Sector Plan Area in its viable population of native plants and animals. These areas can be protected within the proposed Environmental Envelope through preservation and conservation techniques. In areas that are ecologically degraded, these native populations can be restored to maintain and strengthen the ecosystem, and improve the ecological integrity. Nonnative species, especially those classified as invasive exotics, can be prohibited from new planting projects and can be removed from the existing ecosystem so they do not compete with native species.

Noise and Vibration/Noise Corridors —The existing noise exposure within the Sector Plan Area was analyzed using current average daily trips for the roads, the CSX tracks and the Metrorail system. The analysis illustrated that areas immediately adjacent to the major noise generators would experience noise levels in excess of 65 dBA (Ldn)[2], and that about 80 percent of the entire Sector Plan Area would experience resultant noise levels above 65 dBA(ldn). Obviously, the closer the noise generator is to the receiver, the more severe the impact. The Beltway is by far the greatest contributor to the relatively high ambient noise level encountered in the Sector Plan Area. The CSX and Metrorail also generate high levels of noise as trains pass through, but the noise levels are not constant.

State and County standards recommend that residential areas be subject to an average outdoors noise level no higher than 65 decibels, so as to be attenuated by typical construction materials to an interior level no greater than 45 decibels for residential structures. The parameters are less restrictive for commercial and industrial structures, due to higher noise threshold standards.

Although alarming, the estimation of noise exposure in the Sector Plan Area assumes a totally flat terrain, with no appreciable vegetation. Areas shielded by topography or at least 150-200 feet of dense vegetation will experience average noise levels less than anticipated by this model. The minimal removal of woodlands and shielding effects of topographic features within the Sector Plan Area are key elements for noise attenuation. Additional berms or soundwalls at strategic locations can attenuate noise for residential areas. Use of certain construction materials and orientation of buildings can also attenuate noise to acceptable interior levels. Special consideration should be given to the placement of structures in the development areas in the Core Area. Noise from the Beltway and trains will ricochet off building surfaces and could impact residential areas.

The freight trains and Metrorail trains also generate a certain amount of vibration. For precautionary measures, structures and residences are typically located at least 200 feet from the tracks to mitigate this type of adverse impact.

---

[2] The State standard, adopted as County policy, for acceptable noise level for residential areas. It is expressed in decibels (dBA) using the Ldn (day/night) unit of measure, which is the weighted continuous sound level derived from the 24-hour varying noise level, with a 10 dBA penalty added for nighttime noise between 10:00 p.m. and 7:00 a.m.

THE SECTOR PLAN AREA AS A DISTINCT DESTINATION

The Sector Plan Area is highly accessible and occupies a unique location within the region. It is primarily inside the Beltway and contains both developable land and natural and cultural resources. Capitalization on this combination of features can benefit the local and regional ecosystem, the general public and the economy. The main characteristics of the Sector Plan Area that would make a distinct destination possible include the following:

- The Sector Plan Area has a range of environmental opportunities from exceptional preservation areas to areas that can be restored and environmentally engineered to fit development or conservation needs. It also contains large areas conducive to development opportunities.

- The potential exists to connect to other greenways, recreation areas, cultural and historic corridors, and transportation facilities resulting in an effective green network and a multimodal infrastructure.

- The large size of the Core Area allows the flexibility to accommodate innovative development techniques and to avoid excessive destruction of environmental features such as excessive engineering of streams.

These unique characteristics were considered and incorporated into the standards and guidelines of this sector plan.

ENVIRONMENTAL ELEMENTS OF PLANNING ACTS

The sector plan has incorporated the land use planning goals and action items from these programs into its recommendations, standards and guidelines.

Environmental policies of the 1992 Maryland Economic Growth, Resource Protection and Planning Act and the subsequent 1996 Planning Act have been applied in this sector plan (see Introduction and Background):

- Protection of sensitive areas (through application of the Environmental Envelope).

- Stewardship of the Chesapeake Bay and the land (see discussion below).

Chesapeake Bay Initiatives—The Chesapeake Bay Program is a unique regional partnership formed by the 1983 *Chesapeake Bay Agreement* to restore the Chesapeake Bay. An historical decline in the living resources of the Bay led to this cooperative effort between the EPA, Maryland, Pennsylvania, Virginia and the District of Columbia to address the extent, complexity, and sources of pollutants entering the Bay. It is considered a national and international model for integrated ecosystem management, estuarine research and restoration. The goals of the program were established by the 1987 Chesapeake Bay Agreement.

In the 1987 Chesapeake Bay Agreement and in subsequent amendments and agreements, one major goal has been to reduce by 40 percent the phosphorus and nitrogen that enter the Bay and to attack these nutrients at their source — upstream in the Bay's tributaries. These nutrients are the major contributors to reduced water quality in the Bay. In response to this goal, Maryland developed "tributary strategies and basin-wide toxin reduction strategies" to control nonpoint source pollution and to protect and restore riparian forests and wetlands. Indian Creek, a tributary within the Anacostia and Potomac Basins is one such target.

More recently, a directive known as Chesapeake 2000 was signed in December 1998 by the Chesapeake Executive Council to renew the original Chesapeake Bay Agreement. Chesapeake 2000 will integrate three projects: (1) an internal review of the goals and commitments of the Bay clean-up program, (2) the Chesapeake Renewal Project, a rigorous Public Participation Program coordinated by the Alliance for the Chesapeake Bay, and (3) Chesapeake Futures, a technical and scientific project to evaluate the Bay's future to the year 2030. In the process of reviewing, updating and strengthening the goals and commitments of the Bay clean-up program, a strong emphasis on land use management, stewardship, and conservation is emerging. For example, the 1987 goals and objectives for Population Growth and Development is evolving into Land, Growth and Stewardship, with a goal to encourage sustainable development patterns that will integrate economic health, resource protection and community participation with objectives that encourage:

a. Reduced impacts from growth by using higher density, transit-oriented, ecologically sound mixed-use development

b. Promotion of livable communities through revitalization efforts

c. Conservation of the Bay watersheds natural infrastructure to protect the land and water, while enjoying social and economic benefits

d. Conservation of the Bay's cultural resources, a heritage that includes landscape, people, institutions and history

e. Promotion of increased opportunities for public appreciation and enjoyment of the Bay and its tributaries

f. Prevention of pollution

A draft of the Chesapeake 2000 Renewal Agreement was released for public review in December 1999. The renewal agreement was signed by the partners (Virginia, Maryland, Pennsylvania, Washington, D.C., U.S. EPA, Chesapeake Bay Commission) on June 28, 2000.

As part of the overall Chesapeake Bay Initiative, the Anacostia Watershed Restoration Agreement (AWRA) was signed and an oversight committee (Anacostia Watershed Restoration Committee) formed to restore and protect the Anacostia River, one of the most densely populated watersheds in the Chesapeake Bay basin. In 1991, the AWRC established six long-term restoration goals (six-point action plan) for the Anacostia Watershed along with other information about the watershed.

Indian Creek is a tributary and sub-watershed of the Anacostia River. An action agenda was established by the affected jurisdictions for Indian Creek in an effort to improve the degraded water quality and fisheries potential. There are two fish blockages within the Sector Plan Area that should be removed to allow anadromous fish movement northward.

Smart Growth Act of 1997—The Sector Plan Area qualifies as a priority area under this Act and some of its programs. The development density would be determined based on net land area, after exclusion of streams and buffers, 100-year floodplain, RTE habitat, steep slopes, wetlands and buffers and other natural resources. Pursuant to its role within the Smart Growth initiative, MDE endorses this principle of protecting natural resources and promoting environmental responsibility while encouraging growth in suitable areas. The application of the principle would occur at the local level, through the development review process. This principle has been honored and applied in this sector plan. Within the industrially zoned areas of the sector plan, there may also be sites and landowners that are eligible for the Smart Growth Voluntary Cleanup and Brownfields Program.

Federal, State and Local Environmental Regulations and Policies—While developing this sector plan, the appropriate environmental regulations and policies were identified and applied within the general concept. However, specific and detailed application of these regulations and policies can occur only as development proposals are submitted. Site specific data (natural resources inventories) will be required from applicants and reviewed at that time. M-NCPPC will evaluate development plans for impacts to environmental features and compliance with environmental regulations. This review will be coordinated with applicable Federal, State and local agencies.

RECOMMENDATIONS

The plan makes the following recommendations to support Smart Growth policy, conserve unique environmental lands, achieve quality transit-related development and promote improvement in the quality of life of sector residents and visitors:

- Implement the Environmental Envelope.

  The integrity of the Environmental Envelope, as illustrated on the Land Use Concept, shall be honored. Shown generally on the Concept, its boundaries will be further refined by site specific inventory and justification. Within the envelope, the PCMA, shall be permanently protected by conservation easement, land trust, direct purchase, or dedication to a qualified organization or agency.

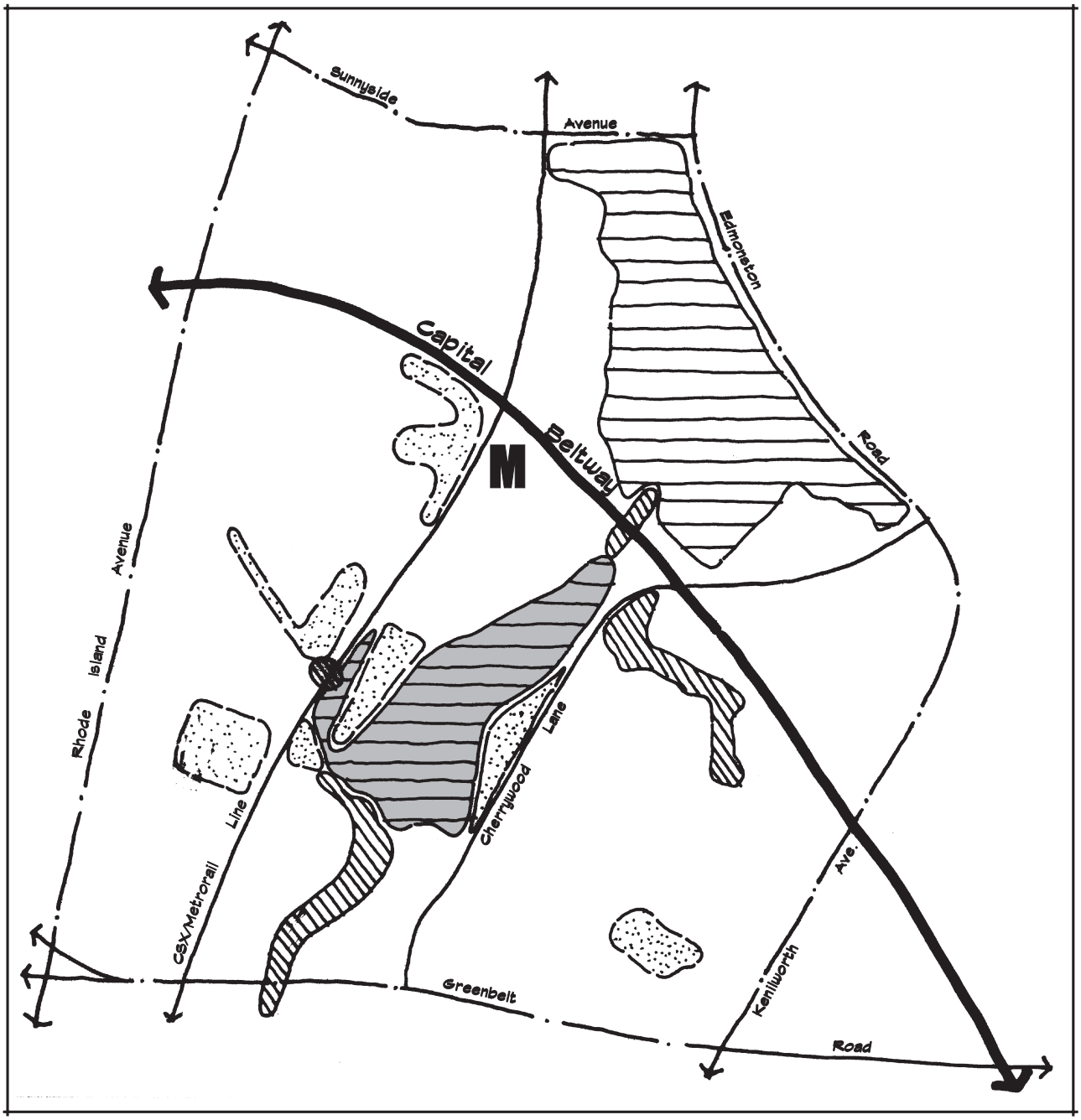
  Preservation, conservation and restoration areas shall be established in the Environmental Envelope. Map 14 illustrates the general location recommended for these elements:

  1. Preservation areas, where little or no disturbance is permitted, shall be established to protect the Sector Plan Area's most environmentally sensitive features, such as Hollywood Swamp, wooded floodplain, wetlands, priority woodlands, and special habitat.

     A Preservation and Conservation Management Area (PCMA) (in the Central Core Area) should be established. This portion of Indian Creek Stream Valley has a special designation to protect its unique ecosystem while allowing public access and enjoyment. In the PCMA, preservation of the most sensitive features such as wetlands, streams, special habitat and exemplary forest stands shall occur. Passive recreation opportunities, such as trails and interpretive stations, shall occur around the edges of the preserved features. The PCMA shall be managed in such a way to allow public use and appreciation of its features, without degrading the features in the process.

  2. Conservation areas shall protect environmental features in a multiple use situation, allowing certain types of disturbance, such as active or passive recreation, transit activities, public gathering spaces, interpretive facilities and nonmotorized commuter facilities. However, active recreational uses should not be allowed in the WMATA wetland mitigation area.

  3. Environmental restoration sites will improve degraded stream sections, dumping sites and stream/fish blockages. These sites shall include the stream section in the South Core Area, the areas where Indian



Preservation Area

Preservation and Conservation Management Area (PCMA)

Conservation Area

Restoration Area

0' 200' 600' 1000'

Environmental Envelope

Map 14

Creek passes under the Beltway and Greenbelt Road, the stream section in Springhill Lake, and the concrete/cement dumping site.

As illustrated on the Land Use Concept, the areas outside the Environmental Envelope are recommended for new development or redevelopment. The sector plan recommends high-density development in those areas to limit sprawl, and minimize environmental impacts. Marginal areas could be used for either development or environmental mitigation.

- Facilitate a green network composed of:

  1. The Environmental Envelope, including the central stream valley greenway, and PCMA.

  2. Connections to other environmental and recreational areas, such as Lake Artemesia, parks and open spaces via trails and paths.

  3. Environmental connections within and beyond the Sector Plan Area via forest canopy, streams and riparian corridors.

  The green network will protect and strengthen the ecosystem and also provide an interface between humans and the natural system by connecting neighborhoods, transportation and commercial elements to the natural environment and to each other.

- Concentrate development in previously disturbed and previously developed areas to protect, conserve, and restore environmental features while respecting development rights. Figure 10 contains aerial photographs of the Sector Plan Area from 1937 and 1965 which can be compared to the more recent aerial in Map 15 to ascertain the extent of development through the years.

- Preserve and improve the watershed's natural hydrologic features by maintaining an awareness of existing stormwater quantity and quality problems and analyzing the effects of new development.

  1. Further channelization of Indian Creek should not be permitted within the Sector Plan Area.

  2. Wetlands shall be preserved to the highest extent possible.

  3. Creation of new areas of open water, such as a lake, is not recommended, especially if natural stream sections and other environmental features would be destroyed by their construction.

  4. Low-impact development (LID) techniques should be considered and used wherever possible for each development proposal to address water quantity and quality control, including a wooded buffer between all impervious surfaces and streams or open water. These techniques control stormwater at the source by creating a hydrological functioning landscape that mimics natural watershed hydrology.

- Avoid disturbance to wetlands, streams, open water, floodplain and woodlands.

  1. Mitigation of these features shall only be allowed when other alternatives are exhausted and the appropriate permits are obtained. If floodplain and wetland mitigation is approved by applicable agencies, it shall occur within the subject property, Sector Plan Area, or Indian Creek Watershed, in that order of priority.

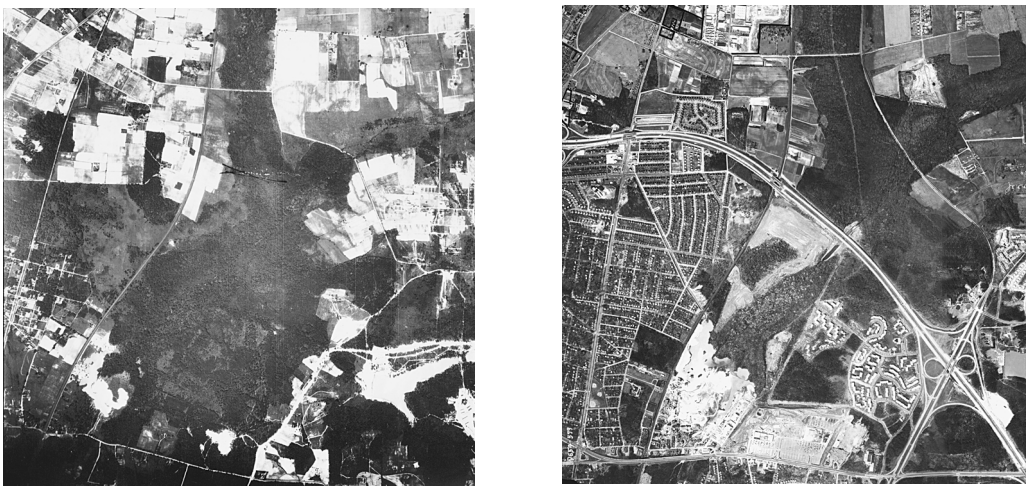


Figure 10. 1937 aerial photo (left); 1965 aerial photo (right).

Sector Plan Boundary

0 200' 600' 1000'

2000 Aerial Photo

Map 15

On-site mitigation of wetlands and floodplain would minimize the negative effects to the watershed as a whole.

2. Certain structures and improvements are allowed within the floodplain, and development shall exhaust these options before proposing floodplain compensation. The Prince George's County Department of Environmental Resources recommends that floodplain compensation for the Core Area be compensated within the Core Area to the greatest extent possible.

3. Within the Sector Plan Area, development features such as roads, parking lots, green space, landscaping and buildings shall be planned and designed to reduce environmental impacts and to provide and maintain beneficial hydrologic functions.

- Preserve and protect woodlands and trees to the greatest extent possible and integrate with future development. This includes the trees in the Environmental Envelope, stands of trees in North College Park, Springhill Lake, Berwyn Heights and street trees.

  1. Woodland conservation requirements, as outlined in the Prince George's County Woodland Conservation and Tree Preservation Ordinance, should be met on site or within the Environmental Envelope for any development proposal within the Sector Plan Area. Afforestation and reforestation requirements will be strategically placed to reconnect forest canopy, reduce forest fragmentation or to expand the riparian zone and other buffers.

  2. To protect the woodlands during development, Tree Protective Devices (TPDs) shall be required at the drip line of trees and woodlands.

  3. Street tree programs should be supported in all communities. Street tree programs in Greenbelt, College Park and Berwyn Heights should be continued, and integrated with development or redevelopment within the Sector Plan Area. New programs should be implemented in those neighborhoods that do not have them, such as Springhill Lake.

- Reconnect the forest canopy within and across sector plan boundaries. Afforestation, reforestation and tree planting will be encouraged in strategic areas where the canopy is now interrupted, such as along Indian Creek in the South Core Area.

- Protect native and RTE (rare, threatened and endangered) species.

  1. Use native species for restoration, afforestation, reforestation and mitigation areas and landscape areas adjacent to the Environmental Envelope. See the Prince George's County Native Plant List.

  2. Require an inventory of RTE plant and animal species for selected properties within the Sector Plan Area as development proposals are submitted during conceptual site plan review. This biological survey should be conducted both in the spring and summer seasons.

  3. Use preservation and conservation techniques to protect native and RTE habitat within the proposed Environmental Envelope. In areas that are ecologically degraded, the native populations should be restored to maintain and strengthen the ecosystem, and improve the ecological integrity. Nonnative species, especially those classified as invasive exotics, should be prohibited from new planting projects, and should be removed from the existing ecosystem so they do not compete with native species. The application of these ideas will occur during the development review process by appropriate agencies and staff.

- Require a detailed Natural Resources Inventory (NRI) for development proposals in the Sector Plan Area during conceptual site plan review. The NRI will include, but not be limited to floodplain, wetland, forest stands, RTE species, and an general assessment of biodiversity and habitat gaps. The NRI requirements may be modified during the development review process for properties that do not contain many environmental features.

- Minimize new impervious surfaces, turf areas, and situations that will require extensive use of pesticides and herbicides. This will improve the water quality and reduce maintenance costs in both the public and private sector.

- Use preservation, conservation, restoration and greenways to buffer unsightly uses, and to enhance gateways leading into the Sector Plan Area.

- Require soils studies for proposed development within areas of slopes exceeding 15 percent on erodible soils, or where hydric soils occur. The studies will assess the extent and characteristics of the soils on the site and recommend sound construction techniques. Construction on sites containing problematic clays, fill sites or old settling or wash ponds shall occur only after a thorough geotechnical evaluation has been performed by a qualified professional to

address issues of drainage, stability and excavation/ replacement of fill.

- Require noise mitigation for residential areas near the Beltway and the CSX railroad/Metrorail tracks.

  1. Location and specification of noise mitigation techniques shall be based on noise studies. These techniques will be requested during conceptual site plan review for any development proposals within the Sector Plan Area containing residential components, or for proposals that will adversely affect adjacent residential areas with increased noise levels.

  2. Mitigation measures may include shielding buffers, vegetation, sound deadening barriers, setbacks or other sound attenuation features placed within the noise transmission path.

  3. Minimal removal of woodlands is a key element in noise attenuation. Strategic planting of trees and other vegetation shall also be pursued.

  4. Topographic features within the Sector Plan Area can also shield noise. Additional berms or sound deadening walls at strategic locations can attenuate noise for residential areas.

  5. Structures located within designated noise corridors will require acceptable attenuation measures and design guidelines to comply with State and County standards. Use of certain construction materials can attenuate exterior noise to acceptable interior levels. Orientation of buildings can also attenuate noise to acceptable levels. Special consideration should be given to the orientation of structures in the development areas of the Core Area. Noise from the Beltway and trains will ricochet off these building surfaces. This phenomenon shall be evaluated during the site planning process so as to protect residential areas from undesirable noise levels.

  6. For precautionary measures, vibration from the freight trains and Metrorail trains should be addressed by requiring that residential structures be located at least 200 feet from the tracks. For other types of proposed structures, further studies may be required to ascertain impacts within 200 feet of tracks.

- Create an interpretive center within walking distance of the Greenbelt station and local communities that would highlight local environmental as well as archaeological and historic information.

- Develop an environmentally sensitive transportation network. As the Sector Plan Area develops, the transportation network will also expand in physical dimensions and number of users. It will be a challenge to accommodate this increased demand in a way that will not degrade the environment. This may be best accomplished by:

  1. Utilizing areas already developed or disturbed, whenever possible, for transportation improvements. Where this is not possible, minimization of disturbance to natural features is essential. Techniques such as raised roadways to span wetlands and floodplain shall be used.

  2. Minimizing automobile traffic, by limiting parking and encouraging travel by bike, walking and public transportation. This will decrease the need for expansive road networks, and improve air quality by reducing emissions.

- Continue team approach and networking between staff, citizens and development applicants to facilitate planning for sustainable, and green development on a local and regional level. Preplanning and responsiveness to local government may reduce project approval times. One option could be working on cooperation with local agencies and governments and Maryland's Green Building Program to apply development techniques that have environment responsiveness, resource efficiency and community and cultural sensitivity.

  1. Preplanning and responsiveness to the local government and other agencies involved in the development review process will save time and expense and result in better quality development. The development process shall be used to implement adequate environmental protection, and at the same time enhance the development with environmental features.

  2. The County will strongly consider a streamlined project review and approval process for those projects that follow and adopt environmental site design guidelines such as those proposed by the Maryland Office of Planning, Prince George's County and Maryland Department of Natural Resources. Reference is made to their low-impact development, environmentally sensitive design and green building programs.

- The principles of "green development" should be considered and applied. Green development is defined as the application of ecological thinking to creation of development in which the product, service or underlying philosophy places some emphasis on protecting the indoor and outdoor environment, resulting in better places to work and

live. Green Development is environmentally responsive, efficient in its use of resources, and sensitive to cultural and community needs, connecting "people to place."

1. Building designs should incorporate energy and water saving features and with health-conscious interior environments.

2. The long term economic advantages of environmentally responsive development should be considered by the applicant during the initial planning phase of development projects.