



Guidelines for Environmental Management of Development in Montgomery County



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Description

The recently Approved and Adopted 10 Mile Creek Limited Amendment to the Clarksburg Master Plan and Hyattstown Special Study Area (hereafter referred to as the 10 Mile Creek Master Plan) has established some new environmental standards and buffers for new development in the Ten Mile Creek Watershed that lies within the 10 Mile Creek Master Plan planning area. Among the regulatory changes that are needed to implement these new environmental requirements are changes to the Guidelines for Environmental Management of Development in Montgomery County (referred to hereafter as the Environmental Guidelines). Staff has reviewed the new environmental requirements that apply to new development in the Ten Mile Creek Watershed, and have drafted changes to the Environmental Guidelines to implement those new requirements in M-NCPPC's development review and approval process (see Attachment 1). These changes appear in a new Chapter in the Guidelines (Chapter VIII). Throughout the text of the Guidelines, text references and other minor changes needed to reflect the material in the new Chapter VIII have been drafted as well. In addition to the Ten Mile Creek-specific additions, staff has made other draft revisions to the Environmental Guidelines to reflect changes required by local and State legislation that have occurred since the last revision of the Guidelines. These updates to the Guidelines must be in place before the Overlay zone is adopted because they are referred to in the Overlay Zone.

On June 6, 2014, the Planning Board held a Public Hearing on the proposed updates to the Environmental Guidelines. Planning staff have compiled the comments below with staff responses to testimony given at that

Staff Recommendation: Approve Revisions to the Environmental Guidelines

Summary

The County Council's resolution adopting the 10 Mile Creek Master Plan included the following general provision:

The Planning Department should work with Executive Branch Departments, including the Department of Environmental Protection and Department of Permitting Services, to take all actions necessary to implement the recommendations in this Master Plan (such as a comprehensive sewer and water category change). In addition, these agencies should identify any changes in regulation or law necessary to implement the Master Plan recommendations.

In many discussions with Council staff, the County Executive departments, and the stakeholders, amendments to the Environmental Guidelines were discussed and expected to assure clear and consistent implementation of the Council's actions. The proposed amendments to the Environmental Guidelines were prepared on that basis.

Public Testimony Summary and Staff Responses

(See Attachment 2 for complete written testimony submitted)

Cathy Wiss (Audubon Naturalist Society):

1. The text of the Council's TMC Resolution (17-1048) clearly indicates (page 11, first sentence under "Throughout Ten Mile Creek") that all wetlands are required to have a 200 ft. buffer, and that this should be required in the updates to the Guidelines.

Staff Response:

The following outlines the pertinent chronological events that led up to and resulted in the Council's adopted Ten Mile Creek Resolution, and the process Planning staff used to determine what updates need to be made to the Environmental Guidelines to implement the Council's environmental requirements for the Ten Mile Creek Limited Master Plan Amendment:

a. The Joint PHED and T&E Committee requested DEP staff to examine the sensitive natural resources and how best to protect Ten Mile Creek by reducing the Limits of Disturbance. DEP staff consulted Planning staff regarding the Environmental Guidelines and how they are applied. DEP staff then developed buffer standards for the environmental resources of Ten Mile Creek, with increased buffer areas of 200 feet for streams, seeps and springs to be expanded per standards in the Guidelines depending on adjacent factors such as steep slopes, etc. Wetland buffers of a minimum 50 feet were used to prepare these maps. During joint PHED/T&E Committee Ten Mile Creek work sessions, DEP showed the environmental buffer mapping criteria and resulting buffers.

b. The joint PHED/T&E Committee voiced its approval of the buffer criteria that DEP used, and these criteria were ultimately detailed in the packet for the full Council's 3/4/14 session at which the TMC straw vote was taken. The packet is very clear in specifying a minimum 50 ft. buffer for wetlands. The following text is taken directly from the Council's 3/4/14 packet (bottom of page 9 and top of page 10). Note that the first main bullet does not include wetlands among the environmental features that should be given a minimum 200 ft. buffer. Also note that the third sub-bullet specifies a minimum wetland buffer of 50 ft. These criteria were used to prepare the environmental resource protection analysis shown by DEP to the Council, and the use of a 200-foot buffer on wetlands would result in different Limits of Disturbance than were discussed by Council:

"The following language was prepared by Planning Department staff and DEP staff:

Unless a greater amount is required under the Planning Board's Environmental Guidelines for Development, environmental buffers (protected through the development review process) should include:

- 200 feet on both sides of perennial and intermittent streams and springs and seeps at a minimum, expanded to include:
 - o All slopes 15 percent or greater that begin within the 200 foot buffer
 - o All erodible soils (with a erodibility factor of 8 or greater as identified by the NRCS)
 - o *A minimum buffer of 50 feet from all wetlands. Buffer will be expanded to include all slopes 15 percent or greater that begin within the wetland buffer. (emphasis added)*
 - o All ephemeral streams, not including roadside drainage ditches, plus an additional 50 feet. Buffer will be expanded to include all slopes 15percent or greater that begin within 50 feet of the ephemeral stream.”

c. At the 3/4/14 full Council Ten Mile Creek worksession the Council acknowledged the LODs specified for sensitive environmental features in the packet, but asked DEP staff to look at those recommendations one more time, and if they believed any changes needed to be made, to submit them to the Council before the Council’s April 1 vote on the Resolution. DEP staff present at the session said they were reviewing them, and if they thought any changes to the recommended environmental buffers in the packet were needed, they would submit them to the Council before the vote on the Resolution. At no point during the full Council’s 3/4/14 worksession was there any discussion about increasing minimum wetland buffers in TMC from 50 ft. to 200 ft.

d. Neither DEP nor Planning staff proposed any changes to the Council regarding the recommended LODs in the 3/4/14 full Council Ten Mile Creek worksession packet subsequent to that worksession. There were no requests of Council or Council staff to change the buffers prior to the preparation of the final resolution.

e. During the discussion at the Council’s 4/1/14 Resolution worksession, Mr. Elrich pointed out how valuable DEP’s Ten Mile Creek environmental buffer analysis and graphic presentation (which visually demonstrated the application of the buffer requirements specified in the Council’s 3/4/14 packet) was for the Council in understanding the potential impacts to natural resources, and made it easier and clearer for the Council to see what they were protecting. The full Council’s 4/1/14 final worksession on the Ten Mile Creek Resolution did not discuss increasing minimum wetland buffers in Ten Mile Creek from 50 ft. to 200 ft.

f. After the Ten Mile Creek Resolution was adopted, Planning staff consulted the Council’s adopted Ten Mile Creek Resolution to determine what Ten Mile Creek-related updates needed to be made to the Environmental Guidelines. The recommendations in the Resolution for wetland buffers, however, were found to be conflicting. The following text is taken directly from the Council’s adopted TMC Resolution (17-1048), (last section at the bottom of page 11). The first main bullet addresses minimum buffers for wetlands. The second sub-bullet also addresses wetlands and is in conflict with the minimum wetland buffer specified in the second sentence in the first main bullet. A minimum 50 ft. buffer for wetlands that extend beyond the buffer would not be needed if a 200 ft. minimum buffer was intended for wetlands:

- “Environmental buffers must be consistent with all regulations and guidelines. In addition, in all areas in Ten Mile Creek other than the Historic District, on both sides of perennial and intermittent streams and adjacent to wetlands, springs and seeps, buffers must be a minimum of 200 feet, and must be expanded to include:
 - All erodible soils (listed in the Planning Board’s *Environmental Guidelines for Development*)
 - *Wetlands that extend beyond the buffer must have a minimum 50 foot wetland buffer* (emphasis added)
 - All ephemeral streams, not including roadside drainage ditches, plus a 50 foot buffer
 - All slopes 15 percent or greater that begin within the buffers described above.”

g. Planning Department legal staff concurred with Planning staff that the adopted Resolution text is conflicting regarding wetland buffers and said that establishing the Council’s intent was needed to resolve the issue.

h. Planning staff reviewed the packets for the full Council’s 3/4/14 session at which the Ten Mile Creek straw vote was taken, and the full Council’s 4/1/14 session at which the Ten Mile Creek Resolution was adopted, as well as the video recordings of these sessions to review the Council’s discussion. This review made it clear to Planning staff that the conflicting minimum wetland buffer recommendations in the Resolution was the result of an drafting error on the part of Planning staff, and that the intent of the Council was to require a minimum 50 ft. buffer for wetlands in Ten Mile Creek, not 200 ft. On this basis, the proposed minimum buffer in the Guidelines for wetlands in Ten Mile Creek was set at 50 ft. This remains the recommendation of Planning staff to be reflected in the Environmental Guidelines.¹

2. Recommends that DEP, as part of its Spring monitoring, should survey all water resources in the Ten Mile Creek watershed to see if there have been any changes to the various environmental features it has already documented.

Staff Response:

This is not a Guidelines issue, and relates to DEP’s programs and operations.

Ann Cinque (Peachtree Citizens Association, Sugarloaf Citizens Association) (no written testimony provided):

1. The two citizens associations Ms. Cinque represents voted to support the testimony of Cathy Wiss.

Staff Response:

See response above to the testimony of Cathy Wiss.

¹ The final published 10 Mile Creek Master Plan will reflect this correction to the language as directed under the Council’s Resolution for the Planning Board to revise the text as necessary to achieve clarity and consistency to convey the actions of the District Council.

Audubon Naturalist Society (ANS), (Incorporates the Public Hearing Testimony of Cathy Wiss, with additional comments)

1. Supports the testimony of Cathy Wiss.

Staff Response:

See response above to the testimony of Cathy Wiss.

2. Cites a prominent scientist regarding the need for even greater protection, including buffers of 465 feet and greater, for amphibians (frogs and salamanders) who are dependent upon wetlands, seeps and springs, as a reason for requiring 200 ft. minimum buffers for wetlands.

Staff Response:

ANS representatives provided public testimony regarding the need for wetland, spring, and seep buffers of 300 feet and even greater at the Planning Board's TMC Public Hearings last year, and earlier this year at the County Council's TMC Public Hearings. The County Council considered all the scientific information regarding environmental buffers presented by ANS at its TMC Public Hearings in deciding the minimum buffers that should be applied to wetlands in the Ten Mile Creek watershed.

3. Cites the need to account for changes that are taking place to the Natural Resources Conservation Service (NRCS) Soil Survey for Montgomery County, and recommends that the Guidelines list of erodible be amended to incorporate the most up-to-date information on erodible and other unsafe soils.

Staff Response:

The NRCS is in the process of updating soil evaluation factors that will affect the classification of soils. Planning staff are aware of these changes and are waiting for the NRCS to complete its soils classification work. This work is expected to be completed in September, 2014. When the work is complete Planning staff will review the results and consult with NRCS on a definitive list of erodible soils for Montgomery County. When this list is established, it will provide a basis for updating the current list in the Guidelines. Future updates to the list will be made from time to time as new soils information becomes available. When a new list of erodible soils based on the new NRCS data is ready, Planning staff will bring it to the Board for an additional technical update to the Environmental Guidelines.

Robert Harris (Lerch, Early, and Brewer) (no written testimony provided):

1. Developable properties in the TMC watershed should not be subjected to further restrictions beyond the imperviousness limits imposed by the Council.

Staff Response:

The Council voted in Resolution 17-1048 to impose additional environmental requirements beyond existing imperviousness limits. See Attachment 1, pages 10-13. Plan recommendations that are appropriate to administer through the Environmental Guidelines, such as environmental buffers and additional forest protection are included in the proposed Guidelines changes.

2. All the additional buffer requirements are contrary to all the other SPAs, and should not be imposed in the TMC watershed, which is a Use Class I-P, not Use Class III as in other SPAs.

Staff Response:

The Council voted to impose additional environmental requirements beyond what is required in other SPAs. In addition, the State Use Classes are not intended to be primary indicators of biological health and water quality. Some Use I streams can have extremely high biological diversity and health, but are just not as cool (sufficient to support trout reproduction) as Use Class III streams. This is the case in 10 Mile Creek.

In addition, there is already an existing SPA watershed that is Use I, the Piney Branch SPA. So, the 10-Mile Creek SPA is not a precedent. And more stringent, watershed-specific buffer definitions have been defined in Upper Paint Branch SPA (see bottom of page 32 of current Environmental Guidelines). As a result, 10 Mile Creek buffers are not unique in being watershed-specific.

3. The County Council did not direct Planning staff to change the Guidelines, and what the Council requires in TMC does not need to go into the Guidelines. For example, the requirements of the Upper Rock Creek Plan were not put into the Guidelines.

Staff Response:

At the 3/4/14 Council session on TMC, Council staff informed the Council that the appropriate regulatory changes would be made to implement the environmental requirements of the Ten Mile Creek Master Plan Amendment, including appropriate changes to the Environmental Guidelines. Council staff informed the Council that those changes would be provided to them at a later date. The Council therefore is expecting the new environmental requirements of the TMC Master Plan Amendment to be implemented in all appropriate places where such requirements are implemented. Environmental buffers are implemented via the Environmental Guidelines. New buffer requirements in revised master plans belong with the buffer requirements in the Guidelines, rather than scattered in various master plan documents. Incomplete buffer requirements in the Guidelines would be a source of confusion for both applicants and interested parties. Moreover, updates to the Guidelines to cover the Upper Rock Creek SPA and its imperviousness limits, as well as changes to the imperviousness limits in the Upper Paint Branch adopted by the County Council are included in these proposed updates to the Guidelines.

No new buffer requirements were established in the Upper Rock Creek (URC) Plan, so it was not critical to amend the Guidelines immediately.

Andie Murtha (Soltesz):

1. We request you consider that afforested Open Space which is voluntarily put into Category I Forest Conservation easement, beyond minimum requirements for Forest Conservation Plans and SVB mandatory afforestation/reforestation, be credited at 1.75 acres of Open Space for each afforested acre. This would provide an incentive to plant trees in required open space areas. Forests provide the best nutrient reduction potential.

Staff Response:

The Guidelines do not address Open Space or Open Space requirements. This type of change would have to be made in the Zoning Ordinance through the Overlay Zones that are pending with the County Council, not through the Environmental Guidelines. The Zoning Ordinance recognizes the importance of different types, functions, and benefits of various land uses and ecosystems, not just nutrient reduction

potential. For this reason, in the Zoning Ordinance the allowed land uses in Open Space are treated equally and are based on percent of tract area. In addition, Open Space areas that are planted with trees can be credited as forest banks, so an incentive already exists for planting trees.

2. A definition of ephemeral streams that includes all conveyance features except “roadside or other constructed ditches,” does not fully protect zero and first order streams that have evolved as a result of anthropogenic actions. Also, the blanket definition unfairly constrains a land owner from using property that has evolved such that it no longer contributes to the stream system in a meaningful way.

The definition and determination of an ephemeral stream/channel should rely on the same methodology used by the United States Army Corps of Engineers (USACE). Consider “significant nexus” and other current determining principles per the existing published Federal Clean Water Act guidance to categorize drainage features as those which do or do not require a buffer.

Staff Response:

The County Council resolution clearly prescribes the changes needed to the definition of ephemeral streams (see Attachment 1, page 10). Ms. Murtha’s comments are based on the USACE’s concepts of “Waters of the United States”, and “significant nexus”. “Significant nexus” means a water body that significantly affects the chemical, physical, or biological integrity of a traditional navigable water, interstate water, or the territorial seas. Waters with “significant nexus” make up the “Waters of the United States”. “Waters of the United States” in turn is an overall designation made by the USACE to establish those waters that must be regulated for discharges, not to establish stream type or buffer requirements. So the USACE “Waters of the United States” and “significant nexus” concepts are not intended to determine what is or isn’t an ephemeral stream or whether it should be buffered.

In addition, natural drainage features can provide other important environmental functions than just contributing to a “significant nexus” with other “Waters of the United States”, as applied by the USACE for the regulation of discharges only. As a result, to bring the USACE concept of “significant nexus” into defining ephemeral streams would leave out some ephemeral channels that have always been considered important for other environmental reasons. For example, an ephemeral channel can drain to an upland wetland or a vernal pool which may in turn only infiltrate to deep groundwater and not stream base flow, and therefore not have a “significant nexus” as defined by the USACE. Because of this, some ephemeral channels are important for reasons other than “significant nexus” as defined by the USACE. The definition of ephemeral streams in the Guidelines has always included such channels.

The USACE’s definition of ephemeral stream is a channel that responds directly to precipitation events. Moreover, the USACE does not consider ditches that do not carry perennial water flow to have “significant nexus” or to be “Waters of the United States”. As a result, the proposed updated definition of ephemeral stream in the Guidelines is consistent with the USACE definition. Limiting ephemeral stream designations to non-constructed channels also makes for a more useful and clear-cut as a tool for determining environmental features for inclusion in Natural Resources Inventories (NRIs). Lastly, the adopted 10 Mile Creek Resolution (at the bottom of page 11) specifies that ephemeral streams do not include roadside ditches, so the proposed updated definition for ephemeral streams in the Guidelines is consistent with the Council’s 10 Mile Creek Resolution.

John R. King, Jr., (Landowner):

1. The Planning Staff draft revisions to the Environmental Guidelines appear to be far more restrictive than the mandate from the County Council by pushing definitions to their most restrictive and limiting interpretation. For example, the Guidelines for impervious surfaces extend the definition of impervious beyond current practice. As drafted, these new definitions would classify even little-used agricultural access roads as impervious surfaces. The gravel surfaced roads and parking lots desired by the planning staff for public access to forest areas would also be classified as impervious and counted against the 6% total.

Staff Response:

The proposed updates to the Environmental Guidelines are not more restrictive than what has been mandated by the County Council, but rather, implement the Council's environmental protection criteria for the 10 Mile Creek Limited Plan Amendment.

The proposed update to the definition of impervious surface in the Guidelines is to bring the Guidelines into conformance with the existing Montgomery County definition of impervious surface as it appears in the County Code, Chapter 19. The County's definition of impervious surface was adopted after the last update of the Environmental Guidelines.

Summary of Proposed Ten Mile Creek Updates to the Environmental Guidelines

Staff has drafted red-line revisions and additions to the Environmental Guidelines to implement the environmental requirements for new development in the 10 Mile Creek Watershed which lies within the 10 Mile Creek Master Plan planning area.

Imperviousness Limits

(See Attachment 1: Redline Mark-up of the Environmental Guidelines, page 67; Attachment 4: Council Ten Mile Creek Council Resolution, pages 10-11; Attachment 5: ZTA 14-03, Clarksburg East and West Environmental Overlay Zones)

East of I-270

In the 10 Mile Creek watershed East of I-270, a 15 percent imperviousness cap applies to new development on properties greater than 2 acres in size that are recommended for the Clarksburg East Environmental Overlay Zone. Properties already developed (as of April 1, 2014) with imperviousness exceeding this cap may improve their properties and maintain the existing level of imperviousness providing the use of the property does not change. A change of use will trigger the application of the imperviousness cap (see Figure 11 and the Clarksburg East Environmental Overlay Zone (Attachment 5)).

West of I-270

West of I-270, a 6 percent imperviousness limit applies to all new development on properties greater than 2 acres in size that are recommended for the Clarksburg West Environmental Overlay Zone, with the exception of County-owned properties. The County-owned properties cannot add imperviousness (0% cap). Properties already developed (as of April 1, 2014) with imperviousness exceeding this cap may

improve their properties and maintain the existing level of imperviousness providing the use of the property does not change. A change of use will trigger the application of the imperviousness cap (see Figure 11 and the Clarksburg West Environmental Overlay Zone (Attachment 5)).

Environmental Buffers

(See Attachment 1: Redline Mark-up of the Environmental Guidelines, pages 67-68; Attachment 3: Full Council Packet for the 3/4/14 Ten Mile Creek Worksession, pages 9-10; and Attachment 4: The Ten Mile Creek Council Resolution, 4/1/14, pages 11-12)

Throughout the 10 Mile Creek Watershed

In addition to the requirements stated elsewhere in these Guidelines, the following requirements apply in the portion of the 10 Mile Creek watershed within the 10 Mile Creek Master Plan Amendment planning area:

- Except for the Historic District, environmental buffers must be a minimum 200 feet wide around perennial and intermittent streams, and springs and seeps, and must be expanded to include:
 - All erodible soils (See Appendix C) that begin within or abut the minimum buffers
 - Wetlands that extend beyond the buffer
 - All slopes 15 percent or greater that begin within or abut the minimum buffers.
- A minimum 50 foot buffer must be provided around all wetlands, and must be expanded according to the criteria contained in Table 7.
- A minimum 50 foot buffer must be provided around all ephemeral streams (not including roadside or other constructed ditches). The environmental buffer expansion requirements in these Guidelines for intermittent and perennial streams do not apply to ephemeral streams.
- In areas covered by the Clarksburg East and West Environmental Overlay Zones, the 80% open space required by the RNC zone must encompass, at a minimum, all environmental buffer areas as described above and forest protection areas, as described below.

Forest Protection

(See Attachment 1: Redline Mark-up of the Environmental Guidelines, page 69; and Attachment 4: The Ten Mile Creek Council Resolution, 4/1/14, page12)

- Minimize disturbance of natural resources throughout the Ten Mile Creek Watershed, especially forests in the headwater areas. Forest Conservation Plans for properties in the Ten Mile Creek Watershed should protect:
 - All forest required by the Forest Conservation Law and Regulations (includes Environmental Buffers as previously described and minimum retention requirements), as well as areas defined in the 10 Mile Creek Limited Master Plan Amendment:

- All interior forest (as defined by the Maryland Department of Natural Resources).
- On the Miles-Coppola properties, the forest bounded by the two northernmost environmental buffer areas on the north and south, I-270 on the west, and the existing agricultural fields on the east.
- On the Pulte/King properties, all forest that begins within or abuts environmental buffers.
- All forest on County-owned properties.

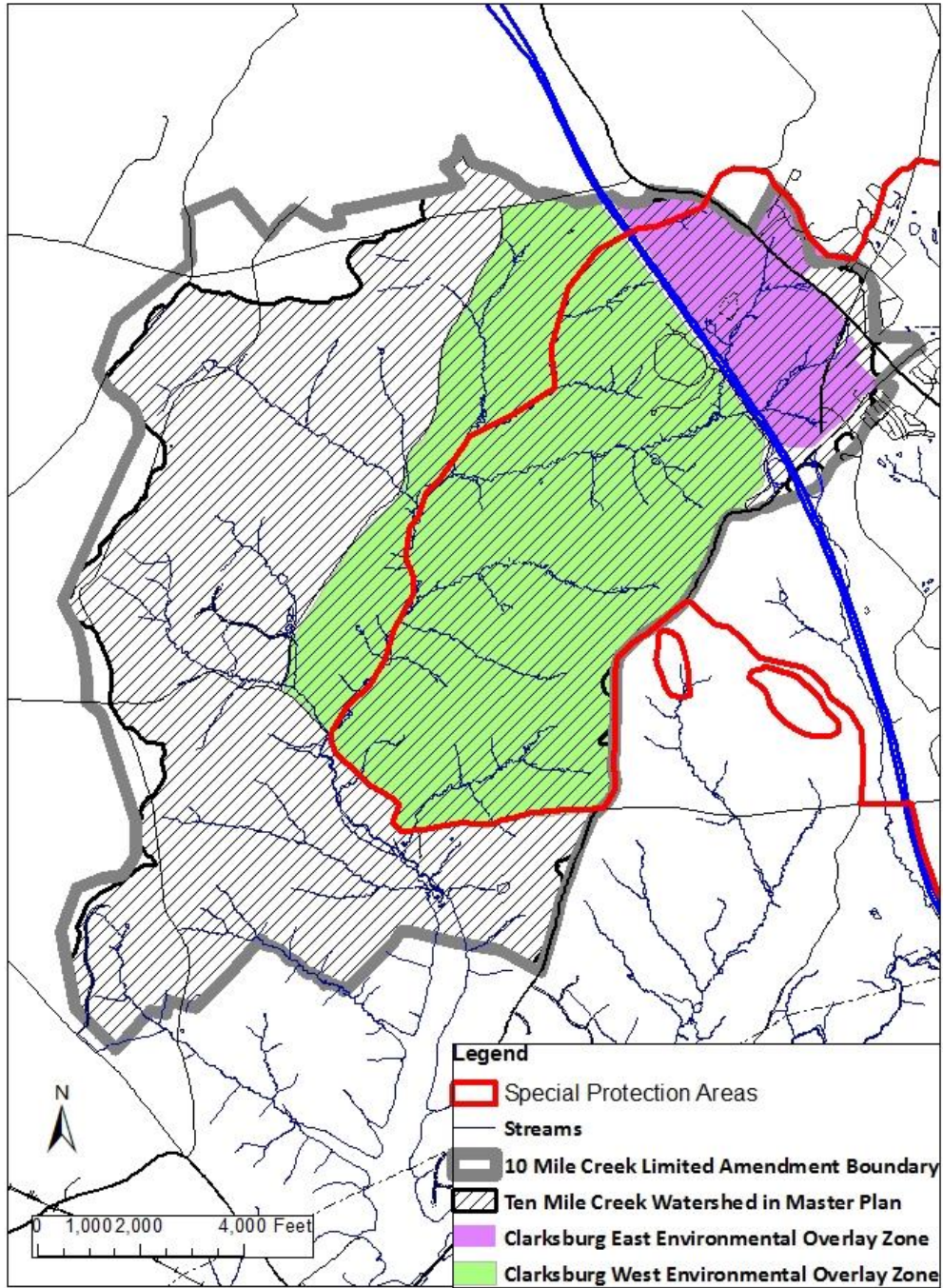
Ten Mile Creek Regulated Areas Map

Depending on how the Council votes on a proposed Clarksburg SPA Resolution, a new figure will be added to the Environmental Guidelines to show the Ten Mile Creek Watershed regulated areas including:

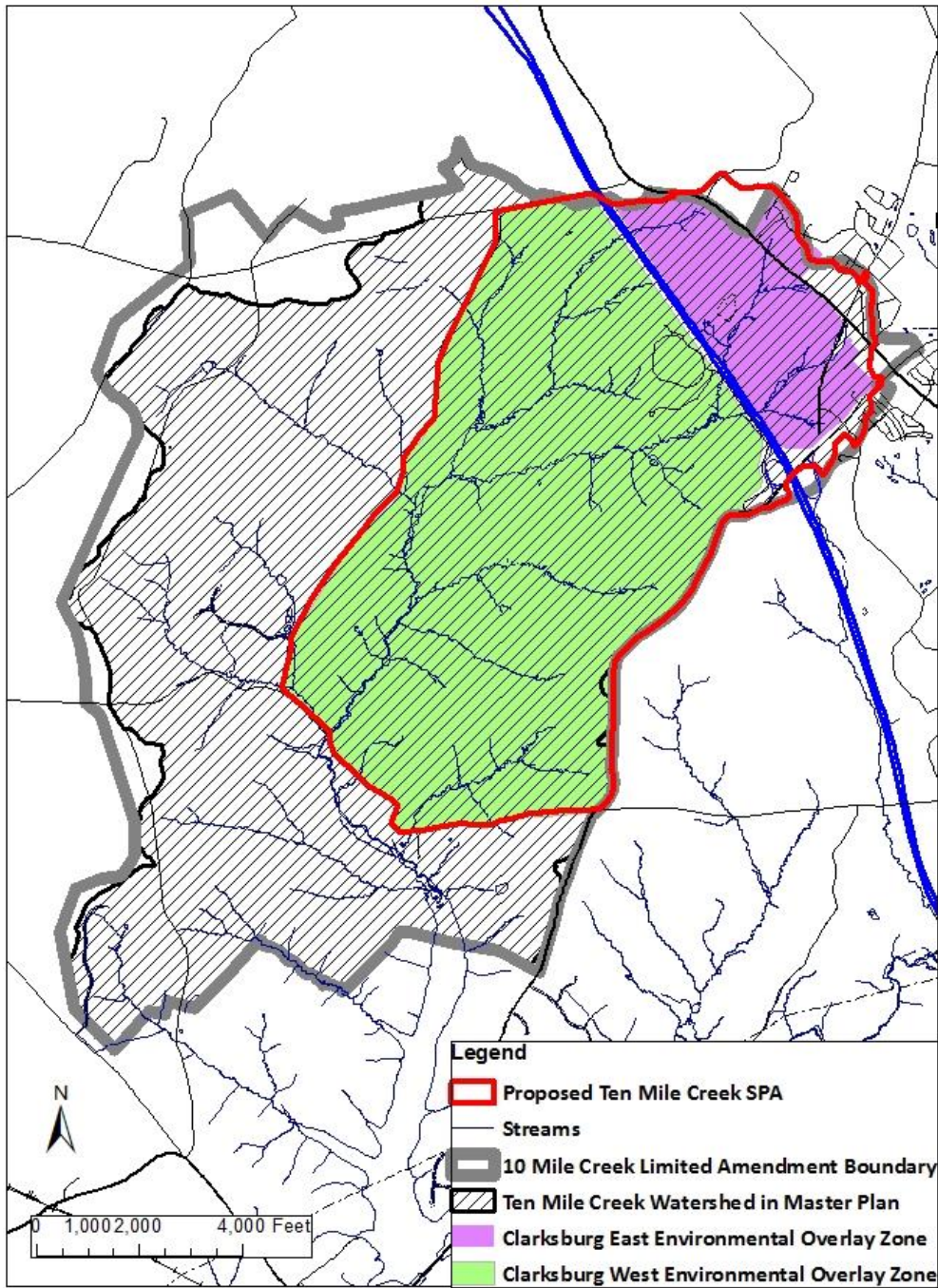
- The Clarksburg Special Protection Area;
- 10 Mile Creek Limited Master Plan Amendment Planning Area;
- The 10 Mile Creek Watershed with in the Planning Area;
- The Clarksburg East Environmental Overlay Zone; and
- The Clarksburg West Environmental Overlay Zone

The first of the two following figures shows the current boundary of the Clarksburg Special Protection Area, as it relates to other areas pertaining to the 10 Mile Creek Master Plan Amendment. If the Council makes no changes to the Clarksburg SPA, this figure will be incorporated into the Guidelines. Pending County Council action on the proposed Clarksburg SPA Resolution, the SPA boundary shown on this map may be expanded to coincide with the Overlay Zones, and designated as a separate Ten Mile Creek Special Protection Area. The second figure shows the SPA area as proposed in the SPA Resolution, and will be used in the Guidelines if the Council adopts the SPA Resolution as proposed. If the Council adopts other changes, then a map similar to these two maps will be prepared that reflects the Council actions taken.

Clarksburg Special Protection Area



Ten Mile Creek Watershed Special Protection Area



Conclusion

Staff has drafted red-line revisions and additions to the Environmental Guidelines to implement the environmental requirements for new development in the 10 Mile Creek Watershed which lies within the 10 Mile Creek Master Plan planning area (see Attachment 1). These changes appear in a new Chapter in the Guidelines (Chapter VIII). Throughout the text of the Guidelines, text references and other minor changes needed to reflect the material in the new Chapter VIII have been drafted as well. In addition to the 10 Mile Creek-specific additions, staff has made other draft revisions to the Environmental Guidelines to reflect changes required by local and State legislation that have occurred since the last revision of the Guidelines.

Some changes to the State Water Use Class Criteria and Designations have occurred since the last revision of the Environmental Guidelines, with others still pending. Because of this, Water Use Class-related updates do not appear in the present red-line markup. If the State Water Use Class-related changes are available in time for this revision of the Guidelines, they will be incorporated. If not, they will be incorporated in a future revision to the Guidelines.

Once the revisions are approved by the Planning Board, they will be incorporated, and graphics will be updated. If the County Council makes any further changes to the overlay zones they will be reflected in the updated Guidelines. The revised Guidelines must be in place when the Overlay zone is adopted because they are referred to in the Overlay Zone.

ATTACHMENTS

1. Red-line Markup of Proposed Revisions to the Environmental Guidelines
2. Written Public Testimony Submitted during and after the 6/12/ Public Hearing on Proposed Updates to the Environmental Guidelines
3. Full Council staff packet for the 3/4/14 Ten Mile Creek worksession
4. Full Council staff packet and Ten Mile Creek Resolution for the 4/1/14 worksession
5. Proposed ZTA 14-03, Clarksburg East and West Environmental Overlay Zones

ATTACHMENT 1

APPROVED BY THE MONTGOMERY COUNTY PLANNING BOARD

Environmental Guidelines

GUIDELINES FOR ENVIRONMENTAL MANAGEMENT OF DEVELOPMENT IN MONTGOMERY COUNTY

THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION THE MONTGOMERY COUNTY DEPARTMENT OF PARK AND PLANNING
8787 GEORGIA AVENUE, SILVER SPRING, MARYLAND 20910-3760

APPROVED BY THE MONTGOMERY COUNTY PLANNING BOARD FEBRUARY 1997

MONTGOMERY COUNTY PLANNING BOARD, M-NCPPC

Approving Commissioners February 1997

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Patricia S. Baptiste, *Vice Chairman*

Ruthann Aron

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THE MARYLAND-NATIONAL CAPITAL PARK & PLANNING COMMISSION

The Maryland-National Capital Park and Planning Commission is a bi-county agency created by the General Assembly of Maryland in 1927. The Commission's geographic authority extends to the great majority of Montgomery and Prince George's Counties; the Maryland-Washington Regional District (M-NCPPC planning jurisdiction) comprises 1,001 square miles, while the Metropolitan District (parks) comprises 919 square miles, in the two Counties.

The Commission has three major functions:

- (1) The preparation, adoption, and, from time to time, amendment or extension of The General Plan (On Wedges and Corridors) for the Physical Development of the Maryland-Washington Regional District in Montgomery and Prince George's Counties;
- (2) The acquisition, development, operation, and maintenance of a public park system; and
- (3) In Prince George's County only, the operation of the entire County public recreation program.

The Commission operates in each county through a Planning Board appointed by and responsible to the county government. All local plans, recommendations on zoning amendments, administration of subdivision regulations, and general administration of parks are responsibilities of the Planning Boards.

The Maryland-National Capital Park and Planning Commission encourages the involvement and participation of individuals with disabilities, and its facilities are accessible. For assistance with special needs (i.e., large print materials, listening devices, sign language interpreters, etc.), please contact the Community Relations Office, 301-495-4600 or TDD 301495-1331.

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Comment [SM1]: Or Ten Mile Creek SPA
 depending on Council action on a proposed SPA
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BACKGROUND

These guidelines are the latest version' of a document that was first approved in 1983 as the *Staff Guidelines for the Protection of Steep Slopes and Stream Valleys*. The first comprehensive revision was completed eight years later, when the renamed *Guidelines for Environmental Management of Development in Montgomery County* were approved in March 1991. At that time, it was anticipated that these guidelines would be a dynamic product, changing as the available data and science of natural resource protection improved. This version of the Environmental Guidelines, approved in February 1997, is the result of the second comprehensive revision and is the third edition of the document.

This document is a compilation of existing policies and guidelines that affect the protection of sensitive natural resources during the development process. Maryland's Economic Growth, Resource Protection and Planning Act of 1992 established the requirement that all local governments provide for protection of sensitive areas during the planning and development process. The Environmental Guidelines are the keystone of M-NCPPC's efforts to protect sensitive areas in Montgomery County.

The Environmental Guidelines also aids in the implementation of other State and County programs and laws by providing one streamlined document that includes guidance to meet many different regulations and goals. These guidelines work in concert with the forest conservation legislation to support the goal of the Maryland Stream ReLeaf program to restore and conserve riparian forest buffers throughout the state. Protection of sensitive environmental resources is a key element of the State's Smart Growth strategy. The Chesapeake Bay Tributary Teams are implementing strategies for non-point source pollution reduction, relying on appropriate land use design, stream buffer protection and Best Management Practices (BMPs) such as implemented through the Guidelines.

In addition, federal requirements for lower concentrations of contaminants in waterways can also be partially achieved through the concepts found in the guidelines. The *Countywide Stream Protection Strategy* (CSPS), developed jointly by the County Department of Environmental Protection (DEP) and M-NCPPC, provides assessments of the quality of county watersheds and assigns them to watershed management categories. This document is a key element in implementing the watershed protection tools that are recommended for each CSPS watershed management category.

I. PURPOSE

In order to provide for growth while protecting Montgomery County's natural resources, all proposals for development in Montgomery County will be reviewed in terms of environmental impact and protection before being approved by the Planning Board. These guidelines present environmental management strategies and criteria for staff use in reviewing the elements of development proposals and in formulating recommendations to the Planning Board. The guidelines provide an indication of what conditions would be acceptable for project approval under most circumstances. It is expected that through the identification of existing natural resources and the application of these guidelines, it will be possible to obtain a balance between accommodating the level of development permitted through zoning and protecting the County's existing natural resources.

The intent of these guidelines is to describe the process of preparing a Natural Resources Inventory (NRI) for development sites and to describe techniques to protect natural resources and environmentally sensitive areas being adversely affected by construction activities and development. These guidelines are intended to ensure that adequate consideration is given to the following environmental management objectives throughout the development process:

- Maintenance of biologically viable and diverse streams and wetlands
- Protection and restoration of stream water quality
- Reduction in flood potential
- Protection of water supply reservoirs against sedimentation and eutrophication
- Conservation of forest and trees
- Protection of steep slopes
- Preservation/protection of wildlife habitat, wildlife corridors, and exemplary communities, including rare, threatened, and endangered species
- Protection against development hazards oil areas prone to flooding, soil instability, etc.
- Provision of visual amenities and areas for recreation and outdoor education activities
- Implementation of state and county riparian buffer programs

In addition, the *Montgomery County General Plan* and local area master plans articulate County-wide and planning area-wide goals, objectives, principles, and policies to protect sensitive areas from the adverse effects of development, as required in the Annotated Code of Maryland Article 66B (Zoning and Planning), 3.05-01 (viii). These guidelines provide the detailed criteria and methods for regulatory review of development in sensitive areas. Sensitive areas include the following:

- Streams and their buffers
- 100-yr floodplains
- Habitats of threatened and endangered species
- Steep slopes

The guidelines are consistent with existing regulations controlling wetlands, dam breach/danger reach, floodplain, and forest conservation administered at the federal, state, and local level. Forest conservation requirements are in accordance with State and County forest conservation laws and are dealt with in detail in the *Trees: Approved Technical Manual* (M-NCPPC, 1992). In cases dealing with such issues as dam breach/danger, reach analysis, stormwater management, and sediment and erosion control, where M-NCPPC is not the lead agency, the information needed for staff use in making recommendations to the Planning Board will be required and reviewed in coordination with the lead agency. In cases where lead agencies' responsibilities overlap in the use of an area on a site, this document gives direction and guidelines as to the criteria to resolving the site design conflict.

Unlike some jurisdictions, zoning regulations 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.

Flexibility shall be shown in the application of these guidelines on a site-by-site basis to best achieve both environmental and other planning objectives for the site. The Planning Board at their discretion may approve, waive, or amend staff recommendations.

II. INTRODUCTION

Despite substantial effort by citizens, regulators, and the development community to date, development pressures in Montgomery County have placed increasing demands upon the County's natural resources. These demands have caused degradation of the resources and loss of the benefits they provide. If preserved and maintained in their natural condition, resources such as streams, stream valleys, wetlands, floodplains, forests, and trees constitute important physical, aesthetic, educational, recreational, and economic assets to the County.

Residents and the development community have expressed support for the protection and enhancement of natural resources. The effort by the development industry toward meeting current requirements to mitigate impacts is recognized as a critical contribution to the protection of these resources. County government agencies are also taking a lead role in reducing development impacts through public education and new common-sense approaches to enhancing stream quality. However, despite these efforts, increased development pressure has resulted in continuing degradation of the County's natural resources.

Decreased native vegetative cover, increased stormwater flows and flooding, accelerated land surface and stream channel erosion, and increased sediment deposition constitute some of the major interrelated negative effects on the environment that can occur during and after development. Erosion and sedimentation exist at natural background levels in the absence of human activities. However, excess erosion and sedimentation create problems for streams and their watersheds as human activities modify the natural landscape; of special concern is the disturbance of steep slopes, especially those adjacent to or in close proximity to 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.

The negative effects of unmitigated development noted above are directly related to increases in land surface imperviousness and decreases in forest cover. Increases in imperviousness can have significant effects on the County's stream systems through the reduction of the natural stormwater infiltration levels and significant increases in levels of overland flow. These alterations to natural infiltration and overland flow processes result in an increase in the velocity, volume, and peak discharge of stormwater discharged to streams, and a decrease in the lag-time between the onset of rain events and peak stormwater discharge as stormflow is concentrated and rapidly transported to streams via impervious surfaces and storm drains. The effects of these alterations on streams can include enlargement of the channel cross-section, increased water temperature, and impairment of water quality and stream habitat. In addition, the decrease in infiltration of storm water results in decreased groundwater recharge and decreased stream baseflow levels that in turn can increase stream temperature and reduce available in-stream habitats. Significant impacts to riparian habitats, including wetlands, result from the extreme variation in water levels caused by increased peak discharges and velocities. Impervious surfaces also transport sediment and other pollutants, such as heavy metals, petroleum products, and salts associated with roadways, to County streams. Increased sediment and pollutant loads impair water quality, stream habitats and aquatic life.

These environmental guidelines for development are based on the following principles of comprehensive watershed management and protection:

- Stream valley and floodplain protection
- Minimizing increases in watershed imperviousness
- Protection of both upland and riparian forest resources
- Recognition and protection of the ecological significance and functions of headwater areas
- Need for long-term baseline stream monitoring to understand and protect the County's stream systems and development impact stream monitoring to evaluate watershed response to development
- Consideration of cumulative impacts

These guidelines attempt to address the problems and opportunities encountered in watershed development and identify management strategies designed to minimize adverse impacts. Among these management strategies are:

- Application of judicious land uses that allow for limiting impervious surfaces and maintaining wetlands, floodplains, seeps, springs, etc., in their natural condition.
- Establishment of protected slope areas that address slope gradient, soil erodibility, and proximity to stream channels.
- Use of stream buffers, the widths of which depend upon the stream's Maryland Department of the Environment (MDE) water use designation, the gradient of adjacent slopes, and the presence of erodible soils.
- Provision of healthy forest and tree cover for the purpose of maintaining water quality, preserving wildlife habitat, preventing erosion, mitigating air pollution, controlling stream temperature, and enhancing community amenity in an urbanizing environment.
- Adherence of land-disturbing activities to the State erosion and sediment control standards.
- Provision of stormwater management devices, storm drainage systems, septic fields, and other structural facilities in a manner that respects the integrity and does not impair the natural equilibrium of stream systems.
- Incorporation of effective best management practices into land disturbance activities.

III. NATURAL RESOURCES INVENTORY

Environmental information must be gathered by conducting a Natural Resources Inventory (NRI) of the development site. 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). The purpose of the NRI is to provide environmental information early in the concept development phase that will allow for more environmentally-friendly site design. In general, the inventory must be submitted before or with the earliest plan submission for a development site. The NRI is submitted as part of the Natural Resources Inventory/Forest Stand Delineation (NRI/FSD) Summary Map as detailed in *Trees: Approved Technical Manual* (M-NCPPC, 1992).

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

A. Streams and Floodplains

All streams and/or drainage courses located on or within 200 feet of the subject property must be shown on the NRI/FSD summary map. M-NCPPC 1"=200' scale topographic maps or applicant's field topography will be used to determine whether or not streams and/or drainage courses are present. Streams will be classified as either perennial, intermittent, or ephemeral (see glossary for definition of terms).

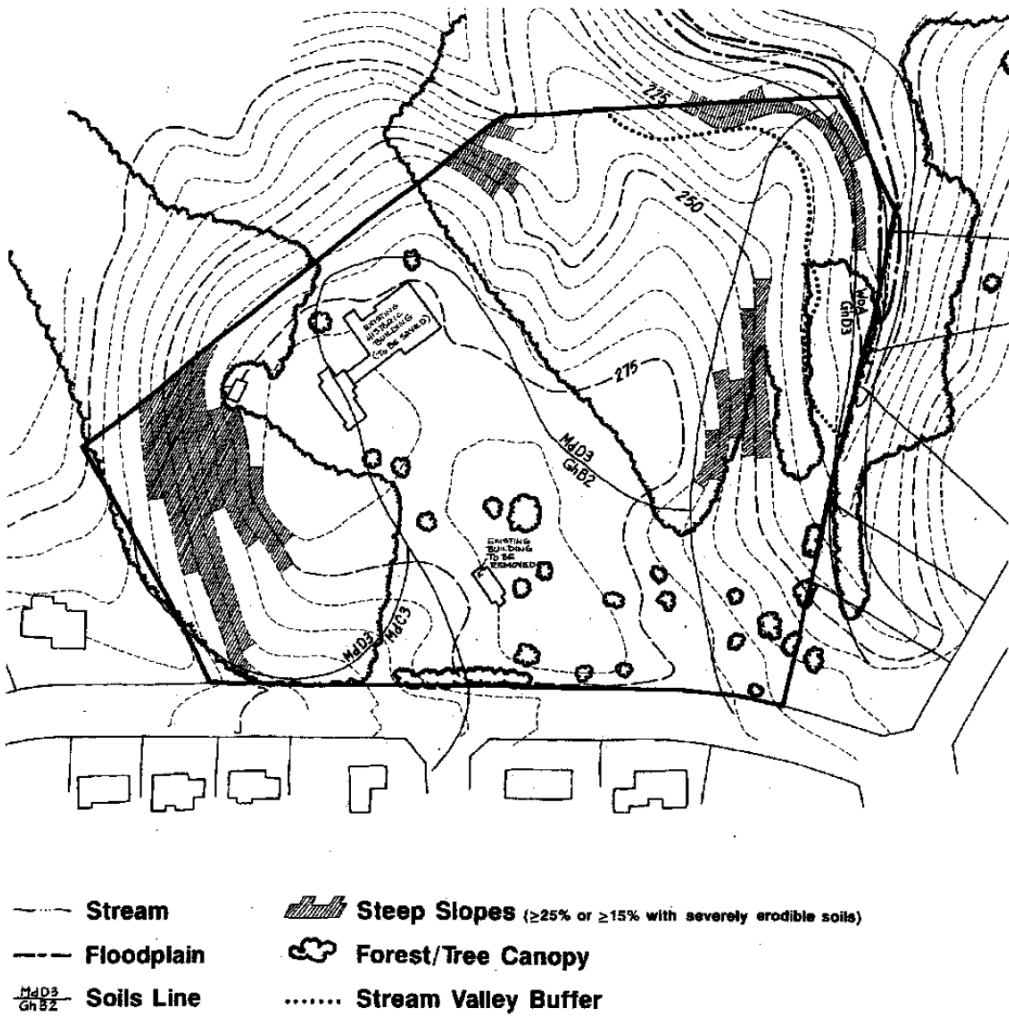
All streams shown on M-NCPPC 1"=200' topographic maps with drainage areas greater than 30 acres are assumed to have a 100-year ultimate floodplain. The floodplain must be shown on the inventory map with a 25 foot Building Restriction Line (BRL). Where M-NCPPC 100-year ultimate floodplain delineation is available, the applicant shall use and identify that information unless more accurate delineation (based on hydrologic/hydraulic computations and/or detailed topography or field survey) is provided. In the absence of M-NCPPC maps, other sources of floodplain information may include Federal Emergency Management Agency (FEMA) Flood Insurance Rate maps, Housing and Urban Development (HUD) Flood Hazard Boundary Map, and engineers' floodplain studies. Final approval of engineers' studies must be given by the Montgomery County Department of Permitting Services (MCDPS) prior to Planning Board approval of development applications.

For drainage areas fewer than 30 acres, a drainage study including delineation of flowpath and limit of flooding may be required, with concurrence from MCDPS. These cases will be determined on an individual basis.

B. Stream Buffers

Stream buffers must be shown on the inventory map in accordance with Table 1 for all perennial and intermittent streams and will include seeps and springs. In most of the County ephemeral streams do not require a stream buffer, but the seep streams should be protected as much as possible through plan layout and conditions on a voluntary basis. In the portion of the Ten Mile Creek Watershed within the 10 Mile Creek Master Plan planning area, however, protective buffers are required around ephemeral streams (see Chapter VIII for details). The slope range for use with Table 1 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 the slope in the steepest 100 foot horizontal run. This procedure is illustrated

Figure 1. Natural Resources Inventory



Wetland limited to stream channel.
Areas outside forest is lawn with specimen size trees.

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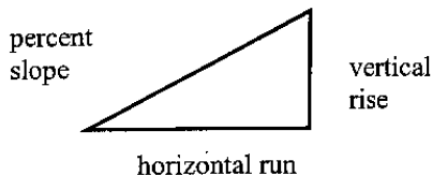
Steep Slopes ($\geq 25\%$ or ~~$\geq 15\%$~~ with severely erodible soils as defined in Chapters V and VIII)

in Figure 2. For hypothetical examples of stream buffer delineation, see Figure 3. Stream buffers will include steep slopes (as defined in section C. Topography), 100-yr floodplains, and wetlands with wetland buffer as defined by State regulations (see section D. Wetlands). Additional buffer requirements for Special Protection Areas (SPAs), ~~and~~ the Patuxent Primary Management Area (PMA), and the Ten Mile Creek Watershed within the planning area for the 10 Mile Creek Area Limited Amendment to the Clarksburg Master Plan and Hyattstown Special Study Area (hereafter referred to as the 10 Mile Creek Master Plan Amendment) are included in Chapters V, ~~and~~ VII, and VIII, respectively, of this document.

C. Topography

Slopes must be classified on the inventory map and all steep slope areas must be highlighted. A slope that has a gradient equal to or greater than 25 percent will be considered steep. See Chapters V and VIII for variations to the steep slope definition in certain Special Protection Areas and the Ten Mile Creek Watershed within the 10 Mile Creek Master Plan Amendment planning area, respectively.

"Percent slope" is defined as vertical rise in feet divided by horizontal run in feet in the *steepest* 100 foot segment multiplied by 100 percent.



$$\text{Percent Slope} = \left[\frac{\text{vertical rise}}{\text{horizontal run in the steepest 100 foot segment}} \right] \times 100\%$$

Slopes are classified as being either (1) near stream or hydraulically adjacent, or (2) hydraulically remote. The terms "near stream" and "hydraulically adjacent" generally refer to the area lying within 200 feet of a stream's bank, which is considered to be the most environmentally sensitive or critical portion of the stream valley. If the stream buffer, as determined by the steepest 100 foot section within the hydraulically adjacent area (Table 1), encompasses the toe of a steep slope, the buffer will be expanded beyond the width in Table 1 to include the entire slope. A hydraulically remote area lies outside the stream buffer.

D. Wetlands

All wetlands, as defined by the Maryland Department of the Environment (MDE), must be shown on the preliminary/site plan overlay and the NRI/FSD summary map. Identification of wetlands at this early stage of the development process is necessary to provide flexibility in protecting wetlands. Prior to the submittal of a preliminary/site plan, special exception, or mandatory referral, an applicant must have a qualified individual perform a wetland assessment. The results of the assessment should be either a line denoting the edge of wetlands on the plan overlay or inventory map, or a note stating that no wetlands exist on the site. The name and address of the individual who conducted the wetland assessment must be shown on the plans. For plans that will undergo 59-D-3 site plan review, the U.S. Fish and Wildlife Service National Wetlands Inventory maps, Maryland Department of Natural Resources (DNR) wetlands maps, and other sources designated by MDE may be acceptable at preliminary plan, to be followed by field investigation at the site plan review stage. These instances will be determined by staff on a case-by-case basis.

Table 1. Recommended Stream Buffer Widths* by Slope Range and State Water Use Designation** (expressed in feet from the stream bank) ([For sites in the Ten Mile Creek Watershed within the 10 Mile Creek Master Plan Amendment planning area, see Chapter VIII](#))

Slope Range (%)	Use I/I-P (Water Contact Rec. and Aquatic Life)	Use III/III-P (Natural Trout Waters)	Use IV/IV-P (Recreational Trout Waters)
0 to <15	100	150	125
15 to <25	125	175	150
25 and greater	150	200	175

*Stream buffer widths may be greater if floodplains, wetlands, or steep slopes extend beyond the buffer line, or as noted in Section VII. In agricultural zones, the requirements for the buffer may be waived when the land will be used for farming. This waiver will be conditioned upon the applicant getting an approved soil and water conservation plan from the Montgomery Soil Conservation District. These instances will be determined on a case-by-case basis.

** Stream Water Use will be determined by the MDE Water Use designation (for definition, listing, and map see Glossary of Terms and Appendix A.)

NOTE: These buffers apply to intermittent and perennial streams only. Plans located in Council-designated Special Protection Areas are subject to the guidelines specified in Chapter V. Plans located in the Patuxent River watershed will be subject to Primary Management Area guidelines (Chapter VII) in addition to the stream buffer widths above. [Plans in the Ten Mile Creek Watershed within the 10 Mile Creek Master Plan Amendment Planning Area are subject to stream buffers as detailed in Chapter VIII.](#)

Additional sources of information on wetlands include functional wetland assessments conducted by M-NCPPC staff on selected watersheds in the County and the Digital Ortho Quarter Quad (DOQQ) wetland maps recently produced by the state in cooperation with M-NCPPC based on updated aerial photography.

Wetland buffers based on the State regulations will be incorporated into the stream buffer described in section B. The State mandates a minimum 25 foot buffer around all wetlands, with expansion up to 100' where adjacent areas contain steep slopes or highly erodible soils. These guidelines also include a larger minimum buffer for wetlands on small headwater streams in sensitive Use III and N watersheds (50 foot and 40 foot, respectively). In addition, the State requires a minimum 100 foot buffer around wetlands of special State concern. Montgomery County contains twelve wetlands unique enough to be designated as wetlands of special State concern. These twelve wetlands include: the C&O Canal bottomland, Germantown Bog, the Great Falls floodplain, the Great Falls National Historic Area, Little Bennett Regional Park, Little Falls, McKee-Beshers West Swamp, the Potomac River at Croyley, Puller Marsh, Sycamore Landing on the Potomac riverside, Unit 1 Spring, and the Violets Lock floodplain. (See COMAR 26.23.01.04 for more information.)

Table 2 shows the recommended wetland buffer widths by State water use categories, stream order, and other sensitivity factors. See Appendix A for a definition of State water use categories and Appendix B for a definition of stream order. See Figures 4 and 5 for illustrations of wetland and stream buffers. Additional wetland buffer requirements for Special Protection Areas (SPAs) [and the Ten Mile Creek Watershed within the 10 Mile Creek Master Plan Amendment planning area](#) are included in Chapters V and VIII, respectively, of this document.

Figure 2. Stream Buffer Determination Using Steep Slopes for a Use I Stream

Cross Section Number	Maximum Slope (steepest 100 feet)	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

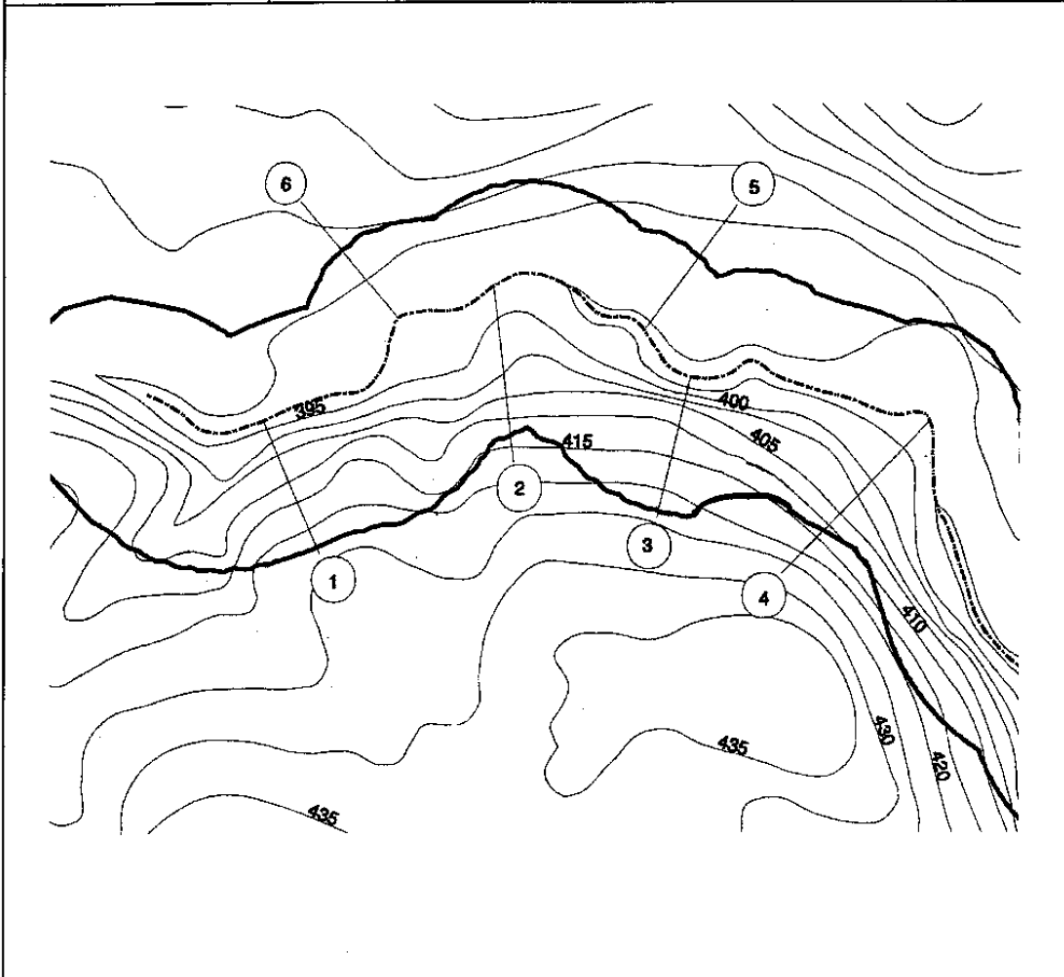
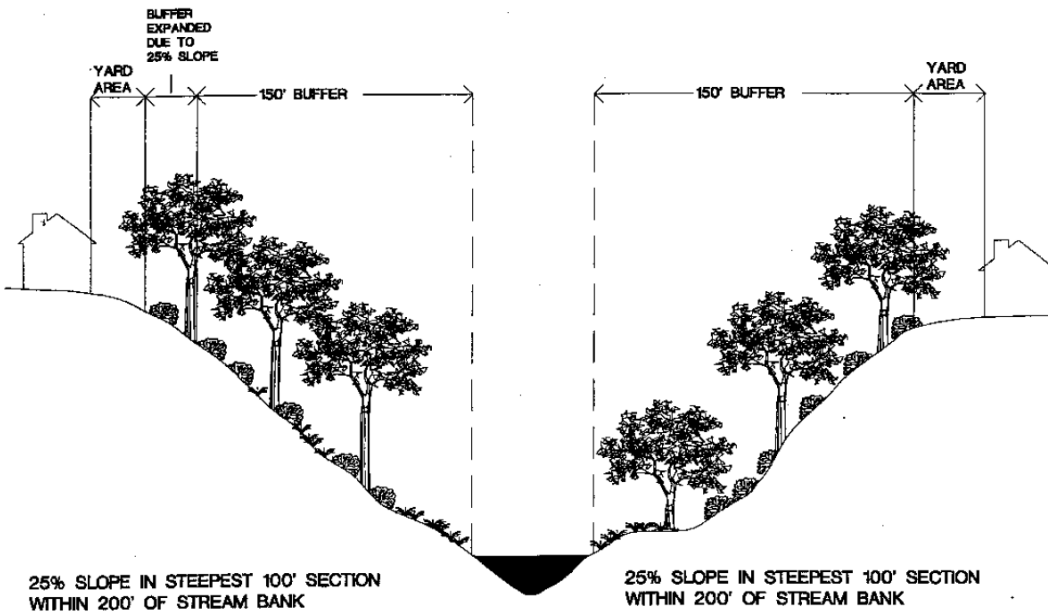
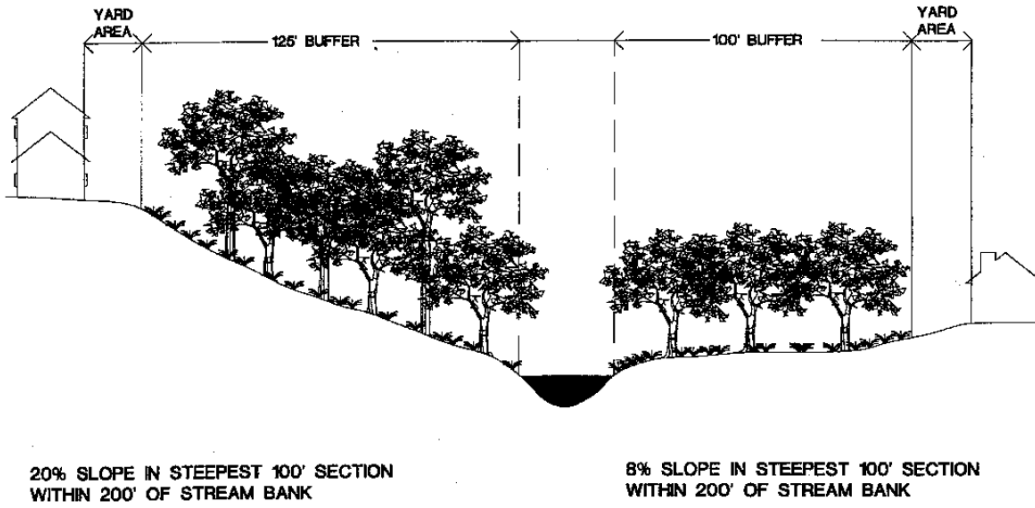


Figure 3. Hypothetical Subdivision with Stream Buffer for a Use I Stream

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E. Forest and Trees

Existing forest and tree cover determined from recent aerial photos must be shown on the NRI/FSD inventory map as a circumferential line around all forest and tree stands that includes the outer perimeter of the branches of the individual trees.

A detailed delineation of forest and trees within these boundaries must also be provided. The requirements and methodology for this delineation are contained in *Trees, Approved Technical Manual* adopted as part of the Montgomery County Forest Conservation Law.

F. Unsafe and Unsuitable Land (Soils)

Environmentally sensitive site design depends on knowledge of the nature and degree of constraints and opportunities offered by a given site. Identification of unsafe or unsuitable land is an integral part of this analysis, both from the standpoint of providing safe and habitable buildings, and for providing protection and conservation of natural resources such as streams, wetlands, floodplains, forests, and trees. The primary reasons for classifying land as unsafe or unsuitable for development are problems with soils/geology, topographic constraints, and surface and subsurface water hazards.

In the past, there have been instances where failure to recognize existing soils constraints have resulted in buildings that experience severe flooding, wetness problems and/or, over the long run, structural problems. Therefore, soil boundaries must be identified on the inventory map. In addition, development limitations must be provided either in a separate report or as a note on the plan drawing. Severely limited areas must be highlighted on the plan drawing. Soils with severe limitations for development are those that have one or more of the following characteristics as identified 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):

- Seasonal high water table
- Subject to flood hazard
- Poor drainage
- Wetland/hydric soil conditions
- High shrink/swell potential
- Shallow depth to bedrock
- Excessive slopes
- High susceptibility to erosion

One of the most common of these characteristics in Montgomery County is highly erodible soils. Highly erodible soils are those listed as having a "severe hazard of erosion" in the 1995 *Soil Survey of Montgomery County* (see Appendix C for a complete list of highly erodible soil types). Erodible soils on slopes over 15% must be delineated on the NRI and highlighted for potential inclusion in the protected areas of the site.

Table 2. Recommended Buffers for Wetlands, Springs and Seeps Outside SPAs ([For sites in the Ten Mile Creek Watershed within the 10 Mile Creek Master Plan Amendment Planning Area, see Chapter VIII](#))

Stream Use & Order	Wetlands of Special State Concern *	Wetlands with Steep Slopes **	Wetlands with Erodible Soils***	Other Wetlands
Use III, First & Second Order Streams	100'	50-100'	50-100'	50'
Use III, Third & Higher Order Streams	100'	25-100'	25-100'	25'
Use IV, First & Second Order Streams	100'	40-100'	40-100'	40'
Use IV, Third & Higher Order Streams	100'	25-100'	25-100'	25'
Use I, First & Second Order Streams	100'	25-100'	25-100'	25'
Use I, Third & Higher Order Streams	100'	25-100'	25-100'	25'

NOTE: Isolated farm ponds, existing storm water management ponds or man-made drainage ditches are exempt from these expanded buffer recommendations. See Appendix A for a definition of State Water Use designations and Appendix B for a definition of stream order.

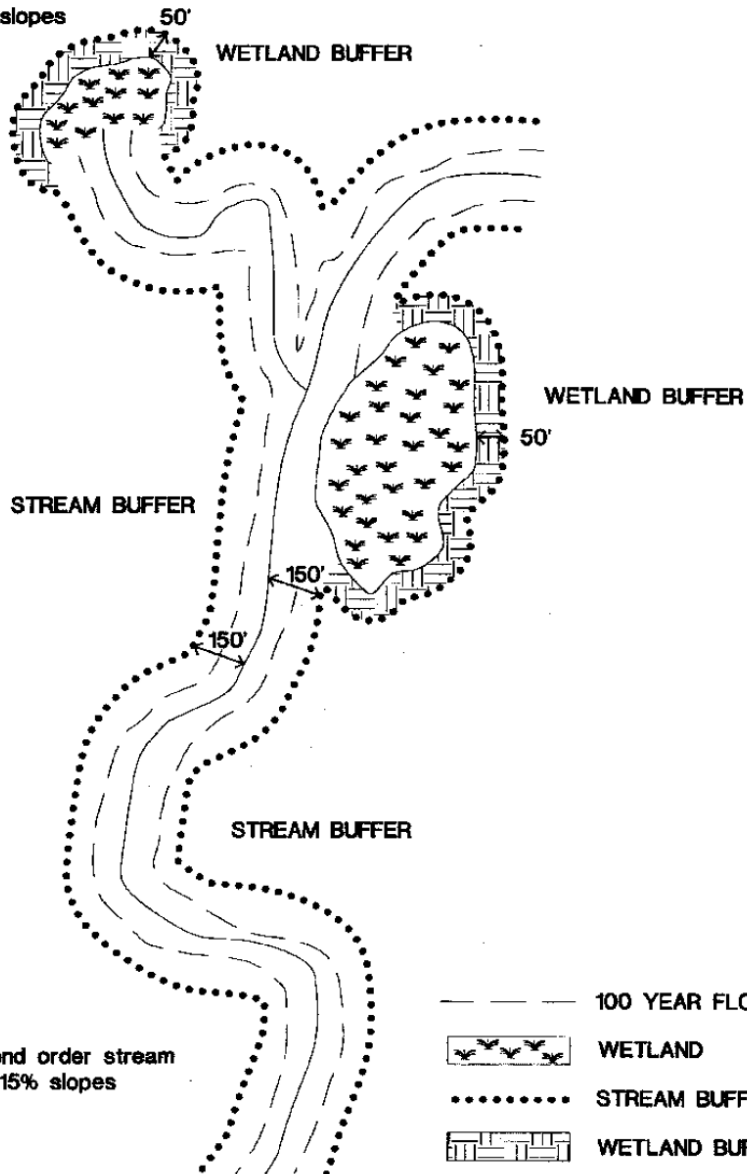
• Wetlands of special State concern, as identified by the Maryland Department of the Environment and the Maryland Department of Natural Resources, are subject to a minimum 100-foot buffer by State regulations.

** Buffer for wetlands adjacent to steep slopes will be expanded to include the steep slopes up to 100 foot maximum. For wetlands outside SPAs, steep slopes are defined as 25% or greater on the steepest 50 feet within the 100 feet adjacent to the wetland.

*** Buffer for wetlands adjacent to erodible soils will be expanded to include the erodible soils up to 100 foot maximum. Erodible soils are those soils classified as having a severe hazard of erosion in the soil profile descriptions of the *Soil Survey of Montgomery County* (July 1995), published by the Natural Resources Conservation Service (formerly SCS) (see Appendix C).

Figure 4. Illustration of Stream Buffers in a Use III Watershed with Wetlands

USE III - First order stream
0 - 15% slopes



USE III - Second order stream
0 - 15% slopes



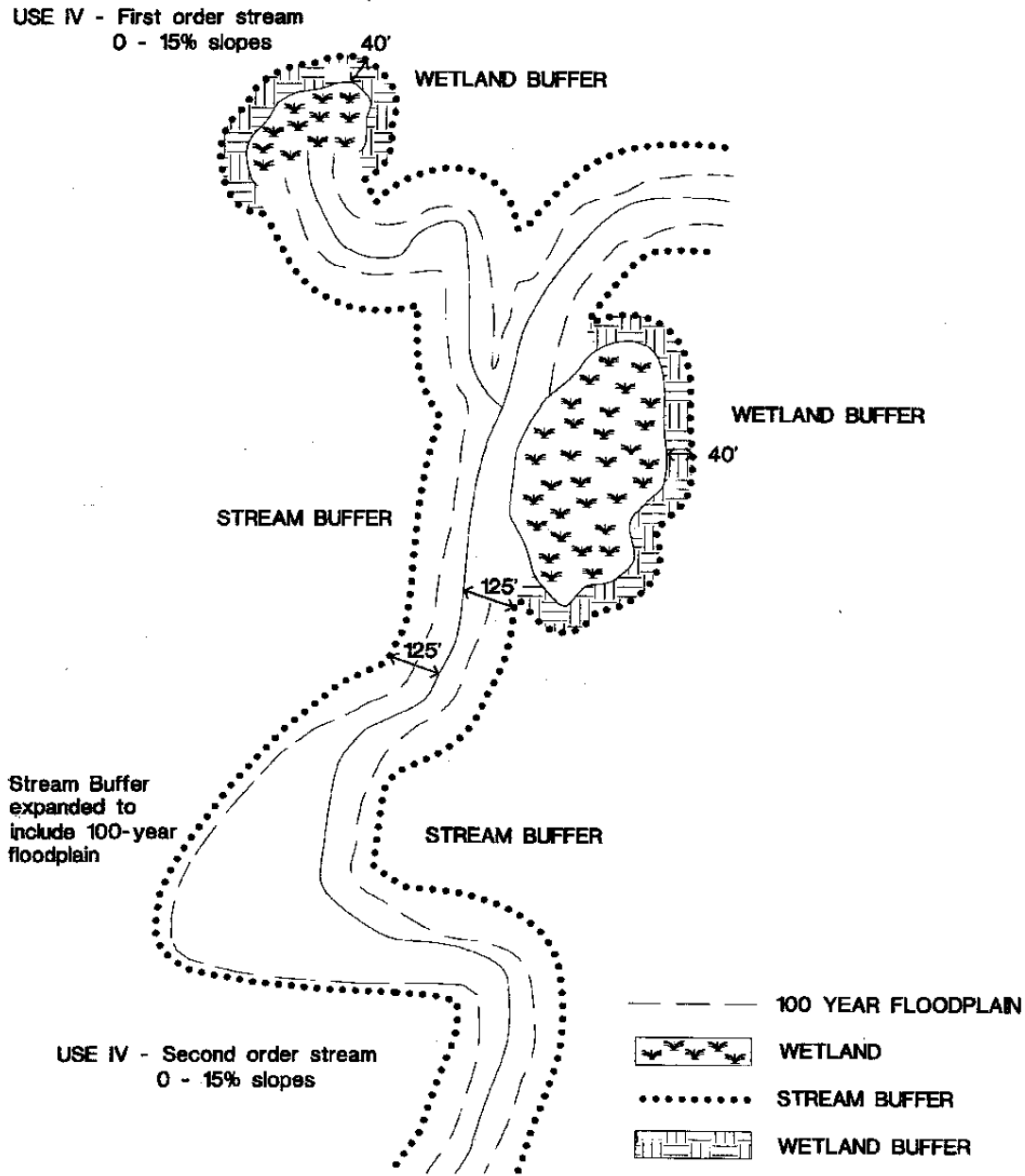
- 100 YEAR FLOODPLAIN
-  WETLAND
- STREAM BUFFER
-  WETLAND BUFFER

Figure 5. Illustration of Stream Buffers in a Use IV Watershed with Wetlands and Floodplain



G. Danger Reach/Dam Break

M-NCPPC, in consultation with MCDPS and the Maryland Water Resources Administration (WRA), incorporates danger reach/dam break analysis in the NRI submittal in order to identify relevant land use issues early in the process, to protect existing structures against dam failures from new ponds, and to protect proposed subdivisions against an existing or proposed ponds' dam breach. (For proposed ponds, danger reach/dam break information, as described in this section, should be submitted with the preliminary/site plan.)

For all development applications that have a dam, subject to dam breach analysis on site, or where the property is one mile or less downstream of a dam, an applicant must show the danger reach (area inundated by the dam break flood), footprints of existing structures, and spot danger reach water surface elevations on the inventory map. MCDPS shall verify this information. M-NCPPC has maps showing the danger reaches for Little Seneca Lake, Lake Needwood, and Lake Frank.

H. Threatened and Endangered Species and Species in Need of Conservation

If identified during the development review process, the habitat location of flora and fauna that are designated as rare, threatened, endangered, in need of conservation, or as a watchlist species (as designated by the Maryland Natural Heritage Program, Department of Natural Resources), must 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 that can be submitted with the NRI map.

Environmental Planning staff will work with DNR and the M-NCPPC Parks Division to determine any special buffering measures to help protect known populations of such species and/or their sensitive habitat areas.

IV. GUIDELINES FOR DEVELOPMENT

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In Montgomery County, protecting and improving the water quality and ecological health of the County's streams is a major planning goal. This goal is particularly important because the County is part of the Chesapeake Bay watershed. Preservation and clean-up of the Bay is a major State priority. Therefore, the environmental guidelines for development are largely based upon the principles of comprehensive watershed and stream valley management.

These guidelines have been developed with consideration of existing policies and practices in other jurisdictions to remain consistent with these other areas. Additionally, these guidelines attempt to consolidate and coordinate environmental site development issues that impact and are impacted by land use decisions. These guidelines are intended to promote and encourage interagency cooperation at the earliest planning stage possible.

The following guidelines will be applied to protect sensitive environmental features on development plans, as identified by the Natural Resources Inventory. They will be the basis for formulation of staff recommendations to the Planning Board.

A. Stream Valley Protection

The slope classification system and stream buffer widths outlined in ~~section~~ Chapter III are the basis for the following recommended guidelines that address stream buffers (including hydraulically adjacent slopes, hydraulically remote slopes, and approved clearing and grading within these areas or that affects these areas). The guidelines are designed to provide greater protection, through use of stream buffers, for the more environmentally sensitive areas.

1. Recommended Guidelines For Stream Buffers

- a) Streams, natural surface springs, and seeps will be maintained in a natural condition so that the existing 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 infrastructure uses, bikeways, and trails found to be necessary, unavoidable, and minimized by the Park and Planning Department environmental staff working closely with the utility or lead agency.
- c) Sediment and erosion control facilities are allowed as a temporary use in unforested areas of the stream buffer when DPS finds that performance of the overall site sediment control system will be measurably improved by placement of a facility at that location. At a minimum, grading must be at least 25 feet from the stream bank, outside wetlands and their State-defined buffer, and outside forest and associated critical root zone areas.
- d) Stormwater management (SWM) facilities are generally 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, maximized long-term effectiveness of 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. As a general rule, minimized buffer intrusions are allowed for construction of suitable SWM facilities or non-erosive storm drain outfalls, and unavoidable and consolidated sanitary sewer connections.

A SWM facility may be allowed within the stream buffer area on a case-by-case basis. The following factors will be considered by DPS and M-NCPPC staff in the evaluation of which facilities or other Best Management Practices (BMPs) may be appropriate in the buffer:

- (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 (forest, wetlands and their State-designated buffers, floodplain, steep slopes, and habitat for rare, threatened, and endangered species with their associated protection buffers)
- (4) Extent to which the SWM facility 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; and *or* the reduction of numerous smaller less efficient structures outside the buffer
- (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 predevelopment 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

M-NCPPC and DPS Water Resources staff will evaluate SWM alternatives that provide effective SWM in a manner closest to the preferred use of the buffer as a stable forested area. The two agencies 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 environmental benefit than that used for the SWM facility and not otherwise protected, may be required as a replacement buffer.

- e) Small amounts of clearing and grading for other purposes within the stream buffer (such as paving for bikeways) may be recommended for approval by staff on a case-by-case basis so long as the modification is consistent with a comprehensive approach to protecting areas that are critical to preserving or enhancing streams, wetlands, and their ecosystems. The applicant shall provide rationale for stream buffer modifications addressing at a minimum the factors below. The extent to which the proposal meets all the following factors will form the basis for staff recommendations.
 - (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, wetlands and their state designated buffers, floodplain, 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 tieouts to existing grades, slope stabilizing BMPs, etc.).
 - (5) The plan design provides compensation for the loss of buffer function.

In reviewing buffer compensation proposals, staff will consider such options as buffer averaging, enhanced forestation, bioengineering practices, and other environmentally beneficial techniques. Buffer averaging provides environmentally-comparable on-site area outside the delineated stream buffer in exchange for the allowance of encroachment elsewhere in the delineated buffer. The concept of enhanced forestation (as described in detail in Chapter V, section C) goes beyond the county legal requirements for forest conservation to enhance existing riparian forest or to accelerate the creation of healthy mature forest in afforestation/reforestation areas.

- f) Only unavoidable road and utility crossings will be permitted in the stream buffer when it is clearly demonstrated that no feasible alternatives exist, and every effort is made to locate road alignment and/or utilities to create the least disturbance to existing vegetation, grade, wetlands, trout spawning areas in Use III watersheds, etc.

Where feasible, utility easements must be set back a minimum of 50 feet from all stream banks *or* outside wetlands and their State-defined buffers, whichever provides more protection. In-stream placement of sediment control devices, stream crossings, and channel modifications must be avoided whenever possible.

Multiple utility, bikeway, and trail rights-of-way within the buffer should be consolidated to minimize buffer disturbance. Reduced or overlapping right-of-way and utility easements should be used where feasible.

- g) 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 strongly discouraged. Activities such as composting or topsoil stockpiling that are necessary to restore an area within a utility easement or temporary sediment control area may be approved on a case-by-case basis prior to approval of the plan when no other alternative is available. These same activities may be approved by MCDPS, in consultation with Park and Planning Department staff, after approval of the plan and prior to issuing the sediment control permits.
- h) Septic fields are prohibited within 25 feet of slopes greater than 25 percent (MCDPS Health Regulation).

- i) Septic fields and reserve fields must be set back to keep the septic field outside the stream buffer. Current County regulations requiring septic field setbacks from streams, steep slopes, water supply reservoirs, etc., must also be met.
- j) No sewage disposal system may be located within 300 feet of the normal high water level of a water supply reservoir, or within 200 feet of the banks of any stream that feeds therein (MCDPS Health Regulation).

2. Recommended Guidelines For Steep Slopes Outside the Stream Buffers (Hydraulically Remote)

- a) Septic fields and reserve fields are prohibited on slopes greater than 25 percent (MOE and County regulations).
- b) To the extent possible, 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 on a case-by-case basis, where the developer can demonstrate that safety, County road standards, storm drainage/stormwater management, erosion and sediment control, engineering, tree preservation, soil stabilization, design, and planning issues are satisfactorily addressed.

3. Recommended Guidelines for Approved Clearing and Grading in Stream Buffers and Hydraulically Remote Slopes

- a) All clearing and grading activities must adhere to the most recent Maryland State standards and specifications. Furthermore, it is strongly recommended that phased clearing and grading be used whenever feasible. In sensitive watershed areas (Use III/III-P, IV/IV-P, and high quality I/I-P streams), phased clearing and grading may be required for plan approval by Park and Planning Department staff in consultation with MCDPS. Close coordination shall be maintained by M-NCPPC staff with the Washington Suburban Sanitary Commission (WSSC) to reduce potential additional disturbance from water and sewer line construction. All disturbed areas should be revegetated as soon as possible as required by the *Maryland Standards and Specifications for Sediment and Erosion Control*. Emphasis should be placed on reforestation of disturbed areas. In many instances, disturbed areas may need replenishment of topsoil before successful reforestation or revegetation can be implemented. Areas without suitable existing vegetated buffers (e.g., cultivation) should be stabilized or seeded prior to grading activity.
- b) Stormwater management concept plans that address water quantity and quality must be approved by MCDPS unless a waiver is granted. These plans should incorporate effective best management practices and respect natural stream channels, existing aquatic life, and stream habitat.
- c) The location, design and construction of new development and transportation facilities will be carefully reviewed to avoid introduction of toxic materials into stream systems.
- d) In instances where a master plan or County-wide program identifies a need for water quality or other monitoring, the Park and Planning staff may recommend stream monitoring to

evaluate impacts of development proposals on the environment. In instances where the Planning Board makes stream monitoring a condition of plan approval, the monitoring will be conducted by the applicant with the guidance and oversight of the M-NCPPC, in consultation with the Department of Environmental Protection, to assure efficient, consistent and comprehensive stream monitoring efforts. Recommended monitoring protocols will follow the sampling procedures developed by the County Biological Monitoring Work Group as presented in the *Montgomery County Water Quality Monitoring Program Stream Monitoring Protocols* (available from MCDEP).

B. Wetland and Floodplain Protection

1. Wetlands

The wetland guidelines are based on the Maryland 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 guidelines will be followed during review of plans:

- a) Wetlands will be regulated in accordance with State (Code of Maryland Regulations {COMAR} 08.05.04) and Federal Nontidal Wetlands Regulations (Secs. 401 & 404 of the Clean Water Act).
- b) A minimum buffer width of 25 feet will be established around nontidal wetland areas. The buffer will be expanded up to 100 feet around wetlands of special State concern and around wetlands with adjacent areas containing steep slopes or highly erodible soils as described in Table 2 (page 12). When a wetland buffer extends beyond the stream buffer that would be required according to Table 1 (page 8) of these guidelines, the stream buffer will be expanded to the wetland buffer line. For example, see Figures 4 and 5. Additional buffers may be required in Special Protection Areas (see Chapter V for details), and in the Ten Mile Creek Watershed within the 10 Mile Creek Master Plan Amendment planning area (see Chapter VIII for details).
- c) The Park and Planning Department evaluates proposed wetland impacts under the federal and State avoidance guidelines 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

d) Wetlands and their associated buffer areas must 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 crossings, water and 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 performance/ effectiveness of the facility (see section A.I.d on page 18)
- (3) Park projects for wildlife and habitat enhancement
- (4) Wetland enhancement projects
- (5) Bikeways and trails, when it can be demonstrated that a satisfactory connection cannot be made otherwise

e) Proposed alterations to areas designated as wetlands must be reviewed and approved by MDE, DNR, and the U.S. Army Corps of Engineers (U.S. ACOE), as appropriate, prior to commencement of any alteration activities. Park and Planning 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

It is strongly recommended that conceptual approval of such alteration be received from these agencies prior to development of a site plan required by Section 59-D-3.

2. Floodplains

Floodplain guidelines are based on existing State and County regulations that govern development activities in these areas.

- a) No building/structure will be permitted within the 100-year ultimate floodplain or its associated 25 foot Building Restriction Line (BRL), except as permitted in Chapter 19 of the County Code.
- b) Per Section 50-32 of the Subdivision Regulations, the Planning Board must restrict subdivision for development of any property that lies within the 100-year ultimate floodplain.
- c) Any construction on platted lots that proposes building within the 100-year ultimate floodplain or its associated 25 foot building restriction line will be governed according to the regulations set forth in the sections of the County Code that relate to floodplain districts. A person must not engage in any land-disturbing activity within the floodplain district or within 25 feet of any boundary of the district unless MCDPS issues a floodplain district permit or exemption from the permit requirement.

- d) The extent of floodplains, must be delineated on the record plat, to ensure that the public and affected homeowners are informed, and must include metes and bounds description for the floodplain boundaries.
- e) When the floodplain extends beyond the stream buffers that are defined in Chapter V, Table 1, or Chapter VIII, Table 7 ~~would be required according to Table I~~ in these guidelines, the stream buffer will be expanded to include the floodplain. For example, see Figure 5.

C. Forest and Tree Conservation

The requirements for forest and tree conservation are contained in the Montgomery County Forest Conservation Law. A Forest Conservation Plan is required as part of the preliminary/site plan and special exception and mandatory referral applications. Guidelines for determining priority areas and details for submission of Forest Conservation Plans are included in the most recent version of *Trees: Approved Technical Manual*.

D. Unsafe and Unsuitable Land Protection

1. Management Strategies

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. Plans showing development on highly erodible soils will be required to propose management strategies in the following order of priority:

- a) Avoidance and minimization of disturbance, including expansion of stream buffer
- b) Environmentally sensitive site design
- c) Restoration/afforestation and vegetative stabilization
- d) Best management practices including expansion of stream buffer and cluster design
- e) Innovative and stringent use of sediment and erosion control measures

Development should avoid areas of the site that contain soils with severe limitations. In some cases, development may be prohibited or restricted in these areas 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.

2. Geotechnical Reports

When no other options exist and development on problem soils cannot be avoided, a geotechnical report, prepared by a certified geotechnical engineer, may be required. This report will describe the soils limitations and the engineering measures necessary to protect against potential development hazards and impacts, as required by MCDPS, the lead agency for problem soils. When staff is convinced that suitable measures have been identified that will mitigate the soils constraints over the long-term, development will be allowed. An agreement between the builder/developer of the property and the M-NCPPC will be required to ensure that development occurs according to the recommendations of the report.

E. Danger Reach/Dam Break

It is the policy of the Department of Permitting Services and the Planning Board to prohibit all dwelling units inside the area potentially inundated by the Dam Break Flood (Danger Reach). In order to ensure that a minimal risk is posed to public well-being and property, the following techniques are employed where appropriate:

- Use of zoning options that require adequate open space for protection of the danger reach
- Use of cluster provisions in the Zoning Ordinance
- Recommending park dedication, park acquisition, and conservation easements
- Applying regulatory review policies to minimize flood risk

To ensure that the public is informed as to the existence of a dam and its potential to break, the danger reach area will be delineated on the record plat, with reference elevations at critical locations.

F. 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) is identified on a development site, the applicant must protect these areas unless an alternate plan is approved by the State and/or M-NCPPC. This includes the applicant identifying any critical habitats necessary to sustain these species that may be affected by development, establishing appropriate buffers, and devising programs for their long-term protection, in conjunction with the Maryland Department of Natural Resources. Initial identification of significant species on a subject property can be obtained from the Natural Heritage Program of DNR (see section III.H, page 16, for details).

G. Site Imperviousness Considerations

Minimizing imperviousness to levels consistent with achievement of zoning densities is one of the best methods for assuring protection of water resources. Evidence clearly indicates a causal relationship between the overall level of watershed imperviousness, water quality, and the health of the aquatic community within the receiving stream.

There are two different levels of control on the amount of impervious area: (1) the County Council mandated imperviousness limits, or caps, that function as a regulatory requirement, and (2) the implementation of general policy contained in master plans, functional master plans, and the water & sewer systems plan that calls for reduced imperviousness in the plan's land use policies and objectives.

1. Impervious Limited (Capped) Areas

Caps specifying maximum levels of imperviousness on a particular property can only be applied after Council approval of such caps as part of an approved and adopted area master plan, watershed plan, Comprehensive Water Supply and Sewerage System Plan, or Council resolution designating a Special Protection Area. Compliance with caps must be documented and enforced during the plan review process. ~~As of October 1999,~~

The following areas outside Special Protection Areas are subject to imperviousness limits. Exact locations are specified in the appropriate master or functional plan.

- a) Kingsview Village Analysis Area Two (KI-2) and Neelsville Village Analysis Area One (NE-1) in Little Seneca Creek in Germantown

Overall, development in these master plan analysis areas should not result in more than 20 percent total impervious surface.

- b) Patuxent Primary Management Area (PMA)

Overall imperviousness within the PMA transition area of a development site should not exceed 10 percent. If a higher imperviousness is desirable in the transition area to maintain community character, achieve compatibility and/or accomplish master plan goals, imperviousness may be averaged over the entire site (i.e., not to exceed 10 percent on the entire site). (For additional imperviousness guidance on the Patuxent PMA, see Chapter VII.)

- c) Clarksburg East Environmental Overlay Zone (See chapter VIII and Figure 11)

New development on properties greater than 1 acre in size in the Ten Mile Creek watershed east of I-270, and outside of the Clarksburg SPA, is subject to a 15% imperviousness cap.

- d) Clarksburg West Environmental Overlay Zone (See Chapter VIII and Figure 11)

Development on properties greater than 2 acres in size in the Ten Mile Creek watershed west of I-270, and outside of the Clarksburg SPA, is subject to a 6% imperviousness cap, except for County-owned properties, which cannot add imperviousness (0% cap).

For areas within SPAs that are subject to imperviousness limits, see Chapters V and VIII.

2. Minimizing Imperviousness Levels Outside Impervious Limited Areas

In SPAs and planning areas where adopted policy documents suggest minimized imperviousness, development on a site should be designed to reduce impervious surfaces wherever possible. In addition to the applicant's site design efforts, implementation agencies and utilities should consider all options for minimizing impervious surfaces, particularly where sensitive water resources have been identified for special protection.

Examples of techniques to minimize imperviousness and enhance groundwater recharge are shown below. These techniques can be used in areas with imperviousness caps or any other area of the County where reduced imperviousness is desirable. This list is not intended to be comprehensive; see the resources in footnote 1 for additional techniques¹.

Comment [SM3]: Note: this text is tentatively inserted, pending action by the County Council on a proposed Clarksburg SPA Resolution. If the proposed changes in that Resolution to create a new Ten Mile Creek SPA and make the SPA boundary coincide with the Overlay Zones are approved by the Council, the following new text (shaded) will not be needed, and will not be inserted.

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- a) Reduce parking imperviousness by limiting parking spaces to the extent possible; using angled parking and smaller parking stall, or sharing use of parking areas among nearby land uses.
- b) Leave necessary overflow parking spaces unpaved.
- c) Utilize natural or informal paths and walkways when such are necessary in the stream buffer.

¹*Site Planning for Urban Stream Protection*, Metropolitan Washington Council of Governments, December 1995.

Imperviousness Surface Reduction Study, City of Olympia, WA, 1994.

- d) Exercise cluster options and/or maximize use of higher density unit types.
- e) Preserve areas with highest infiltration capacity for potential use as an infiltration facility or natural recharge area.
- f) Implement shared driveways, structured parking, multi-story and/or multi-use office/commercial/community buildings where feasible.
- g) Use narrower street and/or sidewalk sections. Provide sidewalks only on one side of the street.
- h) Construct higher buildings with smaller footprints.
- i) Use cul-de-sac donuts or culs-de-sac with reduced radii.
- j) Use swales instead of curb and gutter, and guide runoff toward pervious areas.
- k) Where higher levels of imperviousness are necessary and unavoidable, use measures that increase infiltration & reduce adverse effects of imperviousness, such as disconnecting impervious areas, reducing setbacks to shorten driveways, or more reforestation between impervious areas and water bodies.

3. Review of Proposed Individual Zoning Map Amendments, Special Exceptions, and Mandatory Referrals

The increase in intensity or imperviousness associated with a proposed land use change is a factor that may be considered in the environmental review of the above referenced processes for changing land use. The resulting effects on the receiving stream and watershed will be identified and evaluated for pertinence to the findings necessary for grant of the land use change (e.g., consistency with master plan, detriment to use and enjoyment of surrounding properties, adverse effect on health and general welfare, etc.)

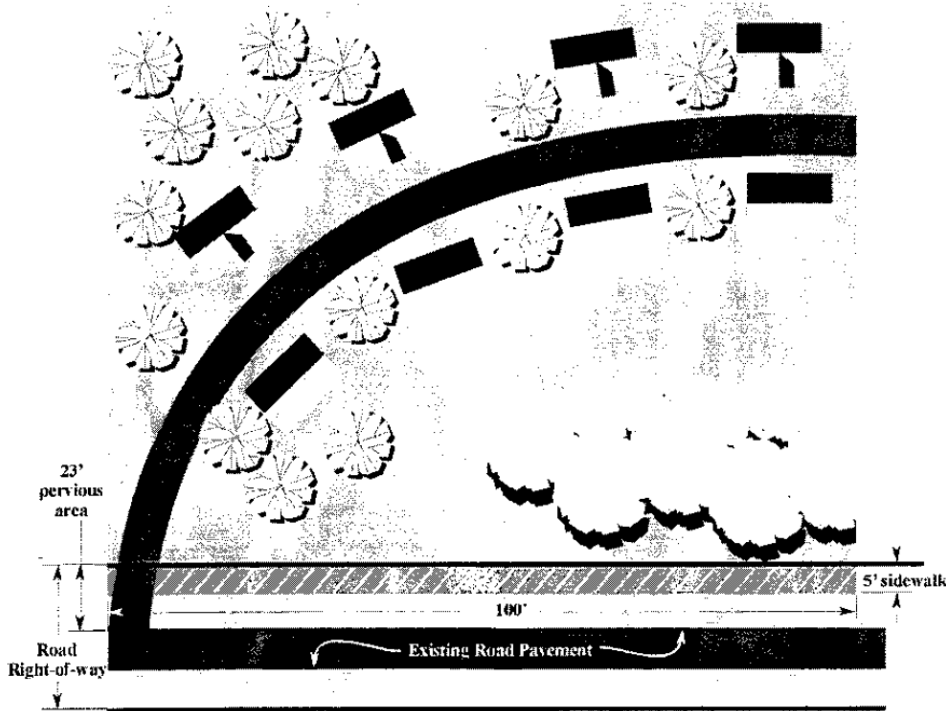
4. Guidelines for Calculating Impervious Areas Where Limits Apply

The following items are recommended for inclusion in the calculation of impervious areas:

- a) Any structure, building, patio, sidewalk, compacted gravel, pavement, asphalt, concrete, stone, brick, tile, swimming pool, or artificial turf. Impervious surface also includes any area used by or for motor vehicles or heavy commercial equipment, regardless of surface type or material, including any road, driveway, or parking area. All pavement, driveways, sidewalks and paved paths.
- b) Estimated building footprints. Use the most conservative (i.e., largest) estimates or average estimates for proposed buildings in the calculations. Each building permit or group of permits must demonstrate conformance with the established estimates by an engineer's certification.
- c) All gravel surfaces.
- d) Impervious surfaces of public improvements as required by other agencies such as DPWT and SHA along the project's roadway frontage, if contained within the watershed of interest. Examples include a new sidewalk or new turning lane along the project's frontage.

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Figure 6. Sample Calculation of Impervious Areas (not to scale)



Sample Scenario

Subject Property: 10 acres
 Proposed imperviousness: 0.99 acre within property boundaries
 Required off-site improvements: Five foot wide sidewalk constructed in road right-of-way (ROW) adjacent to property

Impervious Surfaces

On-site: 0.99 acre = 43,290 s.f.
 Off-site (sidewalk) 5' x 100' = 500 s.f.
 Total 43,790 s.f.

Gross Tract Area

Property 10 acres = 435,600 s.f.
 Part of road ROW 100' x 23' = 2,300 s.f.
 (between edge of road pavement & property boundary)
 Total 437,900 s.f.

Site Imperviousness for Proposed Subdivision

43,790 s.f. / 437,900 s.f. X 100% = 10%

For example, if a new sidewalk is required, the sidewalk area would be added to the project's total impervious area calculation, while the area between the project's boundary and the existing roadway edge would be added to the gross tract area to offset the increased impervious surface.

Sample calculation for illustrative purposes (see Figure 6):

(1) 100 linear feet of five-foot wide sidewalk required by DPWT adds 500 square feet to the overall impervious area (100 linear feet x 5-foot sidewalk width = 500 square feet).

(2) The county right-of-way for a typical master plan primary roadway (70' total ROW) contains an area 23 feet wide in pervious area on each side of the roadway. The gross tract area for purposes of impervious calculations is increased by 2300 square feet (100 linear feet of ROW with sidewalk x 23 feet of pervious area in the ROW = 2300 square feet).

(3) Thus, 500 square feet would be added to the site impervious surface area and 2300 square feet added to the gross tract area for purposes of impervious calculation.

The subject property and all dedicated lands must be included in the gross tract area for purposes of imperviousness calculation. Where improvements are required within the ROW, the gross tract area may be increased to include pervious area in the ROW, as illustrated in (d) above.

On a case-by-case basis, the Planning Board may waive the inclusion of part or all off-site impervious surfaces in a project's imperviousness calculations. Staff may make recommendations to the Board based on waiver justification presented by the applicant. The justification must demonstrate that the off-site impervious surfaces will result in a large proportion of a project's total impervious surface and that compensating BMPs are provided for the off-site impervious surface to the satisfaction of DPS.

5. Consideration of Alternative Technologies

Where variations are granted by the Planning Board to imperviousness caps for accomplishment of other public policy and planning objectives, use of extra BMPs and alternative technologies are encouraged to offset the incremental effect on the watershed.

V. SPECIAL PROTECTION AREAS (SPAs)

A. Goals and Objectives for Special Protection Areas

The County's goal in special protection areas is to protect and maintain high-quality or sensitive water resources and related environmental features in identified geographic areas where proposed land uses threaten those resources and a higher level of environmental protection is needed. This protection will be accomplished cooperatively through the control of land use, site design, and protection of environmentally sensitive areas by the Planning Board and the provision of effective design, implementation, maintenance, and monitoring of best management practices by DEP and other County agencies. Both approaches are necessary to achieve the goal of watershed and stream protection.

The Park and Planning Department objective for special protection areas is to maximize protection of natural resources in environmentally sensitive areas through site design features (such as reduced impervious areas) and use of best management practices (such as accelerated forestation and provision of expanded wetland buffers).

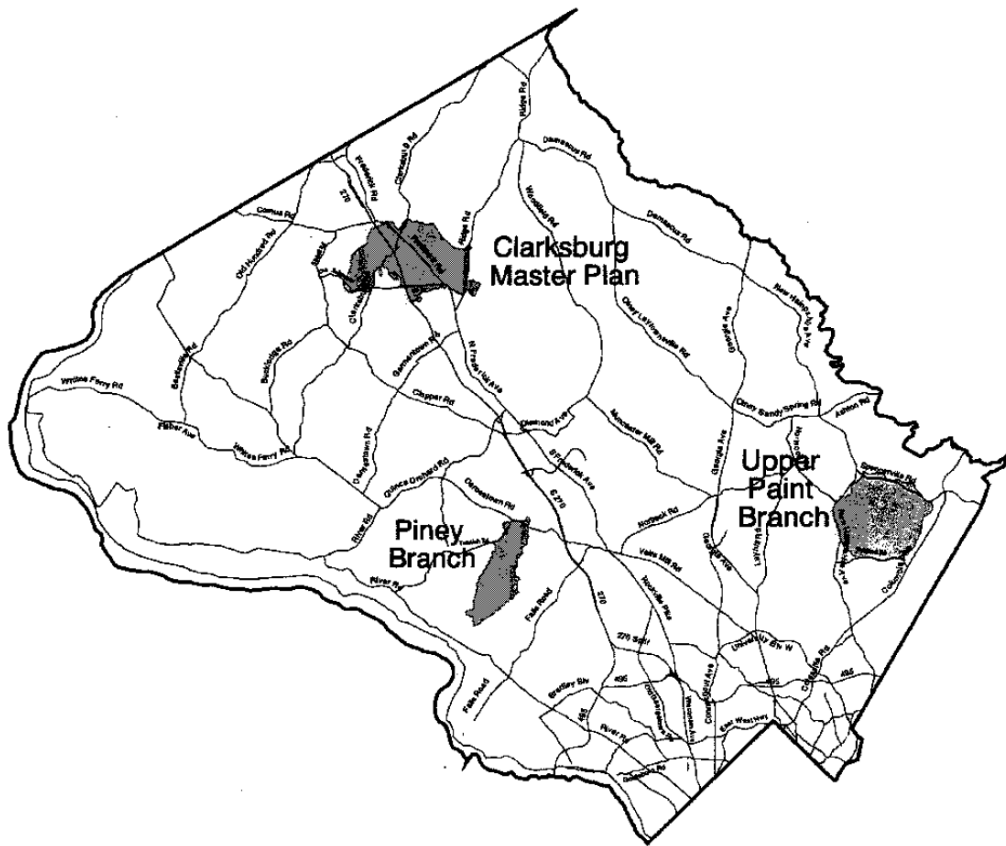
The SPA guidelines, when complemented with the County's water quality review regulations, provide a regulatory framework to accomplish these water resource protection objectives for plans reviewed by the Planning Board and department staff. The tools available to the Department to implement the objectives of special protection areas are:

- Designation of special protection area wetland buffers
- Expanded and accelerated forest conservation
- Imperviousness limitations

The additional protection from disturbance recommended for SPA wetland buffers along with forest and imperviousness provisions will help maintain the high quality characteristics and biological integrity of water resources. This protection should be utilized to better achieve the following objectives:

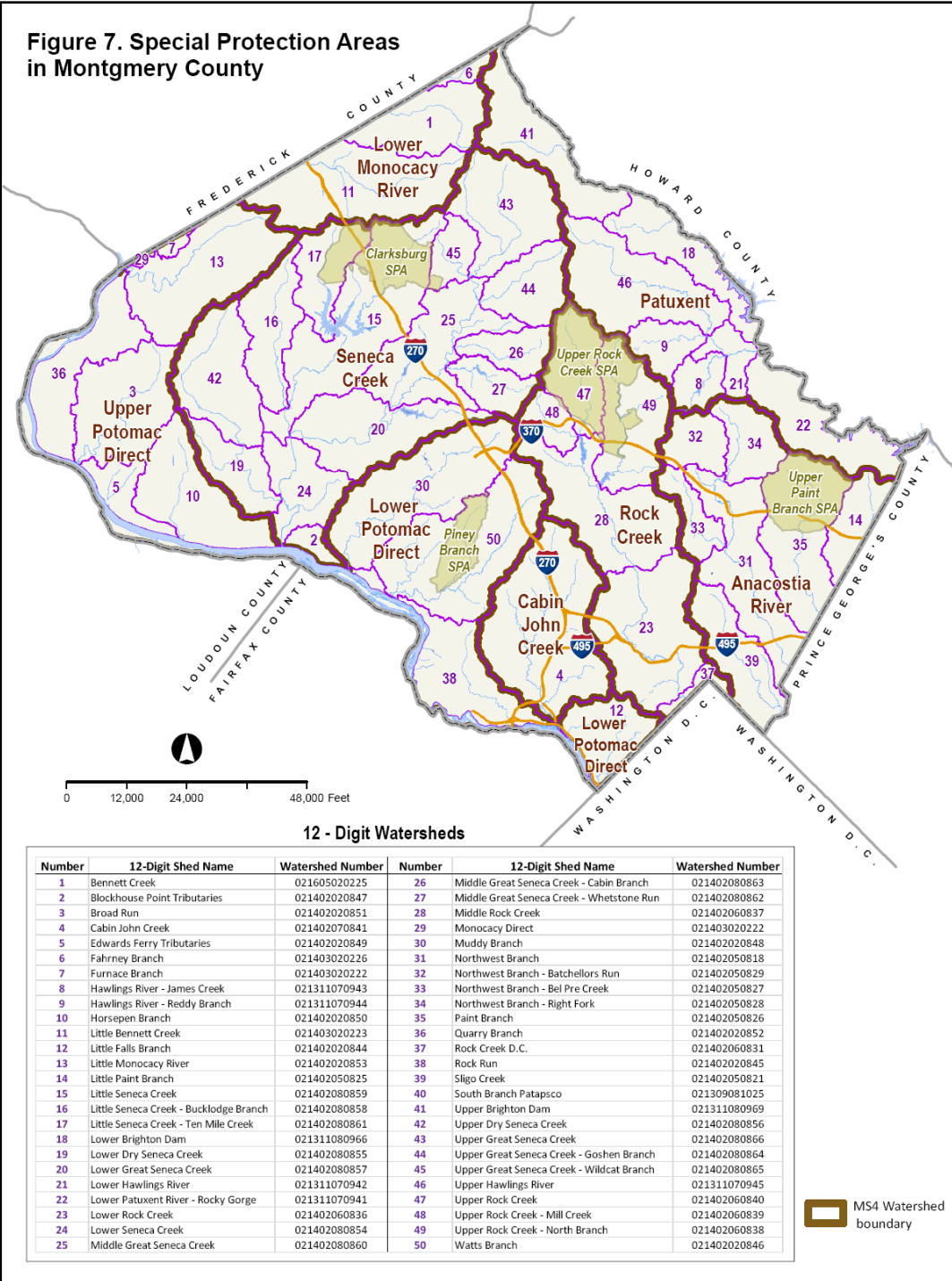
- Protect, restore, and maintain the chemical, physical, and biological integrity of streams, wetlands, springs, seeps, and other water resources
- Help maintain stream baseflow
- Provide infiltration of runoff
- Reduce erosion and control sedimentation
- Provide riparian wildlife habitat
- Provide organic matter to support the food web of aquatic ecosystems
- Provide spawning and nursery areas for aquatic life

Figure 7. Special Protection Areas in Montgomery County (as of January, 1997)



Comment [SM4]: This figure will be replaced with the following figure that was updated and approved by the Planning Board in 2013. The updated figure below will also be revised based on action taken by the Council on the proposed SPA Resolution.

Figure 7. Special Protection Areas in Montgomery County



- Filter overland and non-concentrated stormwater flows through the buffer
- Provide a separation between physical disturbance and sensitive water resources

A coordinated effort in both the public and private sector will be made to protect water resources in special protection areas. Therefore, government agencies (including MCDPWT, MCDEP, MCDPS, MNCPPC Department of Park and Planning, and WSSC) and utility companies should consider allowing flexibility and innovation to their standard design and regulatory requirements to better address watershed protection objectives in special protection areas and still achieve their statutory mission. As part of the plan review process, agency representatives on the Development Review Committee will work together, in concert with State regulatory agencies and in accordance with lead agency protocols (in place since November 1992), to maximize flexibility in site design and to cooperate with the applicant to reduce stream impacts.

Buffers to protect streams and wetlands in SPAs are defined in the following sections of the Guidelines:

- For the Ten Mile Creek watershed (much of which is included in an SPA) buffers are defined in Chapter VIII.
- For buffer guidelines in all other SPA areas, see this chapter (Chapter V).

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B. Special Protection Area Wetland Buffer

1. Rationale for Expanded Wetland Buffer

A stream ecosystem includes not only the stream channel itself, but also the wetlands, floodplains, near-stream (or riparian) area, seeps, and springs that are linked to the stream. These areas are important for maintaining stream water quality, water temperature, and biological integrity, as well as contributing to baseflow. Protection of these features is essential to the vitality and health of the local aquatic ecosystem by virtue of their function, diversity, size, or location.

Expanded buffers for wetlands in SPAs satisfies the requirement for added protection of natural features that provide a continual supply of clean, cool water to environmentally sensitive streams. The importance of wetlands, springs, and seeps as critical components of the stream ecosystem, when coupled to the high intensity of surrounding development in the SPA, create the need for expanded physical protection of these resources.

All wetlands within Special Protection Areas will be considered for application of expanded buffers² with the exception of certain created wetlands that are not hydrologically connected to a stream. The appropriate buffer width will be recommended by Park and Planning Department staff and will ~~range from 25 to 150~~ be a minimum of 25 feet, with increases beyond the minimum based on the following factors: (a) the State Water Use for the watershed, (b) stream order, (c) the presence of steep slopes or highly erodible soils, and (d) designation as a wetland of special State concern. Table 3 describes the appropriate wetland buffer widths after applying the relevant factors. See Table 7 in Chapter VIII for minimum and expanded wetland buffers in the Ten Mile Creek watershed within the 10 Mile Creek Master Plan Amendment planning area, much of which is included in an SPA (see Figure 11).

The following definition for wetlands will be used *solely* for the purposes of determining the applicability of expanded buffers in SPAs. This definition is consistent with the federal and State definition of jurisdictional wetlands as described in the 1987 *Corps of Engineers Wetlands*

²These buffers are considered "expanded" in relationship to the 25-foot State defined wetland buffer. It should be noted that this 25-foot width is a *minimum* and that the State has regulations allowing expansion.

Delineation Manual. All wetlands within Special Protection Areas that meet this definition will be subject to the expanded buffer recommendations.

Wetlands -areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions and are hydrologically connected to a stream.

The 1987 *Corps of Engineers Wetlands Delineation Manual* will be the reference for determining if an area meets the wetland vegetation, soils and hydrology criteria. The assumption will be that all springs, seeps, and emergent and forested wetlands are hydrologically connected to both groundwater and stream systems.

2. Exemptions to Expanded Wetland Buffers

Expanded wetland buffers will not be applied to isolated farm ponds, existing stormwater management ponds, and other man-created wetlands such as highway drainage ditches that are not hydrologically connected to a stream system. However, these created wetlands may be regulated by the Maryland Department of the Environment (MDE) and the U.S. Army Corps of Engineers (COE) and may have a 25 foot buffer applied to their perimeter *if MDE/COE* takes jurisdiction over these wetlands under the State Nontidal Wetlands Protection Act.

An expanded wetland buffer will not be applicable in situations where wetland soils, vegetation, or hydrology have been legally removed or altered by human activity, as in the case of prior converted croplands. (Prior converted croplands are defined by federal regulation as wetlands that have been drained, dredged, filled, or otherwise manipulated for the production of an agricultural commodity prior to December 23, 1985.) Prior converted croplands are exempt from State and federal wetland regulations.

However, prior converted croplands provide an excellent opportunity for wetland restoration. Therefore, Park and Planning staff will recommend that the area be preserved for future consideration for wetland restoration. Potential wetland restoration sites are essential to the County to offset wetland losses due to unavoidable encroachment for infrastructure associated with public and private development. These sites may be used to mitigate wetland losses in the watershed, as permitted by the Maryland Department of the Environment. Opportunities to provide an expanded buffer will be examined after wetland restoration has occurred.

3. SPA Stream Buffer Determination

To protect all components of the stream system, the SPA stream buffer will be *the outermost limit* of the areas specified below: [Chapter VIII defines stream buffers for perennial, intermittent, and ephemeral streams in the Ten Mile Creek watershed within the 10 Mile Creek Master Plan Amendment planning area, much of which lies within an SPA \(see Figure 11\).](#)

- a) Regular stream buffer widths found in Table 1 (page 8) in Chapter III (100 to 200 feet) applied from the intermittent or perennial stream bank
- b) Steep slopes where the toe of the slope starts within the stream buffer from Table 1. Steep slopes are defined as slopes equal to or greater than 25 percent. The one exception is in the Upper Paint Branch SPA, where steep slopes are defined as equal to or greater than 15 percent.
- c) 100-year floodplain
- d) Standard wetland buffer width of 25 feet

e) Expanded wetland buffer width, as described in Table 3, [and Table 7 \(see Chapter VIII\)](#). Expanded buffers are calculated

based on the following criteria. The larger of the following buffers will apply:

(1) Steep Slopes

For SPA wetland buffer determination, slopes greater than 15 percent are considered steep slopes. Steep slopes are calculated by taking the steepest 50 foot run within the 100 feet adjacent to the edge of the wetland. Buffers for wetlands with adjacent steep slopes will be expanded to the outer edge of the steep slope area up to the maximums shown in the second column of Table 3. [For wetlands in the Ten Mile Creek watershed within the 10 mile Creek Master Plan Amendment planning area, which is mostly covered by an SPA \(see Figure 11\), buffer widths are defined in Chapter VIII, Table 7.](#) The minimum buffer [for wetlands with steep slopes](#) is 60 feet, except in the headwater streams (first and second order) in Use IV watersheds where the minimum buffer is 75 feet. For Use III first and second order streams, a flat 150 foot buffer applies.

(2) Highly Erodible Soils

Highly erodible soils are defined as all soils classified as having a *severe hazard of erosion* in the soil profile descriptions of the *Soil Survey of Montgomery County, Maryland* (July, 1995), published by the Natural Resources Conservation Service (formerly the Soil Conservation Service). Wetland buffers will be expanded to include highly erodible soils up to the maximum buffer shown in Table 3. [For wetlands in the Ten Mile Creek watershed within the 10 mile Creek Master Plan Amendment planning area, most of which is included in an SPA \(see Figure 11\), buffer widths are defined in Chapter VIII, Table 7.](#)

(3) Watershed Use Category

(a) Use III/III-P Watersheds

Wetlands associated with first and second order streams will be protected by an expanded buffer of *150 feet*. (See Figure 7 for an illustration.)

Wetlands associated with third and higher order streams will be protected by an expanded buffer ranging from *25 -100 feet* based on the presence of steep slopes, highly erodible soils, or designation as a wetland of special State concern, consistent with non-SPA areas of the County and State standards.

(b) Use IV /IV-P Watersheds [\(Note: For the SPA in the Ten Mile Creek Watershed, see Chapter VIII.\)](#)

Wetlands associated with first and second order streams will be protected by a buffer ranging from *75 -125 feet* based on the presence of steep slopes, highly erodible soils, or designation as a wetland of special State concern.

Wetlands associated with third and higher order streams will be protected by an expanded buffer ranging from *25 -100 feet* based on the presence of steep slopes, highly erodible soils, or designation as a wetland of special State concern, consistent with non

Table 3. Recommended Buffers for Wetlands, Springs, and Seeps in Special Protection Areas. (See Table 7 in Chapter VIII for wetland buffers in the Ten Mile Creek Watershed within the 10 Mile Creek Master Plan Amendment Planning Area (most of which is included in an SPA see Figure 11))

Stream Use & Order	Wetlands of Special State Concern*	Wetlands with Steep Slopes**	Wetlands with Erodible Soils***	Other Wetlands
Use III, First & Second Order Streams	150'	150'	150'	150'
Use III, Third & Higher Order Streams	100'	60-100'	25-100'	25'
Use IV, First & Second Order Streams	100'	75-125'	75-125'	75'
Use IV, Third & Higher Order Streams	100'	60-100'	25-100'	25'
Use I, First & Second Order Streams	100'	60-100'	50-100'	50'
Use I, Third & Higher Order Streams	100'	60-100'	25-100'	25'

NOTE: Isolated farm ponds, existing stormwater management ponds or man-made drainage ditches are exempt from these expanded buffer recommendations. The buffer widths for Use III first and second order streams are in accordance with the recommendations of the Upper Paint Branch Technical Work Group. See Appendix A for a definition of State Water Use designations and Appendix B for a definition of stream order.

* Wetlands of special State concern, as identified by MDE/DNR, are subject to a minimum 100-foot buffer by State regulations.

** Buffer for wetlands adjacent to steep slopes will be expanded to the outer edge of the steep slopes up to the maximum distance shown in the table. For wetlands inside SPAs, steep slopes are defined as greater than 15% on the steepest 50 feet within the 100 feet adjacent to the wetland.

*** Buffer for wetlands adjacent to erodible soils will be expanded to include the erodible soils up to the maximum distance shown in the table. Erodible soils are those soils classified as having a severe hazard of erosion in the soil profile descriptions of the *Soil Survey of Montgomery County* (July 1995), published by the Natural Resources Conservation Service (see Appendix C).

SPA areas of the County and State standards.

(c) Use I/I-P Watersheds

Wetlands associated with first and second order streams will be protected by a buffer ranging from 50 -100 feet based on the presence of steep slopes, highly erodible soils, or designation as a wetland of special State concern.

Wetlands associated with third and higher order streams will be protected by an expanded buffer ranging from 25 -100 feet based on the presence of steep slopes, highly erodible soils, or designation as a wetland of special State concern, consistent with non-SPA areas of the County and State standards.

4. Flexibility in Implementation of SPA Wetland Buffers

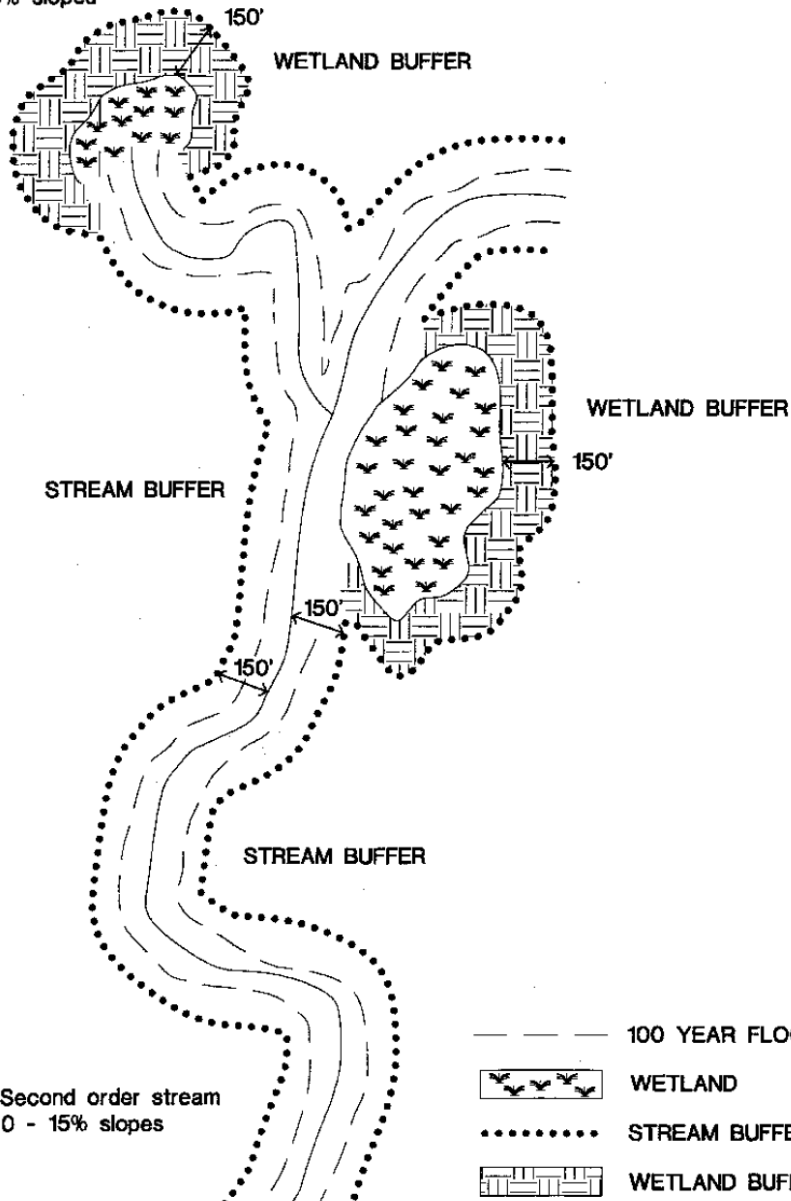
Table 3 and Table 7 in Chapter VIII describes the range of buffer widths that may be applied to the perimeter of a wetland within an SPA. Requirements in Chapter VIII apply to the Ten Mile Creek Watershed within the 10 Mile Creek Master Plan Amendment planning area, most of which is included in an SPA (see Figure 11). Small amounts of clearing and grading for other purposes within the stream buffer (such as paving for bikeways) may be recommended for approval by staff on a case-by-case basis so long as the modification is consistent with a comprehensive approach to protecting areas that are critical to preserving or enhancing streams, wetlands, and their ecosystems. The applicant shall provide rationale for stream buffer modifications addressing at a minimum the factors below. The extent to which the proposal meets all the following factors will form the basis for staff recommendations.

- a) Reasonable alternative locations are not available.
- b) Encroachment into the buffer has been minimized.
- c) Existing sensitive areas have been avoided (forest, wetlands and their state designated buffers, floodplain, steep slopes, and habitat for rare, threatened, and endangered species and their associated protection buffers).
- d) The proposed use is consistent with the preferred use of the buffer (e.g., pervious areas such as tieouts to existing grades, slope stabilizing BMPs, etc.).
- e) The plan design provides compensation for the loss of buffer function.

In reviewing buffer compensation proposals, staff will consider such options as buffer averaging, enhanced forestation, bioengineering practices, and other environmentally beneficial techniques. Buffer averaging provides environmentally-comparable on-site area outside the delineated stream buffer in exchange for the allowance of encroachment elsewhere in the delineated buffer. The concept of enhanced forestation (as detailed in section C) goes beyond the county legal requirements for forest conservation to enhance existing riparian forest or to accelerate the creation of healthy mature forest in afforestation/reforestation areas.

Figure 8. Illustration of Stream Buffers in a Special Protection Area Use III Watershed with Wetlands

USE III - First order stream
0 - 15% slopes



USE III - Second order stream
0 - 15% slopes

C. Expanded and Accelerated Forest Conservation Opportunities

1. Rationale

As stated in the County's forest conservation manual (*Trees: Approved Technical Manual, 1992*), "Forest areas in the natural landscape filter ground water, tend to reduce surface runoff, help alleviate flooding, lower stream temperature, and supply necessary habitat for wildlife." The forest conservation requirements are specifically intended to preserve existing forest, or provide for forest creation in environmentally sensitive locations. In SPAs, where forests play an important role in protecting water quality and the overall health of the stream ecosystem, the following guidelines will allow healthy, mature forest to be established more rapidly. The longer maintenance period gives a growing forest the opportunity to better establish itself against invasive vegetation so it can more quickly provide the many benefits to water quality.

2. Guidelines

- a) The applicant should retain or establish forest in all buffers on a site. Reforestation on SPA sites is to begin as soon as possible after the issuance by DPS of grading permits, with appropriate phasing to allow for the construction of sediment and erosion control structures. On development projects where standard forest conservation requirements do not completely forest the buffer area, the entire buffer should be reforested as part of the development project. This may be accomplished either by the applicant planting the entire buffer and selling the area in excess of their requirements to others as credit toward their off-site requirements, or by the applicant arranging for planting by other applicants.
- b) The applicant will provide a five-year maintenance program of forest planting areas to better ensure forest survival, with emphasis to be placed on control of invasive species. Bonding will remain in place for two years only, as required in current regulations.
- c) The use of 3-to 4-foot planting stock for trees and 18-to 24-inch planting stock for shrubs will be encouraged in re/afforestation plantings to minimize time to canopy closure.

D. Imperviousness Limitations

The multi-level protection of water quality inherent to the SPA concept requires extra emphasis be placed on opportunities for minimizing imperviousness in SPA areas. Policies and site design guidelines regarding overall levels of imperviousness are detailed in Chapter IV. Lower levels of imperviousness have benefits to all watersheds by providing more opportunity for natural infiltration and pollutant removal and less reliance on SWM controls.

As of publication time, the following SPAs have imperviousness limits specified either in a master plan or a Council resolution designating the SPA. See Chapter IV.G.4 for guidance for calculating imperviousness areas.

1. Clarksburg Special Protection Area

Designated through the 1994 adoption of the Clarksburg Master Plan (*Clarksburg Master Plan and Hyattstown Special Study Area, June 1994*), this SPA covers parts of three watersheds within the larger

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Comment [SM5]: If the proposed changes to the Clarksburg SPA in a proposed SPA Resolution to designate the SPA within the Ten Mile Creek Watershed as a separate SPA, this section will be modified accordingly, and an additional subsection added on the new Ten Mile Creek SPA.

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Little Seneca Creek Watershed. These include Ten Mile Creek, Cabin Branch and the mainstem of Little Seneca Creek.

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a. A land development project within the SPA portion of Ten Mile Creek Watershed may be subject to a specific imperviousness limit defined in one of two environmental overlay zones (Clarksburg East Environmental Overlay Zone and Clarksburg West Environmental Overlay Zone).

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Clarksburg East Environmental Overlay Zone (See Chapter VIII and Figure 11)

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- New development on properties greater than 1 acre in size in the Ten Mile Creek Watershed east of I-270 is subject to a 15% imperviousness cap.

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Clarksburg West Environmental Overlay Zone (See Chapter VIII and Figure 11)

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- Development on properties greater than 2 acres in size in the Ten Mile Creek Watershed west of I-270 is subject to a 6% imperviousness cap, except for County-owned properties, which cannot add imperviousness (0% cap).

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b. A project located within the SPA, but outside of Ten Mile Creek Watershed, must demonstrate that proposed imperviousness for the project has been minimized, consistent with Section 19-64(a) of the SPA Law (Article V, Montgomery County Code).

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2. Upper Paint Branch Special Protection Area

This SPA was designated by County Council Resolution 13-215, adopted July 11, 1995). It covers the high-quality headwaters of the Paint Branch stream system (north of Fairland Road). The Environmental Overlay Zone for Upper Paint Branch Special Protection Area establishes an 8 percent imperviousness limit on new land development projects.

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3. Piney Branch Special Protection Area

This SPA was designated in 1995 by County Council Resolution 13-310. It covers the watershed of Piney Branch, which is a major tributary of Watts Branch. A proposed land development project must demonstrate that imperviousness has been minimized, consistent with Section 19-64(a) of the SPA Law (Article V, Montgomery County Code).

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4. Upper Rock Creek (URC) Special Protection Area

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The Upper Rock Creek Area Master Plan recommended designation of the Upper Rock Creek Special Protection Area. The County Council created the SPA when it approved the overall master plan through Resolution 15-519, on February 24, 2004.

The Olney Master Plan added several areas to the Upper Rock Creek SPA. The procedure was the same: the plan recommended expansion of the spa to include specified areas. The County Council approved the expansion as part of the overall approval of the plan, through Resolution 15-924, dated March 8, 2005.

The Upper Rock Creek Environmental Overlay Zone was created after the plan was approved in 2004. The

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Upper Rock Creek SMA mapped the overlay and it consisted of the portions of the watershed in the URC planning area. The Olney Master Plan recommended additional areas to be added to the URC overlay zone. These areas were added to the zone through the Olney Master Plan SMA. The URC Environmental Overlay Zone covers the part of the headwaters of the Rock Creek Watershed west of the upper Rock Creek mainstem and north of Muncaster Mill Road. Two large properties on the east side of the mainstem are in the overlay, but are exempt from the imperviousness requirements of the Overlay Zone because they are not in the sewer envelope and will develop on septic systems.

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a. The Environmental Overlay Zone for the Upper Rock Creek Special Protection Area establishes an 8 percent imperviousness limit on certain types of new, private land development projects that are to be served by community sewer.

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b. Land development projects that are exempt from the specific limit of the overlay zone must demonstrate that imperviousness has been minimized, consistent with Section 19-64(a) of the SPA Law (Article V, Montgomery County Code).

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~~1. Paint Branch Special Protection Area~~

~~Development should not result in more than 10 percent of the total site area in imperviousness surface (including structures, roadways, parking areas, paths, etc.)³.~~

~~2. Clarksburg Employment Areas west of I-270 in Ten Mile Creek watershed~~

~~An impervious limit of 15 percent applies to the entirety of each subject site (see Figure 36 from the *Clarksburg Master Plan and Hyattstown Special Study Area*, June 1994). The imperviousness coverage must be calculated over the entire subject property, not just the portion that is zoned for industrial use.~~

~~³County Council Resolution No. 13-215 designates the upper Paint Branch watershed as an SPA. The resolution states that this SPA "will best be protected through the combined application of the Special Protection Area law and performance criteria as established in the 1981 Eastern Montgomery County Master Plans." The 1981 master plan performance criteria include a 10 percent maximum limitation for site imperviousness.~~

VI. IMPLEMENTATION

As outlined in these guidelines, protection of natural features relies on adherence to construction standards and requirements and the establishment of undisturbed natural buffers. In order to identify these measures and ensure that they are carried out during development, the Planning Board may include one or more of the following methods of enforcement into the development plan approval.

A. Development Agreements

When required by the Planning Board, the applicant/owners of the property shall enter into a binding agreement with the M-NCPPC to ensure that the constructed development meets appropriate standards and requirements defined in the conditions for approval of the plan. It is assumed that all County and State environmental requirements will be met through normal regulatory and permitting processes. However, to ensure compliance with the Planning Board's conditions of approval, a development agreement may be required as part of the regulatory process to ensure adherence to:

- Noise mitigation requirements.
- Forest and tree conservation and protection plans (as addressed in *Trees: Approved Technical Manual*).
- Requirements for engineering measures to address soils constraints.
- Construction and maintenance requirements for off-site stormwater management facilities within parkland.
- Homeowners associations (HOA) maintenance requirements for stormwater management facilities. .

The agreement must be submitted for approval with the record plat submission. 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 Homeowners Association 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 must 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 must assume responsibility.

Appropriate language for the development agreements will be worked out between the Park and Planning Department staff and the Legal Department. Examples of the agreement language can be obtained from the Legal Department.

B. Conservation Easements

Protection of natural features, as outlined in these guidelines, 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. Controlling the limits of grading during the construction process is the lowest level of environmental protection. This control is implemented through development agreements or conditions of approval and does not require permanent easements to be recorded on the plat. Under the grading control approach, protection beyond the construction period relies primarily upon the value of the resource to the first and subsequent homeowners.

In some instances, however, the value of the resource requires a more permanent protection mechanism than grading limits. In these cases, a conservation easement may be established to prohibit actions compromising the natural area both during and after construction. The limits of the easement must be recorded along with the easement agreement. M-NCPPC Legal Department versions of the easement agreements will be pre-recorded in the Office of Land Records. These versions may be rewritten to suit specific circumstances and recorded by the applicant.

In general, situations for which long-term protection in the form of a conservation easement is necessary include: 1) all buffers identified in Use III/III-P streams, 2) stream buffers identified in Use I/I-P and IV/IV-P streams where the Planning Board finds that resources of exceptional quality exist, and/or the likelihood of buffer compromise is great, and 3) forest conservation areas (as detailed in Trees: Approved *Technical 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.

C. Waivers of Base Zone Standards and Specifications for Environmental Reasons

If waivers or variances from base zone standards are requested, various sections of the Zoning Ordinance require a finding by the Planning Board or County Council that a requested variance will result in a development that is more desirable from an environmental perspective. These sections include: Section 59-C-1.621 concerning waivers of minimum percentages of certain housing types within MPDU developments; Section 59-C-1.395 concerning minimum percentage of housing types within Transferable Development Rights (TDR) developments; Section 59-C-1.532 concerning minimum area for cluster developments within RE-2C and RE-I zones; Section 59-C-7.131 concerning percentages for one-family and multi-family units; and Section 59-C-1.393(b) regarding a waiver of the requirement for two-thirds (2/3) of the TDR increment for a development.

Staff will make recommendations on these findings based on information supplied by the applicant at the preliminary plan stage. For purposes of comparison, all waiver submissions (except the waiver of provision of 2/3 of the TDR increment) must include a conceptual base zone development plan (i.e., a plan without waivers) that fully responds to environmental guidelines and regulations, and uses all available options to maximize environmentally compatible development on the site. Requirements for justifying the waiver of 2/3 TDRs will be treated separately, since denial of this waiver would require either more units to be placed on the property, or more of the proposed units to be TORs.

1. Waiver Justification Based on Water Quality and Quantity Benefits

In high quality watersheds (Use III/III-P, IV/IV-P, and high quality Use III-P) and Special Protection Areas as defined in Chapter 19 of the County Code, the primary justification for waivers to the base zone standards specified in the Zoning Ordinance must be based on a finding that the proposed development, with waivers, provides a significant improvement to water quality and/or quantity that correlates to the magnitude of the proposed waiver. The effects of a proposed development shall be compared to the effects of a conceptual base zone development plan, as defined above. In order to fully analyze an application for such waivers based on these benefits, the following minimum information must be included with each submission, comparing the proposed development, with waivers, to development under base zone standards:

- a) Discharge computations for the first 0.5" and 1.0" of runoff, including the pre-development land use condition in addition to the base zone and proposed development conditions.
- b) Runoff computations for the 2-year and 10-year frequency storm, including the predevelopment land use condition in addition to the base zone and proposed development conditions.
- c) Expected pollutant loadings and/or concentration levels, and the expected frequency and magnitude of violations of State water quality standards. Include use of appropriate best management practices (BMPs) in the calculations for the base zone and proposed development, and compare the estimated pollutant loadings with that from the pre-development land use condition.
- d) Number of acres and the percentage of the site that will be impervious.
- e) Number of acres and the percentage of the site that will be disturbed.
- f) Number of acres of forest, pasture, and transitional areas.
- g) Number of acres within forest conservation areas.
- h) Conceptual location and type of stormwater management and storm drainage facilities.
- i) Number of acres of wetlands, showing areas of unavoidable disturbance and compensation areas.

2. Waiver Justification Based on Other Environmental Benefits

In all other areas of the County not included under section C.I, or where water quality improvements as required in Special Protection Areas are insufficient for waiver justification and need enhancement, staff will consider innovative and/or extraordinary measures to protect or improve the built and natural environment. Such measures must be demonstrated to be over and above the requirements or guidelines of the County, State, and M-NCPPC. Such measures may include, but not be limited to the following:

- a) Enhanced sediment control protection, and use of effective best management practices (BMPs)
- b) SWM quantity and/or quality controls for a significant amount of off-site area that would not be controlled under the base zone scenario
- c) Correction of existing off-site drainage and/or stream valley degradation problems, (e.g. through extensive reforestation, stream channel improvements, cleanup of debris, etc.)
- d) Unique site designs for noise mitigation, or mitigation of noise levels through use of topography or barriers beyond what would ordinarily be required
- e) A forest preservation and/or an afforestation/reforestation program beyond the minimum required
- f) Dedication of land for conservation easement and/or parkland, if acceptable to the M -NCPPC Department of Park and Planning
- g) Stream monitoring, the scope of which shall be determined on a case-by-case basis

The measures listed above represent various means of protecting or improving the environment and will not be accepted as enhancements for waiver justification unless a case can be made that stream health will not be degraded, but rather protected or improved.

3. Waiver Justification for 2/3 Minimum TDR Requirement

The TDR (Transferrable Development Rights) waiver brings into focus the tension that sometimes surfaces between two different, but equally important policy objectives: promotion of a strong TDR program, and environmental compatibility and protection issues. The TDR program strives to maintain a balance between the market supply and demand for TDRs, so that farmers have a place to sell and developers have a place to purchase TDRs. The zoning ordinance requires that a developer utilizing the TDR optional method of development must incorporate into their plan at least two thirds the maximum number of TDRs allowed by the site's zoning and master planning designations. This is intended to maintain a vigorous market for TDRs involving those developers electing to so participate and, further, it is to ensure that sufficient density will be located on the site to warrant the public sector's commitment of providing supporting infrastructure, typically at an accelerated pace. In some instances a site may not be able to accommodate a higher level of density due to environmental or compatibility reasons. At that point, the Board must balance the need to achieve higher TDR density levels against the resulting intrusions that would occur against environmental or compatibility standards and expectations. This balancing is conducted through the TDR waiver request, allowing the Board to approve less density than would ordinarily be available on a less constrained site. Its characterization as a waiver may be misleading in that it is not a request to relax environmental protection to facilitate more density; rather it becomes a justification to realize less density.

In order to obtain the waiver, an applicant must demonstrate and the Planning Board must find that the proposed plan:

- Uses the most efficient combination of unit types to attempt to maximize density within the unconstrained area of the site.
- Is reasonably close to reaching the 2/3 number of TDRs required.
- That the level of encroachment into the constrained area of the site in order to obtain the full 2/3 TDRs is unacceptable from an environmental standpoint, based upon the criteria set forth below.

The following points are derived from the rationale for the waiver justification:

- If the number of TDRs needed to meet the 2/3 requirement is small AND the area of encroachment is considered to be acceptable with appropriate environmental mitigation measures as determined by the Planning Board, the development may be allowed to encroach into the constrained area to meet the TDR requirement. Alternatively, the developer may choose to purchase the remaining TDRs to avoid mitigation measures.
- If the number of TDRs proposed on the plan is NOT reasonably close to the 2/3s required and a different unit mix would not alter the ratio or be feasible, the Board may elect to deny the applicant's election to utilize the TDR optional method of development. Alternatively, the developer may be allowed to purchase the remaining TDRs in order to obtain the higher density.

The following development plan scenarios and elements will be analyzed to determine if the development plan applicant has established a case for justifying the environmental waiver:

- The proposed plan, delineating areas of environmental constraints and indicating the proposed number and the particular unit types (include rationale for rejecting certain unit types over others).
- The plan showing areas of development utilizing the full 2/3 TDRs and development within both constrained and unconstrained areas, including mitigation proposals for development within the constrained area.
- A quantitative analysis of the percent of the constrained area used versus the percent of TDRs obtained.
- An environmental analysis comparing the proposed plan with the full TDR usage plan, in terms of the following elements (to be determined: by staff; not all elements may be required):

- difference in stormwater discharge and runoff computations
- expected pollutant loadings
- imperviousness
- acreage of forest/tree areas disturbed
- acreage of stream buffer/wetlands disturbed

D. Exceptions to the Guidelines

The guidelines contained in this document form the basis for staff recommendations to the Planning Board, who may then choose to accept, reject, or modify these recommendations on a case-by-case basis. Exceptions to the guidelines may be recommended by the staff on a case-by-case basis where strict compliance with the guidelines herein would result in unreasonable hardship; and when it can be demonstrated that safety, County 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, staff are receptive to other ideas and techniques that enhance environmental compatibility and achieve the same purpose as those identified in this document.

VII. THE PATUXENT RIVER WATERSHED PRIMARY MANAGEMENT AREA (PMA)

A. Background and Purpose

The Patuxent River Policy Plan, adopted in 1984 by the Maryland General Assembly and the seven Patuxent watershed counties, was prepared by the Maryland Office of State Planning in order to give policy direction to local and State agencies in carrying out their programs and making regulatory decisions in the Patuxent River watershed. Seven Maryland counties have land area within the watershed: Montgomery, Howard, Prince George's, Anne Arundel, Calvert, Charles, and St. Mary's.

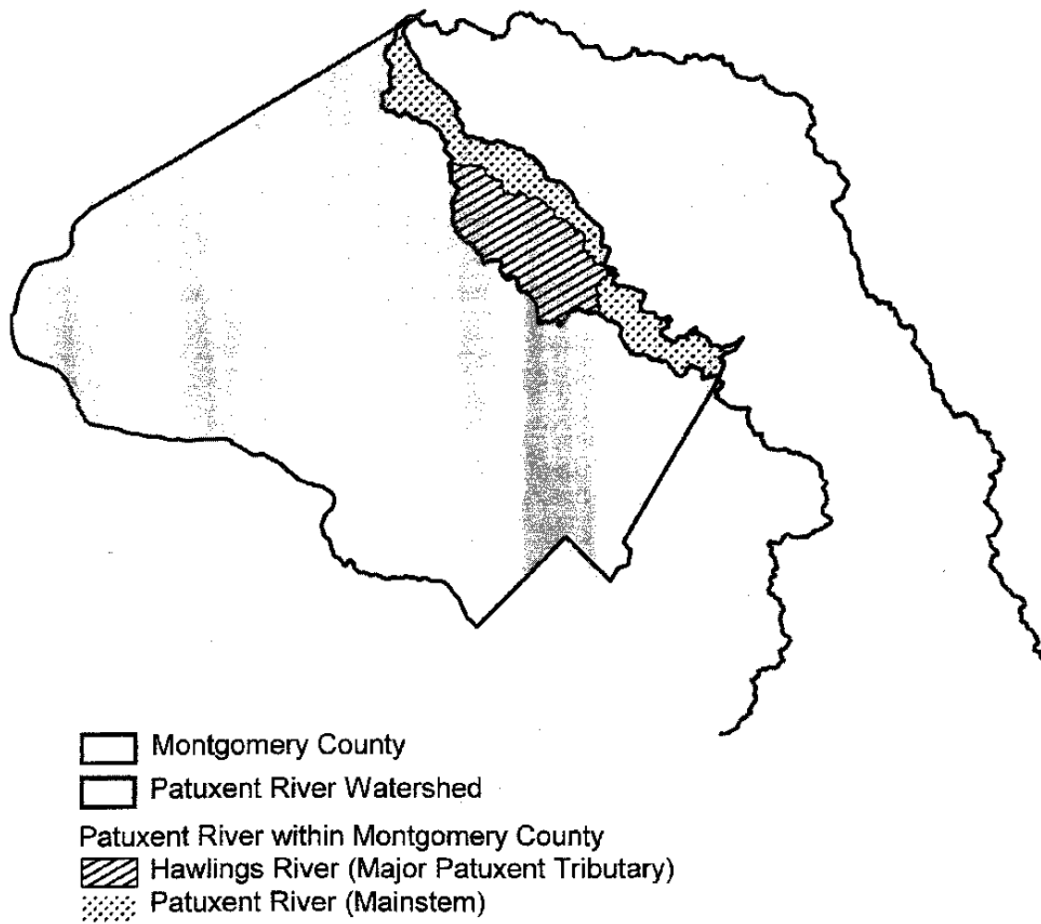
The following pages describe the Patuxent River watershed in Montgomery County and the Primary Management Area (PMA) guidelines used by the Montgomery County Department of Park and Planning to protect the watershed. These PMA guidelines were developed in accordance with the recommendation in the Patuxent River Policy Plan that local governments enact a Primary Management Area. The guidelines address the decline in the Patuxent River's water quality and the need, from an environmental perspective, to protect this resource. In addition, these PMA guidelines respond to the economic necessity of protecting the primary water supply reservoirs and recreational resources provided by the Patuxent River. The purpose of the Montgomery County Patuxent River PMA guidelines is to provide urgently needed land management strategies to help control nonpoint source runoff and preserve, restore, and protect the Patuxent, its drinking water supply reservoirs and the Chesapeake Bay. The guidelines have been approved by the Montgomery County Planning Board for use in the review of development proposals in the Patuxent River watershed.

B. Introduction: The Patuxent River

The Patuxent River watershed, covering 910 square miles, lies entirely in the State of Maryland. This "scenic river", as designated by the State of Maryland, gently meanders through seven counties before draining into the largest and most bountiful estuary in the United States, the Chesapeake Bay. Approximately 61 square miles (39,065 acres) of Montgomery County drain into the headwaters of the Patuxent. In addition to being a tremendous recreational and economic resource, the river serves as a primary drinking water supply, containing both the Triadelphia and Rocky Gorge reservoirs. Both reservoirs are owned and operated by the Washington Suburban Sanitary Commission.

The Patuxent River, the reservoirs and the Chesapeake Bay are being heavily impacted by increasing pollution levels associated with land development and from the ongoing pollution associated with agricultural activities. Pollution impacting the Patuxent River and the Bay originates from both point and nonpoint sources. Point sources primarily include the piped discharge from sewage treatment plants and industry. The 1983 State *208 Water Quality Management Plan/or the Patuxent Basin* (208 Plan) contains the strategy for controlling point sources of pollution. Point source pollution is addressed by the appropriate State and County agencies and therefore will not be addressed by these guidelines. The State 208 plan, which was developed pursuant to Section 208 of the Federal Clean Water Act, also addresses the impacts from nonpoint sources of pollution, which are the major source of the total sediment and nutrient pollutant load to the Patuxent River system.

Figure 9. Upper Patuxent River Basin and Haulings River Subbasin



Nonpoint source pollution is directly related to the land-use practices within the watershed and originates from urban, suburban, and agricultural lands. Effective land management strategies are needed to control the increase of disturbed ground and impervious surfaces within watersheds, from which surface runoff generates, transporting harmful nutrients, sediments, and pollutants to the river and its tributaries and causing adverse temperature changes. The 208 Plan for the Patuxent basin reported a serious decline in the river's water quality. Problems include increases in nutrient loading (particularly nitrogen and phosphorus) that result in harmful algal blooms and consequent harmful reductions in dissolved oxygen. The excessive algae coupled with increased sedimentation has also seriously increased the turbidity of the water. This increased turbidity prevents life-sustaining sunlight from reaching submerged aquatic vegetation and results in reduced habitat and food sources for both waterfowl and juvenile fish, in addition to the reduction of vital dissolved oxygen. In 1981, the WSSC issued a report stating that "the reservoirs are aging at faster than acceptable rates due to high nutrient inputs."

C. The Patuxent River Policy Plan

The Patuxent River Commission and the Maryland Office of State Planning developed the *Patuxent River Policy Plan* (State Policy Plan) in cooperation with all seven Patuxent watershed counties. This Policy Plan was approved by these counties, including Montgomery County, and the General Assembly in 1984. The seven watershed counties and the General Assembly have agreed to accord special management and planning consideration to the lands bordering the streams in the Patuxent watershed. By approving the State Policy Plan, Montgomery County, along with other participating counties, has agreed with the recommendation to develop and implement the primary management area approach to watershed protection.

Based on the recommendations of the State Policy Plan, a conceptual primary management area (PMA) has been proposed for the streams within the Patuxent watershed in Montgomery County. Using the State Policy Plan as a guide, the Montgomery County Department of Park and Planning is proposing a set of criteria and guidelines to be applied to local development reviews. These guidelines could be amended by a joint watershed management policy planning effort between Howard County, Montgomery County, Prince George's County, WSSC, and the M-NCPPC.

The State Policy Plan criteria for designating a PMA are not regulatory standards. Rather, they provide general guidance for developing locally enforceable criteria suited to local conditions. The State Policy Plan contains ten major recommendations to direct land use planning and management toward watershed protection. For a complete list of the Policy Plan's ten recommendations, see Appendix D. Montgomery County's *PMA Guidelines for the Patuxent River Watershed* specifically address four of the ten recommendations put forth in the Policy Plan. These include State Policy Plan recommendations:

- Establishing a Primary Management Area (PMA)
- Providing Best Management Practices (BMPs)
- Preserving Agricultural Land
- Protecting Forest Cover

Montgomery County is in support of all ten of the State Policy Plan's recommendations although at this time these guidelines address only four. It should be noted that not all the Policy Plan's ten

recommendations fall within M-NCPPC jurisdiction. The *Patuxent River Watershed Functional Master Plan* contains a more comprehensive statement that addresses other aspects of the State Policy Plan that fall under M-NCPPC jurisdiction.

D. The Montgomery County Primary Management Area

1. Establishing a Primary Management Area (PMA) for the Patuxent River watershed in Montgomery County

The Primary Management Area (PMA) in Montgomery County is a water quality protection and restoration area where land use activities are managed to protect and enhance water quality in the rivers and streams. The PMA is composed of strips of land that run along the entire length of all streams within the watershed. The recommended land uses and related activities within the PMA are managed through a series of specially designed programs directed to promote water quality in the streams.

The purpose of the Patuxent watershed PMA is to identify and manage land from which nonpoint source pollution is most likely to be transported to the river, to the two water supply reservoirs and ultimately to the Chesapeake Bay.

-Montgomery County's PMA for the Patuxent is consistent with the PMA widths recommended in the State's Patuxent River Policy Plan, which are 114 mile (1320 feet) for the Patuxent mainstem and 118 mile (660 feet) for all tributaries. In addition, Montgomery County is also recommending a 114-mile management strip (PMA) for the mainstem of the Hawlings River. The Hawlings River watershed, a subbasin in the Patuxent watershed, lies entirely in Montgomery County (Figure 8). Greenhome and O'Mara's *Technical Report/or the Patuxent River Watershed* (February 1990) has identified the Hawlings River as a major contributor of nonpoint source pollutants to both the upper Patuxent River and to the Rocky Gorge Reservoir.

The area that will constitute the PMA as described above consists of approximately 17,488 acres, or approximately 45 percent of the Patuxent watershed.

a) Applicability

Montgomery County PMA guidelines will be recommended when the criteria in Table 4 (below) apply to a given property. Any properties that meet the criteria will then be required to delineate a Primary Management Area that will consist of a stream buffer and a transition area (Figure 9).

A property will be subject to PMA requirements ONLY when it is submitted to M-NCPPC for subdivision and/or site plan review. Agricultural land located within the Primary Management Area that is NOT submitted for review will not be subject to the recommended PMA guidelines. Land that remains in agricultural use, as part of a plan for subdivision, however, will be subject to the recommended PMA stream buffer and transition area requirements made herein (Section D.3. Preserving Agricultural Land).

Table 4. Criteria for Determining Primary Management Area Applicability	
1.	The property contains or borders a stream that is tributary to the Patuxent and/or Hawlings River watersheds, OR the property is within a 1/4 mile of the mainstem or 1/8 mile of a tributary of the Patuxent and/or Hawlings River, and
2.	The property has been submitted to M-NCPPC for subdivision and/or site plan review.*
<p style="text-align: center;">* Requests for lots for children of the property owner in rural zones that fall under the exempt provisions of the Montgomery County Zoning Ordinance, <i>do not</i> subject a farm to PMA requirements, provided the farm is operated in compliance with the soil and water quality conservation plan as determined by the Montgomery Soil Conservation District (MSCD)</p>	

b) Delineating the Stream Buffer within the PMA

Within the designated PMA, be it 114 mile or 118 mile, it will be necessary to delineate a stream buffer on the land area directly adjacent to the watercourse. The State's Policy Plan recommends a 100-foot buffer of forest or natural vegetation on each side of the river and its tributaries. Montgomery County is recommending a stream buffer width consistent with its stream buffer guidelines, as identified in Table 1 (page 8). The stream buffer may be expanded to include any environmentally sensitive land features as described in Table 5. It is further recommended that a minimum of 50 feet of this buffer be forested. Afforestation will be necessary in stream buffer areas that do not meet this 50-foot forested minimum. The stream buffer area, based on the recommended widths in Table 1, will consist of approximately 1,257 to 2,515 acres, constituting approximately 7 to 14 percent of the PMA, or approximately 3 to 6 percent of the watershed.

The stream buffer area must be left undisturbed and in its natural state. Land disturbing activities such as clearing and grading will not be permitted in the stream buffer area. Activities that would be encouraged in the stream buffer area include afforestation and, possibly, the implementation of Best Management Practices (BMPs). The control of noxious weed species in the stream buffer area, such as thistles (Asteraceae or compositae), johnsongrass, shattercane and wildcane, and multiflora rose, will be permitted when deemed necessary and when done in a manner that minimizes disturbance to other vegetation. Any disturbance of the stream buffer will require M-NCPPC staff review.

The majority of the area along the Patuxent mainstem and a significant portion of the area adjacent to the Rawlings River mainstem that would be delineated as stream buffer are already included in existing and proposed parkland or WSSC property.

For a complete discussion of stream buffer requirements on agricultural land, refer to section D.3. Preserving Agricultural Land.

Table 5. Recommended Environmentally Sensitive Land Features to be included in the PMA Stream Buffer Area

- 1) The one-hundred year ultimate floodplain.
- 2) All wetlands (and associated buffers) adjacent to the stream or to the one-hundred year floodplain.
- 3) Slopes of twenty-five percent or greater abutting or adjoining the stream, the 100-year ultimate floodplain, or stream-side wetlands.
- 4) Specific areas of critical habitat for rare or sensitive wildlife and/or vegetation, as defined in COMAR, Title 08.03.08.

c) The Transition Area within the PMA

The land area remaining in the PMA that does not fall into the designated stream buffer will be managed as a transition area. Zoning densities of one unit per two acres or less will be recommended for the transition area. Possible zones include RE-2, RE-2C, Rural, RC, and RDT. New development will be accommodated in ways that minimize impacts on water quality and maximize the protection of existing environmental features. Overall imperviousness within the transition area of each new project development site⁴ should not exceed 10 percent. If a higher imperviousness is desirable in the transition area to maintain community character, achieve compatibility, and/or accomplish master plan goals, imperviousness may be averaged over the entire development, not to exceed 10 percent on the entire site.⁵ The planning challenge within the transition area will be to resist the tendency toward fragmented suburban sprawl by consciously siting development to optimize existing infrastructure and soil infiltration capacities while minimizing impacts to environmentally sensitive land features. Agricultural activities *will be* permitted in the transition area (see section D.3. Preserving Agricultural Land).

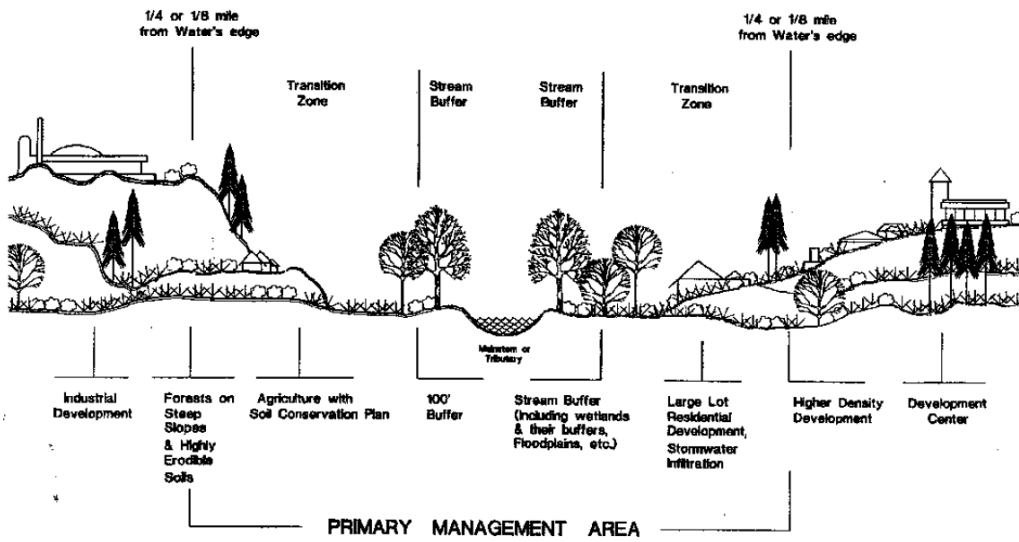
d) Existing Areas in Nonconformance with the PMA Guidelines

Properties for which the PMA guidelines are applicable (Table 4) but that have existing zoning densities greater than RE-2 will be subject to "nonconformance requirements". Nonconformance requirements consist of stormwater management and best management practices applied to the property that will minimize the impacts of higher density zones,

⁴This imperviousness guideline is now applied to new projects that are reviewed by the Planning Board, such as preliminary plans of subdivision, site plans, zoning cases, special exception cases, and mandatory referrals. The guideline would not apply to projects that require only building permit review.

⁵If the property lies within two or more watersheds, only that portion of that property within the Patuxent River watershed (as defined by natural or existing drainage divides) is subject to this imperviousness guideline.

Figure 10. Illustration of the Patuxent River Primary Management Area (PMA)



Conceptual Drawing of the Primary Management Area
as Defined in the Patuxent River Policy Plan
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particularly higher levels of imperviousness, on water quality. These requirements will also apply to RE-2C, RC, and RDT zones where use of cluster development results in densities greater than one unit per two acres. Table 6 describes some, but certainly not all, possible BMPs.

2. Providing Best Management Practices (BMPs)

The provision of BMPs in the Primary Management Area is required for all areas where zoning densities are higher than RE-2, as previously discussed. The use of BMPs will also be encouraged in lower density areas during the development review process to facilitate clustering of development and the maximization of soil infiltration capacities. Soil and water conservation plans utilizing BMPs are strongly encouraged on agricultural lands in the PMA, with the incentive of a reduction in the recommended stream buffer width on portions of properties submitted for subdivision and/or site plan review that will be used for agricultural purposes.

Table 6. Possible Best Management Practices (BMPs)

1. Locating and possibly clustering development to maximize suitable developable land areas and to minimize negative impacts to water quality and other environmental considerations such as tree stands and wetlands.
2. Widening the stream buffer area to ensure increased infiltration of pollutants, nutrients, and sediments over the extended run.
3. Afforestation of more than the required 50-foot minimum of forest cover within the stream buffer.
4. Utilizing more innovative and effective stormwater management. Maximize infiltration and design ponds to effectively mitigate for both temperature and nutrient/sediment removal. Design for the ten-year storm rather than the required two-year storm.

NOTE: Applicants may design and implement, upon staff and Planning Board approval, their own innovative BMP(s). The goal with this option is to foster and encourage a genuine effort between the County and developers to devise and implement effective, innovative, and environmentally sensitive land management practices.

3. Preserving Agricultural Land

The preservation of prime and viable agricultural land is a goal of the Patuxent watershed primary management area as it is throughout upper Montgomery County. It is hoped that the designation of the Patuxent PMA will help achieve the delicate balance between development and agriculture while ensuring water quality.

As discussed earlier, these guidelines only apply to properties that are proposed for development (Table 4). Existing agricultural land will not be subject to these guidelines unless it is included in a development proposal application submitted to M-NCPPC.

In order to encourage the retention of agricultural uses on at least a portion of properties proposed for development, the stream buffer will be reduced from the buffer strip widths listed in Table 1, to 100 feet for land that remains in agriculture and has adopted a soil and water conservation plan approved by the Montgomery Soil Conservation District. However, depending on the site, the stream buffer may be extended to include environmentally sensitive land features (Table 5). It is also recommended that a minimum of 50 feet of the 100-foot stream buffer be forested. Agricultural activities utilizing BMPs are encouraged in the transition area of the PMA and the reduction of the stream buffer from that recommended in Table 1 to 100 feet is done in recognition that the maximization of available land is a necessity for a viable farm. The Planning Board may grant a variance to the PMA 100-foot stream buffer requirement on agricultural portions of plans when the applicant can demonstrate to the satisfaction of staff and the Planning Board that water quality would not be degraded by agricultural activities.

It must also be recognized that the intent of the Primary Management Area is to protect and restore water quality conditions in the Patuxent watershed. To this end, the infiltration and nutrient storage capabilities of forested buffer strips are considerable, as are the beneficial effects such a buffer strip would have on water temperatures and habitat. In order to preserve water quality and avoid the increased regulation that may occur if water quality continues to decline, the Montgomery Soil Conservation District is entreated and encouraged not only to comply with the forested buffer strip recommendations made herein, which are based on studies conducted by and endorsed by the Cooperative Extension Service and the U.S. Fish and Wildlife Service, but also to re-examine the buffer strip requirements currently recommended by the USDA Natural Resources Conservation Service (NRCS) (4 times the percent slope up to 99 feet), in order to provide more environmentally sensitive practices, particularly in special management areas such as the Patuxent River watershed.

The 100-foot recommended minimum buffer width is based upon literature reviews conducted by both the Department of Natural Resources and Office of State Planning. To be effective, buffer areas should be disturbed as little as possible; however, disturbance of the stream buffer for the purpose of controlling noxious weeds, such as thistles (Asteraceae or Compositae), johnsongrass, shattercane and wildcane, and multiflora rose, will be permitted when deemed necessary and when done in such a manner that the disturbance of other vegetation is minimized.

4. Protecting Forest Cover/Re-establishing Forest Cover

Consistent with the Montgomery County Forest Conservation Program and the State ReLeaf Program, the PMA will be targeted as a potential and logical location for preserving and/or re-establishing forest cover. The widespread benefits of forest cover on water quality include infiltration, sediment and nutrient storage and recycling, minimization of temperature impacts, reduction of wind speeds, providing an energy input into stream ecosystems, and providing potential wildlife habitat.

The opportunity for reforesting a significant portion of publicly owned land in the Patuxent watershed PMA is great and should be maximized. Reforestation/afforestation will be strongly encouraged in the stream buffer area and in already developed and/or disturbed areas within the PMA. Preservation will always be recommended in the stream buffer areas, as well as in the transition area when and where, there are large, beneficial, and/or unique tree stands.

The implementation of Montgomery County's Forest Conservation Law and the need to designate potential tree receiving areas may provide the opportunity for developers to contribute to the reforestation/afforestation of buffers within agricultural areas as an off-site planting alternative. In addition, farmers may pursue incentive programs such as the State Conservation Reserve Program, the Maryland Agricultural Cost-Share Program, and the Green Shores Program in order to comply with the 50 foot forested buffer strip recommendation.

E. Septic Field Requirements within the PMA

County Executive Regulation 28-93AM prohibits the location of sewage disposal systems within 300 feet measured horizontally from the normal high water level of a water supply reservoir or within 200 feet measured horizontally of the banks of a stream that feeds therein. The PMA policy plan recommends a minimum 300 foot septic setback for the Patuxent and Hawlings mainstems and a minimum 200 foot setback for all other watershed tributaries. Septic fields will not be permitted in the stream buffer. Any variance to the provision of septic fields within the transition area will be determined on a case-by-case basis.

A detailed technical study by the WSSC and/or the County Health Department on the health hazards associated with potential septic failures is strongly endorsed along with these PMA guidelines. The technical study should also provide recommendations pertaining to design, siting and minimum buffers required for septic fields.

VIII. The Ten Mile Creek Watershed

A. Introduction: Ten Mile Creek

The Ten Mile Creek watershed is an important high-quality sub-basin of the Little Seneca Watershed. Ten Mile Creek originates just north of MD 355 (Frederick Road) and flows into Little Seneca Lake, which then flows into the Potomac River via Seneca Creek. Little Seneca Lake serves as a reservoir that provides additional water flow to the Potomac River, a public water supply, during drought periods. The portion of the watershed east of the Ten Mile Creek mainstem and north of West Old Baltimore Road is located within the Clarksburg Master Plan Special Protection Area (SPA). The Ten Mile Creek watershed includes approximately 3,200 acres, 12 subwatersheds, and over 22 miles of streams. The 10 Mile Creek Limited Master Plan Amendment views Ten Mile Creek as a complete and functioning watershed and ecosystem, including the watershed and all contributing tributaries and their drainage areas. Ten Mile Creek and its tributaries are designated as a Use I-P stream by the State of Maryland, defined as protection of water contact recreation, aquatic life, and drinking water supply.

Comment [SM6]: Note: or east of Shiloh Church Road—pending Council action on an SPA Resolution, which proposes that the SPA boundary coincide with the Environmental Overlay Zones

Comment [SM7]: Note: or the Ten Mile Creek Special Protection Area depending on Council action on a proposed SPA Resolution

Ten Mile Creek is one of a number of reference watersheds designated by Montgomery County, that serve as high quality benchmarks against which other County streams are compared. Long-term monitoring indicates overall biological conditions in Ten Mile Creek to be healthy and diverse. Sensitive indicator organisms that occur in few other areas within the County are found here. Ten Mile Creek is part of a small group of high quality watersheds still remaining within the County (e.g., many Patuxent River tributaries, Bennett Creek, and Little Bennett Creek). As a result of its unique characteristics, Ten Mile Creek warrants extraordinary protection.

The majority of the streams within the Ten Mile Creek watershed are small and spring fed with cool, clean groundwater. The Ten Mile Creek mainstem is characterized by high concentrations of interior forest and wetlands. There is no evidence of widespread and long-term stream channel instability. In addition, the stream bed material is ideal to support a healthy and diverse benthic macroinvertebrate community.

B. The 10 Mile Creek Limited Amendment to the Clarksburg Master Plan

The 10 Mile Creek Limited Master Plan Amendment of 2014 recommends a significant increase in required open space and environmental buffers to protect the watershed's very sensitive environmental resources, and limits on impervious cover to ensure, in combination with County-required Environmental Site Design measures, that environmental impacts are minimized in Ten Mile Creek and particularly sensitive tributaries. Sustaining Ten Mile Creek's ecological health and water quality requires a combination of actions: protecting the largest possible area of undisturbed natural vegetation, improving ecological conditions in areas already developed or planned to remain in agricultural use, and instituting the highest environmental standards of protection for future development areas. The requirements in this Chapter apply to the portion of the Ten Mile Creek Watershed within the 10 Mile Creek Master Plan Amendment, which includes almost the entire watershed except for some small tributaries that flow directly to the Little Seneca Reservoir, and not to Ten Mile Creek.

C. Imperviousness Limits

New development projects within portions of the Ten Mile Creek watershed are subject to imperviousness limits. These limits are specified in two overlay zones: the Clarksburg East Environmental Overlay Zone, and the Clarksburg West Environmental Overlay Zone. The portions of the watershed that are covered by these overlay zones are shown in Figure 11.

East of I-270

In the Ten Mile Creek watershed East of I-270, a 15 percent imperviousness cap applies to new development on properties greater than 2 acres in size that are recommended for the Clarksburg East Environmental Overlay Zone. Properties already developed (as of April 1, 2014) with imperviousness exceeding this cap may improve their properties and maintain the existing level of imperviousness providing the use of the property does not change. A change of use will trigger the application of the imperviousness cap (see Figure 11 and the Clarksburg East Environmental Overlay Zone).

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West of I-270

West of I-270, a 6 percent imperviousness limit applies to all new development on properties greater than 2 acres in size that are recommended for the Clarksburg West Environmental Overlay Zone, with the exception of County-owned properties. The County-owned properties cannot add imperviousness (0% cap). Properties already developed (as of April 1, 2014) with imperviousness exceeding this cap may improve their properties and maintain the existing level of imperviousness providing the use of the property does not change. A change of use will trigger the application of the imperviousness cap (see Figure 11 and the Clarksburg West Environmental Overlay Zone).

D. Environmental Buffers

It should be noted that in the standard review of NRI/FSDs, field collected data, as well as mapped and documented current and historical information, are used by M-NCPPC staff. The requirement in most of the Ten Mile Creek watershed to delineate buffers around ephemeral streams will add a mapped environmental feature to NRI/FSDs that will require the review by M-NCPPC staff of additional data. All available data, including those collected on some of the large developable properties in the Ten Mile Creek watershed during the development of the 10 Mile Creek Master Plan Amendment, will be considered to help determine and verify the various environmental features shown on NRI/FSDs within this watershed.

In addition to the requirements stated elsewhere in these Guidelines, the following requirements apply in the portion of the Ten Mile Creek watershed within the 10 Mile Creek Master Plan Amendment planning area (see Figure 11):

- Except for the Historic District, environmental buffers must be a minimum 200 feet wide around perennial and intermittent streams, and springs and seeps, and must be expanded to include:
 - All erodible soils (See Appendix C) that begin within or abut the minimum buffers
 - Wetlands that extend beyond the buffer
 - All slopes 15 percent or greater that begin within or abut the minimum buffers.
- A minimum 50 foot buffer must be provided around all wetlands, and must be expanded according to the criteria contained in Table 7. (Note: Because all of Ten Mile Creek is a Use Class I-P stream the same buffers apply for both SPA and non-SPA areas, so only one Table is required.)
- A minimum 50 foot buffer must be provided around all ephemeral streams (not including roadside or other constructed ditches). The environmental buffer expansion requirements in these Guidelines for intermittent and perennial streams do not apply to ephemeral streams.
- In areas covered by the Clarksburg East and West Environmental Overlay Zones, the 80% open space

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required by the RNC zone must encompass, at a minimum, all environmental buffer areas as described above and forest protection areas, as described below in Section F.

Comment [SM8]: Note: Figure 11, which will show the Ten Mile Creek Watershed, the Environmental Overlay Zones, the 10 Mile Creek Master Plan Amendment Planning Area, and the portion of the Clarksburg SPA (or a new Ten Mile Creek SPA within the Ten Mile Creek Watershed, will be inserted here, pending the County Council's action on a proposed SPA Resolution).

Table 7. Recommended Buffers for Wetlands in the Ten Mile Creek Watershed (including all SPA areas)* within the Ten Mile Creek Master Plan Amendment Planning Area

<u>Wetlands of Special State Concern**</u>	<u>Wetlands with Steep Slopes***</u>	<u>Wetlands with Erodible Soils****</u>	<u>Other Wetlands</u>
100'	60-100'	50-100'	50'

NOTE: Isolated farm ponds, existing stormwater management ponds or man-made drainage ditches are exempt from these expanded buffer recommendations.

* Because all of Ten Mile Creek is a Use Class I-P stream the same buffers apply for both SPA and non-SPA areas, so only one Table is required.

** Wetlands of special State concern, as identified by MDE/DNR, are subject to a minimum 100-foot buffer by State regulations.

*** Buffer for wetlands adjacent to steep slopes will be expanded to the outer edge of the steep slopes up to the maximum distance shown in the table. For wetlands inside SPAs, steep slopes are defined as greater than 15% on the steepest 50 feet within the 100 feet adjacent to the wetland.

**** Buffer for wetlands adjacent to erodible soils will be expanded to include the erodible soils up to the maximum distance shown in the table. Erodible soils are those soils classified as having a severe hazard of erosion in the soil profile descriptions of the Soil Survey of Montgomery County (July 1995), published by the Natural Resources Conservation Service (see Appendix C).

Comment [SM9]: Depending on Council action taken on a proposed SPA Resolution, this section may be modified to reflect the creation of a new Ten Mile Creek SPA.

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E. The Clarksburg Special Protection Area (SPA) within the Ten Mile Creek Watershed

A portion of the Ten Mile Creek Watershed is contained within the Clarksburg SPA (see Figure 11). (For guidelines that apply to SPAs (except for the more stringent wetland buffers required in the Ten Mile Creek Watershed) see Chapter V.) Wetland buffers in the Ten Mile Creek Watershed (which includes the Ten Mile Creek portion of the Clarksburg Special Protection Area) are similar to those in Chapter V of the Guidelines, but with a greater minimum buffer. See Chapter VIII, Section D and Table 7, for the wetland buffer requirements that apply in the Ten Mile Creek Watershed.

In the portion of the Ten Mile Creek Watershed that is contained within the Clarksburg Special Protection Area, the Expanded and Accelerated Forest Conservation Opportunities in Chapter V apply (see Chapter V, Section C.)

F. Forest Protection

- Minimize disturbance of natural resources throughout the Ten Mile Creek Watershed, especially forests in the headwater areas. Forest Conservation Plans for properties in the Ten Mile Creek Watershed should protect:
 - All forest required by the Forest Conservation Law and Regulations (includes Environmental Buffers as previously described and minimum retention requirements), as well as areas defined in the 10 Mile Creek Limited Master Plan Amendment:
 - All interior forest (as defined by the Maryland Department of Natural Resources).
 - On the Miles-Coppola properties, the forest bounded by the two northernmost environmental buffer areas on the north and south, I-270 on the west, and the existing agricultural fields on the east.
 - On the Pulte/King properties, all forest that begins within or abuts environmental buffers.
 - All forest on County-owned properties.

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GLOSSARY OF TERMS

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 2 inches or more within 7 years.

Conservation Easement -a restriction on the land and the natural features on this 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 M-NCPPC's Department of Park and Planning.

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

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

Ephemeral Stream -a channel at the terminus of an intermittent stream that has flow only in direct response to precipitation. Ephemeral streams do not include roadside or other constructed ditches.

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.

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 an upstream dam failure.

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 one hundred 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, SWM structure, or watercourse that would be inundated by a 100-year flood, based on ultimate development of the watershed under existing zoning.

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 2 inch or greater diameter at breast height. 2) Forest areas that have been cut but not cleared. Forest does not include orchards.

Forest Stand Delineation -a detailed summary of existing forest and trees on a site, prepared by identifying forest stands based on methodology detailed in *Trees: Approved Technical Manual*. 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.

Forest Conservation -the retention of existing forest or the creation of new forest at the levels prescribed by the Planning Board or the Planning Director.

Forest Conservation Plan (FCP) -outlines the strategies and specific plans proposed for retaining, protecting, and reforesting and/or afforesting areas on a site.

Forest Stand Delineation (FSD) -the evaluation of existing vegetation in relation to the natural resources on a site proposed for development or land disturbing activities. A forest survey is conducted to identify and characterize forest stands according to their condition, structure type and retention potential. .

Hydraulically Adjacent Slopes -slopes lying within 200 feet (from bank) of a stream/drainage course, that 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 bank) of a stream/drainage course if the stream buffer is less than 200 feet, that may or may not drain directly to the stream/drainage course or its associated floodplain.

Intermittent Stream -surface waters, contained within a defined channel or bed, that flow at least once per year. An intermittent stream, for purposes of these guidelines, includes one or more of the following characteristics: (1) Defined or distinct channel; (2) hydric soils or wetlands within or adjacent to channel; (3) hydraulically sorted sediments; (4) removal of vegetative litter; or (5) loosely rooted vegetation by the action of moving water

Impervious Area or Impervious Surface -any surface that prevents or significantly impedes the infiltration of water into the underlying soil, including any structure, building, patio, sidewalk, compacted gravel, pavement, asphalt, concrete, stone, brick, tile, swimming pool, or artificial turf. Impervious surface also includes any area used by or for motor vehicles or heavy commercial equipment, regardless of surface type or material, including any road, driveway, or parking area.

Local Genetic Origin -refers to plants whose seed source is from an area within a 150-mile range of Montgomery County.

Native -refers to a plant or animal species whose geographic range during pre-colonial times included 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 Resources Inventory (NRI) -a complete analysis of existing natural features, forest, and tree cover on site. The natural resources 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. Natural features include topography; steep slopes; perennial and intermittent streams and major drainage courses; 100year floodplain; wetlands; soils and

geologic conditions; critical habitats; aerial extent of forest and tree cover; cultural features and historic sites; necessary buffers.

Percent Slope -[(Vertical Rise in feet) / (Horizontal Run in feet in the steepest 100 foot segment)]
X 100%. Vertical rise in feet divided by horizontal run in feet in the steepest 100 foot segment, multiplied by 100 percent.

Perennial Stream -a stream that has base flow all year.

Preliminary subdivision plan -a plan subject to the review and approval procedures of Chapter 50, "Subdivision" of the Montgomery County Code.

Primary Management Area (PMA) -an area within the Patuxent watershed critical to the Chesapeake Bay that may be included in plans and zoning ordinances. Preferred land uses in the PMA will be agriculture, forest, and recreation. State and local governments will ensure that land use practices within the PMA shall be of such a nature so as to have no (or minimal) adverse impact on water quality of the Patuxent River.

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 2 inch or greater diameter at breast height within 7 years.

Riparian Buffer -another term for a stream buffer (defined below). Riparian means "stream-side", so the riparian buffer is the area adjacent to a stream.

River Outwash Savanna -a plant community formed on extensive deposits of the Potomac and dominated by grasses, with hardwoods (of ten oaks) interspersed. River outwash savannas of ten provide habitat for many of Maryland's uncommon and State listed (by DNR) plant species.

Serpentine Barren -a plant community underlain by serpentine soils (rich in chromium and magnesium and poor in essential plant nutrients) and dominated by grasses, often with pines interspersed. Serpentine barrens of ten provide habitat for many of Maryland's uncommon and State listed (by DNR) plant species.

Shale Barren -a plant community occurring on Triassic red shale outcrops and often containing uncommon and State listed (by PNR) plant species.

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

Site plan -a plan subject to the review and approval procedures of Chapter 59, "Zoning," Division 59-D-3, "Site Plan" of the Montgomery County Code.

Specimen tree -a tree that is a particularly impressive or unusual example of a species due to its size, shape, age, or any other trait that epitomizes the character of the species.

Steep slope -a slope in which the percent slope equals or exceeds 25 percent, or that equals or exceeds 15 percent in the portion of the Ten Mile Creek Watershed within the 10 Mile Creek Master Plan Amendment, for wetlands located in an SPA, and in the Upper Paint Branch SPA.

Stream buffer -an undisturbed strip of natural vegetation contiguous with and parallel to the bank of a perennial or intermittent stream that may be designed to:

- Protect hydraulically adjacent slope areas.
- Maintain or improve the water temperature regimen/water quality of the stream(s).
- Protect natural wetlands.
- Provide groundwater storage/recharge for a stream.
- Complement regulations pertaining to the 1 -0-year ultimate floodplain.
- Provide wildlife habitat, open space, or both.
- Complement on-site erosion/sediment control measures by serving as a back-up natural filter/trap.

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

Water Uses -a distinct designated water use applied to each surface water of the state by the Maryland Department of the Environment. The designated water uses and their specific standards are described in detail in Appendix A.

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

APPENDIX A

STATE DESIGNATED WATER USES FOR MONTGOMERY COUNTY STREAMS

The Maryland Department of the Environment applies distinct designated water uses for the surface waters of the State, each having a specific set of standards. Below is a list of the Water Use for each watershed in the County, followed by definitions of each water use and the State anti-degradation policy.

<u>Use</u>	<u>Waters</u>	<u>Extent/Limits</u>
Use I	<ul style="list-style-type: none"> ● Little Paint Branch ● Sligo Creek ● Rock Creek 	Entirety Entirety Below MD Route 28
Use I-P	<ul style="list-style-type: none"> ● Patuxent River and all tributaries except those designated below as Use III-P or IV-P ● Potomac River and all tributaries except those designated as Use III, III-P, IV or IV-P ● Little Seneca Creek and Little Seneca Lake ● Little Monocacy River ● Bennett Creek ● Great Seneca Creek ● Dry Seneca Creek 	Upstream of Rocky Gorge Dam, including Rocky Gorge Reservoir Upstream of Montgomery County/ Washington DC line Between the lake and the B&O Railroad Bridge, and below confluence of Bucklodge Branch incl. Bucklodge Br. Entirety Entirety Entirety Entirety
Use II	None	
Use III	<ul style="list-style-type: none"> ● Paint Branch and all tributaries ● Rock Creek and all tributaries ● North Branch Rock Creek and all tributaries 	Upstream of Capital Beltway (I-495) Upstream of Muncaster Mill Road Upstream of Muncaster Mill Road
Use III-P	<ul style="list-style-type: none"> ● Little Bennett Creek and all tributaries ● Furnace Branch and all tributaries ● Patuxent River and all tributaries ● Little Seneca Creek and all tributaries ● Wildcat Branch and all tributaries 	Upstream of Maryland Route 355 Entirety Upstream of Triadelphia Reservoir Between the B&O Railroad Bridge & the confluence with Bucklodge Branch Upstream of confluence with Great Seneca Creek
Use IV	<ul style="list-style-type: none"> ● Rock Creek and all tributaries (including Lake Frank and Lake Needwood) 	Between Route 28 and Muncaster Mill Road

Comment [SM10]: This terminology will be replaced here and throughout the Guidelines to reflect the new terminology of "Use Classes" that has been adopted by the Maryland Department of the Environment since the last update of the Guidelines.

Comment [SM11]: The list of waters starting on this page will be updated to include the designation changes since the last update of the Guidelines.

	● Northwest Branch & all tributaries	Upstream of East-West Highway (MD Route 410)
Use IV-P	● Patuxent River and all tributaries	Between Rocky Gorge and Triadelphia Reservoirs, and including Triadelphia Reservoir
	● Little Seneca Creek & all tributaries	Upstream of Little Seneca Lake

Definitions of Water Use Categories

A. USE I: WATER CONTACT RECREATION & PROTECTION OF AQUATIC LIFE

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

Criteria for Use I waters:

a) Bacteriological -there may not be any source of pathogenic or harmful organisms in sufficient quantities to constitute a public health hazard. Public health hazard will be presumed when:

- (i) fecal coliform density exceeds a log mean of 200 per 100 ml based on minimum of 5 samples taken over 30 days;
- (ii) 10 percent of total number of samples exceed 400 per 100 ml; or
- (iii) except when a sanitary survey approved by the Maryland Department of the Environment discloses no significant health hazard, i and ii do not apply.

b) Dissolved Oxygen -may not be less than 5.0 mg/liter at any time.

c) Temperature -maximum temperature outside the mixing zone may not exceed 90 degrees F (32 degrees C) or the ambient temperature of the surface waters, whichever is greater. A thermal barrier that adversely affects aquatic life may not be established.

d) pH -Normal pH values may not be less than 6.5 or greater than 8.5. e) Turbidity -may not exceed levels detrimental to aquatic life. Turbidity in the surface water resulting from any discharge may not exceed 150 units at any time or 50 units as a monthly average.

f) Toxic Substances -all toxic substance criteria to protect fresh water and estuarine and salt water aquatic organisms, and the wholesomeness of fish for human consumption, apply in fresh, estuarine and salt waters (see COMAR 26.08.02.03-3).

B. USE I-P: WATER CONTACT RECREATION, PROTECTION OF AQUATIC LIFE, AND PUBLIC WATER SUPPLY

Waters that are suited for all uses identified in Use I and use as a public water supply.

Criteria for Use I-P waters:

a) The criteria for Use I waters (a)-(e) b) Toxic Substances -all toxic substances criteria for protection of fresh water aquatic organisms and to protect public water supplies and the wholesomeness of fish for human consumption apply.

Comment [SM12]: This section will be replaced with the latest criteria for Water Use Classes from COMAR 26.08.02.03-3 which has been revised since the last update of the Guidelines.

C. USE II: SHELLFISH HARVESTING WATERS

None in Montgomery County

D. USE III: NATURAL TROUT WATERS

Waters that are suitable for the growth and propagation of trout, and that are capable of supporting self-sustaining trout populations and their associated food organisms.

Criteria for Use III waters:

- a) Bacteriological -same as Use I waters
- b) Dissolved Oxygen -may not be less than 5.0 mg/liter at any time with a minimum daily average of not less than 6.0 mg/liter.
- c) Temperature -maximum temperature outside the mixing zone may not exceed 68 degrees F (20 degrees C) or the ambient temperature of the surface water, whichever is greater. A thermal barrier that adversely affects aquatic life may not be established.
- d) pH -same as Use I waters
- e) Turbidity -same as Use I waters
- f) Total Residual Chlorine (TRC) -except as provided in COMAR 26.08.03.06, the Department may not issue a permit allowing the use of chlorine or chlorine compounds in the treatment of wastewater discharging to Use III and III-P waters.
- g) -Toxic Substances -all criteria to protect fresh water aquatic organisms and the wholesomeness of fish for human consumption apply.

E. USE III-P: NATURAL TROUT WATERS AND PUBLIC WATER SUPPLY

Waters that include all uses identified for Use III waters and use as a public water supply.

Criteria for Use III-P waters:

- a) The criteria for Use III waters (a)-(f)
- b) Toxic Substances -all toxic substances criteria for protection of fresh water aquatic organisms and to protect public water supplies and the wholesomeness of fish for human consumption apply.

F. USE IV: RECREATIONAL TROUT WATERS

Waters that are capable of holding or supporting adult trout for put and take fishing, and that are managed as a special fishery by periodic stocking and seasonal catching (cold or warm waters).

Criteria for Use IV waters:

- a) Bacteriological -same as Use I waters
- b) Dissolved Oxygen -same as Use I waters
- c) Temperature -maximum temperature outside the mixing zone may not exceed 75 degrees F (23 degrees C) or the ambient temperature of the surface water, whichever is greater. A thermal barrier that adversely affects aquatic life may not be established.
- d) pH -same as Use I waters
- e) Turbidity -same as Use I waters

- f) Toxic Substances -all toxic substance criteria to protect fresh water aquatic organisms and the wholesomeness of fish for human consumption apply.

G. USE IV-P: RECREATIONAL TROUT WATERS AND PUBLIC WATER SUPPLY

Waters that include all uses identified for Use IV waters and use as a public water supply.

Criteria for Use IV-P waters:

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

- b) Toxic Substances -all toxic substances 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.

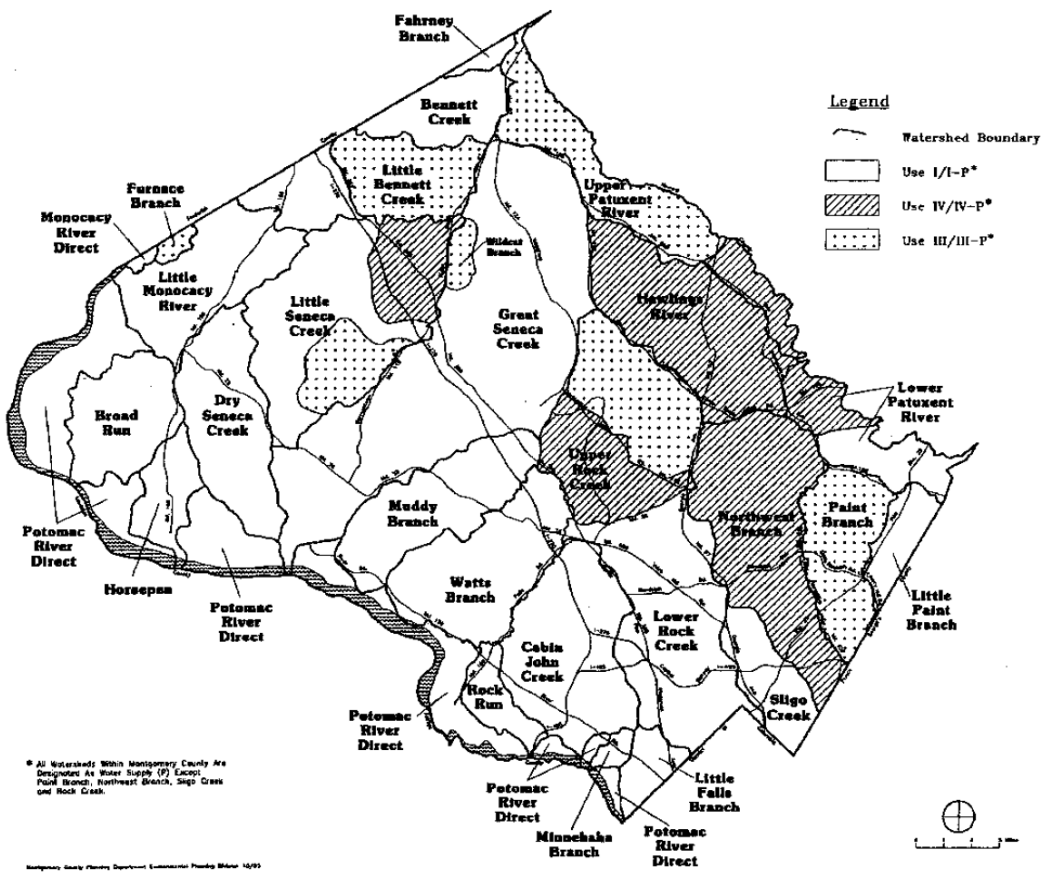
D. The Department shall provide public notice and opportunity for a public hearing on the proposed change before:

(1) Permitting a change in high quality waters; or

(2) Downgrading any stream use designation.

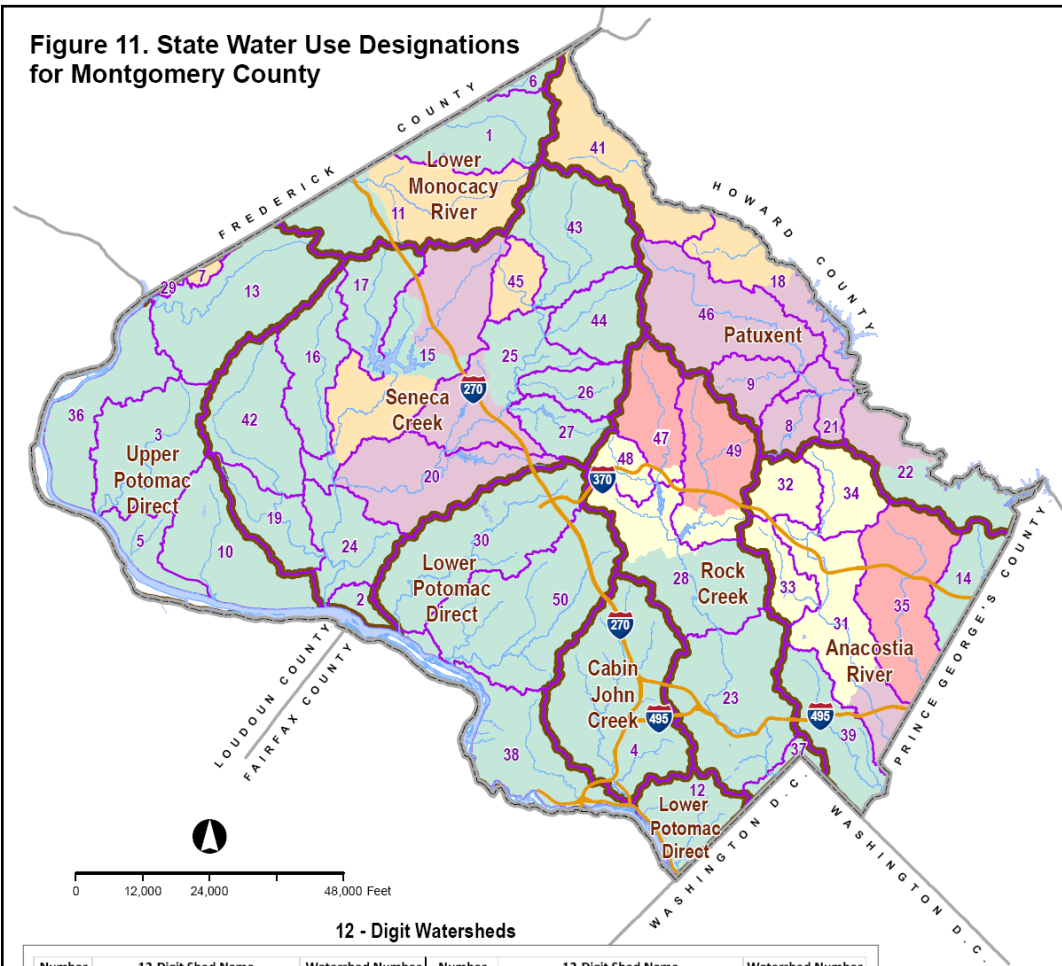
E. Water which does not meet the standards established for it shall be improved to meet the standards.

Figure H12. State Water Use Designations for Montgomery County



Comment [SM13]: This figure will be replaced with the following figure which was updated and approved by the Planning Board in 2013. If data on any designations since 2013 are available in time for this update of the Guidelines, they will also be incorporated.

Figure 11. State Water Use Designations for Montgomery County



12 - Digit Watersheds

Number	12-Digit Shed Name	Watershed Number	Number	12-Digit Shed Name	Watershed Number
1	Bennett Creek	021605020225	26	Middle Great Seneca Creek - Cabin Branch	021402080863
2	Blockhouse Point Tributaries	021402020847	27	Middle Great Seneca Creek - Whetstone Run	021402080862
3	Broad Run	021402020851	28	Middle Rock Creek	021402060837
4	Cabin John Creek	021402070841	29	Monocacy Direct	021403020222
5	Edwards Ferry Tributaries	021402020849	30	Muddy Branch	021402020848
6	Fahrney Branch	021403020226	31	Northwest Branch	021402050818
7	Furnace Branch	021403020222	32	Northwest Branch - Batchellors Run	021402050829
8	Hawlings River - James Creek	021311070943	33	Northwest Branch - Bel Pre Creek	021402050827
9	Hawlings River - Reddy Branch	021311070944	34	Northwest Branch - Right Fork	021402050828
10	Horsepen Branch	021402020850	35	Paint Branch	021402050826
11	Little Bennett Creek	021403020223	36	Quarry Branch	021402020852
12	Little Falls Branch	021402020844	37	Rock Creek D.C.	021402060831
13	Little Monocacy River	021402020853	38	Rock Run	021402020845
14	Little Paint Branch	021402050825	39	Sligo Creek	021402050821
15	Little Seneca Creek	021402080859	40	South Branch Patapsco	021309081025
16	Little Seneca Creek - Bucklodge Branch	021402080858	41	Upper Brighton Dam	021311080969
17	Little Seneca Creek - Ten Mile Creek	021402080861	42	Upper Dry Seneca Creek	021402080856
18	Lower Brighton Dam	021311080966	43	Upper Great Seneca Creek	021402080866
19	Lower Dry Seneca Creek	021402080855	44	Upper Great Seneca Creek - Goshen Branch	021402080864
20	Lower Great Seneca Creek	021402080857	45	Upper Great Seneca Creek - Wildcat Branch	021402080865
21	Lower Hawlings River	021311070942	46	Upper Hawlings River	021311070945
22	Lower Patuxent River - Rocky Gorge	021311070941	47	Upper Rock Creek	021402060840
23	Lower Rock Creek	021402060836	48	Upper Rock Creek - Mill Creek	021402060839
24	Lower Seneca Creek	021402080854	49	Upper Rock Creek - North Branch	021402060838
25	Middle Great Seneca Creek	021402080860	50	Watts Branch	021402020846

MS4 Watershed boundary

Water Use Designations

- I, P
- III, .
- III, P
- IV, .
- IV, P

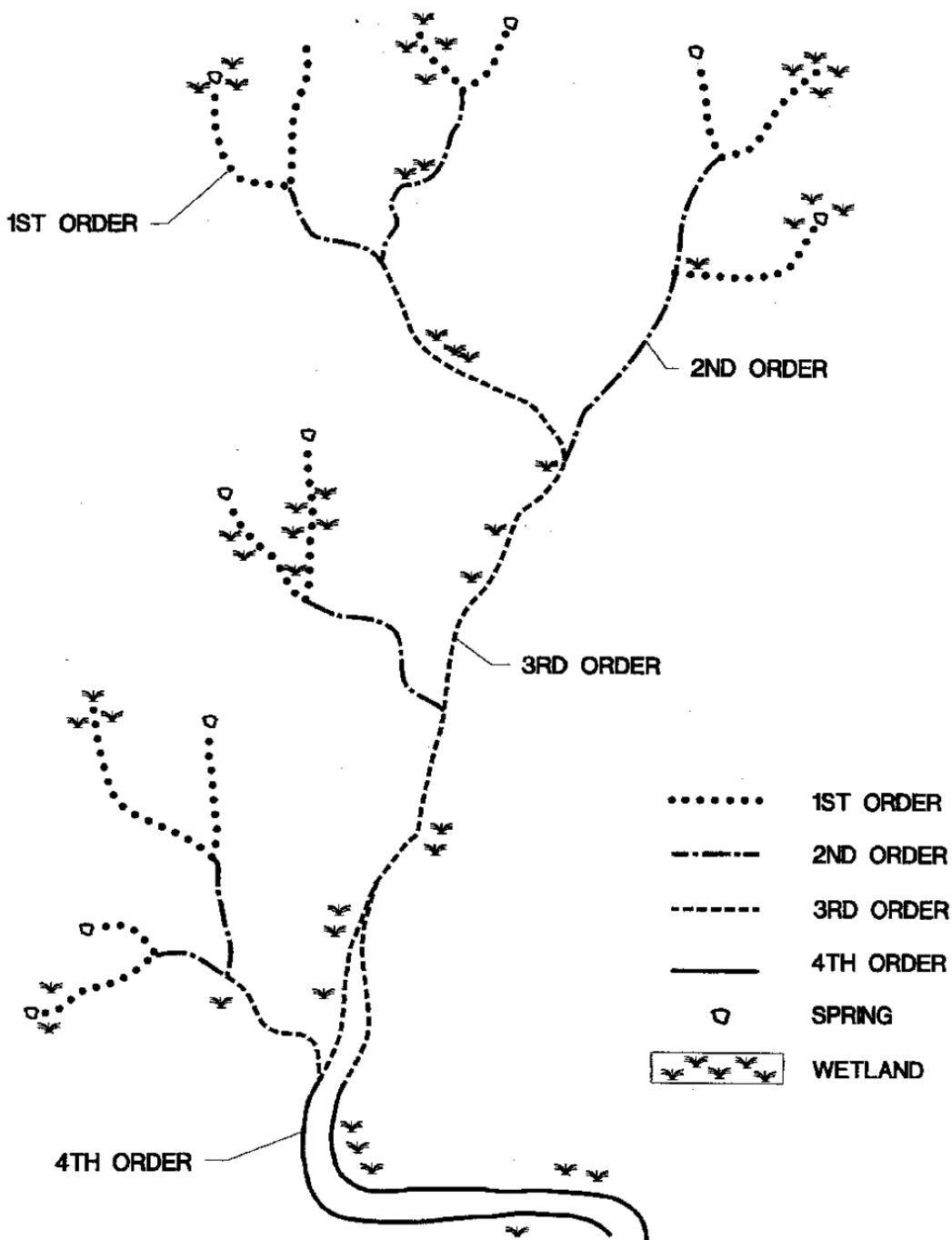
APPENDIX B

STREAM ORDER DETERMINATION

Stream order is used in these guidelines as one factor that determines appropriate wetland buffer widths. Smaller headwater streams, classified as order one and two, are given more wetland protection than the larger downstream reaches classified as order three and four (see Chapters III and V for details). Stream order is determined from a standard map set. For these guidelines, stream order shall be determined from M-NCPPC 1:200' scale topography and stream maps.

Stream order is determined starting at the headwaters of a watershed and continuing until the stream reaches the ocean. All initial headwater perennial streams are classified as first order streams. Wherever two first order streams conjoin to form a larger stream, that reach of stream is labeled second order. Wherever two second order streams conjoin, the next reach is labeled as third order. Note that a first order and a second order stream joining still remains a second order stream; it only becomes third order when the second order one joins another second order. An example of how to determine stream order is found in Figure 11 on the following page.

Figure 4213. Stream Order Determination



APPENDIXC

ERODIBLE SOILS LIST

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

The following soils are classified as having a *severe hazard of erosion* by the NRCS, based on the erodibility index of a soil map unit. These soils are severely erodible and must be incorporated into wetland buffers according to the guidance in chapters III and V. These severely erodible soils should also be incorporated into the property's open space as much as possible 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, 25 to 45% slopes, very rocky

APPENDIX D

STATE PATUXENT RIVER POLICY RECOMMENDATIONS

The following excerpt from the State *Patuxent River Policy Plan* (1984) includes the ten final recommendations of the plan.

RECOMMENDATIONS

1. ESTABLISHING A PRIMARY MANAGEMENT AREA (PMA)

A PRIMARY MANAGEMENT AREA, DELINEATING THE AREA ALONG THE RIVER AND ITS TRIBUTARIES, WILL BE ESTABLISHED TO IDENTIFY AND MANAGE LAND FROM WHICH POLLUTION IS MOST LIKELY TO BE TRANSPORTED INTO THE RIVER.

The PMA shall be considered to be an area critical to the Chesapeake Bay and its tributaries;

Local governments will include the PMA in their plans and zoning ordinances;

Preferred land uses in the PMA will be agriculture, forest, and recreation;

Local governments will prepare plans for the PMA to minimize dense and intensive development and large impervious areas in the PMA;

State agencies, in regulatory activities, technical assistance, and grant programs, will target the PMA as a priority area; and

State and local governments will ensure that land use practices within the PMA shall be of such a nature so as to have no (or at least minimal) adverse impact on water quality of the Patuxent River.

2. PROVIDING BEST MANAGEMENT PRACTICES (BMPs) AND VEGETATIVE BUFFERS

PROGRAMS FOR PROVIDING BMPs AND VEGETATIVE BUFFERS IMMEDIATELY ADJACENT TO THE RIVER AND ITS TRIBUTARIES WILL BE DEVELOPED.

State and local governments will provide BMPs on their publicly owned lands, including buffers where appropriate;

The State will require BMPs on State assisted projects, including buffers where appropriate;

Local governments will adopt subdivision and zoning provisions that require BMPs, including buffers where appropriate, in all new development;

BMPs, including filter strips and field borders, will be encouraged on agricultural land through education, voluntary action, incentive, compensation, and through implementation of the Maryland Agricultural Water Quality Management Plan;

Implementation of soil conservation plans, including filter strips and field borders where appropriate, will be required on lands acquired in easements;

The federal government will be requested to provide BMPs including buffers where appropriate, on its lands; and

The State Department of Transportation will protect roadside buffers by eliminating its practice of broadcast spraying of herbicides along roadsides.

3. IDENTIFYING MAJOR NONPOINT POLLUTION SITES

THE STATE, IN CONJUNCTION WITH LOCAL GOVERNMENTS, WILL SURVEY THE WATERSHED AND IDENTIFY MAJOR NONPOINT POLLUTION SITES.

Existing State regulatory and corrective programs will consider these sites as priority areas.

4. RETROFITTING EXISTING DEVELOPMENT

THE STATE WILL DEVELOP A COST-SHARING PROGRAM TO AID LOCAL GOVERNMENTS IN CORRECTING AND MANAGING STORMWATER POLLUTION FROM EXISTING DEVELOPED AREAS.

Local governments will pursue a program of abating pollution in existing developed areas;

State and local governments will curtail nonpoint pollution coming from their facilities; and

The State will establish priorities among developed areas causing nonpoint pollution and address problems in order of priority.

5. ACCOMMODATING FUTURE DEVELOPMENT

FUTURE DEVELOPMENT WILL BE ACCOMMODATED IN WAYS TO MINIMIZE IMPACT ON WATER QUALITY AND MAXIMIZE EXISTING OPPORTUNITIES.

Development will be concentrated where possible, outside the PMA;

Development will optimize the use of existing facilities and utilities;

Development will be sited to maximize use of soil infiltration capacity;

Development will be sited away from sensitive areas, such as reservoirs, wetlands, steep slopes, and aquifer recharge areas;

Sites within the watershed that offer unique opportunities for development and redevelopment will be identified and planned; and

New public facilities (schools, parks, highways) will incorporate best management practices.

6. INCREASING RECREATION AND OPEN SPACE ADDITIONAL RECREATION AND OPEN SPACE LANDS WILL BE ACQUIRED IN THE PATUXENT WATERSHED BY THE STATE AND LOCAL GOVERNMENTS.

State and local governments will review their recreation and open space plans for the Patuxent Watershed; Acquisition will be concentrated along the river and tributaries and in the lower portion of the watershed;

Federal holdings in the watershed must be retained for open space and research; and

An acquisition program for the lower portion of the watershed will be prepared.

7. PROTECTING FOREST COVER

EXISTING FOREST COVER WILL BE RETAINED AND IMPORTANT SENSITIVE AREAS WILL BE REFORESTED TO PROTECT WATER QUALITY.

Existing State programs, like Program Open Space and Agricultural Preservation will be examined and amended for their application to forest protection;

Buffering with forested strips will be encouraged; and

The State will institute a reforestation program for developed areas.

8. PRESERVING AGRICULTURAL LAND

PRIME AND PRODUCTIVE AGRICULTURAL LAND WILL BE PRESERVED IN THE PATUXENT WATERSHED

Easement purchases will include requirements for implementing soil conservation plans including buffer strips where appropriate; and

The Agricultural Cost-Sharing program will target the Patuxent watershed.

9. EXTRACTING SAND AND GRAVEL

SAND AND GRAVEL ACTIVITIES WILL BE MANAGED TO ALLOW EXTRACTION OF THE RESOURCE WITHOUT DAMAGE TO THE RIVER.

Abandoned sand and gravel sites will be reclaimed;

Sensitive control of active and future sites, particularly those in the PMA, will be required;

Penalties for allowing sediment to enter the Patuxent River resulting from washing operations are to be increased to a minimum of \$1,000 per day for every day a violation is found to exist by the appropriate State agency; and

The location of the resources will be identified, and county resource management strategies developed.

10. ADOPTING AN ANNUAL ACTION PROGRAM

THE PATUXENT RIVER COMMISSION WILL ANNUALLY DEVELOP AND ADOPT AN ACTION PROGRAM TO IMPLEMENT THE STRATEGIES.

The action program will contain a schedule and indicate responsibilities in carrying out specific actions to implement the plan;

A community education program will be an integral part of the action program; and

The Commission will prepare an annual report on progress in implementing the plan.

The recommendations and proposed actions in this plan are a starting point. The Policy Plan has been approved by county governments and the General Assembly. Approval of the plan indicates concurrence and commitment to improving the Patuxent River. The combined work of local and State governments, citizens, land owners, and private industry is required to transform the proposals into an improved river.

While prepared for the Patuxent, the land management recommendations contained in this plan can serve as a model for managing any watershed and the Chesapeake Bay.

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ATTACHMENT 2

Public Hearing on Guidelines for Environmental Management of Development in Montgomery County, June 12, 2014

Testimony of Cathy Wiss

Good afternoon, Madame Chair and Commissioners. My name is Cathy Wiss, and I coordinate the Water Quality Monitoring Program for the Audubon Naturalist Society. I will speak to environmental buffers for Ten Mile Creek; the need for the County to periodically survey water resources in the Ten Mile Creek watershed, and changes that are taking place to the NRCS Soil Survey for Montgomery County.

Minimum 200-foot Buffer for Wetlands

On April 1, 2014, the County Council approved the Limited Master Plan Amendment for Ten Mile Creek in Resolution 17-1048. This resolution concludes that “as a result of its unique characteristics, Ten Mile Creek warrants extraordinary protection.” (Resolution 17-1048, p. 8) The Council regarded substantial environmental buffers as critical to achieving this protection:

As a result, the Plan's recommendations include substantial open space requirements and environmental buffers throughout the watershed. These recommendations will extend the maximum protection practicable to Ten Mile Creek and its tributaries while responding to the goal for Clarksburg to be a “complete community.” (Resolution 17-1048, p. 7)

The Council extended the environmental buffer for perennial and intermittent streams, wetlands, springs and seeps to a minimum of 200 feet from lesser distances in other regulations. And for the first time, it included buffers for ephemeral streams. These buffers are to be augmented to include erodible soils, wetlands within other buffers, and slopes equal to or greater than 15%:

Environmental buffers must be consistent with all regulations and guidelines. In addition, in all areas in Ten Mile Creek other than the Historic District, on both sides of perennial and intermittent streams and adjacent to wetlands, springs and seeps, buffers must be a minimum of 200 feet, and must be expanded to include:

- All erodible soils (listed in the Planning Board's *Environmental Guidelines for Development*)
- Wetlands that extend beyond the buffer must have a minimum 50 foot wetland buffer
- All ephemeral streams, not including roadside drainage ditches, plus a 50 foot buffer
- All slopes 15 percent or greater that begin within the buffers described above.

(Resolution 17-1048, p. 11)

The draft Environmental Guidelines, however, omit wetlands from the types of water resources to be accorded 200-foot buffers:

Except for the Historic District, environmental buffers must be a minimum 200 feet wide around perennial and intermittent streams, and springs and seeps, and must be expanded to include:

- All erodible soils (See Appendix C) that begin within or abut the minimum buffers
- Wetlands that extend beyond the buffer
- All slopes 15 percent or greater that begin within or abut the minimum buffers.

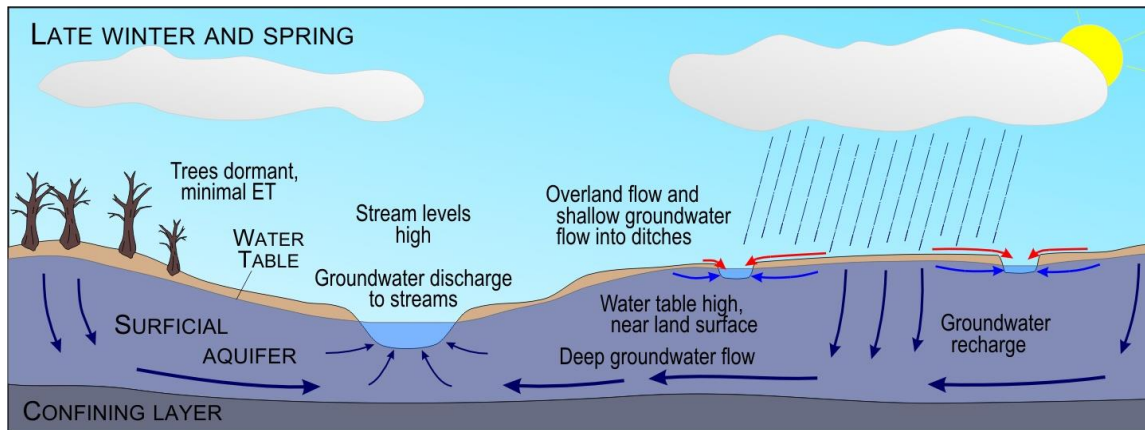
(Draft Guidelines, p. 67)

I believe that the Council's version is scientifically correct and what the Council intended when it voted to approve the resolution. Scientifically, it makes sense to include wetlands as a critical water resource to be given greater protection. Perennial and intermittent streams, wetlands, springs, and seeps all have water flow or are saturated for at least part of the year. Wetlands are no less sensitive to construction than the other hydrologic features, and many would argue that they are more so. Elsewhere in the Guidelines wetlands, springs, and seeps are treated the same way. (Guidelines, Table 2, p. 20; Table 3, p. 43) Wetlands are very different from and should not be treated the same as ephemeral streams, which have flow only in response to precipitation. And yet, that is what the draft Guidelines would do.

The Council intended to give wetlands a 200-foot minimum buffer. Throughout the Council's review, I and other advocates sought wider buffers for all hydrologic features in the Ten Mile Creek watershed, including wetlands. I pressed for a minimum 300-foot buffer based on buffers adopted by the State of New Jersey to protect drinking water resources in its Highlands Regional Master Plan. Councilmembers did not agree to the 300-foot buffer, but did tell me they would extend it to 200 feet. Never once did anyone tell me that buffers for wetlands would be treated differently and remain the same as those required in a Special Protection Area.

The Council drafted the language including wetlands in the list of resources to be given a 200-foot minimum buffer. This draft was circulated to the Planning Department and DEP. No one objected to a minimum 200-foot buffer for wetlands. That is the language that the Council approved on April 1. It should be recognized and adopted for the Guidelines.

Recommendation: I recommend reinstating "wetlands" in the list of water resources to be given a minimum 200-foot buffer. I would also delete the second bullet point in section D on page 67 ("A minimum 50 foot buffer must be provided around all wetlands, and must be expanded according to the criteria contained in Table 7"), as well as Table 7, which reiterates the general standards for Special Protection Areas, not the standard the Council intended for Ten Mile Creek. (Some might argue that the dependent clause "wetlands that extend beyond the buffer must have a minimum 50 foot wetland buffer" reduces the wider 200-foot buffer of the main clause. It defies reason that a dependent clause would nullify a main clause. This dependent clause must be construed in conjunction with the main clause and be subordinate to it.)



In addition, streams change course naturally, and water resources are often reengineered by beavers.

Recommendation: I recommend that DEP, as part of its spring monitoring survey all water resources in the Ten Mile Creek watershed to see if there have been any changes.

Unsafe and Unsuitable Lands (Soils)

To determine whether erodible and other unsafe soils are present, the Guidelines refer to the *1995 Soil Survey of Montgomery County* (Chapter III, Section F, p. 19 and Appendix C). Recently I learned that many of the severity designations for soils have been changed and that the USDA Natural Resources Conservation Service is discontinuing the print soil surveys in favor of an online soil survey,

<http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>. The online version can report up-to-date soil information for a particular property.

Recommendation: I recommend that the Guidelines adopt the most up-to-date information on erodible and other unsafe soils.

AUDUBON NATURALIST SOCIETY

Connecting people with nature in the DC region



Comments of ANS on Guidelines for Environmental Management of Development in Montgomery County, Maryland June 17, 2014

Written by Cathy Wiss¹ and incorporating her testimony before the Planning Board on June 12, 2014.

Audubon Naturalist Society appreciates this opportunity to comment on the draft proposed revisions to the *Environmental Guidelines*. These comments address: 1) environmental buffers for Ten Mile Creek; 2) the need for the County to periodically survey water resources in the Ten Mile Creek watershed, 3) the need to account for changes that are taking place to the NRCS Soil Survey for Montgomery County; and 4) a statement from a prominent scientist of the need for even greater protection, including buffers of 465 feet and greater, for amphibians (frogs and salamanders) who are dependent upon wetlands, seeps and springs.

Minimum 200-foot Buffer for Wetlands

On April 1, 2014, the County Council approved the Limited Master Plan Amendment for Ten Mile Creek in Resolution 17-1048. This resolution concludes that “as a result of its unique characteristics, Ten Mile Creek warrants extraordinary protection.” (Resolution 17-1048, p. 8) The Council regarded substantial environmental buffers as critical to achieving this protection:

As a result, the Plan's recommendations include substantial open space requirements and environmental buffers throughout the watershed. These recommendations will extend the maximum protection practicable to Ten Mile Creek and its tributaries while responding to the goal for Clarksburg to be a “complete community.” (Resolution 17-1048, p. 7)

The Council extended the environmental buffer for perennial and intermittent streams, wetlands, springs and seeps to a minimum of 200 feet from lesser distances in other regulations. And for the first time, it included buffers for ephemeral streams. These buffers are to be augmented to include erodible soils, wetlands within other buffers, and slopes equal to or greater than 15%:

Environmental buffers must be consistent with all regulations and guidelines. In addition, in all areas in Ten Mile Creek other than the Historic District, on both sides of perennial and intermittent streams and adjacent to wetlands, springs and seeps, buffers must be a minimum of

¹ Cathy Wiss coordinates the Water Quality Monitoring Program for the Audubon Naturalist Society, and is a 17-year water quality monitor at Ten Mile Creek.

200 feet, and must be expanded to include:

- All erodible soils (listed in the Planning Board's *Environmental Guidelines for Development*)
- Wetlands that extend beyond the buffer must have a minimum 50 foot wetland buffer
- All ephemeral streams, not including roadside drainage ditches, plus a 50 foot buffer
- All slopes 15 percent or greater that begin within the buffers described above.

(Resolution 17-1048, p. 11)

The draft Environmental Guidelines, however, omit wetlands from the types of water resources to be accorded 200-foot buffers:

Except for the Historic District, environmental buffers must be a minimum 200 feet wide around perennial and intermittent streams, and springs and seeps, and must be expanded to include:

- All erodible soils (See Appendix C) that begin within or abut the minimum buffers
- Wetlands that extend beyond the buffer
- All slopes 15 percent or greater that begin within or abut the minimum buffers.

(Draft Guidelines, p. 67)

I believe that the Council's approval of 200-foot buffers for wetlands, seeps, springs and streams is scientifically correct and is what the Council intended when it voted to approve the resolution. Scientifically, it makes sense to include wetlands as a critical water resource to be given greater protection. Perennial and intermittent streams, wetlands, springs, and seeps all have water flow or are saturated for at least part of the year. Wetlands are no less sensitive to construction than the other hydrologic features, and many would argue that they are more so. Elsewhere in the Guidelines wetlands, springs, and seeps are treated the same way.

(Guidelines, Table 2, p. 20; Table 3, p. 43) Wetlands are very different from and should not be treated the same as ephemeral streams, which have flow only in response to precipitation. And yet, that is what the draft Guidelines would do.

The Council intended to give wetlands a 200-foot minimum buffer. Throughout the Council's review, I and other advocates sought wider buffers for all hydrologic features in the Ten Mile Creek watershed, including wetlands. I pressed for a minimum 300-foot buffer based on buffers adopted by the State of New Jersey to protect drinking water resources in its Highlands Regional Master Plan. Councilmembers did not agree to the 300-foot buffer, but did tell me they would extend it to 200 feet. Never once did anyone tell me that buffers for wetlands would be treated differently and remain the same as those required in a Special Protection Area.

The Council drafted the language including wetlands in the list of resources to be given a 200-foot minimum buffer. This draft was circulated to the Planning Department and DEP. No one objected to a minimum 200-foot buffer for wetlands. That is the language that the Council approved on April 1. It should be recognized and adopted for the Guidelines.

As further support for the 200-foot buffer for wetlands to be established in the Environmental Guidelines, see the email of March 3, 2014 from Dr. Raymond Semlitsch of the University of Missouri to Diane Cameron of ANS. Dr. Semlitsch directs the Semlitsch Lab, with the goal of “understanding how populations of amphibians persist and how we can maintain their biodiversity in human dominated landscapes. The ultimate goal is to provide biologically-based principles for amphibian management and conservation to natural resource managers and policy makers.” (<http://semlitsch.biology.missouri.edu/people/ray-semlitsch/>). As the appended email from Dr. Semlitsch states, core habitat protection for a number of frog and salamander species (many of which are found in Ten Mile Creek’s watershed) requires 465 foot buffers – and even larger buffers. **Thus 200-foot buffers are if anything, not large enough to provide sufficient full-life-cycle protection for Ten Mile Creek’s amphibians. But they are certainly more true to the relevant science than are 50-foot buffers.**

Recommendation: I recommend reinstating “wetlands” in the list of water resources to be given a minimum 200-foot buffer. I would also delete the second bullet point in section D on page 67 (“A minimum 50 foot buffer must be provided around all wetlands, and must be expanded according to the criteria contained in Table 7”), as well as Table 7, which reiterates the general standards for Special Protection Areas, not the standard the Council intended for Ten Mile Creek. (Some might argue that the dependent clause “wetlands that extend beyond the buffer must have a minimum 50 foot wetland buffer” reduces the wider 200-foot buffer of the main clause. It defies reason that a dependent clause would nullify a main clause. This dependent clause must be construed in conjunction with the main clause and be subordinate to it.)

Determining Buffer Widths in Ten Mile Creek

The draft Guidelines use different language than the Council to describe how the minimum buffer should be determined. The Council used the phrases “on both sides of” perennial and intermittent streams and “adjacent to” wetlands, springs, and seeps. These terms make sense because streams are longitudinal and have sides, whereas wetlands, springs, and seeps are polygons or simple points and do not. The Guidelines, though, apply the term “around” to all water resources. This makes sense for wetlands, springs, and seeps, but is confusing when applied to streams and could be misinterpreted.

Recommendation: I recommend the following language, drawing from the phrasing in Table 1 of the Guidelines to define buffers around perennial and intermittent streams and continuing to apply “around” to wetlands, springs, and seeps:

“environmental buffers must be a minimum of 200 feet from each bank of perennial and intermittent streams and around wetlands, springs, and seeps.”

Periodic Need to Resurvey Natural Resources

Streams change over time. This became clear when I monitored Ten Mile Creek in April. An ephemeral stream flowing into DEP’s LSTM 303B has now become an intermittent stream.

comprehensive and inclusive as possible of all water features – including those including vernal pools and other water features that may be wet only during this specific part of the year.

Unsafe and Unsuitable Lands (Soils)

To determine whether erodible and other unsafe soils are present, the Guidelines refer to the *1995 Soil Survey of Montgomery County* (Chapter III, Section F, p. 19 and Appendix C). Recently I learned that many of the severity designations for soils have been changed and that the USDA Natural Resources Conservation Service is discontinuing the print soil surveys in favor of an online soil survey, <http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>. The online version can report up-to-date soil information for a particular property.

Recommendation: I recommend that the Guidelines adopt the most up-to-date information on erodible and other unsafe soils.

From: Semlitsch, Raymond [<mailto:SemlitschR@missouri.edu>]
Sent: Monday, March 03, 2014 4:10 PM
To: Diane Cameron
Subject: Re: buffers to protect salamanders

Diane,

Thanks for contacting me about development of the Ten Mile Watershed. I have attached several papers that support my recommendations and briefly mention what is needed to protect amphibians and their habitats. You have a fair number of species (based on Table 4-5, Page D-74) that need both wetland protection and stream protection as outlined below.

Stream-seep-headwater protection:

Long-tailed salamanders, Dusky salamanders, Red Salamanders, and Two-lined salamanders would all require protection of 88 feet (27 meters) minimum of riparian habitat from the edge of seeps, springs and streams (both sides) to protect their core terrestrial habitat, we add another 162.5 feet (50 meters) of buffer to protect that core habitat, that is, total protection requires 300 feet (**Crawford and Semlitsch 2007**). In my opinion, seeps and springs, as sources of clean water, need increased special protection. This is sometimes overlooked because of their small size, but completely the opposite based on their biological importance.

Pond-wetland protection:

Wood frogs, Spotted salamanders, Pickerel frogs, Grey tree frogs, Fowler's toads, and American Toads would all require protection of 300 feet (93 meters) radius at minimum from the pond-wetland edge to protect their core terrestrial habitat, we add another 162.5 feet (50 meters) of buffer to protect the core habitat, so that total protection requires 465 feet (**Rittenhouse and Semlitsch 2007, and references therein**). Some data actually indicates some species require even MORE habitat.

Forest protection:

There is now adequate evidence to indicate that terrestrial habitat adjacent to amphibian breeding ponds should consist of no less than 50% forest cover to protect salamanders such as Spotted, Marbled or Ringed salamanders (**Peterman et al. 2013, Semlitsch et al. 2009**, and Porej references therein). Species dependent of forested habitat seem to disappear once forest canopy dwindles and ponds-wetlands become fragmented from each other.

I will also mention that two snake species, Queen and Ribbon snakes are wetland-dependent species and would also benefit from the same protection as outlined above for amphibians.

I attached **Slawski 2010** as a general guide for protection and BMPs (a great handout for citizens or water resource people).

If I had more time, I could provide some greater detail. But, I hope this helps.

Best wishes.

Ray Semlitsch
 212 Tucker Hall
 Division of Biological Sciences
 University of Missouri
 Columbia, Missouri 65211
 Cellphone: 573-864-2939
 E-mail: SemlitschR@missouri.edu
 Lab Website: <http://semlitsch.biology.missouri.edu/>
 Complexity Modeling: <http://complexmodeling.missouri.edu/>

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June 12, 2014

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www.solteszco.com

By Email and Hand Delivery

Montgomery County Planning Board  
8787 Georgia Avenue  
Silver Spring, MD 20910

RE: Comments to Proposed Revisions to the Guidelines for Environmental Management of  
Development in Montgomery County (the "Environmental Guidelines")  
On behalf of Brookfield Homes

Dear Chair and Members of the Planning Board:

On behalf of our client Brookfield Homes, the contract purchaser of the Egan Property in the Ten Mile Creek Area of Clarksburg, we respectfully submit the following comments regarding the proposed changes to the Environmental Guidelines. These comments deal with the calculation of required Open Space and the Ephemeral Stream/Channel delineation. We believe that our proposed changes will enable a more environmentally friendly project to be developed, and will further the overall goals of the newly adopted Ten Mile Creek Limited Amendment to the Clarksburg Master Plan (the "Master Plan").

**OPEN SPACE CREDIT FOR ADDITIONAL AFFORESTATION**

Forested area is much more productive than grassland to combat the negative environmental effects associated with land development. Forested areas not only protect streams from waterborne pollutants like suspended sediments and nitrogen and phosphorus, but they also improve air quality, sequester carbon, counter urban heat island effects, provide habitat for wildlife and many other desirable ecosystem services.

Numerous studies indicate that forested buffers make a meaningful contribution to reduction of subsurface nitrates removal. Specifically, studies show that large forested buffers can remove over 90% of subsurface nitrates and also filter greater amounts of other soluble pollutants that contribute to reduced stream health and water quality. Accordingly, voluntary wider buffer requirements that augment the Master Plan mandated 200-foot stream valley buffer ("SVB") requirement will further increase subsurface pollutant removal rates beyond what would be attained at 200 feet and enhance the protections afforded by the Master Plan.

Incentives to increase the buffers to improve environmental conditions on properties within the Ten Mile Creek watershed should be added to the Environmental Guidelines to invite land owners to increase the protection to the watershed beyond what is mandated when this is feasible. Additional forest within the required Open Space, especially forest that abuts the 200-foot required SVB buffer will provide environmental benefits greater than other forms of land use counted as traditional Open Space will provide ( this includes paved pathways, managed and unmanaged grasslands, playgrounds, etc.). An increased numerical value of voluntary afforestation component should be credited toward Open Space to reflect that increased environmental value.

We request you consider that afforested Open Space which is voluntarily put into Category I Forest Conservation easement, beyond minimum requirements for Forest Conservation Plans and SVB mandatory afforestation/reforestation, be credited at 1.75 acres of Open Space for each afforested acre.

This additional credit could be limited such that it could not exceed a value which reduces the total Open Space value below 65%. In this way, properties without much forested area, would have an incentive to provide more forest, which is very beneficial to the overall environmental conditions in the watershed.

#### **EPHEMERAL STREAM/CHANNEL DELINEATION**

Historic anthropogenic influence over the Ten Mile Creek watershed has created numerous drainage features that can be traced to development activities. Conversely, some legacy naturally occurring water conveyance features no longer function because of these same development activities. Some manmade features, such as road drainage ditches which are presently exempt from buffers, based on the draft language may currently have a direct hydrologic connection with naturally occurring natural watercourses (example - ditches build adjacent to wetlands share a subsurface connection) and should be considered for preservation through buffering. On the contrary, some natural drainage features presently lack a hydrologic connection due to past land disturbance. These features may no longer contribute to the watershed in a way that supports a healthy watershed conveyance structure.

A definition of ephemeral streams that includes all conveyance features except “roadside or other constructed ditches,” does not fully protect zero and first order streams that have evolved as a result of anthropogenic actions. Also, the blanket definition unfairly constrains a land owner from using property that has evolved such that it no longer contributes to the stream system in a meaningful way.

The definition and determination of an ephemeral stream/channel should rely on the same methodology used by the USACE. Consider "significant nexus" and other current determining principles per the existing published Federal Clean Water Act guidance to categorize drainage features as those which do or do not require a buffer. This designation does not mean that a Jurisdictional Determination (JD) issued by the USACE is a governing document for this process. It simply means that when MNCPPC and DEP staff evaluate the ephemeral streams they will have a verifiable scientific process to utilize in that determination process.

Thank you for your consideration,

SOLTESZ

Andie Murtha  
ISA Certified Arborist  
Senior Environmental Scientist and Planner

cc: Mary Dolan  
Mark Symborski  
David Carro  
Neil Patel  
Brian Grzelak  
Emily Vaias

**MCP-CTRACK**

**RECEIVED**  
0382

JUN 10 2014

**From:** John King <E27ca@verizon.net>  
**Sent:** Friday, June 13, 2014 4:06 PM  
**To:** MCP-Chair  
**Subject:** Guidelines for Environmental Management Hearing on June 12, 2014  
**Attachments:** Environmental Guidelines Letter 6-13-2014001.pdf

OFFICE OF THE CHAIRMAN  
THE MARYLAND NATIONAL CAPITAL  
PARK AND PLANNING COMMISSION

Dear Chair and Commissioners,

Attached is a letter concerning the June 12 Hearing on draft Guidelines for Environmental Management.

Thank You,

John R King, Jr.

June 13, 2014

Francoise Carrier, Chair  
Planning Board Commissioners  
Montgomery County Planning Board  
8787 Georgia Avenue  
Silver Spring, MD 20910

Re: Guidelines for Environmental Management of Development in Montgomery County  
Ten Mile Creek Limited Amendment

Dear Chair and Commissioners:

I attended the June 12, 2014 hearing on revised Guidelines for Environmental Management of Development but did not testify. Please include this letter in the hearing record.

I am the owner, along with my two sisters, of approximately 128 acres west of I-270. The King property is part of the fourth stage of development in the Clarksburg 1994 Master Plan.

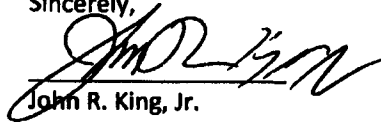
As a result of the County Council action, my property is now subject to some of the most restrictive constraints on development in the history of the county.

The Planning Staff draft revisions to the environmental guidelines appear to be far more restrictive than the mandate from the County Council by pushing definitions to their most restrictive and limiting interpretation.

For example, the guidelines for impervious surfaces extend the definition of impervious beyond current practice. As drafted, these new definitions would classify even little used agricultural field access roads as impervious surfaces. The gravel surfaced roads and parking lots desired by the planning staff for public access to forest areas would also be classified as impervious and counted against the 6% total.

These new guidelines appear to have one purpose, and that is to justify limiting the footprint of development west of I-270 even beyond direction from the Council.

Sincerely,


A handwritten signature in black ink, appearing to read "John R. King, Jr.", written over a horizontal line.

John R. King, Jr.

**MEMORANDUM**

February 28, 2014

TO: County Council

FROM:  Marlene Michaelson, Senior Legislative Analyst

SUBJECT: Ten Mile Creek Area Limited Amendment to the Clarksburg Master Plan and Hyattstown Special Study Area

This memorandum presents the recommendations of the Planning, Housing, and Economic Development (PHED) and Transportation, Infrastructure, Energy and Environment (T&E) Committees on the Ten Mile Creek Area Limited Amendment to the Clarksburg Master Plan and Hyattstown Special Study Area (hereafter referred to as the Ten Mile Creek Amendment). The Committees met seven times in January and February to discuss the Amendment. A separate memorandum addresses transportation issues.

**Councilmembers should bring their copy of the Plan to the meeting.**

Attached on © 1 to \*\* are an extensive array of background materials considered by the Committees prior to their decisions, documentation of information provided at the worksessions, and an update of summaries of land use and imperviousness based on the Committees' recommendations. A list of attachments is provided at the end of this memorandum.

Background information is presented on pages 1- 9 of this memorandum. The presentation of the joint Committee recommendations begins on page 9-21.

**BACKGROUND**

In October 2012, the County Council directed the Planning Board to undertake a limited amendment to the 1994 Clarksburg Master Plan to determine whether development should be allowed to proceed under the zoning in the 1994 Master Plan or whether changes in land use and/or zoning were needed to adequately protect Ten Mile Creek. The Amendment was limited to the Ten Mile Creek Watershed area. This area comprised Stage 4 in the 1994 Master Plan and does not yet have public water and

sewer. A chronology describing the various steps leading up to the Council decision to revise the Master Plan is attached at © 9-10.

## **ENVIRONMENTAL ANALYSIS**

The Committees spent several meetings discussing the environmental assessments prepared for the Ten Mile Creek Amendment. The Committees had presentations from the Planning Department, the Department of Environmental Protection (DEP), and the Washington Suburban Sanitary Commission (WSSC), as well as the Planning Department's environmental consultants (Ted Brown, Practice Leader for Biohabitats; and Greg Milstead, Supervising Engineer for Brown and Caldwell), and representatives of various state and federal agencies (Susan Jackson, Biological Criteria Program, United States Environmental Protection Agency; Matthew Stover, Natural Resources Planner, Maryland Department of the Environment; David Bolton, Hydrogeology and Hydrology Program Chief, Maryland Geological Survey; and Matthew Baker, Associate Professor, Geography and Environmental Systems, University of Maryland, Baltimore County).

Among the many issues addressed were the following:

- The current condition of the Ten Mile Creek watershed and the various sub-watersheds.
- Modeling scenarios used by the consultants.
- The role of environmental site design (ESD) in protecting Ten Mile Creek.
- Whether land use and zoning options could allow water quality to deteriorate in sub-watersheds.
- Prior Council actions to limit impervious surface levels.
- The basis of the Planning Board's decision to recommend varying levels of imperviousness on different properties within the same watershed.
- Prior circumstances in which the Planning Board recommended different impervious surface levels for different properties within the same watershed in the past.
- How increases or decreases in impervious surface levels impact water quality.
- The potential impacts of increasing or decreasing the impervious surface level cap on the key properties.
- The potential impact of the development that the Master Plan recommends for Stage 4 on the Piedmont Sole Source Aquifer and whether development levels recommended in the Master Plan impact the quality of well water.

The technical appendix to the Planning Board Draft and attachments to this packet address the issues considered by the Committees and provide much of the technical detail on environmental assessments.

In testimony, the Council heard both that the Planning Department consultants' models overestimate **and** underestimate the likely impact of development on Ten Mile Creek. The consultants' analyses attempt to determine the likely impact of development under various different scenarios, and they received criticism on several of their assumptions.

**While it would be possible to have different results with a different set of assumptions, the County's environmental staff, both within the Planning Department and the Department of Environmental Protection (DEP), believe the assumptions, modeling, and analyses prepared by the consultants were appropriate. Staff believes the Council must rely on its own independent Staff to make determinations regarding these extraordinarily complex analyses. Planning**

Department staff have specifically addressed each of the criticisms in their summary of testimony (see © 11-28).

It is entirely possible that the environmental impact could be significantly greater – or less – than indicated in the modeling, and the Council must make a decision without a definitive determination of potential impact. This is always the case when a decision must be based in part on modeling the future, instead of data collected from prior actual experiences. Since mechanisms to protect the environment and water quality are always changing, it is frequently necessary to create models to predict future impact. In particular, Staff notes that expectations regarding the impact of Environmental Site Design (ESD) are based on models, not data based on actual experience.

Given this, Staff believes the Council must be cautious. If the Council is overly conservative and later learns that additional development is possible without harming the environment (and provides other public benefits), it can always revisit the zoning and add additional development capacity. If the Council is not conservative enough and development significantly compromises water quality, it will likely be impossible to reverse this decision. At the same time, Staff continues to believe that the Council has an obligation to those who purchased homes in Clarksburg based on the visions set forth in the 1994 plan.

### **Impact on Little Seneca Reservoir and Drinking Water**

The Council received a substantial amount of public hearing testimony and correspondence regarding the potential impact development in the Ten Mile Creek watershed could have on the Little Seneca Reservoir and drinking water in general.

At the Committee worksessions, WSSC staff, DEP staff, and the Executive Director of the Interstate Commission on the Potomac River Basin (ICPRB) made presentations and answered questions.

**Both DEP and WSSC staff stated that, based on the environmental consultants' analyses, the development under consideration in the Ten Mile Creek watershed would not have a significant impact on the Little Seneca Lake Reservoir or on drinking water quality.**

For more background and discussion on this issue, please see the Council Staff packet on ©114.

### **BACKGROUND ON LAND USE ISSUES**

This section provides background information on Clarksburg population, previous land use decisions impacting the Ten Mile Creek Watershed, and the policies approved as part of the 1994 Master Plan. Attached on © 9-10 is a chronology of actions related to Ten Mile Creek.

#### **Population of Clarksburg**

The 1994 Master Plan estimated the population of Clarksburg at build out at 43,000. Planning Department staff indicate that there are approximately 20,000 residents in Clarksburg today, and there will be another 20,000 once the first three stages are completed. Stage 4, with the zoning recommended by the Planning Board, could result in approximately 4,000 additional residents.

Staff notes that the Committees' recommendations will allow for the **same** number of units on the Pulte/King property as the Planning Board Draft and **more** units on the Egan/Mattelyn property as the Planning Board Draft. On the Miles-Coppola property, the Committees' recommendations would allow for **fewer** units than the Planning Board Draft (but more than the 1994 Plan). The magnitude of the reduction will depend on whether the property owner decides to develop the portion recommended as Commercial Residential Town (CRT) for residential or commercial.

| <b>POPULATION ESTIMATES FOR CLARKSBURG</b>                                                                                                                                             |        |        |             |            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|--------|-------------|------------|
|                                                                                                                                                                                        | units  | est hh | avg hh size | population |
| 2014 Clarksburg built units and population                                                                                                                                             | 6,556  | 6,265  | 3.28        | 20,549     |
| 2014 Clarksburg built plus approved development                                                                                                                                        | 10,465 | 10,000 | 3.28        | 32,800     |
| 1994 Plan Clarksburg end state development stages 1, 2, and 3                                                                                                                          | 12,920 | 12,347 | 3.28        | 40,498     |
| Planning Board Limited Amendment stage 4 development <sup>1</sup>                                                                                                                      |        |        |             |            |
| detached                                                                                                                                                                               | 539    | 515    | 3.46        | 1,782      |
| attached                                                                                                                                                                               | 269    | 257    | 2.74        | 704        |
| multi-family                                                                                                                                                                           | 850    | 812    | 1.82        | 1,478      |
| total                                                                                                                                                                                  | 1,658  | 1,584  |             | 3,964      |
| <b>Note</b>                                                                                                                                                                            |        |        |             |            |
| 1. Assumes Pulte development under the Planning Board Draft would be 50% attached and 50% detached, Egan would be entirely detached, and Miles-Coppola would be entirely multi-family. |        |        |             |            |

## 1994 CLARKSBURG MASTER PLAN

In June 1993, the Planning Board submitted to the Council the Draft Clarksburg Master Plan and Hyattstown Special Study Area. The 1993 Planning Board Draft Master Plan's recommendations for the area that is the subject of the Amendment that is now before the Council, would have significantly downzoned much of the area west of I-270 to Rural Density Transfer (RDT) and Rural zoning and increased density on the east side of I-270 in the area around the Town Center. Maps showing the pre-1994 zoning and the zoning recommended in the 1994 Master Plan are attached at © 104-105.

After almost a year of discussion and 26 Planning, Housing, and Economic Development (PHED) Committee and Council worksessions, the Council approved the Master Plan in May 1994. The Master Plan confirmed the 1968 Plan recommendation that Clarksburg develop as a town, not a "corridor city" (as earlier contemplated in the General Plan), and made several recommendations to create a pedestrian-oriented town center and protect the environment, including recognizing the Ten Mile Creek Watershed as an environmentally sensitive area of County-wide significance.



The Council made numerous changes to the Draft Plan submitted by the Planning Board, recorded in a record long 95-page adoption resolution. Most notable, in the geographical area that is the subject of this Master Plan Amendment, it significantly increased both commercial (office) and residential development potential, while also adding staging that would delay development:

- It changed the land use on the properties between I-270 and MD 355 in the Ten Mile Creek Watershed from high density residential to mixed-use to allow for an employment use along I-270.
- It allowed for two employment sites west of I-270 in the Ten Mile Creek Watershed.
- It increased residential density in the area west of I-270 and east of the Ten Mile Creek main-stem ten-fold (from one unit per 5 acres to 2 units per acre).
- It added a 15 percent impervious surface area cap that applied only to commercial development west of I-270.
- It added a staging plan and indicated that development in the fourth stage could not proceed until certain triggers related to environmental quality were met.

The changes made by the Council on a property-by-property basis are summarized in the chart on © 6.

## 1994 VISION AND POLICIES

The Master Plan established a vision for Clarksburg as a transit- and pedestrian-oriented community surrounded by open space, and emphasized that it would be a corridor town, rather than a corridor city. It included 10 key policies to achieve the vision for Clarksburg:

1. **Town Scale of Development.** Envision Clarksburg as a town, at a larger scale than proposed in the 1968 Clarksburg Master Plan but smaller than a corridor city such as Germantown (with a population of approximately 43,000).
2. **Natural Environment.** Recommend that Clarksburg's natural features, particularly stream valleys, be protected and recommend Ten Mile Creek and Little Seneca Creek be afforded special protection as development proceeds.
3. **Greenway Network.** Recommend a multi-purpose greenway system along stream valleys.
4. **Transit System.** Propose a comprehensive transit system that will reduce dependence on the automobile.
5. **Hierarchy of Roads and Streets.** Propose a street network which clearly differentiates between highways needed to accommodate regional through traffic and roads which provide subregional and local access.
6. **Town Center.** Propose a transit-oriented, multi-use Town Center, which is compatible with the scale and character of the Clarksburg Historic District.
7. **Transit- and Pedestrian- Oriented Neighborhoods.** Cluster Development into a series of transit- and pedestrian- oriented neighborhoods.
8. **Employment.** Emphasize the importance of I-270 as a high-technology corridor for Montgomery County and the region, and preserve key sites adjacent to I-270 for future employment options.
9. **Farmland Preservation:** Support and reinforce County policies which seek to preserve a critical mass of farmland.
10. **Staging:** Development should be staged to address fiscal concerns and be responsive to community building and environmental protection objectives.

## ARE THE 1994 VISIONS STILL RELEVANT?

The Planning Board has indicated that, as they prepared this Master Plan Amendment, they considered the visions and key policies in the 1994 Master Plan, assumed that they should still guide their decisions, and chose land use and zoning options that would reflect those visions and policies. Staff believes it is worthwhile for the Committees to consider whether these visions should still guide Council decisions. Unless the Council chooses to add a new staging provision to this Amendment, the policy recommending the use of staging would no longer be valid. It appears that the policy promoting Clarksburg as a center for office employment may also no longer be valid, certainly in the short term.

Staff believes that each of the other policies continues to be relevant and important for the future development of Clarksburg. **This does not mean that Councilmembers may not choose to place greater importance on one policy over another, but that they should all be considered as the Council debates the merits of alternative land use and zoning options.**

## RETAIL STUDY

Attached on © 76-85 is a retail study of the Clarksburg area prepared by Bolan Smart Associates, Inc., serving as consultants to the Planning Department. The focus of the study was on the prospects for neighborhood serving retail in Clarksburg and the potential impact of an outlet mall on neighborhood serving retail.

Some of the key findings in their study are as follows:

- Clarksburg is a very strong candidate for outlet mall retailing.
- While the outlet mall may displace some of the demand for traditional neighborhood local serving retail, there is also the potential for regional destination shoppers to patronize non-outlet mall retailing, with each source more or less offsetting the other.
- There is unlikely to be significant competition between the types of stores most likely to locate in an outlet mall and the types of retail most likely to locate in neighborhood retail centers.
- The neighborhood retail environment in Clarksburg has changed significantly since approval of the 1994 Master Plan (see © 78).
- There may be too great a supply of neighborhood-oriented retail by a factor of 20 to 30 percent.

Regarding the addition of new residential units, their study indicates the following:

“In relatively small proportions (compared with the total Clarksburg build out), changes in the number of planned residential units and their location does not convey significant impacts on the potential for overall planned neighborhood retailing in Clarksburg.” (See ©78-79.)

The Boland Smart study also indicates that single-family homes (attached and detached) tend to account for substantially higher **per unit** levels of demand for neighborhood-based retail as compared to multi-family homes (due to family size, household age, and income) and that hotel and destination-based retail (i.e., an outlet mall) are variables that can add to the general level of activity in Clarksburg.

At the Committees' meeting, they further indicated that a decision to build an outlet mall in Cabin Branch could benefit Town Center, since it would likely mean that the outlet mall would replace other community serving retail at that location (including a grocery store) that would have been in competition with Town Center Retail.

## **BALANCE OF LAND USE AND ENVIRONMENTAL ISSUES**

One of issues brought up repeatedly in testimony is whether the 1994 Plan represented a satisfactory balance between land use and the environment. At the time the Planning Department Draft Plan was before the Council, the Planning Board, Planning Department staff, and County Department of Environmental Protection did not believe the Master Plan densities proposed and ultimately adopted by the Council provided that balance, and very strongly advocated for the lower density zoning submitted by the Planning Board. A slim majority of the Council disagreed and voted to change the zoning as shown in the table on © 6. Even those Councilmembers who supported the higher density zoning had enough doubts about environmental issues to recommend that Stage 4 properties not be allowed to immediately have access to sewer and water, that staging be added to the Master Plan to allow for a reevaluation of environmental protection measures, and that the Master Plan indicate that the Council would have the option of reconsidering the land use to better protect the environment.<sup>1</sup>

**To Staff's knowledge, this may be the only master plan to stage development and indicate that the Council may reconsider land use actions recommended in a master plan based on a future environmental assessment.** In 1994, some Councilmembers believed that the future assessment would prove that best practices required during development would protect water quality and validate the zoning decisions in the Plan, while others believed that the assessment would indicate that the Plan recommended densities in Ten Mile Creek would not protect the watershed and that the only option would be to reconsider the zoning and land use recommendations in the Master Plan. **The history of the Council discussion and the final Master Plan language is relevant, since it both clarifies that the Council did not know if the zoning would adequately protect the environment and that the Council put property owners on notice that they may not be able to develop under the zoning in the adopted Master Plan.**

## **SELECTING ZONING AND IMPERVIOUS SURFACE AREA CAPS**

In the property-by-property options that follow, Staff has provided options for zoning and impervious surface area caps and has indicated the Committee-recommended option. While some have suggested extremely low impervious surface area rates for this sensitive watershed, the reality is that no zone, once the property has been developed, has kept impervious surface area rates extremely low. Even the County's lowest density zone, the Rural Density Transfer (RDT) zone, which caps density at one unit per 25 acres, has impervious surface area rates of up to 5 percent as indicated in the data collected by

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<sup>1</sup> The Master Plan indicated that sewer and water should not be provided in the Ten Mile area until further environmental analysis was completed and the Council determined "if the methods, facilities, and practices then being utilized by applicants as part of the water quality review process then in place are sufficient to protect Ten Mile Creek." The Master Plan then identified four options for the Council to consider:

- Option 1: Grant water and sewer category changes without limiting conditions.
- Option 2: Grant water and sewer category changes with conditions related to water quality measure.
- Option 3: Defer action on a Water and Sewer Plan category change.
- Option 4: Consider other land use actions as are deemed necessary.

Planning Department staff on existing development.<sup>2</sup> (See chart of impervious surface area rates by zone on © 27.) The only way to keep impervious surface area rates extremely low would be for the County to purchase the land and preserve it as undeveloped land. While this may be appropriate for limited areas within the Ten Mile Creek Watershed, it would be extremely costly for the County to attempt to purchase most or all of the land.

Since Staff believes that imperviousness has a far greater impact on water quality than the number of units or density, Staff believes this should be the focus of the Amendment, rather than unit type or density. Therefore Staff recommends providing property owners with a great deal of flexibility regarding density, unit type and, where appropriate, height, provided they can meet impervious surface area caps. If the impervious surface area is capped and higher densities are allowed, it will be up to the property owner to determine whether to build in a traditional manner (similar to existing development in the County and the basis for the impervious surface calculations in the chart on © 27) and limit the number of units, or identify creative ways to increase unit yield while capping imperviousness. **Staff believes that this Plan should provide the zoning that would allow – and encourage – non-traditional design to limit imperviousness.** Limiting densities to those that have traditionally resulted in low imperviousness will not do that. Therefore, for each of the key properties discussed below, Staff had recommended higher densities than the impervious surface area limit would typically allow using traditional forms of development. The Committees supported this approach

**The Committees recommend significantly limiting the impervious surface area on undeveloped properties in the Ten Mile Creek Watershed. Joint Committee recommendations described below would reduce the imperviousness on each undeveloped property to approximately 50 percent of what would have occurred with the zoning in the 1994 Master Plan and no limit on imperviousness.**

## **TRANSFERABLE DEVELOPMENT RIGHTS**

The recommended change in zoning on the Pulte/King property would impact the number of Transferable Development Rights (TDRs) the property owner would be required to use to develop to the maximum allowed by the zone. The chart which appears below under the discussion of the Pulte property indicates the number of TDRs that would be required under different zoning options. Most of the options would mean a decrease in, or elimination of, the TDR requirement, and Staff was asked by Councilmembers to comment on this issue. **Staff very strongly believes that, on the Pulte/King property (and all other properties throughout the County), the Council should decide what it believes to be the right zoning and then separately address the issue of how to make sure the TDR program is in balance.**

Council periodically receives updates on the program. Staff has already asked Planning Department staff to work with Department of Economic Development (DED) staff to prepare the next update. They will update their records regarding the recording and/or sale of TDRs so that the Council will have an accurate count of the number of TDRs yet to be recorded (serialized) and the number yet to be sold. The Planning Department will update information on how many TDRs have been used in developments, how many will be needed for approved but not yet built projects, and how many would be required for undeveloped properties, based on existing zoning. They will also prepare an estimate of the number of

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<sup>2</sup> Although only one home per 25 acres is allowed, neither the size of the home nor the ability to build other structures/infrastructure that support farming, such as barns and roads, is limited, and these add to imperviousness.

TDRs that could be purchased, based on the new provision in the Zoning Ordinance Rewrite that will allow TDRs to be used as one of the benefits under the CR and CRT zones.

This information will be used to determine whether there is a gap between the number of TDRs yet to be sold and the potential receiving areas. If there is a gap, Council Staff will work with Planning Department and DED staff to identify a number of potential options the Council could consider to close the gap. **Staff believes that it is important for the Council to consider the entire TDR program, rather than focus on the loss of TDRs on one specific property.**

Pulte has indicated that they have already purchased TDRs in anticipation of developing this project. There is nothing in County law, regulations, or policies that requires or even encourages property owners to purchase TDRs in advance of obtaining sewer and water and regulatory approvals. If they choose to make a speculative purchase in advance of regulatory approvals, they do so at their own risk.

## **COMMITTEES' RECOMMENDATIONS**

### **LIMITS OF DISTURBANCE**

**Committees' Recommendation: Add language to the Master Plan to address the areas that should not be disturbed by development and consider whether regulatory changes are needed to ensure that limits can be enforced during regulatory reviews.**

Joint Committee members raised questions about the appropriate Limits of Disturbance (LOD) on properties within the Ten Mile Creek Watershed and the importance of not building on the most sensitive parts of the site. They asked the Department of Environmental Protection (DEP) and Planning Department staff whether it would be possible to map the most sensitive areas and provide additional guidance on where development should occur. Planning Department and DEP staff have worked together to map the most sensitive features of each site (see © 106 to 111).

Their preliminary analysis indicates that, on each of the three key properties, there is sufficient area not impacted by wetlands, ephemeral streams, springs and seeps, slopes over 15 percent, and most forested area to develop at the density and impervious surface area cap recommended by the Committee or even with the higher imperviousness recommended by the Planning Board.<sup>3</sup> It is impervious surface area caps, rather than the limits of disturbance, that will impact the amount of development.

**Committee Members asked Staff to prepare language that could be included in the Master Plan to describe the LOD. The Planning Department and DEP propose the following language, which would prevent property owners from developing in sensitive areas.**

The following language was prepared by Planning Department staff and DEP staff:

Unless a greater amount is required under the Planning Board's *Environmental Guidelines for Development*, environmental buffers (protected through the development review process) should include:

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<sup>3</sup> Not all forested areas could be preserved under any scenario for Miles Coppola, due to the bypass and the need to provide access to the site.

- 200 feet on both sides of perennial and intermittent streams and springs and seeps at a minimum, expanded to include:
  - All slopes 15percent or greater that begin within the 200 foot buffer
  - All erodible soils (with a erodibility factor of 8 or greater as identified by the NRCS)
  - A minimum buffer of 50 feet from all wetlands. Buffer will be expanded to include all slopes 15percent or greater that begin within the wetland buffer.
  - All ephemeral streams, not including roadside drainage ditches, plus an additional 50 feet. Buffer will be expanded to include all slopes 15percent or greater that begin within 50 feet of the ephemeral stream.

Forest Conservation plans will protect:

- All forest required by the Forest Conservation Law and Regulations (includes Environmental Buffers described above and minimum retention requirements)
- All other forest identified by the master plan for protection (the master plan must specifically identify interior forest and other forest identified in DEP's analysis)
  - All interior forest
  - On the Miles/Coppola properties, the 27 acres closest to I-270
  - On the Pulte/King properties, all forest adjacent to environmental buffers

The required open space in overlay zones should include, at a minimum:

- All environmental buffers per the above guidance
- All areas identified for protection in Forest Conservation Plans and Legacy Open Space recommendations beyond the environmental buffers

## DENSITY AND UNIT TYPE

**Committees' Recommendation: Give property owners with the flexibility to choose the appropriate unit type and maximize density to the extent appropriate, provided it can be achieved without exceeding the recommended imperviousness caps.**

Councilmembers have indicated to Staff that impervious surface area limitations are more important than the number or type of units and therefore Staff has worked with the Planning Department to determine the maximum number of units that could be built on each site without overwhelming the site. In many cases, the market may not lead to the maximum, but having a higher density will allow property owners the flexibility to add more development if it is marketable. On the Pulte property, Staff recommends deleting any requirement for single-family detached homes and allowing the property owner to provide whatever mix of single-family detached and single-family attached dwelling units it believes is appropriate. On the Miles-Coppola and Egan/Mattlyn properties, Staff recommends that the overlay zone allow for single-family attached, single-family detached, and multi-family units in whatever mix the property owner believes is appropriate. The maximum densities recommended by the Committees can only be achieved with attached units.

## HISTORIC DISTRICT

**COMMITTEES' RECOMMENDATION:** Include the entire Historic District (even the small portion outside the Ten Mile Creek Watershed) in the Master Plan Amendment. A majority of the Committee members recommend rezoning the properties within the Historic District CRT .05, C 0.5, R 0.5, H45. Councilmember Elrich supported the Planning Board recommendation for CRN 0.25, C 0.25, R 0.25, H 35.

The Master Plan Amendment as submitted by the Planning Board includes the portions of the Historic District in the Ten Mile Creek Watershed – which is most of the district. On January 28, the Council held a public hearing regarding changing the boundaries of the Master Plan Amendment to include the entire Historic District. The Committees believes the Council should have consistent zoning in the Historic District and should therefore recommend including the entire district in the Master Plan Amendment. This would address the testimony received from Donnie Gross of Potomac Holdings, LLC, whose property is in the Historic District at a prominent corner (MD 355 and Stringtown Road), but was kept in the R-200 zone because it was outside the Ten Mile Creek Watershed.

The Master Plan recommendations for the Historic District are described on pages 34-35 of the Master Plan. The 1994 Plan identified the Historic District as the focal point of the Town Center, encouraging sensitive and appropriate infill development in the District as an important component of the Plan's objectives for the Town Center. The 1994 Plan confirmed the existing convenience and general commercial zoning (C-1 and C-2) and one-family residential (R-200) zoning. This Amendment recommends the Commercial/Residential Neighborhood (CRN) zone with an overall floor area ratio (FAR) of 0.25, a Commercial (C) FAR of 0.25, a Residential (R) FAR of 0.25 and height (H) of 35 feet (CRN 0.25, C 0.25, R 0.25, H 35). The Plan indicates that the CRN zones would accommodate residential and light commercial uses across the district and would limit heights and densities to protect the scale and character of the Historic District. The Plan also recommends that the area between the Miles Coppola property and MD 355 also be zoned CRN. It consists of 9 parcels totaling 10.5 acres in the C-2 and R-200 zones, and the CRN designation would create consistent zoning along MD 355.

**Testimony:** The Council received testimony from several property owners objecting to the zoning recommendation and the limited FAR, which they indicate would be a downzoning for those properties currently zoned C-1. There is a recently redeveloped property that is a 0.33 FAR. In addition, at least one owner asked to retain the existing C-1 zoning or – alternatively – the Commercial Residential Town (CRT) zone instead of the CRN zone with its more limited list of uses.

**Committees Recommendation:** The 1994 and current Master Plan encourage “sensitive and appropriate infill development”. The goal is to allow sufficient densities to encourage infill and renovation while still maintaining the character and identity of the Historic District. In this situation, the Committees' majority believes the ability to allow renovation and infill development in the Historic District, provide business and service opportunities to Clarksburg residents in the Town Center, and add new development where there are already impervious surfaces, is more critical than preventing any change in the character of this historic district. **The majority supports the request for 0.5 FAR and trusts that the Historic Preservation Commission (HPC) will provide guidance that will protect historic character.** Achieving the Master Plan guidelines may make it impossible to achieve the full density, but the Committees believe the additional flexibility is warranted. Councilmember Elrich believed that the additional density and height could compromise the character of the Historic District and therefore supports the lower density and height recommended by the Planning Board. The Committees majority also supports the request for CRT zoning. CRN would be more appropriate for a

property at the edge of a single-family neighborhood, and is not necessary for a historic district that is in a Town Center District. Councilmember Elrich supported the CRN zoning recommended by the Planning Board.

**Staff recommends excluding the Historic District from the Clarksburg East Environmental Cluster Zone described below, but adding language to the Master Plan encouraging them to minimize impervious surface area to the extent feasible.**

## **RURAL PROPERTIES AND AGRICULTURAL RESERVE**

**COMMITTEES' RECOMMENDATION: The Committees unanimously supported the Planning Board recommendation to confirm the existing RDT and Rural zoning.**

The properties designated for Rural (1 unit per 5 acres) and Rural Density Transfer (RDT – 1 unit per 25 acres) in the 1994 Master Plan are addressed on page 39 of the Master Plan Amendment and shown in orange and green on the map on page 29 of the Master Plan. The 1994 Plan added 1,800 acres west of Ten Mile Creek to the Agricultural Reserve and additional land east of Shiloh Church Road was zoned Rural. **The Master Plan recommends confirming the existing zoning, and the Committees concurs.** The Master Plan also recommends a voluntary forest banking program to encourage property owners to create forested stream buffers.

## **COUNTY PROPERTIES WEST OF I-270**

**COMMITTEES' RECOMMENDATION: The Committees unanimously recommend that zoning on County owned property west of I-270 be capped so as not to allow any additional impervious surface at this time, but further recommend including language in the Master Plan Amendment indicating that the impervious surface overlay zone may need to be amended in the future to allow for an expansion of the Correctional Facility of less than one acre.**

Montgomery County owns more than 380 acres in the upper reaches of the Ten Mile Creek watershed (see page 37 of the Master Plan). The Master Plan discusses this property on pages 38 to 39. The northern portion is the site of the Correctional Facility. A 94-acre portion along I-270 was recommended for employment and was at one point the proposed location of the North County bus depot. The Planning Board Draft Master Plan recommends limiting imperviousness to 8 percent on the former depot site and 4.5 percent on the remaining County property. **Although the Council Executive indicated that he does not plan to further develop these properties and therefore recommends no additions to the existing impervious surfaces, the plans for the Correctional Facility include the possibility of an expansion of residential facilities and a new training facility (which is in the current Capital Improvements Program (CIP)). Therefore, the Committees recommend that the Master Plan Amendment indicate that the impervious surface overlay zone may need to be amended in the future to allow for an expansion of the Correctional Facility of less than one acre.**

## **PULTE/KING PROPERTIES**

**COMMITTEES' RECOMMENDATION: The Committees unanimously support Option 6 below, which includes the zoning recommended by the Planning Board for the Pulte/King properties**



**(RNC 1), but with a 6 percent limit on the impervious surface area and no limit on the mix of housing type.**

In 1993, the Planning Board recommended Rural zoning for the Pulte/King property due to environmental constraints. A majority of the Council believed that new state-of-the-art environmental “best management practices” could protect Ten Mile Creek and that higher density zoning, which would allow for additional housing, was appropriate. The Council changed the zoning on approximately 600 acres (including a portion of the property now owned by the County) to RE-1/TDR and indicated that up to 900 dwelling units (1.5 units per acre) would be appropriate through the purchase of TDRs if certain environmental and housing guidelines could be achieved.

In this 2013 Amendment, Planning Department staff recommended changing the zoning to Rural Neighborhood Cluster (RNC) at 0.4 units per acre, which would allow approximately 215 units, with an 8 percent impervious surface area cap and 80 percent open space. The Planning Board changed this to RNC 1.0 (which would allow approximately 538 units) with a 10 percent impervious surface area cap and 65 percent open space. The property owner believes that the zoning density allowed in the 1994 Master Plan is appropriate with a 12.5 percent impervious surface area cap. They believe that their environmental analysis indicates they can adequately protect Ten Mile Creek. The Council received some testimony in support of the existing zoning, but received a far greater amount of testimony asking the Council to further limit development. Although much of this testimony was general in nature, those that were more specific suggested caps ranging from the Planning Department staff recommendation of 8 percent to 4 or 6 percent, and some who believe that no development should be allowed at all, particularly on subwatershed LSTM110.

The Committees considered a range of zoning options below at different impervious surface area levels, ranging from the 1994 zoning as requested by the property owner to a density of 1 unit per 5 acres. Staff did not include an option for no development, nor does Staff believe RDT zoning would be appropriate here given that land directly to the west is already zoned Rural, separating it from the rest of the Agricultural Reserve. (In addition, converting the existing forested area to farms might have a more negative impact than higher density zoning, which preserves the forested areas.)

| Pulte                                  | Zone           | Yield                                                | TDRs     | Site Imperviousness | Subwatershed Imperviousness              | Comments                                           |
|----------------------------------------|----------------|------------------------------------------------------|----------|---------------------|------------------------------------------|----------------------------------------------------|
| Option 1<br>(Property Owner/1994 Plan) | RE-1/<br>TDR2  | 807 <sup>4</sup>                                     | 169      | 12.5%               | 15.1% (LSTM110)<br>14.1% (LSTM111)       |                                                    |
| Option 2<br>(Planning Board)           | RNC 1          | 538 units                                            | 0        | 10%                 | 10.1% (LSTM110)<br>13.8% (LSTM111)       | 65% Open Space                                     |
| Option 3<br>(Planning staff)           | RNC 0.4        | 215                                                  | 85       | 8.0%                | 8.4% (LSTM110)<br>11.1% (LSTM111)        | 80% Open Space                                     |
| Option 4                               | RNC 1.0        | Up to 538 units or 656 units with MPDUs <sup>5</sup> | 0        | 8.0%                | 8.4% (LSTM110)<br>11.1% (LSTM111)        | 80% Open Space and no limit on mix of units        |
| Option 5                               | RNC 1.0        | Up to 538 units or 656 units with MPDUs              | 0        | 7.0%                | 7.5% (LSTM110)<br>9.7% (LSTM111)         | Scenario 5 in consultant study                     |
| <b>Option 6 – Committees’ Option</b>   | <b>RNC 1.0</b> | <b>Up to 538 units or 656 units with MPDUs</b>       | <b>0</b> | <b>6.0%</b>         | <b>6.6% (LSTM110)<br/>8.3% (LSTM111)</b> | <b>80% Open Space and no limit on mix of units</b> |

The Planning Department’s environmental consultant recommended that everything possible should be done to preserve “existing conditions in the high quality headwater subwatersheds of LSTM110 and LSTM111” and also focused on the importance of the impervious surface area, particularly in areas where the existing imperviousness is currently low. Comments the Committee heard from Planning Department staff, DEP staff and other government experts confirmed this. The Executive notes that “the negative effect of small increases in development activity in these areas is relatively much more significant than the effects that occur in areas with a greater amount of preexisting development.” Professor Matthew Baker also presented information to the Committee indicating that keeping the imperviousness in LSTM110 and 111 “as close to 5% as possible stands the best chance (with LID, ESD and development at or near the divide and away from the stream channels) of protecting the valuable natural resource they represent.” **The Committees believe that the Council should do everything possible to minimize imperviousness in these subwatersheds and therefore unanimously**

<sup>4</sup> The 1994 Plan allowed up to 1.5 units per acre or 900 units over the entire site – which would equate to 807 units on the portion owned by Pulte and King.

<sup>5</sup> Typical RNC development with single-family detached units and an 8% cap would yield approximately 215 units. The Committees recommends setting the zoning at RNC 1 as recommended by the Planning Board and giving the property owner the flexibility to develop with all smaller and/or attached units to increase yield.

**recommends Option 6, which would cap imperviousness on new development at 6 percent while allowing up to one unit per acre (or 1.22 with MPDUs).**

Should future data on the implementation of Environmental Site Design (ESD) prove that a higher impervious surface area rate with ESD can protect sensitive streams, then the Council could reconsider the impervious surface area cap.

Although the chart on © 27 indicates that existing RNC zoning in the County has resulted in average impervious surface area rates of 8.9 percent, the Committees recommend limiting the imperviousness to 6 percent and allowing for an unlimited mix of units. While it may not be possible to achieve the allowable density with single-family detached units, the flexibility recommended by the Committees will allow the property to maximize density by building a majority of attached units.

## **MILES-COPPOLA PROPERTY**

**COMMITTEES' RECOMMENDATION: The Committees recommend split zoning the Miles-Coppola property with CRT zoning on the southern developable area and residential development (R-90) on the remaining portion of the Miles-Coppola property with flexibility regarding unit type and height. The majority of the joint Committee members also recommend limiting overall imperviousness to 15 percent, while Councilmember Floreen believes that imperviousness should be set at 20 percent.**

Both the Miles-Coppola and Egan/Mattlyn properties are in the 635-acre Town Center District (see maps on © 2). They are also in the headwaters of Ten Mile Creek. In the 1994 Plan, the Council believed that it was important to reserve sites along I-270 for employment, and recommended the Miles-Coppola site for the Mixed-Use Planned Development (MXPD) zone, with up to 470,000 square feet of commercial development.

This Master Plan Amendment addresses the Miles-Coppola property on pages 33 to 34. The abundance of vacant land zoned for office development and changes in the market for office development led the Planning Board to believe that office-oriented development was not ideal, and zoning limited to office uses could impede or at least delay development of this property. Earlier development of this property could help support commercial activity in Town Center.

The Planning Board recommends changing the zoning to CR 0.75, C 0.5, R 0.5, H 85 to allow a mix of uses that would help implement the 1994 Plan's vision for a complete corridor town. The Plan notes that environmental constraints, particularly steep slopes, indicate that only about 50 percent of the property is developable, and there are 3 likely developable areas. (Later analysis of potential limits of disturbance by DEP confirms the 3 developable areas, but indicates that only 28 percent could be developed without impacting environmentally sensitive areas.)

The Plan recommends limiting impervious surface area on this property to 25 percent. It notes that the existing imperviousness is 16 percent and the water quality is fair. Planning Department staff believe the 25 percent impervious surface area cap would allow the stream to remain in fair condition (as judged by macro-invertebrate scores), although probably at the low end of fair. A 25 percent impervious surface area cap could, however, pose a risk downstream in subwatersheds with good conditions, especially for storms that exceed the design requirements for ESD. The consultant's report indicates

that stream flow in a one-year storm event would increase by 60 percent and the peak stream flow would increase by about 15 percent in LSTM206.

For this property, Staff presented the Committees with options ranging from the 35 percent impervious surface area rates requested by the property owner down to an 8 percent impervious surface area level.

|                                                          | <b>Zone</b>                                                   | <b>Yield</b>                                                                                                                            | <b>Site Imperviousness</b> | <b>Subwatershed Imperviousness</b>                              | <b>Comments</b>                                                                                                                                                                                                   |
|----------------------------------------------------------|---------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Miles-Coppola 1994 Plan</b>                           | R-200<br>MXPD                                                 | 288 units<br>470,000<br>square feet<br>commercial                                                                                       | Not limited                | Estimate (since not<br>limited)<br>28.7% (LSTM206) <sup>6</sup> |                                                                                                                                                                                                                   |
| Option 1 (Property<br>Owner)                             | CR                                                            | 300 units<br>450,000<br>square feet +<br>250 hotel<br>rooms                                                                             | 35%                        | 30.8% (LSTM206)                                                 | A 35% impervious surface<br>area rate would not only<br>increase the negative impact<br>on the stream, but could not be<br>accommodated within the<br>areas designated by DEP as<br>sensitive (see © 108).        |
| Option 2<br>(Planning Board)                             | CR                                                            | 850 units<br>2.13 million<br>square feet                                                                                                | 25%                        | 28.2% (LSTM206)                                                 | Would allow significant<br>development, but with<br>potential impacts on Ten Mile<br>Creek.                                                                                                                       |
| Option 3                                                 | R-90<br>and<br>CRT 2.<br>0, C 2,<br>R 2,<br>H 120             | Up to 279<br>units on 93<br>acres (or 340<br>with MPDU<br>bonus); and<br>up to<br>435,600 SF<br>on 5 acres                              | 20%                        | 25.9% (LSTM206)                                                 | Scenario 5 in consultant<br>analysis                                                                                                                                                                              |
| <b>Option 4<br/>COMMITTEES'<br/>RECOM-<br/>MENDATION</b> | <b>R-90<br/>and<br/>CRT 2.<br/>0, C 2,<br/>R 2,<br/>H 120</b> | <b>Up to 279<br/>units on 93<br/>acres(or<br/>340 with<br/>MPDU<br/>bonus); and<br/>up to<br/>435,600 SF<br/>on 5 acres<sup>7</sup></b> | <b>15%</b>                 | <b>23.7% (LSTM206)</b>                                          | <b>Places higher density CRT<br/>zoning on southern<br/>developable area near most<br/>degraded streams. Reduces<br/>overall impervious surface<br/>area while allowing<br/>development near Town<br/>Center.</b> |
| Option 5                                                 | RNC 1<br>and<br>CRT 2.<br>0, C 2,<br>R 2,<br>H 120            | Approx. 84<br>units <sup>8</sup> on 93<br>acres; and<br>up to<br>435,600 SF<br>on 5 acres                                               | 8%                         | 21.1% (LSTM206)                                                 | Places higher density CRT<br>zoning on southern<br>developable area near most<br>degraded streams. Greater<br>reduction in overall<br>impervious surface area places<br>greater limit on unit potential.          |
| Option 6                                                 | RNC                                                           | 35 units                                                                                                                                | 8.0%                       | 21.1% (LSTM206)                                                 | Allows greatest protection of                                                                                                                                                                                     |

<sup>6</sup> All estimates of impervious surface area on LSTM 206 assume the same percentage of impervious surface area in for the Miles-Coppola and Egan properties.

<sup>7</sup> Planning Department Staff have estimated that the property owner could achieve the full yield allowed under the zone if they can limit the impervious area to 1,450 square feet per unit (which has occurred in some townhouses developed with relatively small footprints and located close to the street).

<sup>8</sup> Assumes average impervious surface area of 1450 square feet per unit.

|  |     |  |  |  |                                                                                           |
|--|-----|--|--|--|-------------------------------------------------------------------------------------------|
|  | 0.4 |  |  |  | resources, but significantly limits development that could be beneficial for Town Center. |
|--|-----|--|--|--|-------------------------------------------------------------------------------------------|

**The majority of the Committee members recommend Option 4, which they believe would provide greater protection for Ten Mile Creek than the Planning Board recommendation for a 25 percent impervious surface area cap, while at the same time allowing approximately the same level of development as the 1994 Plan.** Councilmember Floreen supports Option 3, which she believes will still provide sufficient protection for the Creek, while also providing more flexibility to accommodate development in the Town Center District and support the success of Town Center.

As indicated in the Sector Plan and confirmed in the environmental analysis, there are 3 developable areas. The one furthest south is in the area where water quality is already most degraded. This area has the easiest access to MD 121 and Town Center and therefore the Committees believe it is an appropriate site for more intense development. **Options 3, 4, and 5 would split zone the Miles-Coppola property and put CRT zoning on the southern developable area and residential development on the remaining portion of the Miles-Coppola property.** The zoning would allow the property owner to concentrate density and imperviousness on the southern developable parcel. The Committee unanimously supported the split zoning recommendation, but disagreed on the impervious surface cap.

The Committees asked Staff to work with Planning Department staff to select a zone that would maximize density to the extent feasible, given the recommended impervious surface area cap. Council Staff and Planning Department staff are in agreement that the appropriate density is 3 units per acre, or up to 3.66 units per acre with a Moderately Priced Dwelling Unit (MPDU) bonus. Achieving the full density would require the construction of a significant number of attached homes and/or multi-family units. Staff recommends using R-90 as the base zone (because it is most appropriate in terms of allowed density), with significant changes via the overlay zone to allow greater heights, smaller lots and setbacks, and an unrestrained mix of all unit types. In addition, the overlay zone should limit imperviousness, and require 80 percent open space and the submission of a site plan. The overlay zone is described in greater depth below.

As indicated in the chart above, the Planning Board recommendation would increase subwatershed imperviousness from the existing 16 percent to 28.2 percent. An 8 percent impervious surface area cap on new development would lead to a 21.1 percent impervious surface area rate subwatershed wide, but would significantly limited development potential. The split in zoning recommended by the Committee majority would increase overall imperviousness to 23.6 percent, but would allow an owner to build a hotel, office, or apartment building on the southern site and maintain lower densities on the rest of the property – or to build an entirely lower density residential community. The reduced imperviousness would reduce the environmental impact of development, while the CRT zoning on the southern portion would allow more intense zoning that would support Town Center.

The Committees discussed the appropriate impervious surface area cap at length with environmental experts and agreed that the existing level of imperviousness and water quality in LSTM206 indicate that there is only limited benefit in limiting the imperviousness to less than 15 percent. As noted in the attached information from the Department of Environmental Preservation (DEP) and Professor Matt Baker, there is a significant impact of increasing imperviousness when the existing imperviousness is low and a far less meaningful change once the imperviousness is at a higher percentage. Professor Baker notes that “there is little evidence to suggest that 24% imperviousness will produce substantially

greater degradation than 21% imperviousness.” (An 8 percent impervious cap on these properties would result in an overall imperviousness of 21 percent for subwatershed LSTM206; a 15 percent impervious cap on these properties would result in an overall imperviousness of almost 24 percent for subwatershed LSTM206.) Based on the information presented, the majority selected Option 4, which would limit imperviousness to 15 percent, while Councilmember Floreen believed that the additional imperviousness allowed by Option 3 was worthwhile to create greater flexibility for property owners in the Town Center District.

## **EGAN/MATTLYN ENTERPRISES LLC PROPERTY**

**COMMITTEES’ RECOMMENDATION: The Committees support rezoning this property R-90 with flexibility regarding the unit type and height. The majority recommends a 15 percent impervious surface area cap and Councilmember Floreen supports a 20 percent cap.**

Although the Egan/Mattlyn property is in the Town Center District, it was further from the Town Center itself and therefore the 1994 Master Plan recommended an R-200 base zone and PD-4 floating zone. The current Master Plan Amendment recommends eliminating the PD-4 option and retaining the R-200 designation, with a 25 percent impervious surface area cap.

Approximately half of the Egan/Mattlyn property is in LSTM206, which currently has an impervious surface area of 16 percent and streams that are in fair quality. However, the remainder is in LSTM201, a large subwatershed with more limited development. Even the 25 percent impervious surface area rate recommended by the Planning Board for new development would result in a 7.5 percent overall impervious surface area rate for the entire subwatershed.

For this property, the Committees reviewed several options with different zoning and impervious surface area rates.

|                                            | <b>Zone</b>      | <b>Yield</b>                              | <b>Site Imperviousness</b> | <b>Subwatershed Imperviousness</b>        |
|--------------------------------------------|------------------|-------------------------------------------|----------------------------|-------------------------------------------|
| <b>Egan 1994 Plan</b>                      | R-200/<br>PD 2-4 | 300 units <sup>9</sup>                    | Estimate 28.5%             | 7.6% (LSTM201)<br>30.8% (LSTM206)         |
| Option 1 (Planning Board)                  | R 200            | 200 units                                 | 25%                        | 7.5% (LSTM201)<br>28.2% (LSTM206)         |
| Option 2                                   | R-90             | 300 (or up to 366 with MPDU bonus)        | 20%                        | 6.8% (LSTM201)<br>25.9% (LSTM206)         |
| <b>Option 3 COMMITTEE'S RECOMMENDATION</b> | <b>R-90</b>      | <b>300 (or up to 366 with MPDU bonus)</b> | <b>15%</b>                 | <b>6.5% (LSTM201)<br/>23.7% (LSTM206)</b> |
| Option 4                                   | RNC 1.0          | 99 units (or up to 121 with MPDU bonus)   | 8%                         | 6.5% (LSTM201)<br>23.7% (LSTM206)         |
| Option 5                                   | RNC 0.4          | 39 units                                  | 8.0%                       | 5.8% (LSTM201)<br>21.1% (LSTM206)         |

The majority of the Committee members recommend Option 3 which they believe would provide greater protection for Ten Mile Creek than the Planning Board recommendation for a 25 percent impervious surface area cap, while at the same time allowing for 50 percent more units than the Planning Board Draft. Councilmember Floreen recommends a 20 percent impervious cap to provide greater flexibility for a property in the Town Center District. The environmental issues related to the portion of this property in LSTM are the same as those discussed for the Miles-Coppola property and therefore the discussion is not repeated here. The lower imperviousness in the portion of the property in LSTM201 means that even with 15 percent on new development, the overall subwatershed imperviousness will be 6.5 percent.

Since this property is less constrained and with the additional flexibility regarding unit type and height, the owner is more likely to achieve the full development allowed under the zoning recommendation.

## **FIRE STATION**

**COMMITTEES' RECOMMENDATION:** The Committees recommend that the Master Plan encourage the County to once again consider other options for the Fire Station that are either outside the Ten Mile Creek Watershed or on land that already has an impervious surface on it.

The County has acquired property within the Ten Mile Creek Watershed to build a fire station. It is directly outside the Historic District in the area between MD 355 and Miles-Coppola. **The site is currently forested and undeveloped.** If developed as currently planned, the fire station would create 37 percent imperviousness. Staff believes the County should make every effort to find another location

<sup>9</sup> Assumes mid-point of range in the 1994 Plan recommendations.

outside the Ten Mile Creek Watershed or on land that already has an impervious surface. Planning Department staff have identified some properties in the Historic District that might provide a suitable location. If this site can be left undeveloped, it will provide greater flexibility to locate the bypass and reduce the overall impervious surface area rate for the subwatershed.

**The Executive has agreed to conduct an extensive search for other sites but prefers that the Master Plan not prohibit a fire station at this location, in case there are no other viable alternatives.**

Staff notes that the Fire Station will be included in the Clarksburg East Environmental Cluster Zone if the Council adopts the boundaries proposed by Staff. At the time the Council reviews the zoning text amendment, it should have updated information on the possibility of another site and **can consider whether an exemption for the fire station site is warranted.**

## **PARKS RECOMMENDATIONS**

**COMMITTEES' RECOMMENDATION: The Committees support the revised language related to parkland dedication proposed by Department of Parks staff.**

The Master Plan's park recommendations are described on pages 41- 43 of the Master Plan. The Plan recommends designating 1,230 acres for Legacy Open Space and suggests that it be designated through a variety of tools, including easements, dedication through the development process, and fee simple acquisition.

It also recommends the creation of a Ten Mile Creek Conservation Park and suggested that the rural open space on the Pulte and King properties should be conveyed to Parks. Staff did not understand what was meant by the term "convey" and asked Planning Department staff to clarify. They now recommend the following changes. In the third bullet they recommend changing the word convey to dedicate and also adding the following language at the end of the third bullet:

However, land not available through dedication during the development review process may be acquired by the Department of Parks.

Staff supports this change in language.

## **SCHOOLS**

Councilmember Riemer asked for an assessment of the impact of proposed development on Clarksburg schools. The Committees reviewed an analysis prepared by Bruce Crispell of Montgomery County Public Schools, based on the densities and zoning recommended by the Planning Board. The Planning Board Draft Master Plan would result in fewer students than the adopted 1994 Master Plan. The Committees' recommendations will result in even fewer overall students, primarily due to the fact that the Committees' recommendations will result in a shift in unit type from single-family detached homes to townhomes and also due to the reduction in the number of units on Miles-Coppola.



## IMPERVIOUS OVERLAY ZONES

The Committees' recommendations would require the creation of overlay zones to limit imperviousness. **Although this will be addressed in a separate process, the Master Plan should include a description of the overlay zones and therefore Staff has described key attributes below.**

**At this point, Staff is contemplating two overlay zones.** On the east side of I-270, it will limit imperviousness to 15 percent and allow development consistent with the land use objectives of the Town Center District. On the west side of I-270, all properties except County property will be limited to a 6 percent impervious surface area; no further impervious development will be allowed on County property at this time, but the Master Plan will indicate that further amendments to the overlay zone may be needed to accommodate limited expansions in County facilities. **Both overlays should indicate that full density allowed by the zone may only be achieved if it does not exceed the impervious surface area cap.**

### Overlay Zone Boundaries

Attached on © 112 to 113 are maps of the potential boundaries for the two overlay zones. Staff is recommending that each overlay zone cover a large area, rather than just the key properties identified in the Master Plan. While some of the other properties are likely to develop at **less** than the limits in the overlay zone, including them within the boundaries will help prevent development that could result in significantly more imperviousness. For example, development in the rural zone west of I-270 could result in individual homes that have an imperviousness of less than 6 percent, but if an institution or special exception use were to purchase the property, the imperviousness could be significantly greater than 6 percent and therefore Staff recommends including land zoned rural. On the east side of I-270, all properties in Ten Mile Creek, except those in the Historic District, would be within the boundary with exemptions for State and County roads and bikeways. (When the overlay zone is considered by the Council, it should consider whether any further exemptions are necessary for small properties.) On the west side, all land draining to Ten Mile Creek not zoned Rural Density Transfer (RDT) would be included. Staff does not believe it would be appropriate to put an impervious surface area cap on land intended for active farming.

**Staff Recommendation:** Staff recommends the Council support the boundaries of the impervious surface overlay zones shown on © 112-113.

### Total Imperviousness

Attached on © 8 is a calculation of imperviousness prepared by Planning Department staff. It calculates the impervious surface area by subwatershed and for the entire Ten Mile Creek watershed. It is important to note that these calculations do not include two changes in assumptions: (1) the reduction in imperviousness if the Council supports the Staff recommendation to have a broader area included in the overlay zones (approximately 0.7 percent in LSTM206, from 23.6 percent to 22.9 percent) and (2) any addition in imperviousness that may occur based on the Committees' recommendation to allow development in the Historic District to increase from a 0.25 floor area ratio (FAR) to a 0.5 FAR. If all properties in the Historic District redevelop to the full limits of the new zone, Planning Department staff indicate the increases in imperviousness would be approximately equivalent to the decreases associated with the boundary delineation. Since it is highly unlikely that more than a couple of properties in the

Historic District will redevelop to the limits of the zone (and Staff recommends adding language about minimizing imperviousness to the extent feasible), Staff believes that the overall imperviousness for subwatershed 206 is likely to be less than estimated on the chart on © 8.

### **The Clarksburg East Environmental Cluster Overlay Zone**

Details regarding the overlay zone will be considered when the text amendment is introduced and considered by the Council; however, the major elements in the overlay zone proposed for the east side of I-270 are as follows:

- All base zones other than R-90 will adhere to the standards of the underlying zones with an impervious surface area cap (15percent if the Council supports the Committee majority)
- For properties with a base zoning of R-90, the requirements of the R-90 zone will be modified with overlay as follows:
  - Density limited to 3 units per acre or 3.66 with MPDU bonus
  - Allows any unit type with no requirements for any minimum percentages
  - impervious surface area cap (with a grandfathering provision for properties already exceeding the cap)
  - 80 percent open space (which should include all environmental buffers and sensitive areas identified in the master plan)
  - Height limits changed to 35 for single-family detached, 50 for townhouses and 65 for multi-family
  - Requires site plan
  - Reduce setbacks
  - No minimum lot size
  - Need to check all other development standards in R-90 to see if others need to be changed to provide maximum flexibility
- Need to consider whether it is necessary to add an exclusion from some or all provisions of the overlay zone for development/redevelopment of small lots and if so what the threshold lot size should be.

### **The Clarksburg West Environmental Cluster Overlay Zone**

The major elements in the overlay zone proposed for the west side of I-270 are as follows:

- Will follow all standards and requirements of the RNC zone (which are designed to encourage clustering to protect environmental resources)
  - Impervious Surface Area Cap of 6 percent; specific properties to be limited to 0 percent (mostly government owned or with easements, with a grandfathering provision for properties already exceeding the cap)
- The open space required in the Master Plan should include all environmental buffers and sensitive areas identified in the Master Plan)

- Need to consider whether it is necessary to add an exclusion from some or all provisions of the overlay zone for development/redevelopment of small lots and, if so, what the size should be.
- Potential exclusion for limited park development of parking lots and trails.

Note that the Master Plan will indicate that the overlay zone **may** be amended at a future time to accommodate less than 1 acre of Correctional Facility expansion.

Staff will work with Planning Department and DEP staff to determine what changes, if any, are needed in the boundaries of the Special Protection Area (SPA) based on the Council's decisions on the Overlay Zones.

## **FOLLOW-UP REGULATORY EFFORTS**

Joint Committee members asked Council Staff to determine whether there were further regulatory measures that needed to be adopted to ensure that Ten Mile Creek is protected as much as possible. An interagency group of staff has met to explore regulatory options and will continue to meet and evaluate alternatives. It is premature to identify potential options at this point, but there appear to be potential opportunities in the following areas.

1. Guidance regarding the Limits of Disturbance (LOD) in Special Protection Areas (SPAs), including more stringent limitations than used for development outside SPAs as to where development may occur.
2. Explore options to reduce erosion at storm drain outfalls.
3. Remediation of compacted soils through soil decompaction and soil amendments.
4. Determine whether/how it may be necessary limit stormwater management practices in riparian areas and other sensitive areas.
5. Determine if guidelines are necessary to protect riparian areas and other sensitive areas from indirect impacts associated with stormwater management.
6. Guidance on the delineation and mapping of sensitive environmental features that are present seasonally.

## **WATER AND SEWER**

Committee members were supportive of the Water and Sewer Service recommendations in the Master Plan (see page 40 of the Plan). More detail regarding water and sewer issues in Stage 4 and Committee discussion can be found on © 114-128.

- The Committee's land use recommendations, while resulting in lower overall densities in each of the major Stage 4 properties under review, still would involve zoning (RNC, R-90, and CRT) where the extension of public water and sewer service would be consistent with the County's Ten-Year Comprehensive Water Supply and Sewerage System Plan policies.
- The Master Plan recommendation for WSSC to coordinate a comprehensive Stage 4 sewerage facility plan, "with the participation of all major Stage 4 development interests" is a key component in ensuring that future sewer extensions are "logical, efficient, and environmentally responsible."

- The 1994 Master Plan recommended public sewer for the Clarksburg Historic District in order to replace aging septic systems and to improve and redevelop properties in the Historic District. The Limited Master Plan Amendment continues to support this recommendation. The approval of Water and Sewer service to the Stage 4 properties in Clarksburg may make extensions to the Historic District more economically feasible for property owners. However, given the immediate concerns of Historic District property owners and the uncertainty as to if and when sewer would be extended to Stage 4 properties, the Limited Amendment notes that the County is investigating ways to extend sewer to serve the Historic District. **Council Staff recommends that the County work with WSSC to address extension cost issues for properties in the Clarksburg Historic District.**

## **DRINKING WATER**

The Committee heard from County Executive and DEP staff that a future study of the long-term health of the Little Seneca Reservoir (encompassing the land use impacts from all of the watersheds draining into the Reservoir) would be worthwhile. Details such as the scope of such a study and who would lead and pay for the study remain to be worked out. However, given the regional purpose of the Little Seneca Reservoir, Council Staff believes it would be appropriate for the Reservoir's regional partners (WSSC, Fairfax County Water Authority, Washington Aquaduct, and the Interstate Commission on the Potomac River Basin) as well as DEP to all be involved in the study.

More detail regarding the Committee's review of the Little Seneca Reservoir and drinking water issues in general can be found on ©114-128.

## ATTACHMENTS

|                                                                                                                              |     |
|------------------------------------------------------------------------------------------------------------------------------|-----|
| 1. PowerPoint prepared by the Planning Department including                                                                  |     |
| Map of master plan area                                                                                                      | 2   |
| Units, households, and population                                                                                            | 3   |
| Map of subwatersheds                                                                                                         | 4   |
| Map of key properties                                                                                                        | 5   |
| Summary of plan proposals (1994 Plan, 2013 Draft Plan and Joint Committee recommendations)                                   | 6   |
| Assumptions for Imperviousness Analysis                                                                                      | 7   |
| Cumulative Imperviousness Estimates by Subwatershed                                                                          | 8   |
| 2. Chronology of events related to the Ten Mile Creek Amendment                                                              | 9   |
| 3. Response to testimony submitted to the Council (prepared by Planning Department)                                          | 11  |
| 4. Scope of work for the Planning Department's environmental consultants                                                     | 29  |
| 5. Rationale for using different impervious surface area levels for different properties within the Ten Mile Creek Watershed | 36  |
| 6. Responses to Councilmember Berliner's questions from Planning Department                                                  | 38  |
| 7. Responses to Councilmember Berliner's questions from DEP                                                                  | 51  |
| 8. Rationale for Development Levels prepared by DEP                                                                          | 59  |
| 9. Retail Issues and Analysis prepared by Bolan Smart Associates, Inc                                                        | 76  |
| 10. Responses to questions regarding Little Seneca Lake and Drinking Water Quality prepared by WSSC and DEP.                 | 86  |
| 11. Map of Historic District                                                                                                 | 103 |
| 12. Map of Clarksburg zoning prior to 1993                                                                                   | 104 |
| 13. Map of Clarksburg zoning proposed in 1994 Master Plan                                                                    | 105 |
| 14. Maps of Environmentally sensitive areas                                                                                  | 106 |
| 15. Maps of Overlay Zone boundaries                                                                                          | 112 |
| 16. Memorandum from Keith Levchenko on Drinking Water and Water and Sewer Issues                                             | 114 |
| 17. Memorandum from County Executive Ike Leggett                                                                             | 129 |
| 18. Memorandum from Associate Professor Matthew Baker                                                                        | 132 |



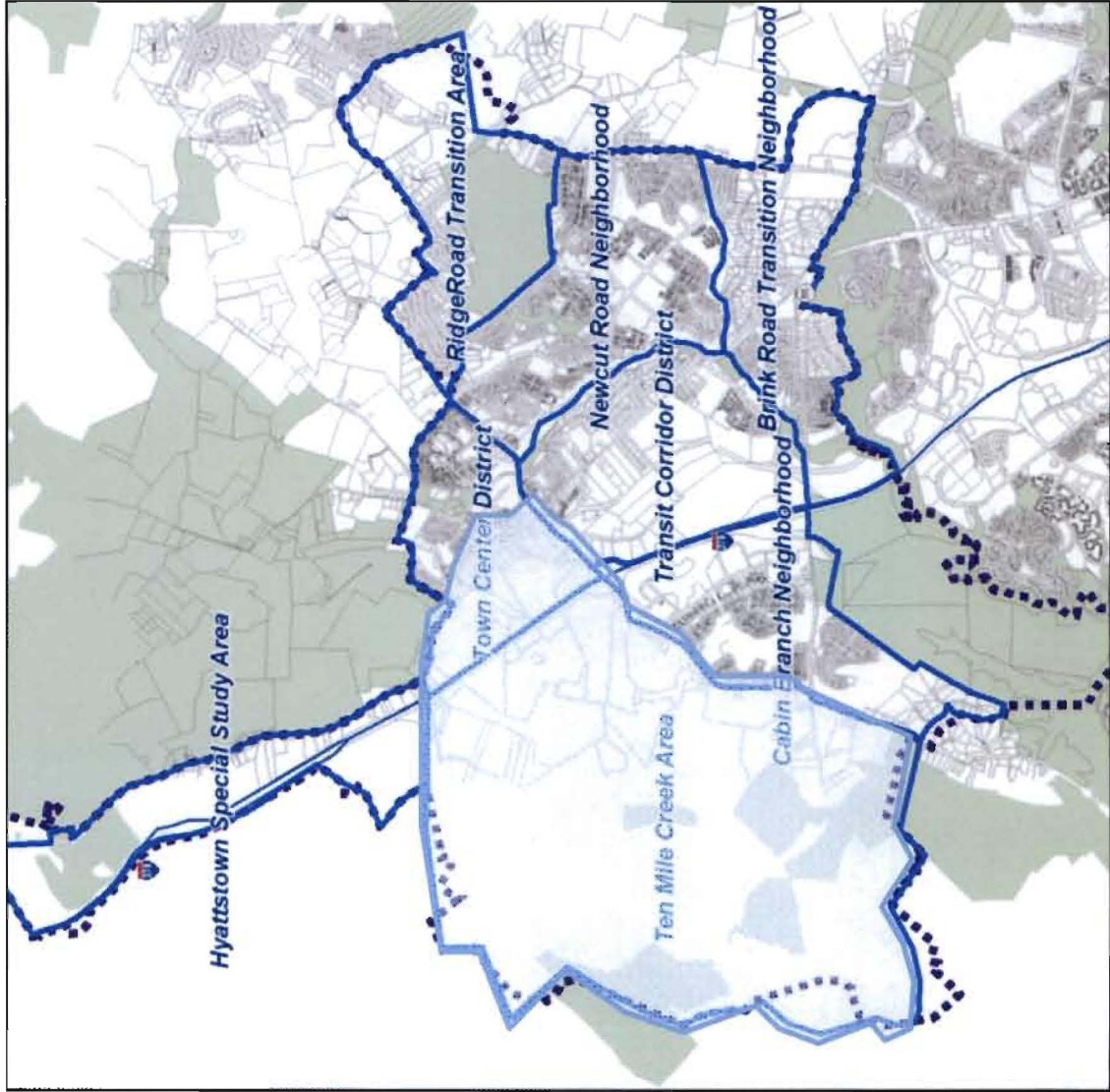
# Clarksburg Limited Master Plan Slides for Council Packet





# Location of Limited Master Plan Area

- Town Center District extends to I-270
- Almost half of Town Center District is in the Ten Mile Creek watershed



22

# Clarksburg Units, Households, Population

|                                                 | units        | estimated households* | household size* | population   |
|-------------------------------------------------|--------------|-----------------------|-----------------|--------------|
| 2014 Clarksburg built units and population      | 6,556        | 6,265                 | 3.28            | 20,549       |
| 2014 built plus approved development            | 10,465       | 10,000                | 3.28            | 32,800       |
| 1994 Plan end state development stages 1, 2, 3  | 12,920       | 12,347                | 3.28            | 40,498       |
| Planning Board Draft Limited Amendment Stage 4* |              |                       |                 |              |
| detached                                        | 539          | 515                   | 3.46            | 1,782        |
| attached                                        | 269          | 257                   | 2.74            | 704          |
| multi-family                                    | 850          | 812                   | 1.82            | 1,478        |
| <b>total</b>                                    | <b>1,658</b> | <b>1,584</b>          |                 | <b>3,964</b> |

Sources: Center for Research and Information Systems, Montgomery County Planning Department, September 2013; 1994 Clarksburg Master Plan; 2013 Planning Board Draft Limited Amendment

\* Estimated households based on 4 percent vacancy rate; household size from US Census and Planning Department surveys. Planning Board Draft assumes 50 percent attached and 50 percent detached development for Pulte-King properties, all detached development for Egan-Mattlyn property and all multi-family development for Miles-Coppola properties.

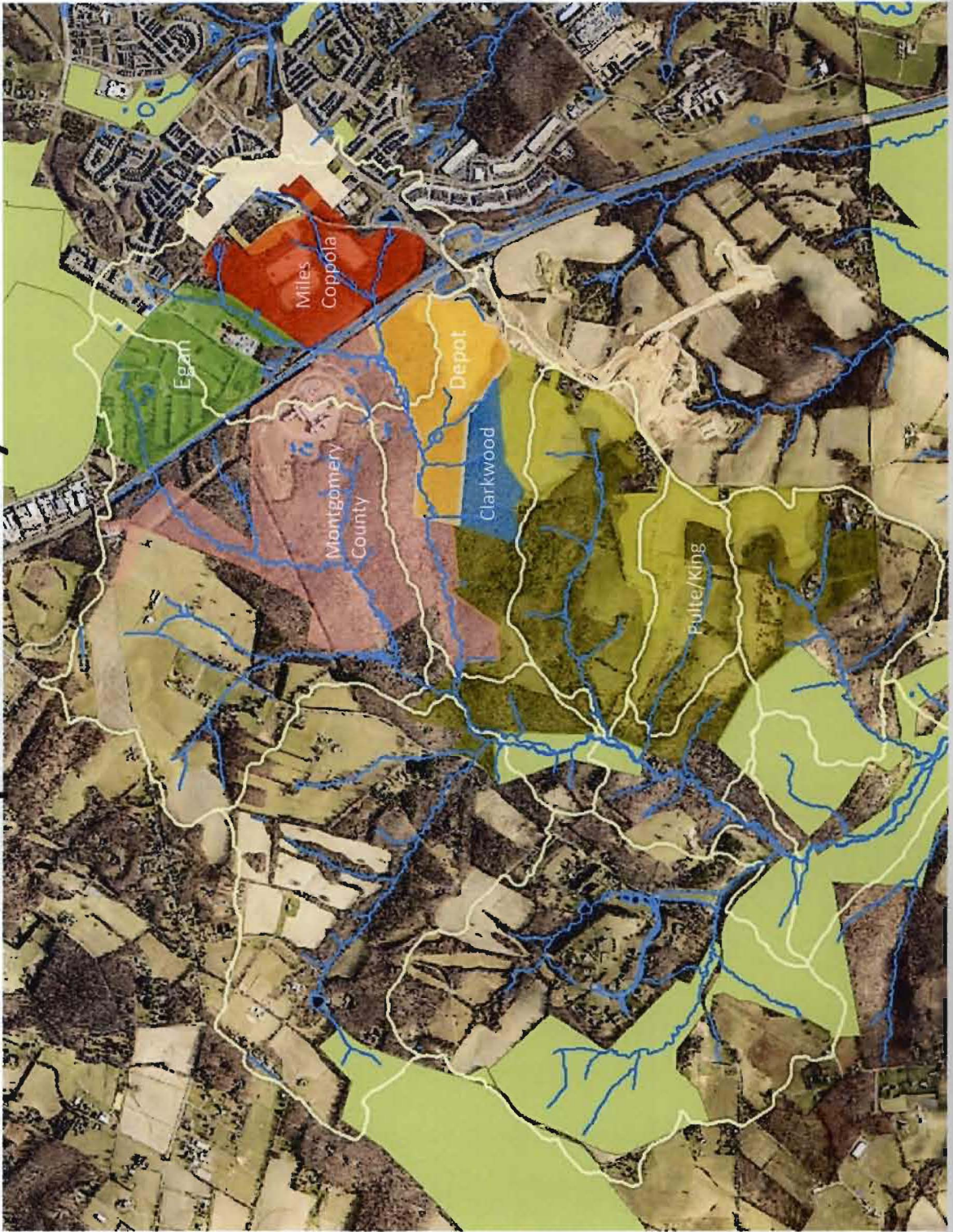


# Sub Watersheds





Properties Analyzed



5



# Summary of Plan Proposals

|                         | 1994 Planning Board Draft     | 1994 Council Approved Plan       | 2013 Public Hearing Draft                | 2013 Planning Board Draft                  | Committee Recommendation                           |
|-------------------------|-------------------------------|----------------------------------|------------------------------------------|--------------------------------------------|----------------------------------------------------|
| <b>Egan</b>             | 2-4 DU/acre (28%, ~300 units) | 2-4 DU/acre (28%, ~300 units)    | R200 (25%) (200 units)                   | R200 (25%) (200 units)                     | up to 3 du/ac (15% cap) (300 units)                |
| <b>Miles/Coppola</b>    | 7-11 DU per acre (~400 units) | MXPD (26%) (~215 units; 470k sf) | CR (25%) (0.5 FAR; ~850 units; 1 mil sf) | CR (25%)(0.75 FAR; ~850 units, 2.1 mil sf) | CRT, up to 3 du/ac (15% cap) (279 units, ~436K sf) |
| <b>Fire Station</b>     | 2-4 units/acre (12 units)     | Build                            | Build                                    | Build                                      | No Build                                           |
| <b>Bypass</b>           | Build entire length (4 lanes) | Build entire length (4 lanes)    | Build shorter (4 lanes)                  | Build shorter (4 lanes)                    | Build shorter 2 lanes                              |
| <b>Clarkwood</b>        | Rural (est. 5%) (7 units)     | RE1/TDR (12.5%) (34 units)       | No Dev                                   | No Dev                                     | No Dev                                             |
| <b>County Depot</b>     | Rural (est. 5%)               | RE1/TDR & I-3                    | I-3 (8%)                                 | I-3                                        | No Dev                                             |
| <b>County Detention</b> | Institutional (est. 5%)       | Institutional (15%)              | Institutional (4.5%)                     | Institutional (4.5%)                       | Institutional (4.2%)                               |
| <b>Pulte</b>            | Rural (est. 5%) (107 units)   | RE1/TDR (12.5%)(~800 units)      | RNC (8% cap) (215 units)                 | RNC 1.0 (10% cap) (538 units)              | RNC 1.0 (6% cap) (538 units)                       |
| <b>Watershed Imp.</b>   | Est. 6-7%                     | 9.8%                             | 7.5%                                     | 8.0%                                       | 6.3%                                               |

# Assumptions for Imperviousness Analysis

|                             | 2013 Public Hearing Draft | 2013 Planning Board Draft | 8% Reduced <sup>1</sup>                  | Scenario 5 <sup>2</sup>                         | 15/15/6% <sup>3</sup> Committee Recommendation |
|-----------------------------|---------------------------|---------------------------|------------------------------------------|-------------------------------------------------|------------------------------------------------|
| Egan                        | 25%                       | 25%                       | 8%                                       | 20%                                             | 15%                                            |
| Miles/Coppola               | 25%                       | 25%                       | 8%                                       | 20%                                             | 15%                                            |
| Fire Station                | Build                     | Build                     | No Build                                 | Build                                           | No Build                                       |
| Historic Dist.              | Build                     | Build                     | Build                                    | Build                                           | Build                                          |
| Bypass                      | Build 4 lanes             | Build 4 lanes             | Build 2 lanes                            | Build 4 lanes                                   | Build 2 lanes                                  |
| County Depot                | 8%                        | RNC                       | No Dev                                   | No Dev                                          | No Dev                                         |
| County Detention            | 4.5%                      | 4.5%                      | 4.2%                                     | 4.5%                                            | 4.2%                                           |
| Pulte                       | 8%                        | 10%                       | 8%                                       | 7%                                              | 6%                                             |
| Impervious in LSTM110 , 111 | 8.4%, 11.1%               | 10.1, 13.8%               | 8.4%, 11.1%                              | 7.5%, 9.7%                                      | 6.6%, 8.3%                                     |
| Watershed Imp.              | 7.5%                      | 8.0%                      | 6.2%                                     | 6.8%                                            | 6.3%                                           |
|                             |                           |                           | <sup>1</sup> 8% Pulte/Egan/Miles-Coppola | <sup>2</sup> Tested by environmental consultant | <sup>3</sup> 15% Egan/Miles Coppola, 6% Pulte  |



MONTGOMERY COUNTY PLANNING DEPARTMENT

Cumulative Imperviousness Estimates by Subwatershed

| Subwatershed | Existing Conditions | 15/15/6% <sup>1</sup> | 8% <sup>2</sup> Reduced | Public Hearing Draft | Planning Board Draft | 1994 Plan |
|--------------|---------------------|-----------------------|-------------------------|----------------------|----------------------|-----------|
| LSTM201      | 3.9%                | 6.5%                  | 5.8%                    | 7.5%                 | 7.5%                 | 10.8%     |
| LSTM206      | 16.6%               | 23.6%                 | 20.9%                   | 28.2%                | 28.2%                | 33.2%     |
| LSTM202      | 11.0%               | 15.9%                 | 14.5%                   | 20.5%                | 20.8%                | 25.0%     |
| LSTM302      | 5.6%                | 8.3%                  | 7.6%                    | 10.2%                | 10.3%                | 13.0%     |
| LSTM110      | 1.6%                | 6.6%                  | 8.4%                    | 8.4%                 | 10.1%                | 15.1%     |
| LSTM111      | 1.2%                | 8.3%                  | 11.1%                   | 11.1%                | 13.8%                | 14.1%     |
| LSTM303B     | 4.7%                | 7.8%                  | 7.5%                    | 9.6%                 | 10.0%                | 12.7%     |
| LSTM112      | 2.5%                | 5.0%                  | 5.8%                    | 5.8%                 | 6.6%                 | 5.7%      |
| LSTM304      | 4.2%                | 6.7%                  | 6.5%                    | 8.1%                 | 8.4%                 | 10.6%     |
| Watershed    | 4.0%                | 6.3%                  | 6.2%                    | 7.6%                 | 7.9%                 | 9.8%      |

<sup>1</sup>15% Egan/Miles Coppola, 6% Pulte

<sup>2</sup> 8% Pulte/ Egan/Miles-Coppola



**Chronology of Actions Related to the Ten Mile Creek in Clarksburg**  
**(Prepared by Planning Department Staff 1/9/14)**

June 1993 - Planning Board Draft of Clarksburg Master Plan recommends 1 unit per 5 acres west of I-270 and medium density residential for most of Egan and Miles/Coppola properties.

June 1994 – County Council approves light industrial for both sides of I-270 near the 121 interchange with 2-4 units/acre for the properties further west and medium density residential for the remainder of the Miles/Coppola and Egan properties respectively. Staging added to the plan to assure that the decision of how to proceed in Stage 4 rested with the County Council after evaluating the impact of Stages 1-3 on Little Seneca Creek.

October 2005 – Sewer and Water Category Change Request received for Miles/Coppola. Deferral requested by the applicant.

2007 – Staging triggers were met for consideration of monitoring data.

2008 - Montgomery County adopts changes to the regulations to require Environmental Site Design (ESD) in conformance to the State Law.

January 2009 – Special Protection Area Annual Report for the monitoring year 2007 analyzes impact of development on Little Seneca Creek and other Special Protection areas. The report gives no definitive findings that will predict the impact of development on Ten Mile Creek.

May 2009 - Sewer and Water Category Change Request received for Pulte & King properties. Request returned due in part to the Council's decision to establish the Stage 4 *ad hoc* working group.

May 2009 – Pulte & King Water and Sewer Category Change application returned due in part to the Council's decision to establish the Ad Hoc Water Quality Working Group.

July 2009 – County Interagency Workgroup expresses concern about potential for impact on Ten Mile Creek and Planning Board reports to Joint T&E and PHED Committees that an amendment to the Master Plan is necessary, due primarily to the fact that construction was still in its active phase. Final protective measures were not yet in place and temporary impacts had not yet stabilized.

October 2009 – Council establishes an Ad Hoc Water Quality Working Group representing all the stakeholders and local agencies to “collect information on all new and pending State and Federal regulations regarding water quality, stormwater management, and sediment control; analyze how these new requirements could impact future development in Clarksburg, especially in Stage 4; seek input from Clarksburg stakeholders as to the methods they propose for minimizing development impacts on water quality in the Ten Mile watershed, and advise the Council on the steps necessary to preserve water quality in Stage 4.”

May 2010 – ESD Regulations take effect in Montgomery County.

July 2010 - Sewer and Water Category Change Request received for Egan/Mattlyn properties. Action is delayed awaiting Council reaction to the Ad Hoc Water Quality Working Group report and the master plan amendment process.

July 2010 - The Ad Hoc Water Quality Working Group report results in split opinion where the majority (environmental, civic and agency representatives) recommended an examination of the land use options in a master plan amendment and the property interests and industry groups recommended moving ahead with development. Joint PHED and T&E Committee hear report results and take no action.

May 2012 – Special Protection Area Annual Report for the monitoring year 2010 reports a slowing of water quality degradation within the SPA and in certain areas, slight increases in water quality. However more time is needed to definitively assess the effectiveness of the water quality protection measures for newly developed areas.

October 9, 2012 - County Council requests the Planning Board to prepare an amendment to the Clarksburg Master Plan. Establishes a one year schedule and authorizes funds for environmental, transportation and economic studies.

July 25, 2013 – Planning Staff recommends RNC zoning on Pulte and King Properties at 1 unit per 0.4 acre with an 8% imperviousness cap. Egan is shown with R200 zoning and with a 25% imperviousness cap. Miles/Coppola zoning is shown with two options: Option 1 is a balanced mixed use option with a 25% imperviousness cap and with CR 0.5, C 0.25, R 0.25, H 75 zoning; Option 2 is mixed use, but with a more residential focus, with a 25% imperviousness cap and townhouses at 12 units to the acre.

October 25, 2013 – Planning Board transmits Planning Board Draft Plan to the County Executive and County Council. It recommends RNC zoning on Pulte and King Properties at 1 unit per acre with a 10% imperviousness cap. Egan is shown with R200 zoning and with a 25% imperviousness cap. Miles/Coppola is shown with a balanced mixed use option with a 25% imperviousness cap with CR 0.5, C 0.25, R 0.25, H 75 zoning.

# Ten Mile Creek Limited Master Plan Amendment— Responses to Testimony on Technical Analyses (2/26/2014)

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This summary of comments and responses was prepared by Planning Department staff. Technical responses regarding the Consultant analysis are explained in greater detail in the memorandum prepared by the consultants (attached).

## Environmental Site Design

- 1. Comment: The Planning Board has not been shown information that justifies a significant change from the 1994 master plan, and the analysis is not in a position to confirm that ESD regulations adopted by MDE and the County are incapable of protecting the water quality of Ten Mile Creek (TMC). (Pulte Group, Soltesz, NewFields, Geosyntec)**

**Response:** All streams in the County have been negatively impacted by human activity. But some relatively undeveloped watersheds, including TMC, are still in good to excellent condition compared with other streams. TMC is one of a number of high-quality streams used as reference streams to be compared with more degraded ones. This allows a comparison of changes in reference stream conditions that are not related to development impacts, such as climate change.

The State of Maryland and scientific literature recognize that even though ESD is an improvement over traditional methods, it cannot prevent all negative development impacts and that high-quality watersheds are best protected by limiting development and applying ESD. This is at the core of the recommendations.

ESD is now required and will be used for any new development in TMC. ESD is intended to mimic the hydrology of wooded land and to treat and infiltrate about 90% of the rainfall in an average year (up to the 1-year storm). Planning-level modeling done by the M-NCPPC consultant shows some potential impacts to stream hydrology for development under the 1994 Plan, and fewer potential hydrological impacts for a recommended reduced development footprint in subwatersheds 110 and 111, along with the protection of key forest resources.

ESD is intended to improve hydrological performance, but there is no expectation by state and local environmental agencies that it will prevent all negative impacts to stream biological health, particularly in high-quality watersheds.

Maintaining hydrology similar to wooded land for up to the 1-year storm is expected to significantly reduce the risks of stream channel erosion and sedimentation. Many pollutants in stormwater will be filtered and reduced by ESD practices. Exceptions to this are mobile pollutants such as road salt and nitrogen to an extent, which ESD practices will transmit directly to groundwater.

Stream biological health is highly related to the amount of disturbance in a watershed. As yet, there have been no watershed-scale studies that have assessed the biological impacts of ESD. Although ESD is



a significant improvement over older SWM practices, MDE has made no assumptions for ESD regarding specific biological responses or biological quality standards.

Although watershed-scale hydrologic modeling of ESD has been done in some parts of the Country, actual monitored responses to ESD on a watershed-scale, especially changes in stream biological health, are almost non-existent. This is confirmed in the scientific literature, along with the general expectation that even if ESD succeeds in mimicking the hydrology of wooded land, there will likely still be negative impacts to stream biological health, especially in sensitive, high-quality watersheds like TMC. These were important considerations that were factored into staff recommendations.

Development under the 1994 Master Plan in subwatersheds 110 and 111 may disqualify TMC from its current status as a reference stream based on selection criteria for reference streams in the County. However, the recommendations to reduce development footprint and impervious area, and enhance natural resource protection will serve to reduce the risk of losing TMC as a remaining a reference stream by reducing negative impacts to the stream's biology.

- 2. Comment: Now that ESD is required, there is no need for any limit on development or impervious cover. ESD will prevent all negative impacts from development and will protect Ten Mile Creek. (Robert Kauffman, Pulte Group, Soltesz, NewFields, Geosyntec)**

**Response:** (See response to 1.) Based on State guidance and the scientific literature on ESD and development impacts to stream biology, maximizing the protection of natural resources, limiting development and limiting total imperviousness, combined with the use of ESD, remain important tools for watershed protection, especially in sensitive, high-quality watersheds.

- 3. Comment: Because ESD better protects water quality than the water quality protection measures in place in 1994, there is no justification to recommend any land use changes at this time. (Gus Bauman, Robert Harris)**

**Response:** Because of ESD, water resource protection measures have indeed improved since 1994. But it is the opinion of the State and the scientific community that although ESD does a better job of environmental protection, it is not intended to be a remedy for all development-related environmental impacts, and there is no reason to believe that it will do so, especially in terms of stream biological health in high-quality watersheds. ESD was developed to improve site design and stormwater management by improving the hydrology of developed sites. But total environmental health depends on more than hydrology. There are almost no data on a watershed-scale that assesses the impacts of ESD on stream biology. Consequently, MDE made no assumptions regarding specific biology responses to ESD, and set no specific biological performance standards for ESD. The assumption is that ESD will reduce development impacts on stream biology, but to what degree is unknown and will vary on a case by case basis based on local conditions, as well as the quality of design and implementation. As a result, the State and the weight of scientific opinion in the literature recommend using an approach that combines protecting natural resources, limiting development and imperviousness, and using ESD as much as possible, especially in high-quality watersheds.

## M-NCPPC Staff Analysis

- 4. Comment: MNCPPC's application of the Countywide Stream Protection Strategy Score Change Estimate (CSCE) model predicts that water quality in the main stem of Ten mile Creek will remain "Good" even without accounting for the superior stormwater management systems related to ESD which are required by State regulations. (Pulte Group, Soltesz, NewFields, Geosyntec, Robert Harris)**

**Response:** The comment misses the fact that the category of "Good" covers a wide range of biological health score points, which corresponds to a wide range of biological quality (from almost Fair to almost Excellent). As a result, an unacceptable amount of biological degradation can still occur within the "good" range. Although the analysis only used stream biological health data from watersheds that use traditional stormwater management (which is the only data currently available), the point is that because ESD is still not expected to be able to mitigate all impacts to stream biological health, a more conservative approach to watershed protection is justified, especially in high-quality watersheds.

- 5. Comment: The Planning Board's calculation of percent impervious area for purposes of impact analysis appears to be highly misleading because it averages application and effect of impervious area over substantial parts of the TMC watershed (e.g. west of the TMC main stem) that are not, in fact, likely to be impacted by Stage 4 development.(Ephraim King)**

**Response:** The analysis of percent impervious area conducted by M-NCPPC staff was done on both a cumulative subwatershed basis and the watershed as a whole. This approach has been in used for many years in previous master plan analyses including the Potomac Subregion and Upper Rock Creek Master Plans. It allows the analysis of headwater areas separately from the rest of the watershed as well as the incremental changes in percent imperviousness while moving downstream in the watershed. Cumulative imperviousness is a measure of all the inputs to the monitoring stations. By the time the analysis has moved downstream to the watershed outlet, the total area being studied is the entire watershed. This approach provides an understanding of the changes in percent impervious area on small, intermediate, and overall watershed scales.

## Consultant Analysis

- 6. Comment: The Planning Board's environmental analysis and recommendations to the County Council is based upon rainfall or design storm assumptions that significantly understate the likely amount and intensity of rainfall in TMC and, thus, substantially understate the water quality and aquatic habitat impacts that will occur as a result of Stage 4 development. Briefly, the Planning Board analysis assumes a 1 inch design storm for modeling flow, intensity, and related environmental impacts. (Ephraim King)**

**Response:** The hydrologic analysis done by the consultant was not based on assumptions that understate the likely amount and intensity of rainfall in TMC. The Maryland Department of the Environment has set the design storm for ESD to be the 1-year storm event. This storm equates to 2.6 inches of rain in a 24-hour period. This was the storm that was used by the consultant in its hydrologic modeling. Moreover, in addition to the 1-year storm, the consultant also modeled the 2-year design storm, which is equal to 3.2 inches of rainfall in a 24-hour period.

- 7. Comment: The M-NCPPC's consultant's hydrologic model is too coarse, uses incorrect assumptions, and is not representative of the detailed site plan and specific ESD layouts possible on the sites, and does not support staff recommendations. (Pulte Group, Soltesz, NewFields, Geosyntec)**

**Response:** No level of hydrologic modeling can determine the effect of development on stream biological health. Because the principal environmental concern in TMC is its high-quality stream biology and its status as one of the few reference streams in the County, the question as to how much TMC would decline in stream biological health in response to development cannot be determined by hydrologic modeling. Hydrologic and other types of modeling and analysis, however, provide important information that is useful in assessing relative degrees of risk to biological health, and in comparing different scenarios. Because of this, staff used a combination of different approaches including hydrologic modeling, natural resources analyses, pollutant loading analysis and findings from the scientific literature, to assess the relative degree of risk to stream biological health, and to make recommendations accordingly.

Differences between the planning-level analysis done by staff consultants, and the much more detailed modeling done for the Pulte property are to be expected. For planning purposes it cannot be assumed that any one particular detailed stormwater concept will be implemented as part of a master plan level analysis. In addition, information at that level of detail is not available for all properties.

- 8. Comment: The M-NCPPC consultant's existing condition model appears to grossly underestimate peak flow rates in subwatersheds 111 and 110. This fundamentally undermines the conclusion drawn by the M-NCPPC consultants in comparing between existing and proposed conditions models. (Pulte Group, Soltesz, NewFields, Geosyntec)**

**Response:** The actual peak flow rates in LSTM110 and LSTM111 are unknown, and predictions of peak flow rates under existing conditions are sensitive to various model algorithms and parameters, and can vary widely within the range of accepted modeling methods and parameter values. (See response to 9.)

But it is important to note that even if a more detailed hydrologic analysis shows that a specific site design and ESD layout can mimic the hydrology of wooded land, it doesn't mean that there will be no degradation of TMC and its tributaries, especially to their stream biology.

- 9. Comment: Geosyntec compared M-NCPPC's consultants modeling results for both subwatersheds 110 and 111 with three other methods: 1) a USGS regression equation for ungauged watersheds in MD, 2) area-scaled continuous gauge data from the USGS gauge on TMC, and 3) Geosyntec's own modeling of the watershed. All three of these methods show significant departures from the values obtained by the M-NCPPC consultants.(Pulte Group, Soltesz, NewFields, Geosyntec)**

**Response:** Regression equations for hydrologic parameters are generally not very accurate, and are typically used as a very general guides in the absence of modeling results, and not for design purposes or for verification of detailed modeling results. Although Geosyntec provided no confidence intervals for their reported regression estimates using a USGS equation, review of the original USGS paper

indicates that the 95% standard error of prediction for peak flows is +/- 78% of predicted values. This confirms the low accuracy of the USGS regression equation for peak flows.

Area scaling to estimate hydrologic parameters is likewise known to provide only rough estimates, and again, is typically used as a general guide in the absence of modeling results—not as a confirmation of modeling results. The degree of area scaling done by Geosyntec (from a 4.5 mi<sup>2</sup> watershed to 0.33 mi<sup>2</sup> and 0.16 mi<sup>2</sup> watersheds) represents a significant extrapolation beyond the gauged data used, with increased and un-quantified uncertainty associated with the results.

Detailed hydrologic modeling using specific site plan designs and ESD practices is not appropriate for planning studies (see the response 8). Moreover, a USGS stream gauging station is located immediately adjacent to TMC in a small tributary that is very similar to subwatersheds 110 and 111 in size and land use. It would have made more sense to use the gauge data for the smaller tributary for comparison with 110 and 111, than the gauge on the much larger TMC watershed. Using the larger watershed for comparison purposes introduces more error.

**10. Comment: The proposed Pulte ESD design will reduce the peak flow rates during the 1 and 2-year design events below existing condition flow rates. (Pulte Group, Soltesz, NewFields, Geosyntec)**

**Response:** Although current baseflow in TMC is not what would occur if the entire watershed was forested, it is in a healthy equilibrium with the existing mix of forest and agricultural open land. As a result, the current high-quality stream biology and channel are adapted to the current hydrologic flow regime.

It is important, especially in high-quality watersheds, that ESD not significantly reduce or increase baseflow, or other key hydrologic parameters. If, as claimed, proposed ESD will reduce peak flow values below existing conditions, it would do so by increasing infiltration over existing levels.

If that occurs, then a corresponding increase in baseflows in TMC and its tributaries could result that could potentially be detrimental to stream biological health.

**11. Comment: In the case of subwatersheds 110 and 111, significant design work has already been completed by Soltesz for the Pulte property. It is possible to achieve stream protection using accurate existing conditions peak flows, reasonable infiltration rates, regulatory compliant recharge volumes, and appropriate ESD design assumptions. (Pulte Group, Soltesz, NewFields, Geosyntec)**

**Response:** (See responses to 1, 2, 3, and 9.) In addition, subwatersheds 110 and 111 are located just upstream of the County's reference monitoring station for TMC. Development in these subwatersheds under the 1994 master plan could potentially disqualify TMC as a County reference stream based on non-biological reference stream criteria, or because of subsequent biological decline. (See response 7). Moreover, there are various factors that could cause ESD to be less effective at reducing peak flows than predicted at the design stage. These include departures from standard assumptions regarding soil compaction, maintenance status, and storm peak timing.

**12. Comment: Infiltration rates used do not represent actual soil conditions found at the proposed subject property. (Pulte Group, Soltesz, NewFields, Geosyntec)**

**Response:** The M-NCPPC consultant's model used a consistent method across the TMC watershed, applying infiltration rates that are consistent with the soil types on the properties, along with considerations for infiltration alterations typical of post-construction soil conditions. This was the approach that was selected for planning-scale modeling to estimate impacts from all the proposed development scenarios, whereas site-specific details would normally be evaluated for specific developments during the development review process.

**13. Comment: The development scenarios as modeled are not consistent with local and state stormwater design requirements. (Pulte Group, Soltesz, NewFields, Geosyntec)**

**Response:** The current Micro Bioretention design used by Montgomery County does meet or exceed the minimum requirements of MDE as an ESD practice. All the assumptions used for ESD in the modeling were coordinated with the Department of Permitting Services and approximate, as much as possible, County stormwater regulations.

**14. Comment: Model configurations do not accurately represent the proposed stormwater practices. (Pulte Group, Soltesz, NewFields, Geosyntec)**

**Response:** The approach used in this effort utilizes generally accepted practices and assumptions, including conservative criteria about BMP routing that are typically assumed by DPS for comparable analyses. Basic assumptions were reviewed with Planning staff, DPS and DEP.

**15. Comment: The consultant's modeling for future pollutant loads ignores the impact of livestock currently maintained on the Pulte property and therefore underestimates the existing impact; by comparison, development of the site as planned by Pulte will significantly reduce Suspended Solids, Nitrogen, and Phosphorus pollutant loads. (Pulte Group, Soltesz, NewFields, Geosyntec)**

**Response:** Even with about 50% of land in agriculture in a sensitive watershed, TMC and its tributaries (except for the more urbanized LSTM 206) show good to excellent stream biology indicative of a high-quality watershed. So although agriculture does have impacts on watersheds and streams, it is clear that it does not impact stream health to the degree that urban land does. Modeling used 50% crops and 50% pasture (including livestock) as land cover for the agricultural portions of the watersheds.

Moreover, nitrogen does not significantly impact local (non-tidal) streams. Although agriculture contributes sediment loads (and some phosphorus—which binds to and is carried by sediment) to TMC and the Reservoir, those loads are relatively low, and are not having a large impact on the existing high-quality of TMC, its tributaries, or the Reservoir.

As a result, any reductions in nitrogen, phosphorus, or sediment that might occur from development would not be expected to have a significant beneficial effect on the biological health of TMC or the Reservoir. On the other hand, loadings of other pollutants associated with urban land, along with impacts to natural functions from land alteration within the development footprint could be expected to have negative impacts on a sensitive high-quality stream like TMC.

**16. Comment: The consultant's studies did not examine actual stream channel conditions resulting from extensive agricultural activities on the Pulte property nor did they consider the improvement to these conditions with development that would create additional forested area and, for the first time, establish appropriate stream valley buffers. (Pulte Group, Soltesz, NewFields, Geosyntec)**

**Response:** (See response 15) Long-term field observations in TMC and fieldwork undertaken by MCSDEP as part of their monitoring program and in support of the Limited Master Plan Amendment, show that the stream channels in the TMC watershed are predominantly in good condition, and do not show significant signs of instability or degradation. Although some of the highest headwater channels show some channel erosion and instability, it is not extensive. These observations are consistent with the high-quality stream habitat conditions and the high-quality stream biological health that have been documented in TMC over the years. To date, the stream biological health of TMC and its tributaries (except for LSTM 206) remains in the good to excellent range, including LSTM 110 and LSTM 111, which have a some stream reaches with no or inadequate buffers. The long-term biological monitoring of TMC therefore reflects the limited negative effects on stream health from the relatively small amount of existing channel degradation in TMC.

Establishing additional stream buffers and forested areas would help to reduce some of the negative impacts of development, but would not compensate for all of those impacts, nor would it increase the stability and quality of the stable and high-quality stream channels that predominate in TMC. Even using ESD, development could potentially have long-term negative impacts on stream channel conditions from storms greater than the ESD design storms, or from future undetected age-related decreases in ESD effectiveness. The riparian areas that would be reforested in development scenarios were modeled by the consultant as meadow, due to the long time required to establish mature healthy forests.

**17. Comment: The consultants admit that published studies for site-specific development projects reflect the benefits of ESD but inconsistently suggest that, because they found no studies of its use on an area-wide basis, the benefits have not been proven. (Pulte Group, Soltesz, NewFields, Geosyntec)**

**Response:** There is no inconsistency. A literature review conducted by the consultants cited studies that document the better performance of ESD practices over traditional stormwater management techniques, and utilized ESD practice performance criteria in their modeling. On the other hand, the consultants have maintained that because there are as yet no monitoring studies that document the effect of ESD, applied on a watershed-scale, on stream biological health, the ability of ESD to protect the biology of receiving streams from degradation has not been demonstrated.

**18. Comment: The consultant's model utilized to justify impervious caps is based on outdated studies and data collected prior to the State mandate for ESD measures. Models utilized to justify impervious area caps are not applicable to development practices using ESD. The use of impervious caps is an inappropriate and ineffective method of watershed protection and is arbitrary. (Pulte Group, Soltesz, NewFields, Geosyntec)**

**Response:** The literature review conducted as part of the TMC Master Plan Amendment process found that limiting impervious cover is still generally considered to be an important tool in conjunction with protecting natural areas, limiting development footprint, and ESD, in limiting negative impacts on

streams and stream biological health. The literature also indicates that this combined approach is especially important for limiting negative impacts to sensitive high-quality watersheds and streams.

The relationship between impervious cover and stream biological health documented in the scientific literature (e.g. The Impervious Cover Model (ICM) Schueler, 2009) is not intended to predict a specific stream biological condition based on a specific imperviousness level. What the relationship does show is a significant correlation between increasing imperviousness and decreasing stream biology. So although differences between various streams and watersheds may result in different degrees of degradation, in any particular watershed an increase in imperviousness would be expected to result in a long-term decrease in stream biological health, even though the stream may show some shorter-term up and down fluctuations in biology due to natural variability. Moreover, the ICM makes it clear that the degradation effect is especially noticeable in watersheds with low levels of impervious cover.

In addition to the ICM, the Planning Board also considered the results of a new Mid-Atlantic Piedmont-specific model called the Biological Condition Gradient (BCG) that has been recently developed through an interagency effort involving the Environmental Protection Agency, State Agencies, DEP, and experts from academia. The BCG that was developed uses Montgomery County data and supports and further refines the relationship between stream biological health and imperviousness.

Setting limits to impervious cover to help protect high-quality watersheds is guided by the results of scientific research. Setting a low imperviousness cap to provide a lower risk level to what is not only one of the highest quality watersheds remaining in the County but one that is known to be particularly sensitive to disturbance, is neither inappropriate nor arbitrary.

**19. Comment: The MNCPPC-developed watershed indicator model does not support Planning Board recommendations and was abandoned. (Pulte Group, Soltesz, NewFields, Geosyntec)**

**Response:** The “watershed indicator model” referred to is not actually a model, but was an early effort (March, 2013) to summarize in tabular form the preliminary results of the consultant’s analyses. The consultant’s analyses were based on a variety of approaches that continued to be refined over 2013 and were not abandoned. As the scenarios were refined and the analytical work continued, however, the earlier tabular approach to presenting the results was replaced in later documents with other ways to present the results.

The combined results of the different analyses done by the consultant (in conjunction with monitored stream biological data in TMC, and the weight of the scientific literature and expert opinion on watershed protection, stream biology, the effects of development on the environment, and ESD) do support recommendations that seek to protect TMC and its tributaries using an approach that combines maximizing the protection of natural resources, limiting development footprints and impervious cover, and using ESD.

**20. Comment: The geomorphological assessment conducted by the consultants is inadequate and inconclusive. (Pulte Group, Soltesz, NewFields, Geosyntec)**

**Response:** The consultants did not conduct a geomorphological assessment, but did use field data on the streams that was collected by DEP staff. Based on that data and the results of the hydrological modeling, the consultants made some inferences regarding the potential for future stream channel changes from post-development storms that would be uncontrolled by ESD.

These are reasonable inferences and are appropriate as part of a planning-level study. Again, this was only one aspect of an overall strategy that combined multiple analytical approaches, including quantitative methods that, when taken together and combined with other data and watershed science, support the recommendations.

**21. Comment: As part of the spatial analysis of natural resource disturbances, the effects of the loss on interior forest located on the Pulte/King property is overstated. (Pulte Group, Soltesz, NewFields, Geosyntec)**

**Response:** Likewise, in the case of the spatial analysis of disturbance to natural resources, the interior forest analysis was only one part of the spatial analysis, which looked at a variety of different natural resources. The loss of interior forest from development can be expected to have some degree of negative environmental impacts to TMC, but it cannot be viewed in isolation from the other impacts to natural resources that could occur under different development scenarios. Again, when the results of all the different analyses and other sources of data scientific knowledge are taken together, they support the recommendations.

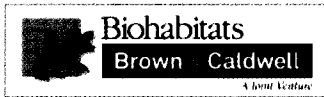
**22. Comment: The spatial analysis does not account for site fingerprinting efforts required by ESD policy/law. (Pulte Group, Soltesz, NewFields, Geosyntec)**

**Response:** Detailed site fingerprinting is typically done at the site plan stage of development review, not at the master planning level. Nevertheless, the spatial analysis that was conducted did consider the likelihood of placing as much development as possible in already cleared areas. In spite of this, it was clear that the level of development in some of the scenarios would necessitate the removal of significant amounts of forested area including some interior forest.

**23. Comment: Per Montgomery County environmental regulations 15% slopes are only regulated as a sensitive environmental feature when they are either hydrologically connected to the stream system or are present within Highly Erodible Soils.(Pulte Group, Soltesz, NewFields, Geosyntec)**

**Response:** This is correct in most Special Protection Areas (SPA's). The Paint Branch SPA protects all 15% and greater slopes. Slopes of 15% or greater are considered steep slopes in all SPA wetland buffer determinations.





# Technical Memorandum

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Prepared for: Maryland-National Capital Park and Planning Commission  
Project Title: Limited Amendment to the Clarksburg Master Plan  
Subject: Draft Response to September 9, 2013 Geosyntec Letter  
Date: October 15, 2013  
To: Mary Dolan and Valdis Lazdins, Montgomery County Planning Department  
From: Biohabitats and Brown and Caldwell, a Joint Venture

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CONFIDENTIAL DOCUMENT - INADMISSIBLE AS EVIDENCE

This document was produced solely for the purpose of the discussions referred to in the Joint Stipulation between The Maryland-National Capital Park and Planning Commission and Pulte and is not admissible in any subsequent litigation.

## Introduction

The purpose of this technical memorandum is to provide preliminary responses from Biohabitats and Brown and Caldwell, a Joint Venture, to certain technical comments raised by Geosyntec in the letter dated September 9, 2013 to the Montgomery County Planning Board entitled *Clarksburg Master Plan Limited Amendment – Ten Mile Creek Area*.

As an initial matter, it is our understanding that the purpose and scope of the Joint Venture modeling effort was to provide high level (planning level) modeling in conjunction with related assessments to assist the Planning Department in evaluating general impacts of development within the entire Ten Mile Creek watershed area. In this context, the modeling effort was appropriately limited, was based on area-wide assumptions, and its conclusions were consistent with other analyses (summarized in the July 2, 2013 report entitled *Ten Mile Creek Watershed Environmental Analysis in Support of the Limited Amendment to the Clarksburg Master Plan*) in concluding that the Ten Mile Creek Watershed area could be impacted by additional development.

As discussed previously, the planning level modeling approach used accepted modeling techniques along with various assumptions and inputs. More detailed modeling using data inputs representing site-specific conditions may be appropriate as part of a later development review process for a specific site design and stormwater management concept plan review. However, predictions made by any modeling approach will vary from actual post-development conditions due to a variety of factors (e.g., variations in site conditions, stormwater management approach, design parameters, and other variations at individual development sites). This is one of the key reasons that planning scale modeling with a margin of safety was an appropriate tool to use as part of the important land use decisions currently being considered in the Ten Mile Creek watershed.

In addition, although we have not conducted a detailed review of the Geosyntec modeling efforts for Pulte, and we express no opinion concerning the validity of any conclusions contained in its report, it is important to note that Geosyntec's efforts appear to relate only to the specific areas within the watershed (LSTM110 and LSTM111) where we understand Pulte proposes development. In turn, many of the concerns and questions raised by Geosyntec also relate to differences between planning level versus site-specific modeling efforts.

## Discussion

For the purposes of this draft response, comments were categorized as those relating to the existing conditions models, and those related to the simulation of environmental site design (ESD). Other comments related to site-specific stormwater management design considerations have been addressed in the Planning Department's previous responses to questions and testimony.

**Geosyntec Comment: Existing conditions model results are well outside of independent predicted results and norms for the area....The MNCPPC's consultant's model appears to grossly underestimate peak flow rates in LSTM110 and LSTM111.**

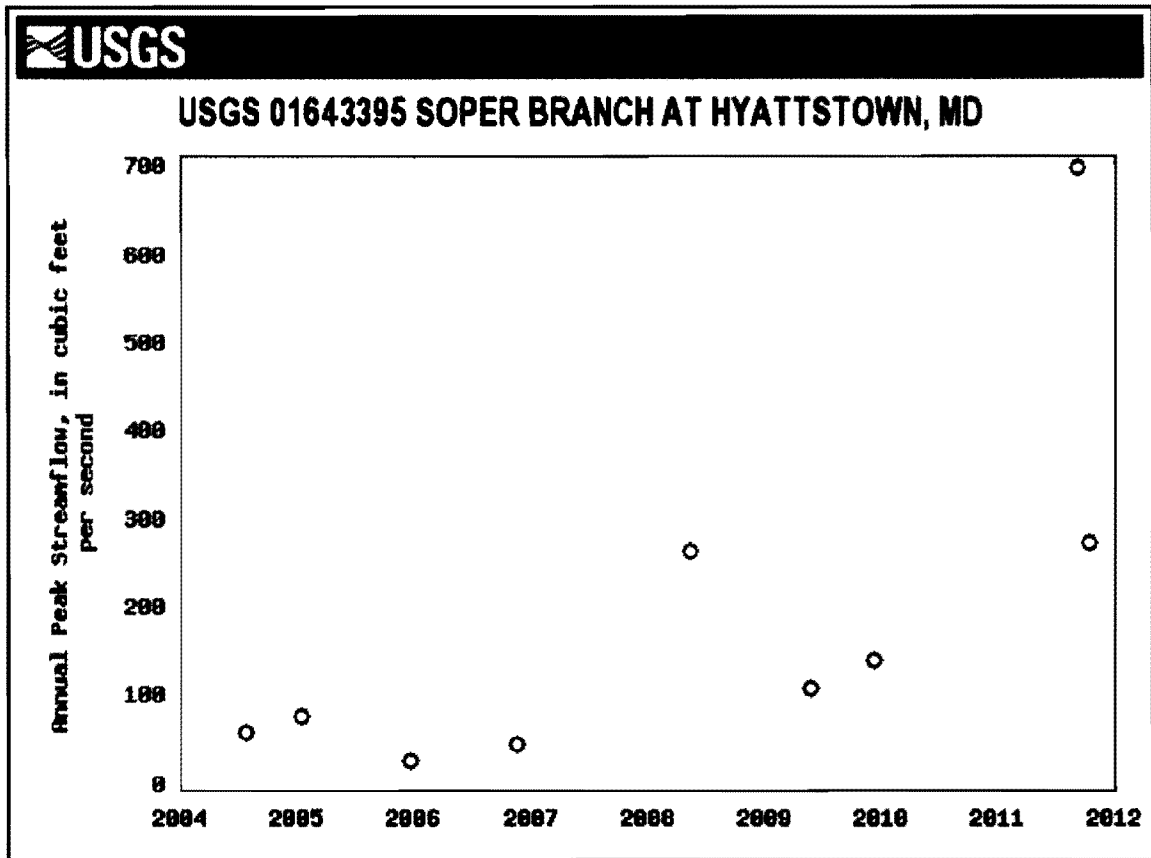
**Response:** We do not agree that the model grossly underestimated existing condition peak flow rates in LSTM110 and LSTM111.. Predicted peak flow rates are sensitive to various model algorithms and parameters, and can vary widely even within the range of accepted modeling methods and parameter values. The actual peak flow rates in LSTM110 and LSTM111 are unknown. Therefore, it is possible to arrive at different modeled predictions of peak flows under existing conditions. The Geosyntec comment letter cites three bases for comparison of predicted peak flows in LSTM110 and LSTM111:

1. USGS regression equations
2. Area-scaled continuous gage data from USGS gage 01644390—Ten Mile Creek Near Boyds, MD
3. Independent SWMM modeling

The USGS Regression Equation quoted by Geosyntec is several years old. USGS has updated the regressions and present data on the USGS stream statistics web site ([http://streamstatsags.cr.usgs.gov/md\\_ss/default.aspx?stabbr=md&dt=130239302542270000](http://streamstatsags.cr.usgs.gov/md_ss/default.aspx?stabbr=md&dt=130239302542270000)). For a basin in the vicinity of the basins in question, this web site suggests a peak 2-yr flow of about 50 cfs for the 211-acre basin 110, which is greater than the value predicted by the Joint Venture but less than the value cited by Geosyntec. The Geosyntec model predicts peak 2-year flows twice the older USGS values and three times the more recent values.

Geosyntec used area-scaling from the Ten Mile Creek gage to validate their model results in continuous simulation noting that their model results were consistent with the area scaled peak flows during Tropical Storm Lee (9/8/2011). This gage is measuring flows from large areas of land use dissimilar to the largely undeveloped land uses found in LSTM110 and LSTM111 and a simple area scaling may be inappropriate. That aside, a better comparison may be achieved if the model outputs were contrasted with the full gage record so that smaller events nearer a one or two year occurrence could be assessed.

Much lower peak flows might be estimated if the area-scaling analysis used data from watersheds more similar in size and characteristics to LSTM110 and LSTM111. For example, the Soper Branch gage near Hyattstown, MD (01643395; [http://waterdata.usgs.gov/nwis/dv/?site\\_no=01643395&agency\\_cd=USGS&referred\\_module=sw](http://waterdata.usgs.gov/nwis/dv/?site_no=01643395&agency_cd=USGS&referred_module=sw)) measures streamflows from an undeveloped watershed of about 750 acres. Application of the area-scaling method to this gage would result in peak 2-year streamflow estimates for the 211 acre LSTM110 of 30 to 40 cfs. This estimate was made by taking the 4<sup>th</sup> largest annual peak flow in the area-scaled 9-year record. This represents a rough estimate because the record is relatively short, but it reflects the characteristics of the watershed. The Soper Branch data are shown below.



Other methods of estimating the existing system peak flows are available. For example, the U.S. Fish and Wildlife Service (McCandless and Everett, 2002) has developed regional regression curves to estimate bankfull discharge and channel geometry for streams in the Maryland Piedmont. Bankfull discharges are relevant to the analysis because they generally correspond to events with a return frequency of 1-2 years (Rosgen, 1996). McCandless and Everett (2002) provide the following equation for estimating bankfull discharges in the Maryland Piedmont:

$$Q_{bkr} = 84.56 (DA)^{0.76}$$

Where:

$Q_{bkr}$  = bankfull discharge (cfs)

DA = drainage area (mi<sup>2</sup>)

Application of this method to subwatershed LSTM110 and LSTM111 provides bankfull discharge estimates of 36 and 21 cfs, respectively. These values are significantly lower than Geosyntec's estimates of peak flows for the 1- and 2- year storms.

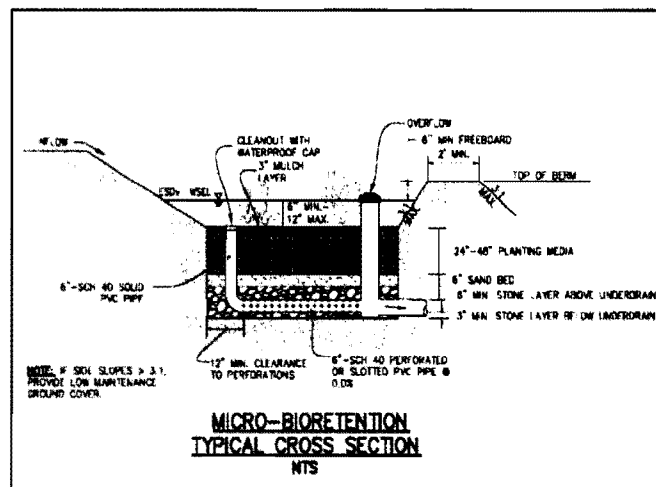
(23)

Some of Geosyntec's criticisms of the planning-level model are related to the use of the SCS method and specific runoff curve numbers. The SCS method is a widely-accepted approach for planning level hydrologic modeling, and the curve numbers used in the planning-level model are within the range of published values for the land uses and soil types present. The selection of different infiltration algorithms, parameters, or model configuration would indeed affect the prediction of peak flows. While it can be argued that the existing condition peak flows in the Joint Venture analysis should have been higher for modeling purposes, we are aware of no basis to accept the estimates cited by Geosyntec that are three or more times higher than alternative estimates. Most importantly, even using USGS values, the analysis would still have shown significant increases in peak flows resulting from development.

**Geosyntec Comment: Infiltration rates do not represent actual soil conditions within the ESD...we do not believe MNCPPC's model is consistent with the descriptions in the MNCPPC Report and does not accurately represent the storage and infiltration occurring within ESD measures.**

**Response:** Geosyntec is correct that there are inconsistencies between the report and the manner in which ESD practices were actually modeled. However, these inconsistencies do not invalidate the ESD simulation, nor greatly affect the predicted peak flows. The following response clarifies the manner in which the ESD practices were modeled, and why these represent reasonable assumptions for a planning-level modeling analysis.

Future development runoff was estimated using a 100% impervious catchment representing impervious surfaces, and a pervious catchment using the same SCS technique as for the base condition for estimation of infiltration with a larger SCS curve number representing soil disturbance. The reduced undeveloped area was modeled using the same parameters as the existing condition runs. The runoff from these developed catchments was routed to two additional catchments (#4 and #5) to account for ESD controls as described below. The model attempts to simulate the County's micro-bioretention standard as shown below:



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In these ESDs, storm inflow infiltrates through planting media and is collected in the underdrain for discharge. If the inflow exceeds the infiltration capacity of the planting media then excess flow is stored up to a specified depth before discharging out the overflow-largely bypassing the underdrain media.

#### **Catchment #4 (Ponding Volume)**

Runoff from the developed catchments is routed to catchment #4, which represents the volume available for ponding above the planting media. This catchment is configured with a total area equivalent to the expected area according to County standards. It was assumed to be 100% pervious area with Horton Infiltration and depression storage of 9-inches. Infiltration occurs to the planting media and excess flow that cannot infiltrate is stored up to a specified depth. The model specification of a 9-inch depression storage simulates the storage available above the planting media.

The 9-inch depression storage and Horton infiltration parameters were arrived at based on discussions with Montgomery County DPS and through consideration of public comments from previous Montgomery County Planning Board work sessions. The 9-inch depression storage value is the mid-point of the depression storage range noted in the County's Micro-Bioretenion standard detail. Maximum and minimum Horton infiltration values were based on published values (Akan 1993) and can be found in the "XPSWMM Technical Reference Manual".

#### **Catchment #5 (Directly Routed to Outlet)**

In the model, outflow from catchment #4 was directed to catchment #5 for storage in the planting media and underdrain. As (incorrectly) described in the modeling report, this catchment represented storage in the filter media. As pointed out by Geosyntec, because this catchment was modeled as 100% impervious, no storage or infiltration occurred in catchment #5, and all flow to this catchment was directed to the outlet. This simulates the overflow of water from the ponding area into the outflow pipe as shown on the schematic above. An equivalent result would have been attained by directing the outflow from catchment #4 directly to the outlet.

Inclusion of catchment #5 with 100% imperviousness results in an increase in system outflow volume as noted by Geosyntec, due to the double-counting of rainfall on the ESD area. Once the infiltration and storage capacity of catchment #4 is exhausted, excess flow is directed to catchment #5 in the model where it runs off. This would not appreciably affect peak flow estimates, because the timing of these flows does not coincide with peak runoff flows from catchment #4. Infiltration at the bottom of the ESD in this configuration is simulated by the infiltration in Catchment #4 which is lost from the solution.

In summary, the manner in which catchment 5 was modeled did not greatly affect the peak flow predictions, which are largely controlled by the rate at which water is predicted to overflow the ponding area of catchment #4 into the outflow pipe. Infiltration from the bottom of the ESD is indirectly simulated by the infiltration in catchment #4. In permitting ESD, the County's assumption is that the underdrain allows water to freely flow from that structure once it reaches the underdrain. Under this assumption, it would not be proper for catchment #5 to include additional storage to account for water leaving the underdrain and entering the filter media or a stone reservoir. If the ESD practice were designed in a manner to cause the overflow to enter the stone reservoir (below the underdrain) prior to entering the underdrain, it would be appropriate to simulate the effect of some storage in the stone reservoir.

**Conclusion:**

The Joint Venture conducted its modeling for the Limited Master Plan using widely-accepted industry practices. The modeling approach, model parameters and assumptions were developed in collaboration with the Planning Department, Department of Environmental Protection (DEP) and Department of Permitting Services (DPS) to represent average watershed-wide conditions, as is appropriate for planning-level land use evaluations. Although Geosyntec questions the modeling results, model simulations are sensitive to selected algorithms and parameters, and model predictions may vary widely even within the range of accepted modeling methods and parameter values. And even if the Joint Venture estimate of existing condition peak flows had been higher based on USGS estimates, the analysis would still have shown a significant increase in post-development peak flow using the County's standard ESD details. Importantly, in concluding that the Ten Mile Creek Watershed could be impacted by additional development, the results of the Joint Venture modeling were consistent with the other environmental analyses and conclusions conducted and provided in support of the Limited Amendment to the Clarksburg Master Plan. .

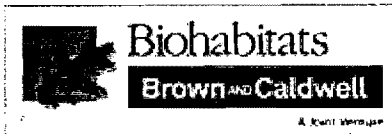
**References**

- Akan, A. O., 1993. *Urban Stormwater Hydrology - A Guide to Engineering Calculations*, Technomic Publishing Co., Lancaster, Pennsylvania, 1993, ISBN: 0-87762-966-6.
- McCandless, T. and Everett, R. 2002. *Maryland Stream Survey: Bankfull Discharge and Channel Characteristics of Stream in the Piedmont Hydrologic Region*. U.S. Fish & Wildlife Service Chesapeake Bay Field Office. CBFO-S02-01.
- Rosgen, D.L. (1996). *Applied River Morphology*. Wildland Hydrology Books, Pagosa Springs, Colo.
- XP Solutions, Inc. 2012. XPSWMM Reference Manual. 1049 p.

| <b>Factors Used for Estimating Projected Imperviousness</b>                                                                                                                                                                                                                                                                                                                        |                                           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|
| <b>Zone</b>                                                                                                                                                                                                                                                                                                                                                                        | <b>Average Gross Tract Imperviousness</b> |
| C-1                                                                                                                                                                                                                                                                                                                                                                                | 90.0%                                     |
| I-3                                                                                                                                                                                                                                                                                                                                                                                | 80.0%                                     |
| MXPD                                                                                                                                                                                                                                                                                                                                                                               | 35.0%                                     |
| PD3                                                                                                                                                                                                                                                                                                                                                                                | 25.0%                                     |
| PD-5                                                                                                                                                                                                                                                                                                                                                                               | 35.0%                                     |
| PD-7                                                                                                                                                                                                                                                                                                                                                                               | 40.0%                                     |
| PD9                                                                                                                                                                                                                                                                                                                                                                                | 40.0%                                     |
| <b>R200</b>                                                                                                                                                                                                                                                                                                                                                                        | <b>15.4%</b>                              |
| <b>R200 with sewer and water</b>                                                                                                                                                                                                                                                                                                                                                   | <b>25.9%</b>                              |
| RC                                                                                                                                                                                                                                                                                                                                                                                 | 6.4%                                      |
| RDT**                                                                                                                                                                                                                                                                                                                                                                              | 5.0%                                      |
| RE1                                                                                                                                                                                                                                                                                                                                                                                | 12.4%                                     |
| RE-1/TDR*                                                                                                                                                                                                                                                                                                                                                                          | 12.5%                                     |
| <b>RE1 with sewer</b>                                                                                                                                                                                                                                                                                                                                                              | <b>22.8%</b>                              |
| RE-2                                                                                                                                                                                                                                                                                                                                                                               | 10.6%                                     |
| RE2/TDR                                                                                                                                                                                                                                                                                                                                                                            | 9.0%                                      |
| RE2C                                                                                                                                                                                                                                                                                                                                                                               | 18.8%                                     |
| <b>RE2C with sewer and water</b>                                                                                                                                                                                                                                                                                                                                                   | <b>11.1%</b>                              |
| <b>RE2 with water only</b>                                                                                                                                                                                                                                                                                                                                                         | <b>12.9%</b>                              |
| <b>RNC with sewer and water</b>                                                                                                                                                                                                                                                                                                                                                    | <b>8.9%</b>                               |
| RURAL                                                                                                                                                                                                                                                                                                                                                                              | 6.4%                                      |
| <p>*Based on Barnesley tract which is tightly clustered with significant open space.</p> <p>**Imperviousness varies widely in this zone depending on the use and size of property</p> <p>The estimates shown in bold were prepared between 1994 and 2003 based on built and approved subdivisions. Other estimates are from the Countywide Stream Protection Strategy in 1997.</p> |                                           |

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November 20, 2012

**TASK ORDER No. 1**

**M-NCPPC Montgomery County Planning Department**

|               |                                                                           |
|---------------|---------------------------------------------------------------------------|
| TO:           | Brown and Caldwell / Biohabitats, a Joint Venture                         |
| CONTRACT NO.: |                                                                           |
| SUBJECT:      | Clarksburg Master Plan Limited Amendment for the Ten Mile Creek Watershed |

**PURPOSE:**

The Consultant will provide data and environmental analysis of the Ten Mile Creek watershed for development scenarios in support of the Clarksburg Master Plan Limited Amendment for the Ten Mile Creek Watershed. This information will be compiled and scientific information and recommendations will be clarified so that documents can be understood by the lay reader.

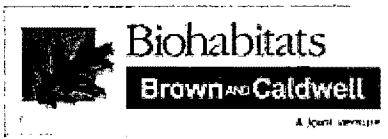
**SCOPE:**

**A. Data Discovery**

The Consultant will review existing data and reports provided by the Planning Department and Montgomery County Department of Environmental Protection (DEP). This will include DEP monitoring data; data collected by Planning from other sources (e.g., Clarksburg Monitoring Partnership, Audubon Naturalist Society, Maryland Department of Natural Resources, U.S. EPA, USGS, etc.); draft NRI/FSD submittals; GIS data; and field data collected by Planning Department and DEP staff.

The Consultant will prepare digital maps using available data illustrating the following features:

- Geology
- Soils
- Topography
- Topology
- Morphology
- Surface Water (streams, wetlands, ponds)
- 100-year floodplain and stream buffers
- Vegetation cover
- Rare and unique plant communities
- Rare, Threatened and Endangered Species
- Historic and cultural sites
- Federal, State and County resource protection areas
- Infrastructure (sanitary sewer, water, cable, roads, electric, transmission, etc.)
- Biological Monitoring and Habitat Index Scores for SPA stations



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- Water temperature
- Geomorphology

The Consultant will review the draft maps for completeness and accuracy and summarize baseline watershed conditions. Field plans for collecting additional data will also be developed, if deemed necessary by the Planning staff. The Consultant will also participate in a kick off meeting with Planning Department and other agency staffs.

**Deliverables:**

- Maps/data and summary of environmental conditions
- Participation in kick off meeting
- PowerPoint slides of existing conditions

**B. Data Collection**

The Consultant will conduct limited field investigations to supplement existing data and verify watershed conditions. The focus of these investigations will be to identify priority areas for conservation (e.g., spring seeps, forested areas, wetlands, and tributaries), potential restoration and enhancement of resources and localized impacted areas (e.g., I-270 stormwater runoff, impacts from agriculture). Field investigations under this task may extend over several months in support of additional data needs identified during Task C. Also included is the preparation of several representative stream cross sections, if currently unavailable. The Consultant will not conduct monitoring or sampling.

It is assumed that the physical condition of Ten Mile Creek (e.g., bank stability, embeddedness, etc.) will be characterized by Planning and DEP staff from available data or during their limited field investigations. Planning and DEP staff will also conduct a synoptic flow study.

**Deliverables:**

- Electronic copies of all field notes, data collection forms, and analysis spreadsheets
- GIS layers, as edited or new information
- Recommendation for additional field work

**C. Analysis**

C.1 Spatial Watershed Analysis

Using the spatial data compiled as part of Task A, the Consultant will define attribute characteristics that have the potential to either influence the landscape's ability to recover from disturbance, or that are critical to long term ecological stability and integrity. These may include:

- Soil characteristics (e.g., highly erodible soils, highly permeable soils, shallow soils)
- Steep slopes
- Seeps and springs

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- Streams (perennial and intermittent) and wetlands (+regulatory buffers)
- 100-year floodplain
- Rare and unique plant communities and corresponding buffers
- Rare, threatened and endangered species habitat and corresponding buffers (based on existing data or data collected by Planning and DEP staff)
- Federal, State and County resource protection areas
- Public recreation features
- Sensitivity of streams to channel erosion and enlargement

A series of maps will be generated which the Consultant will overlay to determine the landscape's ecological stability and integrity and its ability to support development. This analysis will help delineate potential development and resource protection zones.

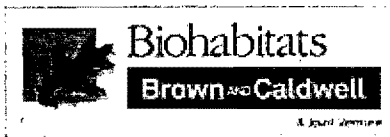
The Consultant will prepare a GIS map illustrating this analysis, with supporting maps and a brief memo documenting the methodology used to prepare the suitability boundaries. Colored maps will include:

- Ecological Attributes Inventory Maps
- Ecological Conditions Analyses Maps
- Development Suitability and Resource Protection Map
- Constraints and Opportunities Map

The Consultant will also analyze trends in biological and habitat data for similar Special Protection Area (SPA) watersheds within Montgomery County. This analysis will help inform anticipated impact projections of development on Ten Mile Creek. The consultant, in conjunction with Planning and/or DEP staff, will select monitoring stations within existing SPAs that meet the following criteria:

- Whose watershed size is similar to that of Ten Mile Creek
- Who have numerous years of monitoring data pre and post construction (min five years pre construction and three years post construction)
- Whose land use pre construction was similar that of Ten Mile Creek
- Whose records are complete in that they contain the habitat data sheets and individual IBI metric scores
- Whose underlying geology is similar to that of Ten Mile Creek
- Where a stream gauge is located nearby in order to ascertain the affects of hydrology on the macroinvertebrate population and whose period of record extends back to the earliest macroinvertebrate sampling event that is being analyzed

Comparisons will be made to trends of IBI scores pre and post construction to determine if negative effects can be attributed to the development within the watershed. The consultant will evaluate overall IBI score trends as well as trends within the individual IBI metrics pre and post construction. Habitat assessment data sheets will also be evaluated from the same biological monitoring stations to determine pre and post construction trends in overall, and individual metric, scores. Due to the infrequent nature of fish sampling at biological monitoring stations, as well as the intermittent nature of



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headwater streams, FIBI scores and metrics will not be evaluated. However, the presence of insectivorous fish may be analyzed to determine effects on insect populations from predation. In addition to evaluating biological monitoring data for sites in developed watersheds, the consultant will also make comparisons to trends in nearby reference sites.

### C.2 Summary of Current Data Regarding Watershed Responses to Development using ESD/LID

The Consultant will identify and assess other studies that document the impacts of development on drainage basins using ESD/LID. Also included will be a summary of the current state of knowledge - including a comparison of typical instrumented or monitored watershed responses to development using traditional stormwater management BMPs. Potential parameters include analyzing changes to erosion/sediment control, reforestation and storm water management regulations and new laws that were not in place during the development of Special Protection Areas. The assessment will also include new state requirements that set additional standards and limit grading to 20 acre increments.

This analysis should seek to characterize the potential difference between past studies of imperviousness to stream health and the potential impacts of the same level of imperviousness under the new regulations. The Consultant will collect data through the NPS listserv and professional contacts, and a literature review.

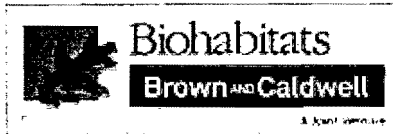
### C.3 Development of Watershed Protection Toolbox for Construction and Post-Construction Phases

The Consultant will describe the major types of watershed protection measures and strategies that could be used to preserve ecological resources in the Ten Mile Creek watershed. This information will be compiled primarily to support the development of land use scenarios in Task C.4. The following types of measures may be included:

- Parcel/site/ development scale (e.g., enhanced ESD beyond that defined and required in the MD Design Manual, vertical construction, etc.)
- Stage 4 scale (e.g., stream buffers, ecological covenants, residential pollution prevention, etc.)
- Watershed scale (e.g., forest conservation, stream buffers, agriculture management)
- Seasonal protections (migrations, spawning, etc.)

### C.4 Analysis of Land Use Scenarios

The Consultant will evaluate scenarios developed jointly with Planning Department and agency staff. They will be provided to the Consultant in GIS format to evaluate potential impacts on Ten Mile Creek. The number of scenarios and degree to which each is analyzed will be determined by agreement between the Planning Department and the Consultant based on the analysis tools used. Time consuming analyses will be limited to key scenarios that will act as sensitivity tests for a range of scenarios.



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For each scenario, the Consultant will conduct the following evaluations:

- Annual pollutant load analysis using the Watershed Treatment Model
- Hydrologic analysis evaluating the range of peak discharges and runoff volume within the Ten Mile Creek area at the subwatershed and watershed scale
- Landscape corridors and patches
- Estimate of natural land cover lost and restored (or enhanced)
- Estimate of agricultural land affected
- A comparison of the development scenarios to the Spatial Watershed Analysis results including likely impacts to the landscape and other resources identified

The Consultant will summarize the results of these analyses and will develop inferences on regarding the potential responses of Ten Mile Creek to proposed development under ESD/LID in terms of hydrology, stream channel response, water quality and biology. The Consultant will also evaluate the effectiveness of ESD practices given local conditions.

#### C.5 Comprehensive Assessment Report

The Consultant will produce a final report that documents all analyses and identifies potential impacts to Ten Mile given the different development scenarios and potential enhancements to watershed protection. This should include recommendations about options for balancing the effects of development and environmental protection of Ten Mile Creek.

#### **Deliverables:**

- Comprehensive Assessment Report

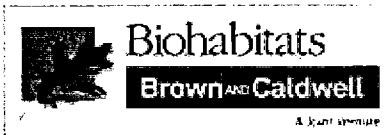
#### **D. Public Outreach**

The Consultant will provide technical support to the Planning Department throughout the process. This shall include:

- Attendance at weekly progress meetings (in person or teleconference)
- Attendance at three work sessions with Planning, Parks and County staff
- Attendance at three public meetings
- Attendance at three Planning Board work sessions
- Attendance at one public hearing
- Attendance at one County Council session

The Consultant will also prepare PowerPoint, graphics and maps in support of the process. Planning will schedule and organize all meetings, including reproduction and distribution of meeting materials.

The Consultant will provide expert testimony if authorized as an additional service.



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**Deliverables:**

- Attendance at all meetings by one Consultant staff member

**TASK ORDER SCHEDULE:**

See attached MS Project Gantt Chart and associated Project Calendar.

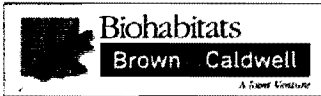
**COMPENSATION:**

The Commission shall compensate the Consultant for Basic Services performed under this Task Order based on the hourly rates contained in the Contract for a not-to-exceed amount of \$XXX. The County will not pay any mark-up or fees on Other Direct Costs (ODC). This not-to-exceed compensation amount is fixed for the duration of the Task Order unless changed by a Task Order Amendment.

Payments for Services shall be made monthly in accordance with the terms and conditions of the Contract. Below is a fee summary for the not-to-exceed amount.

| <b>TOTAL FEE SUMMARY</b>       | <b>Total Fee</b>     |
|--------------------------------|----------------------|
| <b>A. Data Discovery</b>       | <b>\$ 22,880.34</b>  |
| <b>B. Data Collection</b>      | <b>\$ 21,909.68</b>  |
| <b>C. Analysis</b>             | <b>\$ 123,390.15</b> |
| <b>D. Stakeholder Outreach</b> | <b>\$ 31,809.44</b>  |
|                                | <b>\$ 199,989.61</b> |

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# Technical Memorandum

4061 Powder Mill Road, Suite 400  
Beltsville, MD 20705

T: 301.479.1250  
F: 301.479.1300

Prepared for: Maryland-National Capital Park and Planning Commission

Project Title: Limited Amendment to the Clarksburg Master Plan

Subject: Draft Response to September 9, 2013 Geosyntec Letter

Date: October 15, 2013

To: Mary Dolan and Valdis Lazdins, Montgomery County Planning Department

From: Biohabitats and Brown and Caldwell, a Joint Venture

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CONFIDENTIAL DOCUMENT – INADMISSIBLE AS EVIDENCE

This document was produced solely for the purpose of the discussions referred to in the Joint Stipulation between The Maryland-National Capital Park and Planning Commission and Pulte and is not admissible in any subsequent litigation.

*The Master Plan Amendment allows different levels of impervious cover on different properties within the same watershed. What was the basis of the Planning Board's decision to have varying levels of imperviousness?*

All land use plans are based on a rational organization of land uses to promote appropriate densities and uses that achieve a vision for a community. This inevitably results in more intense uses and higher densities on properties that are located closer to the center (or centers) of a community. Such an approach allows for a concentration of uses near a downtown or commercial center and community amenities.

Evaluation of appropriate land uses for the Ten Mile Creek watershed rests on the idea that the "vision" put forth in the 1994 Master Plan remains valid. That vision is based on the interplay among the ten policies articulated in the Plan's Vision for the Future. The thrust of those policies is the creation of a clearly defined community that would include land uses ranging from agriculture in the western parts of Clarksburg, to employment areas along the Corridor Cities Transitway.

Clarksburg is evolving, based on the vision and the ten policies, from a rural crossroads into a vibrant corridor town. Whole communities, like Arora Hills, Clarksburg Village and Clarksburg Town Center, have been planned, designed, built and occupied. More than 6,500 housing units have been built; another 4,000 have been approved. A significant new community is underway on the west side of I 270 in Cabin Branch. Stores, restaurants and other services are available to Clarksburg Village residents, and the retail portion of the Town Center is in the planning stages. While challenges remain, particularly in providing employment and transit opportunities, Clarksburg is emerging as the defined community outlined in 1994.

The amount of existing imperviousness in the subwatersheds and the existing stream biological health conditions of the subwatersheds were also considered. All of the subwatersheds with proposed development under Stage 4 of the 1994 Plan contain headwater streams.

The 1994 Plan recognized that areas under consideration for non-residential development lay in a part of the Ten Mile Creek watershed that is east of I-270 and considered part of the Town Center District. The Plan notes that: "This environmental concern was considered during the Plan process and less constrained locations for the Town Center were evaluated. However, the advantages of locating the Town Center near the historic district in terms of fostering community identity and reinforcing the traditional center of Clarksburg are equally important Plan objectives. To help address environmental concerns, the Plan shows reduced densities for parcels closest to the headwaters of Ten Mile Creek." (p 42)

The subwatershed within the Town Center District (LSTM 206) is the most upstream of these headwater subwatersheds. It has both the highest level of existing imperviousness (16.6%) and the lowest (Fair) biological stream health condition. Even if no development was permitted on the properties in this subwatershed, it is unlikely that stream conditions would improve given the current levels of imperviousness and the existing and proposed transportation infrastructure. Projected imperviousness levels would likely cause additional impacts to water quality, but it would still likely remain in a Fair condition rating.

Land use recommendations in the current Planning Board Draft limited amendment for the Ten Mile Creek watershed reflect acceptance of the 1994 vision and the recommended use of imperviousness caps represent a further effort to reduce environmental impacts, while furthering Plan goals. East of I



270, the recommended limits recognize the continued importance of “fostering community identity and reinforcing the traditional center of Clarksburg...”. Achieving a balance among community building and environmental goals meant that setting an imperviousness limit was an appropriate response to increased awareness of environmental sensitivity, but that limit had to be high enough to encourage development that could meet the important community building objective. Because the proposed zoning could result in a wide range of impervious percentages, the Board felt that an imperviousness limit was a way to assure a limit on the potential environmental impact.

West of I 270, the limits recognize the generally high water quality of the subwatersheds and the generally lower intensity of development recommended for the area in the 1994 plan. The 1994 plan also recommended increasing protection by including substantial areas beyond the stream buffers as “private conservation area.” The plan clearly states that these areas should remain undeveloped and be afforested. The subwatersheds west of I 270 have much lower levels of existing imperviousness and much higher stream biological health conditions compared with LSTM 206. One of these subwatersheds was recently identified as having almost the highest stream health that can be expected in the County. Two of the three subwatersheds on the Pulte and King properties flow into Ten Mile Creek just upstream of the monitoring station where the County has been measuring this as a reference stream (a high-quality benchmark against which other streams in the county are judged. For these reasons, the Board recommended a lower imperviousness level and cap for the developable properties within these subwatersheds. The Board determined that a 10 percent imperviousness limit on the Pulte and King properties could sufficiently protect water quality and stream biological health in particularly sensitive subwatersheds, while allowing single-family residential development in keeping with the 1994 Plan’s objective, creating a low density housing resource in this part of Clarksburg. Much stricter limits were recommended on county properties to provide further protection for the creek and important forest interior habitat.

*Has the Planning Board required different imperviousness levels for different properties within the same watershed in the past?*

The Upper Rock Creek Environmental Overlay Zone effectively requires different levels of imperviousness in the Upper Rock Creek Special Protection Area. Because the zone’s regulations apply specifically to development served by community sewer service, they result in an eight percent limit on development using community sewers and no limit on development using septic systems. Similarly, the zone’s exemption for development in industrial or commercial zones results in no limit on imperviousness for such projects.

In addition, the Functional Master Plan for the Patuxent River Watershed, and more recently in the Burtonsville Crossroads Master Plan, required different imperviousness levels for different areas. In both cases, the lower imperviousness levels for the designated areas were considered important in limiting future development-related degradation to important natural resources.



**MONTGOMERY COUNTY PLANNING BOARD**  
THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION

OFFICE OF THE CHAIR

January 2, 2014

Councilmember Roger Berliner  
Chair, Transportation, Infrastructure, Energy & Environment Committee  
Montgomery County Council  
Stella B Werner Office Building  
100 Maryland Avenue, 6<sup>th</sup> Floor  
Rockville, Maryland 20850

Dear Chairman <sup>Roger</sup> Berliner:

In reply to the questions raised in your letter of December 12, 2013, I have the following responses:

**1. Why is Ten Mile Creek important to our County and/or to the region?**

Ten Mile Creek is one of three remaining larger reference streams in the western portion of Montgomery County. The reference streams here are unlike those in the eastern part of the County because of differences in the underlying geology and soils. Having a number of reference streams in both parts of the County is important because it provides a more scientifically sound basis for assessing stream degradation from human activities, as opposed to stream changes due to local variations in watershed physical, hydrologic, or weather-related factors.

As development has continued and extended into certain reference stream watersheds, the "best in the County" quality of some of those streams has declined to the point where many are no longer considered to be reference streams by DEP. While such streams may still exhibit "good" stream quality, they can no longer be considered in the "best in the County" category. If Ten Mile Creek degrades enough, the County will have lost another "best in the County" stream, leaving only two larger-sized reference streams in the western portion of the County. This will make it more difficult to assess degradation in other streams in this part of the County.

According to a report by a panel of 17 technical experts in stream ecology, benthic macroinvertebrate and fish community assessments, Ten Mile Creek is one of the two most highly rated streams in Montgomery County. The experts included scientists from Montgomery County, the State of Maryland, the University of Maryland, the University of Maryland at Baltimore County, the Interstate Commission on the Potomac River Basin and U.S. EPA.

Ten Mile Creek is also important to the County and the Washington metropolitan region because it is part of the Little Seneca Reservoir watershed. While Little Seneca

Reservoir is not a direct source of local or regional drinking water, it does provide water that can be released in times of severe drought to help maintain minimum flows in the Potomac River. The much larger William Jennings Randolph Reservoir, in western Maryland, is another important source of release water during droughts.

2. **Ten Mile Creek has been referred to as a “reference stream”. What is a “reference stream” and what qualifies a stream for this designation?**

Reference streams are those that show a high level of biological quality. While this places them in the highest stream quality category, it does not mean they are pristine, or show no degradation due to human activity. There are no pristine streams left in the County, but reference streams represent the highest County standard and provide a scientifically sound basis to compare them with more degraded streams, in order to better assess stream degradation from human activities. It is important to have a number of different reference streams to be able to understand changes in stream conditions due to local variations in watershed physical, hydrologic, or weather-related factors, as opposed to human activity-related factors.

All of the County’s reference streams were selected through an interagency effort in the early 1990s using land use and biological monitoring data. Because of geological and soil differences between the eastern and western portions of the County, two sets of reference streams were identified based on geography. Watersheds that met screening criteria indicative of very high stream quality conditions were selected for detailed field assessments. The assessments located the stream segment in each candidate reference watershed that showed the best biological conditions. Once identified, these segments were designated as the reference reaches for the stream, and monitoring stations were established for them. However, since being designated, development has degraded the biological quality of some reference stream watersheds. As a result, they no longer cluster together with the other reference streams that have maintained their biological quality. When this happens DEP removes their designation as a County reference stream.

3. **What should our County’s goal be with respect to the quality of Ten Mile Creek?**

The County is required to meet State water quality standards in all of its water bodies, comply with all Total Maximum Daily Loads (TMDLs) issued by the State, and prevent degradation of all State-designated Tier II streams. Ten Mile Creek and the Little Seneca Reservoir currently meet water quality standards, have no TMDLs, and no Tier II designation. Ten Mile Creek, however, is important to the County as a high-quality reference stream which will be negatively impacted by any new development.

While not officially adopted, it is the County’s general policy to maintain or improve the quality of all its waters, although planned development in many parts of the County will further degrade some of its subwatersheds. For example, additional development in the I-270 corridor will affect the Seneca, Muddy Branch and Watts Branch watersheds. However, much of the County’s new growth is focused on redevelopment. Converting previously developed land that lacks stormwater management will trigger new

stormwater requirements, resulting in improved conditions. In addition, the County is continuously improving older stormwater facilities in priority watersheds.

It is also important to answer this question in the context of the 1994 Clarksburg Plan, since it identified policy concerns that emerged following the completion of the 1968 Clarksburg and Vicinity Master Plan. Among many other policy statements identified in the introduction to the 1994 Plan are numerous references to environmental concerns, including:

Page 2 - "The critical importance of protecting environmental...resources."

Page 4 - "The streams, which flow to Little Seneca Lake, generally have good water quality; continuing the good health of these streams is a key concern of the Plan."

Page 6 - Included among the ten key policies for Clarksburg is: "This Plan recommends that Clarksburg's natural features, particularly stream valleys, be protected and recommends that Ten Mile Creek and Little Seneca Creek be afforded special protection as development proceeds."

Based on these and other statements in the 1994 Plan it would be reasonable to conclude that the County's goal should be to protect the quality of Ten Mile Creek. But the Plan also recognized, on page 12, the potential conflict between directing... "the major portion of Montgomery County's future growth to the Urban Ring and the I-270 Corridor" and protecting environmental resources in Clarksburg.

The 1994 Plan attempted to clarify that issue by stating: "Both the General Plan Refinement throughout the Environmental Goal [p. 70-73] and the 1992 Planning Act urge protection of sensitive areas. Addressing these two factors has been a challenge throughout the planning process. The balance struck by the Clarksburg Plan is to propose a transit-oriented town scale development largely east of I-270." (1994 Master Plan p. 12)

So the goal of protecting Ten Mile Creek in the 1994 Plan was offset by more intense development east of I-270. However, that tension should not negate the importance of protecting the quality of Ten Mile Creek - it merely suggests that a balance be reached, that also accommodates development.

4. **What was the basis of the Board's conclusion that our Council had requested you to "balance" issues pertaining to the environment and "community building"?**

Although Council members made a variety of statements at the session when the Council directed us to prepare this Plan Amendment, several common themes came through clearly: limit the geographic scope to the Ten Mile Creek watershed and do not consider other areas in Clarksburg; preserve the overarching visions of the 1994 Clarksburg Plan while protecting stream quality; and base planning recommendations on science. In light of the relatively small geographic area covered and our sense of the Council's direction,

the Board did not believe it appropriate to significantly modify the universal underpinnings of the 1994 Plan, many of which broadly apply to all of Clarksburg.

The planning principles for all of Clarksburg include its development as a corridor town, with a transit-oriented Town Center located in an area that was known to include the Ten Mile Creek watershed. The 1994 Plan established that development should ...” be staged to address fiscal concerns and be responsive to **community building and environmental objectives** (emphasis added).” (1994 Master Plan p. 14) Based on such an approach, which took into consideration the dual goals of protecting the fragile environment of Ten Mile Creek and creating the community identity envisioned in the Plan, the Planning Board sought a balance between environmental concerns and “community building” goals.

- 5. If the Board had understood that the Council’s request was primarily motivated by environmental concerns, would that have changed your recommendation, and if so, in what respects?**

It is not possible for me to say whether this would have changed the Planning Board’s recommendation. The Board has five members who held varying views on the elements of this plan, resulting in lively discussions at our work sessions. I cannot say what the ultimate result of the debate would have been in a context different from the one that took place.

- 6. What does “community building” mean precisely? In my judgment, it appears that what the residents of Clarksburg seek most of all is the fulfillment of the promise of the Town Center. Do you agree with that statement? How, in your judgment, would further development of phase four properties assist with “community building?”**

The idea of community building in Clarksburg is rooted in the interplay among the ten visions that are the foundation of the 1994 Master Plan. Those visions—a *Town Scale of Development*, protection of *Natural Features*, creation of a *Greenway Network*, development of a *Transit System*, a clearly defined *Hierarchy of Roads and Streets*, a sensitively designed *Town Center*, *Transit- and Pedestrian-Oriented Neighborhoods*, provision of *Employment* opportunities, *Farmland Preservation*, and *Staging* of development—enable Clarksburg’s evolution from a rural crossroads into a Corridor Town. The visions are described on pages 15 to 36 of the 1994 Plan.

The thrust of these policies is creation of a clearly defined community that would include land uses ranging from agriculture in the western parts of Clarksburg to employment along the proposed Corridor Cities Transitway. While the Town Center is an important

component of community building in Clarksburg, all ten visions, working together, are needed to "complete" Clarksburg. Civic activities, such as a library, and nearby transit service would draw residents to the Town Center from the neighborhoods, where retail nodes would include grocery shopping and other routine needs. Community building was to be managed by a Staging plan that would balance provision of needed civic infrastructure with the pace of development, with a particular focus on early development of the Town Center and the need to undertake significant environmental monitoring before allowing development in the Ten Mile Creek watershed.

Development in stage four contributes to community building by providing opportunities for additional housing, commercial office and retail uses east of I 270, and by providing housing west of I 270 that helps create a transition from the Town Center west to the Agricultural Reserve. Each of these opportunities supports a vision of the 1994 Plan, and their interaction contributes to a complete Clarksburg.

**7. What was the basis of the Board's decision to override the staff recommendation with respect to the Pulte property?**

When the staff draft was presented to the Planning Board, certain members of the Board were concerned that the recommendations for the Pulte/King properties did not sufficiently support the goals of a complete Clarksburg, and that they represented such a significant departure from the density recommendations of the 1994 Plan as to be inequitable to property owners. As an exploratory effort, the Board asked staff to identify alternative ways to configure development on the property to minimize environmental impact while increasing residential yield to a level that would be closer to the level recommended in the 1994 Plan. This resulted in staff presenting the Board with a series of options regarding zoning, density and imperviousness limits. The Board chose the option that we felt was the best balance between protecting the sensitive natural resources in the Ten Mile Creek watershed and preserving the vision of the 1994 Master Plan.

**8. What impact would the staff's recommendation have on the quality of Ten Mile Creek if adopted?**

Staff's recommendations would result in the retention of more open space, a smaller development footprint, less grading and soil compaction, less forest impact, fewer impacts to steep slopes, significantly lower impervious cover in LSTM 110 and LSTM 111, and a somewhat lower overall Ten Mile Creek watershed imperviousness. As a result, impacts to Ten Mile Creek would be expected to be less, lowering the risk of reducing the biological quality of the Creek to a point where its status as a reference stream could be lost. This is especially the case because the confluences of LSTM 110 and LSTM 111 are just upstream from the monitoring station for Ten Mile Creek where

the status of the reference stream is monitored. Because of their close proximity to the reference monitoring reach, reducing future impacts to these subwatersheds is important in reducing the risks of degradation in the reference reach. In this case it is impossible to accurately predict the response of stream biological integrity to additional development. As a result, one can only speak in terms of lowering or increasing the risk of stream degradation.

Although Ten Mile Creek will likely remain in the "good" stream quality category under the proposed development, given the very high-quality nature and sensitivity of the stream's biology, in the opinion of State biologists there is still a significant risk of a level of degradation sufficient to lose its status as a reference stream. The staff draft recommendations also pose a risk, although it is a lesser risk.

9. **Does the addition of approximately 400 single family homes on the Pulte property, more than the staff had recommended, have a meaningful impact on "community building," particularly given the fact that there are more than 4,000 homes that haven't been built pursuant to authorizations in Phases 1-3?**

The concept of community building does not solely consider the number of units built or approved in Clarksburg. As noted above in the response to question six, the concept involves the interaction of ten master plan visions. West of I 270, creating housing between the more intensely developed Town Center District and the low-density residential and agricultural lands to the west establishes a land use transition that plays an important role in creating a complete Clarksburg. The Limited Amendment's recommendation for the Rural Neighborhood Cluster Zone on the Pulte-King properties allows creation of that housing resource while providing significant amounts of undeveloped open space to help protect water quality in the Ten Mile Creek watershed. It is the *zone* that meets the goals and objectives of the Clarksburg Master Plan, rather than any specific number of units.

10. **Does the Planning Board believe that a major retail center approximately ¼ of a mile from Town Center complements Town Center, and if so, in what ways?**

The Planning Department recently hired an economic development consultant to address that very question: determining whether the Town Center would benefit from a retail outlet center located near the I-270/MD 121 interchange. However, given the compressed schedule for the master plan, it was not completed in time to be reviewed by the Planning Board.

According to the consultant, "Outlet mall development in Clarksburg will dramatically increase consumer choice for local residents, especially for soft goods, apparel and accessories and home products, assuming the conventional mix of outlet retailers for projects of this type. While such development will displace some of the demand for traditional neighborhood local serving retailing, there is also the potential for regional

**destination shoppers (many times the volume of what Clarksburg alone would generate) to patronize non-outlet mall retailing, with each source of demand more or less offsetting the other. The increased drawing power of an outlet mall will attract support and retail tenants that would not otherwise be supportable in a market the size of Clarksburg” (emphasis added).**

The two product types, a more neighborhood-serving Town Center and a major retail outlet center...“function very differently from each other:

- a) There is virtually no crossover in terms of food sold for home consumption, or for a wide range of convenience services.
- b) While there are some parallels in soft goods (i.e. socks, cosmetics) that are typically part of a local serving grocery or drug store, the differences in shopping experiences associated with picking up these kinds of items as part of other purchases, and as they represent only a fraction of traditional neighborhood general merchandise sales, mutates the impact of non-grocery items on the economic viability of neighborhood supermarket and drug stores.
- c) Neighborhood based dedicated clothing stores, considered unlikely to begin with given the size and locational characteristics of Clarksburg, will have more difficulty competing, as outlet malls typically are based on well known brands at discounted prices. Neighborhood clothing stores do not enjoy the same advantages of bulk purchase and corporate connections to secure manufactured goods/past season products at deep discounts.
- d) Typical outlet malls include limited food offerings (usually in a food court configuration) primarily as a tool to retain consumers on-site in order to increase overall spending, as expenditures typically correlate with amount of time spent at the center. Freestanding restaurant offerings, not a core use in outlet malls, represent the most potential intermixing between serving both outlet / neighborhood sourced demand.
- e) Entertainment uses serving local residents (i.e. movie theaters) are less likely as part of the outlet center mix, particularly if reliant strictly on local based demand, and may or may not be an additional element in some future outlet mall setting.”

**11. What was the Planning Board’s recommendation regarding the intensity of use on the Miles-Coppola property in 1994 (prior to the Council’s actions) and how does that compare with what the Planning Board is recommending in this plan?**

The Planning Board Draft of the 1994 Plan recommended residential development on the approximately 100-acre Miles-Coppola properties. It recommended development at nine to 11 units to the acre on the central and southern developable portions of the property, and seven to nine units to the acre on the northern developable portion, for a total of 416 dwelling units. The current Planning Board Draft recommends mixed-use development in the CR Zone at an overall density of 0.75 Floor Area Ratio (FAR) on the hundred acres. Each CR zone classification is followed by a sequence of symbols, CR, C, R, and H, and



related numbers. The number following the CR is the maximum total FAR, the number following the C is the maximum non-residential FAR, the number following the R is the maximum residential FAR, and the number following the H is the maximum building height in feet. The precise designation for the Miles-Coppola property is CR 0.75, C 0.5, R 0.5, H 75. For the Miles Coppola properties, an FAR of 0.75 equals about 3.2 million square feet of development. A project that maximized commercial development could achieve 2.1 million square feet of commercial space; the remainder, another million square feet, would yield 850 units at 1,250 square feet per unit.

- 12. If an outlet mall or other retail were to proceed on the Cabin Branch property, is there need for more retail on the Miles-Coppola property to serve the residents of Clarksburg? Has the Board had a retail analysis performed, and if so, could you please provide a copy of that analysis?**

**What is the relative commercial viability of the two proposed retail outlet centers? What were the results of the consultant report which examined the issue?**

Both questions are quite similar and the following attempts to answer both. In addition, the consultant's findings will be transmitted to the County Council for review.

#### **Outlet Malls**

"Based on market demographics, current industry trends, and locational considerations, Clarksburg is a very strong candidate for outlet mall retailing. The two outlet proposals, backed by leading national sponsors of such development, are resounding endorsements."

"Over the past few decades outlet malls have morphed into a highly structured breed of retailing. It is one of the few retailing concepts that it still in a growth mode. Retailers and branded product manufacturers have expanded their merchandizing lines to incorporate specifically targeted marketing strategies suited to co-locating in high profile locations overseen by major, specialized retail developers. The contemporary prototype outlet center is fairly simple, and universal:

- 80 to 100+ stores, comprised of mostly nationally or regionally recognized specialty vendors
- 4,000 sf average store size
- 350,000 sf to 500,000 sf overall size
- easy access highway served site
- typically a lower cost, suburban edge location
- regional and transient market capture (not at all neighborhood oriented)
- internal orientation
- lots of surface parking, but not designed for quick in and out access to stores
- located / configured to maximize multiple store shopper patronage (and not non-shopper use)

- limited if any table service restaurants (idea to keep people shopping); sometimes have pad sites for free-standing food services on out parcels
- typically located in isolation from competing outlet centers (though with exceptions)”

“That Clarksburg has been now targeted by the two leading outlet mall developers (Simon and Tanger, in partnership with local master developers) is an entirely natural and understandable focus. But for proximity to Montgomery County, most all submarkets ringing the Washington metropolitan region have an existing or planned outlet or equivalent center. These include the older and/or much larger Mills centers (Potomac Mills and Arundel Mills), a new Tanger outlet mall opening in Oxon Hill in Prince George’s County near Alexandria, an existing Premium Outlets (Simon) in Leesburg, an additional planned center in western Fairfax County, and proximate centers further afield in Maryland in Hagerstown and Queenstown (smaller example).”

“With a Clarksburg outlet facility, currently underserved consumers, reaching well beyond the borders of Montgomery County stand to benefit, as will the tenant vendors, and for that matter, the tax collectors that will not only see some inflow of retail expenditures, but some reduced outflow of Montgomery County resident shoppers. Barring some national or other extraordinary influence, the question is not whether an outlet center will come to Clarksburg, but rather, which one?”

“The developers of both proposed retail outlet centers have indicated that there is demand for only one such commercial enterprise in the immediate area. The consultant sees no reason to refute or test this claim. There is little taste on anyone’s part (developer, tenant or for that matter consumers) for essentially duplicated co-existing malls: the market for such is limited by the simple fact that there are only so many profile credit tenants to go around. While there is limited precedent for dual locations, (one being outside St. Louis, Missouri and another in San Marcos, Texas ), it is rare for two major centers to go ahead at the same time in close proximity to each other. (Interestingly, the competing Simon and Tanger sponsors have actually co-ventured in at least one instance.)”

“The core composition and use of an outlet mall is almost the complete opposite of neighborhood serving retailing. The vendors, and with some narrowly defined exceptions, the product lines, would never normally be found in a neighborhood shopping center dominated by food and convenience related merchandizing. The outlet patronage is coming from a widely extended region, intent usually on making substantial purchases spanning multiple stores over a considerable period of time, the converse of the typical neighborhood in-and-out kind of shopping venture.”

- 13. Several of the fundamental underpinnings of the original Clarksburg master plan have not and seem unlikely to materialize in the near to mid-term future including Clarksburg serving as a major employment center and having sufficient transit options. What impact, if any, should that have on our deliberations regarding the scope of development that should be permitted in Phase 4? What is the relevance of the vision of the 1994 Plan in today's market?**

Clearly, all of the elements of the 1994 Plan vision for Clarksburg have not been completely realized for a number of reasons. These include the recent downturn in the economy and housing market, major shifts in office employment, and the lack of significant transit service on the I-270 corridor. However, the vision for Clarksburg should be viewed in its totality, as the interrelationship between the ten key policies that are represented in the 1994 Plan, and not just a few select components.

While the questions about gaps in fulfilling the vision for Clarksburg and the vision's relevance in today's market are important, they are more relevant when viewing all of Clarksburg. The Planning Board was charged with a focused look at Clarksburg - one that pays attention to just the Ten Mile Creek watershed and not the entire Planning Area. Such a perspective must assume that all of the policies making up the vision for Clarksburg remain important, intact and relevant. While the questions posed about the future Clarksburg are important and should be asked, they should also be answered within the context of a more global view of the Clarksburg Planning Area.

- 14. Testimony was given stating concerns regarding the impact of degradation of Ten Mile Creek on the aquifers in the area. Did the Board review that issue, and if so, what conclusions did the Board reach, and what technical support did the Board receive on this issue, if any?**

The Board heard the same concerns at its Ten Mile Creek public hearing. In compiling public testimony and responses for the Board regarding this issue, staff consulted groundwater and hydrogeology specialists in the Department of Permitting Services and the Maryland Geological Survey.

The staff response pointed out that in the fractured rock aquifer in Montgomery County, groundwater, like surface water, generally flows in response to surface topography, and mimics the flow patterns of surface streams within a watershed. This means that groundwater flows on the east side or the west side of the creek mainstem will flow to the creek, but not across the mainstem to the other side of the watershed. As a result, even if impacts to groundwater from stormwater infiltration practices do occur on the east side of TMC, they should not affect the existing wells on the west side of TMC, much less the other portion of the Piedmont Sole Source Aquifer, which includes many watersheds that are all hydrogeologically separated from TMC.

The proposed new development will be on public water and sewer, which will replace well and septic systems of the existing rural properties east of the TMC mainstem, reducing any current groundwater impacts from the removed septic systems. In addition, ESD requirements will serve to infiltrate stormwater, which will greatly reduce negative impacts to groundwater flow levels compared to traditional stormwater practices.

The Planning Board concurred with the staff response on this issue.

- 15. In your testimony, you noted that the safety of drinking water is assured by the region's water treatment facility. However, the WSSC testimony argued that "water treatment alone is not a panacea for delivering safe water and that a multi-barrier approach is needed to protect water at every step of its trip from source to faucet, with source protection as its first step." Do you believe that the Board's plan adequately addresses what WSSC describes as the "first step" in the safety of our water supply?**

Yes. The Planning Department has long recognized the vital importance of source water protection in safeguarding our drinking water supply, and has worked with WSSC in the general plan and area master plans for many years to accomplish this goal. This is especially true in the case of potential impacts to the region's drinking water supply reservoirs, such as the Patuxent Reservoirs. Drinking water supply reservoirs are the most critical and require the highest level of attention in minimizing potential impacts.

It is important to note, however, that as DEP and the Interstate Commission on the Potomac River Basin (ICPRB) have pointed out, the Little Seneca Reservoir is not an emergency drinking water supply. It is a water body designed to provide water that can be released in times of severe drought to help maintain minimum flow requirements in the Potomac River. Another important source of release water to maintain minimum flow in the Potomac in times of drought is the much larger Jennings Randolph Reservoir, which is located in western Maryland.

Little Seneca Reservoir, however, is still an important component in the overall regional water system and needs to be protected, so taking the "first step" of source protection was an important factor in the draft Ten Mile Creek Plan recommendations. The Planning Board recognized that any increase in developed area within a watershed will result in increased impacts to receiving water bodies, so an approach was taken that recommended significantly less development in Ten Mile Creek than was recommended in the 1994 Clarksburg Master Plan, along with reduced development footprints, higher retention of open space, greater forest retention, less grading and soil compaction, fewer impacts to steep slopes, significantly lower impervious cover in LSTM 110 and LSTM 111, and a significantly lower overall Ten Mile Creek watershed imperviousness.

Furthermore, reviews by environmental staff from DEP, WSSC, and ICPRB of the recommended future development in Ten Mile Creek, along with an accompanying pollutant loading analysis, indicated no significant concerns regarding potential

development-related reductions in surface or groundwater flows to the reservoir, or in increased loadings of nitrogen, phosphorus, and sediment. Technical staff from these agencies indicated that because of the reservoir's limited role in a much larger system, proposed development in the reservoir watershed does not threaten the region's drinking water supply, nor would potential additional pollution loadings from the proposed development cause it to fail to meet State Water Quality Use standards for drinking water reservoirs. DEP reiterated this position at one of the Planning Board's worksessions on the Ten Mile Creek Draft Plan. At that worksession, DEP staff stated that if Ten Mile Creek is protected, the reservoir will be protected for its intended purpose. They further indicated that the proposed actions in the draft plan that protect resources from over-development, combined with the use of ESD where development does occur, would serve to protect Ten Mile Creek.

At the September 26, 2013 Board worksession, WSSC staff reiterated that the reservoir currently meets State water quality standards, and emphasized that the reservoir should be protected from sediment and nutrient inputs from new development. To do this, WSSC staff stated the importance of protecting the reservoir watershed through sound land use planning and management, limiting new impervious cover, protection of natural resources, providing environmental buffers, and the use of ESD. This was precisely the approach taken in developing the Ten Mile Creek Planning Board Draft Plan recommendations.

**16. The reservoir has already been degraded by sediment due to development around Germantown, resulting in three fore bays that limit sediment being more than half full. How much more sediment does the Board project will be added to the reservoir as a result of development in Stage 4?**

The Little Seneca Reservoir has not been significantly degraded by sediment. In the case of the fore bays, their intended purpose is to capture sediment before it enters the reservoir proper. They have been effectively performing this function for 30 years without yet needing to be dredged. The reservoir can hardly be considered to be significantly degraded because the fore bays are doing their job. To this can be added the results of the most recent sedimentation accumulation study by the Maryland Geological Survey, which reports very little sediment accumulation in the reservoir outside of the fore bays, with only about a 3% loss of reservoir capacity as of 2010.

The studies also show that at current sedimentation rates, the fore bays should have decades of service left before they will need dredging. Future increases in sediment inputs, however, could shorten the time for the fore bays to fill in. But since the proposed development in Ten Mile Creek is much less than the existing development around Germantown and will use ESD, which was not used in the earlier Germantown development, significant increases in sediment contributions to the reservoir are not expected.

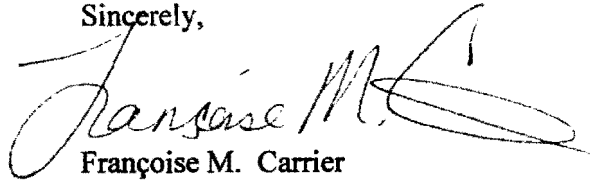
Councilmember Roger Berliner  
December 23, 2013  
Page 13

**17. The Council heard testimony regarding the possibility of algae blooms in the reservoir. Fresh water algae blooms are generally the result of an excess of nutrients which enter watersheds from runoff. Did the Board consider this issue, and if so, could you provide the Board's conclusions with respect to it?**

The levels of nutrients that result in algae blooms are generally those that exceed water quality standards for drinking water reservoirs. The Board did not consider this issue because it did not need to in view of the current high water quality of the reservoir, the results of the pollutant loading analyses which indicate low additional potential loadings from new development, and expected future low sedimentation rates (which will continue to limit phosphorus contributions from sediment). These factors are consistent with the reservoir continuing to meet water quality standards (see responses to questions 15 and 16). As long as the reservoir continues to meet water quality standards, there should be no significant levels of algae growth in the reservoir.

I hope this information is helpful to the joint committees' consideration of the Limited Amendment to the Clarksburg Master Plan.

Sincerely,



Françoise M. Carrier

Chair, Montgomery County Planning Board

cc:

Montgomery County Councilmembers

Montgomery County Planning Board Members

The Honorable Isiah Leggett

Bob Hoyt, Director, Department of Environmental Protection

Marlene Michaelson, Council Staff

**ADDENDUM**

PHED/T&E Committees #1  
January 13, 2014

**From:** Boucher, Kathleen  
**Sent:** Friday, January 10, 2014 4:31 PM  
**To:** Levchenko, Keith  
**Cc:** Michaelson, Marlene; (Mary.Dolan@mncppc-mc.org); Hoyt, Bob; Lake, Dave; Edwards, Stan; Shofar, Steven; Curtis, Meosotis; Van Ness, Keith; Gary Gumm (ggumm@wsscwater.com)  
**Subject:** Ten Mile Creek - DEP Response to Council Staff and CM Berliner Questions  
**Importance:** High

Dear Keith,

In your email below you requested that the Planning Board, WSSC and DEP respond to a list of questions relating to the Little Seneca Lake reservoir and potential impact on drinking water of development in the Ten Mile Creek watershed. You also referenced a letter from Councilmember Berliner to Planning Board Chair Françoise Carrier, which outlined a number of questions regarding the Planning Board's recommendation for the Limited Master Plan Amendment and asked WSSC and DEP to respond to those questions as well.

In order to avoid duplication and confusion regarding the responses from three separate agencies, we have reviewed the attached responses provided by the Planning Board and WSSC and have developed a response that outlines areas of concurrence and provides additional input from DEP where appropriate.

Please let me know if you have any further questions after you review this response.

Kathleen Boucher  
Chief Operating Officer  
Department of Environmental Protection  
240-777-7786

**I. COUNCIL STAFF QUESTIONS**

**Questions 1, 2, 3, 4, 6, 7, 8, 9, and 11.**

DEP Response:

(51)

DEP concurs with the responses provided by WSSC.

### **Question 5**

*What is the current estimated imperviousness of this acreage?*

DEP Response:

Based on GIS data maintained by DEP to implement the Water Quality Protection Charge, the total acreage in the drainage area for Little Seneca Lake is 13,544 acres and approximately 13% of this area is impervious surface.

### **Question 10**

*To what extent would the scale of development being debated in the Stage 4 Limited Master Plan Amendment have a significant impact on the Little Seneca Lake Reservoir or drinking water quality from the Potomac River in general? To what extent would the alternative levels of development that have been suggested (ranging from no additional development to the Planning Board recommendations to the increased levels of development requested by property owners) result in differences in the quality of WSSC drinking water?*

DEP Response:

In response to Question 11, WSSC stated the following: "WSSC has seen modeled data for development in the Ten Mile Creek watershed that suggests that adverse water quality impacts in that sub-watershed would probably not be significantly changed from current conditions. Changes in Ten Mile Creek, if they occur as modeled, are not likely to be substantially distinguishable from the cumulative water quality condition in the entire Lake, which (as noted in A.7) is currently not impaired."

DEP has reviewed the same modeling data referenced by WSSC in its response and agrees, based on this data, that it is unlikely that the "incremental" development proposed for the Ten Mile Creek watershed will significantly impact the water quality of Little Seneca Lake. DEP notes, however, that this is a different question than the question of how development scenarios would impact water quality in the Ten Mile Creek tributaries and main stem. DEP also notes that the modeling data relating to development scenarios in the Ten Mile Creek watershed are only one component of the data that would be necessary to evaluate a different but related issue – i.e., how do the cumulative impacts of development throughout the entire Little Seneca Lake watershed impact the reservoir?

### **Question 12**

*Please describe the factors that underlie your conclusions on questions #10 and #11. For instance, could a particular level of increased imperviousness in the Ten Mile Creek watershed tip the balance in the Little Seneca Lake catchment area?*

DEP Response:

WSSC's response to Questions 10 and 11 indicate that they are based on WSSC's analysis of the environmental models evaluated by the Planning Board regarding the impact of projected increases in nitrogen, phosphorous and sediment loads on the Little Seneca Lake resulting from different development scenarios. DEP's responses are based on the same models. The available scientific data does not allow DEP to identify a specific level of imperviousness that would "tip the balance" of water quality in Little Seneca Lake – viewed from the perspective of whether the changes in water quality would impact the reservoir's intended uses. In general, the more imperviousness the greater the potential impact to water quality. Again, the question of how development activities impact the reservoir is a different question than the question of how development activities impact Ten Mile Creek's tributaries and main stem.



### Question 13

*If specific levels of development in the Ten Mile Creek area would result in significant impacts on water quality, what options should the County consider to reduce or mitigate these impacts?*

DEP Response:

As mentioned above in our responses to Questions 10 and 11, the question of how development impacts water quality in the reservoir is a different question than the question of how development impacts the water quality of Ten Mile Creek's tributaries and main stem. We concur with WSSC's conclusion that the incremental impacts of the various development scenarios modeled by the Planning Board are not likely to adversely impact the water quality of Little Seneca Lake. However, the different development scenarios do pose a risk of impacting water quality in Ten Mile Creek's tributaries and main stem. In addition to minimizing the amount of impervious surfaces, there are a number of other options that could help to reduce or mitigate impacts on water quality, including:

- All of the recommendations included on pages 19-21 of the Planning Board's report on its recommended Limited Master Plan Amendment.
- Establishing conservation management plans in all areas located outside the limits of disturbance in the Ten Mile Creek watershed.
- In addition to the Planning Board's general recommendation to require wide buffers around streams and to maintain natural topography and vegetation where possible (particularly forests in headwater areas), overall performance of Environmental Site Design (ESD) could be improved by promoting a more even flow from bioretention facilities. In this respect, riparian buffer areas should be treated as a critical component of stormwater management. Every effort should be made to promote more even distribution of flow from ESD facilities along the entire range of forested or meadow buffer areas.
- The new 20-acre limit on grading established by State law may provide additional mitigation during construction but State law allows grading of additional areas to proceed once 50% of the 20 acres is "stabilized." Optimizing the success of improved stormwater control measures needs to focus on source reduction rather than best management practices (BMPs) for treatment. Source reduction is by far the best BMP.
- Soil decompaction needs to be incorporated as practical to address effects due to both construction and prior agriculture or other activity, but without disturbing vegetation to be saved on soils that might have had prior compaction effects. DEP's experience suggests there may be cases where collecting, stockpiling and reusing local topsoil generates more sediment than it saves. It may be better to compost amend whatever soil is left on the ground to start topsoil generation, and minimize the amount of grubbing early in a project to leave whatever root mat and organic content was in place for as long as possible.

### Question 14

*Do you believe additional research or analysis is needed to sufficiently answer any of Questions #10 - #13?*

DEP Response:

DEP's responses to Questions 10-13 are based on its review of available modeling data regarding the incremental impact of development scenarios in the Ten Mile Creek watershed on Little Seneca Lake. Former Councilmember

Scott Fosler, former Planning Board Chair Royce Hansen, former DEP Director John Menke and numerous other environmental and water resource advocates have called for further review and analysis of those impacts before Council takes action on the Planning Board's recommended Limited Master Plan Amendment. More specifically, they have called for a study that evaluates the cumulative impacts of all existing and proposed development in the entire Little Seneca Lake drainage area before action on the Limited Master Plan Amendment.

These advocates note that the headwaters of the Little Seneca Lake reservoir and the reservoir itself are located in three different master plan areas within the County -- Germantown, Clarksburg-Hyattstown and Boyds. As a result, they stress that the impacts of development in all three master plan areas on the reservoir have never been fully evaluated as a part of the County's master plan process. They argue that, before further development is approved, an appropriate study should be conducted to assess the cumulative impacts of development – both existing and proposed – within the Little Seneca Lake drainage area. They cite best practices for protecting “source water” that are being implemented throughout the country and argue that this kind of study is needed in order to identify any steps that must be taken by the County over the long-term to protect the reservoir's water quality and its intended use as source water for the region during drought situations.

DEP agrees that these stakeholders have identified a very important policy issue but is uncertain at this point in time as to the appropriate scope of such a study or whether the study should be conducted prior to approval of the Limited Master Plan Amendment. DEP will continue to evaluate this issue as the PHED Committee worksessions move forward. We note that the advocates have referenced a variety of best practices being used by water utilities across the country to protect source water and it would be helpful to learn more from WSSC about its long-term plans for protection of the reservoir in general and, more specifically, whether WSSC believes that a study of the cumulative impacts of existing and proposed development on the reservoir is appropriate at this time.

## II. LETTER FROM COUNCILMEMBER BERLINER

DEP agrees with all of the Planning Board's responses to the questions posed by Councilmember Berliner and also has the following additional comments on Questions 1 and 2.

### Question 1

*Why is Ten Mile Creek important to our county and/or to the region?*

DEP Response:

DEP agrees with the Planning Board's response but also has some additional comments regarding the importance of Ten Mile Creek.

Ten Mile Creek is a “headwater” system in which the majority of the tributary streams are small and spring fed. Abundant springs and seeps supply the cold and clean groundwater necessary to maintain high aquatic diversity. The fracture fault geology that is unique to this part of the County has influenced the stable shape of the stream channels, how the groundwater flows through the underlying layers of rock and how the springs and seeps are maintained. Land use activities that impact any of these factors can negatively impact the high aquatic diversity that they support.

Ten Mile Creek is located within an area of thin, rocky soils that is geologically different than the areas that surround other streams in most parts of the County. Relative to most streams in the County, stream beds in the Ten Mile Creek system contain smaller amounts of silt or clay and larger numbers of flat thin rocks of greenstone and Ijamsville schist. The surface area on these flat thin rocks and the absence of large amounts of silt or clay make it an ideal environment to support diverse benthic (living on the bottom) macroinvertebrate communities. Streambeds with more silt or clay or other types of rock material are less friendly habitats for the benthic organisms that are a key indicator of a healthy

stream and make it more difficult for them to thrive. Land use activities that increase the amount of silt or clay in the stream beds can negatively impact the ability of benthic organisms to thrive.

## Question 2

*Ten Mile Creek has been referred to as a "reference" stream". What is a "reference stream" and what qualifies a stream for this designation?*

DEP Response:

A reference stream is a stream that has the best natural habitat within a certain geographic range. In this case, Ten Mile Creek is a reference stream within Montgomery County for its Piedmont Region. Reference streams are identified as having "least impaired" habitats based on a specific set of factors including low imperviousness and high vegetated cover in their drainage areas and high stream bank and channel stability. These streams potentially support "least disturbed" aquatic communities and are used as a comparative "reference" for assessing the integrity of more impaired County streams. The reference stream program that was developed for Montgomery County is based on the framework outlined in the *Technical Guide for Developing an Index of Biotic Integrity* (George Gibson, 1996).

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**From:** Levchenko, Keith  
**Sent:** Thursday, December 19, 2013 11:43 AM  
**To:** Lake, Dave; Dolan, Mary; 'Gumm, Gary'  
**Cc:** Michaelson, Marlene; Faden, Michael  
**Subject:** Ten Mile Creek questions regarding drinking water issues

To: Dave Lake (DEP)  
Gary Gumm (WSSC)  
Mary Dolan (Planning Board staff)

One issue that Council Staff is reviewing as part of the Stage 4 Limited Master Plan before the Council is the potential impact on drinking water quality from development in the Ten Mile Creek Watershed since the watershed drains into the Little Seneca Lake Reservoir.

An opinion piece in The Washington Post from November 15 (see below) from several former County officials argues that development should be drastically reduced and/or further studied to better understand the potential impacts on the Little Seneca Lake Reservoir before opening up the Stage 4 area for development. These concerns were echoed by a number of speakers at the Council's public hearings on December 3 and 5.

Below is a list of questions that I think would help Council Staff assess this issue. Councilmembers have asked for written responses from WSSC and DEP and would welcome any comments from the Planning Board staff as well. Council Staff would like to receive your responses by January 3 so that the information can be incorporated into the Council Staff packet for the first committee worksession taking place on January 13.

1. Please provide a brief history of the creation of Little Seneca Lake, including the reasons the lake was built, its proposed function, and the agreements that guide water releases from the lake.
2. Please explain the specific circumstances under which reservoir water is used, when this has happened, and exactly what happens during these events.
3. Was the lake ever considered as a direct emergency water source (i.e. direct withdrawals from the lake) as opposed to releases from the dam to allow increased flow into the Potomac River? If so, please describe how this direct use would work. How would the water be treated? How would it be delivered to regional customers? Given the capacity of the

lake (4.0 billion useable gallons of water according to what I've read), how long would that water supply be able to serve the WSSD and the region?

4. How much acreage is within the Little Seneca Lake drainage area (i.e. drains directly into the lake or from water sources that drain into the lake)?
5. What is the current estimated imperviousness of this acreage?
6. What proportion of the total acreage that drains into Little Seneca Lake is from the Ten Mile Creek Watershed?
7. What is the condition of the reservoir right now? How does your agency evaluate the condition of the reservoir? How does development in the watershed affect the quality of the reservoir itself and the quality of the water in the reservoir? What are your agency's major concerns (if any) with regard to the water quality of the reservoir? Sediment? Pollutants?
8. How far does water released from the Lake flow to reach the Potomac River? How far upstream from the Potomac Water Filtration Plant does the released water enter the Potomac River? At its greatest potential release during a severe drought, what proportion of Potomac River water at the Potomac Water Filtration Plant intake would be from the reservoir?
9. Given Question #8, does the released water make up a sufficient portion of the Potomac River water at a given time to have a significant impact on drinking water quality? How much does the water quality of the Lake affect Potomac River water quality and drinking water quality at the Potomac Water Filtration Plant?
10. To what extent would the scale of development being debated in the Stage 4 Limited Master Plan Amendment have a significant impact on the Little Seneca Lake Reservoir or drinking water quality from the Potomac River in general? To what extent would the alternative levels of development that have been suggested (ranging from no additional development to the Planning Board recommendations to the increased levels of development requested by property owners) result in differences in the quality of WSSC drinking water?
11. Comparisons to Watts Branch's impact on Potomac River water quality have been made, with some contending that WSSC is considering a mid-river intake at least partly because of reduced water quality closer to shore as a result of the degradation of Watts Branch's water resulting from upstream development. To what extent would increased development in the Ten Mile Creek watershed raise similar questions?
12. Please describe the factors that underlie your conclusions on questions #10 and #11. For instance, could a particular level of increased imperviousness in the Ten Mile Creek watershed tip the balance in the Little Seneca Lake catchment area?
13. If specific levels of development in the Ten Mile Creek area would result in significant impacts on water quality, what options should the County consider to reduce or mitigate these impacts?
14. Do you believe additional research or analysis is needed to sufficiently answer any of Questions #10 - #13?

Also, On December 11, T&E Committee Chairman Berliner sent a memo (attached) which included a list of questions to Planning Board Chair Carrier. We would like DEP and WSSC to respond in writing by January 3 to these questions as well.


Thanks,

**Keith Levchenko**  
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# Montgomery County rolls the dice with the region's water system

By John Menke, Scott Fosler and Royce Hanson, Published: November 15

Anyone who lives in the D.C. region and relies on clean drinking water to live — in other words, everyone who lives in the D.C. region — needs to be aware of a debate that's about to come to a head in Montgomery County.

A proposal to amend the land-use plan for the Clarksburg area, in the northern part of the county, is set to be taken up by the county council in December. This proposal may endanger the integrity of the water system for metropolitan Washington by permitting millions of square feet of commercial and office development and the construction of hundreds of residences alongside the headwaters of Ten Mile Creek, the last undeveloped tributary of Little Seneca Reservoir.

As former Montgomery County officials, each of us was involved in the creation of the reservoir and its designation as a key component of the water system for metropolitan Washington. It supplanted massive and ill-conceived alternatives, including a proposal to place some 16 dams on the Potomac River that would have inundated most of the C&O Canal and destroyed the character of the river basin. Regional leaders discovered that in the event of a drought, with an appropriate regional system of interconnected local water supplies, Little Seneca Reservoir alone could sufficiently augment the flow of the Potomac until water released from another, larger reservoir reached intakes in the river.

This new regional water supply system, with Little Seneca Reservoir at its core, was formalized in the 1982 Water Supply Coordination Agreement, signed by the region's major water utilities in Maryland, Virginia and the District and the Interstate Commission on the Potomac River Basin.

But the integrity of that system is now threatened. The development blueprint approved by the county Planning Board in October concedes that development of any scale would degrade Ten Mile Creek; the only questions are by how much and what effect would this have on the reservoir. We don't know the answers to these questions because no comprehensive study has been carried out. Notably, the Planning Board's professional staff recommended a level of development well below what the board approved — and even that lower intensity involved significant risk. The board then increased the level of development recommended by its staff by 50 percent east of Interstate 270 and 300 percent west of the highway. No justification for this level of damage is offered in the plan.

To approve such expanded development without a careful, professional and independent analysis of its impact on this critical water resource would constitute an abandonment of the stewardship responsibilities that the county exercises for the 4.3 million people whose water is drawn from the Potomac.

We have walked in the shoes of planners and council members and understand the difficulty of making decisions that are certain to disappoint some interested parties. We share responsibility for the present problem because 30 years ago, when we proposed and acquired land for the reservoir and helped to negotiate the agreements for its role in the regional system, we should have taken stronger action to ensure its protection. But we did not anticipate that future planning boards and county councils would consider massive development along the headwaters of the reservoir without first carefully studying the damage it could do to the region's water supply.

We believe the responsible course for the Montgomery County Council to take at this point is to drastically reduce the proposed density and impervious-surface limits in the Clarksburg amendments. Better yet, reject the plan and remand it to the Planning Board for reconsideration after a thorough, independent analysis.

*John Menke was a member of the Montgomery County Council from 1974 to 1978 and later served as director of the county Department of Environmental Protection. Scott Fosler served on the county council from 1978 to 1986. Royce Hanson was chairman of the Montgomery County Planning Board from 1972 to 1981 and 2006 to 2010.*

Rationale for Development Levels  
Department of Environmental Protection

February 27, 2014

In evaluating the appropriate level of development in the different subwatersheds within the Ten Mile Creek watershed, a number of different environmental factors were considered. These factors include:

- Present water quality
- Amount of existing impervious surface,
- Proposed amount of additional impervious surface,
- Percent change in impervious surface,
- Percentage of environmentally sensitive organisms

**Present Water Quality**

DEP has been conducting water quality monitoring throughout the County and specifically in Ten Mile Creek since 1995. The results of this monitoring are analyzed using the index of biological integrity or IBI. The IBI for a particular stream reach is based on the type of macroinvertebrates and fish identified at the monitoring station for that reach. (see DEP Monitoring Program attachment for more information). IBI scores have been determined for 11 subwatersheds within the Ten Mile Creek watershed. Conditions in less developed subwatersheds like 110/111 have ranged from good to excellent since DEP began monitoring. Conditions in 206, which has had the highest level of development in the Ten Mile Creek watershed, have ranged from poor to good. Because LSTM 110 and LSTM 111 have higher existing water quality they are considered higher priorities for protection.

In addition to the IBI, DEP has worked with the Environmental Protection Agency to begin the development of a biological condition gradient (BCG) to evaluate streams in the County and also to compare them to other watersheds in the piedmont of Maryland. Four of the stations used in the development of the BCG are from Ten Mile Creek. Seventeen regional experts rated these streams using the draft BCG criteria. The draft BCG indicated that LSTM 110 is a stream comparable to some of the best watersheds in the Piedmont region of Maryland (see attachment on BCG).

**Amount of Existing Impervious Surface**

The relationship between the amount of impervious surface and water quality was first documented in 1998 (CWP, 1998) and has since been reaffirmed in a number of different studies (Schueler et al., 2009; Freeman et al., 2007; Dodds et al., 2010; Hidenbrand et al., 2010; Hogan et al., 2013; Utz et al., 2011; Walsh et al., 2005;) (see Existing Impervious attachment). The less impervious surface within a watershed the more likely that water quality health will be maintained close to predevelopment conditions. This is consistent with DEP monitoring results that show a strong relationship between imperviousness and stream health. This is illustrated in Ten Mile Creek where the subwatershed with

the highest imperviousness (206) exhibits the poorest IBI scores . There are other stressors that impact streams, but impervious surface remains the primary 'yardstick' used to relate stream health with development impacts.

### **Proposed Amount of Additional Impervious Surface**

Greater impervious surface reduces the opportunities to avoid sensitive stream resources, , and changes the natural recharge characteristics of the land from a diffuse network of infiltration to a point source system that does not function as before. On land with significant changes in elevation like that found in Ten Mile Creek, the effect of additional impervious surface is magnified by the necessary cut and fill required to achieve slopes suitable for development. SPA stormwater best management practices (BMPs) were designed to function in a distributed way (multiple, different BMPs, often connected in a series and used to detain stormwater; increase infiltration to groundwater; and increase the removal of nutrients, sediment, and other contaminants). The new Environmental Site Design structures are a continuation of a distributed system; there are just more of them and they serve a smaller drainage area. The amount and the location of imperviousness surfaces changes the landscape permanently and changes the receiving streams, often in ways not fully anticipated or well understood until after the development is completed. By then, it is too late to fully undo what has occurred to the stream

### **Percent Change in Impervious Surface**

Based on the work done by Shueler and others, watersheds are more sensitive to changes in impervious surface levels at lower impervious levels. The change in water quality between 1.2% and 6% impervious surface (313%) for LSTM 110 is significantly greater than the change in water quality that would occur between 16.6% impervious and 23.6% impervious (42%) for LSTM 206. The sensitive species that designate a watershed as having excellent water quality disappear at very low levels of impervious surface. Watersheds with very low impervious levels like LSTM 110 (1.6%) and LSTM 111 (1.2%) are more sensitive to changes in impervious surface than watersheds like LSTM 206 (16.6%) and LSTM 202 (11%) which already have existing impervious surface and are already showing signs of degradation. The location of the impervious area is critical in minimizing the impacts to the stream, placement of the developed land has to be carefully thought out so as to maximize the distance from small headwater streams (see Magnitude of Change attachment).

### **Percentage of Environmentally Sensitive Organisms**

Using the DEP monitoring data the percentage of organisms that are considered sensitive can be calculated. Sensitive organisms in LSTM 110 and LSTM 111 were over 60%. Sensitive organisms in LSTM 201 and LSTM 206 were 44% and 22% respectively reinforcing the conclusion that LSTM 110 and LSTM 111 are more sensitive and require more protection.



## Biological Condition Gradient

The Biological Condition Gradient (BCG) is an assessment tool that shows an ecologically-based relationship between the stressors affecting a waterbody (the physical, chemical, biological impacts) and the response of the aquatic community. The tool can be adapted or calibrated to reflect specific geographic regions and waterbody type (e.g., streams, rivers, wetlands, estuaries, lakes).

The County first developed an Index of Biotic Integrity in 1998 as a way to rate and compare local streams. Each index was split into narrative categories of 'excellent', 'good', 'fair' and 'poor' were used. Local officials and the public understood and accepted this concept. Soon, however, people began to describe streams as 'high' good or 'low' excellent and began to ask what would be needed to improve streams from 'poor' to 'good'. A better tool was sought that would present a more refined and detailed assessment of streams and their response to land use change (Figure 1). The BCG is considered to be that tool and a pilot evaluation was sought to see how the BCG would rate streams representing a wide range of conditions. In addition, the Limited Master Plan Amendment for Ten Mile Creek began. The 1994 Master Plan describes Ten Mile Creek as 'sensitive' and 'fragile', the BCG was studied to see if it could be used to better define these characteristics.

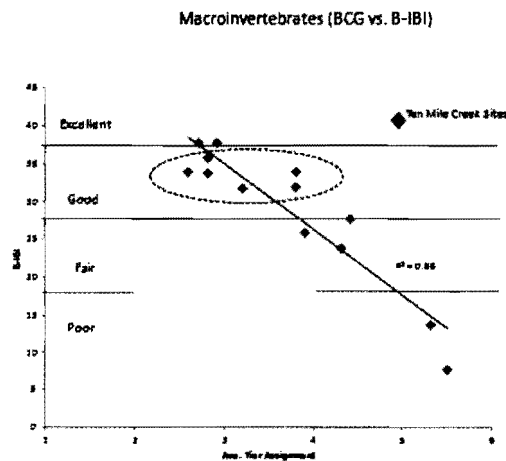


Figure 1. Ability of the BCG to Separate Different IBI Levels

In March 2013, the MNCPPC and Montgomery County convened a panel of 17 regional scientists with expertise in stream ecology. The purpose of this meeting was to develop and test a preliminary BCG model for assessment and interpretation of the biological condition of streams within the County and for several stations within Ten Mile Creek. Results of this workshop were shared with the Planning Board during the April 11, 2013 worksession on the Clarksburg Limited Master Plan for the Ten Mile Creek Watershed.

The BCG development was described as an effort to more clearly understand and describe Ten Mile Creek in the context of the range of stream quality for streams in Montgomery County using a nationally-recognized standard, the Biological Condition Gradient.

On September 24 – 26, 2013 work continued on the BCG with Montgomery County convening a second expert meeting with a larger number of sites for analysis and with an expanded group of experts, including scientists from the states of Virginia, Pennsylvania and Delaware. This meeting developed a more robust, in-depth analysis of stream sites within the piedmont to refine the model and develop an approach for quantification of the model.

Draft decision rules to consistently quantify the site assessments were developed and considered by experts to be applicable to the larger Piedmont region.

Four of the 11 TMC monitoring stations were used in the development of the model. One headwater site within the TMC Watershed (King Spring-LSTM110) was identified as a high quality stream (Tier 2-) with taxa comparable to State of Maryland Sentinel Sites. Impervious cover for these sites was at 3% or below. Three other TMC sites with impervious cover ranging between 4 and 11% were rated between Tier 3 and Tier 4 (lower condition).

The BCG has not been used to represent the overall condition of Ten Mile Creek, but 4 Ten Mile Creek stations have been used in the development of the BCG for the County. One station (LSTM110) was identified as a high quality stream (Tier 2-) with taxa comparable to State of Maryland Sentinel Sites, Three other TMC sites with impervious cover ranging between 4 and 11% were rated between Tier 3 and Tier 4 (lower condition) (Figure 2).

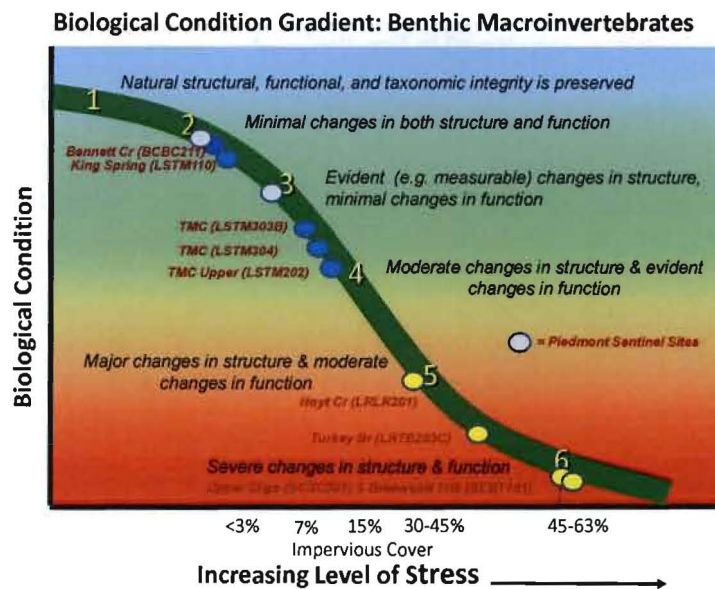


Figure 2. Comparison of the 4 Ten Mile Creek Stations used in the BCG Development.

(62)

## Ten Mile Creek - Background

- Environmental studies undertaken as part of the 1994 Clarksburg Master Plan indicted that “the Ten Mile Creek watershed has the greatest constraints for development.” The Plan noted:

*“Existing sampling data, aquatic biota surveys, and field observations indicate that Ten Mile Creek has good water quality that supports a diverse environmental community. The combination of relatively healthy streams, existing wetlands, significant woodlands, and diverse land cover help provide valuable habitats. At the same time, steep slopes and poor soils limit the opportunities for development. Of the Little Seneca sub-basins, Ten Mile Creek is the most prone to environmental degradation from development.”*

- Ten Mile Creek is a “headwater” system, where the majority of the streams are small and spring fed. It is located within an area of thin, rocky soils. The abundance of springs and seeps supply the cold and clean groundwater necessary to maintain this high aquatic diversity.
- Most of the Ten Mile Creek has maintained ‘excellent’ to ‘good’ stream conditions since 1995. It’s ability to maintain this stream condition over time; during record droughts, floods and other impacts is due to the many healthy subwatersheds that make up Ten Mile Creek today. It is only as healthy as the sum of its parts – each tributary is important. It is a fragile and sensitive watershed in that this important balance of tributary functions can be easily disturbed.
- The watershed currently is characterized by overall very low impervious and high forest cover.

## The Department of Environmental Protection’s Stream Monitoring Program

### General

- The Department of Environmental Protection (DEP) conducts a variety of stream monitoring and assessment activities throughout the County. In addition, DEP partners with experts from the U.S. Geological Survey (USGS), the U.S. Environmental Protection Agency (EPA), the Maryland Department of the Environment (MDE), the University of Maryland, and others on a variety of monitoring efforts to understand the condition of the County’s streams and the effect of development on stream health.
- DEP’s primary tool for stream assessment is biological monitoring. Aquatic organisms have specific habitat, stream flow, and water quality requirements in order to survive. Some are very sensitive and require high quality stream conditions to survive while others can survive in a wide range of stream conditions. Careful monitoring and comparison of streams affected by different levels of development helps identify the difference between the effects of natural conditions (drought, flooding) and those caused by development (e.g., mass grading, sedimentation, and increases in impervious surface. Streams in Special Protection Areas (SPAs) are monitored every year. DEP began stream monitoring within three SPAs, Clarksburg, Piney Branch, and Upper Paint Branch, in 1995 and within the Upper Rock Creek SPA in 2004.

- DEP also conducts geomorphologic assessments of County streams, including several in the Clarksburg SPA. The geomorphology of a stream refers to its shape, pattern, and physical composition. A stream's geomorphology will change in response to changes in the timing and amount of storm runoff that enters the stream.
- In conjunction with the USGS, DEP collects stream hydrology (flow) data at several locations in the County. Conversion of watersheds to urban areas has been shown to have major effects on stream hydrology as a result of vegetation removal; stream channel modification; loss of headwater streams, springs, and seeps; and increases in impervious area. The effects of these hydrologic changes are most severe in headwater streams.
- Changes to the natural landscape, in addition to increased impervious cover, will significantly affect the health of streams. Light Detection and Ranging, commonly known as LiDAR, provides an excellent tool for documenting such changes. LiDAR is a remote sensing method used to collect topographic elevation information at very high resolutions. LiDAR imagery, provided to the County by EPA's Landscape Ecology Branch, has been utilized to document the changes to the natural landscape to supplement the data collected via biological, geomorphologic, and hydrologic assessments.
- A variety of monitoring has been undertaken in the County to assess the performance of sediment control (SC) and stormwater management (SWM) best management practices (BMPs). Since 1994 SPA developers have been required to perform BMP monitoring. This data has been used by DEP and the Department of Permitting Services (DPS) to assess the performance of particular BMPs in specific situations in order to guide future permitting activities. Another significant effort to monitor BMPs has been undertaken by the Clarksburg Monitoring Partnership (CMP), a consortium of local and federal agencies, as well as universities. The CMP provides a collaborative approach to monitor stream ecosystem changes resulting from the transition from agricultural to medium and high density residential, commercial, and industrial land uses. The CMP has concentrated their resources on Clarksburg because of the opportunity to conduct long-term monitoring of a broad array of BMPs to evaluate the hydrologic and geomorphologic effects of development on a previously undeveloped landscape.

#### **Ten Mile Creek Monitoring**

- The range of benthic macroinvertebrate index of biotic index scores is shown in Figure 1. With the exception of the tributary draining the Miles Coppolla property (LSTM206) and the tributary LSTM201, most tributaries have been within the excellent to good range. The width of the individual boxes for each monitoring station show how wide the score ranges have been over time. The narrower the width, the more consistent the scores have remained. This is very important when the scores show a consistent range around the excellent category (ex. LSTM 110, LSTM303b).

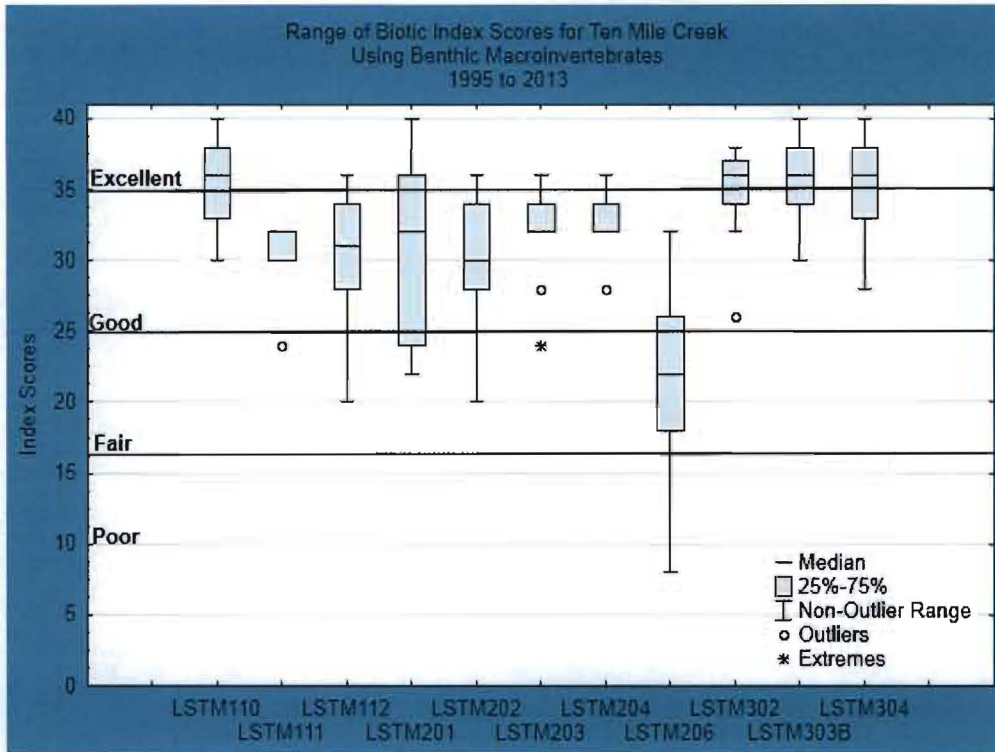


Figure 1. Range of Biotic Index Scores for Ten Mile Creek Monitoring Stations, 1995 to 2013.

- 2013 Stream conditions for Ten Mile Creek using benthic macroinvertebrates (and fish in the larger stream areas) are mapped in Figure 2.

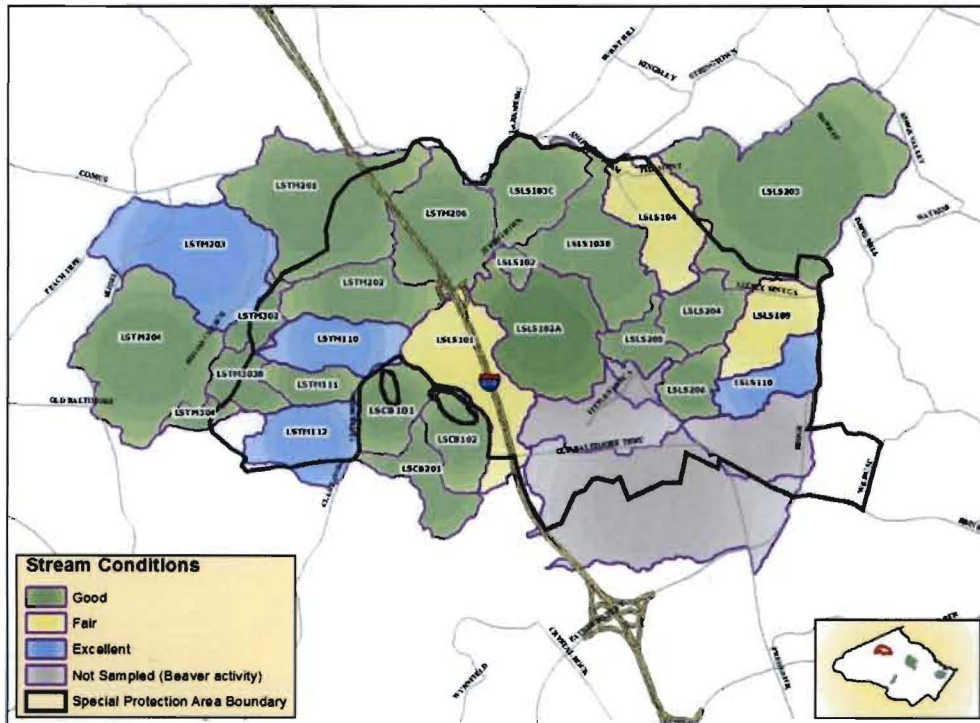


Figure 2. Stream Conditions in Ten Mile Creek and Little Seneca Creek, 2013.

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- Five USGS stream flow gauges have been installed in the Clarksburg SPA to capture hydrologic data. These gauges have been in place since 2004. With 10 years of data, stream flow statistics can now be calculated for these 5 gauges. Two additional USGS stream flow gauges have been recently installed in Ten Mile Creek, although they have not been in place long enough to provide comparable hydrologic statistics to the original five gauges. In addition, two rain gauges have been in operation in the Clarksburg SPA since 2004. Both the rain gauges and flow gauges are set to record in 5 minute intervals so rapidly changing conditions in headwater streams can be compared to detailed rainfall data.
- LiDAR has documented significant changes to the natural landscape in the Clarksburg SPA. Image 1, taken in 2002, recorded the pre-construction topography of the area. Before construction activities began, the landscape consisted of gently to moderate rolling slopes and land use was predominantly farmland. The small streams draining this area can be seen in the middle of the image. Springs and seeps can be observed at several headwater areas of this stream. Surface runoff would be conveyed into the stream through natural drainages and ephemeral stream channels. Groundwater recharge was conveyed through the existing springs and seeps to maintain the base flow of the stream. Overall imperviousness was low, allowing for stormwater infiltration into the ground.

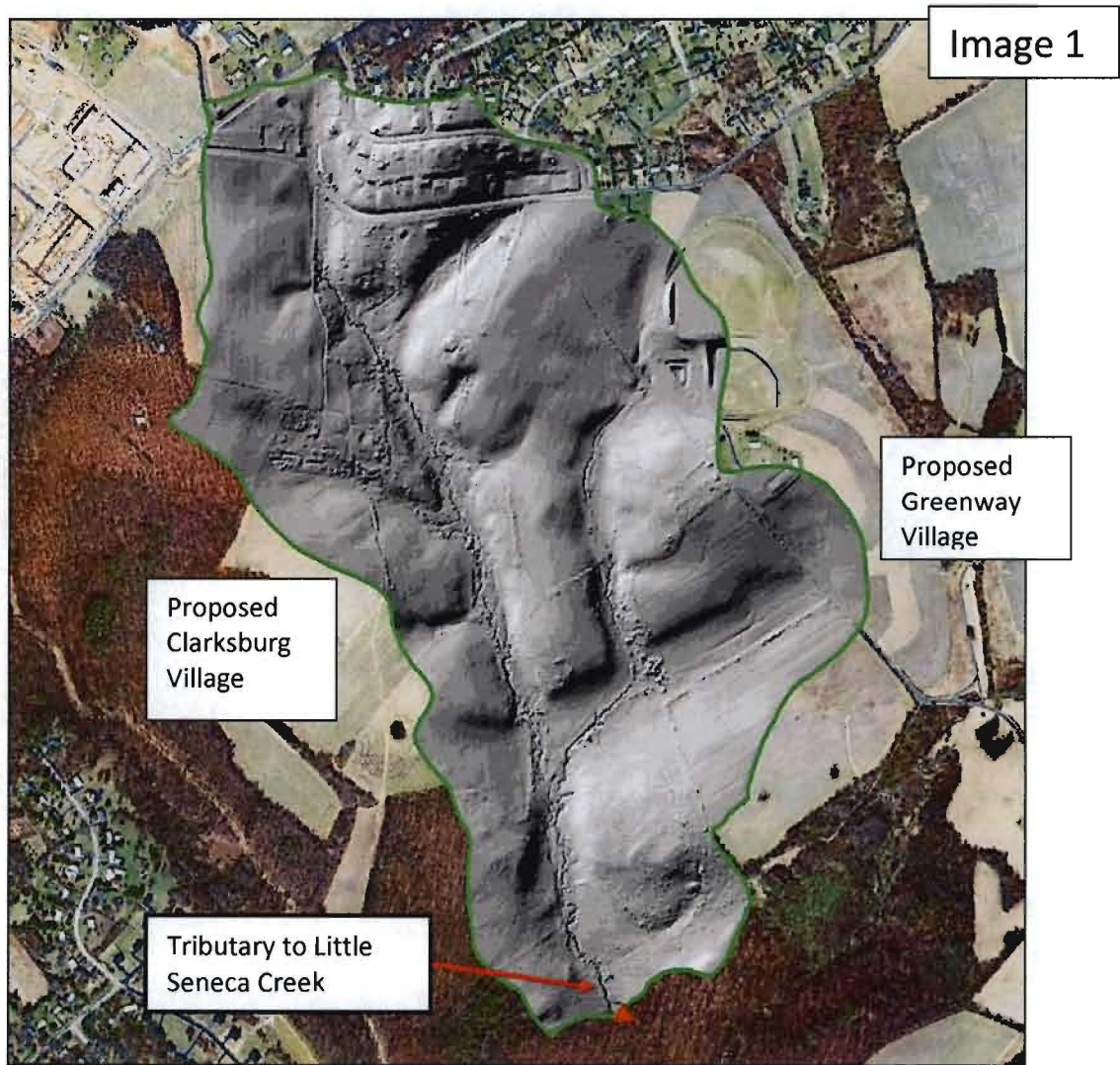




Image 2, taken in 2004, documents changes that occurred to the topography and natural drainage patterns from the cut and fill required to grade the site for approved lots, roads, and utilities. The road grade requirements of 4% maximum slope directly influence the cut and fill necessary to balance the developer's onsite excavation and avoid the cost of importing soil. This massive movement of soil can have lasting effects on the water quality due to changes in the basic flow regime of surface water and groundwater. On the east side (Greenway Village), distinct cut lines along the limits of disturbance document the new elevations graded into the development. The rolling topography was smoothed and leveled, altering the natural drainage patterns. Newly installed SC BMPs can be seen installed at the lower elevations of the new topography with some of the BMPs sited at the heads of springs and seeps. An unanticipated effect was also recorded in this imagery sequence. Sewer service is provided to the developments through gravity fed lines and several segments of the sewer line required blasting. The fill from these segments are shown to have subsided after completion of the line. The proximity of the sewer lines running parallel to the stream has the potential to intersect groundwater recharge to the stream.

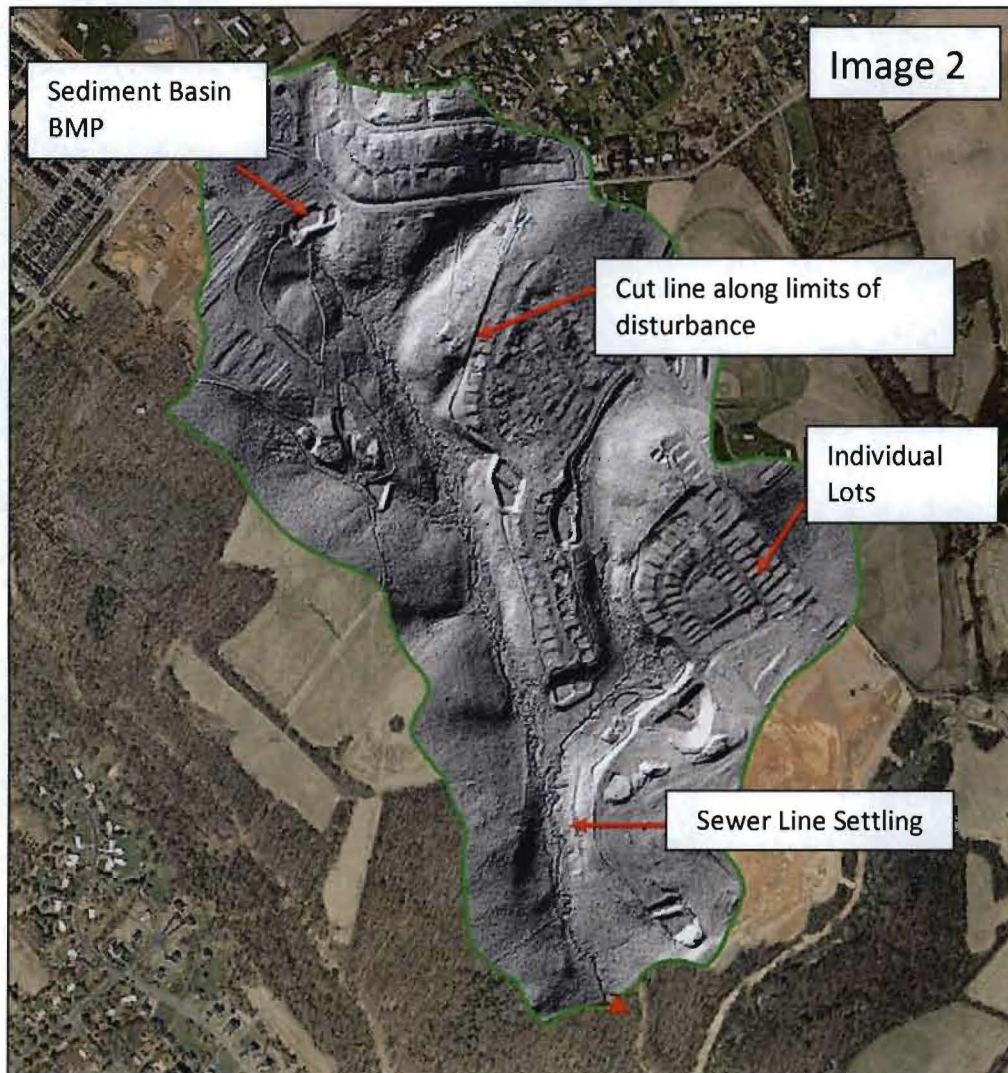
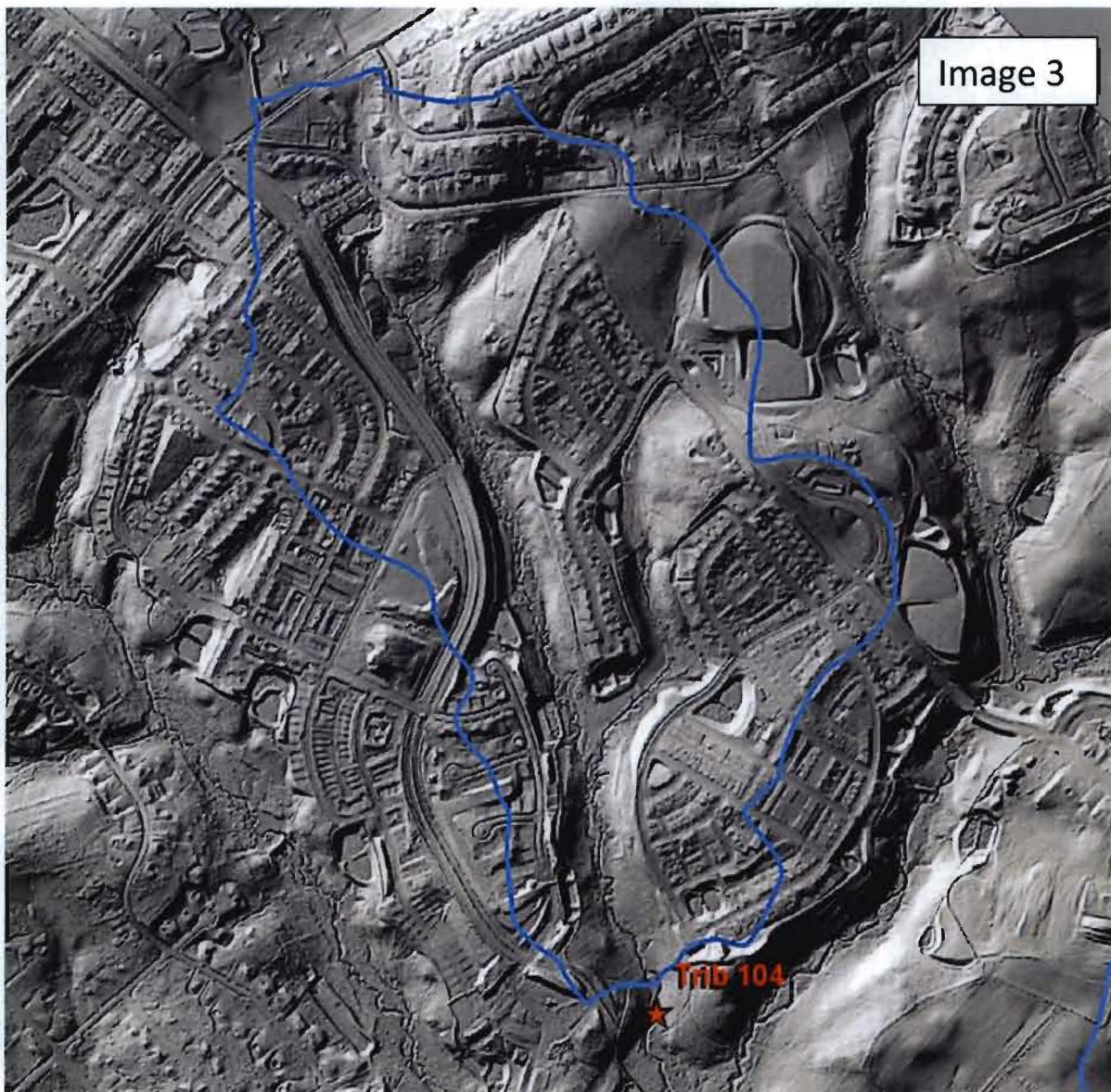




Image 3 shows the development through 2007. Final grades can be seen throughout the site as the rolling topography has been cut, graded, smoothed, and leveled. Snowden Farm Parkway, a major connecting road, is seen in the middle of the image, bordering the headwater stream for much of its length. Grading for the parkway and SC BMPs bisect the natural drainage patterns on the left side of the image, potentially affecting the springs, seeps, and recharge areas on this side of the stream. Newly-defined channels across the floodplain from the SC BMPs are shown in the 2004 and 2007 images. The natural drainage patterns on the right side of the image have been eliminated, and runoff from the new impervious surfaces is redirected into the storm drain system. The overall topography, natural drainage patterns, and natural infiltration have been altered due to the cut and fill requirements necessary to meet the density requirements of these neighborhoods and the diversion of most of the stormwater runoff into stormwater inlets and drains.



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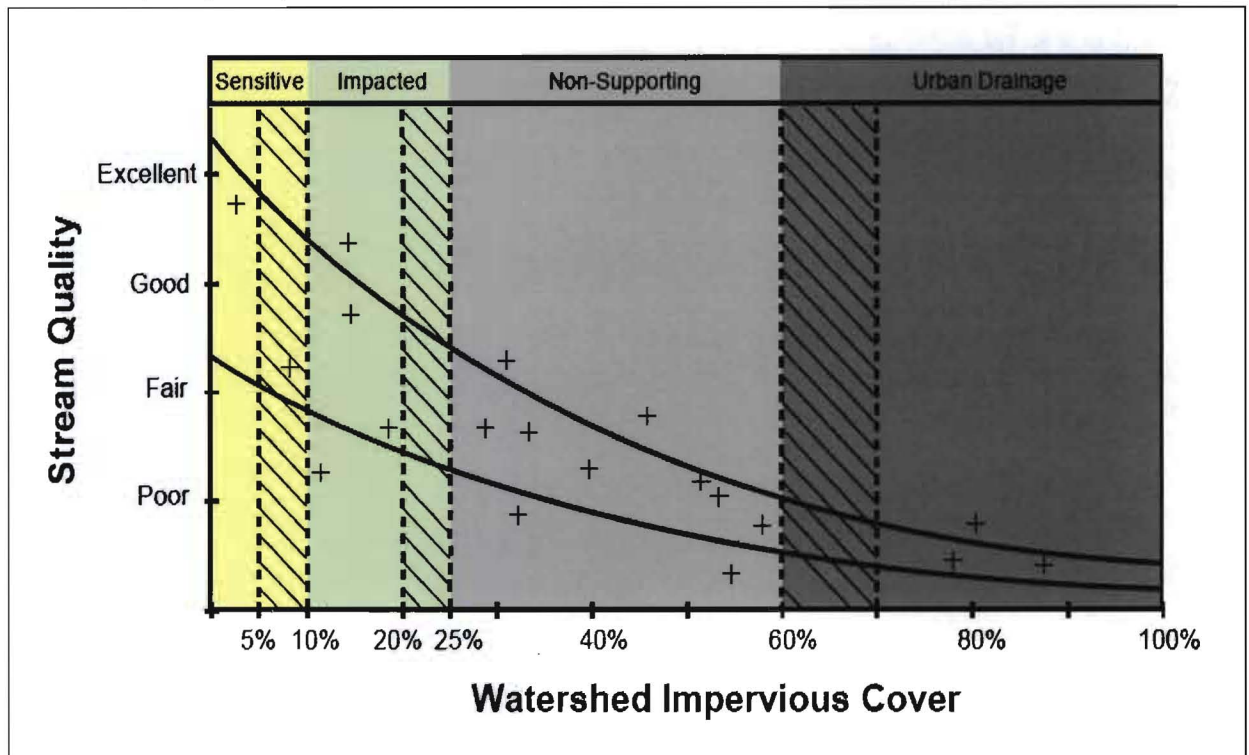
### What is the "Right" Level of Development?

- DEP's monitoring programs, as well as a number of other analyses around the country, have established the basic relationship that the greater the level of imperviousness, the greater the harm to the health of the watershed (please refer to the attached literature as examples). However, these programs have not resulted in a formula that can accurately predict the specific effects associated with specific levels of imperviousness.
- DEP fully concurs with the Council staff recommendations provided in the Committee packet of January 28, 2014. 'Staff believes the Council must be cautious. If the Council is overly conservative, and later learns that additional development is possible without harming the environment (and provides other public benefits), it can always revisit the zoning and add additional development capacity. If the Council is not conservative enough and development significantly compromises water quality, it will likely be impossible to reverse this decision. "

## Existing Impervious

### Existing Impervious Cover

- The impervious cover model (*Figure 1*) was developed and refined by the Center for Watershed Protection (CWP, 2008) and is the result of dozens of studies across the Country.



*Figure 1 – Impervious Cover Model (CWP, 2008)*

- Note that the line from 0 to 10% is steeper than from 10% to 25% and there is a transition from 5 to 10% where “sensitive” changes to “impacted”.
- **Subwatersheds 110 and 111:** The excellent stream quality and existing low impervious levels place the 110/111 subwatersheds at the top of the slope in the “sensitive” category.
- **Subwatersheds 201 and 206:** The lower stream quality and higher existing impervious levels place the 201/206 subwatersheds in the “impacted” category.
- There is a greater risk of environmental impact going from 0% to 10% imperviousness. The drop at the lower levels of imperviousness is very sudden with the first onset of an increase in impervious cover.
- Many studies (*see list of literature*) show this drop to be quite sharp before leveling out at a much lower stream quality. This was described in detail by Matthew Baker from the University of Maryland, Baltimore County.
- Once an excellent quality stream is degraded, it is very difficult to recover even with extensive (expensive) restoration efforts. DEP is not aware of any instance of a once-excellent stream recovering to original conditions following development disturbance.

- Note the current existing impervious levels for the different Ten Mile Creek watersheds, and how much they are increased by the various impervious options discussed (**Figure 2**).

## Cumulative Impervious Estimates

| Sub-Watershed | Existing Conditions | 15/6 Option | 8% Reduced | Council Staff | Public Hearing Draft | Planning Board Draft | 1994 Plan |
|---------------|---------------------|-------------|------------|---------------|----------------------|----------------------|-----------|
| LSTM201       | 3.9%                | 6.5%        | 5.8%       | 6.5%          | 7.5%                 | 7.5%                 | 10.8%     |
| LSTM206       | 16.6%               | 23.6%       | 20.9%      | 23.6%         | 28.2%                | 28.2%                | 33.2%     |
| LSTM202       | 11.0%               | 15.9%       | 14.5%      | 16.1%         | 20.5%                | 20.8%                | 25.0%     |
| LSTM302       | 5.6%                | 8.3%        | 7.6%       | 8.4%          | 10.2%                | 10.3%                | 13.0%     |
| LSTM110       | 1.6%                | 6.6%        | 8.4%       | 8.4%          | 8.4%                 | 10.1%                | 15.1%     |
| LSTM111       | 1.2%                | 8.3%        | 11.1%      | 11.1%         | 11.1%                | 13.8%                | 14.1%     |
| LSTM303B      | 4.7%                | 7.8%        | 7.5%       | 8.2%          | 9.6%                 | 10.0%                | 12.7%     |
| LSTM112       | 2.5%                | 5.0%        | 5.8%       | 5.8%          | 5.8%                 | 6.6%                 | 5.7%      |
| LSTM304       | 4.2%                | 6.7%        | 6.5%       | 7.0%          | 8.1%                 | 8.4%                 | 10.6%     |
| Watershed     | 4.0%                | 6.3%        | 6.2%       | 6.6%          | 7.6%                 | 7.9%                 | 9.8%      |

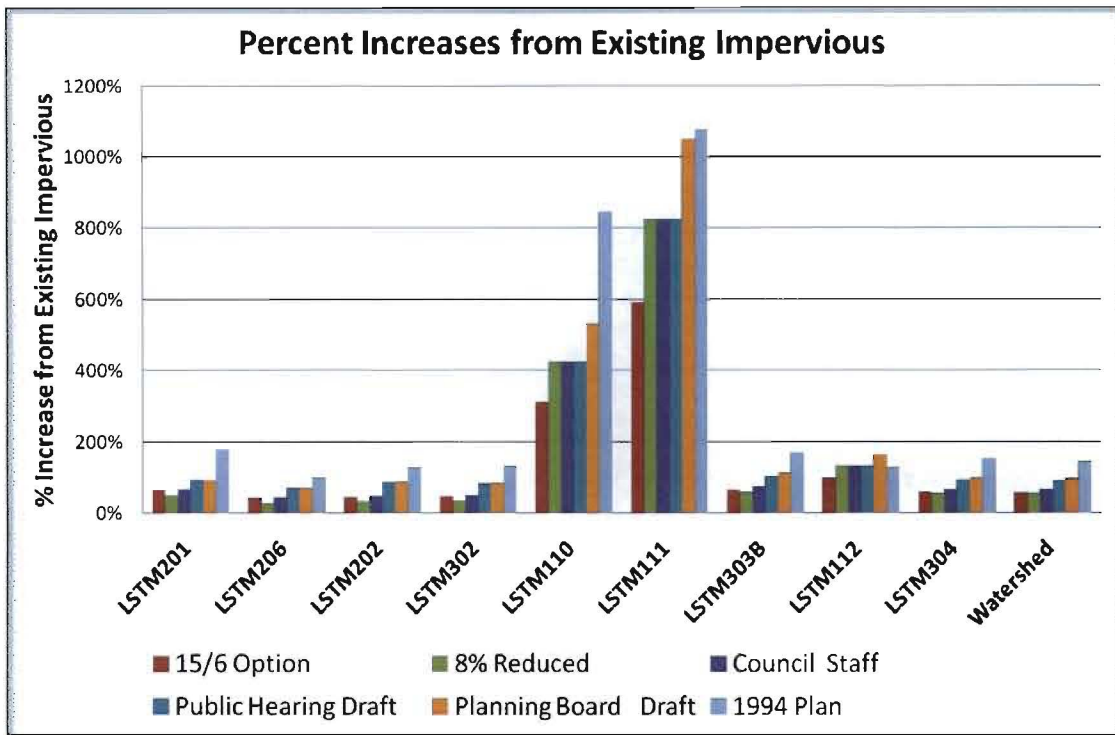
*Figure 2 - Cumulative impervious estimates based on subwatersheds and entire watershed, provided by Planning Staff*

## Magnitude of Change

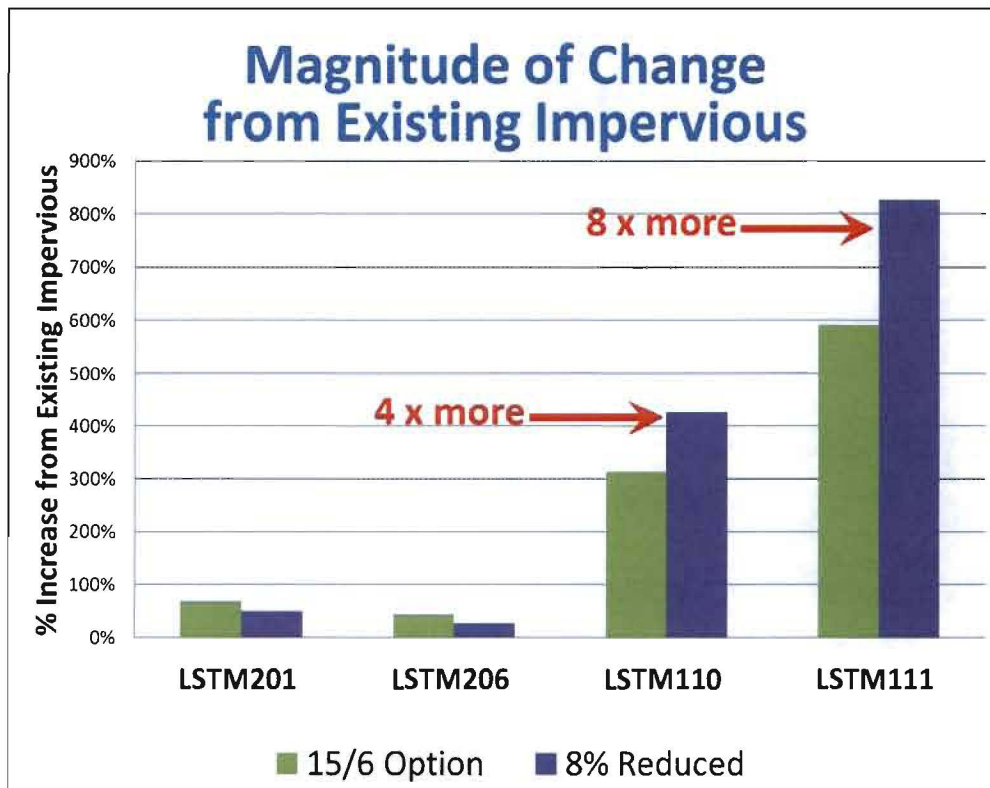
- Because the 110 and 111 subwatersheds are more sensitive, it is more environmentally preferable to minimize increases to existing impervious levels as much as possible. Even a 6% impervious cover will result in a 300% to almost 600% increase over existing levels. The need to exercise caution in the final decision for Ten Mile Creek is very evident as once made, environmental damage may be 'minimized' but not undone.

| Magnitude of Change<br>from Existing Impervious |                |               |                  |                            |                            |           |
|-------------------------------------------------|----------------|---------------|------------------|----------------------------|----------------------------|-----------|
| Sub-<br>Watershed                               | 15/6<br>Option | 8%<br>Reduced | Council<br>Staff | Public<br>Hearing<br>Draft | Planning<br>Board<br>Draft | 1994 Plan |
| LSTM201                                         | 67%            | 49%           | 67%              | 92%                        | 92%                        | 177%      |
| LSTM206                                         | 42%            | 26%           | 42%              | 70%                        | 70%                        | 100%      |
| LSTM202                                         | 45%            | 32%           | 46%              | 86%                        | 89%                        | 127%      |
| LSTM302                                         | 48%            | 36%           | 50%              | 82%                        | 84%                        | 132%      |
| LSTM110                                         | 313%           | 425%          | 425%             | 425%                       | 531%                       | 844%      |
| LSTM111                                         | 592%           | 825%          | 825%             | 825%                       | 1050%                      | 1075%     |
| LSTM303B                                        | 66%            | 60%           | 74%              | 104%                       | 113%                       | 170%      |
| LSTM112                                         | 100%           | 132%          | 132%             | 132%                       | 164%                       | 128%      |
| LSTM304                                         | 60%            | 55%           | 67%              | 93%                        | 100%                       | 152%      |
| Watershed                                       | 58%            | 55%           | 65%              | 90%                        | 98%                        | 145%      |

**Figure 3 – Magnitude of change from existing imperviousness for the different Ten Mile Creek watersheds and various options discussed**



**Figure 4 – Percent Increases from Existing Impervious in Ten Mile watersheds for Various Impervious Cover Limit Options**



**Figure 5 – Percent increase in imperviousness from existing conditions, showing just the four subwatersheds of interest and the two primary options discussed**



**Applying Environmental Buffers & Development Scenarios**  
**(Prepared by Montgomery County Department of Environmental Protection)**

***Scenario 1***

Scenario 1 applied the Environmental Guidelines and the Clarksburg Master Plan recommendations (M-NCPPC) to create the environmental buffer. A baseline buffer was applied to both streams (175 ft) and wetlands (25 ft). The 175 ft stream buffer was used per the recommendation on page 144 of the Clarksburg Master Plan. The 25 ft wetland buffer is the minimum buffer defined in the Environmental Guidelines.

The baseline buffer was extended when necessary to include steep slopes and erodible soils per the Environmental Guidelines (*Table 2*).

***Table 2 - M-NCPPC Environmental Guidelines (Jan 2000). Summary of specific guidelines for use IV, first and second order streams used in this project.***

| <b>Stream Buffers</b>           |                                                                      |                                                                                                                                                                                                               |
|---------------------------------|----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Feature</b>                  | <b>Buffer Extended to</b>                                            | <b>Notes</b>                                                                                                                                                                                                  |
| Steep Slopes and Erodible Soils | Include entire steep slope (>25%) or entire extent of erodible soils | If either steep slopes (>25%) or erodible soils occurred within 200 ft of stream (i.e. "hydraulically connected"), buffer was extended to include entire extent of steep slope or erodible soil.              |
| <b>Wetlands (in SPA)</b>        |                                                                      |                                                                                                                                                                                                               |
| <b>Feature</b>                  | <b>Buffer Extended to</b>                                            | <b>Notes</b>                                                                                                                                                                                                  |
| Steep Slopes and Erodible Soils | 75 to 125 ft                                                         | If either steep slopes (>15% for SPA) or erodible soils occurred within 100 ft of the wetland, buffer was extended to include the entire extent of steep slope or erodible soil, up to the maximum of 125 ft. |

***Scenario 2***

A 200 ft stream buffer was used instead of 175 ft and the buffer was extended to include all >15% slopes instead of just >25%, as well as all ephemeral streams.

Ephemeral stream locations were estimated using desktop analysis of the following information:

1. known location of intermittent streams,
2. LiDAR,
3. contours,
4. aerial photos, and
5. anecdotal observations from DEP scientists.

***Scenario 3***

The Scenario 2 buffer was expanded to include a limited forested area in addition to the forest interior. Priority protection was applied to forest that was contiguous and/or near hydrologic features.

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## Appendices to MNCPPC Planning Board Report Ten Mile Creek Plan Amendment - Retail Issues and Analysis December 2013

### **Background**

Bolan Smart Associates, in conjunction with Retail Development Strategies, was asked to assist MNCPPC in considering retail related aspects of the limited Amendment to the 1994 Clarksburg Master Plan and Hyattstown Special Study Area for the Ten Mile Creek Watershed. The primary issues revolve around the possible market implications concerning two proposed outlet malls and the prospects for local retail development in Clarksburg.

A recent development plan amendment for the Cabin Branch Neighborhood south of the Ten Mile Creek subarea received a recommendation of approval from the Planning Board. The Cabin Branch amendment includes a proposed outlet center located adjacent to the southwest corner of the I-270 / Clarksburg Road interchange. This amendment is in the midst of final review through a Hearing Examiner process, after which it is subject to approval or denial from the Montgomery County Council.

A second outlet center is being considered as an option for the Miles-Coppola property that lies just to the east of I-270 north of the Clarksburg Road interchange. The Miles-Coppola site, located at the eastern edge of the Ten Mile Creek limited amendment planning area, is within the part of Clarksburg known as the Town Center District. It is the closer of the two proposed outlet centers to the planned Clarksburg Town Center retail development parcel. Option 1 of the proposed Ten Mile Creek amendment received preliminary approval from the Planning Board in October 2013, and is now undergoing further review.

Though MNCPPC nor the consultant expect that more than one of the two competing outlet destination centers will actually go forward, it is not the intent of this analysis to question or validate the prospects of two centers virtually co-locating in Clarksburg, or to weigh the possible relative advantages of either proposed site. The focus of consideration is instead on the potential impact on realizing long-planned neighborhood serving retail in Clarksburg.

### **Approach**

The consultant has been charged with addressing a series of questions intended to help inform the public land use planning process. The approach is to build on an understanding of past and present planning assumptions complemented by selected points of independent research and validation. Retail demand and potential sources of supply are profiled based on general indicators and correlated to provide order-of-magnitude measures of implications for development. The analyses are not meant to presume what should constitute specific retail center tenant composition or configuration considerations, but do reflect differences in consumer behaviors corresponding to outlet retail formats as opposed to more conventional resident-serving retail projects.

## Summary

1. ***Is there demand for outlet mall use at a Clarksburg location?*** Based on market demographics, current industry trends, and locational considerations, Clarksburg is a very strong candidate for outlet mall retailing. The two outlet proposals, backed by leading national sponsors of such development, are resounding endorsements.
2. ***How will outlet mall development impact the Clarksburg retail marketplace?*** Outlet mall development in Clarksburg will dramatically increase consumer choice for local residents, especially for soft goods, apparel and accessories and home products, assuming the conventional mix of outlet retailers for projects of this type. While such development will displace some of the demand for traditional neighborhood local serving retailing, there is also the potential for regional destination shoppers (many times the volume of what Clarksburg alone would generate) to patronize non-outlet mall retailing, with each source of demand more or less offsetting the other. The increased drawing power of an outlet mall will attract support and retail tenants that would not otherwise be supportable in a market the size of Clarksburg.
3. ***How will outlet development compete with neighborhood retail?*** The two product types function very differently from each other:
  - a) There is virtually no crossover in terms of food sold for home consumption, or for a wide range of convenience services.
  - b) While there are some parallels in soft goods (i.e. socks, cosmetics) that are typically part of a local serving grocery or drug store, the differences in shopping experiences associated with picking up these kinds of items as part of other purchases, and as they represent only a fraction of traditional neighborhood general merchandise sales, mutes the impact of non-grocery items on the economic viability of neighborhood supermarket and drug stores.
  - c) Neighborhood based dedicated clothing stores, considered unlikely to begin with given the size and locational characteristics of Clarksburg, will have more difficulty competing, as outlet malls typically are based on well known brands at discounted prices. Neighborhood clothing stores do not enjoy the same advantages of bulk purchase and corporate connections to secure manufactured goods/past season products at deep discounts.
  - d) Typical outlet malls include limited food offerings (usually in a food court configuration) primarily as a tool to retain consumers on-site in order to increase overall spending, as expenditures typically correlate with amount of time spent at the center. Freestanding restaurant offerings, not a core use in outlet malls, represent the most potential intermixing between serving both outlet / neighborhood sourced demand.
  - e) Entertainment uses serving local residents (i.e. movie theaters) are less likely as part of the outlet center mix, particularly if reliant strictly on local based demand, and may or may not be an additional element in some future outlet mall setting.



4. ***Has the neighborhood retailing environment in Clarksburg changed since the initial master planning visioning of the early 1990s?*** There are a number of influences on local retailing that have shifted over the past 20+ years:
- a) A prominent national trend has been the increase in demand for food prepared outside of the home (restaurant, take away, and prepared foods in grocery stores), in effect strengthening the base for local dining. Home meal replacement (take out and dining out) spending in the greater Washington DC region is among the highest levels in the United States, due in part to the number of dual income households (both working) and limited time available for meal preparation.
  - b) Concepts of walkable mixed-use neighborhoods in suburban settings have become more firmly established (though not without some important reality checks regarding size and configuration), reinforcing some of the Clarksburg vision for a mixed-use community from decades past.
  - c) Online shopping has eaten away at some of the demand for general retailing, but with relatively minor implications for the majority of neighborhood based retailing. While annual rates of growth for online shopping have continued to show significant increases over succeeding years, in total dollar volume, online purchases are estimated to represent only about 8% of total U.S. retail sales, with over 90% of retail expenditures still made in stores.
  - d) Of major significance to Clarksburg is the lack of substantial growth in local employment, which was expected to help provide demand for local serving retail space (in particular daytime support for food service and general shopping goods).
  - e) The as yet undetermined timing of rapid transit (CCT) is another consideration in comparing the vision of 1994 for Clarksburg with today's dynamics, though in the consultant's view, the status of the CCT is only of secondary significance in terms of retail (or employment) related impact.
  - f) Finally, while the above factors have altered some the finer grained composition of contemplated neighborhood retailing, by far the single most significant change affecting Clarksburg has been the vastly expanded amount of retail space provided nearby at Milestone, most recently represented by the addition of a new Wegmans supermarket anchored shopping venue.
5. ***How does the existing and planned supply of neighborhood retail match up with potential demand?*** The short answer is that there may be too much overall potential neighborhood oriented supply by a factor of perhaps 20 to 30 percent, but not too much to see significant additions. The 1994 Clarksburg Master Plan included shopping centers in the Town Center District, the Cabin Branch and New Cut Road neighborhoods. With approximately 140,000 square feet of retail space currently built, combining the 2013 opening of the 109,000 square foot Clarksburg Village Center (New Cut Road), plus a sprinkling of other existing space, there is suggested demand for upwards of another 80,000 to 100,000 square feet of nearer-term neighborhood oriented retail space, including a potential grocery store component. Longer-term could see added demand for a further 50,000+ square feet. (See page 7 for detailed representation.)
6. ***Does the mix of housing and commercial development to be approved for the Ten Mile Creek and the Cabin Branch Plan Amendment areas impact retail viability?*** In relatively small proportions (compared with the total Clarksburg build out), changes in the number of planned residential units and their location does not convey significant impacts on the

potential for overall planned neighborhood retailing in Clarksburg. On balance, more rooftops help, but other factors can weigh in as well. One-for-one contrasts between single family and multifamily units can be important: single family homes in the Clarksburg marketplace, due to family size, household age and income, tend to account for substantially higher per unit levels of demand for neighborhood based retailing. While the nearer-term equation for office or flex industrial type commercial development is fairly contained by limited demand, hotel and destination based retail (i.e. an outlet mall) are variables that can add more immediately to the general level of activity in Clarksburg.

7. ***How may the proposed changes that may reduce the square footage devoted to a future neighborhood-serving retail center in Cabin Branch (yet including the addition of an outlet center) impact the shopping patterns for future residents west of I-270 and corresponding retail demand elsewhere in Clarksburg?*** The proposed cap of 484,000 square feet of retail space for Cabin Branch, of which 50,000 to 120,000 square feet could be defined as neighborhood retail, represents a potential reduction in the amount of traditional neighborhood type retail space being provided compared with the 1994 Master Plan (which originally provided for 120,000 square feet). This possible change has been represented by the current master developer of the Cabin Branch subarea to exclude a full size grocery store. Given the proximity of Milestone – in particular Wegmans – plus access to other Clarksburg retailing locations, neither may there be a particularly strong perceived need on the part of future residents, nor may a full size grocer be attracted to a possible Cabin Branch location. One scenario could be that if the choice for Cabin Branch is between a plan that includes: (a) an outlet mall and explicitly no grocery store, and; (b) a plan that defaults back to a possibly grocery store anchored neighborhood center, the benefit from going with an outlet mall may be to better underpin the grocery store prospects for Clarksburg Town Center (and support for Clarksburg Village). The related impacts of having possibly competing restaurants east and west of I-270 can be viewed in two ways, one where outlet mall destination users are not likely to patronize offerings east of I-270 if alternative options are present, and a second view being that the distance / barrier separating say the Clarksburg Town Center east of Route 355 and the Cabin Branch location more or less divides the market into two.
8. ***How might the CR zoning contemplated for the Miles-Coppola parcel impact the retailing landscape in Clarksburg?*** One of the features of the CR zoning is flexibility to build to different future market demand. While this can serve Clarksburg well, allowing for residential and commercial uses to evolve over time, the question of impact on the broader Clarksburg retailing environment could rest on what kind of retail development could occur on the Miles-Coppola property. Under the assumption that the proposed CR zoning would not permit “competing” neighborhood retailing, and as proffered by the current developer interest not to build a supermarket, then the flexibility offered by the CR zone could reinforce demand for off-site neighborhood retailing. This potential, however, may need to be qualified. Given that a Miles-Coppola location for an outlet mall would be quite proximate

to the planned but as yet unbuilt Clarksburg Town Center, the specifics of site planning for the Miles-Coppola property, in particular the inclusion of non-food court restaurants and possible non-traditional outlet mall retail spaces, could be important variables impacting the market prospects for these same uses at the Town Center site.

### **Evolving Retail Context**

Retailing is in a constant state of change. New demands and merchandizing concepts come and go, such that over the period of a decade or more, the retail landscape can evolve considerably. Land use planning and development decisions, on the other hand, tend to be cast at fixed points in time that, while perhaps premised on prevailing best practices, may or may not be appropriate or achievable over the longer term. Add to this uncertainty of timing in a growth market, and you have Clarksburg.

So into Clarksburg's mix of a prescriptive approach to land use planning, significantly less employment uses than anticipated, changed retailing concepts and much expanded nearby supply, comes along not one, but two, major destination outlet mall proposals. What are policy makers to make of this opportunity and possible impact?

### **Outlet Malls**

Over the past few decades, outlet malls have morphed into a highly structured breed of retailing. It is one of the few retailing concepts that it still in a growth mode. Retailers and branded product manufacturers have expanded their merchandizing lines to incorporate specifically targeted marketing suited to co-locating in high profile locations overseen by major, specialized retail developers. The contemporary prototype outlet center is fairly simple, and universal:

- 80 to 100+ stores, comprised of mostly nationally or regionally recognized specialty vendors
- 4,000 sf average store size
- 350,000 sf to 500,000 sf overall size
- easy access highway served site
- typically a lower cost, suburban edge location
- regional and transient market capture (not at all neighborhood oriented)
- internal orientation
- lots of surface parking, but not designed for quick in and out access to stores
- located / configured to maximize multiple store shopper patronage (and not non-shopper use)
- limited if any table service restaurants (idea to keep people shopping); sometimes have pad sites for free-standing food services on out parcels
- typically located in isolation from competing outlet centers (though with exceptions)

That Clarksburg has been now targeted by the two leading outlet mall developers (Simon and Tanger, partnering with local master developers) is an entirely natural and understandable focus. Except for being proximate to Montgomery County, most all submarkets ringing the Washington metropolitan region have an existing or planned outlet or equivalent center. These include the older and/or much larger Mills centers (Potomac Mills and Arundel Mills), a new Tanger outlet

mall in Oxon Hill in Prince George's County near Alexandria, an existing Premium Outlets (Simon) in Leesburg, an additional planned center in western Fairfax County, and proximate centers further afield in Maryland in Hagerstown and Queenstown (smaller example).

With a Clarksburg outlet facility, currently underserved consumers in and around Montgomery County stand to benefit, as will the tenant vendors, and for that matter, the tax collectors that will not only see some inflow of retail expenditures, but some reduced outflow of Montgomery County resident shoppers. Barring some national or other extraordinary influence, the question is not whether an outlet center will come to Clarksburg, but rather, which one?

The developers of both proposed retail outlet centers have indicated that there is demand for only one such commercial enterprise in the immediate area. The consultant sees no reason to refute or test this claim. There is little taste on anyone's part (developer, tenant or for that matter consumers) for essentially duplicated co-existing malls: the market for such is limited by the simple fact that there are only so many profile credit tenants to go around. While there is limited precedent for dual locations, (one being outside St. Louis, Missouri and another in San Marcos, Texas ), it is rare for two major centers to go ahead at the same time in close proximity to each other. (Interestingly, the competing Simon and Tanger sponsors have actually co-ventured in at least one instance.)

The core composition and use of an outlet mall is almost the complete opposite of neighborhood serving retailing. The vendors, and with some narrowly defined exceptions, the product lines, would never normally be found in a neighborhood shopping center dominated by food and convenience related merchandizing. The outlet patronage is coming from a widely extended region, intent usually on making substantial purchases spanning multiple stores over a considerable period of time, the converse of the typical neighborhood in-and-out kind of shopping venture.

Despite their highly distinct respective natures, is there any evidence of compromised co-existence of neighborhood and destination outlet malls? Based on a limited survey of other regional examples of outlet oriented locations, the consultant finds no clear association between outlet retailing and undermined neighborhood retailing. To the contrary, where there is an actual proximate neighborhood exhibiting market growth, the different retailing venues most often do co-exist, evident in patterns of retail concentrations and continued retailer interest.

Turned the other way, there is certainly no evidence that outlet malls are impacted negatively by the presence of local serving retail. They in fact can be seen as benefiting from some measure of locally anchored eating facilities, service stations and the like. The regional drawing power and broader market orientation of outlet mall vendors is such that they invariably are new entrants into the local existing marketplace, and not at all inhibited by the usual need for local retailers to see roof tops before committing to construction.

In terms of customer impact, the differences between outlet and neighborhood centers is skewed significantly by the sheer size of the patronage. The volume of customers (and to some extent of the shopping hours) is at a whole different level for outlet malls compared with neighborhood supported venues. To illustrate:

400,000 sf outlet mall @ \$500 psf annual sales = \$200M gross sales / \$100 per patron expenditure = 2M visits

With such volumes of destination shoppers, the vast majority of whom will be coming from outside of Clarksburg, what might be their propensity to support non-direct outlet mall retailing? An illustration suggesting an off-site potential demand for 10,000+ square feet, comprised primarily of partial demand for food service and some convenience items, could be something like the following:

\$2.50 psf off-site demand x 2M potential visits = \$5M sales / \$400 psf in supported neighborhood space = 10,000 sf

### **Neighborhood Serving Retail**

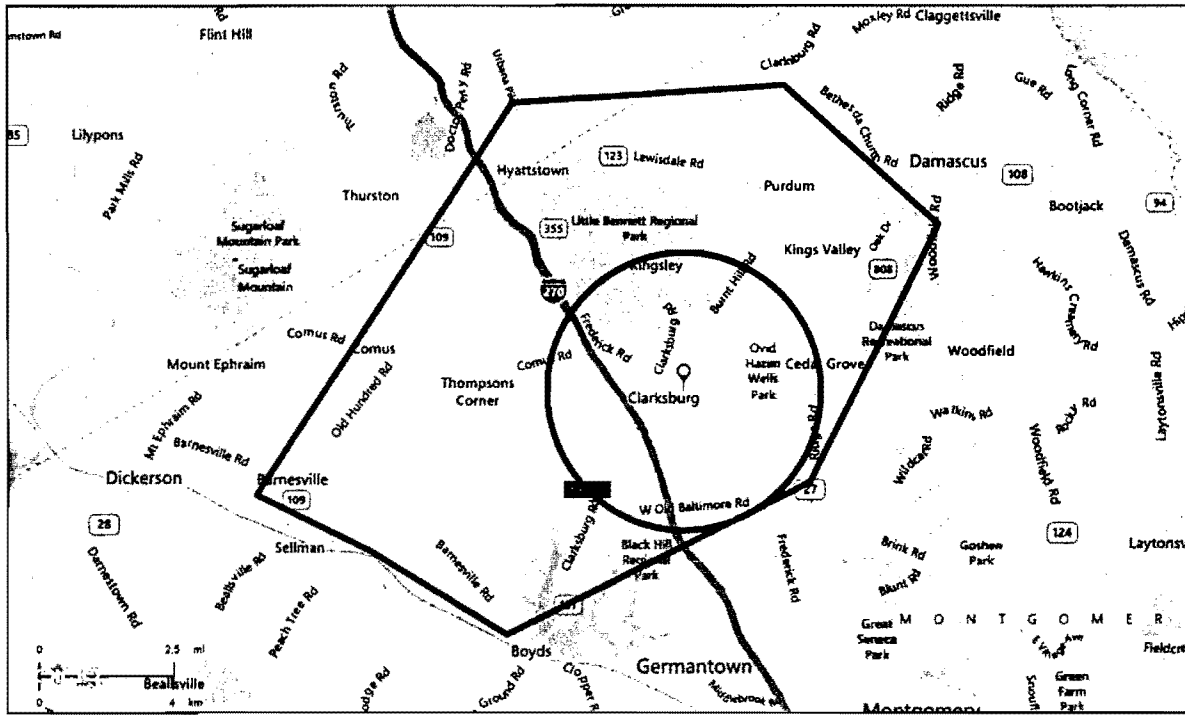
#### Clarksburg / Hyattstown Plan Area Assumptions

- 1994 Master Plan – projected 14,930 residential units
- as of late 2013, a total of 6,500 residential units built (of 10,500 units approved since 1994)
- average residential deliveries from 1996 to 2013 of 300 units per year
- projected future average annual construction of 300 to 500 units added per year
- projected buildout 2030+ @ 90% of potential capacity
- Cabin Branch subarea – zero current; 2,886 residential units at buildout
- Ten Mile Creek – zero current; 1,690 residential units at buildout (600 west / 1,100 east of I-270)
- 1994 Master Plan – up to 10,311,000 sf. of commercial space (depending upon level of transit)
- as of 2013, 850,000 sf of commercial space has been built (of 3,536,073 sf approved since 1994)
- limited near to medium-term projected added employment
- CCT / Observation Drive extended through to Milestone post 2020
- one outlet center to open by 2016/18 (350,000 to 400,000 sf)

#### Primary Local Trade Area

The consultant has defined a retail trade area that more or less includes the primary geographic area of support for the combined Town Center District, the Cabin Branch and New Cut Road shopping centers' locations. The estimated trade area is heavily influenced by the combination of road linkages and the location of a full array of retail offerings, primarily concentrated immediately to the south in Germantown, and to lesser extents to the east in Damascus, north in Urbana, and in a very minor way, west in Poolesville. While the indicated trade area extends well east and west of the formal Clarksburg / Hyattstown Planning Area, much of the added territory is comprised of preserved low density rural and open space land uses. Of the approximately 48 square miles within the defined zone, virtually all of the future growth is forecast to occur within the immediate Clarksburg Planning Area. (See accompanying map and Demographic Highlights table.)

### Clarksburg Neighborhood Serving Retail Trade Area



### Clarksburg Trade Area Demographic Highlights 1990 - 2018

| Demographic Characteristic         | 1990  | 2000  | 1990-2000 Change | 2010   | 2000-2010 Change | 2013      | Projected 2018 | 2013-2018 Growth |
|------------------------------------|-------|-------|------------------|--------|------------------|-----------|----------------|------------------|
| Population                         | 8,645 | 9,853 | 1,208            | 23,469 | 13,616           | 26,710    | 32,000         | 5,290            |
| Population % Change                |       |       | 14.0%            |        | 138.2%           |           |                | 19.8%            |
| Median Age                         | 33.1  | 37.1  | 12.1%            | 35.6   | -4.0%            | 36.1      | 36.5           | 1.1%             |
| Associate Degree or Higher 25+ yrs | 39.8% | 49.3% |                  | 58.9%  |                  | 61.7%     |                |                  |
| Households (HH)                    | 2,821 | 3,369 | 548              | 7,246  | 3,877            | 8,169     | 9,950          | 1,781            |
| HH % Change                        |       |       | 19.4%            |        | 115.1%           |           |                | 21.8%            |
| % Family Households                | 85.6% | 80.8% | 308              | 83.6%  | 3,337            | 83.6%     | 83.5%          | 890              |
| Average HH Size                    | 3.06  | 2.92  | -4.6%            | 3.14   | 7.5%             | 3.18      | 3.12           | -1.9%            |
| % HH Homes Owner Occupied          | 85.8% | 86.0% | 477              | 88.1%  | 3,390            | 88.1%     | 85.0%          | 980              |
| Average HH Income                  |       |       |                  |        |                  | \$141,859 |                |                  |
| Median HH Income                   |       |       |                  |        |                  | \$117,391 |                |                  |

Sources: 2010 U.S. Census, ESRI and Bolan Smart Associates, 12/2013

Neighborhood Demand Factors

A series of industry factors have been applied to the demographic characteristics identified for the defined primary trade area to estimate market demand for generic neighborhood serving retail space. For baseline forecasting, a conservative assumption regarding future growth is assumed (30,000 person near-term population). The principal demand variables include:

- a) the amount of neighborhood based retail space that is typically supported by this demographic (10 sf per person).
- b) the amount of other demand that is present (estimated at 15% of the per person demand derived from a limited amount of employment – at least for the foreseeable future – and transient sources).
- c) a capture factor (65%) estimating how much consumer expenditure can stay within the trade area versus being spent elsewhere.
- d) adjustments for the probable impact of an assumed major contemporary outlet mall being located in the middle of the primary trade area (10% of net local neighborhood oriented demand being redirected to an outlet mall; 10,000+ square feet of implied off-site neighborhood demand generated by outlet mall patrons).

The assumption that is perhaps the most subjective of the above demand factors is the judgment regarding how much neighborhood based demand can potentially be captured at local stores, estimated in this case as ranging between 60% and 70% (65% for baseline computations). Obvious to understanding the shopping propensities of Clarksburg residents, workers and related potentially “captive” consumers, is the overwhelming predominance of commuting patterns directed southward down I-270. Clearly the majority of the working age population in Clarksburg is passing by, if not through, large-scale and diversified concentrations of nearby retail repeatedly during the course of an average week. This fact means that any projection of neighborhood capture of potential demand must be approached cautiously, a concern all the more magnified by the recent opening of Wegmans, widely viewed as a regional market game changer. (Offsetting the southward shopping orientation, to a small degree, is the presence of local public schools central within the trade area, including the Clarksburg High School.)

Baseline Neighborhood Demand (2018)

|                             |                  |                                                       |
|-----------------------------|------------------|-------------------------------------------------------|
| Near-term population (2018) | 30,000 persons   | (25,000 existing, 43,000 @ build out)                 |
| Gross local demand          | 350,000+/- sf    | (10 sf per person neighborhood retail plus 15% other) |
| Net local demand            | 230,000+/- sf    | (65% capture)                                         |
| Deduct for outlet capture   | (23,000) sf      | (10% of net neighborhood demand provided at outlet)   |
| Outlet induced demand       | <u>10,000</u> sf | (see page 7)                                          |
| Total neighborhood demand   | 220,000+/- sf    |                                                       |

Potential Future Neighborhood Demand (2030+, with adjustments for assumed more employment and importantly, a larger base of retail supply offering more consumer choices)

|                           |                  |                                                       |
|---------------------------|------------------|-------------------------------------------------------|
| 90% of buildout           | 39,000 persons   |                                                       |
| Gross local demand        | 450,000+/- sf    | (10 sf per person neighborhood retail plus 20% other) |
| Net local demand          | 295,000+/- sf    | (70% capture)                                         |
| Deduct for outlet capture | (29,000) sf      | (10% of net neighborhood demand provided at outlet)   |
| Outlet induced demand     | <u>10,000</u> sf | (see page 7)                                          |
| Total neighborhood demand | 275,000+/- sf    |                                                       |

Neighborhood Retail Supply

Existing

|                      |                             |
|----------------------|-----------------------------|
| Clarksburg Villages  | 109,000 sf grocery anchored |
| Clarksburg Highlands | 18,000 sf (Stringtown Rd)   |
| Other Clarksburg     | <u>8,000</u> sf             |
| Total:               | 135,000 sf                  |

Planned / Future

|                        |                      |                                                          |
|------------------------|----------------------|----------------------------------------------------------|
| Clarksburg Town Center | 135,000 sf           | (50,000 sf grocer, other)                                |
| Cabin Branch           | 50,000 to 120,000 sf | (non-grocer) (484,000 sf including outlet mall)          |
| Miles-Coppola          | <u>TBD</u>           | (assume retail restricted regardless if includes outlet) |
| Total:                 | 185,000+ sf          |                                                          |

Total Existing and Planned 320,000+ sf

Implications for Neighborhood Retail

- Enough near-term unmet demand for an additional 80,000 to 100,000+ sf
- Demand for additional grocery supply
- Minor potential net loss to outlet mall of local retail (i.e. 20,000 to 30,000 sf)
- Longer-term potential for an additional 50,000 sf, for a total increase of 130,000 to 150,000+ sf



# 10 Mile Creek Area Limited Amendment

## Questions and Answers Regarding Little Seneca Lake and Drinking Water Quality

Below is a set of questions that were sent to DEP, Planning Board Staff, and WSSC earlier on December 19, 2013. WSSC and DEP staff provided written responses. Planning Board Staff indicated that WSSC and DEP were the appropriate entities to respond to this set of questions.

- 1. Please provide a brief history of the creation of Little Seneca Lake, including the reasons the Lake was built, its proposed function, and the agreements that guide water releases from the Lake.**

**WSSC Response:** The Little Seneca Lake was built as part of a regional water supply plan to ensure that there are both adequate amounts of water available for the Washington Metropolitan Area's consumption and agreed upon Potomac River flow-by requirements during drought events in the region. The Lake was created by the construction of a dam on Little Seneca Creek. It was built to provide short-term supplemental flow to the Potomac River during periods of drought and it also provides a recreational amenity for the public. The Lake is located in Black Hill Regional Park. Fishing and boating facilities are available at the park.

The Lake was completed in 1984 and the water supply dam is operated by the WSSC. The water supply resource is shared with the Washington Aqueduct (WA) and Fairfax County Water Authority (FCWA).

The surface area of the Lake is 505 acres. The average depth is 24.7 feet with a maximum depth of 68 feet. The water supply capacity of the Lake is 3.9 billion gallons.

Releases from the Lake are driven by the Water Supply Coordination Agreement (WSCA) of 1982 which includes the Low Flow Allocation Agreement (LFAA) of 1978 by reference. The parties to the LFAA agreement are the USA (represented by the Corps of Engineers), the State of Maryland, the Commonwealth of Virginia, FCWA, WSSC, and District of Columbia. The WSCA governs the operation and releases from the Lake. The parties of this agreement are the USA (again represented by the Corps of Engineers), FCWA, WSSC, District of Columbia, and Interstate Commission of the Potomac River Basin (ICPRB). The cost sharing and operating expenses of the Lake are covered by the Little Seneca Lake cost sharing agreement of which the parties are the District of Columbia, WSSC, and FCWA. There is also an inter-agency agreement between WSSC and the Maryland-National Capital Park and Planning Commission that allows for recreational usage of the Lake.

**DEP Response:** DEP concurs with the responses provided by WSSC.

- 2. Please explain the specific circumstances under which reservoir water is used, when this has happened, and exactly what happens during these events.**

**WSSC Response:** Little Seneca Lake water is used when there is a drought event and predictions indicate that the requirements of the LFAA will not be met. The agreement requires that the projected flow in the Potomac at Little Falls is not less than 100 MGD plus a 30 MGD safety factor after the supply withdrawals of FCWA, WSSC and WA have been made. When flow levels are

projected to be below this level, a release is made and water from the Lake is released to the Potomac via Little Seneca Creek to ensure that the LFAA requirements are honored.

In brief the release rules are:

Little Seneca Release Rule:

Little Seneca Lake release decisions are based on hourly flow projections at Little Falls in coordination with ICPRB. These projections are calculated using data from recent and projected utility withdrawals from the River, flows measured at the Little Falls gage, and flows measured at other upstream gages. When projected flow at Little Falls (after withdrawals) drops below 100 MGD (plus the 30 MGD margin of safety), releases from Little Seneca Lake are used to make up the difference. There is no predetermined targeted release rate or volume. Each release is independent and based on the conditions and projections prompting the release. The release rate and volume can be varied on an hourly basis and should be just large enough to keep flow-by just above 100 MGD plus the margin of safety.

Balancing Jennings Randolph and Little Seneca

During drought operations, the use of Jennings Randolph and Little Seneca Lake should be balanced in relation to their storage capacity. The release from Jennings Randolph will be greater than the release from Little Seneca Lake. This ensures that Little Seneca Lake storage remains available to account for short-term unexpected changes in conditions, such as spikes in demand.

There have been water supply releases from Little Seneca Lake in two years: 1999 (22 MG) and 2002 (976 MG). These releases were each for one day only. By comparison, releases from Jennings-Randolph during these same two events were 3,049 MG and 5,106 MG respectively.

**DEP Response:** DEP concurs with the responses provided by WSSC.

- 3. Was the Lake ever considered as a direct emergency water source (i.e. direct withdrawals from the Lake) as opposed to releases from the dam to allow increased flow into the Potomac River? If so, please describe how this direct use would work. How would the water be treated? How would it be delivered to regional customers? Given the capacity of the Lake (4.0 billion useable gallons of water according to what I've read), how long would that water supply be able to serve the WSSD and the region?**

**WSSC Response:** No, this has not been considered due to the regional requirements of its operation and utilization. The Lake was constructed to provide water that could be released to the Potomac in case of low flow events. There is no consideration underway for this potential change in purpose.

**DEP Response:** DEP concurs with the responses provided by WSSC.

- 4. How much acreage is within the Little Seneca Lake drainage area (i.e. drains directly into the Lake or from water sources that drain into the Lake)?**

**WSSC Response:** According to data made available to WSSC by Maryland DNR, the watershed area upstream of the Little Seneca Lake Dam is 18,531 acres. This includes the sub-watersheds of the three major tributaries, Little Seneca Creek, Cabin Branch and Ten Mile Creek.

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**DEP Response:** DEP concurs with the responses provided by WSSC.

**5. What is the current estimated imperviousness of this acreage?**

**WSSC Response:** This question is best left to the storm water authority to answer.

**DEP Response:** Based on GIS data maintained by DEP to implement the Water Quality Protection Charge, the total acreage in the drainage area for Little Seneca Lake is 13,544 acres and approximately 13% of this area is impervious surface.

**6. What proportion of the total acreage that drains into Little Seneca Lake is from the Ten Mile Creek Watershed?**

**WSSC Response:** According to data made available to WSSC by Maryland DNR, the sub-watershed area of the Ten Mile Creek is 4,801 acres and represents approximately 25.9% of the entire Lake watershed.

**DEP Response:** DEP concurs with the responses provided by WSSC.

**7. What is the condition of the reservoir right now? How does your agency evaluate the condition of the reservoir? How does development in the watershed affect the quality of the reservoir itself and the quality of the water in the reservoir? What are your agency's major concerns (if any) with regard to the water quality of the reservoir? Sediment? Pollutants?**

**WSSC Response:** WSSC conducts water quality monitoring three times per year (spring, summer, fall) and tests for nutrients (nitrogen and phosphorus), algae, sodium chloride, dissolved oxygen, water clarity and other physical and chemical parameters. The data obtained by WSSC since 2010 are very similar to data obtained prior to 2001, from which MDE determined in 2006 that the Lake was not impaired and did not qualify for a Total Maximum Daily Load. Accordingly, we infer that the more recent data demonstrate that the Lake is currently meeting State water quality standards for water supply reservoirs. WSSC does not evaluate quantitatively the impact of development; however, based on studies by the Center for Watershed Protection and others, we are aware that both urban development and agriculture can affect water quality by increasing sediment loadings in the tributary streams draining to the Lake, and by increasing nutrient and pollutant loads (e.g., sodium chloride). WSSC's objective for Little Seneca Lake at this time is maintaining sufficient capacity to achieve its original purpose of supplementing Potomac River flow. Over time sediment inflow can reduce storage capacity, although such capacity loss as of 2010 was a very modest 0.1% loss per year, which by comparison is about half of the rate of infill in the Patuxent Reservoirs.

**DEP Response:** DEP concurs with the responses provided by WSSC.

**8. How far does water released from the Lake flow to reach the Potomac River? How far upstream from the Potomac Water Filtration Plant does the released water enter the Potomac River? At its greatest potential release during a severe drought, what proportion of Potomac River water at the Potomac Water Filtration Plant intake would be from the reservoir?**

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**WSSC Response:** Using measurements from the GIS system, the distance that water from the Lake flows to reach the Potomac River is approximately 11.8 miles. Once the water is released, it mixes with water from other tributaries en route to the Potomac River. The point the water enters the Potomac is approximately 5.25 miles upstream of the Water Filtration Plant. There is not an accurate way to make a determination as to what percentage of water in the River is from the Lake release, but using the available tools, an ICPRB-derived estimate based upon periodic measurements made over the course of the previous two releases suggests that the Little Seneca Lake releases ranged from 1% to 17% of Potomac River flow on the days of the release, with an average of approximately 7%.

**DEP Response:** DEP concurs with the responses provided by WSSC.

- 9. Given Question #8, does the released water make up a sufficient portion of the Potomac River water at a given time to have a significant impact on drinking water quality? How much does the water quality of the Lake affect Potomac River water quality and drinking water quality at the Potomac Water Filtration Plant?**

**WSSC Response:** Releases from the Lake occur only during periods of low Potomac River flows to increase the quantity of water in the River and are not intended to improve water quality in the River. For this reason, information concerning water quality at the Potomac WFP intake during releases compared to water quality under normal conditions has not been measured or recorded. However, the water in the Lake is currently presumed to be of a higher quality than the River due to a lack of mixing and other naturally occurring phenomena of the River though Lake characteristics vary somewhat throughout the year. Therefore, the effect on water quality in the River will be dependent upon the condition of the Lake and of the River at the time of the release and the weather conditions leading up to and at the time of the release.

**DEP Response:** DEP concurs with the responses provided by WSSC.

- 10. To what extent would the scale of development being debated in the Stage 4 Limited Master Plan Amendment have a significant impact on the Little Seneca Lake Reservoir or drinking water quality from the Potomac River in general? To what extent would the alternative levels of development that have been suggested (ranging from no additional development to the Planning Board recommendations to the increased levels of development requested by property owners) result in differences in the quality of WSSC drinking water?**

**WSSC Response:** This is not a question that WSSC has the knowledge to answer and is best left to those looking at the development, the amount of storm water runoff associated with the development and the measures used to manage that runoff and maintenance of related facilities.

**DEP Response:** In response to Question 11, WSSC stated the following: "WSSC has seen modeled data for development in the Ten Mile Creek watershed that suggests that adverse water quality impacts in that sub-watershed would probably not be significantly changed from current conditions. Changes in Ten Mile Creek, if they occur as modeled, are not likely to be substantially distinguishable from the cumulative water quality condition in the entire Lake, which (as noted in A.7) is currently not impaired."

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DEP has reviewed the same modeling data referenced by WSSC in its response and agrees, based on this data, that it is unlikely that the “incremental” development proposed for the Ten Mile Creek watershed will significantly impact the water quality of Little Seneca Lake. DEP notes, however, that this is a different question than the question of how development scenarios would impact water quality in the Ten Mile Creek tributaries and main stem. DEP also notes that the modeling data relating to development scenarios in the Ten Mile Creek watershed are only one component of the data that would be necessary to evaluate a different but related issue – i.e., how do the cumulative impacts of development throughout the entire Little Seneca Lake watershed impact the reservoir?

**11. Comparisons to Watts Branch's impact on Potomac River water quality have been made, with some contending that WSSC is considering a mid-River intake at least partly because of reduced water quality closer to shore as a result of the degradation of Watts Branch's water resulting from upstream development. To what extent would increased development in the Ten Mile Creek watershed raise similar questions?**

**WSSC Response:** WSSC has seen modeled data for development in the Ten Mile Creek watershed that suggests that adverse water quality impacts in that sub-watershed would probably not be significantly changed from current conditions. Changes in Ten Mile Creek, if they occur as modeled, are not likely to be substantially distinguishable from the cumulative water quality condition in the entire Lake, which (as noted in A.7) is currently not impaired. The infrequent releases of water from Little Seneca Lake are combined with water from other Seneca Creek tributaries (Great Seneca Creek, Dry Seneca Creek) before reaching the Potomac River 5.25 miles upstream of the water plant intake (as noted in A.8). Flow from the entire Seneca Creek watershed (with or without contribution from Little Seneca Lake) probably mixes in the Potomac River and would not cause reconsideration of the mid-channel intake, which is a modification contemplated specifically in relation to Watts Branch. The confluence of the Watts Branch and the Potomac River is just upstream (approximately 1,500 feet) of the Potomac Water Filtration Plant intake.

**DEP Response:** DEP concurs with the responses provided by WSSC.

**12. Please describe the factors that underlie your conclusions on questions #10 and #11. For instance, could a particular level of increased imperviousness in the Ten Mile Creek watershed tip the balance in the Little Seneca Lake catchment area?**

**WSSC Response:** With the exception of the mid-River intake addressed as part of question #11, Questions 10 – 11 deal with the impact of development – a topic where WSSC is not the authority.

**DEP Response:** WSSC's response to Questions 10 and 11 indicate that they are based on WSSC's analysis of the environmental models evaluated by the Planning Board regarding the impact of projected increases in nitrogen, phosphorous and sediment loads on the Little Seneca Lake resulting from different development scenarios. DEP's responses are based on the same models. The available scientific data does not allow DEP to identify a specific level of imperviousness that would "tip the balance" of water quality in Little Seneca Lake – viewed from the perspective of whether the changes in water quality would impact the reservoir's intended uses. In general, the more imperviousness the greater the potential impact to water quality. Again, the question of how development activities impact the reservoir is a different question than the question of how development activities impact Ten Mile Creek's tributaries and main stem.

(90)

**13. If specific levels of development in the Ten Mile Creek area would result in significant impacts on water quality, what options should the County consider to reduce or mitigate these impacts?**

**WSSC Response:** WSSC is not the authority on the impact of varying development schemes on the quality of Ten Mile Creek and also is not the authority on storm water runoff mitigation techniques and their potential results.

**DEP Response:** As mentioned above in our responses to Questions 10 and 11, the question of how development impacts water quality in the reservoir is a different question than the question of how development impacts the water quality of Ten Mile Creek's tributaries and main stem. We concur with WSSC's conclusion that the incremental impacts of the various development scenarios modeled by the Planning Board are not likely to adversely impact the water quality of Little Seneca Lake. However, the different development scenarios do pose a risk of impacting water quality in Ten Mile Creek's tributaries and main stem. In addition to minimizing the amount of impervious surfaces, there are a number of other options that could help to reduce or mitigate impacts on water quality, including:

- All of the recommendations included on pages 19-21 of the Planning Board's report on its recommended Limited Master Plan Amendment.
- Establishing conservation management plans in all areas located outside the limits of disturbance in the Ten Mile Creek watershed.
- In addition to the Planning Board's general recommendation to require wide buffers around streams and to maintain natural topography and vegetation where possible (particularly forests in headwater areas), overall performance of Environmental Site Design (ESD) could be improved by promoting a more even flow from bioretention facilities. In this respect, riparian buffer areas should be treated as a critical component of stormwater management. Every effort should be made to promote more even distribution of flow from ESD facilities along the entire range of forested or meadow buffer areas.
- The new 20-acre limit on grading established by State law may provide additional mitigation during construction but State law allows grading of additional areas to proceed once 50% of the 20 acres is "stabilized." Optimizing the success of improved stormwater control measures needs to focus on source reduction rather than best management practices (BMPs) for treatment. Source reduction is by far the best BMP.
- Soil decompaction needs to be incorporated as practical to address effects due to both construction and prior agriculture or other activity, but without disturbing vegetation to be saved on soils that might have had prior compaction effects. DEP's experience suggests there may be cases where collecting, stockpiling and reusing local topsoil generates more sediment than it saves. It may be better to compost amend whatever soil is left on the ground to start topsoil generation, and minimize the amount of grubbing early in a project to leave whatever root mat and organic content was in place for as long as possible.

**14. Do you believe additional research or analysis is needed to sufficiently answer any of Questions #10 - #13?**

(91)

**WSSC Response:** WSSC believes that others studying the impact on the environment are better able to discern if more effort is needed to address these Questions.

**DEP Response:** DEP's responses to Questions 10-13 are based on its review of available modeling data regarding the incremental impact of development scenarios in the Ten Mile Creek watershed on Little Seneca Lake. Former Councilmember Scott Fosler, former Planning Board Chair Royce Hansen, former DEP Director John Menke and numerous other environmental and water resource advocates have called for further review and analysis of those impacts before Council takes action on the Planning Board's recommended Limited Master Plan Amendment. More specifically, they have called for a study that evaluates the cumulative impacts of all existing and proposed development in the entire Little Seneca Lake drainage area before action on the Limited Master Plan Amendment.

*(NOTE: Council Staff has attached at the end of this document the abovementioned opinion piece that appeared in the Washington Post on November 15, 2013 authored by Mr. Fosler, Mr. Hansen, and Mr. Menke.)*

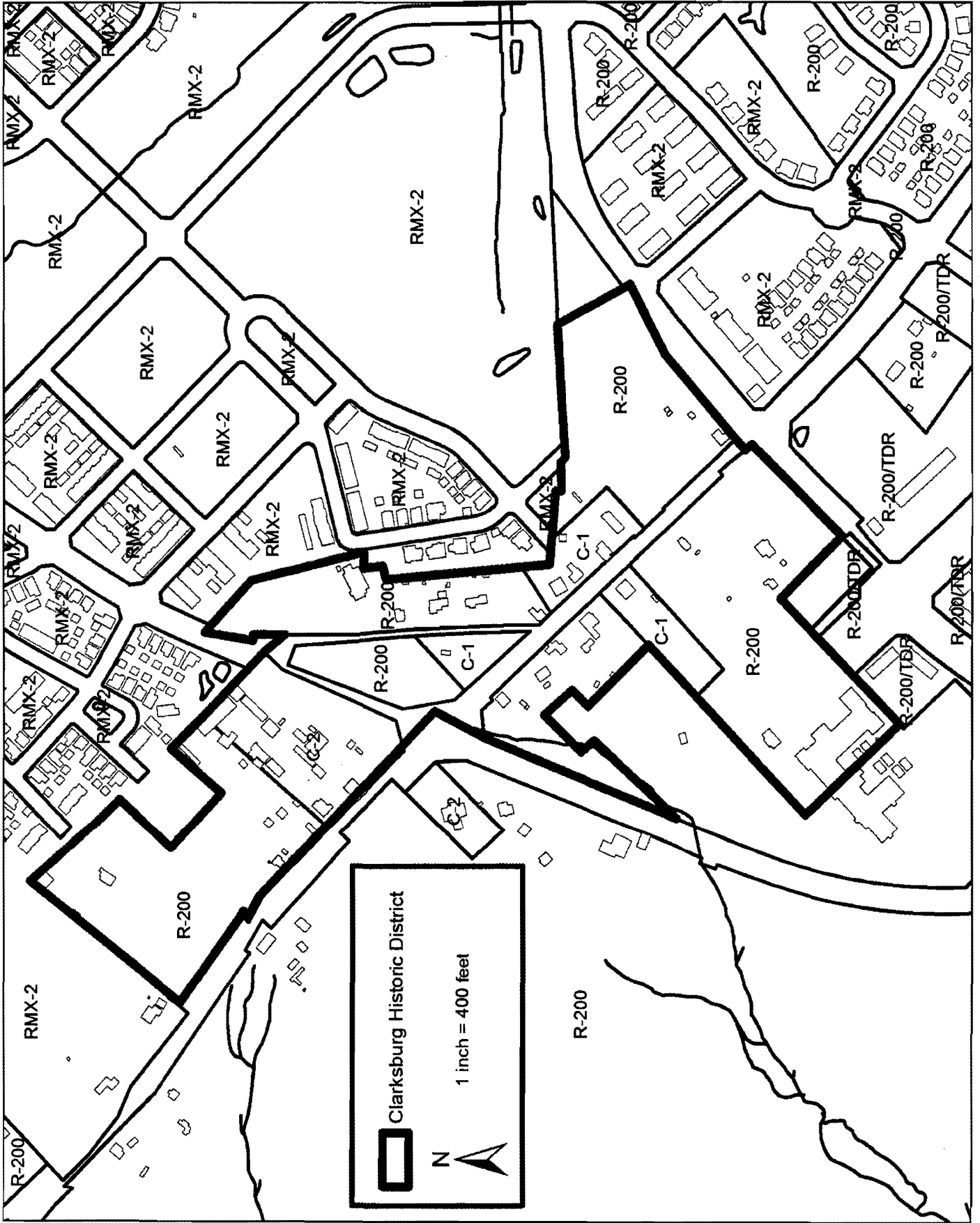
These advocates note that the headwaters of the Little Seneca Lake reservoir and the reservoir itself are located in three different master plan areas within the County -- Germantown, Clarksburg-Hyattstown and Boyds. As a result, they stress that the impacts of development in all three master plan areas on the reservoir have never been fully evaluated as a part of the County's master plan process. They argue that, before further development is approved, an appropriate study should be conducted to assess the cumulative impacts of development -- both existing and proposed -- within the Little Seneca Lake drainage area. They cite best practices for protecting "source water" that are being implemented throughout the country and argue that this kind of study is needed in order to identify any steps that must be taken by the County over the long-term to protect the reservoir's water quality and its intended use as source water for the region during drought situations.

DEP agrees that these stakeholders have identified a very important policy issue but is uncertain at this point in time as to the appropriate scope of such a study or whether the study should be conducted prior to approval of the Limited Master Plan Amendment. DEP will continue to evaluate this issue as the PHED Committee worksessions move forward. We note that the advocates have referenced a variety of best practices being used by water utilities across the country to protect source water and it would be helpful to learn more from WSSC about its long-term plans for protection of the reservoir in general and, more specifically, whether WSSC believes that a study of the cumulative impacts of existing and proposed development on the reservoir is appropriate at this time.

(92)

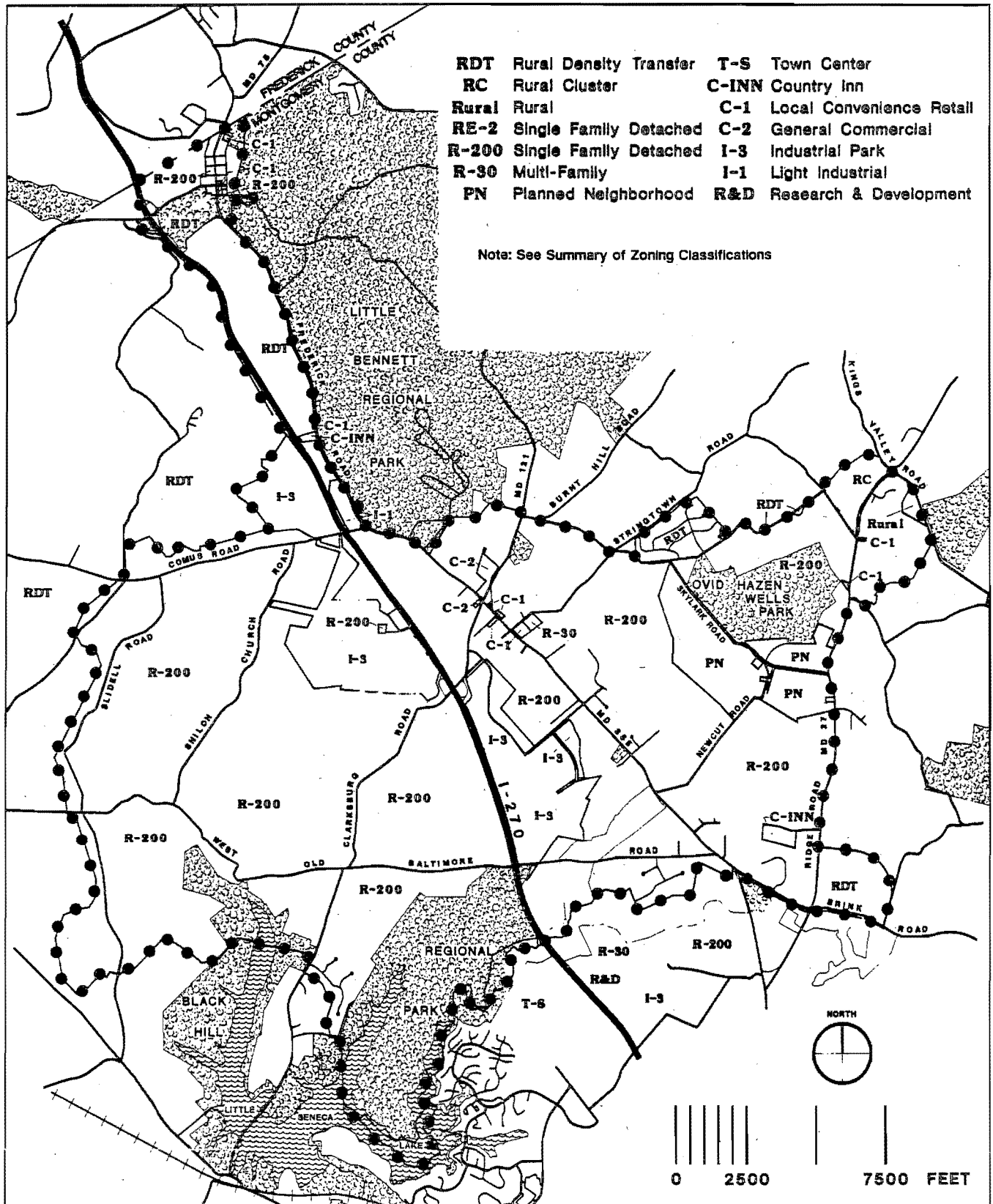
Circles 93 – 102 are duplicated materials elsewhere in this packet and have been removed.





# Existing Zoning (as of 1993)

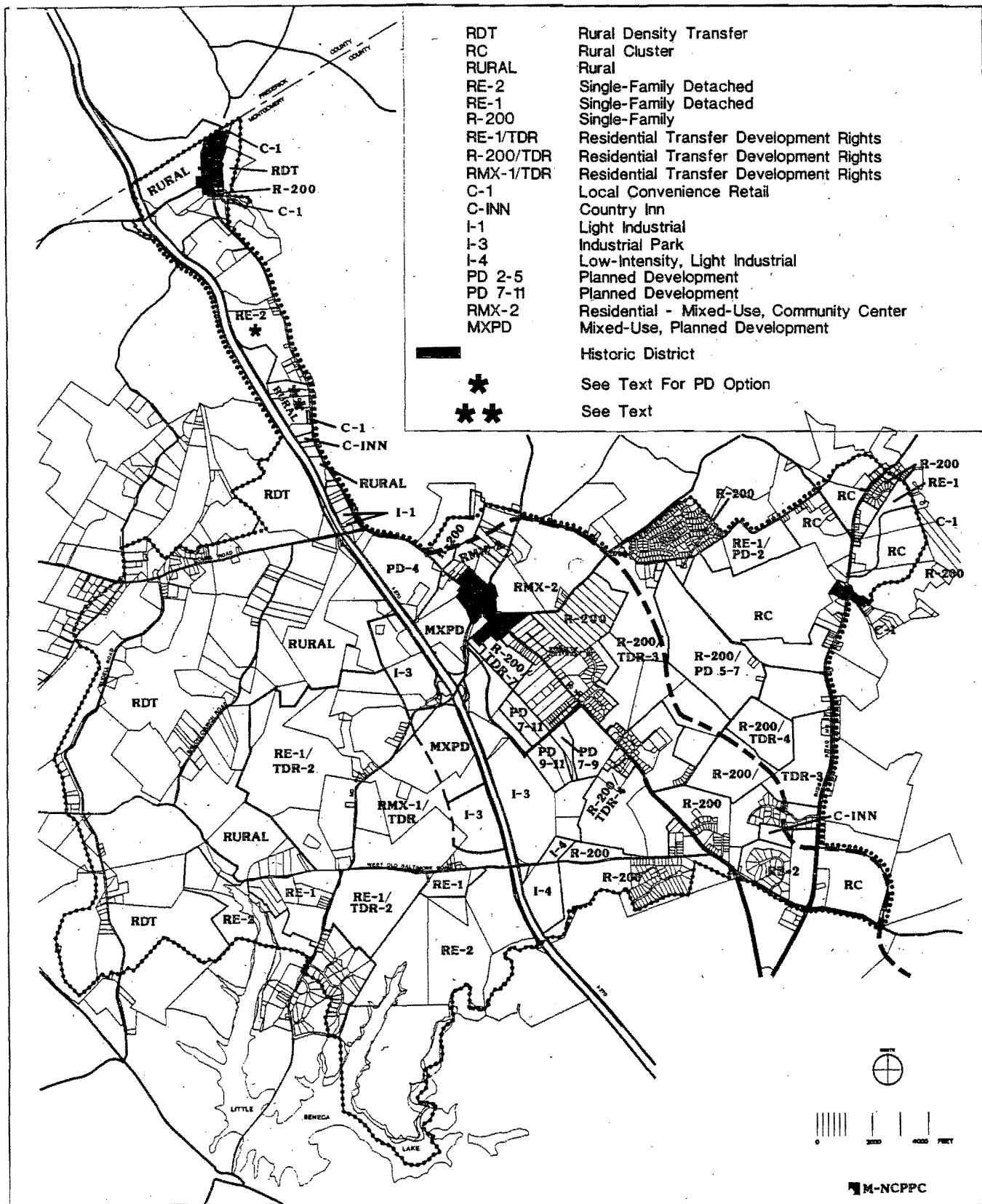
Figure 37



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# Zoning Plan

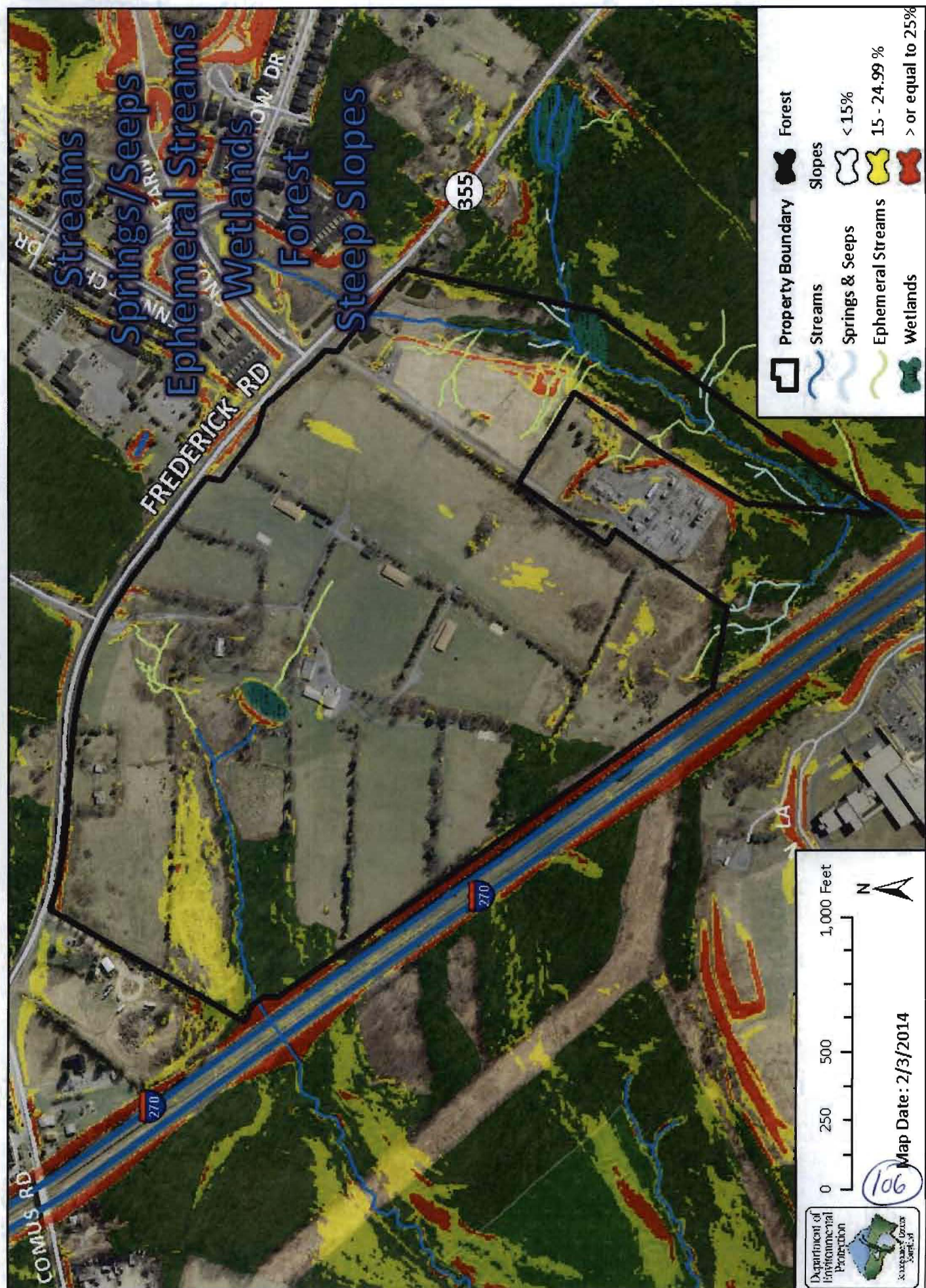
Figure 38





# Egan Environmentally Sensitive Areas

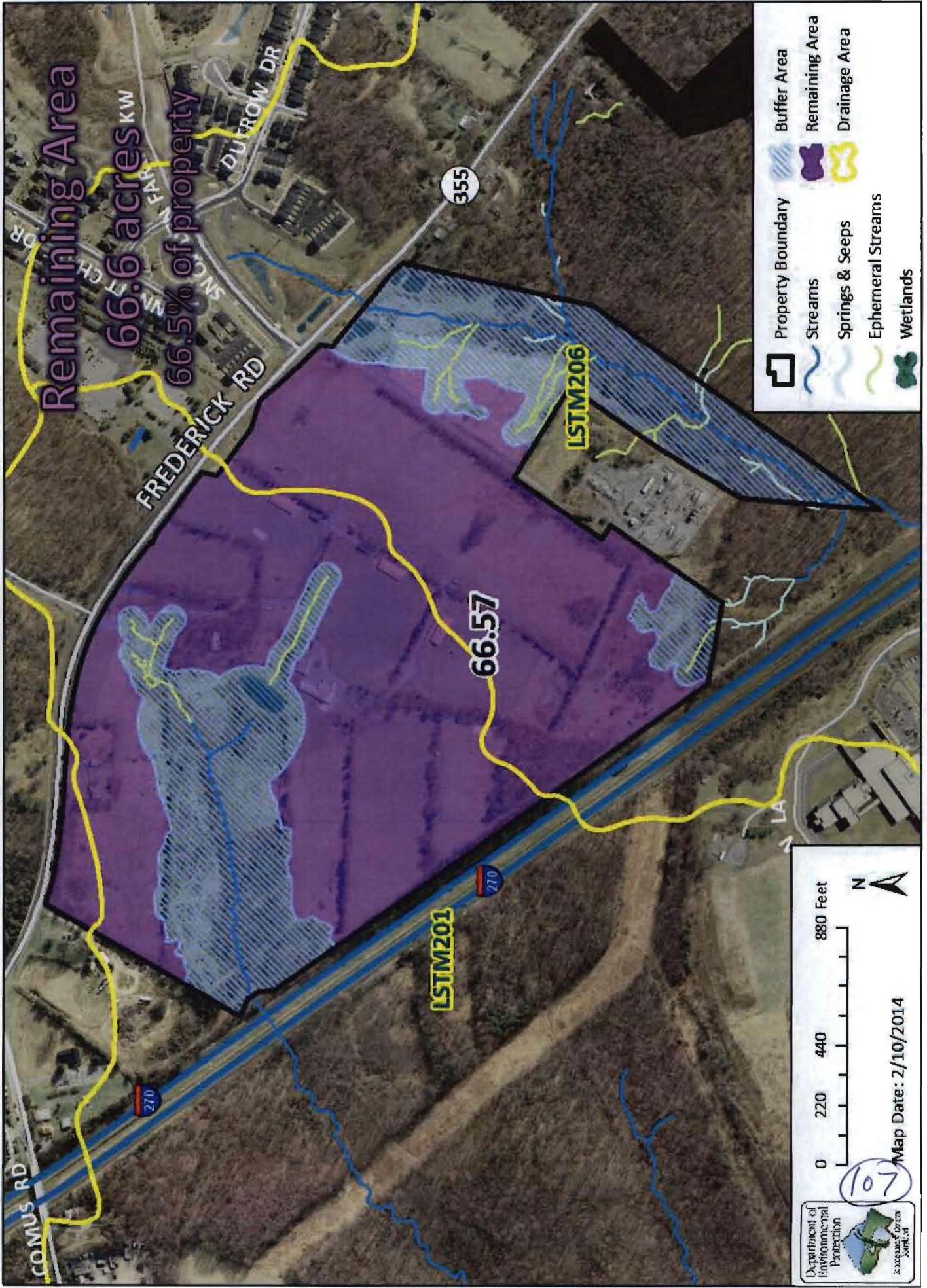
## Features





# Egan Environmentally Sensitive Areas

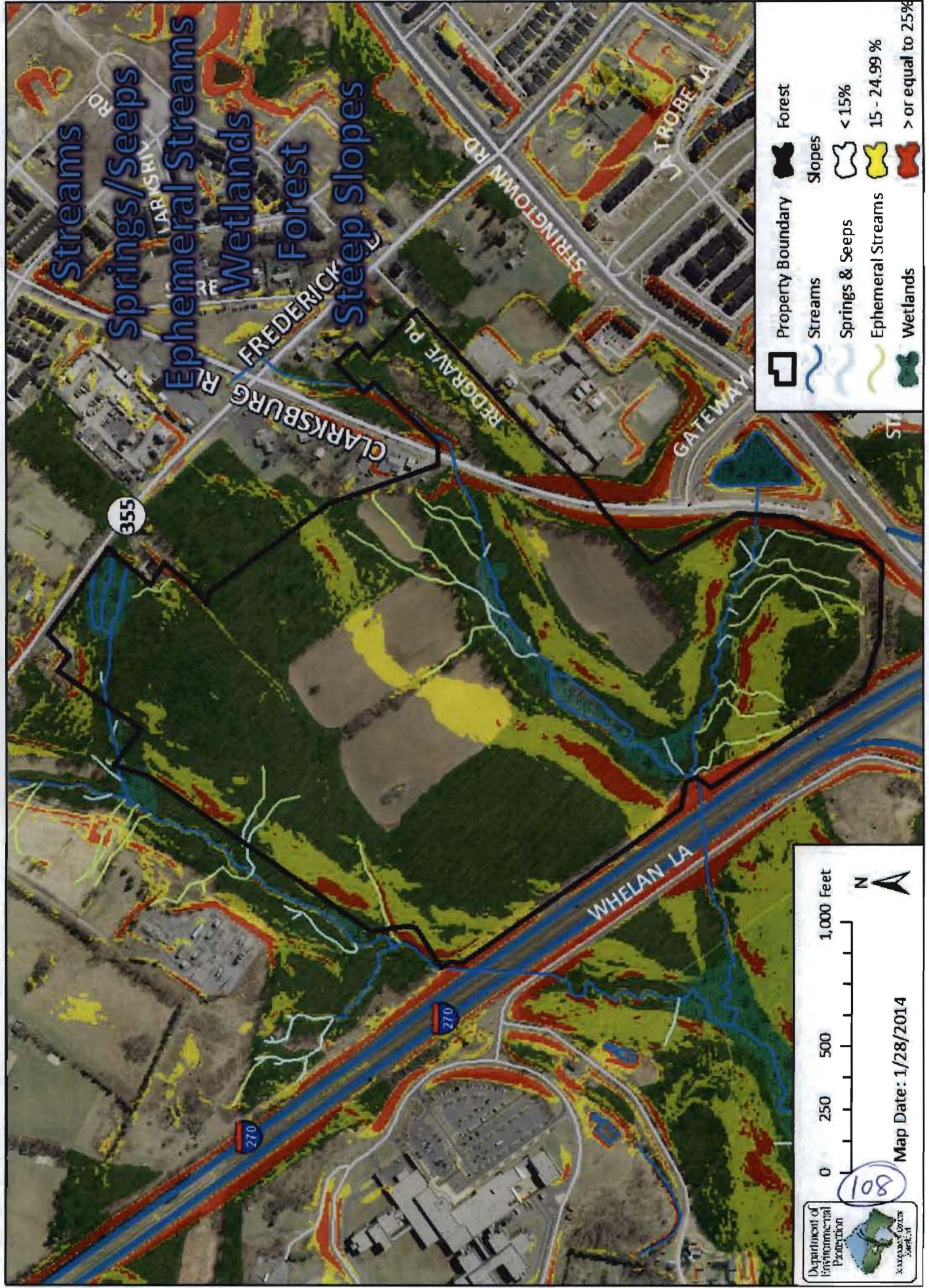
## Level 3





# Miles Coppola Environmentally Sensitive Areas

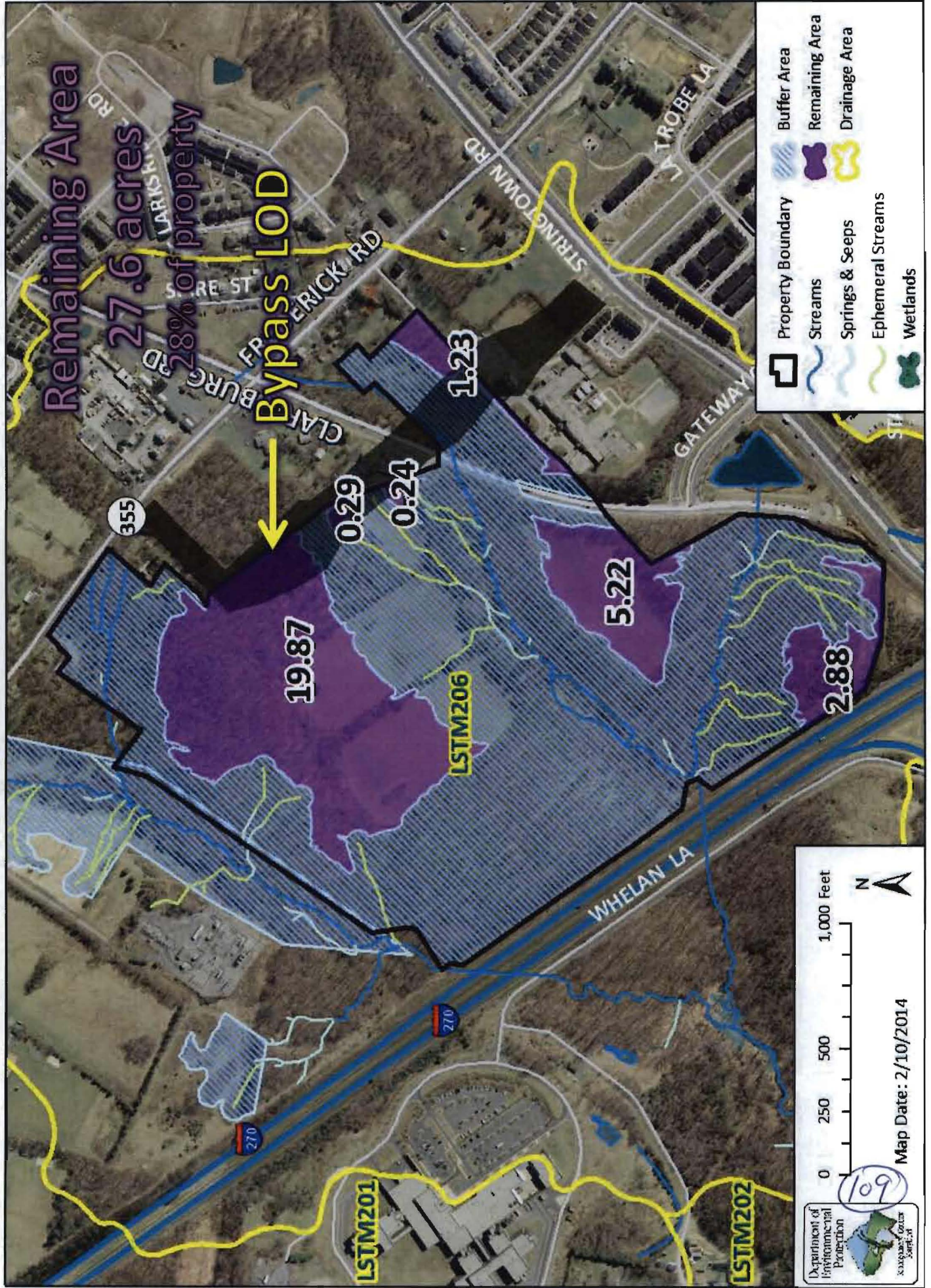
## Features





# Miles Coppola Environmentally Sensitive Areas

## Level 3

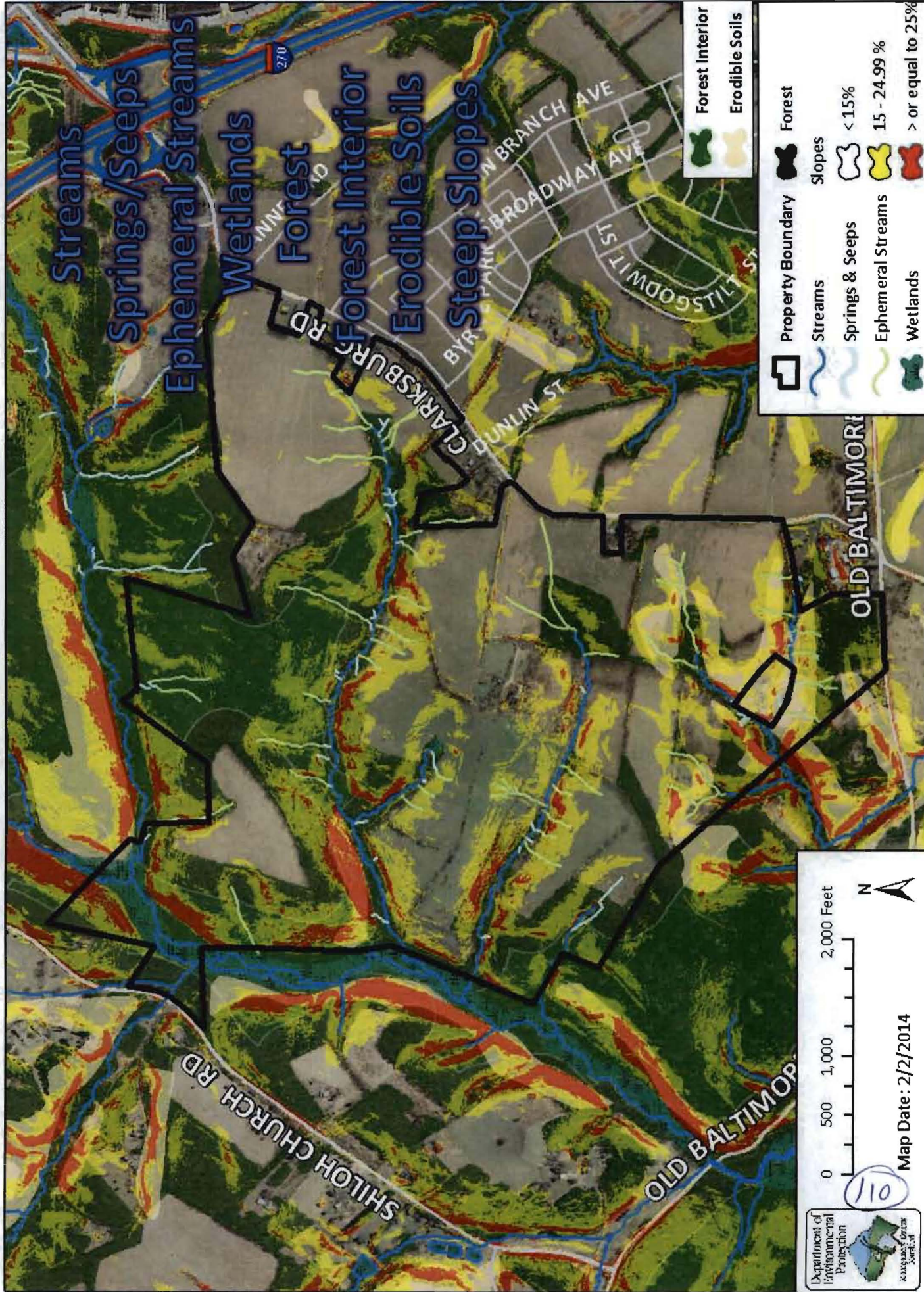




# Pulte/King

Environmentally Sensitive Areas

# Features



Department of Environmental Protection  
Sustainable Growth  
Section 110

Map Date: 2/2/2014

0 500 1,000 2,000 Feet

N

Forest Interior  
Erodible Soils

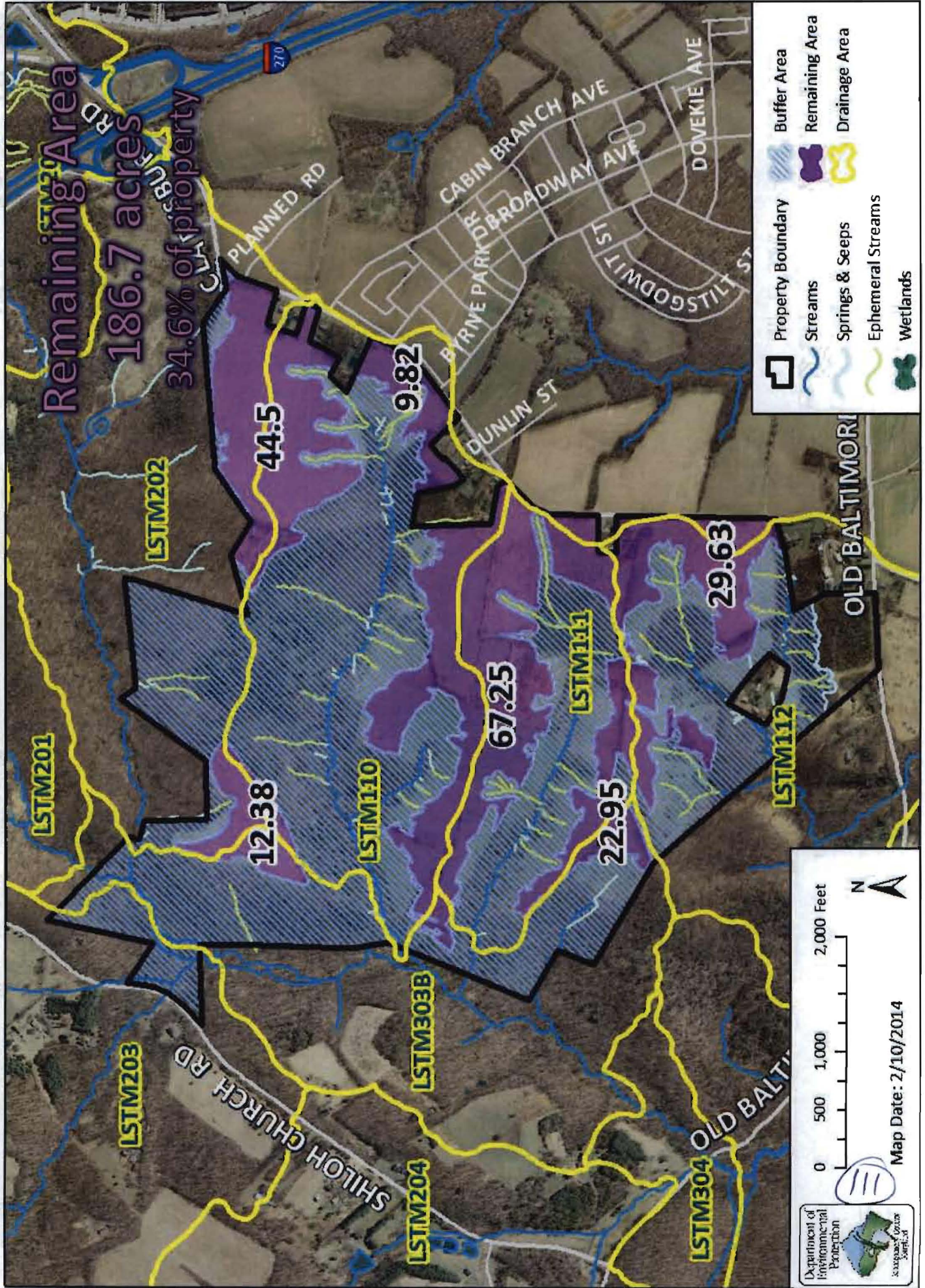
Property Boundary  
Streams  
Springs & Seeps  
Ephemeral Streams  
Wetlands

Forest  
Slopes  
< 15%  
15 - 24.99 %  
> or equal to 25%



**Pulte/King**  
Environmentally Sensitive Areas

**Level 3**

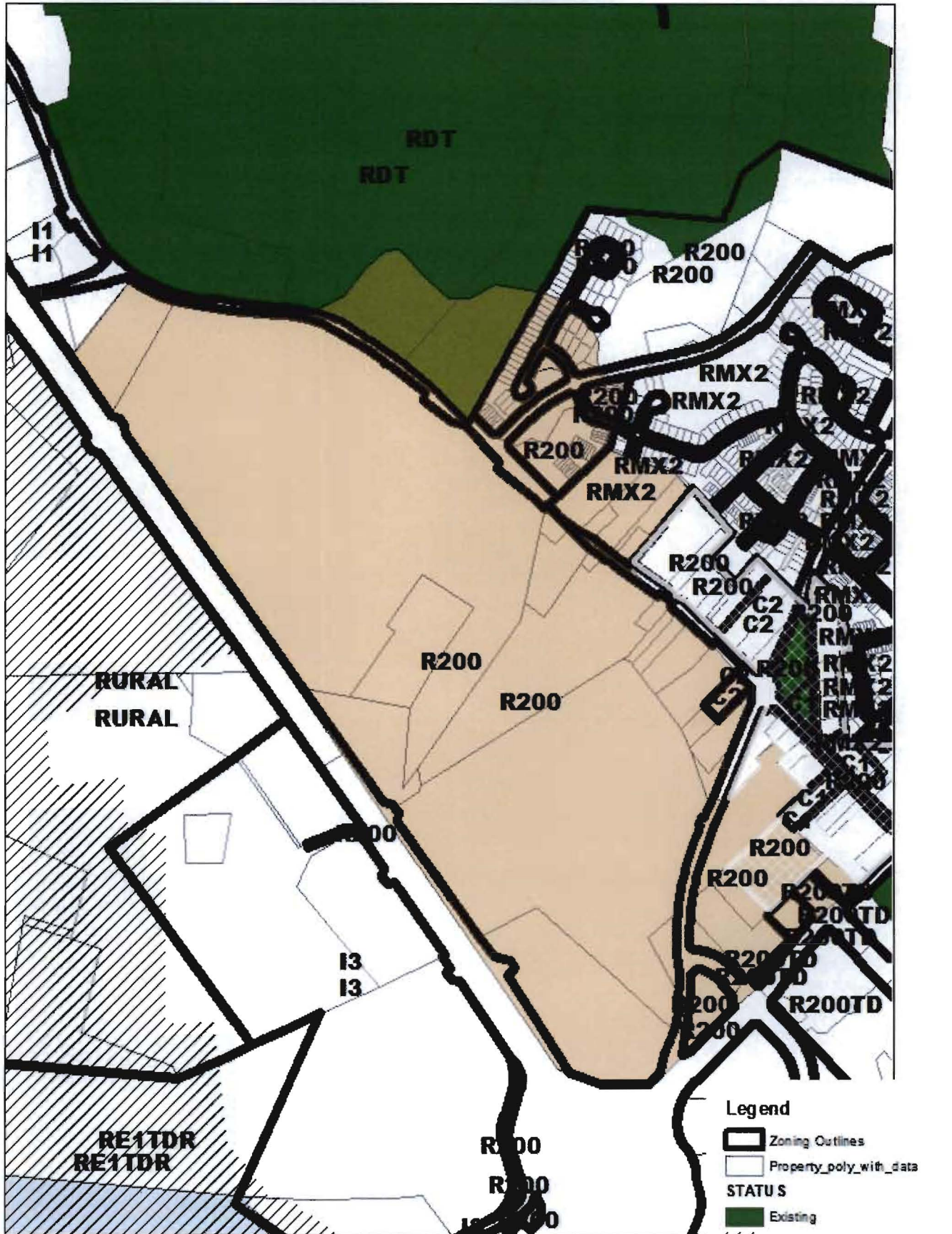








# Potential Overlay Zone East Side of I-270



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PHED/T&E Committees #1  
January 21, 2014

**MEMORANDUM**

January 17, 2014

TO: Planning, Housing, and Economic Development Committee  
Transportation, Infrastructure, Energy & Environment Committee

FROM: *KL* Keith Levchenko, Senior Legislative Analyst

SUBJECT: Ten Mile Creek Area Limited Master Plan Amendment to the Clarksburg Master Plan and Hyattstown Special Study Area.

**Councilmembers should bring their copy of the Plan to the meeting**

This is the Planning, Housing, and Economic Development (PHED) and Transportation, Infrastructure, Energy & Environment (T&E) Committees' third joint worksession on the Planning Board Draft of the Ten Mile Creek Area Limited Amendment to the Clarksburg Master Plan and Hyattstown Special Study Area (hereafter referred to as the Ten Mile Creek Amendment).

At this worksession, the Committees will hear from WSSC with regard to the potential impacts of development in Ten Mile Creek on the Little Seneca Reservoir (and drinking water quality in general), and will hear from DEP staff regarding Ten Mile Creek Amendment's water and sewer related recommendations (including the implications for the Clarksburg Historic District).

**Little Seneca Reservoir and Drinking Water Impacts**

The Little Seneca Reservoir is a regional facility operated by WSSC. The water supply resource is shared with the Washington Aqueduct and the Fairfax County Water Authority. The reservoir was built as part of a regional water supply plan to ensure adequate amounts of water are available in the Potomac River during severe drought conditions. Little Seneca Creek, Cabin Branch, and Ten Mile Creek all drain into the Little Seneca Reservoir (see maps on ©1-2).

Washington Suburban Sanitary Commission Staff Craig Fricke, Planning Group Leader, Engineering and Construction and Martin Chandler, Senior Scientist, Environmental Group will provide a primer on the Little Seneca Reservoir: why it was created, how it works, what condition

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it is in, and whether the various Ten Mile Creek development scenarios raise any significant concerns by WSSC regarding the reservoir or drinking water quality in general.

Carlton Haywood, Executive Director of the Interstate Commission on the Potomac River Basin (ICPRB) will also be available at the meeting to discuss the Little Seneca Reservoir's place within regional water supply planning and operations.

An opinion piece in The Washington Post from November 15 (see ©12-13) from several former County officials argued that planned development in the Ten Mile Creek area should be further studied to better understand the potential impacts on the Little Seneca Reservoir. The concerns raised in the opinion piece were echoed by a number of speakers at the Council's public hearings on December 3 and 5.

These concerns had previously been raised at the Planning Board's hearings on the Ten Mile Creek Amendment in September 2013. Planning Board staff discussed these issues with WSSC and DEP staff and provided responses to the Planning Board testimony (attached on ©3-4). The response to potential reservoir impacts from Ten Mile Creek Development includes the Planning Board Staff conclusion that:

*"WSSC environmental staff has reviewed the M-NCPPC consultant modeling results and has informed M-NCPPC staff that, based on the modeling results, the potential level of new development in the TMC (Ten Mile Creek) scenarios poses no significant threat to the water quality or quantity of the LSR (Little Seneca Reservoir)..."*

In mid-December, Council Staff transmitted a number of questions to WSSC and DEP staff regarding the reservoir (and drinking water impacts in general). These questions and the responses are attached on ©5-11. Notably, DEP's response to Question #10 notes its agreement with WSSC writing:

*"DEP has reviewed the same modeling data referenced by WSSC in its response and agrees, based on this data, that it is unlikely that the "incremental" development proposed for the Ten Mile Creek watershed will significantly impact the water quality of Little Seneca Lake."*

However, DEP later notes in its response to Question 14 that a study of the cumulative impacts on the reservoir would be worthwhile:

*DEP agrees that these stakeholders have identified a very important policy issue but is uncertain at this point in time as to the appropriate scope of such a study or whether the study should be conducted prior to approval of the Limited Master Plan Amendment. DEP will continue to evaluate this issue as the PHED Committee worksessions move forward. We note that the advocates have referenced a variety of best practices being used by water utilities across the country to protect source water and it would be helpful to learn more from WSSC about its long-term plans for protection of the reservoir in general and, more specifically, whether WSSC believes*

*that a study of the cumulative impacts of existing and proposed development on the reservoir is appropriate at this time.*

DEP staff will be available at the meeting to clarify this study concept and whether DEP or the Executive have an opinion yet on whether the Ten Mile Creek Amendment should be deferred pending the outcome of such a study.

### **Water and Sewer Service to Serve Properties in the Ten Mile Creek Amendment Area**

Dave Lake, Manager, Water and Wastewater Management, Department of Environmental Protection (DEP), will provide a summary of general water and sewer planning assumptions for the Ten Mile Creek Amendment properties (see map on ©14). Mr. Lake will also summarize the options and issues for providing sewer service to the Clarksburg Historic District.

Page 40 of the Ten Mile Creek Amendment (see ©17) provides background and recommendations regarding the provision of public water and sewer to areas in Stage 4.<sup>1</sup> As noted in the Ten Mile Creek Amendment, the Ten Mile Creek watershed has no receiving sewers downstream of the Stage 4 area. Therefore, wastewater will need to be pumped out of the watershed into existing systems serving Stage 3 areas (such as Cabin Branch or Little Seneca Creek).

In order to minimize the construction of multiple sewerage systems to serve individual properties in Stage 4, the Limited Master Plan recommends that WSSC develop a comprehensive Stage 4 sewerage plan. The goal of this plan would be to build a “logical, efficient, and environmentally responsible sewerage system for Stage 4...”

It is likely that any sewer dependent development west of I-270 (such as the Pulte property) would require a pump over solution to Cabin Branch. The properties east of I-270 (Miles-Coppola and Egan) would likely share another pumping station that would also pump over to Cabin Branch or Little Seneca Creek. Developers would be required to build all necessary on-site infrastructure (including pump stations), as well any off-site infrastructure to transport wastewater to Cabin Branch. The pump station(s) would be required to be sized to accommodate all existing and future planned development expected to utilize the pump station.

### **Clarksburg Historic District Sewer**

#### **Background**

The Clarksburg Historic District is located at the intersection of Clarksburg Road and Frederick Road (see map on ©18). The entire Historic District falls within the planned water and sewer envelope. Most of the properties in the Historic District are within the Ten Mile Creek

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<sup>1</sup> The water and sewer recommendations in the Limited Master Plan amendment assume that public water and sewer would be required (and approved) to meet the development goals presumed in the Limited Master Plan Amendment. If the Council were to reduce the zoning density on one or more properties to 1 acre lots or greater, then Water and Sewer Plan policies presume service would be provided with on-site systems.

watershed, although there are several properties on the southeast edge that are in the Little Seneca drainage area. These properties can be served by main extensions originating from existing or planned mains serving other developments (such as Town Center) without any capital program sewer projects required for service.

For the Historic District properties in the Ten Mile Creek Watershed, WSSC and DEP concur that these properties are best served by a future sewerage system constructed in the Stage 4 area (Ten Mile Creek). However, these properties could also be served by a separate smaller pump station that would pump wastewater over to Town Center (in the Little Seneca Creek watershed). If Stage 4 were to later build out on sewer (with a pump station on the Miles-Coppola property, for instance), WSSC and DEP concur that the pump station dedicated to the Historic District should be abandoned and wastewater redirected to the larger Stage 4 pump station.

### **2008 Sanitary Survey Results and Public Health Problem Area Designation**

In 2008, DEP and DPS staff reviewed permit records and site characteristics and documented public health problems in the area and placed properties in the Historic District into “high,” “medium,” and “low” concern levels. Seventy-eight percent of the properties reviewed fell into either a high or a moderate concern level. The combination of aging septic systems on relatively small lots, and the additional requirements that go with new and/or replacement systems, resulted in the Department of Permitting Services concluding that on-site systems were not a viable long-term solution for the Historic District. Based on these results, the Executive recommended designating the Historic District a public health problem area. **The Council later approved this designation in October 2008.**

This designation has two main benefits for property owners in the Historic District. First, if and when sewer extensions are built, property owners will be eligible for a public health hazard subsidy from WSSC, which can help to partially defray the costs to property owners of extending sewer. Second, the designation allows for expedited service if and when property owners apply to WSSC for construction of main extensions.

### **Cost Issues**

The longstanding issue with serving the Historic District is not approval for sewer but rather the cost to extend sewer. Working with WSSC, DEP staff has estimated an order of magnitude cost for independently serving the Historic District of \$2.6 million, including: a new pump station (\$1.4 million), 8 inch gravity sewer (\$970,000), and force main (\$210,000). Under current WSSC financing policies, the applicant (i.e., all property owners seeking to connect at the time the extension is done) must pay the “deficit” cost of the extension.<sup>2</sup> In addition, each property owner must pay substantial on-site costs, including: connection fees, SDC charges, and private plumbing costs.

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<sup>2</sup> “Deficit” costs are calculated as the cost to build a water or sewer extension minus the estimated total front foot benefit revenue to be collected by WSSC from the new connections to the extension.



With new developments or redevelopments, extensions are often built and paid for by the developer. The developer can recoup these costs through subdivision and sale of additional properties and/or more intense use of the existing property. However, in the case of the Historic District, property owners have existing uses that are not expected to change drastically when sewer service is provided. Even if the costs are divided among most or all of the Historic District property owners requiring sewer, the costs for extending sewer, under current policies, are prohibitive.

If the Historic District sewer extension were to wait until a pump station in Stage 4 were built, then the cost for a separate pump station would be avoided and overall costs would be reduced by more than half. There has also been some discussion that a Stage 4 developer could potentially build some portion of the additional sewer infrastructure needed for the Historic District. However, WSSC, DEP, and Planning Board staff do not believe there is an existing regulatory hook that would require a developer to build off-site extensions to serve other properties.

From a policy standpoint, the County has an interest in seeing the Historic District sewered. The properties are included within the planned sewer envelope and a sewer extension will provide more flexibility for property owners to improve their properties consistent with the 1994 Master Plan intent for the Historic District.<sup>3</sup> Also, given that the area has been identified as a public health problem area, there is also a public interest in permanently addressing any failing septic systems or systems at risk of failure.

The County also has a direct land use interest in the area, since the County owns several contiguous parcels in the Historic District for a future Clarksburg fire station. A sewer extension will be required to serve the new Fire Station. The Approved FY13-18 capital project (see ©19-20) pushed the fire station project out beyond six years but assumed that the County would participate financially in a sewer extension project to serve the Historic District as well as the fire station property. The PDF language requires that an equitable cost-sharing arrangement be worked out with affected property owners before the project moves forward.

In his FY15-20 Recommended CIP, the County Executive recommends \$28.4 million for the new fire station, with construction to be completed during FY20 (project description form attached on ©21). The cost to extend a pressure sewer to serve the fire station only is included in the project, with a notation that alternative approaches are being explored.

The issue of extension costs has been a long-standing issue with broader implications than just the Clarksburg Historic District. Basically, the costs an applicant must pay to extend sewer can be so prohibitively high that even property owners with failing septic systems are deterred (and make do with temporary solutions such as holding tanks).

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<sup>3</sup> The Ten Mile Creek Amendment (see excerpt on ©2-3) includes a zoning change (to Commercial/Residential Neighborhood (CRN) for the Clarksburg Historic District). This change is intended to provide property owners more options to rehabilitate properties while remaining consistent with the intent of the 1994 Master Plan's historic preservation goals.

Montgomery County has been seeking to address this problem through collaboration with WSSC and staffs from both Montgomery and Prince George's Counties for a number of years.<sup>4</sup> The issue was recently discussed by the Bi-County Infrastructure Working Group (with some potential policy changes discussed) and later presented at a recent WSSC Commissioner meeting.

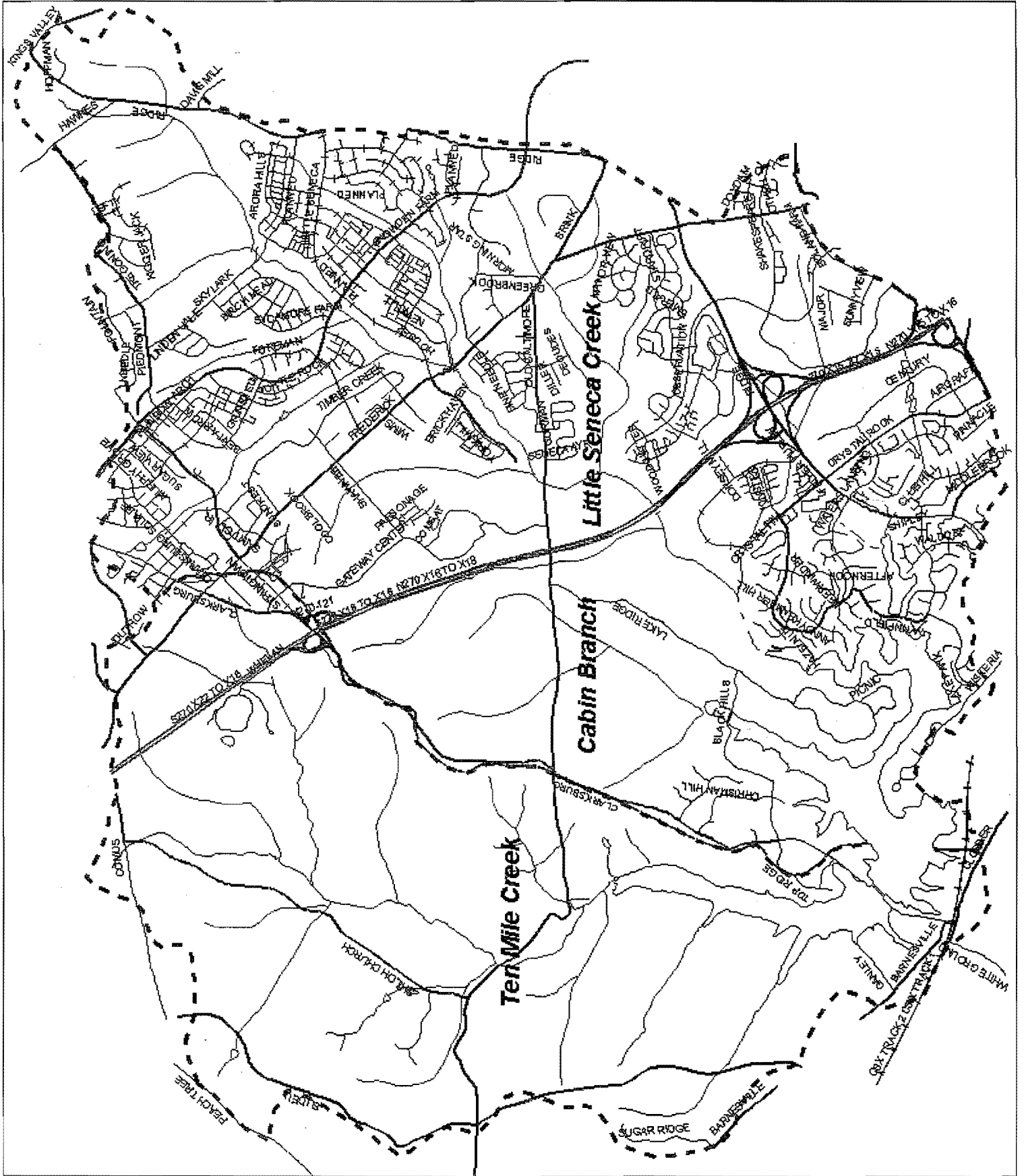
**List of Attachments**

|                                                                                                                            |        |
|----------------------------------------------------------------------------------------------------------------------------|--------|
| Maps of Drainage Area into the Little Seneca Reservoir                                                                     | ©1-2   |
| Excerpt of Planning Board Staff Responses to Testimony at the Planning Board Hearings                                      | ©3-4   |
| Responses from WSSC and DEP to Council Staff Questions Regarding<br>The Little Seneca Reservoir and Drinking Water Impacts | ©5-11  |
| November 15, 2013 Washington Post Opinion (by Menke, Fosler, Hanson)                                                       | ©12-13 |
| Map of Clarksburg Development Stage 4 Cases                                                                                | ©14    |
| 10 Mile Creek Amendment Excerpts:                                                                                          |        |
| • Clarksburg Historic District and Vicinity Recommendations (Pages 34-35)                                                  | ©15-16 |
| • Water and Sewer Service Recommendations (Page 40)                                                                        | ©17    |
| Map of the Clarksburg Historic District                                                                                    | ©18    |
| Approved FY13-18 Clarksburg Fire Station Project Description Form                                                          | ©19-20 |
| Recommended FY15-20 Clarksburg Fire Station Project Description Form                                                       | ©21    |

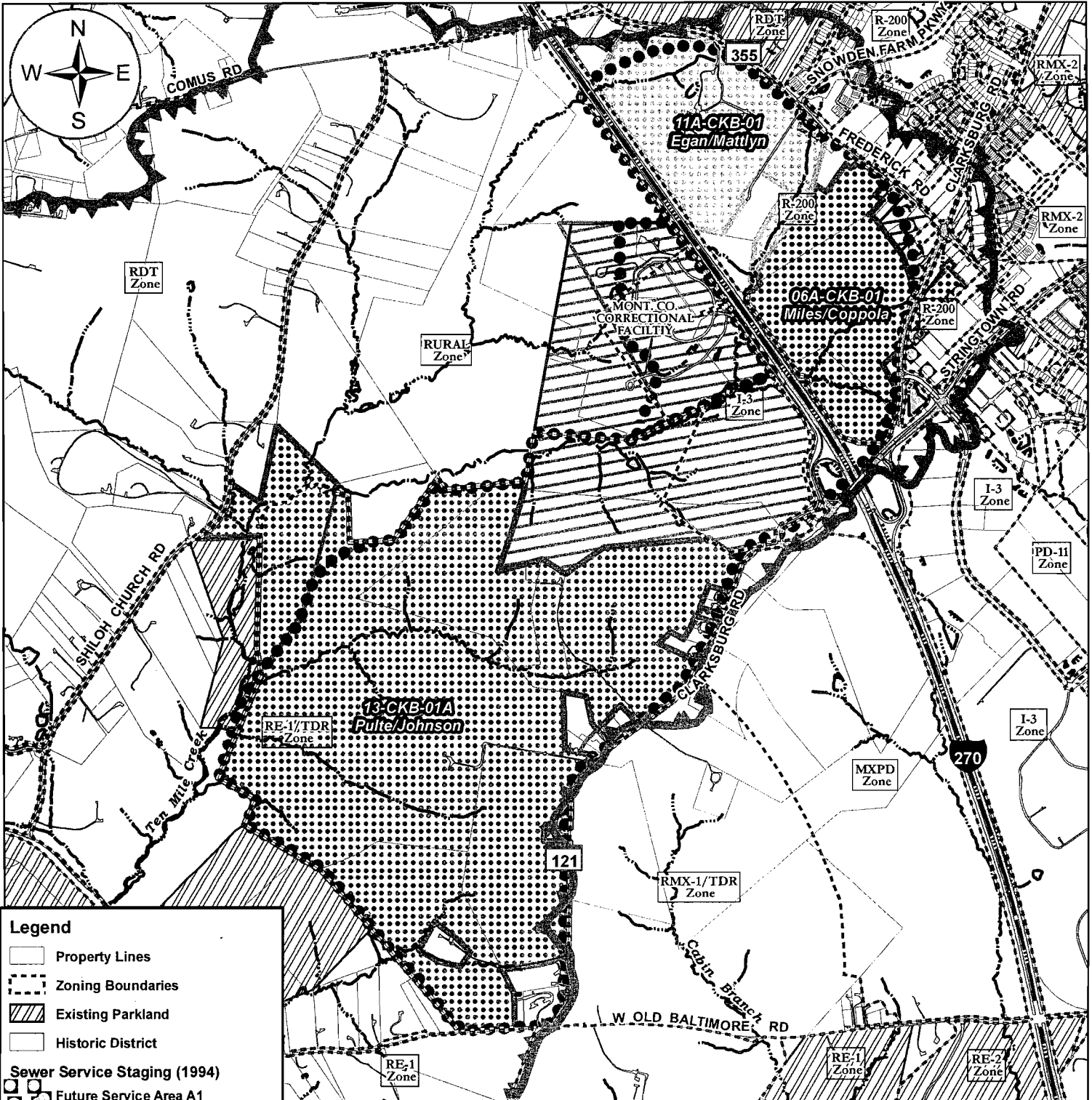
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<sup>4</sup> Council Staff has previously suggested several areas that need to be considered with regard to improving the current extension cost policies:

- First, a better allocation of costs between the direct beneficiaries of the extensions should be considered. The current process allows “free riders” to connect to extensions later, while the deficit costs are paid only by the initial applicant(s). The creation of special districts to finance these extensions may be a way to ensure costs are spread appropriately.
- Second, new financing approaches need to be considered that provide more financing flexibility to applicants. For instance, a lien on a property could allow some or all of the repayment of deficit costs to be deferred until the future sale of the property.
- Third, the public benefit gained (whether direct or indirect, as discussed above) from some extensions may warrant consideration of the use of other revenue sources (such as County or WSSC resources) to help defray the extension costs currently borne by applicants.

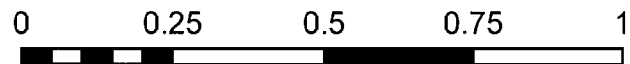


# Comprehensive Water and Sewer Plan Map: Ten Mile Creek Master Plan Amendment - Clarksburg Development Stage 4 WSCCR Cases



**Legend**

- Property Lines
- Zoning Boundaries
- Existing Parkland
- Historic District
- Sewer Service Staging (1994)**
- Future Service Area A1
- Future Service Area C
- Stage 4 Category Change Requests**
- 06A-CKB-01 (Miles/Coppola)
- 11A-CKB-01 (Egan/Mattlyn)
- 13-CKB-01A (Pulte/Johnson)
- County-Owned Sites
- CKB MP Development Stage 4
- Ten Mile Creek Watershed



Scale (Miles)

**Montgomery County, Maryland**  
Draft 2013 Comprehensive Water Supply  
and Sewerage Systems Plan

12/10/13

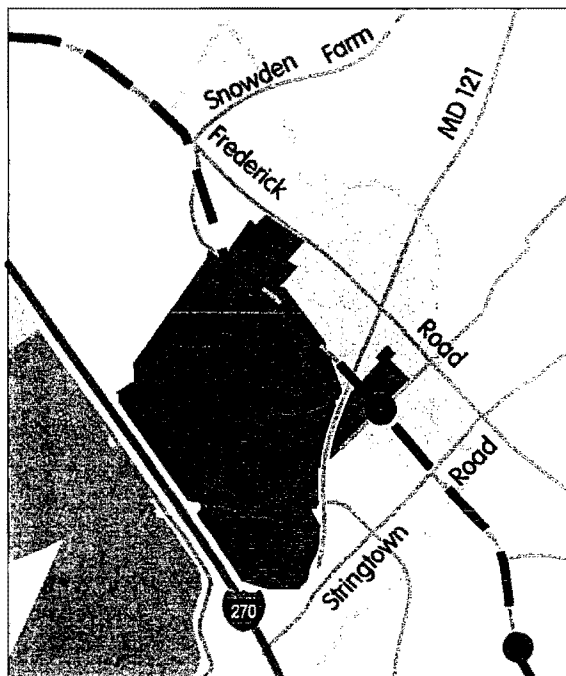


**DEP**  
Water and Was'  
Policy Gr

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- The Commercial Residential Zones offer an opportunity to balance a mix of uses for each development area, while providing significant amounts of housing and commercial uses that would help implement the 1994 Plan's vision for a complete corridor town. Development on the properties should nonetheless employ Environmental Site Design techniques and preserve undeveloped open space to reduce imperviousness. Should optional method development occur, construction of the MD 355 Bypass should be considered a priority as a major public benefit.
- This Plan Amendment recommends CR 0.75, C 0.5, R 0.5 H 85 for these properties. Maximum building heights of 85 feet are appropriate in the portion of the properties nearer I-270, and in areas along MD 121 closest to the I-270 interchange, where buildings will be less visible from the Historic District and Town Center. Development closest to the Historic District should be compatible with building heights in the Historic District, but not exceed 45 feet. There should also be a transition in heights on the Miles/Coppola properties, from the areas designated for lower building heights to those where taller buildings are envisioned.

### Clarksburg Historic District and Vicinity



- - - - - Master Plan Boundary  
 . . . . . Master Plan Proposed Roads  
 - - - - - Proposed CCT 1994 \*  
 ● Proposed CCT Station 1994 \*  
 Rural  
 RNC  
 R-200  
 I-3  
 CR  
 CRN

\* This map shows the general alignment for the Corridor Cities Transitway. See Map 5 for alternative alignments and transit station location.

The majority of Clarksburg's Historic District lies within the Ten Mile Creek watershed (see Map 9). The district straddles MD 355 from its intersection with Stringtown Road to west of its intersection with MD 121. The 1994 Plan identified the historic district as a focal point of the Town Center, encouraging sensitive and appropriate infill development in the district as an important component of the Plan's objectives for the Town Center. The Plan includes a series of design guidelines that are designed to retain the identity of the historic district by reinforcing building scale and historic building patterns—structures close to the road, deep back yards, and expanses of nearby green space—that characterized the original settlement. The Plan recommended renovations of existing buildings that would allow both residential and smaller scale commercial activities, like shops and offices. To protect the district, the Plan recommended reduced building heights and residential zones in the immediately adjacent areas, and recommended relocation of MD 355 to carry through trips away from the Historic District.

The existing zones in the district—convenience and general commercial (C-1 and C-2) and one-family residential (R-200)—are not adequate to accomplish the 1994 Plan's historic preservation goals, particularly the idea of accommodating residential and light commercial uses across the entire district. The Commercial

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Residential Neighborhood (CRN) Zone allows densities and building heights tailored more precisely to the Plan's land use objectives for the district, while supporting the Plan's recommendation to protect the scale and character of the historic district. It also allows property owners the flexibility to rehabilitate properties for a variety of potential uses, making renovation more attractive.

Although it is not in the Historic District, the area between the Miles-Coppola properties and existing MD 355 is also appropriate for the CRN Zone. This area—nine parcels totaling about 10.5 acres—is in the C-2 and R-200 zones. The County plans to build a new Clarksburg Fire Station on two of the parcels, and the remaining parcels are vacant, or improved with small homes or businesses. The CRN Zone would allow redevelopment that would complement Historic District development across MD 355 and create a consistent physical setting along the road.

#### **Recommendations**

- This Plan Amendment recommends CRN 0.25, C 0.25, R 0.25 H 35 for the portion of the historic district within the Amendment boundary. It should be noted that the proposed revision of the Zoning Ordinance includes language exempting from density calculations those historic resources that are recommended for preservation and reuse in the applicable master plan. Contributing resources in the Clarksburg Historic District shown on the Master Plan for Historic Resources would be eligible for the exemption.
- Design guidelines set out for the Historic District in the 1994 Plan remain in place and should be used to direct infill development. In addition, infill or new development must adhere to district-specific guidelines found in the Master Plan for Historic Preservation.
- This Plan Amendment recommends CRN 0.25, C 0.25, R 0.25 H 35 for the area between the Miles Coppola properties and existing MD 355.

#### **Transit Station**

The 1994 Plan shows a transit station where the MD 355 Bypass intersects Redgrave Place. The Plan recommends residential uses near the station at a scale sympathetic to the adjacent historic district, enabling local residents to walk to the transit stop. Clarksburg Elementary School is currently located in the area proposed for the station and the Plan recognizes that the school would remain for a number of years before its eventual relocation or replacement. It is important that the transit station maintain a strong pedestrian connection to the Town Center via Redgrave Place.

#### **Recommendations**

- Maintain the transitway to Clarksburg and in the vicinity of the Miles-Coppola properties, where it could serve primarily residential and employment uses, as well as development east of MD 355 and west of MD 121.
- Two alternative alignments for the Bypass are also shown and should be studied as part of a facility plan when the Miles-Coppola properties develop (see Map 9). The facility plan should study the need for the full 150-foot ROW for the bypass considering potential modifications to the design of the Corridor Cities Transitway. If an alternative alignment is chosen, the transit station location should retain a pedestrian connection to Redgrave Place and fulfill the intent of the 1994 Plan to connect the Town Center with the Historic District.



## Water and Sewer Service

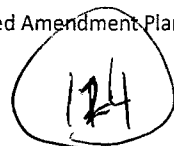
The 1994 Master Plan recommended the provision of public water and sewer service in the Stage 4 area of Clarksburg based on its initial zoning recommendations. This Plan Amendment continues to recommend public services to support the planned development for Stage 4. Specifically, public water and sewer service is recommended for the area identified as "Future Service Area C" in the 1994 Plan, which includes Stage 4, to support planned development densities, including recommended cluster development. The provision of public sewer service will help to reduce the potential for existing and future septic systems to impact the watershed. Public and individual water supply and wastewater disposal service in the master plan area is recommended to be provided in a manner consistent with the service policies included in the County's *Comprehensive Water Supply and Sewerage Systems Plan*. Properties within the Plan Area not already receiving public service or recommended for public service are expected to use individual, on-site water supply and/or sewerage systems (wells and septic systems).

The Ten Mile Creek watershed has no receiving sewers downstream of the Stage 4 area. Wastewater flow from the majority of Stage 4/Future Service Area C will need to be pumped out of the watershed into sewerage systems serving adjacent Stage 3 development. The *Clarksburg Stage 3 and 4 Area Facility Plan*, prepared for the Washington Suburban Sanitary Commission (WSSC), anticipated the need for planned Stage 3 area sewerage facilities to accept and handle pumped wastewater flows from Stage 4. Environmental concerns and competing development interests within Stage 4 could result in individual proposals for several wastewater pumping facilities scattered throughout the sewer service area. To minimize infrastructure operation and maintenance needs, and to create a logical, efficient, and environmentally responsible sewerage system for Stage 4, this amendment recommends WSSC's coordination of a comprehensive Stage 4 sewerage facility plan, with the participation of all major Stage 4 development interests. If necessary, this requirement should be incorporated into service area category change approvals for the Stage 4 sites.

The lack of public sewer service, needed to replace aging septic systems, has hampered improvement and redevelopment of the Clarksburg Historic District, an integral part of the Town Center. The County is investigating the design and construction of a public sewerage system to serve the historic district. If this sewerage system is constructed ahead of other Ten Mile Creek development, it would include a small, interim pumping station and force main tying into the Town Center system. This interim station and force main would be removed from service when gravity sewer service becomes available from the Miles-Coppola property. Planning and development of the Miles-Coppola project sewerage system will need to include, at a minimum, a gravity main extension to accept wastewater flows from the historic district.

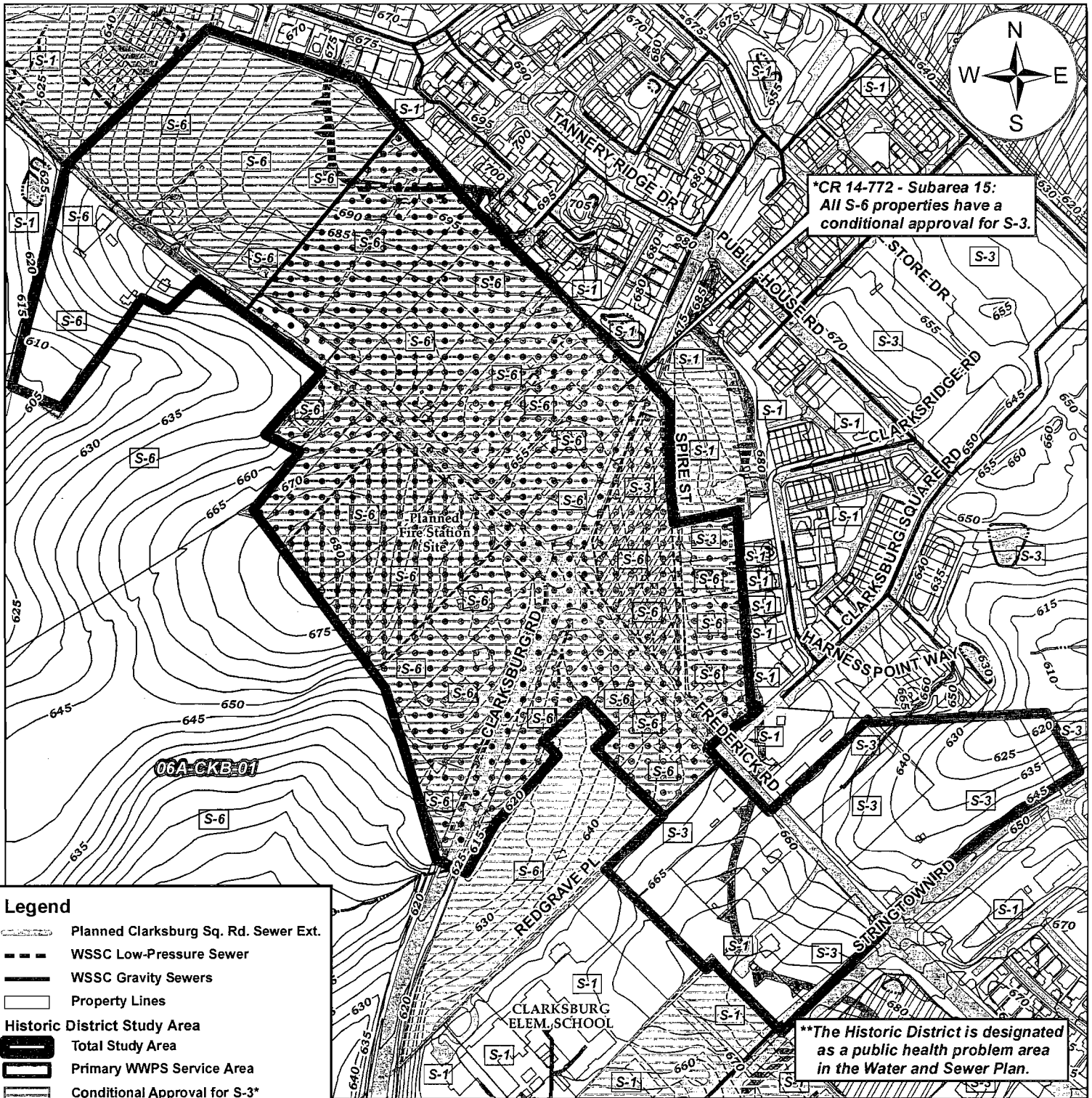
### Recommendations

- Approve amendments for public water and sewer service for the Stage 4 area (Future Service Area C) of Ten Mile Creek in the County's Water and Sewer Plan. Include a requirement for a comprehensive Stage 4 sewerage system facility plan. WSSC service and financing policies will require construction of needed water and sewer facilities as part of the development process by the property owner.
- Locate sewer main alignments and pumping station sites to minimize, as feasible, disturbance of environmental buffers and forested areas.
- Provide sewer service to the Historic District as part of the Stage 4 development, including at a minimum, the removal of interim wastewater pumping facilities in favor of gravity sewer service.



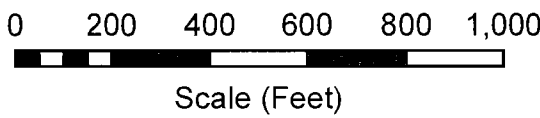


# Sewer Service Area Category Map: Ten Mile Creek Master Plan Amendment - Clarksburg Historic District



- Legend**
- Planned Clarksburg Sq. Rd. Sewer Ext.
  - WSSC Low-Pressure Sewer
  - WSSC Gravity Sewers
  - Property Lines
  - Historic District Study Area**
  - Total Study Area
  - Primary WWPS Service Area
  - Conditional Approval for S-3\*
  - Sewer Categories
  - Topography (5 ft. c.i.)
  - Existing Parkland
  - Ten Mile Creek Watershed
  - Clarksburg Historic District\*\*
  - Stage 4 Category Change Requests**
  - Miles-Coppola Project (06A-CKB-01)
  - Egan/Mattlyn Project 11A-CKB-01)
  - County-Owned Sites

\*\*The Historic District is designated  
 as a public health problem area  
 in the Water and Sewer Plan.



Montgomery County, Maryland  
 Draft 2013 Comprehensive Water Supply  
 and Sewerage Systems Plan

MONTGOMERY COUNTY  
MARYLAND

Department of  
Environmental  
Protection

DEP  
 Water and Waste  
 Policy Group

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12/9/13

Approved FY13-18 CIP

## Clarksburg Fire Station -- No. 450300

Category  
Subcategory  
Administering Agency  
Planning Area

**Public Safety**  
**Fire/Rescue Service**  
**General Services**  
**Clarksburg**

Date Last Modified  
Required Adequate Public Facility  
Relocation Impact  
Status

**May 14, 2012**  
**No**  
**None.**  
**Preliminary Design Stage**

### EXPENDITURE SCHEDULE (\$000)

| Cost Element                      | Total         | Thru FY11    | Est. FY12  | Total 6 Years | FY13       | FY14         | FY15     | FY16     | FY17     | FY18     | Beyond 6 Years |
|-----------------------------------|---------------|--------------|------------|---------------|------------|--------------|----------|----------|----------|----------|----------------|
| Planning, Design, and Supervision | 3,374         | 462          | 291        | 125           | 125        | 0            | 0        | 0        | 0        | 0        | 2,496          |
| Land                              | 1,660         | 1,660        | 0          | 0             | 0          | 0            | 0        | 0        | 0        | 0        | 0              |
| Site Improvements and Utilities   | 6,514         | 2            | 42         | 2,413         | 84         | 2,329        | 0        | 0        | 0        | 0        | 4,057          |
| Construction                      | 9,811         | 0            | 0          | 0             | 0          | 0            | 0        | 0        | 0        | 0        | 9,811          |
| Other                             | 5,577         | 4            | 0          | 0             | 0          | 0            | 0        | 0        | 0        | 0        | 5,573          |
| <b>Total</b>                      | <b>26,936</b> | <b>2,128</b> | <b>333</b> | <b>2,538</b>  | <b>209</b> | <b>2,329</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>21,937</b>  |

### FUNDING SCHEDULE (\$000)

|                   |               |              |            |              |            |              |          |          |          |          |               |
|-------------------|---------------|--------------|------------|--------------|------------|--------------|----------|----------|----------|----------|---------------|
| G.O. Bonds        | 26,366        | 2,128        | 333        | 1,968        | 209        | 1,759        | 0        | 0        | 0        | 0        | 21,937        |
| Intergovernmental | 570           | 0            | 0          | 570          | 0          | 570          | 0        | 0        | 0        | 0        | 0             |
| <b>Total</b>      | <b>26,936</b> | <b>2,128</b> | <b>333</b> | <b>2,538</b> | <b>209</b> | <b>2,329</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>21,937</b> |

#### DESCRIPTION

This project provides for a new Fire and Rescue Station in the Clarksburg area and the purchase of associated apparatus. Also, the project will provide a connection to the Washington Suburban Sanitary Commission (WSSC) sanitary sewer system for the fire station and for properties along MD 355 within the Clarksburg Historic District. The new facility will be located at 23420 Frederick Road, Clarksburg. The new station will be constructed in accordance with square footage specifications of the prototype Program of Requirements (POR) for a Class I Fire Station. A Class I Fire Station is approximately 22,600 gross square feet and includes apparatus bays, dormitory and support space, personnel living quarters, administrative offices, and a meeting/training room. This station will include offices for a Battalion Chief, a Police satellite facility, additional space for the Upcounty Regional Services Center and personal protective equipment storage totaling 2,589 square feet. On-site parking will be provided. Fire/Rescue apparatus to be purchased for this station includes an aerial truck, a tanker and a brush truck.

#### ESTIMATED SCHEDULE

The fire station planning and design is complete through the design development stage. The final design and construction of the Clarksburg fire station is deferred beyond six-years due to fiscal capacity. Funds for the design and construction for the sewer extension required to serve the fire station and the Clarksburg Historic District are included in FY13 and FY14.

#### COST CHANGE

Previously funded costs are for land and partial design costs for the fire station up to the design development phase. FY13-18 project costs represent preliminary cost estimates for the sewer extension only. Costs and funding reflected on this PDF will be revised after the County completes a cost-sharing agreement with the affected property owners in the Clarksburg Historic District and finalizes the scope of work with WSSC.

#### JUSTIFICATION

A new station will be necessary in this area due to the present and projected population density for the Clarksburg area. Clarksburg is expected to increase from a few thousand residents to more than 25,000. The Clarksburg Town Center is envisioned to include a mix of housing, commercial, retail, recreation and civic uses with the Clarksburg Historic District as the focal point. Residential areas include the Newcut Road neighborhood, the Cabin Branch neighborhood, the Ten Mile Creek area, the Ridge Road transition area, the Brink Road transition area, as well as projected residential development in the Transit Corridor District and the Gateway Center.

In addition, the property for the fire station and the surrounding properties are not connected to the sanitary sewer system; with failing septic systems, they do not meet modern wastewater disposal standards. Therefore, this project also includes the design and construction of the sanitary sewer connection for the fire station and 38 surrounding properties. This will help keep the Clarksburg Historic District a viable community, promote rehabilitation of existing structures, and allow for limited development that is consistent with the adopted master plan. This sanitary sewer connection was based on the 2010 WSSC report "Sewer Facility Plan for Historic Clarksburg."

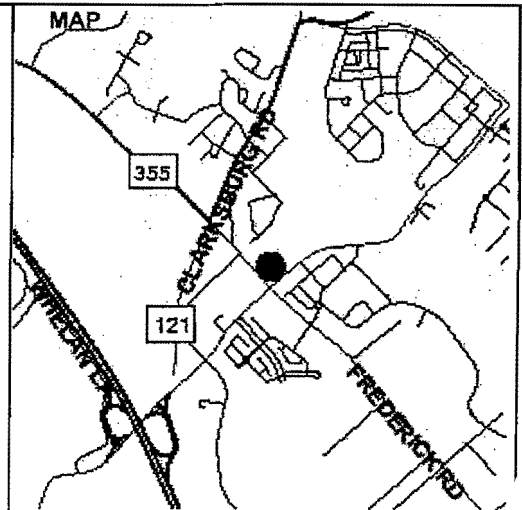
This project is recommended in the Fire, Rescue, Emergency Medical Services and Community Risk Reduction Master Plan approved by the County Council in October 2005 and the Montgomery County Fire and Rescue Service Station Location and Resource Allocation Work Group, Phase I Report, "Need for Upcounty Fire-Rescue Resource Enhancements, October 14, 1999. Development of this facility will help Montgomery County meet the NFPA 1710 Guidelines.

#### OTHER

Unexpended appropriation for the design and construction of the fire station has been removed. The County Council will consider a future appropriation request for the design and construction of the sewer extension once the County Council and County Executive have agreed upon a cost-sharing agreement for the sewer extension with the affected property owners. This agreement should equitably allocate the sewer extension costs between the County and the

| APPROPRIATION AND EXPENDITURE DATA |      |         |
|------------------------------------|------|---------|
| Date First Appropriation           | FY03 | (\$000) |
| First Cost Estimate                |      |         |
| Current Scope                      | FY13 | 4,999   |
| Last FY's Cost Estimate            |      | 3,952   |
| Appropriation Request              | FY13 | -726    |
| Appropriation Request Est.         | FY14 | 1,047   |
| Supplemental Appropriation Request |      | 0       |
| Transfer                           |      | 0       |
| Cumulative Appropriation           |      | 3,952   |
| Expenditures / Encumbrances        |      | 2,893   |
| Unencumbered Balance               |      | 1,059   |
| Partial Closeout Thru              | FY10 | 0       |
| New Partial Closeout               | FY11 | 0       |
| Total Partial Closeout             |      | 0       |

**COORDINATION**  
Montgomery County Fire and Rescue Service  
Department of Police  
Upcounty Regional Services Center  
Department of General Services  
Department of Permitting Services  
Department of Technology Services  
M-NCPPC  
State Highway Administration  
WSSC



## Clarksburg Fire Station -- No. 450300 (continued)

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private property owners who will benefit from the extension. The property for the fire station will require a sewer category change prior to the issuance of permits. Contributions reflect a planning level estimate of a WSSC health hazard subsidy for which Clarksburg Historic District property owners would be eligible for construction of new sanitary sewer mains.

### **OTHER DISCLOSURES**

- A pedestrian impact analysis will be performed during design or is in progress.

Clarksburg Fire Station (P450300)

FY15-20 CIP  
CE Recommended

Category Public Safety  
Sub Category Fire/Rescue Service  
Administering Agency General Services (AAGE29)  
Planning Area Clarksburg

Date Last Modified 1/6/14  
Required Adequate Public Facility No  
Relocation Impact None  
Status Preliminary Design Stage

|                                      | Total         | Thru FY13    | Est FY14 | Total 6 Years | FY 15    | FY 16    | FY 17    | FY 18        | FY 19         | FY 20        | Beyond 6 Yrs |
|--------------------------------------|---------------|--------------|----------|---------------|----------|----------|----------|--------------|---------------|--------------|--------------|
| <b>EXPENDITURE SCHEDULE (\$000s)</b> |               |              |          |               |          |          |          |              |               |              |              |
| Planning, Design and Supervision     | 3,867         | 712          | 1        | 3,120         | 0        | 0        | 0        | 1,962        | 574           | 584          | 34           |
| Land                                 | 1,663         | 1,663        | 0        | 0             | 0        | 0        | 0        | 0            | 0             | 0            | 0            |
| Site Improvements and Utilities      | 4,728         | 2            | 0        | 4,726         | 0        | 0        | 0        | 0            | 2,660         | 2,066        | 0            |
| Construction                         | 11,572        | 0            | 0        | 11,572        | 0        | 0        | 0        | 0            | 6,613         | 4,959        | 0            |
| Other                                | 6,579         | 5            | 0        | 6,574         | 0        | 0        | 0        | 0            | 5,165         | 1,409        | 0            |
| <b>Total</b>                         | <b>28,409</b> | <b>2,382</b> | <b>1</b> | <b>25,992</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>1,962</b> | <b>15,012</b> | <b>9,018</b> | <b>34</b>    |

|                                  | Total         | Thru FY13    | Est FY14 | Total 6 Years | FY 15    | FY 16    | FY 17    | FY 18        | FY 19         | FY 20        | Beyond 6 Yrs |
|----------------------------------|---------------|--------------|----------|---------------|----------|----------|----------|--------------|---------------|--------------|--------------|
| <b>FUNDING SCHEDULE (\$000s)</b> |               |              |          |               |          |          |          |              |               |              |              |
| G.O. Bonds                       | 28,409        | 2,382        | 1        | 25,992        | 0        | 0        | 0        | 1,962        | 15,012        | 9,018        | 34           |
| <b>Total</b>                     | <b>28,409</b> | <b>2,382</b> | <b>1</b> | <b>25,992</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>1,962</b> | <b>15,012</b> | <b>9,018</b> | <b>34</b>    |

APPROPRIATION AND EXPENDITURE DATA (000s)

|                                    |       |       |
|------------------------------------|-------|-------|
| Appropriation Request              | FY 15 | 0     |
| Appropriation Request Est.         | FY 16 | 0     |
| Supplemental Appropriation Request |       | 0     |
| Transfer                           |       | 0     |
| Cumulative Appropriation           |       | 3,226 |
| Expenditure / Encumbrances         |       | 3,115 |
| Unencumbered Balance               |       | 111   |

|                          |       |        |
|--------------------------|-------|--------|
| Date First Appropriation | FY 03 |        |
| First Cost Estimate      |       |        |
| Current Scope            | FY 15 | 28,409 |
| Last FY's Cost Estimate  |       | 28,709 |

**Description**

This project provides for a new Fire and Rescue Station in the Clarksburg area and the purchase of associated apparatus. The new facility will be located at 23420 Frederick Road, Clarksburg. The new station will be constructed in accordance with square footage specifications of the prototype Program of Requirements (POR) for a Class I Fire Station. A Class I Fire Station is approximately 22,600 gross square feet and includes apparatus bays, dormitory and support space, personnel living quarters, administrative offices, and a meeting/training room. This station will include offices for a Battalion Chief, a Police satellite facility, additional space for the Upcounty Regional Services Center and personal protective equipment storage totaling 2,589 square feet. On-site parking will be provided. Fire/Rescue apparatus to be purchased for this station includes an aerial truck, a tanker and a brush truck.

**Estimated Schedule**

The fire station planning and design is complete through the design development stage. Design to begin in FY19 with construction in FY19-20.

**Cost Change**

Previously funded costs are for land and partial design costs for the fire station up to the design development phase. Cost is added for completion of the design and construction of the project.

**Justification**

A new station will be necessary in this area due to the present and projected population density for the Clarksburg area. The Clarksburg population is expected to increase from 13,766 in 2010 to almost 40,000 by 2025. The Clarksburg Town Center is envisioned to include a mix of housing, commercial, retail, recreation and civic uses with the Clarksburg Historic District as the focal point. Residential areas include the Newcut Road neighborhood, the Cabin Branch neighborhood, the Ten Mile Creek area, the Ridge Road transition area, the Brink Road transition area, as well as projected residential development in the Transit Corridor District and the Gateway Center. This project is recommended in the Fire, Rescue, Emergency Medical Services and Community Risk Reduction Master Plan approved by the County Council in October 2005 and the Montgomery County Fire and Rescue Service Station Location and Resource Allocation Work Group, Phase I Report, "Need for Upcounty Fire-Rescue Resource Enhancements, October 14, 1999. Development of this facility will help Montgomery County meet the NFPA 1710 Guidelines.

**Other**

Project only includes cost to provide sewer service to the station. Alternative approaches to providing sewer service to the historic district are being explored.

**Disclosures**

A pedestrian impact analysis will be performed during design or is in progress.

**Coordination**

Montgomery County Fire and Rescue Service, Department of Police, Upcounty Regional Services Center, Department of General Services, Department of Permitting Services, Department of Technology Services, M-NCPPC, State Highway Administration, WSSC, Special Capital Projects Legislation [Bill No. 07-06] was adopted by Council May 25, 2006 and reauthorization will be requested prior to construction.




OFFICE OF THE COUNTY EXECUTIVE  
ROCKVILLE, MARYLAND 20850

Isiah Leggett  
County Executive

MEMORANDUM

February 27, 2014

TO: Craig Rice, President  
Montgomery County Council

FROM: Isiah Leggett, County Executive 

SUBJECT: Ten Mile Creek

On February 11, 2014, the Planning, Housing and Economic Development (PHED) and the Transportation, Infrastructure, Energy and Environment (T&E) Committees jointly made recommendations regarding future development of the Ten Mile Creek area of Clarksburg. I support these recommendations. This memorandum outlines my rationale for this position.

The 1994 Clarksburg Master Plan envisioned a new community concentrated around the Clarksburg Historic District, and recognized the importance of protecting the sensitive environmental features of the area. The 1994 Plan outlined a geographically staged development approach, with the fourth and final stage being potential development in the environmentally vulnerable Ten Mile Creek watershed. Decisions on development in Ten Mile Creek were to be delayed until a certain level of development occurred in the first three stages of the plan and were also to follow analyses conducted by the Department of Environmental Protection (DEP) on the impact to water quality of these earlier stages of development. The 1994 Plan directed Council to review the water quality analysis prior to making any decisions on potential development in Ten Mile Creek and provided Council the option of taking "land use actions as are deemed necessary" to ensure development in Ten Mile Creek was consistent with the overall visions of the 1994 Plan to build the Clarksburg community and protect the area's sensitive environmental resources.

In October 2012, with my support, the County Council directed the Planning Board to undertake a limited amendment to the 1994 Clarksburg Master Plan to determine whether development should be allowed to proceed in Ten Mile Creek under the zoning in the 1994 Plan or whether a re-balancing of the land use goals envisioned in the 1994 Plan for the Ten Mile Creek subwatersheds was in order given the results of an environmental analysis.

Since adoption of the 1994 Clarksburg Master Plan 20 years ago, development has not occurred as originally envisioned in the 1994 Plan, and over the course of seven work

sessions, the Committees heard from a number of experts about how current development compared to the development projected in the 1994 Plan with respect to population, housing, commercial activity, and employment opportunities.

Importantly, environmental scientists from DEP, state and federal environmental agencies, and local universities provided information to the Committees on the environmental resources in Ten Mile Creek, the current condition of the watershed, and the effects of previous development in Clarksburg on water quality. DEP provided a detailed analysis of the individual subwatersheds that would be affected by development, including the documentation of existing environmental features of each area and the potential effects of development on each subwatershed. Several fundamental conclusions can be drawn based on the analyses of these experts:

1. There is a relationship between the amount of imperviousness created by development in a watershed and the environmental health of the watershed. As a general rule, more imperviousness leads to greater environmental degradation of the watershed.
2. This degradation effect is more pronounced in areas with low levels of preexisting imperviousness. The negative effect of small increases in development activity in these areas is relatively much more significant than the effects that occur in areas with a greater amount of preexisting development. Sensitive aquatic species and critical environmental habitat in essentially undisturbed watersheds are affected by small increases in imperviousness. Once a certain level of imperviousness occurs, the most sensitive species and critical habitat is significantly affected and the habitat and sensitive species are lost.
3. In those areas where impervious levels are such that the most critical habitat and sensitive species have already been compromised, small amounts of additional imperviousness will have a lesser effect.
4. The exact points at which these transitions occur (e.g., the level of imperviousness at which the most critical habitats are affected) is complex and site specific, and therefore it is preferable to act cautiously since it is difficult, and likely not possible, to restore these habitats once they are lost.

The environmental information provided by DEP and other experts clearly leads to the conclusion that the level of imperviousness must be reduced from what was discussed in the 1994 Plan on all subwatersheds in Ten Mile Creek. This reduction, however, must be balanced against the need to achieve other land use goals for the Clarksburg community as well as maximizing development potential for the property owners in the Ten Mile Creek watersheds.

1. LSTM 110/LSTM 111 – These subwatersheds have the lowest current level of imperviousness in Ten Mile Creek at 1.6% and 1.2%, respectively, and are of the

highest quality. Although the Committees' recommended approach would increase the level of impervious surface on these properties from existing levels by more than 300% and 500%, respectively, the relatively low level of existing imperviousness would still, in the views of the environmental experts, provide an opportunity to maintain the high quality conditions of the streams in these vulnerable subwatersheds. The Plan should provide the property owners of these subwatersheds with the greatest development potential possible that is consistent with the land use goals for Clarksburg within the 6% imperviousness cap.

2. LSTM 201/LSTM 206 – These subwatersheds have greater levels of existing development, and some environmental features in these areas have already been affected by development and agricultural activities. In particular, portions of LSTM 206 were affected by earlier stages of Clarksburg development, and the overall level of existing imperviousness is the highest in the Ten Mile Creek watershed at 16.6%. Under the Committees' recommendations the level of imperviousness in these subwatersheds would increase from existing levels by 67% and 42%, respectively. Although less than recommended in the 1994 Plan, this level of imperviousness would allow development that would contribute to the vision of the Clarksburg community focused around the Clarksburg Historic District.
3. County Properties – In order to protect Ten Mile Creek, it is appropriate for the County to scale back development as well. As I have previously communicated, the County will forego development on the 128 acre County/Clarkwood site that had been previously identified as a potential site of a bus depot, and will not move forward with any expansion to impervious area at the County Correctional Facility. Finally, I have committed to revisiting the proposed location of the Clarksburg Fire Station in LSTM 206 to determine if an alternate location outside of the Ten Mile Creek watershed can be identified consistent with providing Clarksburg with appropriate public safety protection.

I congratulate the Committees for conducting the thorough and comprehensive review envisioned in the 1994 Master Plan and again, support the recommendations made for development in the Ten Mile Creek watershed.

- c: Joy Nurmi, Special Assistant to the County Executive  
Bonnie Kirkland, Assistant Chief Administrative Officers  
Bob Hoyt, Director, Department of Environmental Protection  
Kathleen Boucher, Chief Operating Officer, DEP  
Marc Hansen, County Attorney





AN HONORS UNIVERSITY IN MARYLAND

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February 27<sup>th</sup>, 2014

Montgomery County Council  
Attn: Marlene Michaelson, Administrator  
100 Maryland Ave  
Rockville, Maryland 20850

To the Council:

At the request of Administrator Michaelson, I am writing to elaborate on my testimony before the Council's Transportation, Infrastructure, Energy, and Environment committee earlier this month. The purpose of this letter is to provide a written explanation of the rationale on which I based my comments. I will address several specific issues before the Committee: (1) whether impervious cover is a reasonable basis for understanding the impacts of development; (2) what scientists have learned about how we measure biological responses and detecting change along gradients of increasing disturbance; (3) what we know about the relationship between different levels of land development and stream ecosystem response; and (4) what we have learned from studying various forms of Low Impact Development (LID) and Environmental Site Design (ESD) in Montgomery County, Maryland.

#### Impervious Cover as an Index of Development

The first comprehensive syntheses of ecological consequences in urban streams are less than 20 years old (Schueler 1994, Booth and Jackson 1997, Paul and Meyer 2001). Since that time, there have been several updates to the original review (Meyer et al. 2005, Walsh et al. 2005b, Wegner et al. 2009) with the next update to be developed this May prior to the Joint Aquatic Sciences Meetings in Portland, Oregon. In particular, Walsh et al. (2005b) summarized the growing recognition that urban streams (broadly defined as those streams that drain urban centers, industrial lands, or med-high density residential landscapes) suffer from a widespread "syndrome" of effects associated with land development. These effects include (but are not limited to) alteration of the natural water flow regime (surface and subsurface), altered rates of erosion and fine sediment transport, increases in dissolved material (potentially including both organic and synthetic contaminants), and a notable decline in sensitive biotic taxa (e.g., fish, macroinvertebrates, and algae). Early reviews all noted the strong association between the effects of the urban stream syndrome and degree of watershed imperviousness (Booth 2005, Schueler et al. 2009).

More recently, scientists have experimented with refining geographic measures of urbanization that include a more comprehensive set of impacts than "just" impervious cover. For example, Walsh et al (2005a) defined "effective impervious area" as imperviousness directly connected to streams by engineered drainage. Cuffney and

Falcone (2009) developed a Metropolitan Area Normalized Urban Intensity Index (MA-NUII) that attempted to modify estimates of developed land by both housing and road density. Whereas both of these refinements sound reasonable in theory, in practice investigators have yet to demonstrate that they perform better for detecting the effects of land development than simple maps of impervious cover. Instead, investigators have largely found that such modifications may be somewhat more effective in certain regions than in others (Detenbeck et al. 2013). However, because these modifications are simply augmentations of impervious cover, they are often statistically indistinguishable. What does seem clear is that impervious cover (or road crossings, or dense development) near to streams seems more detrimental than impervious cover further away from streams and other sensitive areas (King et al. 2005, Van Sickle and Johnson 2008, Detenbeck et al. 2013).

Another issue is the relation between estimates of impervious cover derived from 30m satellite data and county-level data. Estimates of the USGS National Land Cover Dataset (NLCD) relative to county level data in Maryland suggest two things: (1) a general underestimate of imperviousness by satellite data across most levels of imperviousness of approximately 5% (Greenfield et al. 2009, Smith et al. 2010), (2) that levels of imperviousness <10% were estimated *more accurately* than the rest of the range (Smith et al. 2010). In general, depending on the type of imperviousness used our experience in Maryland suggests satellite-derived estimates of low levels of impervious cover underestimate values <5% by between 25% and 50%. For example, 3% derived from satellite could be reasonably interpreted as ~3.75%-4.5% in county level data.

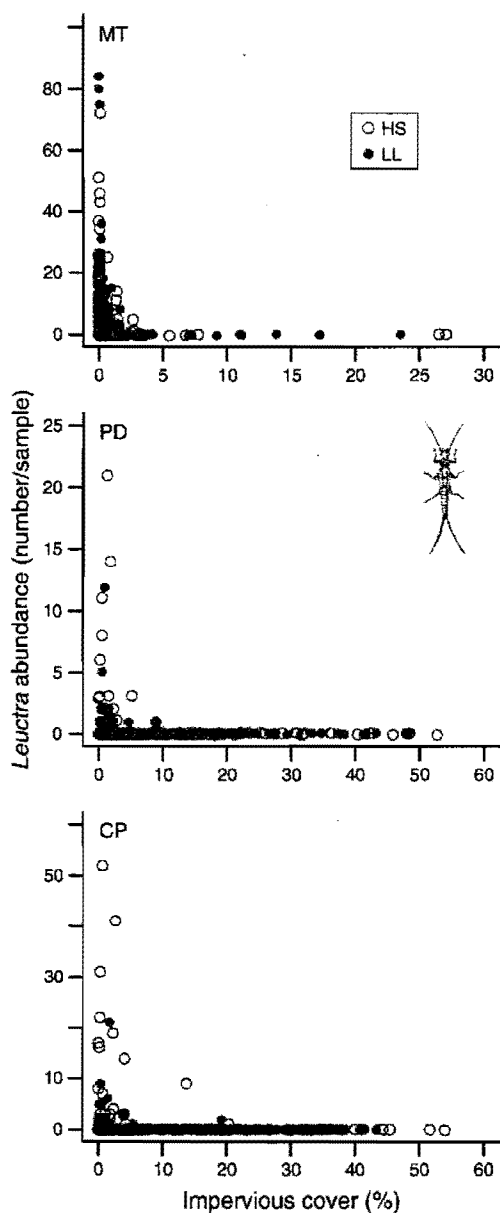
**Take Home Message:** It is critical to remember that it is not necessarily the impervious cover *per se* that causes observed degradation—imperviousness is certainly a part of the syndrome but it is also the strongest, most detectable indicator available for the many correlated and contributing factors associated with urbanization.

#### Detecting and Measuring Biotic Change

In their meta-analysis, Walsh et al. (2005b) were the first to emphasize uncertainty in the form of biological responses to urban development. Prior to that point, many biotic analyses had been performed using indices of biotic integrity that, due to their limited value range, *necessarily* generated smooth response curves. Around the same time, King et al. (2005), Walsh et al. (2005a), and Walters et al. (2005) all demonstrated strong non-linear effects (i.e., a zone of excessively large change in response to an incremental increase in development) of urban development on biotic communities using responses other than indices. More detailed analysis since then has demonstrated that biotic responses to urban gradients in eastern streams, and indeed throughout the United States, are rarely smooth or linear (Utz et al. 2009, Baker and King 2010, Hildebrand et al. 2010, King and Baker 2011, King et al. 2011, Qian et al. 2012, Detenbeck et al. 2013). Indeed, King and Baker (2010) pointed out that there are very good reasons to expect non-linear responses to anthropogenic environments that depart from conditions experience by biota in their evolutionary history. Whereas there are methodological differences, all of the aforementioned studies agree that low levels (i.e., <10%) of watershed impervious cover cause greater degradation in biotic communities than higher (>20%) levels.

A complication in interpreting studies of biotic responses to urbanization has to do with whether abundance (counts) or occurrence (presence-absence) data are used to derive estimates of change, and whether the analysis methods are designed to detect *resistance* or *exhaustion* thresholds (Cuffney et al. 2010). Detection of resistance thresholds often involves abundance data and investigators are concerned with detecting changes relative to undisturbed or pre-disturbance patterns (King and Baker 2014). Exhaustion thresholds

usually involve occurrence data and investigators are often more concerned with detecting the absence of particular species. In rare cases, investigators consider both levels of response. The former analysis is most likely useful for detecting change relative to background conditions from which population resilience and recovery may be possible, the latter is mostly useful for detecting levels sufficient to alter a population beyond its ability to recover on its own. The following figure from King et al. 2011 shows the abundance response of a particular stonefly (*Leuctra* sp.) to impervious cover in small, high slope streams (HS) and large, low-slope streams (LL) throughout mountain, piedmont, and coastal plain physiographic regions in Maryland:



What this figure illustrates is the dramatic changes in the abundance and occurrence pattern associated with incremental increases in watershed impervious cover. It is difficult to tell whether this stonefly shows resistance to impervious cover or whether it proceeds quickly to exhaustion once its population declines (e.g., apparently *Leuctra* is able to persist at higher levels of imperviousness in some CP streams). Such responses are not

at all uncommon among sensitive macroinvertebrates, yet some aggregate indices may have trouble representing such declines.

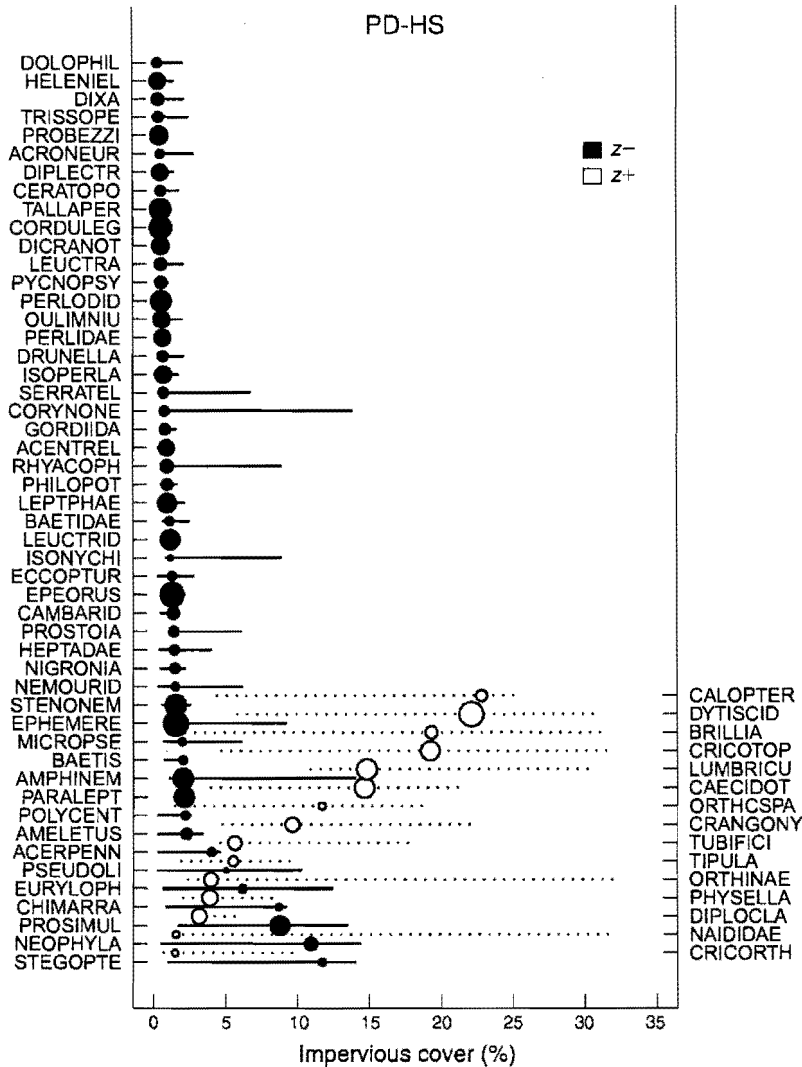
Baker and King (2010), King and Baker (2010), and Detenbeck et al. (2013) show that some aggregate biotic metrics have trouble detecting change precisely. For this reason, investigators have increasingly relied on greater specificity in terms of species guilds, taxonomic groups, or other form of biotic summary that integrates detailed knowledge of species life history (Baker and King 2013). Relatively new analytical approaches used as reference for my testimony such as The Biological Condition Gradient (BCG; Davies and Jackson 2006) and Threshold Indicator Taxa Analysis (Baker and King 2010) reflect an improved ability to detect change based on more detailed biological information and collectively, these results and others suggest that the smooth decline often associated with imperviousness (e.g., Schueler et al. 2009, Cuffney et al. 2010) is probably insensitive to the rate at which biotic change actually occurs.

**Take Home Message:** Biotic responses to impervious cover are nonlinear, and change is greatest at low levels of land development. Recent emphasis on resistance thresholds versus exhaustion thresholds obtained by increasing biological detail and distinguishing different responses has provided new insight when compared to studies that rely solely on aggregate indices. The indices are not wrong, but may not reveal precisely at what level of disturbance large changes in their component biotic populations occur.

#### Biotic responses at different levels of development

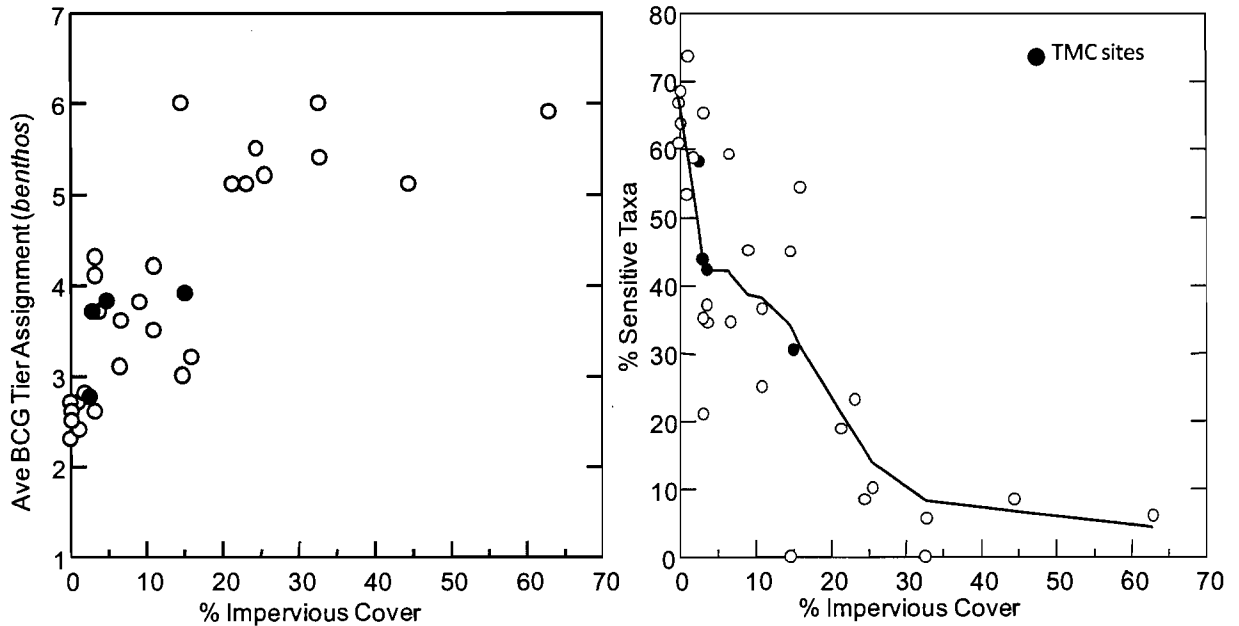
The most recent and intensive analyses by independent research teams since the last urban stream synthesis (i.e., Utz et al. 2009, King et al. 2011, Qian and Cuffney 2012, Detenbeck et al. 2013) ALL agree that biotic responses to incremental increases in impervious cover are sharpest and most dramatic at levels <5% impervious cover, and often less so between 5-10%. At levels above ~10% watershed impervious cover, there is greater variation, and thus less certainty about how biota in different streams with different interacting effects respond.

With the understanding that individual watersheds can respond differently and idiosyncratically depending on a host of factors, it is worth noting that studies specific to Maryland's Piedmont (Utz et al. 2009, King et al. 2011) are part of this result. A quick glance at the results from King et al. 2011 for smaller, high gradient streams should make the reasons for this consistent result abundantly clear to even the casual observer:



This graph depicts the greatest change in abundance and occurrence that could be robustly detected from the Maryland Biological Stream Survey dataset. On the left are species and other taxonomic groups that decline in abundance (sensitive taxa; filled circles) in response to impervious cover. On the right are those that increase in abundance (tolerant taxa; open circles). The circles indicate the level of impervious cover and their size reflects the magnitude of the change. Horizontal lines indicate uncertainty (greater for rare or variable species) about where the change occurs. The first thing that is apparent is a difference in number from left to right. Fully 25% of nearly 200 organisms sampled across 405 Piedmont streams declined in response to impervious cover. This decline is reflected in the Biotic Condition Gradient established by US-EPA working in concert with MGC-DEP explicitly for Montgomery County and context for Ten Mile Creek. Below are some of the results of the BCG:

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The left graph shows a progression from “minimal changes to structure and function” (BCG Tier 2) to “evident change in structure, minimal changes in function” (BCG Tier 3) to “moderate changes in structure, evident changes in function” (BCG Tier 4). There are formal narrative criteria for Tiers 5 and 6, but from a biological perspective they are so altered as to be unrecognizable...a wholesale transformation. The increase in scatter along this graph from 5-20% reflects both temporal and spatial variability during reorganization of the biotic community in response to various perturbations associated with development as well as the challenge in interpreting the response. There is little difficulty, however, to interpreting the biological signals at levels in excess of 20%.

The right graph tracks the % of taxa identified beforehand by a team of experts as “sensitive” in the stream samples with a smoothed trend line. Note both the strong agreement between the story told by King et al. 2011 and the BCG results—using two independent methods with different data sets from Maryland’s Piedmont. Below 5% imperviousness, streams are generally in reasonably good condition; above this level, there is substantial variation in how streams respond watersheds but their tends to be a rapid decline in condition (Ten Mile Creek examples tend to be on the low end, indicating a potential for greater sensitivity to development than other streams). At levels >20% imperviousness, there is relatively little response to incremental amounts of development, and beyond 25% all sensitive taxa seem to have declined and all tolerant taxa seem to have increased. It is worth noting that though a few sensitive taxa may occur at high levels (>20%) of impervious cover, taxa richness (overall #) often decreases too, so percentages may be inflated by just a few sensitive individuals, and it is rarely clear whether their presence is persistent and meaningful or simply the last vestiges of an unsustainable population. There is enough variation around all these levels to create some uncertainty about expected change at certain levels of imperviousness, but the data are sufficiently consistent to warrant reasonable confidence about different rates of change expected among those watersheds with <5% imperviousness, those watersheds with 5-20%, and those watersheds with >25% imperviousness.

**Take Home Message:** In order to keep streams in good condition, any ecologist will tell you to keep impervious cover under 5% by as much as possible to minimize risk. However, when I was asked whether 6% or 8% or 12% was best for the Pulte property

(LSTM 110 and 111) and the streams that drain it, the evidence is clear that due to their status among the best examples of stream condition in the County, restricting levels as close to 5% as possible stands the best chance (with LID, ESD, and development at or near the divide and away from stream channels) of protecting the valuable natural resource they represent. When asked about the choice of going from existing 16% to either 21% or 24% in LSTM 206 associated with the Miles-Coppola and Egan properties, the evidence suggests that proceeding from 16% to >20% will cause real and substantial degradation to the stream, but there is little evidence to suggest that 24% will produce substantially greater degradation than 21% imperviousness. Although the data does show changes at these levels, the variation is so great from stream to stream that there is far less confidence about conditions at any specific level in excess of 20%.

#### Results from recent study of temporal trends and BMPs in Little Seneca Creek

With so much focus in the planning meetings on distinguishing between different levels of impervious cover, several key points came up that I believe are worth further emphasis. First, although many of the studies documenting the impacts of impervious cover for streams have involved "older" forms of land development prior to existing regulatory standards, there is little evidence to support the notion that newer forms have succeeded in adequately protecting aquatic resources. There is strong evidence that engineered solutions have been quite effective at modifying flow patterns and the hydrologic response to certain storm events, there is also encouraging evidence that efforts to mitigate or reduce the sediment loads to streams during development have been modestly successful as well. However, despite these successes, neither have been enough to prevent further degradation in stream condition.

Part of the reason that BMPs have yet to fully protect streams is that no BMP can adequately address all of the stresses that urbanization implies for a watershed. Instead, BMPs have focused on the most obvious linkages, often presenting unexpected consequences and new environmental problems as often as solutions. For example, one consequence of extensive efforts to mitigate storm water in the Little Seneca has been *increases* in nitrate concentrations. This does not bode well for the County's TMDL obligations. In attempting to understand the complex linkages between watersheds and stream biota, science has not yet discovered a simple comprehensive cure for the symptoms of land development.

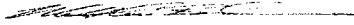
Another concept that sometimes gets lost in planning is that land development causes *progressive degradation*. By this I mean that perturbation occurs during land clearing and construction, but also following completion in the way the entire hydrologic system response to extreme events that overcome design specifications. BMPs have focused on limiting peak flows, but no BMP has unlimited capacity, droughts are also exacerbated by development, and no BMP fully addresses the cumulative and accumulating chemical impacts associated with continued human activity and land use (e.g., further construction, retrofits, repairs, road salting, fertilization, toxics). Despite the detailed plans discussed at the meetings I attended, no one addressed the impacts caused by further development of the historic district nor were implied plans to construct a Clarksburg bypass through the headwaters of Ten Mile Creek brought to bear on these decisions. Given nearby source populations, stream biota may maintain population numbers in the face of this degradation for a time and resist collapse, but if a goal of the Council is to preserve the integrity of the watershed these considerations should raise concern.

**Take Home Message:** Despite the repeated promise of BMPs and ESD, no development is without substantial risk of degradation in both the short and long term, and best conceived as a chronic and occasionally acute stress on aquatic communities.



I hope this letter is helpful in the Council's deliberations.

Submitted respectfully,



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MEMORANDUM

March 28, 2014

TO: County Council

FROM: Marlene Michaelson, Senior Legislative Analyst  
GO Glenn Orlin, Deputy Council Administrator  
KL Keith Levchenko, Senior Legislative Analyst

SUBJECT: Resolution to Approve the Ten Mile Creek Area Limited Amendment to the Clarksburg Master Plan and Hyattstown Special Study Area

Attached is a Resolution approving the Ten Mile Creek Area Limited Amendment to the Clarksburg Master Plan and Hyattstown Special Study Area. A draft of the resolution was circulated early last week and Staff made all recommended changes to the draft that improved the clarity of the resolution and were consistent with Council straw votes on the Master Plan Amendment. Other than typographical and grammatical errors, all additional changes to the draft resolution are indicated by double underscoring and deletions by double bracketing.

The Council should note that there are a few issues not previously considered by the Council that are addressed in the resolution.

**Zoning**

**There are several small properties within the planning boundaries adjacent to the Miles-Coppola and Egan-Mattlyn properties that were not addressed in the Planning Board Draft and therefore were not discussed by the Council.** The Draft Master Plan assumed that the R-200 zoning on each property would be reconfirmed. Staff recommends adding 2 new paragraphs to the Master Plan to specifically address these properties (see lines 1071 to 1090).

Three properties at the northern tip of the planning area are zoned R-200 (see properties 1, 2, and 3 on © 1). Since these properties are partially developed and not close to the town center core, **Staff recommends retaining the existing R-200 zoning** and removing the 1994 recommendation for a Planned Development (PD) floating zone. There are five other properties between the Miles-Coppola and Egan-Mattlyn properties (see properties 4, 5, 6, 7 and 8 on © 1). Since they are located between properties recommended for R-90 zoning, Staff recommends rezoning both to the R-90 zone and removing the Planning Department recommendation. These properties are also included in the area recommended for the Environmental Overlay zone.

**Property 9** on © 1 is along Clarksburg Road, south of the portion of the Miles-Coppola property recommended for Commercial Residential Town (CRT) zoning. Staff recommends that this property also be rezoned CRT. It is also within the boundary of the Environmental Overlay Zone.

**Property 10** is directly adjacent to the Historic District and within the overlay zone and it is also the location of the proposed fire station. In the Master Plan Amendment, these properties were recommended for Commercial Residential Neighborhood (CRN) zoning to be consistent with the Historic District. Although the draft of the Resolution designated these properties CRT 0.5, C 0.5, R 0.5, H 45<sup>1</sup>, upon further consideration Staff believes that the Council’s rationale for increasing the height and density in the Historic District does not apply to these primarily undeveloped lots adjacent to the Miles-Coppola property and therefore recommends retain the Planning Board Master Plan recommendation for CRN 0.25. Staff notes that there are 5 vacant lots, 2 with homes and 2 lots developed as commercial with floor area ratios (FARs) of 0.07 and 0.12, so the Planning Board Draft recommendation for CRN 0.25 designation still provides the developed properties the opportunity to expand.

A summary of the ownership, size, and zoning for each property appears below:

| Prop # | Owner                                | Size (acres) | Current Zone   | Proposed Zone | Comments                                         |
|--------|--------------------------------------|--------------|----------------|---------------|--------------------------------------------------|
| 1      | Dorothy Schaefer                     | 1.11         | R-200          | R-200         | Single Family Dwelling with outbuildings         |
| 2      | Seventh Day Adventists               | 2.02         | R-200          | R-200         | Conference Center                                |
| 3      | Monacco Exclusive Renovation         | 6.12         | R-200          | R-200         | House and Barns                                  |
| 4      | Coleen Culbertson                    | 0.58         | R-200          | R-90          | Single Family House                              |
| 5      | Payne Family LLC                     | 2.9          | R-200          | R-90          | Vacant                                           |
| 6      | Peter Henderson                      | 0.23         | R-200          | R-90          | Single Family House                              |
| 7      | Michael Redgrave                     | 6.23         | R-200          | R-90          | Vacant, no access and in Environmental Buffer    |
| 8      | Potomac Electric                     | 7.20         | R-200          | R-90          | Electric Power Substation                        |
| 9      | Ralph Wright                         | 1.17         | R-200          | CRT           | Vacant                                           |
| 10     | Proposed CRN Properties              | 11.5         | R-200, one C-2 | CRN           | Includes Bank and Gas Station                    |
| 11     | Area outside of Master Plan Boundary |              | R-200 and RDT  | No Change     | Single Family Dwelling (part of #3) and Parkland |

<sup>1</sup> C – Commercial; R – Residential; H – Height.



## **Historic District Design Guidelines**

The Planning Board Draft Plan recommends that the design guidelines for the Historic District in the 1994 Plan remain in place; however, Staff believes that some of the guidelines conflict with the Council's decisions regarding the zoning for the Historic District and, therefore, Staff has rewritten the design guidelines (see lines 1002 to 1022).

New language has been added to the draft to clarify that the requirement for environmental buffers beyond those required by regulation does not apply to Historic District properties (see line 990).

## **Forest Cover**

The Council received numerous e-mails suggesting the Council add a Master Plan requirement for 65 percent forest cover. Staff does not support having a requirement, since the only way it could be achieved would be by planting additional forest on land in rural areas, which are not likely to be redeveloped. However, Staff believes it would be appropriate to add this as a **goal** (rather than a requirement) for the Master Plan and to recommend the development of incentives to encourage additional forest cover (see lines 427 to 429 and 535 to 537). The language has been added to the draft to clarify that efforts to achieve this goal will be voluntary.

## **Transportation**

In the transportation recommendations, Staff has inserted the following sentence: "Set the minimum right-of-way of MD 355 from Redgrave Place to Roberts Tavern Drive at 50 feet." This is a technical correction to the Countywide Transit Corridors Functional Master Plan, which erroneously identified the minimum right-of-way in the segment as 120 feet. Table 2 has also been revised to reflect this correction.

## **Water and Sewer**

The section on Water and Sewer on pages 30 to 31 has additional language that describes the Council discussion of the drinking water issue, and also new language recommending a comprehensive water and sewer category change and indicating which properties are eligible for public water and sewer (all properties zoned RNC, R-200, R-90, CRT, and CRN). The implementation section also recommends the comprehensive category change.

## **Follow Up Regulatory Actions**

The master plan sets forth the requirements for protection of Ten Mile Creek, but additional action is necessary to assure that these requirements are codified as appropriate. Staff has added the following language to the resolution (see lines 1608 to 1612 in the General section at the end of the resolution) to indicate the need for follow-up work:

The Planning Department should work with Executive Branch Departments, including the Department of Environmental Protection and Department of Permitting Services, to take all actions necessary to implement the recommendations in this Master Plan (such as a comprehensive sewer

and water category change). In addition, these agencies should identify any changes in regulation or law necessary to implement the Master Plan recommendations.

This language is fairly broad because agency staff have not finished identifying changes that may be necessary.

A comprehensive amendment to the **Ten Year Water Supply and Sewerage Systems Plan** is needed to allow community water and sewer service for the areas approved for cluster development. Executive staff will prepare such an amendment as soon as the Council approves the Master Plan Amendment.

The **overlay zones** are needed to implement expanded environmental buffers to protect sensitive resources; limit disturbance and set imperviousness limits; and vary the requirements for lot sizes, building types, and setbacks as prescribed in the Plan and supported during the Council's worksession. All of the changes adopted in the overlay zone will be incorporated into the Planning Board's *Environmental Guidelines for Development* so that all Natural Resources Inventory/Forest Stand Delineation documentation and Forest Conservation Plans will reflect the protections afforded by the overlay zone.

Staffs from the Department of Environmental Protection (DEP), Department of Permitting Services (DPS), and the Planning Department are working with the stakeholders to assure all the recommendations of the plan are implemented and to determine whether any further changes in regulations are needed to implement the Council's recommendations. Some examples of areas that should be explored further include policies and procedures to further promote non-erosional stormwater conveyance to the floodplain and receiving streams, and options to strengthen the requirements for soil de-compaction and organic soil amendments.

Resolution No.: \_\_\_\_\_  
Introduced: \_\_\_\_\_  
Adopted: \_\_\_\_\_

1  
2  
3 **COUNTY COUNCIL FOR MONTGOMERY COUNTY, MARYLAND**  
4 **SITTING AS THE DISTRICT COUNCIL FOR THAT PORTION**  
5 **OF THE MARYLAND-WASHINGTON REGIONAL DISTRICT**  
6 **WITHIN MONTGOMERY COUNTY, MARYLAND**  
7  
8

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9  
10 By: County Council  
11

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12  
13 **SUBJECT:** Approval of Planning Board Draft 10 Mile Creek Area Limited Amendment to the  
14 Clarksburg Master Plan and Hyattstown Special Study Area

- 15  
16  
17 1. On October 25, 2013, the Montgomery County Planning Board transmitted to the County  
18 Executive and the County Council the Planning Board Draft 10 Mile Creek Area Limited  
19 Amendment to the Clarksburg Master Plan and Hyattstown Special Study Area.  
20  
21 2. The Planning Board Draft 10 Mile Creek Area Limited Amendment to the Clarksburg Master  
22 Plan and Hyattstown Special Study Area amends the Approved and Adopted 1994 Clarksburg  
23 Master Plan and Hyattstown Special Study Area, as amended. It also amends the General Plan  
24 (on Wedges and Corridors) for the Physical Development of the Maryland-Washington  
25 Regional District in Montgomery and Prince George's Counties, as amended; the Master Plan  
26 of Highways and Transitways within Montgomery County, as amended; the Countywide  
27 Bikeways Functional Master Plan, as amended; and the Legacy Open Space Functional Master  
28 Plan, as amended.  
29  
30 3. On December 20, 2013, the County Executive transmitted to the County Council his fiscal  
31 impact analysis for the 10 Mile Creek Area Limited Amendment to the Clarksburg Master Plan  
32 and Hyattstown Special Study Area.  
33  
34 4. On December 3 and 5, 2013, the County Council held a public hearing regarding the Planning  
35 Board Draft 10 Mile Creek Area Limited Amendment to the Clarksburg Master Plan and  
36 Hyattstown Special Study Area. The Plan was referred to the Planning, Housing, and  
37 Economic Development Committee for review and recommendation.  
38  
39 5. On January 28, 2014, the County Council held an additional public hearing for the sole purpose  
40 of determining whether the Council should expand the boundaries of the Master Plan  
41 Amendment area to include the entire Historic District, even though a small portion of it is  
42 outside the Ten Mile Creek Watershed.  
43  
44 6. On January 13, 17, 24, 27, and 29 and February 4 and 11, 2014, the Planning, Housing, and  
45 Economic Development Committee and the Transportation, Infrastructure, Energy and

46 Environment Committee held joint worksessions to review the issues raised in connection with  
47 the Planning Board Draft 10 Mile Creek Area Limited Amendment to the Clarksburg Master  
48 Plan and Hyattstown Special Study Area.  
49

50 7. On March 4, 2014, the County Council reviewed the Planning Board Draft 10 Mile Creek Area  
51 Limited Amendment to the Clarksburg Master Plan and Hyattstown Special Study Area and the  
52 recommendations of the Planning, Housing, and Economic Development Committee.  
53

54  
55 **Action**  
56

57 The County Council for Montgomery County, Maryland, sitting as the District Council for that portion  
58 of the Maryland-Washington Regional District in Montgomery County, Maryland, approves the  
59 following resolution:  
60

61 The Planning Board Draft 10 Mile Creek Area Limited Amendment to the Clarksburg Master Plan and  
62 Hyattstown Special Study Area, dated October 2013, is approved with revisions. County Council  
63 revisions to the Planning Board Draft 10 Mile Creek Area Limited Amendment to the Clarksburg  
64 Master Plan and Hyattstown Special Study Area are identified below. Deletions to the text of the Plan  
65 are indicated by [brackets], additions by underscoring.  
66  
67

68 **Introduction**  
69

70 In October 2012, the Montgomery County Council directed the Planning Board to undertake a limited  
71 amendment of the 1994 Clarksburg Master Plan (the 1994 Plan) because environmental analyses  
72 showed continued uncertainty about the ability to protect sensitive resources in Ten Mile Creek if full  
73 development occurred under the original [plan] Plan recommendations. This [amendment] Amendment  
74 includes the watershed of Ten Mile Creek, which is a high quality stream within the Plan area  
75 boundaries. Ten Mile Creek drains portions of Clarksburg west of I-270, as well as part of the Town  
76 Center, approximately between I-270 and MD 355, which is now the main route through Clarksburg  
77 (see Map 1). The Amendment also includes the entire Clarksburg Historic District, even though a  
78 portion of the District is outside of the Ten Mile Creek watershed.  
79

80 This [amendment] Amendment includes recommendations for achieving the desired community  
81 elements envisioned for Clarksburg in the 1994 [plan] Plan, while protecting the quality of Ten Mile  
82 Creek. These objectives required studying the extent to which land use and environmental site design  
83 could combine to help protect natural resources and maintain high water quality in the watershed.  
84 Various transportation and land use alternatives were also examined for their effect on traffic and  
85 transit services and the balance of jobs and housing.  
86

87 [While this amendment] This Amendment retains the core of the 1994 Plan’s vision, [it refines]  
88 refining the 1994 Plan’s recommendations to better achieve two important objectives: the creation of a  
89 complete, well-defined corridor town that provides jobs, homes, and commercial activities; and the  
90 preservation of natural resources critical to the County’s well-being. This Limited Amendment covers  
91 only the Ten Mile Creek watershed and portions of the Historic District outside the watershed; the  
92 1994 Plan, as amended in 2012, continues to guide land use development in the rest of Clarksburg.

93 Where this Limited Amendment revises or alters the underlying vision of the 1994 Plan, the text makes  
94 note of those changes.

95  
96 The [amendment] Amendment further draws on the expertise of independent environmental  
97 consultants who studied the effects of several development scenarios on Ten Mile Creek’s water  
98 quality, [and] transportation consultants who evaluated the effect of land use changes on Clarksburg’s  
99 existing and planned road network and plans for transit service, and economic consultants who  
100 assessed the potential effects of land use change. These consultant reports and additional staff analysis  
101 are available in the Appendix.

102  
103 The recommendations in this Amendment are designed to further the completion of Clarksburg,  
104 following the [tenets] main policies of the 1994 Plan, while taking advantage of increased knowledge  
105 about environmental protection, innovations in environmental mitigation techniques, and new zones  
106 created since approval of the 1994 Plan.

107  
108  
109 Map 1 Plan Area Boundary: Revise to reflect Council decision to expand the boundary to include the  
110 entire Historic District.

111  
112

113 **Planning Context**

114  
115 **1994 Plan Vision**

116  
117 The Clarksburg Master Plan manages Clarksburg’s evolution from a rural crossroads to a vibrant  
118 corridor town surrounded by open space (see Appendix 1 for relevant excerpts from the 1994 Plan). A  
119 number of policies guide that process.

120  
121 Policy 1, *Town Scale of Development*, proposes that Clarksburg develop at “a larger scale than  
122 proposed in the 1968 Clarksburg Master Plan but smaller than a corridor city such as Germantown”  
123 (page 16). The Plan implements this policy by:

- 124 • including the Clarksburg Historic District as an important component of the Town Center
- 125 • making land use recommendations that balance the need to protect sensitive environmental
- 126 resources with the desirability of somewhat higher densities that can support transit service
- 127 • keeping intact the concept of a technology corridor centered on I-270, while reducing its scale
- 128 • organizing future development into defined neighborhoods that include broad mixes of housing.

129  
130 From these four components, the Plan derives other important guiding policies. The *Town Center*  
131 (Policy 6) describes a mixed-use, transit-oriented central area that concentrates Clarksburg’s civic  
132 resources to define it clearly as the focus of public life in Clarksburg and creates a “Main Street” on  
133 MD 355 through the [historic district] Historic District.

134  
135 Plan recommendations also recognize the importance of environmental protection (Policy 2, *Natural*  
136 *Environment*) by:

- 137 • recognizing the Countywide significance of the Ten Mile Creek watershed
- 138 • recommending public acquisition of stream valleys that in turn can support a *Greenway Network*  
139 (Policy 3)

- 140 • offering development guidelines for stream systems likely to experience substantial impacts,  
141 including refinements to the water quality review process required for Clarksburg’s existing  
142 Special Protection Area (SPA) prior to development in Ten Mile Creek.

143  
144 At the same time, Plan recommendations are premised on a comprehensive *Transit System* (Policy 4)  
145 that reduces auto dependence and targets higher densities to areas near the proposed transit line. In the  
146 Town Center, these recommendations include high technology *Employment* centers (Policy 8) at the  
147 interstate interchange and higher residential densities near transit stations. This Limited Amendment  
148 reevaluates and, through its recommendations, revises this policy.

149  
150 The Plan proposes creating seven neighborhoods in Clarksburg that would be oriented toward  
151 *pedestrians* and would maintain *connections to the transit network* (Policy 7). These neighborhoods  
152 would contain a mix of uses and a diversity of housing types. They would also incorporate a *Hierarchy*  
153 *of Roads and Streets* (Policy 5) that would allow through traffic to bypass the developed areas in the  
154 Town Center’s [historic district] Historic District, connect streets within neighborhoods for improved  
155 local movements, and include pedestrian-friendly designs for streets that link neighborhoods to  
156 through routes.

157  
158 The thrust of these policies is to create a clearly defined community that would include land uses  
159 ranging from agriculture, which would contribute to *Farmland Preservation* (Policy 9) in the western  
160 parts of Clarksburg, to employment along the proposed Corridor Cities Transitway. Civic activities in  
161 the Town Center would draw residents from the neighborhoods, whose retail nodes would include  
162 grocery shopping and other routine retail needs. Community building would be managed by a *Staging*  
163 *Plan* (Policy 10) that would balance the provision of needed civic infrastructure with the pace of  
164 development, with a particular focus on early development of the Town Center and the need to  
165 undertake significant environmental monitoring before allowing development in the Ten Mile Creek  
166 watershed.

167  
168 **1994 Plan Recommendations for Ten Mile Creek**

169  
170 The Ten Mile Creek watershed is the principal focus of this Limited Amendment. The Amendment’s  
171 recommendations reflect a re-balancing of the 1994 Plan’s original visions in light of an evolving  
172 understanding of the impacts of development on sensitive natural resources like Ten Mile Creek. This  
173 section summarizes the 1994 Plan recommendations for the Ten Mile Creek District.

174  
175 The 1994 Master Plan’s recommendations for Ten Mile Creek [are] were based on the Plan’s policy  
176 for protecting the natural environment. The 1994 Plan [takes a balance approach, relying] relied on  
177 agricultural activities and low-density residential development—with environmental best management  
178 practices—to limit impacts on water quality in the western part of the watershed. Elsewhere, the Plan  
179 recommends a series of mitigation strategies, including expanded green buffers, impervious caps on  
180 key properties, and park dedication to reduce environmental impacts. These protections allowed the  
181 Plan to recommend a broad array of land uses, including relatively high-density uses in the headwaters  
182 and medium-density residential uses between the creek and MD 121 (see Map 2).

183  
184 West of I-270, the 1994 Plan [recommends] recommended:

- 185 • adding 1,800 acres west of the main stem of Ten Mile Creek to the Agricultural Reserve, creating a  
186 transition from more intense uses in the corridor town of Clarksburg to the productive agricultural  
187 lands in the western county

- 188 • residential development east of the creek, between Shiloh Church and Clarksburg Roads, fulfilling  
189 a longer-term countywide need for single-family housing and incorporating significant amounts of  
190 parkland and open space to preserve resources:  
191 - rural development (one unit per five acres) on about 800 acres between the creek’s mainstem  
192 and Shiloh Church Road  
193 - although the zone would allow up to two units per acre on about 600 acres between the creek’s  
194 mainstem and MD 121, [including lands currently owned or controlled by the Pulte  
195 Corporation, with up to] the Master Plan capped development at 900 [of those] units [possible]  
196 (one and one-half units per acre), if developed with the purchase of transferable development  
197 rights available [when] and if environmental and housing mix guidelines are met
- 198 • employment, including institutional uses, along I-270, with maximum allowable imperviousness of  
199 15 percent and no more than 400,000 square feet of floor area on each of the two County sites to  
200 preserve natural resources. (One site has since been used for the Montgomery County Correctional  
201 Facility.)

202  
203 East of I-270, the 1994 Plan [recommends] recommended:

- 204 • floating zones—the Planned Development and Mixed-Use Planned Development Zones—to  
205 encourage joint development of residential and employment uses and allow detailed analysis of  
206 proposals for conformance with Plan policies:  
207 - residential development at two to four units per acre in the Planned Development Zone on the  
208 Egan property near Comus Road  
209 - approximately 470,000 square feet of employment activities on the Miles-Coppola properties at  
210 I-270.

211  
212 The property owners have not applied for the recommended floating zones.

213  
214  
215 Map 2 1994 Land Use Plan: Revise to reflect Council decisions on the Master Plan Amendment.

216  
217  
218 **1994 Plan Staging and Implementation**

219  
220 The 1994 Plan staged development to match specific targets for the provision of infrastructure needed  
221 to support it. The Plan also provided for the evaluation of environmental protection techniques to  
222 ensure they were sufficient. The Montgomery County Department of Environmental Protection has  
223 been monitoring conditions in the Clarksburg Special Protection Area (SPA) since 1994, which  
224 includes the Stage 4 portion of Ten Mile Creek.

225  
226 Staging was the Plan’s primary implementation strategy, and the Ten Mile Creek watershed was  
227 included in the last stage—Stage 4. Approval to move ahead with Stage 4 was based on two  
228 benchmarks: substantial residential development in the Town Center and Newcut Road Districts to  
229 support retail and transit, and an evaluation of water quality impacts associated with development,  
230 which could help anticipate potential effects on Ten Mile Creek.

231  
232 The required biological evaluation of stream conditions to determine if measures in use were sufficient  
233 to ensure protection of Ten Mile Creek was triggered to occur after the 2,000<sup>th</sup> building permit in the  
234 Town Center and Newcut Road Districts. The Plan [indicated] stated that, once the evaluation was



235 complete, the County Council could allow Stage 4 development to move ahead or determine whether  
236 additional land use actions were necessary.

237  
238 The 2009 publication of the County’s annual report on Special Protection Area (SPA) monitoring for  
239 the year 2007 constituted the required environmental evaluation. This report documented deteriorating  
240 stream conditions in the Clarksburg SPA and offered recommendations for remedial efforts. The report  
241 further concluded that new development in the Town Center [district] District, west of MD 121 and  
242 east of MD 355, as well as ongoing construction activity at the correctional facility, had resulted in a  
243 decline [in] of Ten Mile Creek’s stream conditions from good to fair between 1998 and 2007.  
244 Conditions in the Little Seneca watershed portion of the SPA also declined during the period, from  
245 good/excellent to fair.

246  
247 Several factors contributed to declining water quality. External events, such as the unexpected housing  
248 crisis, resulted in construction delays, during which only sediment and erosion control structures were  
249 in place to protect water quality. This, in conjunction with large areas of disturbed land and a delay in  
250 implementing full stormwater management, resulted in altered stream hydrology and impacts to stream  
251 biology.

252  
253 The 2007 report recommended stormwater management improvements in the SPA and proposed that  
254 environmental site design (ESD) be integrated into overall project design for new development. It also  
255 recommended improvements to sediment and erosion controls and limits to the amount of land being  
256 graded at any given time during construction. The report recognized, however, that stormwater  
257 management structures and facilities could not completely offset inevitable increases in impervious  
258 surfaces that accompany development.

259  
260 Subsequent annual monitoring reports showed continued improvement in Little Seneca Creek  
261 subwatersheds as development in Clarksburg stabilized and full stormwater controls were  
262 implemented. However, the portion[s] of the Ten Mile Creek [sub]watershed that [have] has been most  
263 affected by development LSTM 206 remains in fair condition as measured with the County’s Benthic  
264 Index of Biotic Integrity, and none of the monitored streams in the Town Center or Newcut Road  
265 Districts has returned to pre-development conditions. Consequently, in 2012, the County Council  
266 determined that a limited plan amendment was necessary to consider refining 1994 Plan  
267 recommendations [to achieve the original stated goals,] given stream monitoring findings, changes to  
268 environmental regulations, and the potential need for further safeguards to protect Ten Mile Creek  
269 while balancing [with] community building goals.

270  
271  
272 **Limited Amendment Concept**

273  
274 This [limited amendment] Limited Amendment retains the overall vision of the 1994 Plan, but  
275 recognizes that additional environmental protection is needed to allow development to move ahead. It  
276 emphasizes environmental protection west of I-270 and provides more flexibility in achieving the  
277 community building goals east of I-270 (see Map 3). Its recommendations also acknowledge that  
278 market conditions no longer support the goal that large amounts of land in Clarksburg should be  
279 devoted to office and employment activities, which was a major vision of the 1994 Plan.

280  
281 Considerable additional information about environmental conditions emerged during development of  
282 this Amendment. Information used in the development of the Plan was received from independent

283 consultants retained by M-NCPPC; verbal and written public testimony; and federal, state, and local  
 284 government staff advice at Committee and Council worksessions. As a result, the Plan’s  
 285 recommendations include substantial open space requirements and environmental buffers throughout  
 286 the watershed. These recommendations will extend the maximum protection practicable to Ten Mile  
 287 Creek and its tributaries while responding to the goal for Clarksburg to be a “complete” community.  
 288

289 On the east side of I-270, proximity to the interstate and the Town Center commercial area, as well as  
 290 the impact of previous development in the headwaters, offer opportunities to accommodate modest  
 291 levels of residential and mixed-use development that [is] are complementary to the Town Center  
 292 [district] District, and help[s] to support enhanced transit and roadway improvements while  
 293 strengthening protection for environmental resources.  
 294

295 In the western portion of the Plan Area, the presence of significant, sensitive tributaries requires  
 296 [substantially larger conservation areas, with more] limiting development to tightly-clustered  
 297 residential uses that contribute to Clarksburg’s community-building needs by providing options for  
 298 [clustering and a greater range of] housing [types. A] choice. In addition, a large, new conservation  
 299 park and a nature-oriented neighborhood park will create a focus for a new green neighborhood,  
 300 connecting Clarksburg residents to this important natural resource and providing recreation  
 301 opportunities [to incorporate substantial community gardens] in natural settings, including hiking,  
 302 nature appreciation, picnicking, nature play, and community gardening.  
 303  
 304

305 Map 3 Limited Amendment Concept: Revise to reflect Council decisions on the Master Plan  
 306 Amendment.  
 307  
 308

309 **Environment**  
 310

311 Ten Mile Creek originates just north of MD 355 (Frederick Road) and flows into Little Seneca Lake,  
 312 which then flows into the Potomac River via Seneca Creek. Little Seneca Lake serves as a reservoir  
 313 that provides additional water flow to the Potomac River, a public water supply, during drought  
 314 periods. The portion of the watershed east of the Ten Mile Creek mainstem and north of West Old  
 315 Baltimore Road is located within the Clarksburg Master Plan Special Protection Area (SPA). The Ten  
 316 Mile Creek watershed within the Plan area includes approximately 3,200 acres, [11] 12 subwatersheds,  
 317 and over 22 miles of streams (see Map 4). [It is important to view] This Plan views Ten Mile Creek as  
 318 a complete and functioning watershed and ecosystem, including the watershed and all contributing  
 319 [subwatersheds] tributaries and their drainage areas[, and not just consider the potential effects to the  
 320 mainstem].  
 321

322 Ten Mile Creek and its tributaries are designated as a Use I-P stream[—] by the state of Maryland,  
 323 defined as protection of water contact recreation, aquatic life, and drinking water supply. Except for  
 324 the headwater area subwatershed[s] (LSTM\_206 [and LSTM202] on Map 4), which has [have] already  
 325 been affected by development, Ten Mile Creek is in good to excellent condition based on stream  
 326 biology (see Appendix 3 for a full report on existing conditions and environmental analyses). This is  
 327 primarily due to existing conditions, which include a combination of agricultural and low-density  
 328 residential development balanced by a very high proportion of dense forests and a wealth of springs  
 329 and wetlands. LSTM 110 (King Spring Tributary) is considered one of the highest quality streams in

330 Montgomery County, as measured by the DEP Countywide stream monitoring program and in an  
331 assessment by EPA using the Biological Conditions Gradient (See Appendix 9, Attachment R).

332  
333 Ten Mile Creek is a reference stream in Montgomery County, serving as a high quality benchmark  
334 against which other streams are compared. Long-term monitoring indicates overall biological  
335 conditions to be healthy and diverse. Sensitive indicator organisms that occur in few other areas within  
336 the County are found here. Ten Mile Creek is part of a small group of high quality watersheds still  
337 remaining within the County (e.g., many Patuxent River tributaries, Bennett Creek, and Little Bennett  
338 Creek). As a result of its unique characteristics, Ten Mile Creek warrants extraordinary protection.

339  
340 The majority of the streams within the Ten Mile Creek watershed are small and spring fed with cool,  
341 clean groundwater. The mainstem is characterized by high concentrations of interior forest and  
342 wetlands. There is no evidence of widespread and long-term channel instability. In addition, the stream  
343 bed material is ideal to support a benthic macroinvertebrate community.

344  
345 The dominant land use/land cover is forest (48 percent), followed by agriculture (38 percent), with the  
346 remainder in institutional, residential, and commercial uses. Existing imperviousness is approximately  
347 4.1 percent. Slopes are steep and soils are generally rocky, with shallow to moderate depth to bedrock.

348  
349 Methods to help protect water quality have changed significantly since 1994 and monitoring has been  
350 underway continuously since that time. The County Department of Environmental Protection reports  
351 annually on the results of monitoring in all the Special Protection Areas. These reports state that  
352 environmental protection measures, as applied to date in Clarksburg, have not prevented a  
353 deterioration in the quality of Ten Mile Creek. Environmental Site Design (ESD) represents the state  
354 of the practice for site planning and post-construction stormwater runoff management. It is also now  
355 required [in Montgomery County] throughout Maryland. However, rigorous and comprehensive  
356 implementation of ESD across or within watersheds has not occurred, nor has the practice been  
357 monitored, either in the County or elsewhere, at a scale large enough to establish likely expectations of  
358 post-development stream conditions. Impervious cover continues to be widely accepted as an indicator  
359 of the complex impacts that are difficult to model sufficiently, including pollutants such as oil,  
360 gasoline, and salt associated with roads and parking areas, and impacts to groundwater quality and  
361 quantity, as well as heat island effects and the effects of more severe storms.<sup>1</sup>

362  
363 While gaining watershed-based knowledge on the efficacy of ESD for its ecological effects beyond  
364 hydrology will be valuable, given the current lack of corroborating studies at a comparable scale, it  
365 remains prudent to include safeguards in addition to ESD to help ensure that the [good] high quality  
366 Ten Mile Creek watershed will continue to be able to sustain sensitive species and achieve [good] high  
367 quality stream conditions over most of the watershed.

368  
369 Environmental analyses of various development scenarios studied for this Plan Amendment included  
370 [pollutant loadings,] hydrology (stream flow volumes), effects on specific natural resources, pollutant  
371 loadings and effects on the imperviousness in each subwatershed. An analysis (see Appendices 3 and  
372 4) of building out the 1994 Plan showed the following impacts:

- 373 • the potential for significant increases in the total volumes of stream flow[,] (Hydrologic  
374 Analysis)

---

<sup>1</sup> Many studies have confirmed and expanded upon the work of nationally-recognized expert on imperviousness, stormwater, and water quality, Tom Schueler, and others. This information is summarized in Dr. Matthew Baker's Letter (with references) in Appendix 9, Attachment R.

- 375 • substantial impacts to specific natural resources [and] (Impacts on Resources)  
 376 • the limited nutrient and sediment loading analysis showed that post development impacts of  
 377 residential uses would be similar to existing agricultural uses. Stream bank erosion, a  
 378 significant source sediment, was not accounted for in the analysis (Pollutant Loading Analysis)  
 379 • [extremely large] increases of up to 10 times in imperviousness in the most sensitive  
 380 subwatersheds ([[LSTM\_202,]] LSTM\_110 and LSTM\_111) (Imperviousness Analysis).  
 381 [However, pollutant loading analysis indicated that the differences between the existing  
 382 agricultural uses and proposed land uses (regardless of the scenario) would be minimal.]  
 383

384 The degree of modeled impacts on stream flow volumes, the amount of imperviousness, and the  
 385 impacts to natural resources in the most sensitive watersheds demonstrates the importance of  
 386 recommending limits [in] as part of this Plan Amendment to ensure that imperviousness does not  
 387 increase above that which is [typical] protective of this very good quality stream system. It is not  
 388 necessarily the impervious cover *per se* that causes observed degradation—while imperviousness has a  
 389 direct impact, it is also the strongest, most detectable indicator available for [comparable land uses] the  
 390 many correlated and contributing factors associated with urbanization.<sup>2</sup>  
 391

392 High quality subwatersheds [[Watersheds]] with very low impervious cover, such as LSTM 110 (1.6  
 393 percent) and LSTM 111 (1.2 percent), are more sensitive to changes in impervious cover than  
 394 watersheds like LSTM 206 (16.6 percent) and LSTM 202 (11 percent), which already have a  
 395 significant amount of existing impervious cover and are showing signs of degradation. Recent studies  
 396 (see Appendix 9, Attachment R) have shown that impervious cover levels as low as 5 percent are  
 397 correlated with significant degradation in water quality. [[In order to keep streams in good condition,  
 398 it is important to keep impervious cover under 5 percent by as much as possible to minimize risk.]]  
 399 This Plan recommends a 6 percent impervious surface cap for new development in the most sensitive  
 400 subwatersheds to minimize risk as much as possible. While it is not possible to keep all the  
 401 subwatersheds at this low level without unreasonably restricting development, this Plan provides  
 402 [[proposes]] a combination of imperviousness limits and required open space protection that would  
 403 keep the overall watershed imperviousness level at slightly more than 6 percent if all planned  
 404 development occurs. The highest levels of imperviousness allowed in this Amendment for new  
 405 development (15 percent) are permitted in the Town Center District (LSTM 206 and portions of  
 406 LSTM 201), where existing imperviousness levels are already high. Various alternatives were  
 407 analyzed, and the vast majority of environmental experts indicated that the impervious cover increases  
 408 in this area would have a smaller environmental impact than in the subwatersheds with the most  
 409 sensitive and highest quality streams and existing low levels of imperviousness (LSTM 110 and  
 410 LSTM 111). The lowest levels of impervious cover for new development are [[proposed for]] allowed  
 411 in the subwatersheds west of I-270, because the tributaries [[tributary streams]] to Ten Mile Creek in  
 412 this area are unique and among the highest quality streams in the County. Restricting imperviousness  
 413 [[to maintain levels as close to 5 percent as possible]], (combined with ESD and development at or  
 414 near ridgelines and away from stream channels), provides the best chance of protecting these streams.  
 415 In addition, this Plan recommends expanding the environmental buffers around sensitive areas and  
 416 protecting additional forest to preserve natural resources. The Plan also protects the natural ability to  
 417 buffer areas to mitigate impacts, and reduces the total amount of area disturbed.  
 418

419 Significant protection is also afforded by the forest cover within the watershed. Maintaining and  
 420 expanding the forest cover is essential to protection of water quality and habitat in the watershed.

<sup>2</sup> See Appendix 9, Attachment R.

421 About 46% of the watershed is in forest cover, including approximately 400 acres of forest capable of  
 422 supporting forest interior dwelling species (according to the Maryland Department of Natural  
 423 Resources criteria). This is one of the largest interior forest areas in the County and it could be  
 424 substantially expanded by filling some key gaps in LSTM 202 and LSTM 302. The overall forest cover  
 425 could be expanded to cover approximately 50% of the watershed if all the planned open space on the  
 426 key developable properties is planted in forest. Additional forest cover could be achieved if developed  
 427 properties and properties in the rural and RDT zones increase forest cover. While this cannot be  
 428 required, incentives should be developed to encourage voluntary plantings with a goal of increasing  
 429 forest cover in the watershed to 65%.

430  
 431 [Consequently, this] This Plan [amendment] Amendment recommends a significant increase in  
 432 required [conservation areas] open space to protect sensitive resources and limits on impervious cover  
 433 to ensure, in combination with Environmental Site Design, that environmental impacts are minimized  
 434 in Ten Mile Creek and particularly sensitive tributaries (see Appendices 3 and 4 for details of the  
 435 environmental analysis). Sustaining Ten Mile Creek's ecological [health] health and water quality  
 436 requires a combination of [efforts] actions: protecting the largest possible area of undisturbed natural  
 437 vegetation, improving conditions in areas already developed or planned to remain in agricultural use,  
 438 and instituting the highest standards of protection for future development areas.

439

440

441 Map 4 Ten Mile Creek Subwatersheds: Revise to reflect Council decisions on the Master Plan  
 442 Amendment.

443

444

445 Imperviousness is an important factor in watershed health and affects both the water quality and many  
 446 other factors. This Plan Amendment is designed to achieve an overall imperviousness goal of  
 447 [approximately eight] slightly more than six percent for the entire Ten Mile Creek watershed (as  
 448 shown on Map 4) and limit the development footprint to preserve sensitive natural resources. (If  
 449 measured for the portion of the watershed that drains to the DEP monitoring station at West Old  
 450 Baltimore Road, the potential watershed imperviousness would be approximately 6.7 percent.)

451 Limiting imperviousness within the development footprint is important to achieving this overall goal  
 452 while still allowing flexibility in the numbers, types and sizes of structures and accompanying roads  
 453 and parking areas. The Amendment sets different imperviousness levels for major properties on each  
 454 side of I-270 to address the unique environmental conditions in the different subwatersheds and  
 455 support the Plan's land use objectives of allowing development that will support Town Center [that  
 456 accommodate the proposed land use recommendations].

457

## 458 **Recommendations**

459

### 460 East of I-270

- 461 • [Retain the Special Protection Area for the Stage 4 area of Ten Mile Creek and establish an  
 462 environmental overlay zone to limit imperviousness associated with new development.] Limit  
 463 imperviousness levels to 15 percent for new development on properties [in excess of five acres in  
 464 subwatersheds LSTM206 and LSTM201 to 25 percent. In LSTM202, LSTM110, LSTM111, and  
 465 LSTM112 limit imperviousness for new development on properties in excess of five acres to ten  
 466 percent imperviousness except for the County properties, which have different imperviousness  
 467 limits] that are recommended for the proposed Clarksburg East Environmental Overlay Zone.

468 Details of the proposed overlay zones are found in the Implementation chapter of this Plan  
 469 Amendment.

- 470 • Forest Conservation Plans prepared for properties in the Ten Mile Creek watershed should protect  
 471 the [[27 acres of]] forest [[closest to I-270]] on the Miles/Coppola properties bounded by the two  
 472 northernmost environmental buffer areas on the north and south, I-270 on the west, and the existing  
 473 agricultural fields on the east.
- 474 • Work with the Maryland State Highway Administration to provide stormwater retrofits for any  
 475 expansion or modification of I-270.

476

#### 477 West of I-270

- 478 • Reduce the development footprint and impervious cover [west of I-270], emphasizing reduced  
 479 impacts to upland forested areas and steep slopes. In particular, protect existing stream conditions  
 480 in the high quality headwater subwatersheds LSTM 110 (King Spring) and LSTM 111. [In LSTM  
 481 202, reduce the extent of development on County-owned property so that existing forest is not  
 482 disturbed. The recommended conservation area is shown on the land use plan (see Map 7).]
- 483 • Limit imperviousness to six percent for new development on properties recommended for the RNC  
 484 zone.
- 485 • No additional impervious cover is recommended for the County-owned properties, except that the  
 486 impervious surface overlay zone may be amended in the future to allow for a less than one acre  
 487 expansion of the Correctional Facility.
- 488 • Require development of the Pulte/King properties to include a conservation management plan for  
 489 areas outside the limits of disturbance [(but) that are not either dedicated to [the Department of  
 490 Parks]] M-NCPPC for parkland or placed in a rural open space easement, if such areas are located  
 491 in a development plan. This [plan] Plan should be coordinated with the Planning Department and  
 492 Department of Parks to [determine the optimal mix of meadow and forest habitat and to guarantee  
 493 perpetual] address management of [rural open space not dedicated to Parks. It would] natural  
 494 resources, preservation of pervious land cover, and compatibility with adjacent land uses (both  
 495 Parks and development area). This conservation management plan [[will]] must be approved as  
 496 part of [a] the preliminary or site plan for the site.
- 497 • [Require at least 175-foot wide buffers on both sides of streams. They should be expanded as  
 498 required by the Planning Board's most recently amended *Environmental Guidelines for*  
 499 *Development* to protect floodplains, wetlands, and steep slopes that extend beyond the 175 feet and  
 500 to maintain natural topography and vegetation within 50 feet of zero order streams (ephemeral  
 501 streams not currently regulated).]

502

#### 503 Throughout Ten Mile Creek:

- 504 • [[Unless a greater amount is required by the Planning Board's Environmental Guidelines for  
 505 Development, environmental]] Environmental buffers must be consistent with all regulations and  
 506 guidelines. In addition, in all areas in Ten Mile Creek other than the Historic District, on both  
 507 sides of perennial and intermittent streams and [[surrounding]] adjacent to wetlands, springs and  
 508 seeps must be a minimum of 200 feet, and must be expanded to include:
- 509 - All erodible soils (listed in the Planning Board's *Environmental Guidelines for Development*)
- 510 - Wetlands that extend beyond the buffer [[plus]] must have a minimum 50 foot wetland buffer
- 511 - All ephemeral streams, not including roadside drainage ditches, plus a 50 foot buffer
- 512 - All slopes 15 percent or greater that begin within the buffers described above.
- 513 • Amend the Clarksburg Special Protection Area to include additional area east of I-270 (see  
 514 Map X).

- 515 • Establish environmental overlay zones to [[limit]] apply the Plan's limits on imperviousness  
 516 [[associated with]] for new development and reduce development footprints to protect sensitive  
 517 resources.
- 518 • Minimize disturbance of natural resources throughout the Ten Mile Creek watershed, especially  
 519 forests in the headwater areas. Forest Conservation Plans prepared for properties in the Ten Mile  
 520 Creek watershed should protect:
- 521 - All forest required by the Forest Conservation Law and Regulations (includes  
 522 Environmental Buffers as previously described and minimum retention requirements), as  
 523 well as [[these]] areas defined in this Master Plan:
- 524 ❖ All interior forest (as defined by the Maryland Department of Natural Resources)  
 525 ❖ On the Miles-Coppola properties, the [[27 acres of]] forest [[closest to I-270]]  
 526 bounded by the two northernmost environmental buffer areas on the north and south,  
 527 I-270 on the west, and the existing agricultural fields on the east.  
 528 ❖ On the Pulte/King properties, all forest adjacent to environmental buffers  
 529 ❖ All forest on County-owned properties
- 530 • [Establish a forest banking program that would give additional credit for rural or RDT zoned  
 531 properties in Ten Mile Creek to voluntarily establish banks for forest planting in unforested stream  
 532 buffers.]
- 533 • All off-site forest planting for [Stage 4] new development should be [achieved within] located in  
 534 the Ten Mile Creek watershed as a first priority.
- 535 • Explore ways to incentivize additional voluntary forest planting (via forest banks or other  
 536 strategies) on rural or RDT zoned properties in the Ten Mile Creek watershed to help in reaching a  
 537 watershed goal of 65% forest cover.
- 538 • [Work with the Maryland State Highway Administration to provide stormwater retrofits for any  
 539 expansion or modification of I-270.]

541 Although additional development in Ten Mile Creek will adversely affect stream biology, it is  
 542 important to retain as much stream biodiversity and overall health as possible. Because of the unusual  
 543 quality and sensitivity of Ten Mile Creek, a higher level of protection than that already provided under  
 544 SPA regulations is [[recommended]] required to help achieve this goal.

546 Water Quality Plans for development in the Ten Mile Creek watershed [[should]] must comply with  
 547 the most current water quality regulations, which include ESD outfall and overflow management  
 548 strategies such as:

- 549 • avoiding overflow discharges onto steep slopes  
 550 • ensuring that any overflow is safely conveyed and occurs as sheet flow to the floodplain and/or  
 551 receiving streams
- 552 • managing discharges from stormwater outfalls using step-pool storm drainage conveyance systems  
 553 or comparable designs, as appropriate
- 554 • minimizing environmental buffer impacts associated with ESD overflow outfalls  
 555 • minimizing the need to convey stormwater across steep slopes and forested areas and ensure any  
 556 such conveyance is done in a nonerosive manner.

557



- 558 In addition to current SPA requirements, Water Quality Plans for development in the Ten Mile Creek  
 559 watershed [[should]] must demonstrate the application of the following principles and strategies:
- 560 • Minimize disturbance of natural resources throughout the Ten Mile Creek watershed, especially  
 561 forest cover in the headwater areas.
  - 562 • Minimize direct impacts associated with new infrastructure, such as the MD 355 Bypass and  
 563 sanitary sewer extensions on natural resources.
  - 564 • Minimize grading the thin and rocky soils in Ten Mile Creek, which help sustain groundwater  
 565 flows to the many springs and seeps, and indicate the importance of limiting grading and soil  
 566 compaction as much as possible through creative site design and development staging.
  - 567 • New development [[should]] must employ planning and zoning options and design techniques[,]  
 568 which minimize impervious cover, including:
    - 569 - cluster development with smaller building footprints on smaller lots with shorter driveways
    - 570 - place houses near the front of a building envelope to reduce driveway length, and provide  
 571 shared driveways, where feasible
    - 572 - design narrower streets with limited sidewalks
    - 573 - use vegetated swales to guide runoff toward ESD facilities or pervious areas instead of curbs  
 574 and gutters on secondary streets, unless it conflicts with other requirements
    - 575 - limit impervious cover for cul-de-sacs by reducing curve radii and having a green space in the  
 576 turn-around area
    - 577 - preserve land with a high infiltration capacity to be used for storm water infiltration or natural  
 578 recharge area.
  - 579 • Maintain natural drainage patterns, especially around ephemeral (zero order) streams, by:
    - 580 - preserving and designing around ephemeral streams within the limits of disturbance
    - 581 - maintaining existing natural topography and vegetation within 50 feet of ephemeral streams
    - 582 - [decompacting] de-compacting and amending soils within the limits of disturbance (LODs)  
 583 with organic matter to a greater depth than currently required (this would be determined by the  
 584 Department of Permitting Services as part of development plan approvals).
  - 585 • Environmental Site Design (ESD).
    - 586 - As a first step, apply appropriate ESD site planning techniques within proposed development  
 587 areas to maximize environmental benefits.
    - 588 - Site planning and design [should] must be guided by and integrated with the selection and  
 589 appropriate location of ESD [facilities] practices to achieve the greatest watershed benefits  
 590 based on an evaluation of specific site and subwatershed considerations.
    - 591 - To the extent feasible, ESD practices should minimize the [need for clearing conveyances  
 592 across steep slopes and through forested areas or stream buffers] concentration of flows  
 593 through sheet flow and dispersion and must ensure any such conveyance is done in a  
 594 nonerosive manner.
  - 595 • Require restoration of streams and wetlands adversely affected by existing uses after all  
 596 development is completed in the drainage area so as to allow the hydrology to adjust to the new  
 597 landscape.

## 600 **Transportation**

601  
 602 Transportation is an ongoing issue in Clarksburg, primarily because the transit network proposed in the  
 603 1994 Plan to reduce auto dependence has not yet been implemented. Recommendations included a

604 transitway along the MD 355 Bypass (Observation Drive) and a number of bikeways. Interconnected  
 605 neighborhood bus loops and park-and-ride lots were further proposed as part of this system.

606  
 607 The 1994 Plan also contained recommendations for roadway classifications and rights-of-way.  
 608 Changes to these are not recommended in this Plan Amendment. However, the completion of many  
 609 key arterials will depend on completing various development projects. Furthermore, some key links  
 610 will require expensive bridges, which are waiting for funding through the County’s Capital  
 611 Improvement Program.

612  
 613 Area-wide analysis using the Transportation Policy Area Review (TPAR) method indicates most of the  
 614 Clarksburg Policy Area’s major roads [currently] are projected to operate at [an A] a B or [B] high C  
 615 level of service (LOS) at the time horizon of this Plan. MD 27 (Ridge Road) [operates] is projected to  
 616 operate at [a “D”] an F level, bringing down the average for the Policy Area to a [“C”] C  
 617 level of service. [However, most roads are currently underused and provide a high level of service] (see  
 618 Appendix 6 for additional transportation modeling information).

619  
 620 All of the intersections in the Plan area [also] function at adequate levels of service under existing  
 621 conditions. Although the intersection of Clarksburg Road (MD 121) and Frederick Road (MD 355) has  
 622 the lowest level of service, LOS [“C”] C in both the morning and evening peak hours, traffic volumes  
 623 are similar to those at Stringtown Road and Frederick Road (MD 355). Stringtown Road has more  
 624 lanes, which results in greater intersection capacity (LOS [“A”] A and [“B”] B).

625  
 626 The following describe current transportation conditions:

- 627 • Transit service is limited to two routes and the Clarksburg Policy Area does not yet have adequate  
 628 transit service in terms of two of the measures of adequacy in TPAR, coverage and peak headways.  
 629 Current transit is just adequate in terms of a third measure, the span of service (the total number of  
 630 hours/day that transit service is provided).
- 631 • Most travel in the area is north-south, with the east-west movements generally providing access to  
 632 north-south travel routes.
- 633 • I-270 is heavily used and the directional split (the percent of traffic going either northbound or  
 634 southbound) during peak hours reflects this. Typically 60 percent of the traffic goes in the peak  
 635 direction, while 40 percent goes in the non-peak direction.
- 636 • MD 355 has a much higher peak to daily traffic ratio, an indication that morning trips are  
 637 commuters and evening peak hour trips are a combination of commuter and local trips.

638  
 639  
 640 **Table 1 Clarksburg Critical Lane Volumes**

| Intersection                                    | Existing |       |   |       |
|-------------------------------------------------|----------|-------|---|-------|
|                                                 |          | AM    |   | PM    |
| <b>MD 121 and I-270 western intersection</b>    | A        | 365   | A | 250   |
| <b>I-270 and MD 121 eastern intersection</b>    | A        | 609   | A | 480   |
| <b>MD 355 and MD 121</b>                        | C        | 1,225 | C | 1,150 |
| <b>MD 355 and Shawnee Lane</b>                  | A        | 750   | A | 875   |
| <b>MD 355 and Stringtown Road</b>               | A        | 914   | B | 1,068 |
| <b>Gateway Center Drive and Stringtown Road</b> | A        | 667   | A | 846   |

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The 1994 Plan recommended a bypass to avoid significantly widening MD 355 (“Old Frederick” Road) through the Clarksburg Historic District and to provide an alternate route when emergencies cause full or partial closures on I-270 or MD 355. It would also accommodate future access to the Miles-Coppola properties and the Corridor Cities Transitway (CCT), as it transitions from Observation Drive and then continues onto the bypass. The Plan further proposed a transit station at the intersection of the bypass and Redgrave Place.

While pedestrian and bicycle connectivity are essential to promote community cohesion and provide access to both transit and community amenities, the difficult topography, numerous stream crossings, and major roadways hinder the integration of land uses. Providing appropriate transit service for Clarksburg’s residents and businesses will require a different approach than that used in other areas of the County, which are closer to employment, have higher development densities, and are better connected. Consequently, the relatively small number of potential transit users and the distances to key destinations will require an approach that relies on express and limited stop bus service to achieve reasonable travel times.

Testing future development scenarios under the Transportation Policy Area Analysis for both the 1994 master-planned land uses and land use options with the highest intensity of retail development continues to show levels of service that do not exceed the suburban policy area standard for roadway adequacy. Analyses of potential intersection congestion associated with [plan] Plan options that have the highest combination of retail uses (with the highest traffic generation rates) indicate that four intersections could exceed the standard for congestion in the study area:

- MD 355 and MD 121
- MD 355 and Stringtown Road
- Gateway Center Drive and Stringtown Road
- Observation Drive and Stringtown Road.

The intersection of a reconfigured bypass alignment and existing MD 355, north of Clarksburg Road [(MD121)], could also exceed the standard, but it could be designed as a roundabout, should proposed development result in congestion at this proposed intersection. Improvements could address congestion at the other listed intersections if determined necessary at the time of development.

### **Recommendations**

All transportation recommendations in the 1994 Master Plan are continued, except as indicated by the following refinements to improve the transportation system (see Table 2 and Maps 5 and 6):

- The following intersection improvements are necessary to accommodate the master planned development in Ten Mile Creek:
  - MD 355 & MD 121: add an eastbound through lane on MD 121 through the intersection.
  - MD 355 & Stringtown Road: add an eastbound and a westbound through lane on Stringtown Road through the intersection.
  - Gateway Center Drive & Stringtown Road: create double left turn lanes on both the eastbound and westbound approaches of Stringtown Road; add double right turn lanes from southbound Gateway Center Drive to westbound Stringtown Road.
  - Observation Drive & Stringtown Road: add an eastbound and a westbound through lane on Stringtown Road through the intersection; create double left turn lanes and free right turn lanes on each of Stringtown Road’s approaches.

- 689 • Retain the MD 355 bypass, but realign it as a T-intersection [with MD 355 near the proposed fire  
690 station] 0.3 miles south of Snowden Farm Parkway. Reduce the number of through lanes on the  
691 Bypass segment north of Clarksburg Road to 2 lanes, plus the CCT, within a 130'-wide right-of-  
692 way. This will avoid significant wetland impacts, while still providing access to [the fire station  
693 and the Miles-Coppola] developable properties. The [plan] Plan shows the original alignment as it  
694 crosses Redgrave Place. Two alternative alignments are also shown and should be studied as part  
695 of a facility [plan] planning study when the Miles-Coppola properties develop (see Map 5). The  
696 facility [plan] planning study should [study the need for the full 150-foot ROW] determine the  
697 appropriate right-of-way south of Clarksburg Road for the bypass, considering potential  
698 modifications to the design of the Corridor Cities Transitway. If an alternative alignment is chosen,  
699 the transit station location should retain a pedestrian connection to Redgrave Place and fulfill the  
700 intent of the 1994 Plan to [connect the] extend Redgrave Place to the east so as to create a  
701 connection between the new Town Center development, [to] the Historic District, and the transit  
702 station. Set the minimum right-of-way of MD 355 from Redgrave Place to Roberts Tavern Drive at  
703 50 feet.
- 704 • Provide additional [turn lanes or] transit service to help achieve acceptable traffic operating  
705 conditions at key intersections.
- 706 • Accommodate bus rapid transit in mixed traffic along MD 355, south from the Town Center  
707 Transit station within the Clarksburg Policy Area, and retain the CCT designation for the MD 355  
708 Bypass.
- 709 • Provide facilities for peak period, frequent (20 minutes or less) express non-stop bus service from  
710 the Clarksburg Town Center to:
- 711 - Shady Grove Red Line Metrorail Station via I-270 (estimated 30-35 minute travel time).  
712 - Germantown Town Center/Germantown MARC via I-270 (estimated 15-20 minute one-way  
713 travel time).
- 714 • Provide facilities for peak period, limited stop, Ride On service from the Clarksburg Town Center  
715 to:
- 716 - Milestone (and future CCT stop) via MD 355 (estimated 15-20 minute travel time).  
717 - Lakeforest/Gaithersburg MARC via MD 355 (estimated 30-35 minute travel time).
- 718 • Provide an internal Clarksburg bus circulator, which connects activity centers east and west of  
719 I-270 with the Town Center and the CCT COMSAT station until such time that the CCT is  
720 extended to the Town Center area.
- 721 • Add bike accommodation on Comus Road between Shiloh Church Road and on Clarksburg Road  
722 between Snowden Farm Parkway and Stringtown Road.  
723  
724

725 Table 2 Street and Highway Classifications for Roads within the Ten Mile Creek Watershed<sup>3</sup>

| Master Plan Roadway Designation    | Name                                               | Limits                                                                                     | Number of Travel Lanes <sup>4</sup><br>Maximum Recommended        | Minimum Right-of-way Width <sup>5</sup> |
|------------------------------------|----------------------------------------------------|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------|-----------------------------------------|
| <b>Freeway</b>                     |                                                    |                                                                                            |                                                                   |                                         |
| F-1                                | Washington National Pike (I-270)                   | Southern Study Area Boundary to MD 121                                                     | 8 lanes                                                           | 350'                                    |
|                                    |                                                    | MD 121 to Comus Road                                                                       | 6 lanes                                                           | 250'                                    |
| <b>Arterial Highways</b>           |                                                    |                                                                                            |                                                                   |                                         |
| A-7                                | West Old Baltimore Road                            | MD 355 to MD 121                                                                           | 2 lanes                                                           | 80'                                     |
| A-251                              | Frederick Road (MD 355)                            | [A-19 to B-1 (MD 355 Bypass <sup>6</sup> )<br>Newcut Road Extended to Roberts Tavern Drive | 4 lanes Divided                                                   | 120'                                    |
|                                    | Roberts Tavern Drive (MD 355 Bypass <sup>6</sup> ) | Frederick Road (MD 355) to Observation Drive                                               | 4 lanes Divided w/transitway                                      | 150'                                    |
|                                    | Observation Drive (MD 355 Bypass <sup>7</sup> )    | Roberts Tavern Drive to Clarksburg Road                                                    | 2 lanes w/transitway                                              | 130'                                    |
|                                    | Observation Drive                                  | Clarksburg Road to Frederick Road (MD 355)                                                 | 2 lanes w/transitway                                              | 130'                                    |
|                                    | Frederick Road (MD 355)                            | [B-1] Observation Drive to Comus Road                                                      |                                                                   |                                         |
| A-258                              | Slidell Road                                       | Northern to Southern Study Area Boundary                                                   | 2 lanes                                                           | 80'                                     |
| A-259                              | Comus Road                                         | MD 355 to Western Study Area Boundary                                                      | 2 lanes                                                           | 80'                                     |
| <b>Business Streets</b>            |                                                    |                                                                                            |                                                                   |                                         |
| B-1                                | "Old Frederick" Road <sup>8</sup>                  | [Through Town Center Area] MD 121 to Roberts Tavern Drive                                  | 2 lanes                                                           | 50'                                     |
| B-2                                | Redgrave Place                                     | Little Seneca Creek to A-260                                                               | 2 lanes w/no parking inside [historic district] Historic District | 70'                                     |
| <b>Primary Residential Streets</b> |                                                    |                                                                                            |                                                                   |                                         |
| P-3                                | Shiloh Church Road                                 | West Old Baltimore Road to Comus Road                                                      | 2 lanes                                                           | 70'                                     |
| P-5                                | Redgrave Place                                     | Little Seneca Creek to A-260                                                               | 2 lanes                                                           | 70'                                     |
| <b>Rustic Roads</b>                |                                                    |                                                                                            |                                                                   |                                         |
| E-1                                | West Old Baltimore Road                            | Clarksburg Road (MD 121) to Western Study Area Boundary                                    | N/A                                                               | 80'                                     |

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Map 5 Proposed Roads and Transit: Revise to reflect Council decisions on the Master Plan Amendment.

<sup>3</sup> Text highlighted indicate changes relative to the Adopted 1994 Clarksburg Master Plan.  
<sup>4</sup> These are the number of planned through travel lanes for each segment, not including lanes for turning, parking, acceleration, deceleration, or other purposes auxiliary to through travel.  
<sup>5</sup> This minimum may be increased at time of subdivision on the basis of more detailed engineering studies.  
<sup>6</sup> See Plan text (pages \*\*.\*\*) for description of proposed alternative alignment options.  
<sup>7</sup> See Plan text (page \*\*) for description of proposed alternative alignment options.  
<sup>8</sup> See Plan text (page \*\*) for discussion of this road.

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Map 6 Bikeways: Revise to reflect Council decisions on the Master Plan Amendment.

**Land Use and Zoning**

The most [appropriate] effective way to protect the unique environmental resources in the Ten Mile Creek watershed is to combine the advanced stormwater management techniques of Environmental Site Design with [efforts] actions to significantly reduce the amount of land disturbed by development. To achieve this goal, the Plan Amendment recommends a zoning pattern that encourages innovative site design as a means to limit disturbance and imperviousness. Consequently, recommended maximum dwelling units per acre are higher than impervious limits would typically accommodate using traditional site design and forms of development. Property owners are provided a great deal of flexibility regarding unit type and, where appropriate, building height, to allow them to achieve development objectives, if impervious caps can be met. Higher densities may encourage new forms of development as a means of achieving increased development potential. Full density allowed by a recommended zone may only be achieved if it does not exceed the applicable impervious surface cap in the proposed overlay zones.

East of I-270, the relationship between development in the headwaters areas and overall stream quality magnifies the tension among three important elements of the 1994 Plan’s vision for Clarksburg: timely development at an appropriate scale in the Town Center, provision of employment land uses, and resource protection. The elements are not exclusive—some development can occur while reasonably protecting natural resources—but shifting development toward uses that reduce imperviousness and have less disturbance in the part of the Town Center [district] District that drains to Ten Mile Creek would provide additional safeguards. [[In addition, ongoing monitoring of office market fundamentals by M-NCPPC research staff, published quarterly, shows significant amounts of vacant space and weak demand for office space, which suggest that the 1994 Plan vision of Clarksburg as a primary employment resource is no longer viable.]]

More generally, a broad mix of uses in parts of Clarksburg can create vibrant neighborhoods that are attractive to employers, workers and residents[,] by providing jobs, amenities, gathering places and entertainment. Areas along I-270 now designated exclusively for employment are appropriate for such mixed-use development, including retail uses, which reflects changes in the demand for exclusively office uses. Mixed-use activities can support Clarksburg’s development by attracting people to the area, supporting other employment and providing amenities.

West of I-270, keeping more undeveloped and forested land means reducing the development footprint—the amount of land that is disturbed by development. This [means] involves a series of potential choices that include:

- [reducing] limiting the development footprint while [maintaining] reducing development densities recommended by the 1994 Plan. This would [require] be mitigated by changes to the dwelling unit mix and higher net densities per acre to accommodate the [recommended] number of units[,but] recommended in the Plan Amendment on less land.
- retaining the generally single-family housing emphasis, while reducing the development footprint, which would significantly reduce overall development density and the number of units.

777 This Plan adopts the first choice as the most reasonable means to balance the need to protect the  
 778 environment with achieving important land use goals for the Clarksburg Plan, while at the same time  
 779 maximizing the development potential for the area West of I-270.

780  
 781 Recommendations for the three large, privately owned undeveloped properties in the watershed have  
 782 two [objectives] aims:

- 783 • for [the] all properties, but particularly those that fall within the portion of the Town Center in the  
 784 Ten Mile Creek headwaters, determining their roles in fulfilling [master plan] Master Plan  
 785 objectives
- 786 • determining the size and location of protection and open space areas that should remain  
 787 undeveloped, to be managed for conservation purposes and to reduce impervious areas devoted to  
 788 development in the watershed, thereby reducing impacts to overall stream quality.

789  
 790  
 791 Map 7 Proposed Land Use: Revise to reflect Council decisions on the Master Plan Amendment.

792  
 793  
 794 Map 8 Proposed Zoning: Revise to reflect Council decisions on the Master Plan Amendment.

795  
 796  
 797 **East of I-270**

798  
 799 [The] This area lies within the headwaters of Ten Mile Creek [[between]] east of I-270 [[and MD 355]]  
 800 and within the Town Center District of Clarksburg, comprising the western portion of that District. It  
 801 includes the Egan/Mattlyn Enterprises and Miles-Coppola properties [lie in the headwaters of Ten Mile  
 802 Creek, between I-270 and MD 355] along with the Historic District, and some [[small]] additional  
 803 properties [[along MD 355]] (see Map 9). The properties outside the Historic District total [[nearly  
 804 200]] approximately 240 acres and [[both]] most are zoned R-200. The 1994 Master Plan  
 805 recommended planned development floating zones for the properties—Planned Development (PD) for  
 806 the Egan/Mattlyn Enterprises property and Mixed-use [planned development] Planned Development  
 807 (MXPD) for the Miles-Coppola properties.

808  
 809 The Plan did not discuss the Egan/Mattlyn property in detail, but [the] its Land Use Plan does show the  
 810 property with a density of two to four units per acre. The 1994 Plan made no explicit density  
 811 recommendation for the Miles-Coppola properties, stating instead that the property be designated an  
 812 employment site suitable for as much as 470,000 square feet of space. This reflects its location along  
 813 I-270 and proximity to a future stop along the Corridor Cities Transitway. The Land Use Plan showed  
 814 approximately equal parts of the property as residential (at seven to nine units to the acre) and research  
 815 and development (R&D) uses.

816  
 817 The water quality in the streams that drain this area, particularly in the southern portion, is already  
 818 compromised by the existing development associated with the roadways, elementary school, power  
 819 substation, Historic District and Clarksburg Heights. Limiting additional imperviousness in this area  
 820 and, to the extent reasonable, protecting most of the existing forest, is essential to keeping the  
 821 downstream effects to a minimum while supporting the Town Center District. Reducing  
 822 imperviousness below the recommended limits would not significantly change the resulting water  
 823 quality in the subwatershed.

824



825 **Egan/Mattlyn Enterprises LLC Property**

826  
827 The northernmost headwaters tributary of Ten Mile Creek runs through the approximately 100-acre  
828 Egan/Mattlyn property. A second tributary traverses the eastern portion of the property. The two  
829 tributaries are in different subwatersheds of Ten Mile Creek. The property is largely open, with  
830 sparsely wooded areas in the stream valleys, and most of the property is in turf or meadow. Its owners  
831 currently operate a catering and entertainment venue for outings and other special events. Main and  
832 support buildings are located along the ridge that separates the two subwatersheds. Topography slopes  
833 to the northwest and southeast, toward I-270. Removing the floating zone option could reduce the  
834 imperviousness that would have resulted from implementing the 1994 Plan recommendations.

835  
836 The 1994 Plan [recommends] recommended residential development for the property largely because  
837 of its distance from the Town Center and the transit station. Retaining that recommendation while  
838 [limiting development] allowing up to [two] three units per [acres could reduce water quality impacts  
839 by reducing imperviousness and providing] acre, restricted by an impervious cap and substantial open  
840 space[, either through master plan guidelines for a floating zone development plan or as a  
841 recommendation for] requirements, will reduce the potential impact on stream quality while  
842 maximizing development potential. Design techniques that reduce lot sizes; cluster development [in  
843 the R-200 Zone]; or flexibility in unit types can reduce the amount of land disturbance. Such a  
844 development [could also permit] pattern permits a broader array of housing types, while [including  
845 Environmental Site Design. Design techniques that reduce lot sizes or cluster development could  
846 reduce imperviousness as well] protecting sensitive resources and maintaining fair stream conditions.

847  
848 **Recommendations**

- 849 • [Retain current recommendations for residential uses by applying residential cluster development  
850 used] Include this property in the [R-200 Zone. Establish an environmental overlay] proposed  
851 Clarksburg East Environmental Overlay zone [to limit] with a 15 percent imperviousness [of new  
852 development greater than five acres to 25 percent] limit and an 80 percent open space requirement.  
853 • Rezone properties to R-90, with a maximum density of three units per acre (approximately a 297  
854 unit limit), or up to 3.66 units per acre with a Moderately Priced Dwelling Unit (MPDU) bonus and  
855 flexibility regarding unit types and building heights via the overlay zone.  
856 • Use the overlay zone to permit varied unit types, including single-family attached, single-family  
857 detached, and multi-family. This Plan recommends that maximum development yields may only  
858 be realized with units that achieve higher densities within the smaller developable area established  
859 by the imperviousness limit and open space requirement.

860  
861  
862 Map 9 Properties East of I-270: Revise to reflect Council decisions on the Master Plan Amendment.

863  
864  
865 **Miles-Coppola Properties**

866  
867 Two branches of a headwaters tributary run through the Miles-Coppola properties and the western part  
868 drains to a second tributary. The heavily wooded stream valleys are steep and there is a significant  
869 drop in elevation across the properties from MD 355 to I-270. Topography, forest, and steep slopes  
870 create three separate developable areas that constitute about 50 percent—50 acres—of the properties,  
871 which total about 98 acres. This assumes that the MD 355 Bypass would consume a portion of the  
872 property along the northeastern edge.

873  
 874 These environmental and man-made constraints make it difficult to achieve the 1994 Plan's goal of  
 875 promoting "a better relationship between this property and portions of the Town Center east of  
 876 MD 355." The most direct route from the largest development area to the transit station location  
 877 proposed in the 1994 Plan requires crossing both a stream and [MD 121] Clarksburg Road. The  
 878 distance from the center of that development area to the core of the Town Center is more than three  
 879 quarters of a mile. While the central development area may be close to Redgrave Place, topography on  
 880 both sides of [MD 121] Clarksburg Road will make the walk challenging for pedestrians.

881  
 882 Physical constraints, combined with the future roadway and transit network, suggest that the area  
 883 should function independently, but in a way that supports the Town Center. While an employment  
 884 focus might be desirable to achieve the goal of increasing opportunities to live and work in Clarksburg,  
 885 there are significant amounts of available and yet to be developed space to the south in Germantown  
 886 and the Great Seneca Science Corridor. This, combined with a weakened regional office market and  
 887 more attractive and available locations elsewhere, suggests that a zone that would focus exclusively on  
 888 [retaining the] employment [recommendation] for the Miles-Coppola properties would mean  
 889 significantly delaying development of these properties. [Moreover, the recommended level of  
 890 development and market conditions may not be able to support tall buildings with smaller footprints  
 891 and parking structures that would reduce imperviousness and enhance the effect of Environmental Site  
 892 Design.]

893  
 894 **Recommendations**

895  
 896 [Earlier development] Development of these properties could help support important commercial  
 897 activity in the Town Center, [provided] if it is complementary. A five acre area close to MD 121 and  
 898 the Town Center is recommended for zoning that could result in [A mix of commercial and] residential  
 899 or commercial uses [could further] or a mix of uses. The remaining developable area on the property  
 900 is recommended for residential uses that can provide homes to support retail in Clarksburg's Town  
 901 Center. Such a pattern could provide [the types of services that today require travel outside  
 902 Clarksburg. They could also provide] more variety in higher density residential uses, shopping,  
 903 restaurants, and other business opportunities desired by Clarksburg residents. This [amendment  
 904 proposes a flexible, but integrated mix of retail, office, and housing uses on the Miles-Coppola  
 905 properties. It] Amendment recommends:

- 906 • [Commercial uses that complement, but do not compete with or encroach on the core Town Center.  
 907 Retail development that requires a broader market, and amenities like restaurants and entertainment  
 908 venues, could help create a separate attraction on these properties for Clarksburg residents to  
 909 enjoy.]
- 910 • Including these properties in the proposed Clarksburg East Environmental Overlay zone with a  
 911 15 percent imperviousness limit and an 80 percent open space requirement.
- 912 • Directing development to two potential development areas. The southern area, located near  
 913 Clarksburg Road, benefits from access to Clarksburg Road and the Town Center and, therefore, is  
 914 appropriate for more intense development. The Plan Amendment recommends CRT zoning  
 915 (CRT 2.0, C 2, R 2, H 120) for this area, with a residential zone (R-90) on the remainder of the  
 916 Miles-Coppola property, to concentrate density and imperviousness on the southern developable  
 917 area near major roads and within proximity of the Historic District and Town Center.
- 918 • Allowing housing or commercial uses on the southern developable area that complement, but do  
 919 not compete with, the core Town Center. High density residential housing, lodging, or office  
 920 development would all support Town Center.

- 921 • Orienting residential development on the northern developable area toward the MD 355 Bypass to  
 922 take advantage of proximity to future transit and to enable residents to reach businesses or  
 923 activities in the Town Center using an integrated network of roads, trails, and sidewalks.
- 924 • Concentrating and integrating development to allow more of the existing forest and natural terrain  
 925 to remain undisturbed, [reducing] reduce imperviousness, and [contributing] contribute to  
 926 improved water quality.
- 927 • [Establishing an imperviousness cap of 25 percent of the total tract area on properties in excess of  
 928 five acres]
- 929 • [The Commercial Residential Zones off an opportunity to balance a mix of uses for each  
 930 development area, while providing significant amounts of housing and commercial uses that would  
 931 help implement the 1994 Plan’s vision for a complete corridor town. Development on the  
 932 properties should nonetheless employ Environmental Site Design techniques and preserve  
 933 undeveloped open space to reduce imperviousness. Should optional method development occur,  
 934 construction of the MD 355 Bypass should be considered a priority as a major public benefit.]
- 935 • [This Plan Amendment recommends CR 0.75, C 0.5, R 0.5 H 85 for these properties. Maximum  
 936 building heights of 85 feet are appropriate in the portion of the properties nearer I-270, and in areas  
 937 along Md 121 closest to the I-270 interchange, where buildings will be less visible from the  
 938 Historic District, but not exceed 45 feet. There should also be a transition in heights on the  
 939 Miles/Coppola properties, from the areas designated for lower building heights to those where  
 940 taller buildings are envisioned.]
- 941 • Permitting varied unit types via the overlay zone, including single-family attached, single-family  
 942 detached, and multi-family, with flexibility regarding building heights.
- 943 • Permitting a maximum density of three units per acre (approximately a 279 unit limit), or 3.66  
 944 units per acre with an MPDU density bonus on the portion of the property to be zoned R-90.
- 945 • Recognizing that maximum development yields may only be realized with unit types that achieve  
 946 higher densities within the smaller developable areas created by the imperviousness limit and open  
 947 space requirement.

948  
949 **Clarksburg Historic District and Vicinity**

950  
951 The majority of Clarksburg’s Historic District lies within the Ten Mile Creek watershed (see Map 9).  
 952 The [district] District straddles MD 355 from its intersection with Stringtown Road to west of its  
 953 intersection with [MD 121] Clarksburg Road. The 1994 Plan identified the [historic district] Historic  
 954 District as a focal point of the Town Center, encouraging sensitive and appropriate infill development  
 955 in the [district] District as an important component of the Plan’s objectives for the Town Center. The  
 956 Plan includes a series of design guidelines that are designed to retain the identity of the [historic  
 957 district] Historic District by reinforcing building scale and historic building patterns—structures close  
 958 to the road, deep back yards, and expanses of nearby green space—that characterized the original  
 959 settlement. The 1994 Plan recommended renovations of existing buildings that would allow both  
 960 residential and smaller scale commercial activities, like shops and offices. To protect the [district]  
 961 District, the Plan recommended reduced building heights and residential zones in the immediately  
 962 adjacent areas, and recommended relocation of MD 355 to carry through trips away from the Historic  
 963 District.

964  
965 The existing zones in the [district] District—convenience and general commercial (C-1 and C-2) and  
 966 one-family residential (R-200)—are not adequate to accomplish the 1994 Plan’s [historic preservation]  
 967 goals, particularly the idea of accommodating residential and light commercial uses across the entire  
 968 [district] District. The Commercial Residential [Neighborhood (CRN)] Town (CRT) Zone allows

969 densities and building heights that will encourage infill development in [tailored more precisely to] the  
 970 District and will allow [Plan's land use objectives for] new uses to be introduced that may help to  
 971 invigorate the [district, while supporting the Plan's recommendation to protect the scale and character  
 972 of the historic district] District. It [also] allows property owners the flexibility to rehabilitate properties  
 973 for a variety of potential uses, making renovation more attractive.

974  
 975 [[Although it is not in the Historic District, t]] The area between the Miles-Coppola properties and  
 976 existing MD 355 is [[also]] appropriate for the [CRN] [[CRT]] CRN Zone as a transition between the  
 977 CRT in the Historic District and the R-90 zoning on this portion of the Miles-Coppola property. This  
 978 area—nine parcels totaling about 10.5 acres—is in the C-2 and R-200 zones. The County [plans to]  
 979 may build a new Clarksburg Fire Station on two of the parcels, and the remaining parcels are vacant, or  
 980 improved with small homes or businesses. The [CRN] [[CRT]] CRN Zone would allow redevelopment  
 981 that would complement Historic District development across MD 355 [[and create a consistent  
 982 physical setting along the road]].

### 983 **Recommendations**

- 985 • Rezone properties within the Historic District [[and vicinity]] to CRT 0.5, C 0.5, R 0.5, H 45.
- 986 • For new development and redevelopment within the Historic District, support Historic Preservation  
 987 Commission (HPC) decisions that guide protection of Clarksburg's historic character. This may  
 988 result in limits on density or height less than the maximum allowed by the zone.
- 989 • Exclude the Historic District from the Clarksburg East Environmental Overlay Zone and the  
 990 Environmental Buffer requirements in this Plan that exceed standard regulatory requirements, but  
 991 encourage future development and redevelopment to minimize impervious surface area to the  
 992 extent feasible.
- 993 • [This Plan Amendment recommends CRN 0.25, C 0.25, R 0.25 H 35 for the portion of the historic  
 994 district within the Amendment boundary. It should be noted that the proposed revision of the  
 995 Zoning Ordinance includes language exempting from density calculations those historic resources  
 996 that are recommended for preservation and reuse in the applicable master plan. Contributing  
 997 resources in the Clarksburg Historic District shown on the Master Plan for Historic Resources  
 998 would be eligible for the exemption.]
- 999 • [Design guidelines set out for the Historic District in the 1994 Plan remain in place and should be  
 1000 used to direct infill development. In addition, infill or new development must adhere to district-  
 1001 specific guidelines found in the Master Plan for Historic Preservation.]
- 1002 • The following guidelines, for use by the Historic Preservation Commission when reviewing  
 1003 historic area work permits, are intended to assure that infill development in the Clarksburg Historic  
 1004 District is supportive of the District's development patterns and consistent with the character of the  
 1005 Historic District. These guidelines supersede the guidelines in the 1994 Clarksburg Master Plan.
  - 1006 - Orient buildings to the street with parking behind the buildings.
  - 1007 - Retain existing paving widths, locate street trees close to the pavement edge (but in a manner  
 1008 that allows views of significant historic resources) and provide sidewalks (particularly along  
 1009 both sides of Old Frederick Road), lighting, and signage appropriate to the District.
  - 1010 - Road improvements and [[P]] pedestrian and bicycle linkages to and through the District  
 1011 should be appropriate to the scale and character of the District.
  - 1012 - Match the setback of existing buildings, particularly along Old Frederick Road.
  - 1013 - Encourage the [[renovation]] rehabilitation of existing buildings.
  - 1014 - Encourage compatible new construction that highlights and respects historic resources around  
 1015 it.

- 1016 - Move historic resources only as a last resort if necessary for public capital improvements and
- 1017 relocate within the Historic District to the extent feasible.
- 1018 - The prominence of Hammer Hill, and the Clarksburg Methodist Episcopal Church and the open
- 1019 space in front of the Clarksburg Methodist Church, must not be diminished by any surrounding
- 1020 development.
- 1021 - Encourage the maintenance of existing trees and major landscaping features.
- 1022 - Encourage gateways at both north and south entrances to the District.

1023

1024 [This Plan Amendment recommends CRN 0.25, C 0.25, R 0.25 H 35 for the area between the Miles

1025 Coppola properties and existing MD 355.] This Plan Amendment recommends CRN 0.25, C 0.25, R

1026 0.25 H 35 for the area between the Miles Coppola properties and existing MD 355.

1027

1028 **Transit Station**

1029

1030 The 1994 Plan shows a transit station where the MD 355 Bypass intersects Redgrave Place. The Plan

1031 recommends residential uses near the station at a scale sympathetic to the adjacent [historic district]

1032 Historic District, enabling local residents to walk to the transit stop. Clarksburg Elementary School is

1033 currently located in the area proposed for the station and the Plan recognizes that the school would

1034 remain for a number of years before its eventual relocation or replacement. It is important that the

1035 transit station maintain a strong pedestrian connection to the Town Center via Redgrave Place.

1036

1037 **Recommendations**

- 1038 • Maintain the transitway to Clarksburg [and] in the vicinity of the Miles-Coppola properties, where
- 1039 it could serve [primarily residential and employment uses, as well as development east of MD 355
- 1040 and west of MD 121] uses in the Town Center District.
- 1041 • Two alternative alignments for the Bypass are also shown and should be studied as part of a facility
- 1042 plan when the Miles-Coppola properties develop (see Map 9). The facility plan should study the
- 1043 appropriate [need for the full 150-foot] ROW for the bypass, considering potential modifications to
- 1044 the design of the Corridor Cities Transitway. If an alternative alignment is chosen, the transit
- 1045 station location should retain a pedestrian connection to Redgrave Place and fulfill the intent of the
- 1046 1994 Plan to connect the Town Center with the Historic District.

1047

1048 **Fire station**

1049

1050 Montgomery County has acquired a vacant, forested property within the Ten Mile Creek watershed to

1051 build a fire station. The site is directly outside the Historic District, between MD 355 and the Miles-

1052 Coppola properties. If developed as currently planned and approved, the fire station would result in

1053 37 percent of the property with impervious cover.

1054

1055 Given its location at the headwaters of Ten Mile Creek, every effort should be made to explore other

1056 possible sites, either outside the Ten Mile Creek watershed or on land within the Planning Area that is

1057 already developed with impervious surfaces. Leaving the current fire station site undeveloped would

1058 not only reduce overall subwatershed imperviousness, but also would provide greater flexibility in the

1059 alignment of the planned bypass. While an extensive search for an alternate location should be

1060 conducted, if another one is not found, a fire station at the current location should not be ruled out.

1062 **Recommendation**

1063  
1064 Consider other options for a fire station, either outside the Ten Mile Creek watershed or on already  
1065 developed land where building the fire station would result in a reduced amount of imperviousness. If  
1066 no other site is found, allow development on the current site, but redesign the station to reduce  
1067 imperviousness to the extent feasible.

1068  
1069 **Remaining Properties**

1070  
1071 Portions of the Ten Mile Creek tributaries drain several [[small]] residential and institutional  
1072 developments [[along and east of MD 355. With the exceptions noted below, this Amendment  
1073 recommends no land use changes for these areas and recommends that their existing zones be  
1074 reconfirmed]]. The 1994 Land Use Plan showed three properties at the intersection of MD 355 and  
1075 Comus Road as suitable for the PD Zone. These properties would have qualified for the PD Zone only  
1076 as part of a single development plan with the Egan-Mattlyn property. Because this Amendment  
1077 recommends the Egan-Mattlyn property for the R-90 Zone only, this Amendment eliminates the  
1078 potential to use a Planned Development zone for those properties and recommends retaining the  
1079 existing R-200 zoning. [[Four]] Five other properties, between the Egan-Mattlyn and Miles-Coppola  
1080 properties (but in separate ownership), are recommended to be rezoned to the R-90 zone (as are the  
1081 properties that surround them) within the overlay zone.

1082  
1083 **Recommendations**

- 1084 • Confirm the existing zoning for properties to the north of the Egan-Mattlyn property and rezone  
1085 properties between the Miles-Coppola and Egan-Mattlyn properties to the R-90 zone. The  
1086 Clarksburg East Environmental Overlay zone would apply to the portion of these properties within  
1087 the Ten Mile Creek watershed.
- 1088 • Rezone the one-acre Wright property (between the Miles-Coppola property and Clarksburg Road  
1089 near Gateway Commons Drive) to CRT 2.0, C 2.0, R 2.0, H 120 to allow for the possibility of joint  
1090 development with the portion of the Miles-Coppola property also zoned CRT.

1091  
1092  
1093 **West of I-270**

1094  
1095 **Pulte and King Properties**

1096  
1097 These unique properties comprise [The Pulte Corporation owns or controls] almost 540 acres west of I-  
1098 270 and between Shiloh Church and Clarksburg Roads (see Map 10). Three major Ten Mile Creek  
1099 tributaries originate on the properties and two are contained almost entirely within them. The  
1100 properties are a mix of woodlands and farm fields, with forest covering much of the stream valleys.  
1101 The 1994 Plan recommended the properties (and two other parcels to the north [of the Pulte holdings]  
1102 totaling about 65 acres) for residential development, with a number of guidelines for environmental  
1103 protection and housing unit mix. The Plan designated the 600 acres as a receiving area for Transferable  
1104 Development Rights, with a maximum of up to 900 units. The entire area is in the RE-1/TDR Zone.  
1105 The 1994 Plan also included a staging element. [[It allowed the Council to consider other land use  
1106 actions after a review of the effectiveness of stormwater practices and monitoring results from  
1107 development elsewhere in Clarksburg and in similar stream systems. This analysis has indicated a  
1108 significant risk to the preservation of current water quality levels with the planned levels of

1109 development.]] The Plan required further review of the effectiveness of stormwater practices and  
 1110 monitoring of results from development elsewhere in Clarksburg and in similar stream systems before  
 1111 any development was approved in this sensitive area. The Council reserved its authority to consider  
 1112 other land use actions, as appropriate, based upon the results of this further review. This review has  
 1113 now been completed, and the analysis indicates that the proposed levels of development in the 1994  
 1114 Plan would create a significant risk to stream quality in these sensitive subwatersheds.

1115  
 1116 The subwatersheds that would be affected by building out these properties are largely undeveloped,  
 1117 have high overall stream quality, and support many sensitive species. Any development of these  
 1118 properties will have a negative impact on stream quality.<sup>9</sup> It is on these properties that preserving more  
 1119 undeveloped and forested open space [can], along with Environmental Site Design, [limit] will most  
 1120 effectively reduce the impact of development on water quality.

1121  
 1122 This area includes the most sensitive subwatersheds (LSTM 110 and 111) and the monitoring stations  
 1123 for the reference stream reach. The very low existing imperviousness and long-term agricultural uses  
 1124 have resulted in excellent stream conditions that have been maintained since monitoring began in  
 1125 1994. Even small changes in imperviousness will likely affect the stream, but if imperviousness is  
 1126 kept as near 5 percent as possible, stream conditions can be maintained in the good to excellent range,  
 1127 based on the majority opinion of environmental experts. The stream impacts [will] should be  
 1128 minimized by making preservation and protection of natural resources a clear priority; maintaining  
 1129 natural drainage routes and patterns; minimizing imperviousness; clustering development; planting all  
 1130 stream buffers in forest; and minimizing grading, soil disturbance, and soil compaction.

1131  
 1132 The combination of reduced densities and cluster development could increase undeveloped open space  
 1133 using privately owned conservation areas in addition to parkland. The Rural Neighborhood Cluster  
 1134 (RNC) Zone would allow a more precise percentage of open space [—as much as 85 percent of the  
 1135 gross acreage—] to be required on the properties. The RNC Zone requires a significant portion of the  
 1136 open space to be undisturbed and contiguous. It provides an optional method of development on public  
 1137 water and sewer service with a range of allowable development densities up to a maximum of one  
 1138 dwelling unit [to the] per acre, and allows master plans to make density recommendations, enabling a  
 1139 more precise density designation appropriate to the properties. It also provides a standard method of  
 1140 development without sewer service at one dwelling unit for every five acres, should that be determined  
 1141 more appropriate. [The RNC Zone can be used with TDRs, retaining an important policy in support of  
 1142 agriculture.]

1143  
 1144 The Cephas-Summers House, a locally-designated historic resource, is located on the property  
 1145 proposed for development along Clarksburg Road. The current environmental setting includes the  
 1146 whole property, but it could be reduced to approximately five acres as part of the proposed  
 1147 development. The house should be restored and become part of the adjacent development.

1148  
 1149  
 1150 Map 10 Properties West of I-270: Revise to reflect Council decisions on the Master Plan Amendment.

---

<sup>9</sup> See Appendix 9, Attachment R.



1153 **Recommendations**

- 1154 • Include these properties in the proposed Clarksburg West Environmental Overlay zone, with a 6  
 1155 percent imperviousness limit and an 80 percent open space requirement.
- 1156 • Allow optional method development [on] in the RNC Zone with public sewer, at [in the RNC/Zone  
 1157 for these properties, with] a [recommended] permitted density of one unit [to the] per acre[, if  
 1158 recommended amounts of open space are provided]. Moderately priced dwelling units beyond the  
 1159 minimum 12.5 percent [can] would be [added] in addition to the recommended density, in accord  
 1160 with Chapter 25A of the Montgomery County Code, if the development does not exceed the  
 1161 impervious surface cap.
- 1162 • Provide flexibility in the mix of housing types; allow either a blend of single-family lots and  
 1163 attached units or exclusively attached units as a means of achieving maximum development yields.
- 1164 • Rural open space requirements:
- 1165 - Include all land meeting the Environmental Buffer requirements, as well as forest  
 1166 protection, listed on page \*\*.
  - 1167 - [A minimum of 65 percent of the net tract area must be designated as rural open space. The  
 1168 rural open space must include:]
  - 1169 - [A 175-foot buffer around all streams and a 50-foot buffer around ephemeral streams:]
  - 1170 - [All forested areas:]
  - 1171 - [Slopes greater than 15 percent with erodible soils, and all other slopes greater than 25  
 1172 percent.]
  - 1173 - The neighborhood park recommended for this portion of the watershed may be wholly or  
 1174 partially within the rural open space.
  - 1175 - [Apply a limit of 10 percent imperviousness on the entire property.]
  - 1176 - Dedicate most of the rural open space as parkland (see recommendations for Legacy Open  
 1177 Space).

1178  
 1179 The following should be addressed when implementing the Rural Open Space Design Guidelines as  
 1180 part of the development review process for these properties:

- 1181 • Concentrate cluster development in unforested upland areas; wooded stream valleys should be left  
 1182 intact, undeveloped, and in their natural states as rural open space.
- 1183 • Reduce environmental impacts and imperviousness during development by applying ESD  
 1184 techniques.
- 1185 • Require a conservation management plan for areas outside the limits of disturbance that are not  
 1186 either dedicated to M-NCPPC for parkland or placed in a rural open space easement, if such areas  
 1187 are located in a development plan. This conservation management plan should be coordinated with  
 1188 the Planning Department [[and]], the Department of Parks, and the Department of Environmental  
 1189 Protection to address management of natural resources, preservation of pervious land cover, and  
 1190 compatibility with adjacent land uses (both Parks and development area). This conservation  
 1191 management plan must be approved as part of the preliminary plan for the site. Direct new sewers  
 1192 away from Ten Mile Creek, utilizing proposed and existing roads; pump stations may be required  
 1193 to make connections to sewer lines in Cabin Branch.
- 1194 • [Provide substantial variations in lot sizes, as required by the RNC Zone's development standards.]
- 1195 • Size and locate lots to preserve rural views from Clarksburg Road and ensure an environmental  
 1196 setting of five acres for the historic Cephas-Summers house. Include restoration of the Cephas-  
 1197 Summers house in a development plan.
- 1198 • Incorporate open space into the clustered community to provide neighborhood residents with  
 1199 recreational opportunities.

- 1200 • Provide [connections] access from public roads within the development to the proposed Ten Mile  
 1201 Creek Conservation [Park's] Park to facilitate the creation of trailheads for natural surface [trail  
 1202 system] trails and allow park maintenance access.  
 1203 • [Allow forest planting in buffers (required by Special Protection Area regulations) in excess of the  
 1204 forest conservation threshold to be used as a forest bank. The credits could be used for  
 1205 development projects or sold.]  
 1206

### 1207 **Montgomery County Properties**

1208  
 1209 Montgomery County owns more than 380 acres in the upper reaches of the Ten Mile Creek watershed  
 1210 (see Map 10). The majority of this land, known in the 1994 Plan as Site 30, now houses a County  
 1211 correctional facility. The majority of the property is heavily wooded, and the County has no  
 1212 development plans beyond a planned expansion of the correctional facility. The Parks Department has  
 1213 identified [almost all] most of this wooded area as a [suitable for acquisition through the] Legacy Open  
 1214 Space [program] Natural Resource that is suitable for transfer to Parks as a key part of the Ten Mile  
 1215 Creek Conservation Park.  
 1216

1217 Two parcels totaling about 94 acres are located at the I-270 interchange with [MD 121] Clarksburg  
 1218 Road. The headwater branches that originate on the Miles-Coppola properties combine on one of the  
 1219 County properties to form a headwater tributary. Several smaller streams feed the tributary on these  
 1220 properties and the steeply sloped stream valleys are heavily forested.  
 1221

1222 [The 1994 Plan identified these properties as an employment site, recommending them for no more  
 1223 than 400,000 square feet of space and applying a 15 percent imperviousness cap. They are in the  
 1224 Technology and Business Park (I-3) Zone.]  
 1225

1226 The County has considered the site for its north county bus maintenance and storage facility, but has  
 1227 no current plans for the properties. Montgomery County government commits to keeping this site fully  
 1228 pervious with no development. The Parks Department has identified [the wooded stream valleys for  
 1229 acquisition under the] areas of this site as a suitable Legacy Open Space [Program, which] Natural  
 1230 Resource. It would [reduce imperviousness and enhance water quality] be appropriate to have its  
 1231 management transferred to Parks as part of Ten Mile Creek Conservation Park.  
 1232

1233 The remaining County property surrounding the Detention Center is planned for only a small  
 1234 expansion of the existing facility. This plan intends to accommodate the planned expansion, but limits  
 1235 further development on the site.  
 1236

### 1237 **Recommendations**

- 1238 • Include this area in the Clarksburg West Environmental Overlay Zone with no additional  
 1239 imperviousness permitted. Minimal development of this property would help contribute to water  
 1240 quality in this portion of the watershed. Forested areas should remain undisturbed and the  
 1241 designated [western] portion protected [via] under the Legacy Open Space Program.  
 1242 • No additional impervious cover would be permitted on County owned land west of I-270.  
 1243 However, the Clarksburg West Environmental Overlay Zone may need to be amended at some  
 1244 point to allow a minimal amount of imperviousness associated with an expansion of the  
 1245 Correctional Facility of less than one acre.

- 1246 • Transfer management of areas designated as Legacy Open Space and other appropriate open space
- 1247 in County ownership to the Parks Department to create the northern portion of the Ten Mile Creek
- 1248 Conservation Park.
- 1249 • [If the County chooses to develop the land, limit imperviousness to eight percent on the former
- 1250 depot site.
- 1251 • Imperviousness on the remaining County properties is limited to 4.5 percent.]
- 1252

**The Rural Properties and the Agricultural Reserve**

1253 The rurally-zoned properties and the Agricultural Reserve are not proposed for change in this limited  
1254 [master plan] Master Plan. The rural zoning allows up to one unit per five acres on properties between  
1255 the mainstem of Ten Mile Creek and Shiloh Church Road. The Agricultural Reserve Rural Density  
1256 Transfer Zone allows only one unit per 25 acres. There are currently portions of stream buffers on  
1257 properties in both areas that are not maintained in forest that could benefit from a voluntary forest  
1258 banking program. Protection and restoration of these buffers at the discretion of the property owners  
1259 would help in the overall health of the Ten Mile Creek watershed. Some portions of the rural properties  
1260 should be protected through the Legacy Open Space Program if development is proposed.  
1261  
1262  
1263

**Recommendation**

- 1264 • Retain the existing zoning in these areas.
- 1265 • Include the Rural-zoned properties in the Clarksburg West Environmental Overlay Zone to
- 1266 limit imperviousness associated with special exceptions and institutional uses.
- 1267 • [Establish a forest banking program that would give additional credit for rural or RDT-zoned
- 1268 properties in Ten Mile Creek to voluntarily establish banks for forest planting in unforested
- 1269 stream buffers.]
- 1270 • Explore incentive programs to encourage voluntary forest planting, particularly in unforested
- 1271 stream buffers.
- 1272
- 1273
- 1274

**Water and Sewer Service**

1275 The 1994 Master Plan recommended the provision of public water and sewer service in the Stage 4  
1276 area of Clarksburg based on its initial zoning recommendations. This Plan Amendment continues to  
1277 recommend public services to support the planned development for Stage 4. Specifically, public water  
1278 and sewer service is recommended for the area identified as “Future Service Area C” in the 1994 Plan,  
1279 which includes Stage 4, to support planned development densities, including recommended cluster  
1280 development. The provision of public sewer service will help to reduce the potential for existing and  
1281 future septic systems to impact the watershed. Public and individual water supply and wastewater  
1282 disposal service in the master plan area is recommended to be provided in a manner consistent with the  
1283 service policies included in the County’s *Comprehensive Water Supply and Sewerage Systems Plan*.  
1284  
1285  
1286

1287 Properties within the Plan Area not already receiving public service or recommended for public service  
1288 are expected to use individual, on-site water supply and/or sewerage systems (wells and septic  
1289 systems).

1290 The Ten Mile Creek watershed has no receiving sewers downstream of the Stage 4 area. Wastewater  
1291 flow from the majority of Stage 4/Future Service Area C will need to be pumped out of the watershed  
1292 into sewerage systems serving adjacent Stage 3 development. The *Clarksburg Stage 3 and 4 Area*  
1293 *Facility Plan*, prepared for the Washington Suburban Sanitary Commission (WSSC), anticipated the

1294 need for planned Stage 3 area sewerage facilities to accept and handle pumped wastewater flows from  
 1295 Stage 4. Environmental concerns and competing development interests within Stage 4 could result in  
 1296 individual proposals for several wastewater pumping facilities scattered throughout the sewer service  
 1297 area. To minimize infrastructure operation and maintenance needs, and to create a logical, efficient,  
 1298 and environmentally responsible sewerage system for Stage 4, this amendment recommends WSSC's  
 1299 coordination of a comprehensive Stage 4 sewerage facility plan, with the participation of all major  
 1300 Stage 4 development interests. If necessary, this requirement should be incorporated into service area  
 1301 category change approvals for the Stage 4 sites.

1302  
 1303 The lack of public sewer service, needed to replace aging septic systems, has hampered improvement  
 1304 and redevelopment of the Clarksburg Historic District, an integral part of the Town Center. The  
 1305 County is investigating the design and construction of a public sewerage system to serve the historic  
 1306 district. If this sewerage system is constructed ahead of other Ten Mile Creek development, it would  
 1307 include a small, interim pumping station and force main tying into the Town Center system. This  
 1308 interim station and force main would be removed from service when gravity sewer service becomes  
 1309 available from the Miles-Coppola property. Planning and development of the Miles-Coppola project  
 1310 sewerage system will need to include, at a minimum, a gravity main extension to accept wastewater  
 1311 flows from the historic district.

1312  
 1313 The Council received a substantial amount of public hearing testimony and correspondence regarding  
 1314 the potential impact development in the Ten Mile Creek watershed could have on the Little Seneca  
 1315 Reservoir and drinking water in general. In response to these concerns, the Council heard from WSSC  
 1316 staff, DEP staff, and the Executive Director of the Interstate Commission on the Potomac River Basin  
 1317 (ICPRB).

1318  
 1319 Both DEP and WSSC staff stated that based on the environmental consultants' analyses, the  
 1320 development under consideration in the Ten Mile Creek watershed would not have a significant impact  
 1321 on the Little Seneca Reservoir or on drinking water quality. However, DEP staff did note that a study  
 1322 of the long-term health of the reservoir (taking into account all of the watersheds draining into the  
 1323 reservoir) would be worthwhile.

1324  
 1325  
 1326 **Recommendations**

- 1327 • [[Approve amendments for public water and sewer service for the areas recommended to be served  
 1328 in the land use chapter [Stage 4 area (Future Service Area C)] of this plan [Ten Mile Creek] in the  
 1329 County's Water and Sewer Plan. Include a requirement for a comprehensive [Stage 4] sewerage  
 1330 system facility plan to serve recommended service areas in Ten Mile Creek. WSSC service and  
 1331 financing policies will require construction of needed water and sewer facilities as part of the  
 1332 development process by the property owner.]]
- 1333 • Approve a comprehensive category change amendment to the County's Ten-Year Comprehensive  
 1334 Water Supply and Sewerage Systems Plan to support the extension of public water and sewer  
 1335 service to all of the properties in the Ten Mile Creek Area Limited Amendment which are  
 1336 recommended to be zoned R-90, R-200, CRT, CRN, and RNC. A comprehensive category change  
 1337 amendment is consistent with the 1994 Master Plan which recommended that future Water and  
 1338 Sewer Plan amendments be of a comprehensive or area-wide nature only. Include as a condition of  
 1339 the approval of the amendment, a requirement for a comprehensive sewerage system facility plan  
 1340 to serve recommended service areas in Ten Mile Creek. WSSC service and financing policies will

- 1341 require construction of needed water and sewer facilities by the property owner as part of the  
 1342 development process.
- 1343 • Locate sewer main alignments and pumping station sites to minimize, as feasible, disturbance of  
 1344 environmental buffers and forested areas.
  - 1345 • The 1994 Master Plan includes the Clarksburg Historic District within the proposed sewer service  
 1346 area. The Limited Master Plan Amendment continues to support this recommendation.
  - 1347 • While approval of water and sewer service to nearby properties (as recommended by the Ten Mile  
 1348 Creek Area Limited Amendment) may make sewer service more economically feasible in the  
 1349 Clarksburg Historic District, it is uncertain when such extensions would occur and the costs to  
 1350 extend sewer may still be prohibitively expensive for property owners in the Historic District.  
 1351 Given the immediate concerns of property owners in the Clarksburg Historic District, and that  
 1352 public sewer service is needed to realize the County's land use goals in the area, the County should  
 1353 work with WSSC on a project to extend public sewer to properties in the Clarksburg Historic  
 1354 District as soon as possible and in a manner which is affordable to property owners.
  - 1355 • This Plan supports a study [[looking at]] of the long-term health of the Little Seneca Reservoir  
 1356 (encompassing the land use impacts from all of the watersheds draining into the Reservoir). The  
 1357 details of such a study, such as the scope and who would lead and pay for the study, should be  
 1358 discussed by the Reservoir's regional partners (WSSC, Fairfax County Water Authority,  
 1359 Washington Aqueduct, and the Interstate Commission on the Potomac River Basin) and  
 1360 Montgomery County.
  - 1361 • [Provide sewer service to the Historic District as part of the Stage 4 development, including at a  
 1362 minimum, the removal of interim wastewater pumping facilities in favor of gravity sewer service.]  
 1363  
 1364

## 1365 Parks

### 1366 Legacy Open Space

1367 Montgomery County preserves its most significant undeveloped open space through its Legacy Open  
 1368 Space program. The 2001 *Legacy Open Space Functional Master Plan* identifies natural resources,  
 1369 open space, farmland, and historic places that can then be conserved through a variety of protection  
 1370 tools, including easements, protection through the regulatory process and, when appropriate,  
 1371 acquisition. The Plan includes the Special Protection Area of the Ten Mile Creek watershed as a  
 1372 Natural Resource site that meets Legacy Open Space criteria, but needs further study to select specific  
 1373 properties.  
 1374  
 1375

1376 Evaluation of the Ten Mile Creek watershed concluded that the 600 acres of forested headwaters met  
 1377 six of the eight criteria for inclusion in the Legacy Open Space program. The forest:

- 1378 • “has particular countywide, regional or national significance” for its potential ability to support  
 1379 rare, threatened or endangered species, aquatic communities, and its varied habitats;
- 1380 • “is critical to the successful implementation of public policy such as protection of the Agricultural  
 1381 Reserve and public water supply;”
- 1382 • “is part of a ‘critical mass’ of like resources that perform an important environmental or heritage  
 1383 function;”
- 1384 • “provides human or ecological connectivity between significant park, natural or historic areas  
 1385 and/or corridors;”
- 1386 • “helps to buffer and thereby protect other significant resources;”  
 1387

- 1388 • “represents an opportunity for broadening interpretation and public understanding of natural and  
1389 heritage resources.”  
1390

1391 **Recommendations**

- 1392 • Designate the high quality, critical forest and open habitats that protect the quality of the Ten Mile  
1393 Creek headwaters as a Legacy Open Space Natural Resource site (Class II). Approximately 1,230  
1394 acres are proposed for designation (see Map 11).  
1395 • Protect the designated Natural Resource on an individual property basis using a variety of tools,  
1396 which may include easements, dedication through the development review process, and fee simple  
1397 acquisition.  
1398 • To create the core of the Ten Mile Creek Conservation Park, [convey] dedicate to Parks the Rural  
1399 Open Space outside of the development envelope on the Pulte and King properties as a condition of  
1400 the development review process. Land not available through dedication during the development  
1401 review process may be acquired by the Department of Parks.  
1402  
1403

1404 Map 11 Proposed Legacy Open Space and Parks: Revise to reflect Council decisions on the Master  
1405 Plan Amendment.  
1406

1407  
1408 **Parks and Trails**  
1409

1410 The 1994 Plan created a park and open space system that designated general locations for new local  
1411 parks serving Clarksburg’s developing neighborhoods and were closely integrated with proposed  
1412 development. Importantly, the Plan also made provisions for connections between these local parks  
1413 and the greenway network as a prominent component of its overall vision. However, since park  
1414 planners did not anticipate the significant development west of I-270 that was ultimately approved as  
1415 part of the 1994 Plan, no local park was included in the Ten Mile Creek watershed.  
1416

1417 Since approval of the 1994 Plan, park planners have recognized the emerging importance of natural  
1418 resource areas as a form of recreation. Bicycling, hiking, and horseback riding, as well as activities  
1419 such as wildlife and bird watching or nature photography, all depend on the availability of large  
1420 amounts of undisturbed forests and other natural areas. The substantial forests, steep stream valleys,  
1421 and high ridges of the Ten Mile Creek watershed west of I-270 can be used for such purposes and be  
1422 reached using sensitively located trails through the already proposed conservation park and greenway  
1423 system (see Map 12).  
1424

1425 Also, since approval of the 1994 Plan, the *Legacy Open Space Functional Master Plan (2001)*  
1426 designated and the Parks Department acquired Clarksburg Triangle Civic Green as an urban open  
1427 space. The site is located in the heart of the Historic District on the east corner of Clarksburg Road  
1428 and MD 355. Planning and implementation for this central civic space within the Town Center District  
1429 will need to be coordinated with other public infrastructure planning for Clarksburg, including the  
1430 CCT, water and sewer provision, and road and bikeway improvements.  
1431

1432 **Recommendations**

- 1433 • Provide a countywide natural surface trail, designed to M-NCPPC Montgomery Parks standards, in  
 1434 the Ten Mile Creek area linking Little Bennett Regional Park and Black Hill Regional Park, per the  
 1435 *Countywide Park Trails Plan* (2008) and the 1994 Clarksburg Master Plan.
- 1436 • Provide five trailheads, designed to M-NCPPC Montgomery Parks standards, to access the Ten  
 1437 Mile Creek natural surface trail and nearby natural areas for park users and operations staff.
- 1438 • Provide a new natural resource-based Neighborhood Park of at least ten developable acres for  
 1439 close-to-home recreation for the Ten Mile Creek area, designed to M-NCPPC Montgomery Parks  
 1440 standards. The park, located outside of environmentally sensitive areas, is recommended as a  
 1441 platform for walkable, close-to-home facilities and to serve as a trailhead for the Ten Mile Creek  
 1442 natural surface trail. The park should have a natural resource theme and should be located adjacent  
 1443 to conservation parkland. The proposed Preliminary Program of Requirements for the  
 1444 Neighborhood Park is as follows:
- 1445 - Access to the Conservation Park to the west for trail users and operations, maintenance and
  - 1446 police functions from the development
  - 1447 - Trailhead with small gravel parking area (6-8 spaces), with access through adjacent
  - 1448 development
  - 1449 - Picnic area
  - 1450 - Natural play area
  - 1451 - Community garden
  - 1452 - Community open space large enough for community festivals and pickup sports, at least 15,000
  - 1453 square feet
  - 1454 - Adequate space to provide for Environmental Site Design, Stormwater Management, Forest
  - 1455 Conservation, and other regulatory requirements. Ensure that public infrastructure planning for
  - 1456 Clarksburg is fully coordinated with planning and implementation efforts for Clarksburg
  - 1457 Triangle Civic Green.

1458  
 1459 Appendix 7 includes additional information in support of these recommendations.  
 1460  
 1461

1462 **Implementation**

1463  
 1464 Although this Amendment is limited in scope and geography, its implementation nonetheless requires  
 1465 cooperative efforts by a number of private and public actors. This chapter indicates follow-up efforts  
 1466 that are needed once the Plan is adopted.  
 1467

1468 **[[Areawide]] Overlay Zones**

1469  
 1470 This Amendment recommends limiting imperviousness, establishing open space requirements for new  
 1471 development both east and west of I-270]. Previous efforts to impose such caps in the Upper Paint  
 1472 Branch] and changing some development standards of the underlying zones in order to maximize  
 1473 development flexibility and protect sensitive natural resources [Upper Rock Creek watersheds have  
 1474 used environmental overlay zones to apply the caps]. This Amendment recommends creation of  
 1475 [similar] overlay zones to [impose] establish a [25] 15 percent imperviousness limit on new  
 1476 development in the Town Center portion of the watershed, a [ten] six percent limit on the Pulte-King  
 1477 properties, and no additional imperviousness [limits of 4.5 percent and eight percent] on County-  
 1478 owned land. [Properties of less than five acres] Very small properties will be exempt from  
 1479 imperviousness limits in the [Town Center under the] overlay zones.



1480

1481 The purpose of these zones is to preserve and protect sensitive natural resources in the watershed by  
 1482 reducing the amount of land disturbed for development. Limiting impervious surfaces enables natural  
 1483 filtering of water runoff[,] and creates undeveloped open space that can be forested, which can help  
 1484 support cooler water temperatures and a diverse population of insects and invertebrates within streams.

1485

### 1486 **Overlay Zone Boundaries**

1487

1488 Each overlay zone covers a large area, rather than only the key properties identified in the Master Plan.  
 1489 While some of the other properties are likely to develop at less than the limits in the overlay zone,  
 1490 including them within its boundaries will reduce/limit development that could result in significantly  
 1491 more imperviousness. For example, development in the rural zone west of I-270 could result in  
 1492 individual homes that have an imperviousness of less than 6 percent, but if an institution or special  
 1493 exception use were to purchase the property, the imperviousness could be significantly greater than  
 1494 6 percent. On the east side of I-270, all properties in Ten Mile Creek, except those in the Historic  
 1495 District, would be within the boundary with exemptions for State and County roads and bikeways.  
 1496 Park property within the Ten Mile Creek Watershed that was not within the Master Plan boundaries  
 1497 will also not be in the overlay zone, but the Department should do everything feasible to limit  
 1498 additional imperviousness. On the west side, all land draining to Ten Mile Creek not zoned Rural  
 1499 Density Transfer (RDT) would be included. In both zones, small properties existing at the time of this  
 1500 Amendment that develop without combining into larger developments would be exempted from the  
 1501 restrictions of the zone.

1502

### 1503 **The Clarksburg East Environmental Overlay Zone**

1504

1505 Details regarding the overlay zone are addressed in the overlay zone for the east side of I-270. The  
 1506 major elements are as follows:

- 1507 • Impervious surface area limit of 15 percent of the area within a development application (with a  
 1508 grandfathering provision for properties already exceeding the cap)
- 1509 • 80 percent open space (which should include all environmental buffers and sensitive areas  
 1510 identified in the Master Plan)
- 1511 • All base zones other than R-90 will adhere to the standards of the underlying zones.
- 1512 • For properties with a base zoning of R-90, the requirements of the R-90 zone will be modified by  
 1513 the overlay as follows:
  - 1514 - Density limited to 3 units per acre or 3.66 units per acre with the maximum MPDU bonus
  - 1515 - Any unit type with no requirements for any minimum percentages of unit type should be  
 1516 allowed
  - 1517 - Building height limits increased to 35 for single-family detached, 50 for townhouses, and 65 for  
 1518 multi-family
  - 1519 - Site plan approval should be required
  - 1520 - Setbacks and minimum lot size requirements should be eliminated
- 1521 • Exempt small properties from some or all provisions of the overlay zone.
- 1522 • Consider limited potential exemptions for limited public facilities, such as state and County roads  
 1523 and park facilities.

1524

### 1525 **The Clarksburg West Environmental Overlay Zone**

1526

1527 The major elements in the overlay zone proposed for the west side of I-270 are as follows:

- 1528 • Will follow all standards and requirements of the RNC zone (which are designed to encourage
- 1529 clustering to protect environmental resources), except those relating to diversity of lot size and unit
- 1530 type
- 1531 • Impervious Surface Area limit of 6 percent of the area within a development application; specific
- 1532 properties to be limited to 0 percent (mostly government-owned or with easements, with a
- 1533 grandfathering provision for properties already exceeding the recommended impervious surface
- 1534 limit)
- 1535 • 80 percent open space (which should include all environmental buffers and sensitive areas
- 1536 identified in the Master Plan)
- 1537 • Exempt small properties from some or all provisions of the overlay zone.
- 1538 • Consider limited potential exemptions for public facilities, such as state and County roads and park
- 1539 facilities associated with conservation parks (e.g., small parking lots).

1541 It is possible that the overlay zone **may** be amended at a future time to accommodate less than 1 acre

1542 of Correctional Facility expansion.

#### 1544 Sewer and Water Implementation Actions

1546 The 1994 Clarksburg Master plan stated that “Subsequent Water and Sewer Plan amendments be of a

1547 comprehensive or area wide nature only...” Accordingly, this Master Plan Amendment reconfirms this

1548 intent for the Ten Mile Creek Area. These amendments will require Council approval consistent with

1549 the policies of the Comprehensive Water Supply and Sewerage Systems Plan and the Comprehensive

1550 Sewerage System Study called for in this Master Plan Amendment.”

#### 1552 [[East of I-270]]

1553 Of particular importance to development in the Town Center [district] District generally, and the

1554 Clarksburg Historic District in particular, is the timely provision of sewer service. Infill development

1555 and rehabilitation of existing historic buildings for residential, commercial or mixed-use activities

1556 cannot occur until sewer service is available to properties along MD 355. Although planning for

1557 interim solutions for service to the Historic District is underway, a permanent solution is critically

1558 needed. This Amendment recommends inclusion of facility planning funds for sewer infrastructure to

1559 the Historic District at the earliest possible date. Should the Miles-Coppola properties develop in ways

1560 that facilitate an earlier provision of sewer service, private sector involvement in facility planning and

1561 implementation is welcome.

#### 1563 Other Implementation Actions East of I-270

1566 This Amendment includes recommendations for the MD 355 bypass and for a transit station along the

1567 bypass that would serve bus rapid transit riders. The Plan shows alternative alignments for the bypass

1568 and suggests consideration of alternative locations for the transit station that could reduce impervious

1569 surfaces in this part of the watershed, as well as support connections among the Town Center, the

1570 Historic District, and the Miles-Coppola properties. This Amendment recommends a facility plan for

1571 the bypass to address these issues and to evaluate potential relocation of both the historic Clarksburg

1572 School and the existing Clarksburg Elementary School, which lie in its path. The proposed facility plan

1573 should also consider appropriate rights-of-way for Observation Drive (A-19), which will include the

1574 transit alignment. Right-of-way widths should be reconsidered in light of the shift in mode from light

1574 rail to bus rapid transit. Any change to the right-of-way alignment or width can be incorporated into an

1575 amendment of the Master Plan of Highways. Design guidelines should be developed for facility  
1576 planning for the bypass.

1577  
1578 [Given changes in land use assumptions in support of community building goals, this plan also  
1579 recommends a fresh look at the currently approved fire station plan:

- 1580 • Consider an approach that better integrates the station and its design into the context of future  
1581 development.
- 1582 • Consider including other co-located public uses and functions.]

1583  
1584 **Other Implementation Actions West of I-270**  
1585

1586 This Plan recommends locating a natural resource-based neighborhood park for this part of the  
1587 watershed. Designation of an appropriate place for the park will occur through the regulatory review  
1588 process. It may be accomplished through dedication during the development review process or fee  
1589 simple acquisition.

1590  
1591 As part of its forest conservation programs, Montgomery County has established forest banks, which  
1592 can be used to support voluntary planting of trees in areas—particularly stream buffers—that are  
1593 currently unforested. Development projects take advantage of these banks to offset other forest  
1594 conservation requirements. This Amendment recommends [creation of a forest banking program that  
1595 would give credit to] creating a program to provide incentives for property owners in the Rural and  
1596 Rural Density Transfer zones [who] to plant new forests on their properties, particularly in currently  
1597 unforested buffer areas [on their properties. The credits could be used for development projects or  
1598 sold].

1599  
1600  
1601 **General**  
1602

1603 All illustrations and tables included in the Plan are to be revised to reflect District Council changes to  
1604 the October 2013 Planning Board Draft Plan. The text and graphics are to be revised as necessary to  
1605 achieve clarity and consistency, to update factual information, and to convey the actions of the District  
1606 Council. All identifying references pertain to the Planning Board Draft.

1607  
1608 The Planning Department should work with Executive Branch Departments, including the Department  
1609 of Environmental Protection and Department of Permitting Services, to take all actions necessary to  
1610 implement the recommendations in this Master Plan (such as a comprehensive sewer and water  
1611 category change). In addition, these agencies should identify any changes in regulation or law  
1612 necessary to implement the Master Plan recommendations.

1613  
1614  
1615 This is a correct copy of Council action.  
1616

1617  
1618  
1619 \_\_\_\_\_  
Linda Lauer, Clerk of the Council



# Remaining Properties

## MONTGOMERY COUNTY PLANNING DEPARTMENT



Grey boundary is Master Plan

Red is subwatershed boundaries

White hatch is Historic District

Pink are properties not discussed by Council

Yellow area is CRT/CRN question

White is area to exclude from Overlay Zone

(-)

Zoning Text Amendment No.: 14-03  
Concerning: Overlay Zone -  
                  Clarksburg  
Draft No. & Date: 1 – 4/3/14  
Introduced: April 8, 2014  
Public Hearing:  
Adopted:  
Effective:  
Ordinance No.:

**COUNTY COUNCIL FOR MONTGOMERY COUNTY, MARYLAND  
SITTING AS THE DISTRICT COUNCIL FOR THAT PORTION OF  
THE MARYLAND-WASHINGTON REGIONAL DISTRICT WITHIN  
MONTGOMERY COUNTY, MARYLAND**

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By: Council President at the request of the District Council

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**AN AMENDMENT** to the Montgomery County Zoning Ordinance for the purpose of:

- Creating an overlay zone for Clarksburg East; and
- Creating an overlay zone for Clarksburg West.

By amending the following section of the Montgomery County Zoning Ordinance, Chapter 59 of the Montgomery County Code:

DIVISION 59-C-18.           “OVERLAY ZONES.”

By adding new sections:

Section 59-C-18.25.       “Clarksburg East Environmental Overlay Zone.”  
Section 59-C-18.26.       “Clarksburg West Environmental Overlay Zone.”

*EXPLANATION: **Boldface** indicates a heading or a defined term.  
Underlining indicates text that is added to existing laws  
by the original text amendment.  
[Single boldface brackets] indicate text that is deleted from  
existing law by the original text amendment.  
Double underlining indicates text that is added to the text  
amendment by amendment.  
[[Double boldface brackets]] indicate text that is deleted  
from the text amendment by amendment.  
\* \* \* indicates existing law unaffected by the text amendment.*

*ORDINANCE*

*The County Council for Montgomery County, Maryland, sitting as the District Council for that portion of the Maryland-Washington Regional District in Montgomery County, Maryland, approves the following ordinance:*



1           **Sec. 1. Division 59-C-18 is amended as follows:**

2  
3   **DIVISION 59-C-18. OVERLAY ZONES.**

4   \* \* \*

5   **Sec. 59-C-18.25. Clarksburg East Environmental Overlay Zone.**

6           **59-C-18.251. Purpose.**

7           The purpose of the Clarksburg East Environmental Overlay Zone is to:

- 8           (a) protect the water quantity, water quality, habitat, and biological diversity  
9           of the Ten Mile Creek watershed and its tributaries;  
10          (b) regulate the amount and location of impervious surfaces to maintain  
11          levels of groundwater, control erosion and water temperature, and retain  
12          as many of the functions provided by natural land as possible;  
13          (c) regulate development that could adversely affect this high quality stream  
14          system; and  
15          (d) implement the recommendations of the 2014 Ten Mile Creek Area  
16          Limited Amendment to the Clarksburg Master Plan and Hyattstown  
17          Special Study Area.

18          **59-C-18.252. Procedure for approval.**

- 19          (a) A site plan must be approved by the Planning Board under the  
20          provisions of Division 59-D-3 for any development that must file a  
21          preliminary plan of subdivision under Chapter 50, unless excluded under  
22          Subsection (b).  
23          (b) A lot or parcel for a one-family dwelling that has not changed in size or  
24          shape since January 1, 2014 is excluded from the site plan approval  
25          requirement.



26 **59-C-18.253. Regulations.**

27 (a) Land Use.

28 All permitted and special exception uses allowed in the underlying zones  
29 are allowed in the Clarksburg East Environmental Overlay Zone.

30 (b) Development standards.

31 (1) The development standards of the underlying zone apply, except  
32 as modified by this overlay zone.

33 (2) Except for development under Section 59-C-18.254, the total  
34 impervious surface area for any development after {EFFECTIVE  
35 DATE} may be a maximum of 15% of the total area in the  
36 application for development.

37 (3) All environmental buffer areas or natural resources recommended  
38 for protection in the Ten Mile Creek Area Limited Amendment to  
39 the Clarksburg Master Plan and Hyattstown Special Study Area  
40 must be treated as environmentally sensitive areas, in addition to  
41 other areas identified as environmentally sensitive in law,  
42 regulations, or in the Planning Board’s Guidelines for the  
43 Environmental Management of Development, as amended.

44 (4) All environmentally sensitive areas must be included in the  
45 required open space area.

46 (5) The minimum area devoted to open space is 80% of the total area  
47 under application for development.

48 (6) If the underlying zone is R-90:

49 (A) the maximum density without MPDU bonus density is 3.0  
50 dwelling units per acre;

51 (B) the maximum density with MPDU bonus density is 3.66  
52 dwelling units per acre;

- 53                    (C) a development may include any type of dwelling unit, up to  
54                    the maximum number of dwelling units;  
55                    (D) the maximum building height is:  
56                    (i) 35 feet for a one-family detached dwelling;  
57                    (ii) 50 feet for a one-family attached dwelling; and  
58                    (iii) 65 feet for a multiple-family dwelling or any non-  
59                    residential building; and  
60                    (E) when site plan approval is required, the minimum lot area,  
61                    lot dimensions, and building setbacks of the R-90 zone do  
62                    not apply. Any such requirements must be determined by  
63                    the Planning Board during site plan approval process.

64                    **59-C-18.254. Exemptions from impervious surface area restrictions.**

- 65                    (a) Any impervious surface lawfully existing under a building permit or  
66                    sediment control permit issued before {EFFECTIVE DATE} that  
67                    exceeds the applicable impervious surface restriction may continue or be  
68                    reconstructed with the same or less impervious surface area under the  
69                    development standards in effect when the building permit or sediment  
70                    control permit was issued.  
71                    (b) Any impervious surface not approved as part of a site plan under Section  
72                    59-D-3 resulting from an addition to an existing one-family residential  
73                    dwelling or an accessory structure to a one-family dwelling is exempt  
74                    from this overlay zone’s impervious surface restriction.  
75                    (c) Impervious surfaces associated with development on any lot or parcel  
76                    with an area less than 2.0 acres as of January 1, 2014 are exempt from  
77                    this overlay zone’s impervious surface restriction.

- 78            (d) Impervious surface for any publicly funded road, bikeway, path,  
79            driveway, or parking area is exempt from this overlay zone’s impervious  
80            surface restriction.

81 **Sec. 59-C-18.26. Clarksburg West Environmental Overlay Zone.**

82            **59-C-18.261. Purpose.**

83            The purpose of the Clarksburg West Environmental Overlay Zone is to:

- 84            (a) protect the water quantity, water quality, habitat, and biological diversity  
85            of the Ten Mile Creek watershed and its tributaries;  
86            (b) regulate the amount and location of impervious surfaces to maintain  
87            levels of groundwater, control erosion and water temperature, and retain  
88            as many of the functions provided by natural land as possible;  
89            (c) regulate development that could adversely affect this high quality stream  
90            system; and  
91            (d) implement the recommendations of the 2014 Ten Mile Creek Area  
92            Limited Amendment to the Clarksburg Master Plan and Hyattstown  
93            Special Study Area.

94            **59-C-18.262. Procedure for approval.**

- 95            (a) A site plan must be approved by the Planning Board under the  
96            provisions of Division 59-D-3 for any development that must file a  
97            preliminary plan of subdivision under Chapter 50, unless excluded under  
98            Subsection (b).  
99            (b) A lot or parcel for a one-family dwelling that has not changed in size or  
100           shape since January 1, 2014 is excluded from the site plan approval  
101           requirement.

102 **59-C-18.263. Regulations.**

103 (a) Land Use.

104 All permitted and special exception uses allowed in the underlying zones  
105 are allowed in the Clarksburg West Environmental Cluster Zone.

106 (b) Development standards.

107 (1) The development standards of the underlying zone apply, except  
108 as modified by this overlay zone.

109 (2) Except for County owned land or land under a conservation  
110 easement granted to the benefit of the County and development  
111 exempted under Section 59-C-18.264, the total impervious surface  
112 area for any development after {EFFECTIVE DATE} may be a  
113 maximum of 6% of the total area in the application for  
114 development.

115 (3) County owned land or land under a conservation easement granted  
116 to the benefit of the County may not add any impervious surface.

117 (4) Any number of lots may be of any size, without regard to varying  
118 lot size requirements in the underlying zone.

119 (5) The minimum lot area, lot dimensions, and building setbacks must  
120 be determined by the Planning Board during the site plan approval  
121 process.

122 (6) All environmental buffer areas or natural resources recommended  
123 for protection in the Ten Mile Creek Area Limited Amendment to  
124 the Clarksburg Master Plan and Hyattstown Special Study Area  
125 must be treated as environmentally sensitive areas, in addition to  
126 other areas identified as environmentally sensitive in law,  
127 regulations, or in the Planning Board's Guidelines for the  
128 Environmental Management of Development, as amended.

129           (7) All environmentally sensitive areas must be included in the  
130                   required open space area.

131           (8) The minimum area devoted to open space is 80% of the total area  
132                   under application for development.

133           **59-C-18.262. Exemptions from impervious surface restrictions.**

134           (a) Any impervious surface lawfully existing under a building permit or  
135                   sediment control permit issued before {EFFECTIVE DATE} that  
136                   exceeds the applicable impervious surface restriction may continue or be  
137                   reconstructed with the same or less impervious surface area under the  
138                   development standards in effect when the building permit or sediment  
139                   control permit was issued.

140           (b) Any impervious surface not approved as part of a site plan under Section  
141                   59-D-3 resulting from an addition to an existing one-family residential  
142                   dwelling or an accessory structure to a one-family dwelling is exempt  
143                   from this overlay zone’s impervious surface restriction.

144           (c) Impervious surfaces associated with development on any lot or parcel  
145                   with an area less than 2.0 acres as of January 1, 2014 are exempt from  
146                   this overlay zone’s impervious surface restriction.

147           (d) Impervious surface for any publicly funded road, bikeway, path,  
148                   driveway, or parking area is exempt from this overlay zone’s impervious  
149                   surface restriction.

150

151           **Sec. 2. Effective date.** This ordinance becomes effective 20 days after the  
152 date of Council adoption.

153

154 This is a correct copy of Council action.

155

156 \_\_\_\_\_

157 Linda M. Lauer, Clerk of the Council