Ad Hoc Water Quality Working Group

Report to the Montgomery County Council

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Acknowledgements

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The Working Group also extends its appreciation to Ms. Carmen D'Agostino of Montgomery College for all of her facilitation work with the all day worksession.

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Introduction

On October 13, 2009, the Montgomery County Council approved Resolution 16-1149 creating the Ad Hoc Water Quality Working Group. Members were appointed to the working group through Resolution 16-1151, approved by the Council on October 20, 2009 and Resolution 16-1239 (which filled a vacancy), approved by the Council on January 19, 2010.

The Working Group collected and analyzed information pertaining to Clarksburg Stage 4 and specifically Ten Mile Creek; local, state and federal regulations regarding water quality, stormwater management, and sediment control; and watershed protection measures and best practices to maintain or improve water quality.

The Working Group's findings are delineated into two sections in this report. The first section includes the salient facts that the Working Group wanted to ensure were presented to the council. These 'Fact Finding Summaries' reflect all of the topics covered in the Working Group's meetings. The second section contains the reports from the sub-groups on the Clarksburg Stage 4 Master Plan options. Group members agreed that they would not reach unanimity in their recommendations with respect to support for the Master Plan options. Upon reaching this conclusion, Group members agreed to present both options to the council:

> Option 2 - Grant water and sewer category changes, subject to property owner commitments to take additional water quality measures, such as staging of development, to protect the environmentally fragile Ten Mile Creek watershed.
> Option 4 - Consider such other land use actions as are deemed necessary.

There are two Master Plan options that Working Group members did not support for additional consideration.

> Option 1 - Grant water and sewer category changes, without placing limiting conditions upon property owners.
> Option 3 - Defer action on a Water and Sewer Plan category change, pending further study or consideration as deemed necessary and appropriate by the Council.

In addition, Co-Chair Carl Elefante included some additional thoughts and observations for the benefit of the council.

Work Program

The Working Group met for a total of 10 meetings including an all-day facilitated worksession. There was also an opportunity for Working Group members to participate in a guided field trip to the Ten Mile Creek watershed area.

During the course of the first few meetings, Group members identified topics which needed to be covered and a work program was developed based on those recommendations. The Working Group studied a wide variety of relevant topics including background on Ten Mile Creek, the regulatory environment and best management practices. Subject area experts were invited to present to the Working Group and they discussed relevant issues and perspectives with Group members. The specific list of topics covered is as follows:
Clarksburg Stage 4 and the 2007 Special Protection Area Report, Ten Mile Creek Baseline Conditions, Impervious Cover, Environmental Site Design, Storm Water Management Act of 2007, 2010 Maryland Standards and Specifications for Soil Erosion and Sediment Control, Chesapeake Bay Total Maximum Daily Load and 2009 Effluent Limitation Guidelines, Flocculants and Chemical Treatment Systems, National Pollutant Discharge Elimination System General Permit, Storm Water Management Best Practices, Porous Concrete, Development Review Process and Environmental Considerations, Permitting Services Process – Environmental Plan Requirements and Review Process, Experience with other Montgomery County Special Protection Areas.

The Working Group also met for an all day worksession to discuss and agree upon the key facts gleaned from the prior meetings and to determine which Master Plan Option(s) the Group supported.

Meeting agenda, minutes and topic summaries are located in the Appendix to this report.

Fact Finding Summaries

The Ad Hoc Water Quality Working Group collected information on new and pending state and federal regulations regarding water quality, stormwater management and sediment control the current state of Ten Mile Creek, Stage 4 of the 1994 Clarksburg Master Plan and related planning issues. This information is summarized in the following categories: Planning/Master Plan and Development Review Process; Ten Mile Creek Condition; Regulatory Framework, Stormwater Management and Environmental Site Design Practices; Regulatory Framework, Construction Site Practices and Techniques; and Watershed Protection.

1) Planning/Master Plan and Development Review Process

The 1994 Clarksburg Master Plan's vision for the Clarksburg area was to develop the Town Center around the historic district; support transit with higher densities; create neighborhoods with a variety of housing; extend the I-270 high-tech corridor as an employment center, and protect environmental resources through designation of most of the area within the Master Plan as a Special Protection Area.

To refine the vision further, there are more specific goals for the areas associated with the four stages of the plan. Stage 4 of the Clarksburg Master Plan, which is wholly contained within the Ten Mile Creek watershed, has as its planning vision: a transit-oriented Town Center employment area east of I-270; a segment of the I-270 employment corridor west of I-270 along the interstate; and a residential/TDR receiving area west of I-270. In addition, there are specific environmental protections recommended in the plan for this area including:

- Impervious caps (15%) in employment zones east of I-270
- Designation of 64% of the Ten Mile Creek watershed as Rural Density Transfer (RDT) zone
- Forested buffers along streams, including a significantly wider "private conservation area" around the stream valleys east of I-270
- Protected wetlands and forest habitats
- Creation of a Special Protection Area
- Protected headwaters of Ten Mile Creek

The Master Plan identifies the Ten Mile Creek watershed as an environmentally sensitive area of county-wide significance. The plan focuses on the importance of protecting Ten Mile Creek and the establishment of a unique mechanism to evaluate the effectiveness of environmental protection in view of the environmental effects of development elsewhere in Clarksburg.

The implementation of the first three stages of the Master Plan is well underway. Plans for approximately 8900 residential units and 3.7 million square feet of employment and retail uses have been approved by the Planning Board. Building permits have been issued for approximately 2650 units and 537,000 square feet of employment and retail space. In the Town Center District outside of Stage 4, plans have been approved for 46%

of the residential units proposed by the Master Plan and over 25% of the commercial square footage envisioned.

The Development Review process is integral to carrying out the objectives and vision set forth in the Master Plan. Development plans must be consistent with the Master Plan, including Special Protection Area requirements. Plans must conform to established rules and standards including lot sizes, building heights, road grades, and environmental regulations (forest conservation, stormwater management, etc.) There are conflicts among competing policies that become evident during the development review process, such as Fire and Rescue access requirements vs. goals to reduce paving; and zoned and permitted land use vs. the impacts from development of those areas.

2) Ten Mile Creek: Baseline Water Quality and Watershed Conditions

The Ten Mile Creek watershed is extremely sensitive and fragile, comprised of numerous headwater streams. The east side of the Ten Mile Creek watershed is noted in the Master Plan an ecologically unique Special Protection Area. The remainder of the Ten Mile Creek watershed (approximately 64%) is zoned Rural Density Transfer (RDT) and is not part of the Special Protection Area because the rural zoning precludes significant development of that area.

The water in Ten Mile Creek flows clear, cold, and steadily, and supports one of the most diverse aquatic life communities in Montgomery County, including species of fish, aquatic insects, and amphibians that are found rarely (if ever) elsewhere in the county. This excellent water quality is indicative of a rural watershed that has many small and ephemeral streams, springs and seeps. The current total imperviousness in the Ten Mile Creek watershed is 3.3%, and current total forest cover is 45%. Ten Mile Creek is a high quality Use I-P stream (defined as: water contact recreation, protection of aquatic life, and public water supply[1]) and is part of the Little Seneca Lake backup drinking water supply.

Ten Mile Creek has been monitored by the Montgomery County Department of Environmental Protection since 1994. Stream conditions averaged within the *excellent* to *good* ranges. The stream conditions of many of the upper headwaters were in *excellent* condition. The headwaters east of I-270 were in *good* condition. Since Special Protection Area development began, stream conditions in the headwaters east of I-270 declined to *fair*. The upper headwater areas declined to *good* condition. County staff field located mapped seeps, springs and wetlands in the Stage 4 portion of Ten Mile Creek in 2009. These extremely sensitive features are critical to the protection of the high quality conditions of the Ten Mile headwater streams.

[1] as defined by MDE - http://www.mde.maryland.gov/programs/waterprograms/tmdl/wqstandards/index.asp

3) Regulatory Framework, Stormwater Management and Environmental Site Design Practices

The regulatory landscape for stormwater management has changed twice since the 1994 Clarksburg Master Plan was adopted.

The Stormwater Management Act of 2007

> On April 24, 2007, Governor Martin O'Malley signed the "Stormwater Management Act of 2007", which became effective on October 1, 2007…The Act requires that [Environmental Site Design] ESD, through the use of nonstructural best management practices and other better site design techniques, be implemented to the maximum extent practicable. Charged with implementation, the Maryland Department of the Environment (MDE) is in the process of addressing the requirements of the Act including changes to regulations, the 2000 Maryland Stormwater Design Manual, and other guidance materials.[2]

The significant requirements of the Act include:

- Design requirements to utilize Environmental Site Design to replicate natural hydrology to cause watersheds to perform like 'woods in good condition'
- Environmental Site Design using micro-scale practices instead of structural measures for greater infiltration of run-off and reduction of run-off
- Planning for stormwater and sediment/erosion control must occur at the beginning of the development process with more emphasis on integration of stormwater management and sediment/erosion control into site design
- Greater emphasis on maintenance of Best Management Practices (which could require greater responsibility on homeowners/residents)

There is ongoing debate statewide on implementation details (i.e. when full implementation will take effect), but the mandatory legislative framework is in place. The requirements of this Act will apply to all future development in Stage 4.

On June 29, 2010, the Montgomery County Council President introduced Expedited Bill 40-10, Stormwater Management – Revisions, on behalf of the County Executive. The Expedited Act is to:
(l) require management of stormwater runoff through the use of nonstructural best management practices to the maximum extent practicable for new development and redevelopment projects approved by the Department of Permitting Services;
(2) bring local stormwater management requirements into compliance with the Maryland Stormwater Management Act of 2007; and
(3) generally amend County law regarding storm water management.

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[2] Taken from the Maryland Department of the Environment website:
http://www.mde.state.md.us/Programs/WaterPrograms/SedimentandStormwater/swm2007.asp

Environmental Site Design

MDE expects Environmental Site Design practices to aid in the protection of sensitive, fragile stream systems. They are included as part of the new stormwater management regulations because MDE anticipates a benefit to the environment. Since this is a new standard, there is not currently enough data to confirm the environmental benefits from this methodology. The ESD process requires consideration of site layout requirements to eliminate excessive grading and stream crossings. Treatment of stormwater is provided as much as possible by natural features or small facilities, such as bio-infiltration trenches.

Pervious Concrete

The use of pervious concrete was also presented as part of an examination of technologies available to apply to Environmental Site Design (ESD). Pervious concrete is viewed as an effective ESD measure because it reduces runoff and promotes infiltration relative to standard construction surfaces. There is potential for broader applicability as this technology is developed. Some current limitations of pervious concrete include: higher per square foot construction cost than other surfaces; soil condition requirements, vehicular weight limitations, vehicular speed limitation (<30mph), and a complicated installation process. It also requires significant routine maintenance. Use of pervious concrete is permissible in Stage 4 development in coordination with other ESD and stormwater management measures that would provide for both quality as well as quantity treatment for runoff. It cannot be used exclusively however, for certain structurally higher load-bearing surfaces, but can be suitable for parking lots, driveways, alleyways, lead walks, sidewalks and trail systems.

Total Maximum Daily Loads

The federal Clean Water Act requires that maximum pollutant loads, expressed as Total Maximum Daily Loads (TMDLs), be established for designated water bodies. They could limit the amount of development in specific watersheds if pollutant loads are exceeded. This program is administered by the Maryland Department of the Environment (MDE) with oversight by the Environmental Protection Agency (EPA). A Chesapeake Bay TMDL is under development and Maryland is one of the participating jurisdictions in this effort. The impact of this TMDL on Ten Mile Creek can be significant depending on specific requirements or limitations spelled out in the TMDL. The effective dates are unknown at this time.

Other TMDLs have been developed for specific watersheds in Montgomery County. Each TMDL targets specific pollutants such as sediment and nutrients. To date, a specific TMDL has not been developed for Ten Mile Creek.

Effluent Limitation Guidelines

In 2009, the EPA finalized the Effluent Limitation Guidelines (ELGs) with an implementation timeframe for Maryland of 3 years or sooner. Development must comply with the ELG requirements once they are incorporated into the state's NPDES construction general permit. ELGs establish a numeric turbidity limit for construction activities (from the standard of average technology rather than site specific water quality); require active monitoring and inspection of construction sites to ensure compliance (administered by MDE); and may require enhanced sediment control measures such as flocculents, dewatering, filters, etc. It is likely that this standard will relate to the development of Ten Mile Creek.

4) Regulatory Framework, Construction Site Practices and Techniques

The Maryland Department of the Environment (MDE) initiated a comprehensive review of the State's erosion and sediment control standards in early 2009 and has developed an initial draft of the "2010 Maryland Standards and Specifications for Soil Erosion and Sediment Control"

2010 Maryland Standards and Specifications for Soil Erosion and Sediment Control

The Maryland Department of the Environment has initiated the process to incorporate in regulation their comprehensive revisions to the State's erosion and sediment control standards.

> MDE received numerous suggestions related to improvements of the State's erosion and sediment control requirements during the development of Montgomery County's municipal separate storm sewer system discharge permit, new stormwater regulations required by the Stormwater Management Act of 2007, and the general discharge permit for stormwater related to construction activity… Areas that were evaluated include: environmental site design requirements, the use of coagulants, revised stabilization standards, new standards for best management practices, and new technology.[3]

These comprehensive changes will require new development and redevelopment projects to proceed in a new paradigm: initial stormwater management and erosion and sediment control design must occur at the outset of the development process. Other significant changes included in the 2010 standards are: requirements for increased efficiency of design practices (conservation of natural resources, minimization of cut and fill, etc.); quicker stabilization of development sites; and establishment of 'grading units' to reduce the amount of disturbance at any one time (20 acre maximum per development project permit).

[3] Taken from the Maryland Department of the Environment website: http://www.mde.state.md.us/Programs/WaterPrograms/SedimentandStormwater/erosionsedimentcontrol/Draft_ESC_Standards.asp

The Working Group believes that these new standards will be required for all new development in Stage 4.

Flocculants

Sediment control for an active construction site can include the use of flocculants, chemicals designed to bind to small suspended particulates making them heavier to fall out of suspension or larger to be filtered out of suspension. Such technology will be mandatory for areas with high clay content in the future. This includes much of Montgomery County. Flocculants can reduce sediment suspension and turbidity below conventional designs and can be environmentally safe if used correctly. Risks include operator error and toxicity of flocculant chemicals to aquatic life if they are released to a stream. Flocculants must be used in the proper temperature range in order for them to be fully functional. There is also an added cost associated with use of this technology above the conventional methods. Flocculant technology is improving and is expected to be required when Stage 4 developments begin construction.

National Pollutant Discharge Elimination System (NPDES) General Permit

The MDE NPDES Construction General Permit is the means by which the state and federal water quality laws and regulations are enforced.

> On February 16, 2010, MDE issued the third round of the Montgomery County's Municipal Separate Storm Sewer System (MS4) permit. This 5-year permit complies with the Environmental Protection Agency's National Pollutant Discharge Elimination System (NPDES) regulations that require large urban jurisdictions to control pollution from stormwater runoff to the maximum extent practicable.[4]

The most recent permit issued in 2010 includes: enhanced public notice and transparency; combined new and evolving federal and state regulations with 'in the field' standards; and more stringent mandatory inspections and record keeping. It also establishes strict criminal penalties for non-compliance. NPDES standards will apply to Stage 4.

[4] Quoted from the Montgomery County Department of the Environment website: http://www.montgomerycountymd.gov/deptmpl.asp?url=/content/dep/NPDES/home.asp

5) Watershed Protection

Special Protection Areas

The Special Protection Area (SPA) program was initiated in 1994 by County law. According to the Montgomery County Code, Section 19-61(h), a Special Protection Area is defined as:

> "a geographic area where:
> (1) existing water resources, or other environmental features directly relating to those water resources are of high quality or unusually sensitive; and
> (2) proposed land uses would threaten the quality or preservation of those resources or features in the absence of special water quality protection measures which are closely coordinated with appropriate land use controls."

SPA monitoring provides information to help evaluate: 1) the effectiveness of the SPA program in minimizing development-related impacts to sensitive streams; and, 2) the efficiency, performance, and effectiveness of best management practices (BMPs) in reducing pollutants. There are currently four designated Special Protection Areas in the county: Upper Paint Branch, Upper Rock Creek, Clarksburg and Piney Branch.

The 2008 SPA report indicates that stream conditions changed little in the SPA watersheds. Out of 49 stations monitored in 2008 for the 2008 SPA Annual Report, five stations had improved stream conditions and one station worsened. Forty-three stations (88%) had no change in stream conditions.

The Clarksburg Master Plan SPA has an impervious cap of 15% for commercial development, including that in the Stage 4 area. Two SPAs in other parts of the county, Upper Rock Creek and Upper Paint Branch, where impervious caps of 8% on new construction were applied, have been effective in protecting water quality.

Stream degradation occurred during the construction phase of the residential areas of the Newcut Road Neighborhood and the Town Center in Clarksburg. Delays in project completion in stages 2 and 3 of Clarksburg have resulted in temporary sediment and erosion control facilities being kept in place years longer than anticipated. The SPA reports indicate that this delay in conversion of these structures to stormwater management have exacerbated water quality degradation. There is no guarantee that delays will not occur in the future. New construction site phasing requirements contained in the 2010 Standards for Erosion and Sediment Control are intended to address this by limiting the grading unit to a 20 acre maximum per permitted project and requiring near immediate site stabilization.

Imperviousness and Water Quality

The development process (which include cut and fill operations, disturbance and grading of large tracts of land and stream crossings) has an impact on water quality. Some of the impacts include: sediment discharges, interruption of group water flows, and changes in stream base flow and peak flow, increases in stormwater volumes discharged to the receiving streams, habitat destruction and other changes in hydrology.

Impervious surface in a watershed affects streams by intercepting rainwater and eliminating the natural functions of the soil. In an undisturbed environment, most rainwater percolates through soil prior to discharging into a stream. The functions of soil and infiltration include: 1) filtering contaminants such as pesticides, road salt, nutrients from fertilizer, and hydrocarbons found in oil and grease, 2) cooling water temperature, and 3) slowing the rate of discharge into the stream. Increased levels of impervious surface reduces these functions, and streams typically experience increased temperatures during storms, increased contaminants and sediments in surface water, and wider flow fluctuations during floods and droughts. These changes cause streams to degrade.

The Impervious Cover Model demonstrates a relationship between stream quality and watershed imperviousness.[5] Montgomery County's experience indicates that as imperviousness increases in a watershed, stream health declines, and there is no threshold of imperviousness below which degradation is not observed. Critics of the Impervious Cover Model state that the primary drawback to the model is that it analyzes watersheds retrospectively and there is no ability to project forward using the same baseline because regulations and technology related to water quality have changed.

[5] This model is discussed in the Special Protection Area Annual Report 2007 p. 25

Recommendation for Master Plan Option 2

Amy Quant, Dusty Rood, Rich Thometz

Executive Summary

The Ad Hoc Quality Working Group has been asked to evaluate water quality protections that will be applicable to the Ten Mile Creek Area under new Federal, State and County regulations and to recommend measures that might be employed in the Ten Mile Creek area as development there proceeds.

Since its adoption, the Clarksburg Master Plan has envisioned development of several properties within the Ten Mile Creek watershed under prescribed land use patterns, consistent with the location of those properties and their relationship to the entire Clarksburg Master Plan. Both the land use patterns recommended for these properties and the environmental protections included within the Master Plan have been designed to protect the Ten Mile Creek watershed. The property owners have relied on these provisions in their land investments and have awaited the opening of Stage 4 as envisioned in the Master Plan. Since the Master Plan was adopted, extensive new Federal, State and County regulations have been adopted that provide ever greater water quality controls. These include new Stormwater Management controls, more stringent Sediment Control requirements, and far more extensive Federal oversight of water quality. The combination of environmental protections already incorporated into the Master Plan, combined with these new water quality protection measures, amplifies the conclusions reached in the 1994 Clarksburg Master Plan that the subject properties can be developed as envisioned while still protecting Ten Mile Creek. In addition, this report suggests the use of some possible additional measures used in other sensitive areas to protect water quality. Nothing has changed to justify an abandonment of the land use recommendations on which the Clarksburg Master Plan is based. The only difference is the implementation of more comprehensive environmental controls that support conclusions in the Master Plan. With the new controls, Stage 4 should be allowed to proceed as envisioned.

Discussion and Recommendations

Pursuant to Resolution 16-1149, adopted October 13, 2009, the Montgomery County Council appointed a Working Group to examine water quality issues with respect to Stage 4 development called for in the 1994 Clarksburg Master Plan. Specifically, that Resolution established:

> A Working Group that would 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; and seek input from Clarksburg stakeholders as to the methods they propose for minimizing development impacts on water quality in the Ten Mile watershed would help the Council determine steps necessary to preserve water quality in Stage 4.

This report presents the response to this assignment from those members of the Working Group who support the Clarksburg Master Plan recommendation to "grant water and sewer category changes [for Stage 4 properties] subject to property owner commitments to take additional water quality measures…." (Clarksburg Master Plan, Option 2, p. 199).

An assessment of Option 2 requires: (1) a review of the applicable Clarksburg Master Plan recommendations for development of the Ten Mile Creek neighborhood, (2) an analysis of new and pending Federal, State and County regulations and policies regarding water quality protection, as well as (3) a consideration of any additional controls that might be imposed on Stage 4 development through the approval of water and sewer category change requests, Water Quality Plans required in Special Protection Areas and Preliminary Plans of Subdivision.

I. Clarksburg Master Plan

The private properties within the Ten Mile Creek drainage area recommended for development as Stage 4 of the Clarksburg Master Plan include: (1) the Miles/Coppola properties, totaling approximately 98 acres and located along MD Route 355 in the Town Center, [6] (2) the Egan Bar-B- Que property on MD Route 355 just north of Miles/Coppola, totaling approximately 101 acres [6] and the Pulte/King properties along MD Route 121 across from the Cabin Branch community, totaling approximately 527 acres. These properties are only a fraction of the entire Ten Mile Creek drainage area which consists of more than 3,500 acres, the large majority of which is designated for agricultural use and is zoned RDT to prevent development. The three subject properties however were zoned R-200 prior to the 1994 Clarksburg Master Plan and development of them has been expected for many years. The Master Plan recommends rezoning the Miles/Coppola property at the time of its development, to the MXPD zone consistent with its location at the future Corridor Cities Transit Station for Clarksburg and within the Clarksburg Town Center area and calls for PD-4 zoning on the Egan property for similar reasons. The Pulte/King properties already have been rezoned under the Master Plan to RE-1/TDR-2 to facilitate development at two units per acre through the purchase of TDRs.

In making these land use recommendations, the Clarksburg Master Plan balanced a variety of objectives, including environmental protection of Ten Mile Creek as well as the goal of achieving a variety of land uses and development densities consistent with the Wedges and Corridors pattern, encouraging and maintaining a wide choice of housing types and neighborhoods, and promoting a healthy economy. Planners at the time also recognized anticipated population growth in Montgomery County which today is estimated at approximately 200,000 more people within the next 20 years. The Plan also recognizes the existence of I-270 as a major highway running directly through these properties, providing excellent regional access, as well as the future Corridor Cities Transitway, the existence of major sewer and water infrastructure capable of serving the area and the investment in other infrastructure planned and built with the Ten Mile Creek development in mind.

The Master Plan recommendations for development of these properties also reflect the following:

> <u>Miles Coppola/Egan properties</u> (pp. 42 – 53)
>
> - These properties are within the Town Center District, designated as the center of Clarksburg with the greatest densities.
> - These properties provide important employment and housing opportunities to support a complete Town Center and the overall Clarksburg vision.
> - These properties provide the location for the Town Center Corridor Cities Transitway Station and land uses related to it.

[6] These properties are within the Ten Mile Creek drainage area but are in the Town Center land use area.

- These properties directly adjoin I-270 at a major interchange.
- The failing septic systems for much of the Clarksburg historic district adversely affect the environment and prevent appropriate uses for those properties; development of the Ten Mile Creek properties provides an economically supportable basis for providing public sewer to the historic district.
- Reflective of the intended balancing of various objectives, the Plan finds:
  "As noted in the Environmental Plan chapter, portions of the Town Center were located in the headwaters of Ten Mile Creek. The 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." (Page 42)

King/Pulte Properties (pp. 87 - 93)

- Many provisions in the Master Plan demonstrate the basis for the decision to allow these properties to develop at the density prescribed in the Master Plan while maintaining the balance the Plan provides with respect to environmental issues:
  - "A land use pattern east of Ten Mile Creek which balances environmental concerns, County housing needs and the importance of I-270 as a high technology employment corridor (page 89).
  - "The key land use objective in this area is to provide housing and job opportunities while mitigating water quality impacts in Ten Mile Creek. An open space pattern extensive enough to help protect the many natural attributes of the larger watershed is recommended by this Plan." (Page 89).
  - "During the Master Plan process, the importance of protecting these environmental resources was weighed against competing County needs, in particular, the long-term County-wide need for additional areas for single family detached housing and the future of I-270 as a significant employment corridor." (Page 89).
  - "This Plan recommends an extensive level of environmental mitigation because all of the environmental studies done as part of the Master Plan process have identified Ten Mile Creek as a fragile stream due to its delicate eco-system, low base flow, and highly erodible stream banks." (Page 89).

- In balancing the land planning objectives with environmental protection desires, the Plan concluded with respect to the Pulte/King properties, (p.91):
    - "Up to 900 dwelling units would be appropriate through the purchase of TDRs if the following environmental and housing mix guidelines can be achieved:

        - Development should achieve a minimum of 70% single family detached units ….

        - The open space and conservation areas along Ten Mile Creek's main stem and tributaries shown on the Master Plan should remain undeveloped and should be afforested.

        - Dedication to M-NCPPC will be required for the open space and conservation areas along Ten Mile Creek main stem….

- After balancing the various objectives with respect to the Pulte/King properties, the Council both adopted the Master Plan, and actually rezoned the properties to RE-1/TDR-2 for development connected to public water and sewer and reflective of the previous zoning capacity (R-200), while balancing provisions for clustering to conserve environmental areas and protect the stream, and requiring the purchase of TDRs to achieve that density to help preserve farm land further to the west.

The balance demonstrated by these recommendations is also seen in other portions of the Master Plan including the following at pp. 142 – 148:

- **"Considers the special qualities of Ten Mile Creek Area.**

  About 64 percent of the Ten Mile Creek watershed is designated for farmland preservation or rural uses. This recommendation supports the environmental objectives which emphasize that low density land use patterns and appropriate Best Management Practices (BMPs) are the most effective strategies for maintaining water quality. Elsewhere in the watershed the land use objectives make environmental mitigation the main focus. The following mitigation strategies are recommended in these areas:

  …

- "Extensive green space beyond standard stream buffers is recommended for the area bounded by Ten Mile Creek and MD 121 where substantial development is proposed. This expanded green space as shown in the Land Use Plan, will become part of the

undisturbed stream buffer and should be afforested/reforested by the developers during the subdivision process, if not earlier." (pp. 142-144)

In connection with Stage 4 development, the Master Plan further:

"Recommends modifications to the M-NCPPC "Environmental Guidelines" for the review of subdivisions to assure that existing high water quality standards can be maintained." (p.145)

This has been done. Other provisions documenting the water protection strategy for each sub area, conclude for Ten Mile Creek:

"The proposed rural and agricultural land use pattern is the key protection strategy for the area west of Ten Mile Creek where agricultural BMP usage is anticipated to increase. The east side of Ten Mile Creek where there is substantial development potential will be protected with a mitigation strategy based on the impervious caps for employment areas, extensive forested buffers for the residential area, and development staging that allows advances in environmental protection technology to be incorporated in Ten Mile Creek properties." (p. 149).

These provisions demonstrate the careful consideration given to the zoning and land use recommendations in the Master Plan and to the basis for recommending these development patterns in the Ten Mile Creek drainage area after considering environmental protection goals.

The Master Plan included a staging mechanism intended to meter development for various purposes, but not intended to alter zoning or land use patterns. More specifically, the Master Plan includes the following recommendations regarding staging:

- "Finally, it should be noted that the staging recommendations of this Plan are designed to affect the timing of private development and public facilities, not the total amount, type or mix of development. (Page 187).
- "These staging principles which are integral components of this Master Plan, provide a general framework and guidance for the future staging or timing of private development and the provision of public facilities in Clarksburg." [i.e., not "whether" but "when"].
- The six key staging principles (pp 187-191) were:
    - Waste Water Treatment and Conveyance (i.e. the ability to provide such facilities).
    - Fiscal Concerns (i.e. the timing of development to coordinate with funding of capital improvements).
    - Coordination of Land Development and Public Infrastructure.
    - Development of a Strong Community Identity (i.e. encouraging the early development of the Town Center).

- Market Responsiveness (i.e. accommodate the planned growth over time)
- Water Quality Protection
  "The timing and sequence of development in Clarksburg [i.e. not "whether" or "what"] should respond to the unique environmental qualities of the area and help mitigate in particular, development impacts to the environmentally sensitive stream valleys in the Ten Mile Creek watershed."

All of these objectives have been and will be met in the Ten Mile Creek area. The Plan states further: (p.191)

- "Significant changes in water quality regulations can be expected during the next few years. A new water quality Zoning Text Amendment was approved by the Planning Board in the spring of 1994 for transmittal to the County Council. If this new water quality review process is approved, it will be highly desirable to limit early development in Clarksburg to one or two less environmentally sensitive sub watersheds (such as those found on the east side of I-270) so that Department of Environmental Protection (DEP) can conduct the necessary base line stream monitoring for the proposed program and test the effectiveness of Best Management Practices in protecting water quality.

  Such baseline monitoring and evaluation will better enable the County and Ten Mile Creek property owners to work together in developing effective Best Management Practices for Clarksburg most environmentally fragile watershed.

  Delaying development in the Ten Mile Creek watershed will provide these property owners with the opportunity to pursue voluntary measures to protect water quality in the environmentally fragile Ten Mile Creek Watershed. Such measures might include stream restoration, afforestion/reforestation and modified environmental practices."

These extensive recommendations and their subsequent implementation provide a solid foundation for the zoning and land use recommendations in the Master Plan including development of the Miles/Coppola, Egan and Pulte/King properties under the adopted and recommended zoning in the Master Plan. The Council clearly evaluated environmental protection goals, including water quality in the Ten Mile Creek drainage area, and concluded that development could proceed with the various restrictions and protections provided in the Master Plan.

These property owners have waited patiently since 1994, and in some cases even before that, for Stages 1 – 3 of the planned Clarksburg development to proceed through the development approval process so that Stage 4 can proceed. In some cases, such as the Pulte/King properties, in reliance on the Master Plan provisions and the rezoning to

RE-1/TDR, the current owner invested approximately 12 million dollars in purchasing the land and millions more to purchase the TDRs called for to develop them consistent with the TDR zoning and the land use recommendations in the Master Plan. In further reliance on the Master Plan, several of the property owners also have filed Water and Sewer Category Change applications and now want to be able to proceed through the contemplated development approval process..

Since adoption of the Master Plan, one issue not anticipated at that time has developed that amplifies the importance of the Stage 4 development and the trunk line sewer to serve it. A major portion of the Clarksburg Historic District has no access to public sewer. Some of the septic systems today are failing resulting in rare sewage seeping into Ten Mile Creek. In 2008, Montgomery County's Department of Environmental Protection examined the public health problems related to this sewer and, together with the WSSC, concluded "that properties located northwest of Clarksburg Road would be best served by the sewage system constructed for development in the Master Plan's Stage 4 area, the Ten Mile Creek Sub Watershed. (July 14, 2008 transmittal from County Executive Leggett, page 2). Based on the justifications in that recommendation, the owners of properties in Stage 4 studied the feasibility of providing such sewer access as part of the Stage 4 sewer system and concluded that it would be the most economically and environmentally responsible way in which to address the failing septic systems. They also obtained concept approval from WSSC for the sewer system.

II. Recent Questions About Implementing the Master Plan Recommendations

The Master Plan contained six staging triggers for Stage 4. Triggers 1 - 4 were met years ago. Trigger 5 required the issuance of at least 2,000 building permits in Clarksburg and trigger 6 required an evaluation of Best Management Practices and the issuance of the annual County water quality report for the year after the 2000th permit. The 2000th building permit was issued more than 2 years ago and the most recent annual water quality reports were issued in February, 2009 (the 2007 Annual Report) and February, 2010 (the 2008 Annual Report). Therefore, all of the triggers have been met for Stage 4 to proceed.

The 2007 report caused some people to suggest that the development plan for Stage 4 should not proceed or, at least, that development there should have additional water quality protection measures attached to it. For various reason we do not believe so. First, the 2007 Water Quality Report, reflected a number of circumstances that might best be described as a "perfect storm" which resulted in some temporary water quality issues on the east side and which are not relevant to Stage 4. More specifically, as everyone is aware, the housing market was extremely active between 2001 and 2008 when water quality data was being collected for this report. As a result of the unprecedented demand for housing in Clarksburg, large areas of the Town Center and the Newcut Road neighborhoods, among others, were all under construction at the same time. Temporary sediment control measures were in place to facilitate the construction, but very few BMPs and stormwater management systems were functioning to control water quality, because the previous regulations and the design of the measures did not allow the conversion from

a sediment control function to stormwater management at that time. During that period of time, a large water main also broke, causing major erosion and temporarily skewing the sediment calculations in some areas. Then, in 2007, the County imposed a moratorium and effectively shut down development in Clarksburg for an extended period of time, leaving these major areas open to run-off and further precluding the conversion of sediment control measures to stormwater management protections. Therefore, while recognizing that the circumstances resulted in temporary stream impacts, we caution against any suggestion that the results are indicative of conditions likely to occur in Ten Mile Creek; we believe just the opposite is true. In fact, the 2008 Annual Report the following year showed that some of those earlier observations had already begun to reverse themselves and water quality was improving. The most recent Annual Report concluded that existing water quality protection measures are performing, noting that the new regulatory requirements will further mitigate the impact of development.

Second, many things are different for Stage 4. As noted above, the area planned for development within the Ten Mile Creek watershed is a mere fraction of the Ten Mile Creek drainage area and is far smaller than the area under development on the east side of Clarksburg. The "perfect storm" of unprecedented housing demand, hundreds of acres under development at the same time, a construction moratorium, a complete melt down in the economy and other factors are not likely to be repeated. Perhaps most importantly, as discussed below, new Federal, State and County regulations, as well as new engineering and water quality practices, have been implemented at every level of government. Through these measures, Montgomery County now has among the most, if not the most, demanding environmental protection measures of any jurisdiction. With the advocacy of the environmental community, these new measures have been designed to provide the highest level of stream protection ever applied. They are significantly more comprehensive than those measures used in earlier stages of development in Clarksburg.

Finally, as discussed in Section IV of this report, in a "belt and suspenders" effort, and in response to the Council's charge to the Working Group, the authors of this report suggest the use of additional water quality protection measures, imposed through the development approval process for each property.

III. New Sediment Control and Stormwater Management Regulations

As a result of environmental protection advocacy, future development in Montgomery County, including that within the Ten Mile Creek area, will face environmental controls that are significantly more comprehensive than those of the past. These measures will result in a reduced volume of water leaving the site and a much higher quality of that water than ever before. These new Federal, State and County measures include the following:

- State of Maryland Stormwater Management Act of 2007 (and State/County regulations for implementation) and new regulations,

adopted under that law which require water quality protection through Environmental Site Design ("ESD").

- State of Maryland Sediment and Erosion Control regulations and a new manual to implement the regulations as well as stricter controls required by the NPDES permit issued January 1, 2009
- New Federal National Pollutant Discharge Elimination System requirements (NPDES).
- New Federal Environmental Protection Agency Effluent Limit Guidelines (ELG).
- New Chesapeake Bay Total Maximum Daily Load (TMDL) discharge limits.

Since adoption of the Clarksburg Master Plan in 1994, extensive changes have taken place in the regulatory structure with respect to water quality, and engineering practices have advanced measurably in response to these requirements. The change that probably has drawn the most attention in the past year is Maryland's implementation of the Stormwater Management Act of 2007. Under regulations prepared by the Maryland Department of the Environment, and those required to be implemented by Montgomery County, stormwater management in the future will be much different than that of the past. Instead of large structural ponds used to treat water quality for large areas of development, Environmental Site Design measures will be required throughout a project. "ESD means using small scale stormwater management practices, nonstructural techniques and better site planning to mimic natural hydrologic runoff characteristics and minimize the impact of land development on water resources." (Section 2:0A(17) Md. Model SWM Ordinance). These measures include rain gardens, infiltration measures, microbioretention, swales, enhanced filters, rainwater harvesting, and pervious pavements, all designed to protect natural land conditions such that stormwater run-off from a property once it is developed will reflect the run-off characteristics before development and in some instances will reflect improved run-off characteristics even from existing undeveloped conditions. The new requirements are both technical in nature and extremely comprehensive. The County's new regulations implementing these requirements are themselves 40 pages long and the State's Manual to be used by local governments for implementation of the new requirements is even longer, more than 500 pages. Make no mistake, these changes are extensive. These measures take effect May 4, 2010 and will make a dramatic change in the quality of stormwater run-off on all development in the Ten Mile Creek area.

After extensive study of water quality protection measures from across the nation, the, Maryland Department of the Environment concluded that their measures are more effective than controls on the amount of impervious surface, the installation of large structural ponds and Best Management Practices or other techniques from the past. Stewart Comstock from the Maryland Department of the Environment discussed these measures at the December 16, 2009 Working Group meeting. He explained how these measures will capture a much higher quantity of stormwater than past measures and how they will treat it more effectively in order to mimic the natural conditions. Both he and Rick Brush of the Montgomery County Department of Permitting Services noted that

these measures will be "totally different" than the measures used on the east side of Clarksburg and Mr. Comstock explained that in the best professional judgment of the Maryland Department of the Environment, these measures are the preferred approach to stormwater management and it will produce the highest resulting water quality.

The second major change concerns sediment and erosion control particularly during construction. New regulations are about to be implemented through the State and County agencies that also will address past concerns associated with the "perfect storm". Under the new regulations, sediment control measures will be planned at the front end of a project rather than after it is designed. This will make them function for better than those in the past. Staging of development also will be controlled much more restrictively and large areas will not be eligible for mass grading with limited or no phasing restrictions. These limited areas of disturbance will remain in a sediment control phase only for a relatively short period of time and as development progresses, the permanent stormwater management facilities will be constructed and brought online sooner. Finally, new monitoring requirements will apply in order to ensure continued performance of the systems. These measures will have a significant benefit on water quality.

Third, Environmental Protection Agency has set a Total Maximum Daily Load (TMDL) pollution budget for receiving waterways and the Chesapeake Bay. The TMDL includes specific pollution budgets for 92 sub-watersheds or segments within the Chesapeake Bay.

Fourth, a new NPDES General Permit was issued in 2009 that raises the bar for sediment control and erosion prevention. This Permit provides State and Federal oversight of local land development projects. The Permit conditions include increased site inspections, additional public review, remediation requirements and requirements to comply with Total Maximum Daily Loads such as the Chesapeake Bay TMDL

Fifth, for the first time, this ELG establishes a numeric limit on the turbidity of run-off from construction activities. The standard requires that run-off not exceed 280 NTUs. The Federal Environmental Protection Agency also is implementing rules that apply to post-construction conditions in order to limit pollutants after construction.

These measures dramatically increase water quality protection from that of the past and will serve the Ten Mile Creek area well. Given the runoff characteristics of agricultural land, this means development of the identified properties in Stage 4, which now are farmed, would actually be the mechanism to implement the very goal of runoff reflective of "woods in good condition." More specifically, water quality experts recognize that agricultural land use is not ideal for protection of streams. Frequently, farm fields are located very close to streams, and in some cases right up to them. Rarely are forested stream buffers of the desired width provided. Where livestock is located on the farm, the animals frequently enter the stream and there is no filter for their waste products. Stream crossings frequently consistent of driving right through the stream. When farm fields are tilled, there is little if any protection against sediment run-off nor is there any buffer to protect against fertilizers and pesticides. All of this would change through the

development of the selected properties within Ten Mile Creek and the application of new ESD and sediment control requirements.

IV. Potential Additional Water Quality Protection Measures

In the 16 years since the Master Plan was adopted, not only has the regulatory structure changed, but many new water protection measures have been developed and could be employed in Stage 4. Even though the rigorous new Federal, State and County measures discussed above have been designed to protect water quality in the most sensitive areas of the State, stakeholders during the Working Group process considered possible additional measures to further ensure achievement of the environmental objectives. Those additional measures might include the following:

1. Maximize use of porous materials to the extent feasible. This will require the use of pervious asphalt and concrete for driveways, parking lots and roads.

Figure 1 - Porous Paving

Figure 2 - Gravel, Porous Paving, Concrete

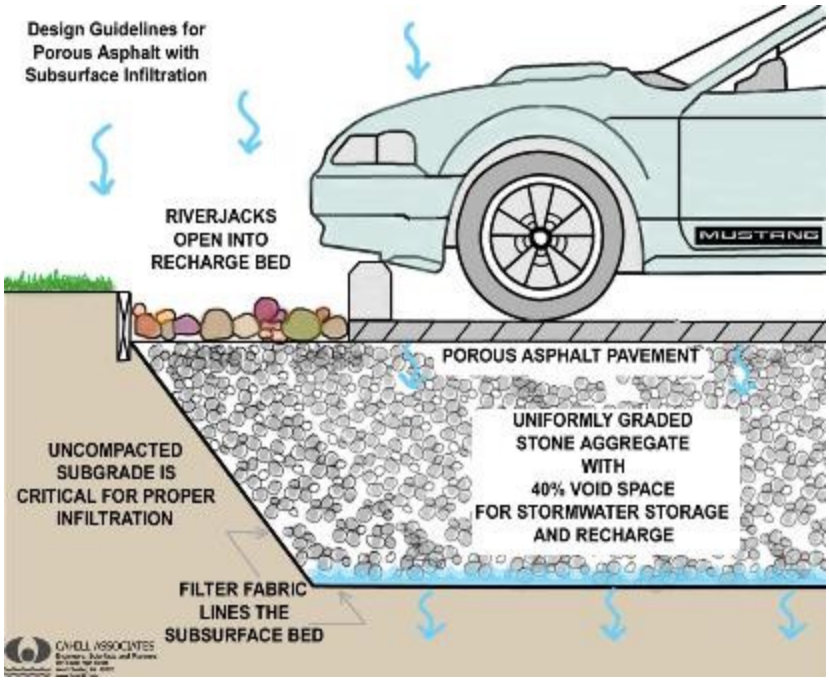


Figure 3 - Typical Section of Porous Pavement with Groundwater Recharge Design

Figure 4 - Porous Driveways and Parking Areas

2. Increase size and performance of stream buffers in selected areas where such increased buffers enhance the water quality. Particular emphasis on stream recharge areas along stream banks.

3. Pre-storm field management/monitoring for erosion/sediment control. Dewater

each sediment trap or basin after major storms by pumping through a filter cloth and then releasing to the stream. This method restores the trap/basin's storage volume to full capacity and the quality of water discharged would be significantly improved.

Figure 5 - Maintenance & Dewatering of Traps using Filtering Cloth

Figure 6 - Dewatering using Filtering Bag

4. Establishment of mandatory third-party inspections. This will require the inspection of sediment control features weekly and within 24 hours of a rain event triggering runoff (required by NPDES permit) and immediate corrective actions by the contractor of any compromised feature to ensure sediment runoff is treated.

5. Set turbity limits for discharge of water. Turbity can be greatly reduced with timely stabilization of disturbed areas with mulch and grass. Floc logs can be used in concentrated channels and flocculants can be used to increase sedimentation in the basin, thus reducing turbity.

Figure 7 - Turbidity of Runoff Before and After Filtering Practices

Figure 8 - Reduce Turbidity using Floc Logs

6. Stream restoration where appropriate.

7. Strictly limit the use of lawn and garden fertilizers.

8. Utilize biologically/environmentally sensitive design for necessary stream crossings. A pipe arch bridging system with rock stabilization on the banks of the stream within the arch could be utilized.

9. Afforest un-forested stream buffers. Possible off-site reforestation within the drainage shed as mitigation is possible.

10. Design water and sewer extensions to minimize stream valley impacts. Design sewer in roads to the extent feasible by sensitive site layout with sensitive grading.

11. Design public sewer service, where feasible, to facilitate extensions to existing properties on septic systems including Clarksburg historic areas.

12. Provide additional trees with larger canopies in streets and parking lots to provide more shading and to reduce heat from runoff, as well as to reduce amount of peak runoff.

13. Reduce parking lot and stall sizes and relax building setback lines to reduce impervious area, where feasible.

14. Provide “treatment train” stormwater and sediment control measures (treatment facilities in a series) as recommended by MCDPS.

15. Design stormwater management and water quality devices to capture rainfall in excess of 1 year storm in selected locations of site, where such increased protections could enhance water quality runoff with discharge locations near streams/sensitive environmental areas.

16. Provide opportunities for groundwater to feed buffers by designing bioretention or infiltration trench underdrains to outfall at grade, where feasible.

These measures could be applied in addition to those required by the various new regulations and standards to provide even further water quality protection.

Although virtually the entire Working Group saw the value of such additional protections to protect water quality, some questioned whether the County could impose them through the development approval process. The answer from both DEP and DPS staff is an absolute "yes." To begin, as noted above, the new Federal, State and County regulations absolutely will apply to all development within Stage 4. Those are, by far, the most significant additional precautions. Beyond those measures, however, should additional

voluntary measures be appropriate, there are at least three mechanisms for doing so. First, each of these properties requires County Council approve of a water and sewer category change. Pursuant to the Ten Year Comprehensive Water and Sewer Plan, the Council can impose conditions on the approval of water and sewer category changes and they have done so on many occasions in the past. Alan Soukup from the Department of Environmental Protection and Rick Brush from the Department of Permitting Services both confirmed this for the Working Group.

Second, each of these properties requires approval by both the Department of Permitting Services and the Montgomery County Planning Board of a Water Quality Plan prior to development. Under Chapter 19 of the County Code, the approval of such plans can include any conditions deemed appropriate for the protection of water quality. Third, each of these properties requires approval of a Preliminary Plan of Subdivision and here again, with input from the Montgomery County Department of Environmental Protection, the Department of Permitting Services and its own Environmental Planning Staff, the Planning Board can impose appropriate conditions when approving the Preliminary Plan.

One issue that was discussed during the Working Group meetings was the issue of adding impervious caps on new development. In the past, prior to establishment of the new stormwater management regulations and sediment control measures discussed above, limiting impervious cover for new development was an indirect way to control water quality, in the absence of the more stringent water quality protection measures that now apply. While some studies indicated a relationship between limitations on impervious cover and water quality (e.g. limiting imperviousness for a watershed area to 10 – 12 %), those studies were based on development that occurred prior to and without compliance with the new stormwater management and sediment control regulations that now apply to all new development in the Ten Mile Creek watershed. Those new regulations, designed to replicate run-off from "woods in good condition" through the use of Environmental Site Design measures, supplant the need to control or even measure imperviousness. When the new Federal, State and County controls are combined, it is clear that water protection for Stage 4 development will be far more comprehensive than anything employed previously including the use of impervious cover limits. As Ernest Sheppe, P.E. explained to the Work Group, stream health and watershed imperviousness do not share a direct correlation. Studies sometimes show streams with high imperviousness and good water quality, and low imperviousness and poor water quality. Other factors contribute to the results and the new ESD measures and other regulatory requirements provide for more direct measures for protecting water quality.

Finally, as noted above, the area envisioned for development in Stage 4 of the Clarksburg Master Plan is a small fraction of the total land area in the Ten Mile Creek watershed. Given that the majority of the area is underdeveloped and required to remain as such under RDT zoning, the transfer of development rights and the absence of sewer, development at the densities envisioned under the Master Plan for the subject Stage 4 properties will result in an appropriate impervious factor for the overall watershed under any circumstances.

Conclusion

Since 1994, the three subject properties have been planned for development under the Master Plan with uses, densities and controls such as stream buffers designed to protect water quality. Since then, regulatory measures have increased exponentially to further ensure water quality protection. As each property proceeds through the development approval process, comprehensive application of the new ESD measures, sediment control requirements, Federal water quality controls and others will be applied to ensure protection of water quality in Ten Mile Creek in satisfaction of the Master Plan expectations. These properties should be allowed to proceed.

Amy Quant, Dusty Rood, Rich Thometz

Recommendation for Master Plan Option 4

Rick Brush, Diane Cameron, John Cook, Mark Pfefferle, and Steven Shofar

Executive Summary

Why we recommend Option 4 – and why choosing another option could mean polluting Ten Mile Creek and losing its special water quality. The Ad-HocWater QualityWorking Group, established by the October 13, 2009 Resolution of the Montgomery County Council, is charged with making recommendations on the protection of Ten Mile Creek, part of our Little Seneca backup drinking water supply, and a designated Special Protection Area. Near the end of the Working Group's 7-month effort, five members of theWorking Group who supported Option 4, (stated in the 1994 Clarksburg Master Plan as "*Consider other land use actions as necessary,*") worked together to summarize the reasons why we support a limited Master Plan amendment as the best way to protect the sensitive, fragile Ten Mile Creek and its watershed.

At this time, only a limited Master Plan amendment, restricted to Clarksburg Stage 4, would enable Montgomery County to adopt changes including zoning for the protection of Ten Mile Creek. Stage 4 is the only significant development planned in the Ten Mile Creek watershed Special Protection Area. **The development allowed by the land use and zoning in the Clarksburg Master Plan poses too great a risk**.

A limited master plan amendment can be accomplished within a roughly 2-year time frame. (The sooner we get started, the sooner this can be accomplished.) **A Master Plan amendment is the best way to assure protection of Ten Mile Creek.** This conclusion and recommendation is based on our review of the science of watershed protection, including expert information provided to the whole Ad-Hoc Water Quality Working Group; DEP's Special Protection Area Report for 2008; our observations of the degradation that occurred in the previous Clarksburg Town Center developments; and the inadequacy of the "Option 2" conditions proposed by other Working Group members. **We urge the Council to support a limited Master Plan amendment, so that the Planning Board can start as soon as possible to formulate the changes to zoning and other land use actions necessary to protect Ten Mile Creek.**

What qualities make Ten Mile Creek special and unique?

The Clarksburg Master Plan describes Ten Mile Creek as "fragile and sensitive." In several respects Ten Mile Creek is the "Last of the Best" streams in Montgomery County. The high quality of Ten Mile Creek depends upon the contribution of cool, clean water from its tributaries to maintain healthy stream conditions.

The Department of Environmental Protection has documented that Ten Mile Creek:

- maintains summer base flows
- minimizes the response to storms
- has tributaries that function as a refuge for fish during droughts
- contains consistently cool water
- contributes high quality water to our Little Seneca Reservoir backup drinking water supply
- has shallow soils overlying fragile, folded metamorphic rocks
- supports a high quality biological community including amphibians
- supports some macroinvertebrates rarely if ever found elsewhere in the County
- is a "reference watershed" used as a standard of quality to measure the comparative quality of other streams.

Protecting this fragile and unique water quality of Ten Mile Creek involves effective watershed protection approaches based on local experience and a large body of published science. Option 4 – a limited amendment of the Clarksburg Master Plan – would enable Montgomery County to apply proven watershed protection approaches, including necessary zoning and land use density changes.

Why we recommend Option 4: Why is the Council being asked to consider a plan of action for Stage 4 of the Clarksburg Master Plan?

- When the Clarksburg Master Plan was adopted in 1994, there was considerable controversy and debate around whether the land use and zoning proposed for Ten Mile Creek would threaten its health. The Council voted 5-4 to adopt the recommendations now in the plan.
- In order to assure the members of the Council that the health of Ten Mile Creek would be protected, the staging element -- requiring a determination of the Council based on the experience of Stages 1-3 on the health of Little Seneca Creek and similar watersheds – was added to the plan.
- This staging mechanism is unique in that it requires the Council to "…determine if the method, 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." Staging mechanisms are usually based only on the programming or completion of physical improvements, but in this instance, the staging is based upon whether water quality practices and review processes would be sufficient to protect Ten Mile Creek.

Only Option 4 Allows Montgomery County to apply necessary land use and land cover conditions to Ten Mile Creek.

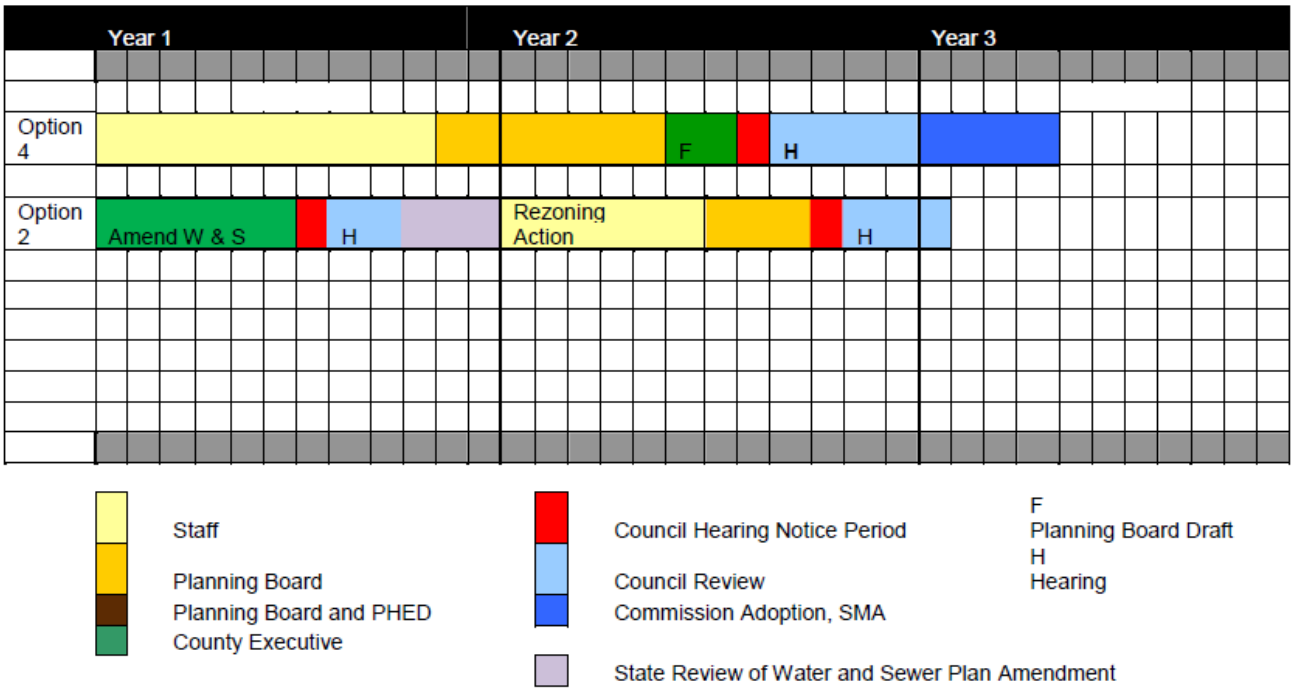
Only Option 4, allowing a limited amendment of the Clarksburg Master Plan, will enable Montgomery County to re-set the land use intensity, and therefore the land cover conditions in the Ten Mile Creek watershed, based on the latest, best science:

- Scientists have documented the relationship between land cover conditions, especially imperviousness, and stream quality for the past 30 years, with some of the most prominent databases generated in Maryland and Montgomery County.
- In 2008, the National Research Council stormwater committee found that "**There is a direct relationship between land cover and the biological condition of downstream receiving waters.** The possibility for the highest levels of aquatic biological condition exists only with very light urban transformation of the landscape." (National Research Council (2008), Committee on Reducing Stormwater Discharges to Receiving Waters. *Urban Stormwater Management in the United States,* p. 195, emphasis in the original.)
- Numerous studies reviewed in the NRC report, indicate that as watershed imperviousness increases from 1% to 10%, stream quality transitions from "sensitive" to "impacted," and that the degradation occurs along a continuum – in other words, there is no threshold of imperviousness and other urbanization impacts, below which no degradation is observed.

A Limited Master Plan revision will not take too much time, nor will it delay needed economic development or housing in Clarksburg.

- The pipeline of existing approved (but not completed) development projects in Clarksburg contains over 6000 dwelling units (approximately 4000 east of I-270) and over 3 million square feet (approximately 1.3 million east of I-270) of commercial space. Hurrying Stage 4 will put not only Ten Mile Creek at risk, but also have the potential to draw development away from the properties closer in to the Town Center and other areas in the county nearer Metro and earlier sections of the CCT.
- Stage 4 development is dependent on sewer and water lines and a water tower that will have to be built as part of the Cabin Branch development. Site plans for these areas are in various stages of approval and some not yet submitted for consideration by the Planning Board.
- Preparation of a master plan amendment will include both a comprehensive water and sewer plan amendment for all of stage 4 and a sectional map amendment to establish the zoning. Option 2 actions will take about the same amount of time for the properties east of I-270 that require rezoning. The properties west of I-270 that do not require rezoning could submit a preliminary plan approximately one year earlier. (See the schedule below.)

Proposed Schedule for a Clarksburg Stage 4 Master Plan amendment



What "land use actions" can assure protection of Ten Mile Creek while fulfilling the community-building goals of the Master Plan?
Land use actions that could address these issues require amending the Clarksburg Master Plan, because land use decisions and zoning recommendations are included in that plan. These include:

- Changing the proposed land use and zoning associated with land in the Ten Mile Creek Watershed.
- Applying an overlay zone to implement an impervious cap.
- Changing the proposed park acquisition in the watershed.
- Involving all the stakeholders in the process.

Minor land use actions such as developing Planning Board Design Guidelines, would not significantly address the underlying issue of the proposed intensity of land use and imperviousness associated with those land uses at the allowed densities**.**

Amending the master plan involves scope (geography and subjects covered) and timing decisions. This working group and the Planning Board recommend that the **geographic scope** be limited to the Ten Mile Creek watershed (approximately 3000 acres). The significant land use and zoning decisions would be *confined to the Stage 4 area within Ten Mile Creek (approximately 1100 acres of the 10,000-acre planning area)*, with some potential for:

- Finding the best method to provide sewer and water to unstaged properties in the Town Center in and around the Historic District.
- Recommending desirable environmental improvements to Rural and RDT zoned properties that could be used by willing property owners to enhance natural resources on properties where zoning and land use changes are not anticipated.

The **scope of subjects** covered would include all the land use, zoning, transportation and park acquisition issues that would combine to achieve a vibrant Town Center and a thriving Ten Mile Creek resource. See specific issues below.

The **timing** of any amendment would depend on the priorities set by the County Council in the budget and work program for the Planning Department. A master plan amendment would take at least two years to complete once it is included in the work program. Currently, the Council has not included this area as a priority in the FY11 budget.

Why should the Council request that the Planning Board prepare a limited Master Plan Amendment?

1. Stream monitoring to date indicates that Ten Mile Creek is already showing signs of stress with a small amount of land area developed in the headwaters. For example, one subwatershed with 12% imperviousness has dropped from good to fair condition. If development is constructed as planned, the imperviousness level in that particular subwatershed is predicted to be over 22% imperviousness, risking poor water quality and adverse effects downstream.

2. Placing conditions that would require additional Best Management Practices, short of an imperviousness cap that would severely restrict development, will not assure protection of water quality.

3. Dealing only with the stormwater, as Option 2 emphasizes, overlooks the cumulative effects of urban transformation of the landscape -- and does not allow comprehensive consideration of community-building and urban design issues in a public forum where all stakeholders participate.

What can a master plan amendment do?

1. **Allow time and resources to evaluate methods, facilities, and practices for water quality protection** currently being used in Clarksburg and elsewhere in the County and State, including Environmental Site Design (ESD) and Low Impact Development (LID). It will also provide time for the County to determine what ESD to the MEP (maximum extent practicable) means for each type of development.
2. **Provide an opportunity to create a new paradigm** for the best balance between community building priorities and the protection of fragile and valuable environmental assets, implementing the extensive provisions of the 1994 Master Plan for the Ten Mile Creek watershed.

3. **Consider environmental enhancements** holistically throughout the watershed that can offset the impacts of development.
4. **Allow consideration of** the approved development and **the most appropriate use of the remaining land in the Town Center**.
5. **Allow all stakeholders**, including residents, businesses, landowners and their development teams, environmental groups, and County agencies **to develop a plan** to meet the needs of the community.
6. **Allow the approved Town Center development** outside the Ten Mile Creek watershed **to stabilize** and permit public facilities and amenities to be completed.
7. Allow the County to **study the Clarksburg Town Center CCT station** and establish the alignment for the extension of Observation Drive north of Clarksburg Road.
8. **Reconcile existing and approved development levels** with current private and public development plans.
9. **Plan for infrastructure priorities** including water and sewer and roadways to serve the planned development and evaluate solutions to provide affordable sewer access to the historic district.
10. **Allow consideration of other zoning options** (either in the base zone or adding overlay zones) that would assure lower imperviousness levels. Through this mechanism the first principles of Environmental Site Design can be accomplished. These include: protection of natural resources and the minimization of imperviousness and site grading.
11. **Allow incorporation of current county policy initiatives** and new environmental planning guidelines for smarter growth and sustainability.

The master plan amendment **will not delay improvements sought by the residents of Clarksburg**. A significant amount of development is planned and approved to support the desired improvements in the Town Center and planned road connections.

How Does Option 2 compare with Option 4 in terms of ability to protect the high quality, fragile waters and contributing watershed of Ten Mile Creek?

Option 2 is based on building out to the currently-zoned and planned densities of Stage 4 in the current Master Plan, along with a set of potential water quality practices; adopting this approach would not assure the protection of water quality in Ten Mile Creek – thus it is not a viable option. The reasons include:

Imperviousness levels resulting from build out of current densities planned for Clarksburg Stage 4 (Ten Mile Creek) are more likely to result in stream degradation.

- If development is allowed to move forward under the current zoning densities in the Clarksburg Master Plan for Stage 4, the resulting imperviousness levels in some parts of Ten Mile Creek watershed could range as high as 26% imperviousness – or even higher.

- These imperviousness levels would be well above the levels observed documented in the Montgomery County DEP Special Protection Area reports, and noted by the National Research Council, to constitute an "impacted" (degraded) stream;
- The voluntary 15% commercial-site imperviousness limit in the existing Clarksburg Master Plan for Stage 4 is also well above the imperviousness, and associated land cover changes, associated with stream quality degradation.
- National-level reviews of the published science have supported low imperviousness levels in order to protect high-quality rural streams. The 2008 report from the National Research Council stormwater committee indicated that sensitive streams enter a "transition zone," where they begin to experience decline in water quality indicators, within the range of 5% to 10% watershed imperviousness. The NRC report calls watersheds with 1 to 5% impervious cover "lightly impacted," and watersheds with 6 to 10% impervious cover "moderately impacted." This national-level observation is borne out by local observations here in Montgomery County.
- Stormwater management and construction site erosion controls, along with forest buffers, are important but not sufficient measures to protect Ten Mile Creek. The reason is that these stormwater management and other so-called "water quality practices" proposed for Option 2 are not proven to maintain the high quality, sensitive characteristics of a rural watershed such as Ten Mile Creek, when subjected to moderate to dense development.

Environmental Overlay Zones used in other Special Protection Areas are effective in maintaining and protecting water quality

Of the four Montgomery County Special Protection Areas (SPAs), two (Upper Paint Branch and Upper Rock Creek) have applied Environmental Overlay Zones to limit imperviousness. As of 2010, the imperviousness caps for both UPB and URC are set at 8%. When compared with "control streams," Upper Paint Branch and Upper Rock Creek maintained their good water quality over time, while Piney Branch and Clarksburg streams showed significant degradation.

Beyond imperviousness: Option 2 , even with ESD practices, is also unproven to prevent the water quality degradation resulting from land use and land cover changes associated with moderate to high density developments in sensitive watersheds.

- Imperviousness is an important factor, but not the only urbanization factor, to consider with respect to the protection of Ten Mile Creek. The stream degradation to Ten Mile Creek resulting from the currently-planned imperviousness levels would be further exacerbated by hydrologic and soil damages due to cut-and-fill, infrastructure construction, and other development activities.
- The Environmental Site Design provisions included in the Option 2 report are important and necessary, but not sufficient, to protect the high quality water and sensitive contributing watershed of Ten Mile Creek. They are insufficient because

the forest buffer, stormwater and sediment controls included in the Option 2 approach have not been proven to prevent the disruption of infiltration and groundwater flows, and other destructive impacts, associated with the densities currently planned for Stage 4.

What makes Cut-and-Fill and related earthmoving operations so damaging to sensitive streams?

Cut-and-fill operations, which were used in prior Clarksburg stages, would be necessitated by the high to moderate land use densities now planned for Clarksburg Stage 4 and the headwaters of Ten Mile Creek. Cut-and-fill operations would have the following impacts on Ten Mile Creek and its fragile watershed:

- Terraforming: Cut and fill operations amount to "hilltop removal," earth moving operations that re-work the topography, obliterating or altering the smallest seeps, springs, and "zero-order streams." This process has been called "terraforming."
- Loss of top soil and established vegetation: The top soil is the layer of soil with the most organic content and is important for enabling infiltration of rainwater and for the holding of moisture for plant uptake. Conventional development practices, and even some practices termed "ESD," involve removal of the vegetation and top soil layer and the placement of turf grass or pavement on top of sub-soil, with the net effect of significant reductions in rainwater infiltration ability and moisture holding capacity– this leads to loss of stream water quality.
- Compaction: Cut-and-fill and related earthmoving operations result in soil compaction, which is a nearly-permanent condition that prevents rainwater from percolating into the ground.
- Breakage of fragile rocks: The Clarksburg area is known for its fragile geology: thin, tilted layers of metamorphic rocks that are easily broken by heavy construction equipment. This rock breakage disrupts the local hydrology, specifically, the patterns of infiltration and groundwater movement, including lateral flow of water that creates seeps and springs.
- Decreases in groundwater recharge and dry weather stream flows result from the sum total of these cut and fill and related earthmoving operations.
- Obliteration or alteration of the smallest seeps, springs, and "zero-order streams."
- Increases in stream erosion and sedimentation.

DEP's 2008 Special Protection Area Report presents data showing that the development process used in the Clarksburg test areas permanently change the character of the landscape. These changes are cumulative and influence the receiving streams in many ways. The current cut-and-fill approach to site development permanently alters the overall topography, natural drainage patterns, and natural infiltration conditions. These disturbances to the landscape alter hydrology including base flow, characteristics of the stream channel, and the community of organisms living in the streams and adjoining wetlands. Water quality can be permanently altered as well.

Transportation and Water/Sewer Infrastructure Projects also contribute to degradation.

Montgomery County DEP has also documented that the construction of sewer lines contributed to groundwater problems and stream degradation in Clarksburg Stages 1-3. In addition, road crossings over streams with associated culverts and other structures contributes to stream degradation both during and after project construction. These various impacts of development projects – even those incorporating new construction and post-construction stormwater controls – can create a host of water quality impairments.

- **The only scientifically-proven way to prevent (not just possibly lessen) this host of impairments is to minimize the construction of infrastructure projects in the Ten Mile Creek watershed, and to apply protective conservative land cover requirements through a limited Master Plan amendment.**

Voluntary conditions that might apply as part of Option 2 are not sufficient to protect Ten Mile Creek.

- There is no conclusive evidence to indicate that the mechanisms and regulatory requirements in place (or soon to be adopted) are sufficient to protect Ten Mile Creek given the master plan land use and zoning, and the property owners have not proffered "voluntary measures" that give us confidence beyond those requirements. There is no way to enforce these "voluntary measures."
- Attaching imperviousness limits to Water and Sewer Category changes is an untested tool, and doing so would require the Planning Board to determine at time of preliminary plan if the density should be significantly reduced below the zoning yield to achieve the desired level of imperviousness. Master plans or sector plans have been the traditional processes used to establish impervious limits.
- The possible "additional water quality measures," potentially offered by the Clarksburg Stage 4 property owners, are not proven to protect fragile streams and their watersheds from degradation during and after development at the densities now planned for Stage 4.
- The "Red Run" watershed in Baltimore County – a case study cited by those favoring Option 2 – has several aspects that make it less than a relevant or convincing case study. Supporters of Option 2 have cited the Red Run watershed as supporting their contention that development projects without imperviousness limits, but with other provisions such as forested stream buffers, can occur in a watershed that is able to maintain a high biological quality, including support of trout. One key difference between the Red Run watershed, and Ten Mile Creek, is in the development patterns – dense development in the Red Run watershed occurred in the lower reaches, but most of the highly dense development now planned for Ten Mile Creek is for the upper headwaters - areas known to affect the quality of an entire stream more profoundly. Another problem we found with the Red Run case study was that trout were last reported to be found in Red Run

in 2000 – a decade ago. Baltimore County officials whom we reached were unable to confirm that the stream continues to support a trout population.

We therefore ask the Council to support Option 4 in order to protect Ten Mile Creek.

Rick Brush, Diane Cameron, John Cook, Mark Pfefferle, and Steven Shofar

Attachment: Detailed responses to potential conditions that could be proffered as part of "Option 2."

Responses to the Option 2 Sub-group proposal– Grant Water and Sewer changes, subject to property owners' commitments to take additional water quality measures:

- Option 2 is unacceptable because it involves moving forward with zoning densities, land cover changes, and earth moving and infrastructure projects that are associated with the degradation of high-quality streams. This lack of a proven water quality protection record also applies to the new set of Environmental Site Design methods for stormwater management set to take effect in May 2010.
- Some of the potential practices that may be offered as part of Option 2 include increasing the size and extent of forest buffers; use of permeable pavements where effective and appropriate; and pre-storm management for active construction sediment traps and basins. While we acknowledge that these and some other water quality practices - many of them under the rubric of Environmental Site Design – are good and important things to require developers to do, they are not proven to protect Ten Mile Creek. Because they do not address the hydrologic, geologic, and topographic changes caused by moderate to high density developments, stormwater and sediment control practices are *necessary but not proven to be sufficient* for protecting high quality, sensitive, fragile streams.
- At this time, only the limited Master Plan revision available under Option 4 enables Montgomery County to place some certainty in stream protection efforts by establishing the land use densities through zoning, and the associated land cover conditions necessary and proven to protect high-quality, fragile streams such as Ten Mile Creek.

The following are some of the possible "additional water quality measures" that may be offered in the Option 2 proposal, and our reasons for why these measures – taken together or separately – are inadequate to protect Ten Mile Creek.

Use Environmental Site Design for full stormwater volume target:

Problems with this condition: ESD is the new "law of the land" and is widely seen as an improvement over previous stormwater management approaches, but it alone does not address the density, land use, cut-and-fill, and other impacts of moderate to high density developments on sensitive watersheds. The effectiveness of Environmental Site Design (ESD) as a stormwater technique is still undocumented. The State indicates that there is no data to support its long term effectiveness. The National Home Builder's Association has also indicated that there is no data available to support its effectiveness. Leading stormwater management experts (such as Tom Schueler) indicated that there is a lack of data available to support its effectiveness, particularly with respect to maintenance of high-quality sensitive streams.

Pre-storm management for erosion/sediment control

This involves the draining of erosion and sediment control devices in advance of rainfall events when the existing control facility is near capacity. This is a good idea; however, it may already be required with a NDPES construction permit. It could also be a required technology when the new NPDES turbidity limits become effective.

Problems with this condition:

1)We don't yet know the effectiveness of this relatively new practice. 2) It does not require a reduction in the amount of land disturbance nor does it provide additional controls. 3) It is only a method to manage discharges from temporary structures; 4) There is difficulty in getting equipment and a vendor onsite to conduct this activity. We learned it can take as long as 48 hours for a vendor, using flocculants, to be onsite, negating the time sensitive nature to respond to summer storms.

Enhanced filtering at surface discharges for Erosion and Sediment Control facilities

This suggestion is to provide an additional filtering device after the water is released from the soil and erosion control device. This is not currently required in Montgomery County but is used in the Chesapeake Bay Critical Areas.

Problems with this condition:

1) This practice does not require a reduction in the amount of land disturbance, nor does it provide additional controls; 2) Data shows that the fine particles are not being captured by existing filtering material; the County is currently requiring use of flocculants to capture these fine particles.

Lower turbidity limit

There is currently no turbidity limit for discharges from construction sites in the State of Maryland. The Federal Government recently has passed regulations that will require them sometime in the future.

Problems with this condition:

1) It is unclear what limit MDE will establish. 2) The business representatives have indicated how difficult it will be to measure turbidity and to get reliable readings. 3) The effectiveness of any limit is unknown.

Stream restoration where necessary

Problems with this condition:
1) Stream restoration does not get to the root of the problem – which is the Urban Stream Syndrome, where development and urbanization create a host of hydrologic, topographic

and other changes that in turn alter and degrade the biology, chemistry, and hydrology of streams. Stream restoration is at best, a partial fix of some of these problems after the fact. 2) We are unaware of sites within the Stage 4 portion of Ten-Mile Creek that require stream restoration. Stream restoration on sites off the project limits is not feasible. DPS, through their approval of the special protection area water quality plans, limits all stream restoration to the subject property. 3) The evidence shows that increased impervious levels has resulted in higher stormwater discharges, increased "flashiness" of streams, and scouring of the stream banks. The proposal to do stream restoration provides benefits but does not get to the root problem – too much upland imperviousness. 4) Since there few areas that need restoration within the Stage 4 area the benefits are minimal - the challenge for Stage IV is to prevent degradation – not to allow degradation, and then attempt to (partially) restore it.

Strictly limit or eliminate use of fertilizers via HOA covenants and restrictions

Problems with this condition:

1) DPS approval of the special protection area water quality plans already calls for the minimization of fertilizers on HOA lands. 2) It is physically impossible to prevent HOA's or private individuals from using fertilizers/pesticides/herbicides 3) Enforcing this provision is impossible without a county-wide ban on the sale of such materials. 4) Since this is already a requirement there is no benefit.

Protection of ephemeral/zero order streams

1) Protection of ephemeral channels is already occurring when they are within the established stream buffers. 2) The potential to protect ephemeral channels will be impossible on the east side of I-270 because of the high densities, and numerous crossings that will be needed for infrastructure such as roadways, utilities, and the corridor cities **transitway**; 3) protection of zero order and ephemeral channels is already occurring when they are within the established stream buffers.

Re/afforest all unforested stream buffers

This is not a new requirement. Under the existing environmental guidelines, owners of properties in any special protection area are required to reforest all unforested stream buffers at an accelerated pace. That is planting must occur in the first planting season after issuance of the first sediment control permit. Thus, there is no additional benefit.

Optimize sewer design to facilitate public sewer for historic district septic failures (permit grinder pumps)

According to Council staff, a connection to the historic district will be required when the water and sewer connection is granted. The owners of the historic properties will have extreme difficulties in affording any connections since their properties have little or no subdivision potential. Just making individual connections via grinder pumps will be

expensive for the lot owners because of the distance the lines must travel. Providing sewer access to the historic district will not solve the problem of how to deliver the sewer service in an efficient and cost-effective manner to the benefit of all properties within the historic district.

Any benefit to the watershed of providing such a sewer connection will be minimal since these properties are a distance from the streams. Though we agree that the sewer problems of the Historic District need to be addressed, they should not be addressed at the cost or risk of degrading Ten Mile Creek – these are separate issues that each requires their own effective solutions.

Design sewer extensions to minimize stream valley impacts

The Clarksburg Stage 3 and 4 Water and Sewer Study delineates the main water and sewer trunk lines. The goal in that study was to provide gravity sewer to the greatest extent practicable with maximum environmental protection. The main sewer line location has already been determined to minimize impacts to stream buffers. Designing sewer extensions to tap into the main line that minimize environmental impacts is already required for all new subdivisions. This is not a new requirement, so it does not provide additional benefit.

Implement impervious surface cap

The proven way to implement and enforce an impervious surface cap is through a master plan amendment and environmental overlay zone. It would potentially not save any time or expense to attempt to apply such a cap via a water and sewer plan amendment, and doing so raises significant questions about effectiveness and enforceability.

Staging within stage 4 - would be extremely difficult

This refers to staging within a subdivision, and not sewer staging. The concept is to allow a developer to build so many homes, stabilize the area and then pause to allow for monitoring of the streams to determine the effectiveness of the soil and erosion control devices and stormwater management. If the development shows little detrimental effect on water quality, the development would be allowed to move to the next stage/phase. If there is water quality degradation, the developer would either have to pause longer until additional studies are conducted, or abandon the remainder to the subdivision

<u>Problems with this condition:</u>

1) It will not provide certainty to the development community; 2) Would delay development or prohibit completion of a subdivision that has recorded lots. 3) Developer would want to economize implementation of the infrastructure mass grading, installing water and sewer lines, and roadways at one time, but with uncertainty they would not do this. 4) There is no ability in regulation or code to do this. There are significant difficulties in implementing this type of staging.

Comments from Co-Chair Carl Elefante

Process

The Working Group process was open, transparent, and inclusive. As co-chair, I am not aware of anyone who does or should feel left out. All views were welcome and all views were provided a fair and respectful opportunity to be expressed. Each Working Group member was given full voice. Other attendees were given the opportunity to participate in Working Group discussions and to share their views.

The Working Group structured its proceedings to follow the charge given by the County Council. The topics addressed were expanded at several points to include additional topics requested by Working Group members.

Representatives of the owners of properties in Stage 4 and other Clarksburg residents and stakeholders attended the meetings regularly. In addition to having an opportunity to participate in the Working Group's discussions, several participated in the Working Group's all-day workshop where the Working Group's findings, conclusions and consensus were developed. Property owners were offered the opportunity to present development principles, concepts or plans. None chose to make materials available to the Working Group.

Findings of Fact

The report fairly summarizes the presentations made to the Working Group. There were several points of disagreement about a number of water quality topics, including the reliability of certain water quality measures (for example: turbidity), the effectiveness of certain water quality protection techniques (for example: flocculants), the effectiveness of certain water quality protection policies (for example: limits on impermeable surfaces and structures), and several other topics. The Working Group was not of one mind and one voice.

This said, the Working Group did find substantial agreement on many issues, including:

- Ten Mile Creek is a high-value stream which continues to have great importance to the County;
- development of Clarksburg has resulted in the degradation of water quality in Ten Mile Creek;
- development in Clarksburg has proceeded, as far as can be reasonably expected, in accordance with all required regulations and utilizing best practices to protect water quality; efforts have not failed so much as development has proceeded on a schedule and in a sequence not anticipated by the Master Plan; in this context, standards have fallen short of achieving their intended goals;
- such results are not unprecedented; however, experiences in other special protection areas have differed due to several factors, some inherent to the

differences in the areas themselves, others due to differing application of water quality protections;
- new state and federal regulations offer the opportunity to substantially improve water quality protection;
- evolving water quality protection technologies and practices offer the opportunity to substantially improve water quality protection.

Consensus

The Working Group was able to reach consensus on narrowing the number of actions the County Council should consider for Stage 4:

- Action Option 2 – recommend water and sewer category changes with additional conditions
- Action Option 4 – consider other land use actions

Regarding Option 2, there was general agreement that the County needs to go beyond simply adopting new water quality standards and practices. Application of standards and practices must be tailored to the specific conditions in Stage 4. There were differing opinions on which water quality protection measures and practices have the best opportunity to improve water quality protection in Stage 4.

Regarding Option 4, consensus was elusive. There was general agreement that "other land use actions" translates almost certainly into revisiting the Clarksburg Master Plan. Two predominant views were expressed. There were strong concerns raised about the potential delay of the continued development of the Clarksburg Town Center and the consequent opportunities to solve sanitary sewer problems in the Historic District. There were equally strong concerns raised that the land uses proposed in the development of Stage 4 must result in the continued degradation of water quality in Ten Mile Creek regardless of what water quality standards and practices are employed. The Stage 4 land uses proposed must be substantially altered if water quality is to be protected.

Additional Observations

On both sides, (pro-development and pro-water quality protection, if those are fair characterizations), Working Group members came into the process with pre-conceptions. Some participants were not moved by the information presented to the Working Group. Their positions did not alter substantially.

Implementation of the Clarksburg Master Plan has not achieved either its intended water quality or land use goals. Water quality in Ten Mile Creek has been degraded. A compact, transit-oriented, mixed-use village center has not been created. The Working Group did not investigate what caused this failure to reach either water quality or land use goals. There was some speculation about causes for water quality protection failures (for example: too rapid development, development remaining "under construction" for too long). There was no speculation about what caused the failure of land use goals.

Completion of the Stage 4 development east of I-270 and west of I-270 are very different propositions. To the east, failure to complete the development of Stage 4 threatens the viability of the town center concept for Clarksburg. While completion of Stage 4 is no guarantee that the proposed land use goals of the Master Plan will be achieved, failure to develop properties designated in Stage 4 east of I-270 almost certainly eliminates any possibility of achieving the town center concept. I-270 substantially isolates development to the east from Ten Mile Creek; however, implementing effective water quality protection measures will remain a challenge, a challenge not successfully achieved so far.

There is no compelling purpose to development of the Stage 4 parcels west of I-270. Residential development west of I-270 cannot reasonably be characterized as contributing to compact, transit-oriented, mixed-use, town center development. Transfer development rights would be better distributed to parcels east of I-270 where additional development density could be served by transit and support hoped-for retail and job centers. The challenges of protecting water quality developing parcels west of I-270 increase dramatically. While development models may exist for properties in areas as sensitive as those located west of I-270, no evidence was presented to the Working Group that such models would be adopted. A sample development plan was presented by staff from Loiederman Soltesz Associates comparing "existing" storm water management standards and practices with the newly adopted Maryland environmental site design standards. Far from being re-assuring about the promised benefits of the new standards, the plan appeared wholly unworkable. Each single-family property was served by a minimum of two rain water retention features, calling into serious question the ability of the County to monitor and maintain effective water quality measures. As an architect, the plan demonstrated to me that development-as-usual overlaid with environmental site design practices is an absurdity. If environmental site design is to be an effective means to protect water quality, alternative development patterns must be imagined and implemented.

The County should lead by example by curtailing plans for the development of County-owned parcels west of I-270 and assuring that water quality measures implemented on those parcels already developed are in fact protecting water quality in Ten Mile Creek.