

Worksession: Clarksburg Limited Master Plan for the Ten Mile Creek Watershed - Presentation and Discussion of Plan Findings and Recommendations



Valdis Lazdins, Chief, Area 1, valdis.lazdins@montgomeryplanning.org, 301-495-4506



Mary Dolan, Chief, Functional Planning & Policy, mary.dolan@montgomeryplanning.org 301-495-4552



Frederick Vernon Boyd, Planner/Coordinator, Area 3, fred.boyd@montgomeryplanning.org 301-495-4654



Completed: 06/13/2013

Description

The County Council directed the Planning Board to prepare an amendment to the 1994 Clarksburg Master Plan by October 11, 2013. This worksession reviews the results of the environmental and additional transportation analyses and presents preliminary recommendations for the Clarksburg Limited Master Plan for the Ten Mile Creek Watershed. Staff has completed a review of additional material and recommendations from the consultants and is prepared to present a more complete analysis. This memo includes recommendations for the Board to consider, which will help guide the development of the Staff Draft, to be presented on July 25, 2013.

Summary

Staff recommends the Planning Board evaluate the preliminary recommendations based on the scenario analysis results and provide direction to staff.

Since completing the staff report to the Planning Board on April 11, 2013, together with our consultants and the Department of Parks we have prepared additional analyses:

- Environmental modeling of the scenarios agreed to by the Planning Board on May 9, 2013.
- Transportation modeling and analysis of potential transit and roadway improvements to address projected traffic issues.
- An assessment of Legacy Open Space protection for the resources in Ten Mile Creek and park acquisition to address resource protection and passive recreation needs.

Environmental Modeling

On May 9, 2013, the Planning Board directed staff to revise the assumptions for the environmental analysis and model four additional scenarios. While Scenario 1 (the 1994 Master Plan) was tested, with results reported to the Planning Board in March 2013, it was not further analyzed because some assumptions were revised based on subsequent discussions with the Planning Board. A full description of the scenarios and the modeling assumptions are attached. The analyzed scenarios include:

2. **1994 Plan** - The 1994 Clarksburg Master Plan recommendations for density and land use in Stage 4, assuming full Environmental Site Design for all properties (new development and redevelopment).
3. **1994 Plan - Reduced Footprint, Same Yield** - The same as Scenario 2, but with a reduced development footprint for the Pulte properties. Assumes a different residential mix that allows approximately the same number of units permitted by the 1994 plan, but on less land.
4. **1994 Plan - Reduced Footprint, Lower Yield** - The same as Scenario 2, but with the same residential mix for the Pulte property recommended in the 1994 Plan resulting in fewer units.
5. **7% Watershed Imperviousness** – The same as Scenario 3, but a reduced yield on Miles/Coppola, Egan, and the County properties, with slightly less development on the Pulte property.

These scenarios were tested based on Spatial Analysis and the Hydrologic and Hydraulic Models. Subwatershed imperviousness was also calculated. The Nutrient Loading Model was not applied because the initial analysis showed that nutrient and other related pollutant levels would be reduced slightly when residential uses replace agriculture. Further reductions of imperviousness would decrease nutrient loadings even more. The consultant’s summary report is attached with greater detail on the results of the modeling. The map below shows the subwatersheds for reference in the discussion that follows.



Subwatersheds of Ten Mile Creek

In early June, two additional scenarios were suggested by the Save Ten Mile Creek Coalition, one advocating a watershed imperviousness goal of 6% and one assuming no additional development. While the No-Build scenario was tested in the form of the Existing Conditions analysis, the 6% goal was not tested. Achieving a 6% goal would severely restrict what could be developed, especially east of I-270. Even with densities of 1 unit per 5 acres, or 1 unit per 25 acres on the west side of I-270 the resulting imperviousness levels could be between 3-6%; given the type of housing and the long cul-de-sac roads and driveways needed to serve very low density development. Given these impervious levels, very little development would remain for the east side of I-270, in the Historic District and on the Miles/Coppola and Egan properties. Such an approach would conflict with the community-building objectives of the 1994 Master Plan.

Of the four development scenarios evaluated, Scenario 2 (1994 Master Plan) has the greatest development footprint and consequently the greatest direct impact to the Ten Mile Creek watershed. These impacts include loss of forest, forest interior, streams and wetlands. Development will disturb approximately 420 acres of land. Four subwatersheds will see the greatest disturbance – approximately 46% of LSTM 111, 42% of LSTM 110, 43% of LSTM 206 and 25% of LSTM 202. Of these, LSTM 206 is currently the most developed subwatershed, with 16% impervious cover and fair stream conditions. In contrast, LSTM 110 and LSTM 111 are small, high quality headwater tributaries dominated by forest cover and rural land uses.

Build-out of the 1994 Master Plan would also result in the loss of over 60 acres of interior forest. About 18 of these acres may be directly impacted by development, namely on the County and Pulte properties. The remaining loss would be attributed to fragmentation and overall reduction in forest cover, reducing the size and buffer of contiguous forest. Approximately 57 acres on lands with a slope greater than 15% would be developed under the 1994 Master Plan, with 6 of these acres on lands with a slope greater than 25%. These include the Pulte, County, and Miles Coppola properties, as well as the MD 355 Bypass.

An appreciable difference in potential stream and watershed impacts associated with Scenarios 3, 4 and 5 is not uniformly noted by these analyses. The similarity in limits of disturbance results in similar impacts to natural resources. The exception is the in Scenario 5, where a revised MD 355 Bypass realignment reduced stream impacts from approximately 1,100 feet (in Scenarios 3 and 4) to 700 feet in Scenario 5, and eliminates wetland impacts.

The results of the hydrologic model indicate that ESD will not fully mitigate the impacts of development on hydrology in the watershed. Scenario 2 results in the largest increases in volume of runoff and stream flow. In most subwatersheds, the differences between the development proposed under Scenario 3 versus Scenario 4 were too small to result in any significant model response. Of the four development scenarios, Scenario 5 showed the lowest increase over existing conditions as a result of the reduced imperviousness, with the greatest benefits predicted in LSTM110, LSTM111 and LSTM206. Improvements were also seen in LSTM201 and at the downstream modeling points at LSTM202, LSTM203, LSTM302, LSTM303B and the study outlet point at LSTM304.

Impacts from potential channel erosion resulting from altered hydrology were not explicitly analyzed as part of this study, due to uncertainty of future stream response. However, research does indicate that channel erosion can be a significant sediment source.

Given the level of development proposed, increases in stormwater runoff volume and peak flow can be expected in all development scenarios despite the application of ESD practices (Center for Watershed Protection, 2013). Literature review of case studies and monitoring to document the effectiveness of ESD and similar low impact development (LID) strategies are limited and don't appear to exist at a watershed scale of analysis. Where case studies do exist at a subdivision scale, there is no conclusive evidence that ESD fully protects stream health.

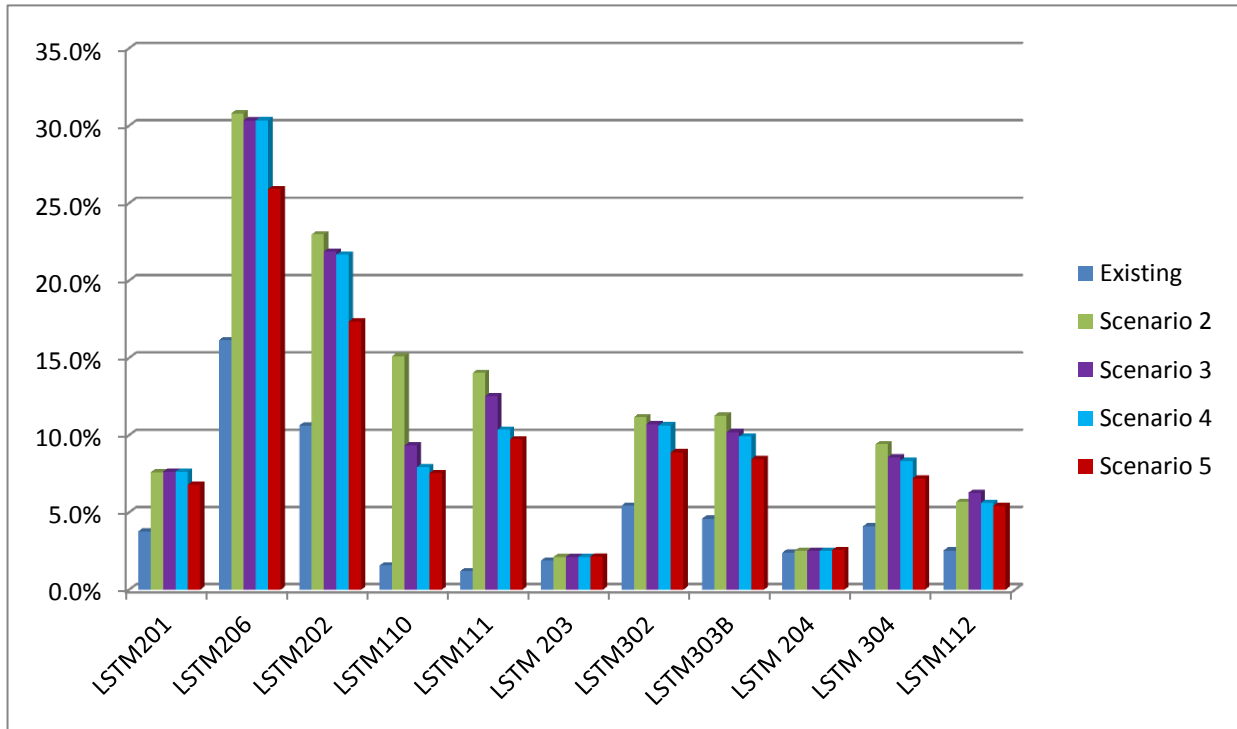
ESD represents the state of the practice for site planning and post-construction stormwater runoff management. However, rigorous and comprehensive implementation across or within watersheds has not occurred nor been monitored to establish a base of literature where we can conclude that watershed impacts won't be observed. While gaining watershed-based knowledge on the efficacy of ESD will be valuable, it may not be prudent to have initial experience and studies conducted in high quality watersheds.

Cumulative Imperviousness Analysis

The following chart reflects the imperviousness by subwatershed resulting from the different scenarios. The subwatersheds are generally shown from the headwaters on the left to the most downstream point on the right. The cumulative imperviousness is calculated by dividing the projected impervious acreage by the area of the subwatershed. As you move downstream, imperviousness acreage of subwatersheds that receive flow from upstream is aggregated with the upstream imperviousness and divided by the total area of all the subwatersheds upstream. The watershed totals for the free-flowing part of the Ten Mile Creek watershed is expressed in the values shown for LSTM304, the most downstream point in the watershed of the free-flowing stream. LSTM112 is a separate subwatershed that flows directly to Little Seneca Lake.

This analysis shows the dramatic increase in the percentage of imperviousness in parts of the Ten Mile Creek watershed. The overall watershed imperviousness is approximately doubled with the 1994 Plan (Scenario 2) from 4.1% to 9.4%. The large increase in imperviousness in the headwaters LSTM206 affects all of the mainstem tributaries downstream. Even with the use of Environmental Site Design, this level of imperviousness will affect stream conditions, certainly resulting in a loss of the stream's status as a reference stream (against which other streams are measured).

Cumulative Imperviousness for Ten Mile Creek Subwatersheds

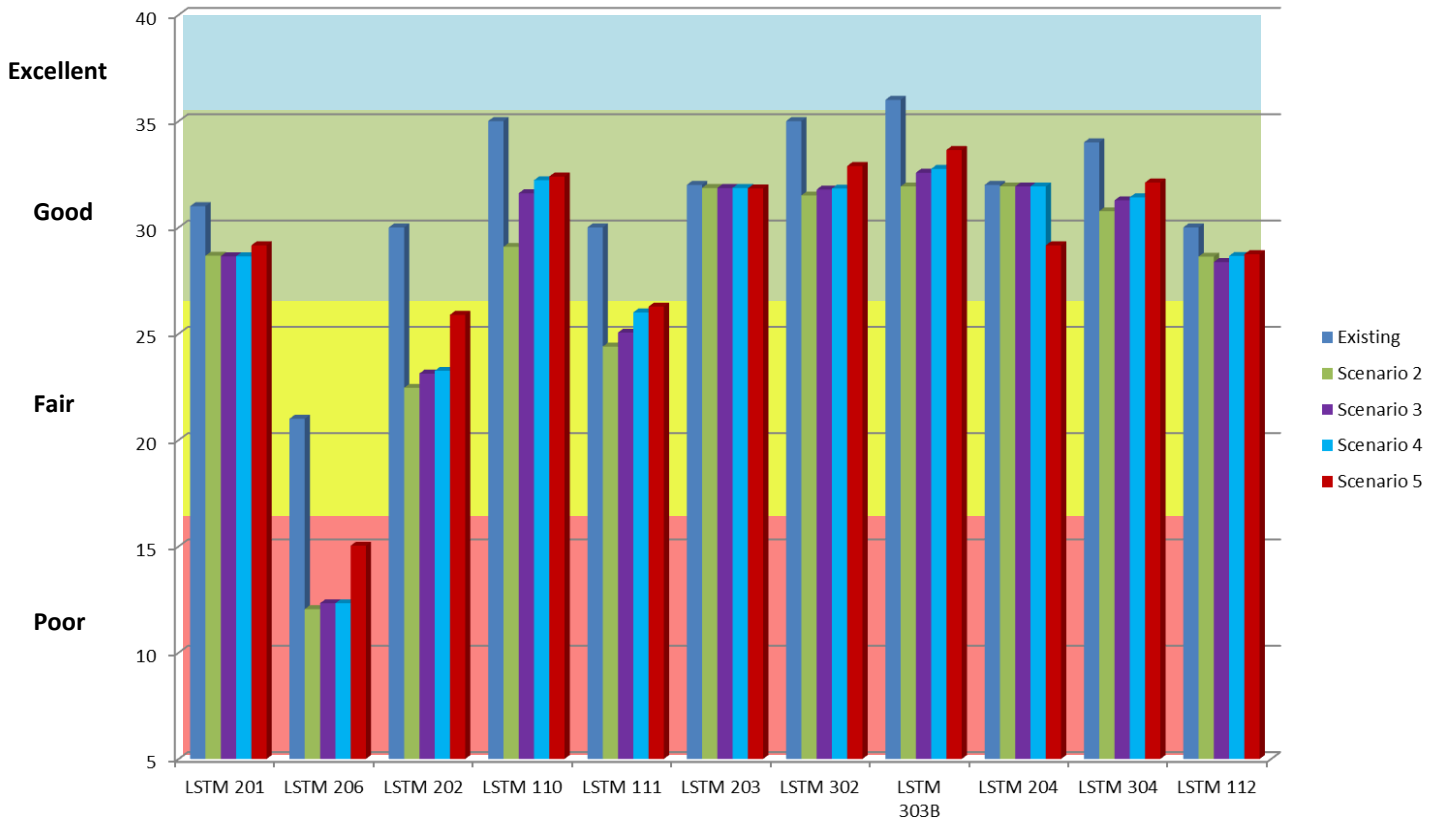


Using these imperviousness projections, the Countywide Stream Protection Strategy Score Change Estimate (CSCE) Model was applied, which is used to estimate changes in the Index of Biological Integrity (IBI) scores, in response to different development scenarios. Used this way, the predicted IBI score change from development in a given watershed is subtracted from the monitored pre-development score to provide an estimate of the resulting post-development IBI score.

The CSCE model was developed using data that reflects pre-ESD development standards, and therefore cannot predict potential changes in IBIs that might result from development that uses ESD. Until enough data exist to update the CSCE model to predict the benefits of ESD the model can still be used to estimate the potential stream health impact under the old regulations. This model predicts a range of potential results with a high and low prediction. The following chart shows the predicted high scores, assuming ESD would produce at least the best result that could be achieved with more traditional stormwater management.

This analysis shows the potential for LSTM206 to move into the Poor range and for LSTM202 and 111 to move into the Fair range. The other subwatersheds would be predicted to remain in the Good range, although some drop substantially within that range. LSTM303B drops from Excellent into the Good range.

Potential Projected Stream Quality for Ten Mile Creek Subwatersheds



Transportation

Roadways

The initial transportation analysis presented to the Planning Board on April 11, 2013, showed several intersections would be over capacity in most scenarios. Two scenarios were evaluated, each with and without the 355 Bypass. The first scenario was for what has been approved and is programed in the Round 8.1 Cooperative Land use Forecast. The second scenario included a high land use scenario that converts the employment uses on Miles/Coppola and the Adventist Hospital site in the Cabin Branch to retail uses (see the attachment for detailed descriptions of the scenarios). The following intersections were evaluated under each scenario:

- Interchange ramp terminals for I-270 and Clarksburg Road (MD 121) for both the eastern and western side of the interchange;
- Clarksburg Road (MD 121) & Frederick Road (MD 355);
- Shawnee Lane & Frederick Road (MD 355);
- Stringtown Road (MD 121A) & Frederick Road (MD 355);
- Gateway Center Drive & Clarksburg Road (MD 121);
- New By-pass Road & Stringtown Road (MD 121A).

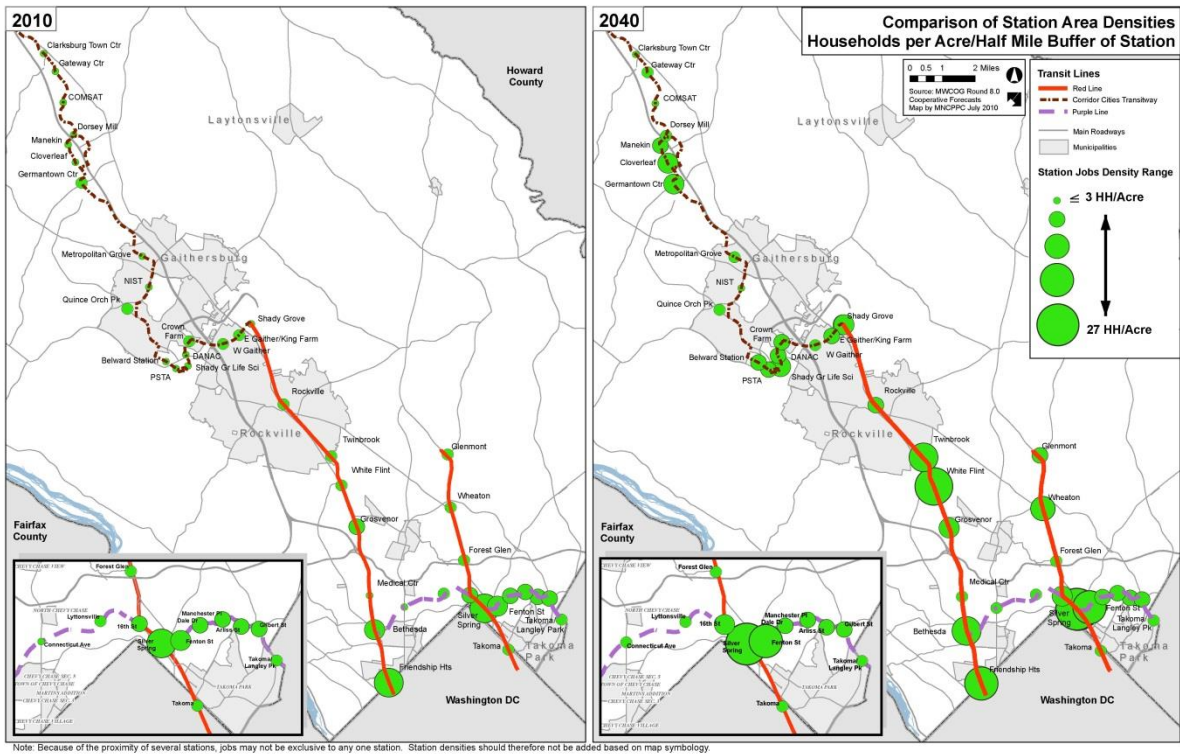
Under the first scenario, the approved land use without adding the 355 Bypass, shows the MD 355 & Stringtown Road as well as the MD 121 & MD 355 intersections as failing. Intersection improvements consisting of added turn lanes can result in acceptable levels of service for these two intersections. A minimum three lanes are needed on MD 355 to avoid the Bypass, with reversible-flow center lane during the peak periods. The added lane, the need for turn lanes at the intersections, and added facilities for bikes and pedestrians along MD 355 would require widening the cross section within the historic district. The MD 355 By-pass is, therefore, needed to move traffic through the area and avoids widening MD 355 in the historic district. Without the proposed by-pass the high land use scenario only adds additional traffic demands to MD 355.

The scenarios with the Bypass result in many of the same intersections experiencing congestion, but the improvements needed would create fewer impacts to the historic district. Widening MD 355 beyond added turn lanes would also be avoided. The proposed Bypass, as recommended in the 1994 plan, would be developed as a complete street, with bike lanes and pedestrian facilities. In addition, the Bypass could provide access to the Miles/Coppola property along the same route. The proposed Bypass could go from either MD 121 or Stringtown Road and tie in north of the current MD 121 & MD 355 intersection. The proposed facility could directly intersect with MD 355 as a T-intersection with the possibility of a roundabout to help keep a more continuous flow of traffic. It would also provide access to the parcels to the west of MD 355 and east of I-270.

Transit

Planned BRT station area densities north of Father Hurley Boulevard / Ridge Road are generally not at a level considered to be supportive of transit in a dedicated lane (see following map). This is essentially the reason the MTA Corridor Cities Transitway (CCT) concept planning and alternatives analysis work to date assumes a northern terminus at COMSIS, where there is a planned park and ride lot. The year 2040 ridership forecasts developed for the Countywide Transit Corridors Functional Master Plan essentially confirmed those earlier findings for this segment.

The mean travel time for work trips for Montgomery County residents is about 34 minutes based upon the American Community Survey for the time period 2007-2011. In general, about 40-50 minutes is thought to be the point where travel time begins to influence the selection of the location of the residence and/or job – all other things being equal.



This somewhat theoretical maximum travel time is reflected to some extent in the census data available on weekday Residence County to Work Place County Trips (rounded to nearest thousand) for 2006-2010, as noted below.

Residence County to Work Place County Trips 2006 – 2010 – Average Weekday

From/To	Montgomery Co.	D.C.	Prince George's Co.	Arlington Co.	Fairfax Co.
Montgomery Co.	298,000	107,000	29,000	9,000	22,000
Howard Co.	14,000	10,000	14,000	1,000	2,000
Frederick Co.	26,000	4,000	2,000	1,000	3,000
Fairfax Co.	17,000	90,000	10,000	48,200	302,000
Prince George's Co.	44,000	136,000	175,000	16,000	18,000

As noted in the table, travel flows within jurisdictions far exceed flows to adjacent jurisdictions in most instances. Congestion, however, remains an issue (even with the lower volumes) because of the limited number of corridors available to accommodate the trips between jurisdictions – especially where Metrorail is not available.

The Clarksburg area and its related travel patterns and trip-making are, therefore, characterized by at least four related conditions in the near and intermediate term (next 10-20 years):

- Residential and employment densities below densities normally thought to be supportive of high quality all day transit service in dedicated lanes
- Travel shed for work trips that extends no more than 40-50 minutes one-way on average for most work trips.
- Limited number of travel corridors with right-of-way constraints and congested travel conditions.
- Relatively high percentage of peak travel flow in north-south direction.

The origin/destination pairs with highest percentages of an estimated 28,000 work trips originating in Clarksburg and destined for locations in the County, DC, or Frederick County in 2040 – based upon the regional model forecast - include the following:

- Trips to/from City of Gaithersburg – 16%
- Trips Remaining Within Clarksburg – 13%
- Trips to/from Germantown East – 10%
- Trips to/from City of Rockville – 10%
- Trips to/from Germantown West – 8%
- Trips to/from R&D Village – 6%
- Trips to/from DC – 6%
- Trips to/from Frederick County – 6%

The total potential transit market is not large. As an example, a relatively optimistic transit mode share of 15% would translate to 4,200 weekday trips to and from Clarksburg on a typical workday in 2040. A theoretical allocation of those trips to any specific peak hour results in an estimated 300– 500 trips per peak hour - with those trips having dispersed origins and destinations.

Park and Open Space

The Department of Parks Staff undertook an intensive analysis of the original park recommendations of the 1994 plan and the recommendations of the 2001 Legacy Open Space Plan with respect to Ten Mile Creek. Their process and findings are included as an attachment to this staff report. The Ten Mile Creek watershed is listed as meeting the criteria for Legacy Open Space, but needing further analysis to determine the extent of land needing protection. Also, the addition of substantially more homes to the 1994 plan west of I-270 was never analyzed for local park needs. The Department of Parks memo contains the recommendations for Legacy Open Space and additional park needs for the Ten Mile Creek watershed area.

Preliminary Master Plan Recommendations

Environment

ESD represents the state of the practice for site planning and post-construction stormwater runoff management. However, rigorous and comprehensive implementation across or within watersheds has not occurred, nor been monitored to establish a base of literature that can conclude that watershed impacts won't be observed. While gaining watershed-based knowledge on the efficacy of ESD will be valuable, it may not be prudent to have the initial experience and studies conducted in high quality watersheds. Additional development within the Ten Mile Creek watershed will have a negative impact on watershed health and stream quality. Minimizing impact to Ten Mile Creek will require the following measures:

- Reduce development west of I-270, with an emphasis on reducing impacts to upland forested areas and steep slopes. In particular, preserve existing conditions in the high quality headwater subwatersheds LSTM 110 (King Spring) and LSTM 111. In LSTM 202, reduce the extent of development on County-owned property (per Scenarios 3, 4 and 5) so that existing forest is not disturbed.
- Focus and prioritize development east of I-270 in LSTM 206.
- If development occurs in subwatersheds LSTM 110 and LSTM 111, the limits of disturbance set forth in Scenarios 3, 4 and 5 should be applied.
- Strictly enforce erosion and sediment control regulations, with special emphasis on proposed clearing and grading limits.
- Preserve riparian corridors and establish buffers around "zero order" or ephemeral streams not currently regulated.
- Reduce the 1994 Master Plan impervious levels in the headwater areas of LSTM206, LSTM201 and LSTM202 to protect those headwater tributaries and the mainstem of Ten Mile Creek.
- Minimize disturbance of natural resources throughout the Ten Mile Creek study area, especially forest cover in the headwater areas.
- Within any proposed developed areas, employ site planning techniques as the first measure of Environmental Site Design. Prioritize preservation and protection of natural resources; conservation of natural drainage patterns; minimization of impervious areas; clustering of development; and limiting soil disturbance, mass grading and compaction. Achieve control of required volumes or enhanced volumes with the ESD treatment practices selected to achieve the most watershed benefits based on evaluation of site-specific and subwatershed-specific considerations.
- Design stream outfalls to reduce impacts associated with large flows (e.g., implement step pool conveyances at all outfalls).
- Minimize direct impacts to natural resources associated with new infrastructure, namely the MD 355 Bypass and the sanitary sewer extension.

Land Use and Zoning

The results of the environmental modeling suggest that the only feasible way to allow development while limiting negative impacts on the Ten Mile Creek watershed is to combine the advanced stormwater management techniques associated with Environmental Site Design with efforts to reduce significantly the amounts of land disturbed by development. If the goal of Environmental Site Design is hydrology that “mimics woods in good condition,” it is reasonable to conclude that increasing the amount of undeveloped and forested open space—actual woods in good condition—will further ensure the overall health of the watershed. The results also indicate that additional development in Ten Mile Creek, both east and west of I-270, will have a negative impact on the overall health of the entire watershed.

East of I-270, the relationship between development in the headwaters areas and overall stream quality magnifies the tension among three important elements of the 1994 Plan’s vision for Clarksburg: timely development at an appropriate scale of the Town Center, provision of employment land uses, and resource protection. The elements are not exclusive – some development can occur while reasonably protecting natural resources, but it may be necessary, particularly in the part of the Town Center district that drains to Ten Mile Creek, to shift development toward uses that reduce imperviousness and have less disturbance.

West of I-270, keeping more undeveloped and forested land means reducing the development ‘footprint’ - the amount of land that is disturbed by development. This means a series of potential choices that include:

- Reducing the development footprint while maintaining development densities recommended by the 1994 Plan. This would require changes to the dwelling unit mix and higher net densities to accommodate a similar number of units, but on less land.
- Retaining the generally single-family housing emphasis, while reducing the development footprint. This requires reducing overall development density and the number of units.

Preliminary recommendations for the three large, privately owned undeveloped properties in the watershed have two objectives:

- For the properties that fall within the portion of the Town Center in the Ten Mile Creek headwaters – determining their roles in fulfilling master plan objectives and;
- Determining the size and location of protection and open space areas that would remain undeveloped and forested to reduce impervious areas devoted to development in the watershed, thereby reducing impacts to overall water quality.

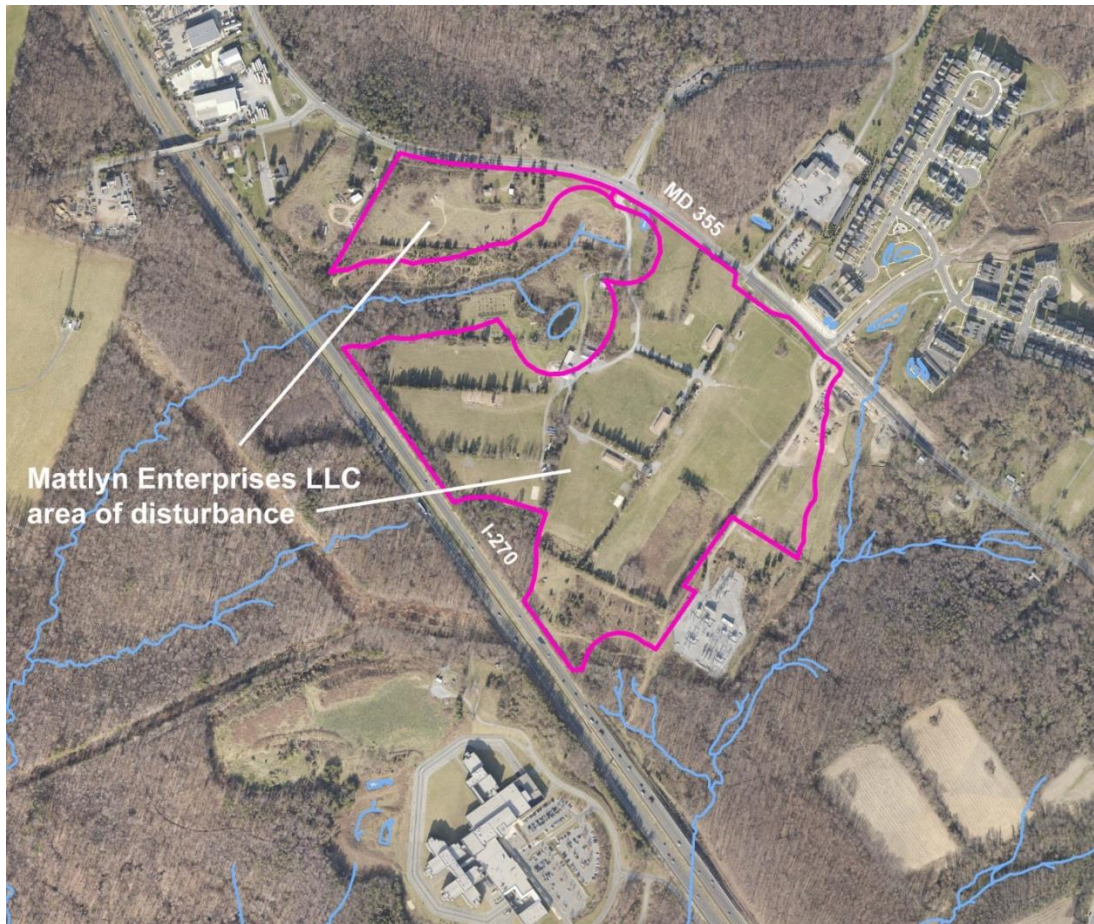
East of I-270—Mattlyn Enterprises LLC and Miles/Coppola properties

The Miles/Coppola and Mattlyn LLC properties lie in the headwaters of Ten Mile Creek, between I-270 and MD 355 to its east. The properties total nearly 200 acres. Both are in the R-200 Zone. The 1994

Master Plan recommended planned development floating zones for the properties— Planned Development (PD) for the Mattlyn Enterprises LLC property and Mixed Use Planned Development (MXPD) for the Miles/Coppola properties. The Plan did not discuss the Mattlyn property in detail, but the Land Use Plan shows the property with a density of two to four units to the acre. The Plan made no explicit density recommendation for the Miles/Coppola properties, stating instead that the property be designated an employment site that was suitable for as much as 470,000 square feet of space, reflecting its location along I-270 and its proximity to a future stop along the Corridor Cities Transitway. The Land Use Plan showed approximately equal parts of the property as residential (at seven to nine units to the acre) and Research and Development (R&D) uses.

Mattlyn Enterprises LLC property

The northernmost headwaters tributary of Ten Mile Creek runs through the approximately 100-acre Mattlyn property. A second tributary traverses the eastern portion of the property. The two tributaries are in different subwatersheds of Ten Mile Creek. The property is largely open, with sparsely wooded areas in the stream valleys and most of the property in turf or meadow. Its owners currently operate a catering and entertainment venue for outings and other special events. Main and support buildings are located along the ridge that separates the two subwatersheds, and there are slopes to the northwest and southeast, towards I-270. The approximate outline of the developable portion of the property is shown in the following image.



Recommendation

- Retain current recommendations for residential by applying residential cluster development used in the R-200 Zone, or by applying the Residential Detached Floating Zone.

The 1994 Plan recommends residential development for the property largely because of its distance from the Town Center and the future transit station. Retaining that recommendation could provide substantial open space, either through master plan guidelines for a floating zone development plan or as a recommendation for cluster development in the R-200 Zone. Such development could reduce imperviousness by permitting a broader array of housing types, while including Environmental Site Design. Design techniques that reduce lot sizes or cluster development could reduce imperviousness as well.

Miles/Coppola Properties

Two branches of a headwaters tributary run through the Miles/Coppola property and the western part of the property drains to a second tributary. The heavily wooded stream valleys are steep and there is a significant drop in elevation across the properties from MD 355 to I-270. Topography, forest and steep slopes create three separate developable areas that constitute about 40 percent (42 acres) of the

properties, which total about 98 acres (see image below showing developable area). This assumes that the 355 Bypass would consume a significant portion of the property along the northeastern edge. Different configurations of the bypass would yield more developable property.



These environmental and man-made constraints make it difficult to achieve the 1994 Plan’s goal of promoting “a better relationship between this property and portions of the Town Center east of MD 355.” The most direct route from the largest development area to the transit station location proposed in the 1994 Plan requires both a stream crossing and a crossing of MD 121. The distance from the center of that development area to the core of the Town Center is more than three quarters of a mile. While the central development area may be close to Redgrave Place, topography on both sides of MD 121 will make the walk challenging for pedestrians.

Physical constraints, combined with the future roadway and transit network, suggest that the area would function independently, but in a way that could support the Town Center. While a focus on employment could allow these properties to function independently, with significant amounts of available and yet to be developed space in Germantown and the Life Sciences Center proposed for research, development, biotechnology and other activities, it may be some time before significant levels of employment could exist in Clarksburg. This, combined with a weakened regional office market and more attractive and available locations elsewhere, suggests that retaining the employment recommendation for the Miles/Coppola properties would mean significantly delaying development of these properties. Moreover, the recommended level of development and market conditions may not be

able to support tall buildings with smaller footprints and parking structures as a means of reducing imperviousness and enhancing the effect of Environmental Site Design.

Recommendation

- **Option 1—Balanced mixed-use development**

Earlier development of these properties could help support neighborhood commercial activity in the Town Center, provided it is complementary. Such a mix of uses could further provide the types of services that today require travel outside Clarksburg. They could also support economic development goals, as expressed by some at public meetings, providing more shopping, restaurant, and other business opportunities. Therefore, this option considers a flexible, but integrated mix of retail, office and housing uses on the Miles/Coppola properties. Critically, the types of commercial uses must not compete with or encroach upon the neighborhood orientation of the core Town Center. They must be complementary. Specialty retail, requiring a broader market than just Clarksburg, and other types of commercial activities, like restaurants and entertainment venues, could help create a separate attraction on these properties for Clarksburg residents. Orienting development toward Observation Drive will be particularly important to take advantage of proximity to future transit and to enable residents to reach neighborhood services in the Town Center using an integrated network of roads, trails and sidewalks. Concentrating and integrating development can also allow more of the properties to remain undisturbed, reducing imperviousness and contributing to improved water quality.

The Commercial Residential zones would allow a fine-grained evaluation of these properties and would offer an opportunity to balance a mix of uses for each development area. Because the Miles/Coppola property is relatively large and can, therefore, generate large amounts of space while keeping floor area ratios low, development in the CR zones may well occur under the standard method. Any development on the properties should nonetheless employ Environmental Site Design techniques and preserve undeveloped open space to reduce imperviousness. Should optional method development occur, construction of Observation Drive should be considered a major public benefit.

- **Option 2—Mixed-use development with a residential focus**

Modifying the land use mix to provide more housing on the Miles/Coppola properties could bring additional households and potential core Town Center shoppers and business customers. Some specialty retail or office/employment uses complementary to Town Center could also be established nearest I-270. Shifting the land use focus on the Miles/Coppola properties could further reduce the amount of disturbed area and imperviousness, especially if attached housing and apartments make up a substantial fraction of the overall development.

The proposed Apartment Floating Zone would allow a broad mix of housing types on the properties and would enable up to 25 percent of the property to be non-residential. Development should be concentrated near Observation Drive, again, to take advantage of the transit system, and should

have defined pedestrian and bike routes to the core of the Town Center area. Detailed design guidelines should be used to help define and guide development.

Transit Station

The 1994 Plan shows a transit station where Observation Drive extended intersects Redgrave Place. The Plan recommends residential uses near the station at a scale sympathetic to the adjacent historic district, enabling local, albeit a limited number of residents, to walk to the transit stop. Clarksburg Elementary School is currently located in the area proposed for the station and the Plan recognizes that the school would remain for a number of years before its eventual relocation or replacement. In addition, the State is not currently considering a transitway north of the proposed station at Comsat and the Countywide Transit Corridor Functional Master Plan does not recommend extending service to the Town Center.

Recommendation

- There is merit to extending transit service (see Transportation Recommendations) to Clarksburg and the vicinity of the Miles/Coppola properties, where it could serve primarily residential, and employment uses, as well as development north of MD 355 and west of MD 121. Further, the station location, as shown in the 1994 Plan, should be reconsidered and moved near the intersection of existing MD 355 and MD 121. Such a move could benefit future redevelopment of nearby properties, support modest infill development in this part of the historic district and help anchor this important four-corners area and the public park. The transit service could be routed along existing MD 355 and Observation Drive to form a terminal loop that could serve the Miles/Coppola properties and any new development in the historic district. This concept would accommodate a future extension of transit further north along MD 355.

West of I270—Pulte and King Properties, Montgomery County

Pulte and King Properties

The Pulte Corporation owns or controls almost 540 acres west of I-270 and between Shiloh Church and Clarksburg Roads. Three major Ten Mile Creek tributaries originate on the properties and two are contained almost entirely within them. The properties are a mix of woodlands and meadow with forest covering much of the stream valleys. The 1994 Plan recommended the properties (and two other parcels to the north of the Pulte holdings) for residential development with a number of guidelines for environmental protection and housing unit mix. The Plan designated the 600 acres as a receiving area for Transferable Development Rights, with a maximum of up to 900 units. The entire area is in the RE-1/TDR Zone.

The subwatersheds that would be affected by building out these properties are largely undeveloped and, therefore, have high overall stream quality. The environmental analyses show that any

development of these properties will have a negative impact on stream quality, even when Environmental Site Design techniques are applied. It is on these properties that preserving more undeveloped and forested open space can, alongside Environmental Site Design, limit the impact of development on water quality.

Recommendation

- Reduce the development footprint and densities.

The consultant's report notes five techniques available for limiting stream impacts: making preservation and protection of natural resources a clear priority; maintaining natural drainage routes and patterns; minimizing imperviousness; clustering development; and minimizing grading, soil disturbance, and soil compaction. These techniques should be combined with efforts to preserve forest, particularly in upland areas, and efforts to keep steep slopes undisturbed. The report concludes that preserving existing conditions in subwatersheds west of I-270 requires reducing the density of development.

The combination of reduced densities and cluster development could increase undeveloped open space using privately owned conservation areas in addition to parkland. The Rural Neighborhood Cluster Zone would allow a more precise percentage of open space—as much as 85 percent of the gross acreage—to be required on the properties. The Zone requires a significant portion of the open space to be undisturbed and contiguous. It provides an optional method of development on public water and sewer service with a range of allowable development densities up to a maximum of one dwelling unit to the acre, and allows master plans to make density recommendations, enabling a more precise density designation appropriate to the properties. It also provides a standard method of development, without sewer service, at one dwelling unit for every five acres, should that be determined more appropriate. The RNC Zone can be used with TDRs, retaining an important policy in support of agriculture. Detailed design guidelines should be adopted in support of the draft Amendment, including location of housing clusters, delineation of open space, preservation of resources, and provision of housing types.

Planning staff will be prepared to review prospective densities with the Planning Board during the worksession.

Montgomery County Properties

Montgomery County owns more than 380 acres in the upper reaches of the Ten Mile Creek watershed. The majority of this land, known in the 1994 Plan as Site 30, now houses a correctional facility. The majority of the property is heavily wooded and the County plans no development for it beyond a planned expansion of the correctional facility. The Parks Department has identified almost all of this wooded area as suitable for acquisition through the Legacy Open Space program.

Two parcels totaling about 94 acres are located at I-270's interchange with MD 121. The headwaters branches that originate on the Miles/Coppola properties combine on one of the County properties to

form a headwaters tributary. Several smaller streams feed the tributary on these properties, and the steeply sloped stream valleys are heavily forested.



The 1994 Plan identified these properties as employment sites, recommending them for no more than 400,000 square feet of space and applying a 15 percent imperviousness cap. They are in the Technology and Business Park (I-3) Zone.

The County has considered the site for its North County bus maintenance and storage facility, but has no current plans for the properties. The Parks Department has identified the wooded stream valleys for acquisition under the Legacy Open Space program, which would reduce imperviousness and enhance water quality.

Recommendation

- Minimal development of this property—or transfer of the entire property to the Department of Parks—would help contribute to water quality in this portion of the watershed. However, if the County chooses to develop the land, the existing imperviousness cap should be retained, although the ability to achieve such caps when land is in public ownership is uncertain.

Clarksburg Historic District

The majority of Clarksburg's Historic District lies within the Ten Mile Creek watershed. The district straddles MD 355 from its intersection with Stringtown Road to west of its intersection with MD 121. The 1994 Plan identified the historic district as "a focal point" of the Town Center, encouraging sensitive and appropriate infill development in the district as an important component of the Plan's objective for the Town Center. The Plan includes a series of design guidelines that are designed to retain the identity of the historic district by reinforcing building scale and historic building patterns—structures close to the road, deep back yards and expanses of nearby green space—that characterized the original settlement. The Plan recommended renovations of existing buildings that would allow both residential and smaller scale commercial activities, like shops and offices. To protect the district, the Plan recommended reduced building heights and residential zones in the immediately adjacent areas, and recommended relocation of MD 355 to accommodate through trips.

The existing zones in the district—general and neighborhood commercial (C-2 and C-1) and one-family residential (R-200)—may not be adequate to accomplish the Plan's historic preservation goals, particularly the idea of accommodating residential and light commercial uses across the entire district. Close and comprehensive evaluation of the district could result in the use of new mixed-use zones that will allow the establishment of densities and building heights tailored more precisely to the Plan's land use objectives for the district, while supporting the Plan's recommendation to protect the scale and character of the historic district. They also could allow property owners the flexibility to rehabilitate properties for a variety of potential uses, making renovation more attractive.

Additional Recommendations

Transportation

- Retain the 355 Bypass, but realign to connect via a T intersection with MD 355 close to the proposed location of the fire station. This will avoid significant impacts to the wetlands north of the fire station, while providing access to both the fire station and the Miles/Coppola property.
- Provide additional turn lanes to achieve acceptable conditions at key intersections.
- Provide facilities for peak period frequent (20 minutes or less) express non-stop service from the Clarksburg Town Center to:
 - Shady Grove Red Line Metrorail Station via I-270 (estimated 30-35 minute travel time).
 - Germantown Town Center/Germantown MARC via I-270 (one way travel time an estimated 15-20 minutes).
- Provide facilities for peak period limited stop Ride-On service from the Clarksburg Town Center to:
 - Milestone (and ultimate CCT stop) via MD 355 (estimated 15-20 minutes travel time).
 - Lakeforest/Gaithersburg MARC via MD 355 (estimated 30-35 minute travel time).
- Provide for internal Clarksburg circulator service that would connect activity centers east and west of I-270 with the Town Center and the CCT COMSAT station until such time that the CCT was extended to the Town Center.

- Retain the CCT designation for potential future study.

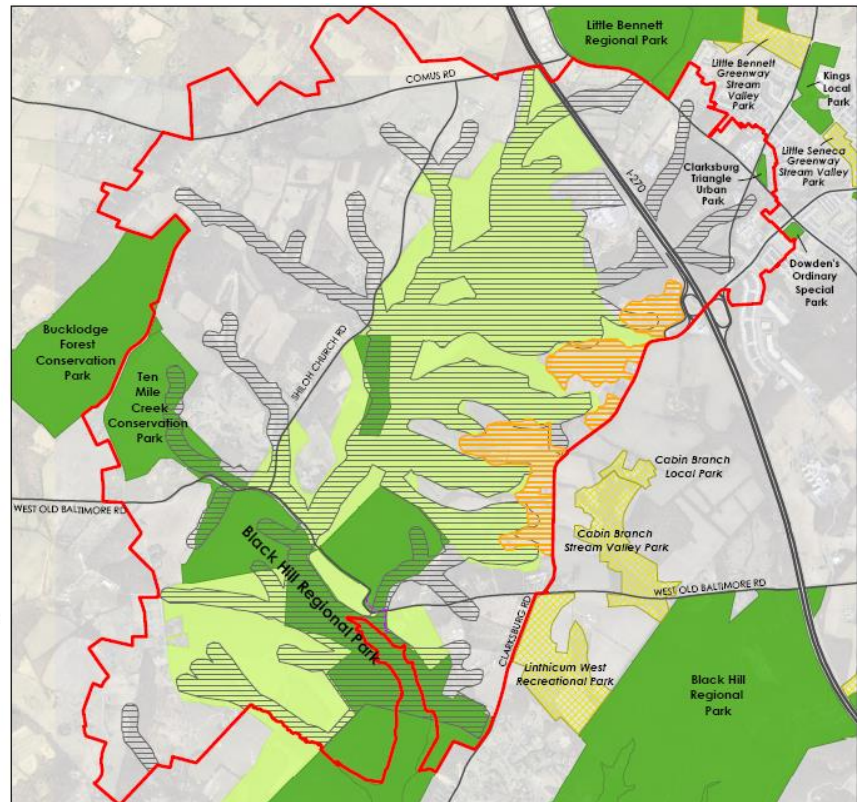
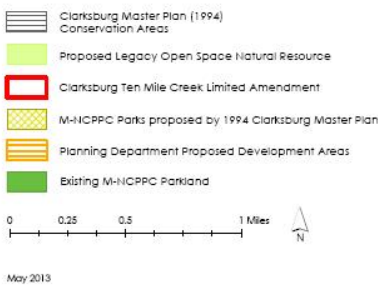
The allocation of resources in support of a network similar to the concept described above in lieu of the extension of BRT to the Town Center – given the overall relatively low transit ridership forecast and dispersed trip patterns - is viewed as a better fit for the potential transit market for the foreseeable future. Once the CCT is ultimately extended to the Town Center, the supporting bus network and associated resources would likely be reevaluated. This concept or approach to a developing activity center is similar to what has been successfully implemented by Ride-On in Germantown.

Legacy Open Space

- Designate the high quality, critical forest and open habitats that protect the quality of the Ten Mile Creek Headwaters as a Legacy Open Space Natural Resource site (Class II).
- Protect the designated Natural Resource on an individual property basis using a variety of tools including easements, dedication through the development review process, and fee simple acquisition.

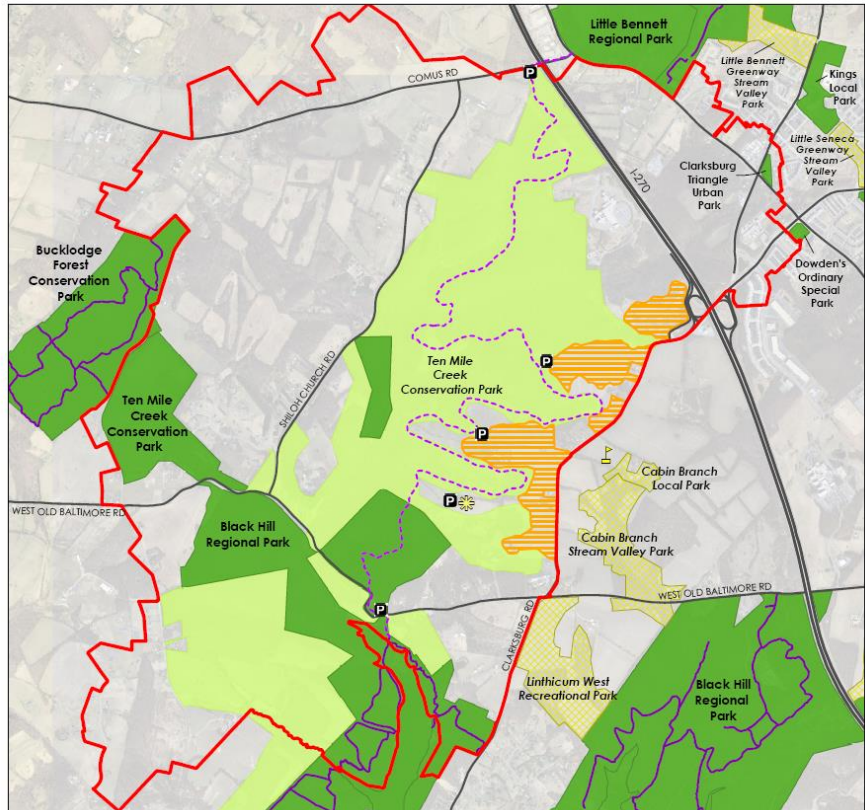
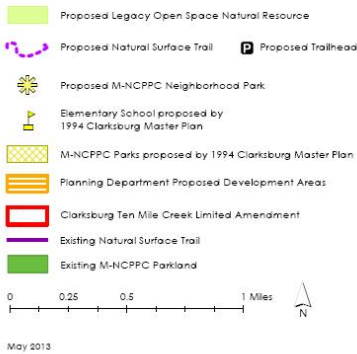
Attachment 1:

Clarksburg Master Plan (1994) Conservation Areas and Current Proposed Legacy Open Space Natural Resource, Ten Mile Creek Area



Attachment 2:

Proposed Legacy Open Space Natural Resource and Parks and Trails, Ten Mile Creek Area



Park and Trail Recommendations

- Provide a countywide natural surface trail, designed to M-NCPPC Montgomery Parks standards, in the Ten Mile Creek area linking Little Bennett Regional Park and Black Hill Regional Park as per the Countywide Park Trails Plan and the 1994 Clarksburg Master Plan.
- Provide five trailheads, designed to M-NCPPC Montgomery Parks standards, for access to the Ten Mile Creek natural surface trail and nearby natural areas for park users and operations staff.
- Provide a new natural resource-based Neighborhood Park of at least ten acres for close-to-home recreation for the Ten Mile Creek area, designed to M-NCPPC Montgomery Parks standards. This recommendation would be revisited if density is significantly reduced on the west side of I270.

Public Comment

Staff and the Planning Board have received numerous public comments and correspondence since the April worksessions, most of which recommend significantly reducing densities to protect Ten Mile Creek, providing better transportation options, delaying any additional development in Clarksburg until current issues are resolved and prohibiting any commercial development outside the core area of the Town Center. Some also call for delay in opening of Stage 4 until the approved Town Center development is built out. All comments received are attached.

Attachments

1. Scenario Testing Descriptions
2. Environmental Consultant Summary Report
3. Memo from the Department of Parks
4. Public Comments Received (prior to 6/13/13)

5. Attachment 1 – Testing Scenario Descriptions

Description of Scenarios for Environmental Testing:

2. **1994 Plan** - The 1994 Clarksburg Master Plan recommendations for density and land use in Stage 4, assuming full Environmental Site Design for the developable and redevelopable properties. The full length and width of the 355 Bypass is included, assuming that minimal bridging will be required.
3. **1994 Plan-Reduced Footprint, Same Yield** - The same as Scenario 1 with a reduced footprint for the Pulte properties. Assumes a different unit mix that would allow approximately the same number of units permitted by the 1994 plan. In addition, the 355 Bypass is shortened, reducing the impact on one stream crossing and adding more developable area to the Miles/Coppola and Egan properties. Imperviousness assumed on the County property is reduced from 15% to 8%.
4. **1994 Plan-Reduced Footprint Lower Yield** - The same as Scenario 3 with the same unit mix as recommended in the 1994 Plan for the Pulte property, resulting in fewer potential units on the Pulte property.
5. **7% Watershed Imperviousness** – The same as Scenario 4 with reduced yield on Miles/Coppola, Egan, Pulte, and the County property is assumed as undeveloped beyond that planned for the Detention Center minor expansion.

All Scenarios include the following assumptions:

- Typical Environmental Site Design as prescribed by County regulations and the Maryland Stormwater Design Manual. For purposes of hydrologic modeling a single type of bioretention practice was chosen as representative of ESD with the following characteristics:
 - Ponding above media – 9"
 - Media depth - 3.5'
 - Maximum infiltration rate = 2"/hr.
 - Minimum infiltration rate = 0.25"/hr.
 - Continuous infiltration rate = 0.05"/hr.
 - Underdrains above stone reservoir with overflow to surface waters reduce potential for infiltration to native soil
 - Gravel bedding – 3" required
- Soil Decompaction per County regulations for all areas disturbed and not covered by buildings, paving or stormwater management. This assumes soils are compacted to represent the next most compacted soil group, then decompacting to be halfway between that and the original soil group.

- Reforestation of unforested stream buffers, with any unforested areas between the stream buffer and the limit of disturbance as meadow in good condition. This was assumed because, while the stream buffer is required to be planted to a high standard and managed to achieve a closed canopy as soon as possible, other unforested areas are more likely to be either managed as meadow or allowed to naturally reforest, taking substantially longer to achieve a closed canopy.
- ESD for all properties along 355 and that are likely to redevelop and for vacant properties
- ESD will be used for the Bypass, but the new lanes on I-270 would use traditional stormwater management due to the ROW constraints and topography.

Scenario Imperviousness Assumptions

Scenario 2 1994 Plan Updated

Development Name	Land Use	Density	Imperviousness Percentage of Disturbed Area	Acres of Disturbed Area	Property Acreage (per GIS polygon)	Imp acres	Gross imp %
Egan/Brookfield	Residential	4 units/ac	50.15%	56.78	100.06	28.47	28.5%
Miles Coppola/Peterson	Office/Residential	50%office 50% res	60.03%	42.46	98.64	25.49	25.8%
County Site	Office	Office	41.56%	45.72	124.77	19.00	15.2%
Pulte	Residential	2 units/ac	33.02%	198.28	523.44	65.48	12.5%
Fire Station	Institutional	NA	37.00%	4.08	4.08	1.51	37.0%
Hammer Hill	Commercial	commercial	30.00%	2.93	2.93	0.88	30.0%
Historic District Commercial	Commercial	NA	80.00%	0.71	0.71	0.57	80.0%
Historic District Residential	Residential	2 units/ac	15.40%	4.46	4.46	0.69	15.4%
Historic District Residential	Residential	2 units/ac	15.40%	7.40	7.40	1.14	15.4%
355 Bypass	Roadway/Transitway	NA	30.40%	38.43	38.43	11.68	30.4%
I-270 widening	Roadway/Transitway	NA	100.00%	3.57	3.57	3.57	99.9%
Rural Properties	Residential	1 unit/5 acres	43.00%	30.93	223.39	13.30	6.0%
Total						171.78	

Approximate Watershed
Imperviousness 9.3%

Scenario 3 Reduced Footprints/1994 Unit Mix

Development Name	Land Use	Density	Imperviousness Percentage of Disturbed Area	Acres of Disturbed Area	Property Acreage (per GIS polygon)	Imp acres	Gross imp %
Egan/Brookfield	Residential	4 units/ac	50.15%	61.33	100.06	30.76	30.7%
Miles Coppola/Peterson	Office/Residential	50%office 50% res	60.03%	48.91	98.64	29.36	29.8%
County Site	Office	Office	41.56%	24.67	124.77	10.25	8.2%
Pulte	Residential	2 units/ac	40.00%	119.10	523.44	47.64	9.1%
Fire Station	Institutional	NA	37.00%	4.08	4.08	1.51	37.0%
Hammer Hill	Commercial	commercial	30.00%	2.93	2.93	0.88	30.0%
Historic District Commercial	Commercial	NA	80.00%	0.71	0.71	0.57	80.0%
Historic District Residential	Residential	2 units/ac	15.40%	4.84	4.84	0.75	15.4%
Historic District Residential	Residential	2 units/ac	15.40%	7.40	7.40	1.14	15.4%
355 Bypass	Roadway/Transitway	NA	63.06%	12.40	12.40	7.82	63.1%
I-270 widening	Roadway/Transitway	NA	100.00%	3.57	3.57	3.57	99.9%
Rural Properties	Residential	1 unit/5 acres	43.00%	30.93	223.39	13.30	6.0%
Total Imperviousness						147.54	

Approximate Watershed
Imperviousness 8.5%

Scenario 4 Reduced Imperviousness/1994 Unit Mix

Development Name	Land Use	Density	Imperviousness Percentage of Disturbed Area	Acres of Disturbed Area	Property Acreage (per GIS polygon)	Imp acres	Gross imp %
Egan/Brookfield	Residential	4 units/ac	50.15%	61.34	100.06	30.76	30.7%
Miles Coppola/Peterson	Office/Residential	50%office 50% res	60.03%	48.91	98.64	29.36	29.8%
County Site	Office	Office	41.56%	24.62	124.77	10.23	8.2%
Pulte	Residential	1 unit/ac	33.02%	119.00	523.44	39.29	7.5%
Fire Station	Institutional	NA	37.00%	4.08	4.08	1.51	37.0%
Hammer Hill	Commercial	commercial	30.00%	2.93	2.93	0.88	30.0%
Historic District Residential	Residential	2 units/ac	15.40%	4.84	4.84	0.75	15.4%
Historic District Residential	Residential	2 units/ac	15.40%	7.40	7.40	1.14	15.4%
Historic District Commercial	Commercial	NA	80.00%	0.71	0.71	0.57	80.0%
355 Bypass	Roadway/Transitway	NA	63.06%	12.40	12.40	7.82	63.1%
I-270 widening	Roadway/Transitway	NA	100.00%	3.57	3.57	3.57	99.9%
Rural Properties	Residential	1 unit/5 acres	43.00%	30.93	223.39	13.30	6.0%
Total						139.18	

Approximate Watershed Imperviousness 8.4%

Scenario 5 Seven Percent Overall Imperviousness

Development Name	Land Use	Density	Imperviousness Percentage of Disturbed Area	Acres of Disturbed Area	Property Acreage (per GIS polygon)	Imp acres	Gross imp %
Egan/Brookfield	Residential	2 units/ac	32.60%	61.34	100.06	20.00	20.0%
Miles Coppola/Peterson	Office/Residential	50%office 50% res	40.90%	49.82	98.64	20.00	20.3%
County Site	Office	Office	0.00%	24.62	124.77	0.00	0.0%
Pulte	Residential	1 unit/ac	31.00%	119.00	523.44	36.89	7.0%
Fire Station	Institutional	NA	37.00%	4.08	4.08	1.51	37.0%
Hammer Hill	Commercial	commercial	30.00%	2.93	2.93	0.88	30.0%
Historic District Residential	Residential	2 units/ac	15.40%	4.84	4.84	0.75	15.4%
Historic District Residential	Residential	2 units/ac	15.40%	7.40	7.40	1.14	15.4%
Historic District Commercial	Commercial	NA	80.00%	0.71	0.71	0.57	80.0%
355 Bypass	Roadway/Transitway	NA	57.3%	10.47	10.47	6.00	57.3%
I-270 widening	Roadway/Transitway	NA	100.00%	3.57	3.57	3.57	99.9%
Rural Properties	Residential	1 unit/5 acres	43.00%	19		8.00	6.4%
Total						99.31	

Approximate Watershed Imperviousness 7.0%

Description of Scenarios for Transportation Testing

- A. 2040 No-Bypass – This projects traffic assuming growth according to the Round 8.1 forecast based on existing and planned zoning from the 1994 Clarksburg Master Plan. While it assumes an improved interchange at I-270 and 121 and two additional lanes on I-270 north of the interchange, it does not include a bypass of 355.
- B. 2040 – This is the same as above, assuming the four-lane bypass is built.
- C. 2040 High No-Bypass – This projects traffic the same as Scenario A, but substitutes retail uses as proposed by developers on the Miles/Coppola property and in Cabin Branch for the office uses in A and B.
- D. 2040 High – This is the same as C, but with the bypass of 355.