



VII. PREFERRED ALTERNATIVE

A. Evaluation of Preferred Alternative

As required by Section 404 of the Clean Water Act, the selection of the Preferred Alternative is based on a determination of the least environmentally damaging practicable alternative (LEDPA). The evaluation of the LEDPA included reviewing each alternative's ability to satisfy the purpose and need of the project and to avoid and minimize impacts on jurisdictional waters and wetlands and other natural, cultural, and socioeconomic resources. The evaluation of the LEDPA also considered the extensive public involvement performed with the community over the past ten years and the wide range of comments received from the general public, agency representatives, elected officials, special interest groups, and community leaders.

The culmination of the ten-year study that has been vetted extensively with all the various stakeholders, as described in the *Draft EER* and herein, serves as the basis in arriving at a recommendation for the Preferred Alternative. Foremost in determining a "practicable alternative" was the ability of each alternative to satisfy the purpose and need of the project. Specifically, the Preferred Alternative should provide a high level of transportation enhancements (as detailed in **Section II**) that will effectively:

1. Accommodate planned land use and future growth;
2. Reduce existing and future congestion;
3. Enhance the efficiency of the roadway network and improve the connections between economic centers;
4. Improve vehicular safety;
5. Provide bicycle and pedestrian connections;
6. Enhance homeland security; and
7. Improve the quality of life.

In addition, the Preferred Alternative should be able to accomplish the proposed purpose and need in an environmentally sensitive manner. The assessment of potential environmental impacts includes each alternative's impacts on socio-economic resources, natural resources, cultural resources, and indirect and cumulative effects as detailed in **Table VII-1**.

In its evaluation of the alternatives, MCDOT placed heavy emphasis on the ability of the Preferred Alternative to effectively address the purpose and need of the project. With a capital investment of this magnitude, it is imperative that the needs of Montgomery County and the community be adequately addressed for the "design year" and beyond. In addition, the improvements must be completed in an environmentally sensitive manner. Environmentally sensitive design is accomplished by identifying the area's resources, designing a level of improvement that is commensurate with the project purpose and need, incorporating design



practices that avoid and minimize impacts on project resources, and effectively mitigating unavoidable impacts.

Table VII-1: Assessed Impact Topics

IMPACT TOPICS	IMPACT TOPICS
SOCIOECONOMIC RESOURCES AND LAND USE	NATURAL RESOURCES
Residences relocated	Wetlands
Businesses displaced	Streams
Property acquisitions	Floodplain
Community disruptions	Water quality
Social changes	Forest
Economic changes	Forest Interior Dwelling Species (FIDS) habitat
Environmental Justice	Wildlife including Rare, Threatened and Endangered Species
Parkland	Biodiversity Areas
Farmland	NOISE
Hazardous Materials	AIR QUALITY
Special Protection Areas	CULTURAL RESOURCES
Agricultural Reserve	INDIRECT AND CUMULATIVE EFFECTS
Master Plan Conformance	COST

As noted above, MCDOT evaluated a wide range of factors to identify the Preferred Alternative. Key factors included the following:

1. Accommodating the ongoing and planned growth as previously adopted in the area master plans;
2. Providing a safe and efficient multimodal corridor that will enhance traffic mobility and safety for all modes of traffic including automobiles, transit, bicyclists, and pedestrians;
3. Minimizing impacts to wetlands and streams;
4. Minimizing major impacts to communities, residents and businesses;
5. Improving homeland security and quality of life within the study area; and
6. Mitigating unavoidable impacts to area resources.

B. Preferred Alternative – Alternative 9A

To identify a Preferred Alternative for the study, MCDOT evaluated each alternative for its ability to meet the purpose and need objectives and its assessed environmental impacts. A summary of MCDOT’s evaluation for each alternative’s ability to meet the project purpose and needs as well as its impacts is presented in **Table VII-2**.



Table VII-2: Preferred Alternative Assessment

<p>Alternative 1 – No-Build</p>	<ul style="list-style-type: none"> • Does not meet the purpose and need
<p>Alternative 2 – TSM/TDM</p>	<ul style="list-style-type: none"> • Does not adequately fulfill purpose and need • Does not offer improvements to safety or efficiency and mobility, accommodation of planned growth, pedestrian or bicycle improvements, improved homeland security, or enhanced quality of life (limited travel time benefits)
<p>Alternative 4 Modified – Brink-Wightman-Snouffer School-Muncaster Mill</p>	<ul style="list-style-type: none"> • Does not adequately fulfill purpose and need • Changes the character of corridor, particularly north of Montgomery Village Avenue • Impacts 242 residential properties, including two displacements • Safety improvements are moderate due to the high number of intersections • Does not significantly improve network efficiency – does not provide new connections to local roadways (no ladder/rung effect) • Modest decrease in travel time, offering a low improvement in quality of life. • Does not comply with master plan • Significant public opposition • Would require extensive survey to determine National Register of Historic Places eligibility of three individual properties and a potential historic district. If determined NRHP eligible, would likely result in an <i>adverse effect</i> to these properties (per discussions with SHPO).
<p>Alternative 5 – MD 355 with Service Roads</p>	<ul style="list-style-type: none"> • Does not adequately fulfill purpose and need • Service roads generate significant impacts to 92 residential properties and 82 businesses, of which three businesses are displaced • Improvements to safety are moderate • Does not significantly improve network efficiency/mobility • Does not adequately accommodate planned growth - limited additional capacity • No significant improvements to homeland security • Moderate Quality of Life improvements – Moderate travel time improvements • Conflicts with master planned Bus Rapid Transit network
<p>Alternative 8 – M-83 Truncated at Watkins Mill Road</p>	<ul style="list-style-type: none"> • Offers a very small reduction in wetland and stream impacts relative to cost of lost transportation benefits compared to Alternative 9 • Diverts through traffic to local roadways • Maintains existing safety conditions between Watkins Mill Road and Montgomery Village Avenue • Creates potential bottleneck along MD 355 between Watkins Mill Road and Montgomery Village Avenue • Offers significant improvements for Safety, Efficiency, Accommodation of Planned Growth, Bicycle and Pedestrian, Homeland Security • Offers moderate improvement to Quality of Life – significant reduction in travel times along MD 355, however the travel time along Alternative 8 is significantly greater (50%) than Alt 9.



<p>Alternative 9 – the Master Plan Alignment</p>	<ul style="list-style-type: none"> • Best meets Purpose and Need criteria • Partial access controlled facility will significantly reduce congestion, enhance safety, improve network efficiency (ladder/rung), accommodate planned growth, improve bicycle/pedestrian connections, improve homeland security and improve quality of life – reduces travel time by more than 50% compared to No-Build Alternative • Conforms with area master plans • Supported by Montgomery County Planning Board (November 2013) • Impacts to natural resources significantly reduced through design modifications • Conceptual mitigation identified for wetlands, streams, forest and parks
<p>Option A vs. Option D</p>	<ul style="list-style-type: none"> • Option D was originally developed at the request of M-NCPPC staff as an alternative to reduce parks impacts. • No difference in wetland/waterway impacts between Option A and Option D. • Option D presents following disadvantages: <ul style="list-style-type: none"> • Displacement of a resident • Impacts to adjacent community/residences along Brink Road • Impacts to additional forest and farmland north of Brink Road • Potential pressure to open lands within the Agricultural Reserve to development • Option A conforms to area master plans • M-NCPPC Board identified their preference for Option A in November 2013.

NOTE: A combination of alternatives – 5 & 4 Modified, 5 & 2, 4 & 2, as well as BRT are also discussed in this document.

MCDOT has selected Alternative 9A as the Preferred Alternative because of its ability to completely and most effectively achieve the purpose and need of the project while minimizing impacts to jurisdictional wetlands and waters to less than one acre. In addition, the alternative’s overall impacts are preferable compared to some of the other alternatives, such as Alternative 4 Modified, that have less natural resource impacts, but provides less transportation benefits and has substantially higher community impacts. Finally, a preliminary mitigation plan (**Section VIII**) has been developed that will enable the project to effectively mitigate the associated environmental impacts.

Alternative 9A conforms to the alignment for Midcounty Highway identified in the study area master plans and includes construction of a new four-lane divided arterial from the Snowden Farm Parkway/Ridge Road (MD 27) intersection in Clarksburg to the existing Montgomery Village Avenue/Midcounty Highway intersection in Gaithersburg (**Figure VII-1**). Typical sections are depicted in **Figure VII-2** and **Figure VII-3**.

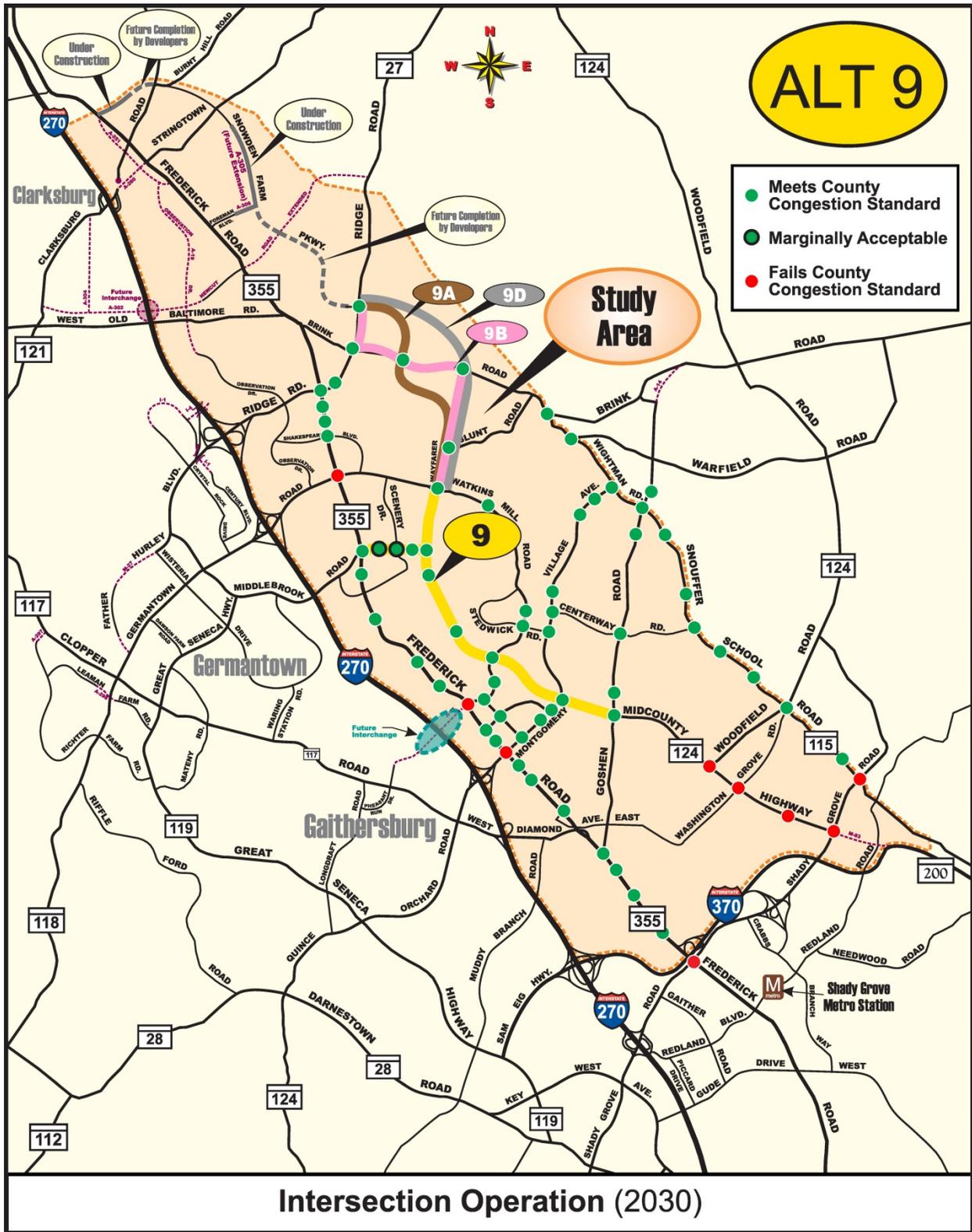


Figure VII-1: Alternative 9 - Intersection Operation (2030)

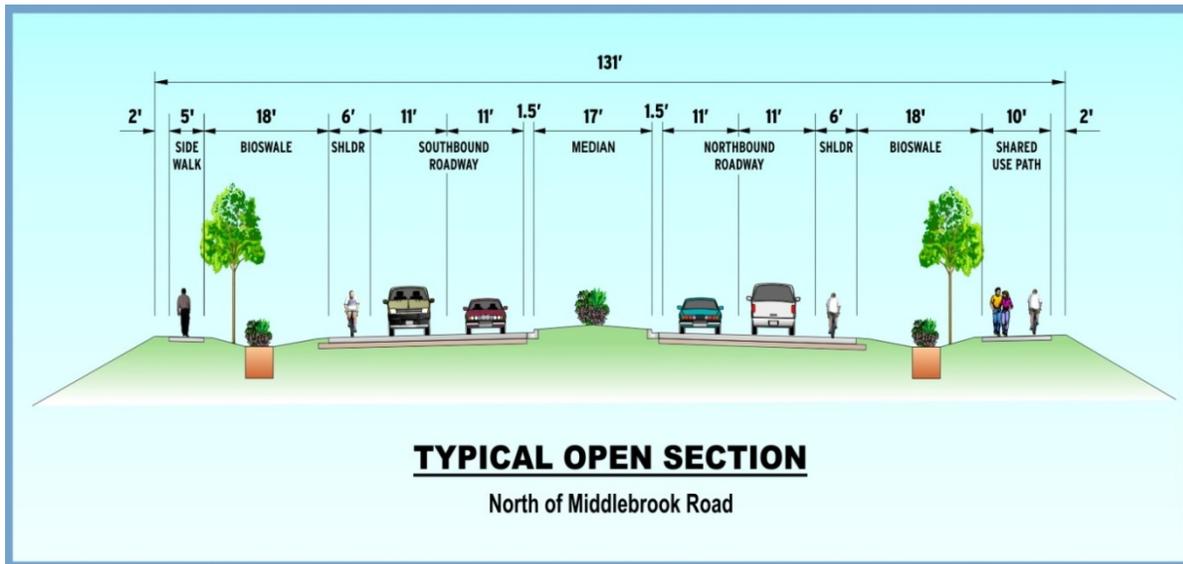


Figure VII-2: Alternative 9 Typical Open Section

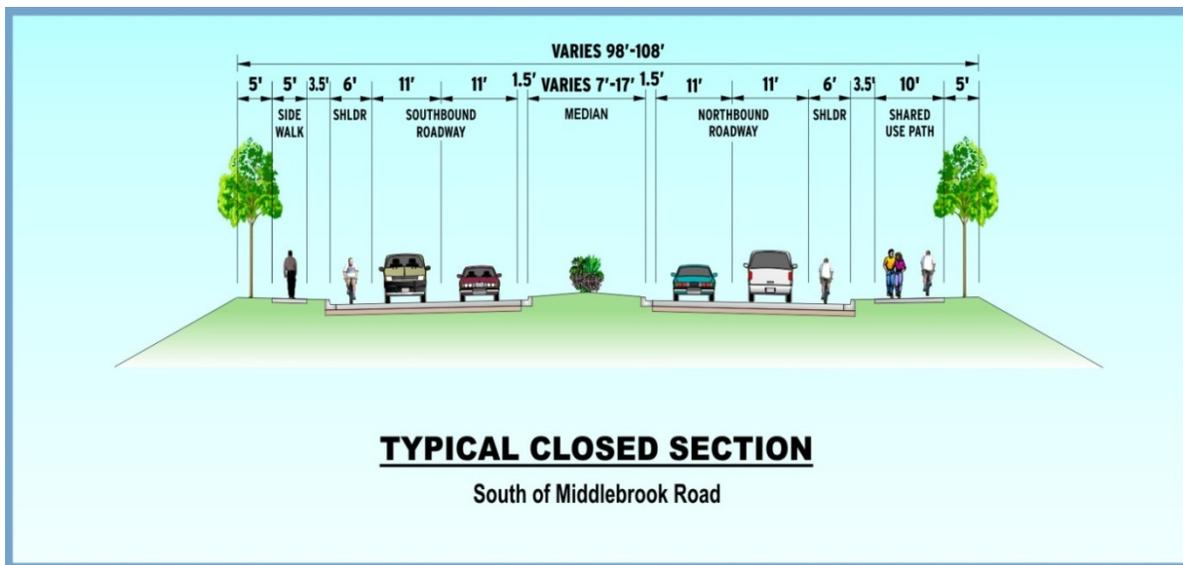


Figure VII-3: Alternative 9 Typical Closed Section

Alternative 9A substantially outperforms the other alternatives in transportation effectiveness which was a key contributing factor to its selection as the Preferred Alternative. The ability of Alternative 9A to satisfy each specific purpose and need of the project is presented below.

Accommodating Planned Land Use and Future Growth: Alternative 9A most effectively accommodates the planned land use and future growth as specified in the area master plans. Alternative 9A will complete the missing six-mile segment of a 12-mile partial access controlled four-lane arterial between Clarksburg and Gaithersburg. The roadway adds the highest level of capacity in the study area (22.3 lane miles), and most effectively accommodates the ongoing



growth in the study area as envisioned in the area master plans. Because Alternative 9A is the Master Plan alignment, the land uses adopted in the area master plans for Clarksburg, Germantown and Gaithersburg were balanced with the transportation capacity that would be afforded by Alternative 9A and other master planned transportation improvements. The need for Alternative 9A will be even greater if some of the other master planned improvements – such as widening of I-270, the implementation of the Corridor Cities Transitway and the implementation of a BRT system in the MD 355 Corridor – are not completed for several decades. Consequently, the additional lane capacity provided by Alternative 9A is very important to accommodating the planned and orderly growth in the study area and encouraging business and industry to locate in the Technology Corridor. The other build alternatives would provide a lesser amount of transportation capacity and, therefore, would require a reduction in the planned growth. A reduction in planned growth, of course, would likely have the adverse consequential effect of slowing economic growth by deterring planned land development, lowering property values, reducing tax revenues, and reducing job growth.

Reduce Existing and Future Congestion: Alternative 9A was a top performer along with Alternatives 2 and 5 in its ability to reduce traffic congestion at area intersections. In the analysis of 72 existing and proposed intersections within the study area, 88% of the intersections were found to operate an acceptable level of service (LOS) under Alternative 9A (**Table IV-2**, page IV-3). Similarly, in an analysis of 18 major intersections within the study area, Alternative 9A had acceptable operations for 83% of the AM and PM peak hour periods (**Table IV-3**, page IV-4) which was significantly greater than Alternatives 1, 2, and 4 Modified and only slightly below the 86% achieved under Alternative 5. However, considering that Alternative 5 has the lowest projected north-south travel demand through the study limits while Alternative 9A has one of the highest projected travel demands, Alternative 9A effectively provides a superior level of congestion relief within the study area.

Enhance the Efficiency of the Roadway Network and Improve the Connections Between Economic Centers: Alternative 9A will maximize network efficiency and roadway connections within the study area by completing the planned roadway network and “ladder grid”. Some of the ways Alternative 9A fulfills this need includes the following:

- Completes a new north-south link between Clarksburg and Gaithersburg with improved access to the ICC and locations southeast of the study area.
- Provides new connections to existing east-west roadways such as Ridge Road, Brink Road, Germantown Road, Middlebrook Road, Watkins Mill Road and Montgomery Village Avenue.
- Provides a partial accessed controlled facility within the study area – a roadway type that is missing in the study area. The new roadway will provide a quicker, safer and more



efficient travel alternative in the study area that cannot be fulfilled by the other alternatives.

- Along with Alternative 4, Alternative 9A maximizes the volume of north-south traffic that can be accommodated within the study area.
- Creates the largest reduction in traffic volume on MD 355 which will reduce congestion and should improve safety by providing more opportunity for traffic to access the numerous intersecting roadways, entrances and driveways along the corridor.
- Enhances the ability of MD 355 to accommodate the newly master planned BRT system.

Improve Vehicular Safety: Alternative 9A will provide the greatest improvement to travel safety because it enables the completion of the only partial access controlled facility within the study area and provides a roadway corridor with the lowest estimated crash rate among the alternatives. The new roadway will have only 11 intersections with local public roadways, and will not provide access to any current or future driveways or entrances. The other build alternatives will not provide access controls. Alternatives, 2, 4, 5 will have more than 100, 125, and 65 intersections/access points, respectively. Furthermore, Alternative 9A will attract the longer distance commuter trips from adjacent roadway corridors with no access controls such as MD 355 and the Brink/Wightman/Snuffer School/Muncaster Mill corridor which will reduce potential conflicts between commuter and local traffic on these adjacent corridors.

Provide Bicycle And Pedestrian Connections: Alternative 9A will provide new bicycle and pedestrian facilities along the corridor including on-street bike lanes, off-street shared use path and sidewalk. Alternative 9A maximizes network efficiency and connectivity for bicyclists and pedestrians by providing a new north-south travel route and creating new connections to existing east-west roadways. Alternative 9A also offers the safest bicycle and pedestrian travel alternative since the new bike facilities and sidewalks are being constructed along a partial access controlled facility with a target speed of 40mph as compared to Alternative 4 Modified and Alternative 5 with multiple intersections/driveways and posted speeds of 40-45 mph (Alternative 5). Similar to automobile operations, the limited access points along the roadway will minimize potential conflicts between pedestrians/bicyclists and automobile traffic. Alternative 9A will also provide a direct connection to the Seneca Creek Greenway Trail, providing improved pedestrian and bicycle access to the trail and the entire park system for the adjacent communities.

Enhance Homeland Security: Alternative 9A, when compared to the other alternatives, will maximize the ability to enhance homeland security within the study area. By constructing a new north-south travel route between Clarksburg and Gaithersburg, Alternative 9A will provide an alternative travel route and additional capacity should a major evacuation be required along this segment of the I-270 corridor. Furthermore, if an incident closes or restricts travel along one of the adjacent north-south corridors, Alternative 9A provides an alternative travel route.



Alternative 9A also provides a faster and more efficient route (less intersections) for emergency response access to various locations within the study area.

Improve the Quality of Life: Alternative 9A will enhance quality of life within the study area by relieving congestion, improving network efficiency and reducing travel times for all users of the new roadway – including automobiles, bicyclists, pedestrians, and transit. For example, Alternative 9A, will provide the quickest travel route between Clarksburg and Gaithersburg, and the estimated round trip travel time on Alternative 9A is approximately 23 minutes which is less than half of the No-Build travel time of 52 minutes on MD 355. In addition to providing a new faster and safer travel route, Alternative 9A will also improve travel times on adjacent corridors by reducing traffic volumes and congestion on the roadways. For example, travel times on MD 355 will be reduced by approximately 17 minutes under Alternative 9A, or a 31% reduction over the No-Build. Considering that these travel times affect tens of thousands of people each day, the cost savings in terms of productivity and quality of life issues are very large. And when other quality of life issues are considered, such as reduced congestion, reduced emissions, improved safety, enhanced bicycle and pedestrian facilities and increased mobility, the quality of life benefits from Alternative 9A are superior to the other alternatives.

1. Impacts of the Preferred Alternative – Alternative 9A

Environmental Impacts: The environmental impacts of Alternative 9A have been significantly reduced during the planning process through a variety of avoidance and minimization measures so that the roadway can be constructed in an environmentally sensitive manner. As presented in **Section III.B**, MCDOT has continued to refine the design of Alternative 9A in an effort to further minimize impacts associated with the proposed improvements and intends to continue working with the regulatory agencies, organizations, community, and public throughout the final design of the project to minimize impacts. In addition, MCDOT has developed a conceptual mitigation plan to mitigate unavoidable impacts. Discussions are on-going with the M-NCPPC Parks Department concerning forest and parkland mitigation, and the Parks Department has identified several acceptable mitigation sites. In addition, MCDOT has been working with the USACE, MDE and M-NCPPC to develop wetland and stream mitigation and have identified several acceptable stream and wetland mitigation sites. The conceptual mitigation plan for Alternative 9A is presented in **Section VIII**.

Provided below in **Table VII-3** is a summary of the impacts of Alternative 9A as currently designed. Also included is a summary of the Alternative 9A impacts from the initial alternative design stage to demonstrate the reduction in impacts between the initial alternative design and the current retained alternative design. The categories of impacts summarized in this section are consistent with those evaluated in the *Draft EER*.



Table VII-3: Impacts of the Preferred Alternative - Alternative 9A

RESOURCES IMPACTED	ALTERNATIVE 9A		CHANGE IN IMPACTS
	INITIAL DESIGN	CURRENT DESIGN	
PROPERTY IMPACTS			
Residences Displaced (no.)	0	0	0
Businesses Displaced (no.)	0	0	0
Total Number Parcels from which Property will be Acquired (no.)	197	161	-36
Total Right-of-Way/Easements (ac)	111.7	89.0	-22.7
NOISE IMPACTS			
Residences within 67 dBA Noise Contour (no.)	NA	217	NA
PARK IMPACTS			
Wildcat Branch Tributary Park (M-NCPPC Department of Parks) (ac)	NA	0.88	NA
Seneca Crossing Local Park (M-NCPPC Department of Parks) (ac)	NA	3.65	NA
North Germantown Greenway Stream Valley Park (M-NCPPC Department of Parks) (ac)	NA	24.89	NA
Great Seneca Stream Valley Park (M-NCPPC Department of Parks) (ac)	NA	14.72	NA
Blohm Park (City of Gaithersburg) (ac)	NA	2.56	NA
South Valley Park (Montgomery Village) (ac)	NA	2.27	NA
Total (ac)	43.8	49.0	+5.2
PRIME, STATEWIDE IMPORTANT FARMLAND			
Acres	23.2	17.7	-5.5
WATER RESOURCES			
WETLANDS			
Wetland Fill (ac)	NA	0.9	NA
Wetland Conversion (ac)	NA	1.7	NA
Total Permanent (ac)	13.5	2.6	-10.9
Temporary (ac)	NA	0.8	NA
WETLAND BUFFER			
Permanent (ac)	NA	1.0	NA
Temporary(ac)	NA	0.2	NA
STREAMS			
Perennial/Intermittent (LF)	5,257	256	-5,001
Ephemeral (LF)	1,427	229	-1,198
Total Piped (LF)	NA	485	NA
Total Relocated (LF)	NA	989	NA
FLOODPLAIN IMPACTS			
Permanent (ac)	22.8	4.8	-18.0



RESOURCES IMPACTED	ALTERNATIVE 9A		CHANGE IN IMPACTS
	INITIAL DESIGN	CURRENT DESIGN	
Temporary (ac)	NA	0.6	NA
FOREST IMPACTS			
Acres	74.8	72.9	-1.9
SPECIAL PROTECTION AREAS			
Impervious Surface in SPA (ac)	21.1	7.2	-13.9
FIDS HABITAT			
Direct (ac)	67.2	19.4	-47.8
Indirect (ac)	NA	74.1	NA
THREATENED & ENDANGERED SPECIES (no.)			
Number of Species Impacted	0	0	0
CULTURAL RESOURCES			
Potential Historic Structures and Districts (Surveyed/Unrecorded)	6/6	7*/1	--*
Anticipated Archeological Sites (Prehistoric/Historic)	5/15	5/15	--*

* Additional survey of historic structures and districts has been completed since the ARDS, further consultation would occur with MHT prior to completion of the Final EER to determine the effect of the Preferred Alternative on Cultural Resources.
 NOTE: NA indicated impact topics for which data is unavailable for the initial alternative design.

The following provides additional information regarding each category of impacts included in **Table VII-3**.

Jurisdictional Waterways and Wetlands: When studies for Midcounty Highway were initially developed by MCDOT in 2004, wetland impacts were estimated to be more than ten acres. Through avoidance and minimization techniques such as alignment modifications, typical section reductions, retaining walls and bridging, MCDOT has reduced the filled wetland impacts to below one acre for Alternative 9A. This is a major reduction from the initial estimates and illustrates MCDOT’s commitment to completing the project in an environmentally sensitive manner. As presented in **Table VII-3**, Alternative 9A will result in the fill of 0.9 acres of wetlands and the conversion of 1.7 acres of wetlands. Wetland “conversions” refer to forested wetlands that must be cleared to construct a bridge. These wetlands will convert to emergent or scrub/shrub wetlands following construction. Temporary impacts to wetlands would total approximately 0.8 acres. Approximately one acre of wetland buffer would be permanently impacted and 0.2 acres of wetland buffer would be temporarily impacted.

Alternative 9A would permanently impact 1,474 linear feet of streams. This impact includes the piping of 485 linear feet of streams and relocation of 989 linear feet of streams. Temporary stream impacts would total approximately 60 linear feet. These impacts have been minimized through bridging, alignment shifts, and retaining walls as detailed in **Section VII.D**. Under Alternative 9A, approximately 4.8 acres of FEMA-designated floodplain would be impacted.



During final design, detailed Hydrologic and Hydraulic Studies would be prepared for all new structures proposed under the Preferred Alternative. The estimated impacts are currently based on a 2004 delineation of wetlands and waters of the U.S. As described in the *Draft EER*, a new delineation and Jurisdictional Determination will be undertaken for the *Final EER* using the latest methodology. A conceptual mitigation plan for impacts to jurisdictional waterways and wetlands has been developed in cooperation with the federal, state and local regulatory agencies. The conceptual mitigation plan is presented in **Section VIII**.

Residential Impacts: Alternative 9A would require no residential relocations. Residential areas would be affected by minor property acquisition, changes in access, impacts to community cohesion, and noise and visual impacts. Planning level design indicates that right-of-way would be required from 125 individual residential parcels. Because Alternative 9A is along the Master Plan alignment, the right-of-way for the roadway has been largely preserved through the development process. Consequently, nearly all of the communities along Alternative 9 were planned and constructed around the right-of-way for Alternative 9 and most of the property impacts to existing residents consist of narrow strip takes. Since Alternative 9 is along the Master Plan alignment, the property owners along the corridor were aware of the planned roadway when they purchased their homes and were informed of the future road in accordance with County law. A variety of minimization and mitigation techniques will be evaluated during final design to further reduce impacts on adjacent residents including section reductions, alignment shifts, retaining walls, landscaping, berms, fences, and noise barriers.

Business Impacts: No businesses would be displaced by Alternative 9A, nor would Alternative 9A have an effect on access and operations of adjacent businesses. This alternative would require minor right-of-way acquisitions from 14 business properties.

Land Use: Land use in Montgomery County is guided by zoning and local master plans developed by the M-NCPPC. The area master plans balance development projections with planned transportation infrastructure. The current zoning in the area master plans is predicated on Midcounty Highway construction occurring on the Master Plan alignment (Alternative 9A), as a four-to-six lane divided highway with partial control of access. Alternative 9A would provide 22.3 lane miles of new highway capacity. The Preferred Alternative is consistent with the master planned use and integral to the plan developed by Montgomery County to guide land use decisions.

Noise: The Montgomery County Highway Noise Abatement Policy considers noise impacts to occur at, or above, 67 dBA. A worst-case *approximation* of the 67 dBA noise contour was evaluated based on projections of traffic in 2030; based on this modelling 217 residences fall within the boundary of the 67 dBA contour. This approximation provides an indication of the locations where impacts may potentially occur. Detailed noise modeling will be conducted



during final design for the Preferred Alternative and potential mitigation measures will be evaluated in accordance with County policy.

RTEs: No federally-listed or state-listed threatened or endangered species have been identified within the limits of disturbance (LOD) of Alternative 9A; however, this alternative would traverse the western edge of the Great Seneca Creek Biodiversity Area, and may impact some individual American chestnut (*Castanea dentata*), a State “rare” species; Bashful bulrush (*Scirpus verecundus*), a State “watchlist” species; and Shingle oak (*Quercus imbricaria*), a former Montgomery County “watchlist” species. Time-of-year restrictions would be implemented to protect colonial nesting birds (Great blue herons and Black-crowned night herons) on Lake Whetstone (location noted in *Draft EER*, **Figure 5-2**) in accordance with recommendations provided by Maryland Department of Natural Resources (DNR). No construction will occur within 0.25 mile of the protection area during the breeding season, February 15 through August 15. Approximately 19 acres of impacted forest area has been determined to provide habitat for Forest Interior Dwelling Species. An additional 74 acres of FIDS habitat area would be indirectly effected by construction and clearing. A more detailed discussion of FIDS direct and indirect impacts is provided in **Section V.C**.

Farmland: Alternative 9A would impact 17.7 acres of prime, statewide, and important farmland soils.

Water Quality: With Alternative 9A, bridges proposed at stream crossings would minimize impacts to benthic macro-invertebrate habitat and water quality. Proposed bridges would span well beyond the limits of the streams, preventing direct disturbance to the existing aquatic habitat. Where culverts are proposed, macro-invertebrate habitat would be lost for the length of the culvert plus any riprap placed for velocity dissipation at the outfall of the culvert. Canopy cover and leaf litter would be lost for the length of the bridge or culvert. Bridges constructed over streams would allow sunlight to penetrate beneath a portion of the structure. The height of the bridge would determine the extent of shading. The impact on benthic macro-invertebrate habitat due to shading is expected to be minimal. Long-term water quality effects would be minimized through the use of stormwater management plans developed in accordance with state and county regulations requiring the use of Environmental Site Design (ESD). These requirements place heavy emphasis on infiltration and water quality management, and would minimize thermal impacts in the Use III Wildcat Branch. All other streams affected by this alternative are Use I streams, characterized as warm-water streams containing organisms adapted to high water temperatures. Because Wildcat Branch is located within the Clarksburg Special Protection Area (SPA), discharges to Wildcat Branch would be subject to Montgomery County Department of Environmental Protection’s (DEP’s) stringent SPA water quality requirements. MCDOT has initiated coordination with MCDEP concerning this issue. In addition, in-stream construction would not be performed in Use I streams during the period of fish spawning and



early development from March 1 to June 15 in accordance with the State's Use I time-of-year restrictions. In Wildcat Branch and its tributaries, in-stream construction would be restricted from October 1 through April 30 in accordance with the State's Use III time-of-year restrictions.

During construction, the potential effects of sediment-laden runoff on aquatic habitat and water quality would be minimized by adherence to sediment and erosion control plans approved by the Montgomery County Department of Permitting Services (DPS). If a contractor needs to cross these high-quality streams during construction, a temporary crossing would be required.

Forests: Alternative 9A would require the clearing of approximately 73 acres of forested area. Forest clearing will be replaced at a minimum ratio of 1:1, as required by the Montgomery County Forest Conservation Law. Mitigation for forest cleared within parkland is being coordinated with M-NCPPC Department of Parks and would be developed with consideration for the functions and values of the impacted forests, as determined by the M-NCPPC Department of Parks. Any impacts to forest conservation easements will be mitigated in accordance with MD State Conservation Law. Impacts to terrestrial wildlife would be minimized by constructing bridges over the riparian wildlife corridors along major streams. Of the 73 acres of impacted forest area, 19 acres is FIDS habitat, as previously cited. A conceptual mitigation plan for forest impacts is presented in **Section VIII**.

Parkland: Alternative 9A would impact approximately 49.0 acres of park land. Impacted parks include facilities owned by M-NCPPC Department of Parks, the City of Gaithersburg, and Montgomery Village Foundation. Alternative 9A would bisect the North Germantown Greenway Stream Valley Park (M-NCPPC Department of Parks). Small portions of the Seneca Creek Greenway Trail in Great Seneca Stream Valley Park (M-NCPPC Department of Parks) would need to be relocated at the crossing of Brandermill Tributary. A bird-watching pavilion and small portion of Blohm Park Trail would need to be relocated in Blohm Park (**Figure VII-4**). The fishing, hiking, and passive recreation experience of South Valley Park (Montgomery Village Foundation) would also be altered due to the proximity of the highway. However, it is important to note that impacts to parks were either anticipated during the development of the area master plans, or park land was acquired after the Master Plan with Alternative 9 was adopted, as is the case with the North Germantown Greenway Stream Valley Park at the north end of the project.

Mitigation of park land impacted by the Preferred Alternative will be developed through collaboration between MCDOT and the park owners – M-NCPPC Department of Parks, the City of Gaithersburg and the Montgomery Village Foundation. A conceptual mitigation plan for park impacts is presented in **Section VIII**.

Special Protection Areas, Biodiversity Areas, and Green Infrastructure: The Clarksburg Special Protection Area (SPA) includes a portion of the Wildcat Branch watershed in the northeast quadrant of the Ridge Road/Brink Road intersection within the WSSC, M-NCPPC, and



All Souls Cemetery properties. Alternative 9A would traverse the Clarksburg SPA on the All Souls Cemetery property, creating 7.2 acres of impervious surface within the SPA. To reduce the potential effects of the Midcounty Corridor project on the SPA, the alignment of Alternative 9A was shifted slightly upstream from the Master Plan alignment to reduce the impact to mature forested stream buffer. Linear stormwater management is proposed to facilitate infiltration of stormwater runoff in this area. In addition, erosion and sediment controls would be stringently employed during construction to reduce stream siltation. Other measures that would be considered to reduce impervious surface include the following:

- construction of pervious pavement for the proposed sidewalk and shared use path;
- consideration of elimination of the sidewalk within the SPA, in favor of construction of a proposed sidewalk along Brink Road (along Seneca Crossing Local Park) and possibly along Ridge Road;
- consideration of additional BMPs beyond those required by MDE stormwater guidelines;
- provision of spring boxes if existing springs are identified in the path of the alternative; and
- avoidance of natural springs for stormwater facilities and E&S controls.

Portions of North Germantown Greenway Stream Valley Park and Great Seneca Creek Stream Valley Park have been designated as Biodiversity Areas and would be traversed by Alternative 9A. To avoid further fragmentation of green infrastructure and wildlife habitat, and to reduce collisions between wildlife and motorists, Alternative 9A would include bridges that are high enough and long enough to allow wildlife, including deer, to pass underneath as detailed in **Section VII.D.**

Cultural Resources: The historic architectural APE will be refined to reflect MCDOT's selection of Alternative 9A as the Preferred Alternative. From north to south, Wildcat Road/Davis Mill Road Rural Historic District (M: 14-68), Woodfield Farm (M: 19-49), Benson-Sibley Farm (M: 19-49), 21401 Davis Mill Road, Burton Woods District (M: 19-42), and Dayspring Retreat (M: 19-6) would likely be located within the refined APE. These resources were evaluated for the NRHP as part of this project and found not to be eligible for the NRHP. While the Woodbourne/Blunt House (M: 14-51) was evaluated and found to be eligible, it will likely not be located within the Alternative 9A APE. If the Butler's Orchard Log House (M: 14-47) is located within the refined APE, the property will be evaluated for the NRHP. Prior to the *Final EER*, MCDOT will fully assess potential effects on historic properties, then consult with MHT and additional consulting parties on their findings.

Should the Butler's Orchard Log House be evaluated and found to be eligible for the NRHP, it would be the only historic property located within the historic architectural APE for the Preferred Alternative. A preliminary assessment of effects (36 CFR Part 800.4(d)(2) and 800.5(a)) finds



the project would have an effect to this potential historic property, but no adverse effect. No part of the project would directly impact the Butler's Orchard Log House and therefore would not diminish its integrity of location, design, materials, and workmanship. The visual, atmospheric, and audible elements associated with the project would not diminish the setting, feeling, or association of the Butler's Orchard Log House's significant historic features. Therefore, a preliminary assessment finds this undertaking would not have an adverse effect on historic properties. Prior to the *Final EER*, MCDOT will consult with MHT and additional consulting parties.

An archeological Phase IA study performed for the study recommended approximately 158 acres along the Alternative 9 alignment for physical testing for prehistoric archeological resources, and 39 acres are classified as having high potential for historic period archeological resources including an anticipated 15 historic period resources. Three previously recorded archeological sites in MHT's Inventory of Historic Properties - 18MO175, 18MO362, and 18MO363 - would be potentially impacted by Alternative 9A. Three additional sites - two stone foundations and one surface scatter of historic debris - observed in Great Seneca Stream Valley Park, north of Middlebrook Road, and a second debris field observed in North Germantown Greenway Stream Valley Park may also be impacted by Alternative 9A. An archeological Phase 1B study will be conducted based on MCDOT's selection of Alternative 9A as the Preferred Alternative.

Hazardous Materials: Based on a review of regulatory databases a number of regulated facilities and past spills of hazardous substances or petroleum products were identified. During final design, a Phase I Environmental Site Assessment will be conducted for the Preferred Alternative to assess whether any remedial measures are required to properly manage any possible residual hazardous materials which could be encountered during construction.

Conclusion: Alternative 9A completely satisfies each component of the project purpose and need. In addition, environmental impacts have been significantly reduced to the minimum level through a wide variety of avoidance and minimization measures developed during the project planning process, and an effective mitigation plan has been developed to mitigate unavoidable impacts (see **Section VIII**). Alternative 9A is consistent with local Master Plans and is supported as the Preferred Alternative by the M-NCPPC Planning Board. In summary, Alternative 9A is the least environmentally damaging practicable alternative (LEDPA) and is the Preferred Alternative for the project.

C. Evaluation of Other ARDS

1. *Alternative 1: No-Build Alternative*

Alternative 1, the No-Build Alternative, would not construct any improvements beyond the improvements already programmed in the study area. Consequently, Alternative 1 does not fulfill the project purpose and need because it would:

- Not accommodate planned land use and future growth;
- Not relieve existing and future traffic congestion;
- Not enhance the efficiency of the roadway network and improve the connections between economic centers;
- Not improve vehicular safety;
- Not provide bicycle and pedestrian connections;
- Not enhance homeland security; and
- Not improve the quality of life.

Conclusion: Alternative 1 does not achieve the project purpose and need and is not a practicable alternative.

2. *Alternative 2*

Alternative 2 was studied to determine if the project need could be addressed through a low-cost, low-impact solution. Alternative 2 was limited to minor intersection improvements such as the addition of turning lanes within the existing right-of-way. Alternative 2 would help reduce existing and future congestion traffic by improving the capacity of local intersections. Of the sixteen intersections in the study area that would be at unacceptable congestion levels in 2030 if no improvements were constructed, eight of them could be improved to acceptable congestion levels with the Alternative 2 improvements (**Figure VII-5**). This alternative would result in moderate improvement in travel times as a result of the intersection improvements. However, Alternative 2 would:

- Not adequately accommodate planned land use and future growth;
- Not adequately enhance the efficiency of the roadway network and improve the connections between economic centers;
- Not adequately improve vehicular safety;
- Not adequately improve bicycle and pedestrian connections;
- Not adequately enhance homeland security; and
- Not adequately improve the quality of life

Conclusion: Alternative 2 does not achieve the project purpose and need and is not a practicable alternative. Elements of Alternative 2 may be added to the Preferred Alternative to enhance the results of the Preferred Alternative and will be considered upon final design of the Preferred Alternative. These improvement would be considered separate projects for enhancing safety and local traffic needs at the intersections included in Alternative 2.

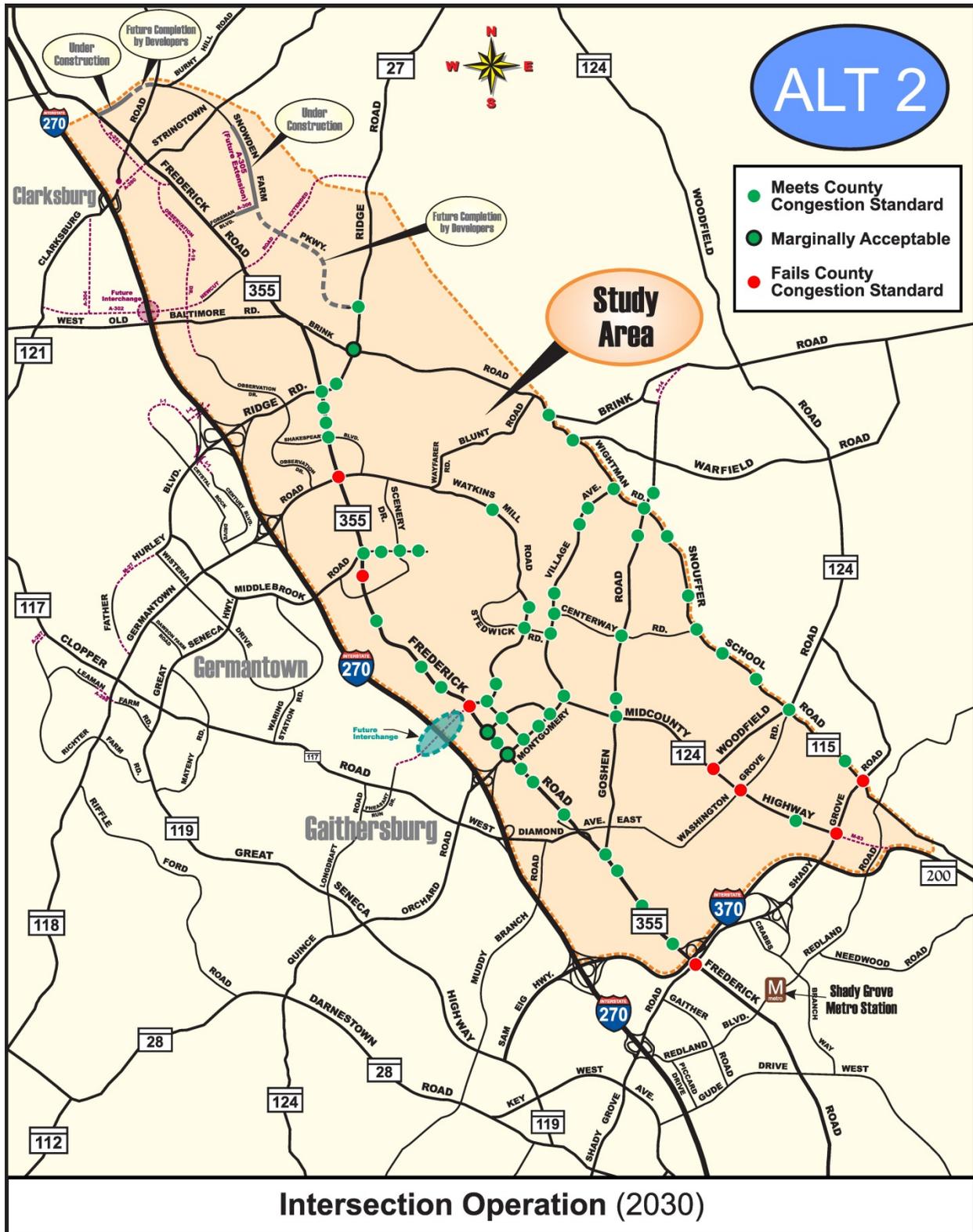


Figure VII-5: Alternative 2 - Intersection Operation (2030)



3. *Alternative 4 Modified*

Alternative 4 Modified would provide a major roadway improvement along the eastern limits of the study area by widening Brink/Wightman/Snuffer School/Muncaster Mill Roads to a four or six-lane divided arterial roadway between Ridge Road and Shady Grove Road. Alternative 4 Modified would partially achieve the MCS purpose and need as presented below.

Accommodating Planned Land Use and Future Growth: Alternative 4 Modified would provide a large number of new highway lane miles to accommodate planned growth, but its distance from the MD 355/I-270 Technology Corridor, and the limited number of east-west connections between the alternative and the MD 355/I-270 Technology Corridor would reduce this alternative's ability to support the growth corridor. Although Alternative 4 Modified would attract more traffic to the study area than any other alternative (slightly more than Alternative 9), much of this traffic is drawn from east of the study area as opposed to the congested MD 355/I-270 corridor.

Reduce Existing and Future Congestion: While Alternative 4 Modified is effective at accommodating a large volume of north-south traffic through the corridor, it is one of the least effective at reducing congestion on area roadways. As illustrated in **Figure VII-6**, Alternative 4 Modified together with Alternative 1 has the highest number (16) of congested intersections in the study area and the lowest number of peak hours of acceptable operation at the major intersections in the study area (**Table IV-3**, page IV-4). Of particular concern is that many of the congested intersections are along MD 355 which is indicative of Alternative 4 Modified's inability to draw traffic away from MD 355.

Enhance the Efficiency of the Roadway Network and Improve the Connections Between Economic Centers: Alternative 4 Modified does not adequately improve the roadway network and connections between economic centers because it would:

- Not provide a new north-south roadway between Clarksburg and Gaithersburg with a potential direct connection to the ICC;
- Not provide new connections to existing east-west roadways such as Ridge Road, Brink Road, Germantown Road, Middlebrook Road, Watkins Mill Road and Montgomery Village Avenue;
- Not provide the partial accessed controlled facility that is missing from the study area; and
- Introduce undesirable traffic operations by introducing a "dog-leg" at the intersection of Brink/Ridge Road and Ridge Road/Snowden Farm Parkway.

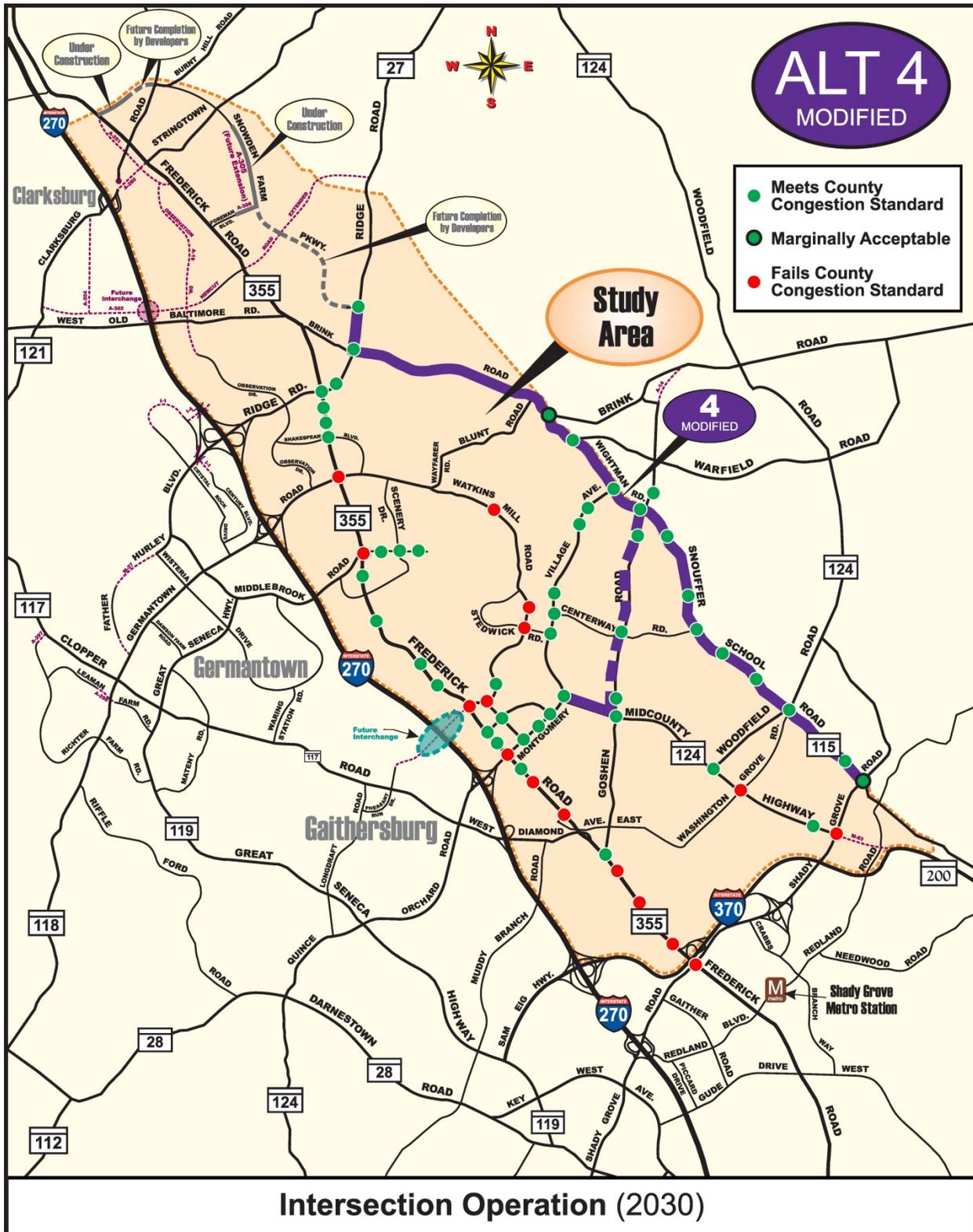


Figure VII-6: Alternative 4 Modified - Intersection Operation (2030)



The alternative would require large volumes of turning traffic from Snowden Farm Parkway and Brink Road to merge with large traffic volumes on Ridge Road creating difficult merging and weaving operations through this segment of the alternative.

Improve Vehicular Safety: Alternative 4 Modified does not adequately improve roadway safety because it would maintain a high number of intersections and access points (more than 125) and maintain a high potential for conflicts between commuter and local traffic. The large number of access points results in a high projected crash rate along the alternative with only a small improvement over the crash rate projected for the No-Build Alternative.

Provide Bicycle And Pedestrian Connections: Alternative 4 Modified will significantly enhance the existing pedestrian and bicycle facilities by providing a new system of on-street bike lanes, off-street shared use path and sidewalks. However, the lack of access controls along Alternative 4 Modified and the large number of driveways and intersections (more than 125) significantly increases the potential for conflicts between automobiles and pedestrians/bicyclists when compared to Alternative 9.

Enhance Homeland Security: Alternative 4 Modified will enhance homeland security by providing more capacity and additional lanes to accommodate mass evacuation of traffic during an incident. The additional lanes will also enhance passing of vehicles by emergency responders. However, Alternative 4 Modified does not provide an alternative travel route and the capacity level increase provided by Alternative 9.

Improve the Quality of Life: Alternative 4 Modified would modestly improve travel times compared to Alternative 9 and would introduce difficult weaving and merging operations at the intersections of Brink/Ridge Road and Ridge Road/Snowden Farm Parkway as noted above. This issue was further analyzed after the circulation of the *Draft EER* using SimTraffic software which determined that travel times along Alternative 4 Modified would be reduced only 15% in the morning peak hour and 4% in the evening peak hour when compared to the No-Build Alternative. (Table IV-4, page IV-12).

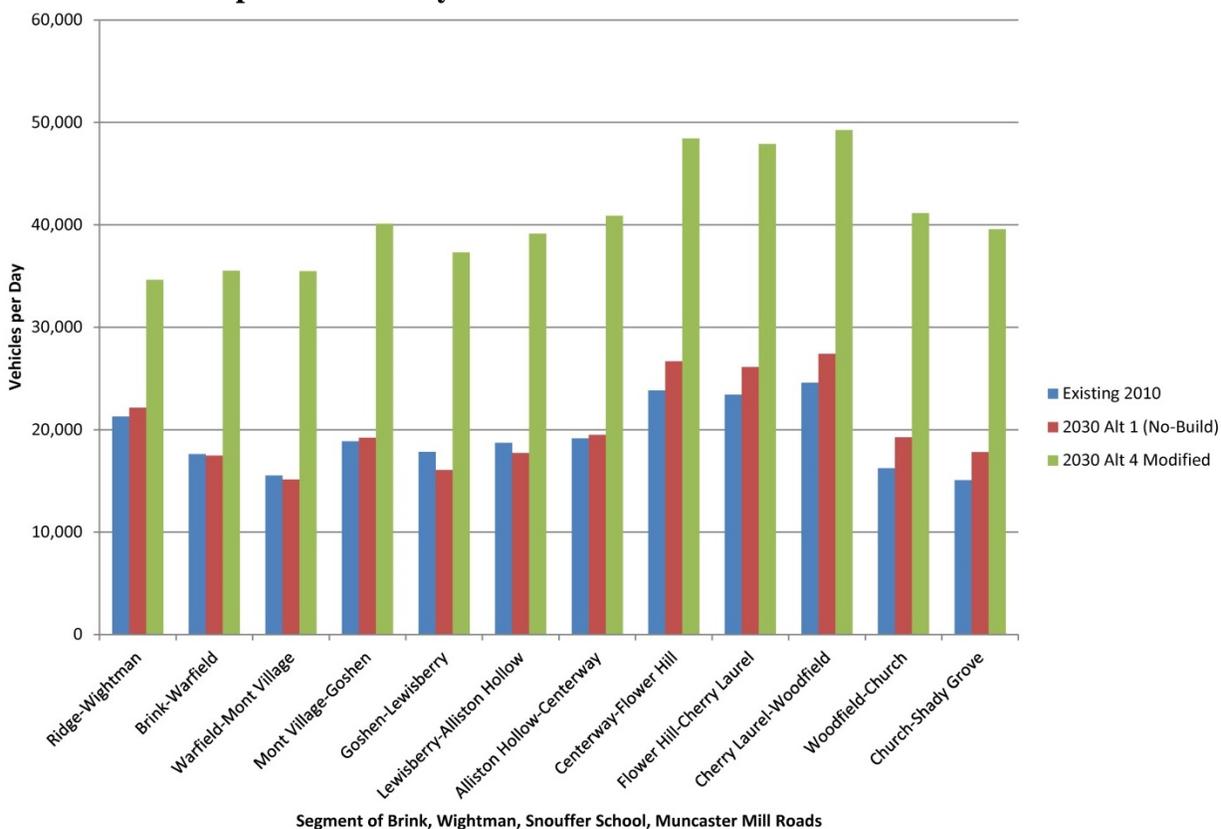
Environmental Impacts: Because the highway corridors that comprise Alternative 4 Modified are substantially developed, Alternative 4 Modified would result in lower impacts to the natural environment as compared to Alternative 9A. However, Alternative 4 Modified's impacts on the adjacent residential and business communities would be substantial. In fact, Alternative 4 Modified would require two residential displacements and property acquisition from more than 350 individual parcels, more than twice the number of properties impacted by Alternative 9A.

General: One of the foremost concerns with the selection of Alternative 4 Modified would be the substantial change to the character of the Brink Road, Wightman Road, Snouffer School Road, and Muncaster Mill Road corridor. As noted in Section III of this report, the widening



proposed with Alternative 4 Modified far exceeds what is currently proposed in area Master Plans. Traffic volumes along the alternative, compared to the No-Build Alternative, would be 60% greater along Brink Road, 80% greater along the Montgomery County Airpark Industrial Park, and more than double along the remaining portions of the alternative (see **Chart VII-1**). In addition, because Alternative 4 Modified would be a substitute for the Midcounty Highway, it would attract the regional traffic that the Master Plan envisioned being accommodated along the Midcounty Highway.

Chart VII-1: Comparison of Daily Traffic Volumes - Alternative 4 Modified



Most of this alternative is bordered by residential land use. The numerous school bus stops, parks, churches and affiliated elementary schools along the alternative heighten the concern for the safety of children. Access to and from many residences and neighborhoods would be more difficult due to the prohibition of left turns at many driveways and subdivision entrances, or by the absence of a traffic signal to accommodate left turns across a four to six-lane roadway. Alternative 4 Modified would subject more residences to potential noise impacts than any other alternative, and the vegetation that currently buffers the residences from the roadway would be lost. In addition, the provision of appropriate noise mitigation along the corridor would be challenged by the lack of available right-of-way and the numerous access points along the corridor which decrease the efficiency of noise mitigation measures such as walls and berms.



The winding portion of Wightman Road between Brink Road and Aspenwood Lane is an example of the physical impacts that would be imparted by Alternative 4 Modified. In this area, the proposed design improvements would necessitate changes to the horizontal and vertical geometry in order to satisfy the 40 MPH design speed. These changes would shift the alignment into Milton M. Kaufmann Park, and require retaining walls along much of this segment, with some walls being five to nine feet taller than the front yards of adjacent residences. In addition, a historic residence associated with the Prathertown community would be displaced at the Warfield Road intersection. Another residence would be displaced along the east side of Muncaster Mill Road, just south of Woodfield Road. The change in character would perhaps be most dramatic along Brink Road where the roadway widening would impact mature woodland buffers and significantly alter the size and scale of the roadway along this rural residential area within the Agricultural Reserve which has been master planned by the County as a rural two-lane roadway.

Alternative 4 Modified would also impact businesses, with the greatest impacts occurring in the Montgomery Airpark Industrial Park due to property acquisition, loss of parking spaces, and prohibition of left turns. Loss of parking would affect several businesses, including the Horizon Plaza strip shopping mall and Absolute Furniture which would both lose almost half their parking, and Braddock Motors whose parking is already extremely limited. The magnitude of this reduction in parking could impact the long-term viability of these businesses.

Finally, it is important to note the expectations that are created by the County Master Plan. Montgomery County has a very comprehensive and rigorous planning process. Any approved changes to the Master Plan are vetted publicly, and legal challenges to the land use and zoning are vigorously defended by Montgomery County. By law, prospective purchasers of property are given an opportunity to review the Master Plan to determine what type of development is planned on adjacent properties and where the planned infrastructure will be constructed. Purchasers of property must sign a document at settlement asserting that they have either reviewed the Master Plan or waive their right to do so. Over the years, all of these factors have reinforced the public's perception that the information in the Master Plan is reliable. Many citizens have commented that they consulted the Master Plan before purchasing their property, and the Master Plan indicated that the regional highway facility would be along the alignment represented by Alternative 9A, and that Brink, Wightman, Snouffer School, and Muncaster Mill Roads would serve local traffic. A deviation from the approved Master Plan is therefore considered a major deception to local residents and business owners.

Changing the function of this highway corridor to a regional route would significantly change the function, visual character, the vegetative buffer, the tranquility, the ease of access, and community cohesiveness.



As a result of the impacts and concerns noted above, Alternative 4 Modified was heavily opposed by the community and was not supported by the M-NCPPC Planning Board.

Conclusion: Alternative 4 Modified does not adequately satisfy the project purpose and need, has significant property and community impacts, does not conform to local planning and is heavily opposed by the adjacent communities and the M-NCPPC Planning Board. Therefore, Alternative 4 Modified is not a practicable alternative.

4. *Alternative 5*

Alternative 5 includes widening MD 355 to complete the master planned six-lane section, additional intersection improvements and the construction of service roads between Ridge Road and Montgomery Village Avenue (**Figure VII-7**). The alternative also includes widening along Montgomery Village Avenue between MD 355 and Midcounty Highway and widening along Midcounty Highway between Montgomery Village Avenue and Goshen Road. Alternative 5 would partially achieve the project purpose and need as presented below.

Accommodating Planned Land Use and Future Growth: Currently, existing MD 355 is already nearly built out to its master planned six-lane section, and only the portion of MD 355 between Middlebrook Road and Boland Farm Road must be widened by one-lane under Alternative 5 from its existing five-lane section to the full six-lane section. Consequently, Alternative 5 adds very few lane miles of additional capacity to accommodate planned growth within the study area. In fact, Alternative 5 would construct 4.9 lane miles of additional capacity which is over 70% less than the lane mile capacity constructed under Alternatives 4 Modified, 8 and 9. As a result of the small increase in capacity, Alternative 5 has the lowest projected north-south travel volumes through the study area of any build alternative (**Table VII-4**). Consequently, Alternative 5 would not accommodate the planned land use and future growth of the study area.

Reduce Existing and Future Congestion: Because the Alternative 5 improvements are focused directly along MD 355, the roadway with the largest number of failing intersections in the study area, Alternative 5 is the most effective alternative at improving the failing intersections and relieving congestion. As shown in **Table IV-2**, page IV-3 and **Table IV-3**, page IV-4, Alternative 5 has the highest percentage (89%) of intersections with acceptable LOS and the highest percentage (86%) of acceptable peak hour operations at the major intersections in the study area.

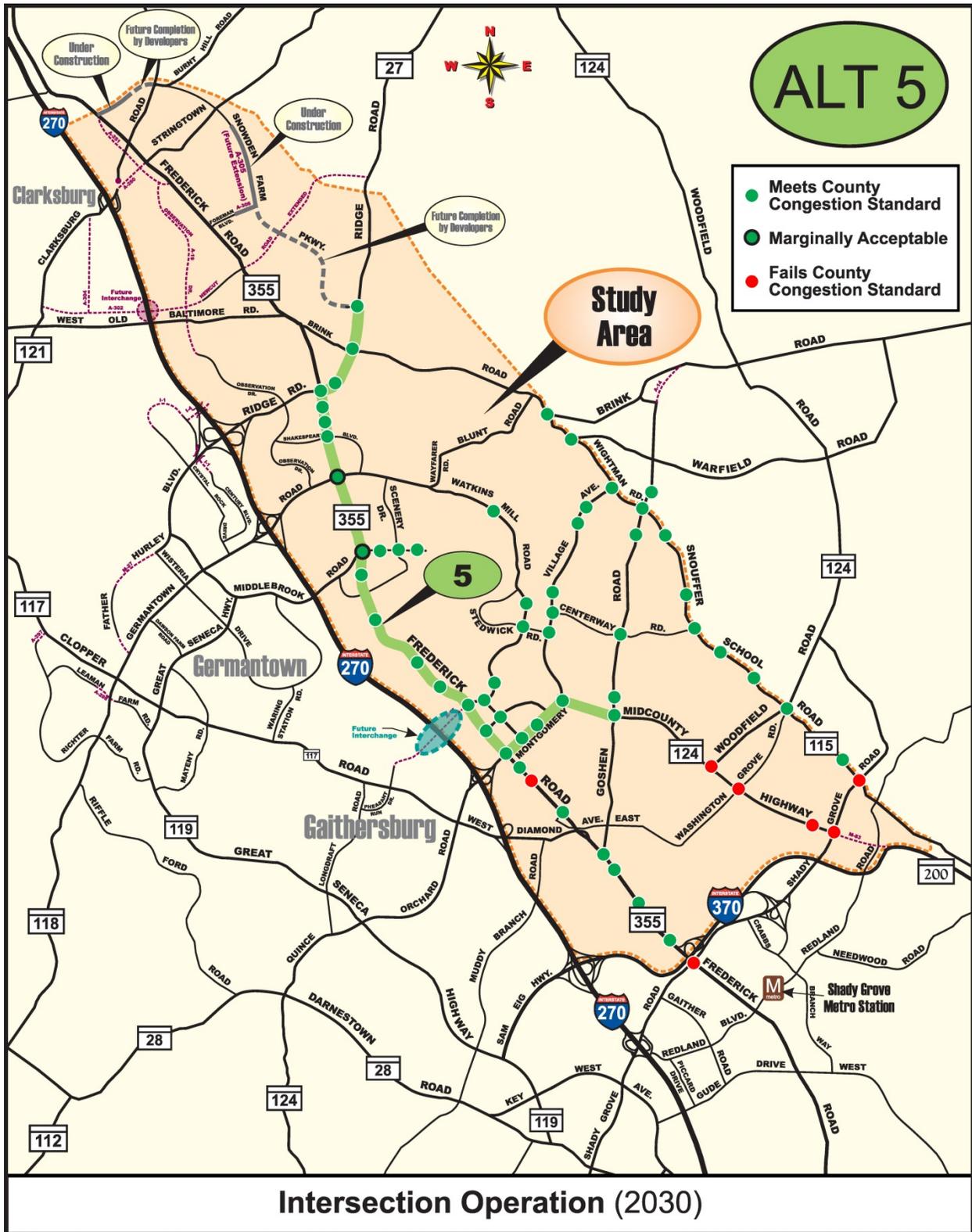


Figure VII-7: Alternative 5 - Intersection Operation (2030)



Enhance the Efficiency of the Roadway Network and Improve the Connections Between Economic Centers: Alternative 5 would not significantly improve the roadway network and connections between economic centers because it would:

- Not provide a new north-south roadway between Clarksburg and Gaithersburg with a potential direct connection to the ICC;
- Not provide new connections to existing east-west roadways such as Ridge Road, Brink Road, Germantown Road, Middlebrook Road, Watkins Mill Road and Montgomery Village Avenue;
- Not provide the partial access controlled facility that is missing from the study area;
- Conflict with the master planned BRT line in the corridor; and
- Not improve regional transportation connectivity and would not provide future direct access to the Intercounty Connector.

Improve Vehicular Safety: Alternative 5 would improve roadway safety because the addition of service roads would reduce the total number of intersecting roadways, entrances and streets by nearly 45% from 125 to 69. However, the number of access points is still significantly greater than the 11 intersections on Alternative 9A.

Table VII-4: Project Traffic Volumes along the MD 124/MD 355/ MD 27 Alignment

Road/Route	Roadway Segment	2030 Annual Average Daily Traffic				
		1	4 Mod	5	8	9
Ridge Rd	Snowden Farm Pkwy to Brink Road	40,075	57,500	39,975	33,900	30,150
Ridge Rd	Brink Road to Henderson Corner Rd	38,275	33,150	37,950	34,950	31,975
Ridge Rd	Henderson Corner Rd to Frederick Rd	27,900	24,525	27,550	25,650	23,250
Frederick Rd	Ridge Road to Henderson Corner Rd	33,550	24,500	35,275	27,100	20,725
Frederick Rd	Henderson Corner Rd to Milestone Center (South)	40,400	29,925	42,000	32,750	24,475
Frederick Rd	Milestone Center (South) to Shakespeare Blvd	42,275	32,400	43,850	35,300	27,400
Frederick Rd	Shakespeare Blvd to Germantown Rd	49,025	37,225	49,525	40,150	32,900
Frederick Rd	Germantown Rd to Middlebrook Rd	45,975	32,800	49,750	37,600	30,300
Frederick Rd	Middlebrook Rd to Gunners Branch Rd	50,425	38,900	55,075	42,175	34,925
Frederick Rd	Gunners Branch Rd to Plummer Dr	46,900	37,825	52,525	40,650	34,050
Frederick Rd	Plummer Dr to Professional Dr	47,950	38,850	53,325	41,300	34,900
Frederick Rd	Professional Dr to Travis Ave	48,400	39,725	51,675	41,850	35,900



Road/Route	Roadway Segment	2030 Annual Average Daily Traffic				
		1	4 Mod	5	8	9
Frederick Rd	Travis Ave to Watkins Mill Rd	45,200	37,825	47,675	38,550	33,900
Frederick Rd	Watkins Mill Rd to Christopher Ave	48,775	46,400	50,225	51,575	37,750
Frederick Rd	Christopher Ave to Lockheed Martin	45,500	43,650	46,575	47,650	34,100
Frederick Rd	Lockheed Martin to Montgomery Village Ave	50,275	47,600	50,275	51,600	37,325
Montgomery Village Ave	Frederick Rd to Russell Ave	48,575	42,100	47,475	41,025	42,075
Montgomery Village Ave	Russell Ave to Lakeforest Mall	49,625	40,075	47,750	38,025	41,975
Montgomery Village Ave	Lakeforest Mall to Christopher Ave	49,225	39,325	47,400	36,800	41,275
Montgomery Village Ave	Christopher Ave to Midcounty Hwy	52,275	40,850	51,625	38,300	44,650
Midcounty Hwy	Montgomery Village Ave to Goshen Rd	44,575	14,200	44,575	36,925	43,500
Average for Entire Length		45,010	37,110	46,290	38,755	34,165
Percent Change in Average AADT vs. Alt. 5		-3%	-20%	0%	-16%	-26%
Percent Change in Average AADT vs. No-Build		0%	-18%	3%	-14%	-24%

Provide Bicycle And Pedestrian Connections: Alternative 5 would construct missing links in the existing sidewalk and shared use path along MD 355 and Montgomery Village Avenue. Alternative 5 would not provide a new pedestrian and bicycle route through the study area and would not provide a significant number of new bicycle and pedestrian connections to communities, businesses and transit centers within the study area. In addition, pedestrians and bicyclists would still need to navigate through a large number (69) of intersecting entrances, driveways and streets along the Alternative 5 corridor.

Enhance Homeland Security: Alternative 5 would not significantly enhance homeland security since it provides a nominal increase in roadway capacity to accommodate an evacuation of traffic during an incident. Similarly, Alternative 5 does not provide a new alternative travel route to detour around incidents on other local roadways.

Improve the Quality of Life: Alternative 5 would modestly improve travel times on local roadways. However, the travel time along MD 355 (35.6 min.) would be over 50% longer than the travel time (23.2 min.) along Alternative 9A.



Environmental Impacts: The natural resource impacts under Alternative 5 are substantially less than the impacts under Alternatives 4 Modified, 8 and 9 since the improvements to the Alternative 5 roadways are generally limited to one additional through lane north of Middlebrook Road and a system of two-lane service roads that are generally located within developed commercial and residential areas along the corridor. Consequently, the impacts to wetlands, waterways, floodplains, forest, and parks are very minor.

General: The impacts to the adjacent communities are significant. The proposed service roads would displace three businesses and impact another 82 businesses. The service roads proposed with Alternative 5 could potentially result in long-term impacts on the customer base and survivability of the affected businesses due to loss of parking, reduced visibility, and more circuitous and less convenient access, closure of driveways from MD 355, loss of identity with the MD 355 corridor, and reduction in the area available to display inventory.

The business impacts are discussed in greater detail, as follows. Service roads would change the number and location of entrances to the businesses and, in some cases, make access more inconvenient or circuitous. For example:

- At the Middlebrook Square Shopping Center located in the southwest quadrant of the Middlebrook Road intersection, two driveways from the southbound lanes of MD 355 would be closed. This would substantially alter access from MD 355 by requiring customers to access the rear of the shopping center from Middlebrook Road or follow an even more circuitous route from Gunners Branch Road.
- At the Fox Chapel Shopping Center in the southeast quadrant of the same intersection, three entrances from the northbound lanes of MD 355 would be closed, leaving only one entrance from MD 355 at Gunners Branch Road. This would require motorists to make their way through the aisles of the grocery store parking lot in order to access the other businesses in the shopping center.
- From Station 115 to 119, the front entrance to Verizon, Cricket, and Carolina Furniture would be closed, and a new access provided from a service road in the rear of these businesses. From Station 180 to 192, the entrances to the Animal Hospital, the Flaming Pit restaurant, the Salvation Army store, Tri Peaks Shopping Center, and National Interest Security Company would be consolidated along a service road that would be accessible from MD 355 at the Professional Drive intersection. Construction of the service road would displace approximately 40% of the parking at Tri Peaks Shopping Center, and a large percentage of the parking at the Flaming Pit restaurant. This loss of parking could affect the volume of business in the long-term. At the Seven Eleven across the street, the entrance from MD 355 would be closed and access would be permitted only from the side street.



- Just south of Travis Avenue, the MD 355 entrance to the Mattress Mart would be closed, leaving only the entrance on Travis Avenue. The Mattress Mart sits well back from the road, therefore the loss of the only entrance from MD 355 could reduce the business' identity with the MD 355 corridor and affect the volume of customers.
- Between Watkins Mill Road and Montgomery Village Avenue, a new service road would be provided to consolidate the number of entrances to the car dealerships in Village Overlook. The service road would eliminate parking spaces where the car dealerships display their inventory, thus reducing the number of cars from which customers can choose. All of these changes have the potential to affect the viability of the businesses either immediately or over the long-term. Making the access more circuitous, changing the access to the rear or side of a business, and displacing parking spaces would affect the number of people who would shop at these businesses by making access more inconvenient, by reducing customer parking, by reducing the identity of the business with the MD 355 corridor, or by reducing the area available to display inventory.

In addition to the impacts to businesses, another major disadvantage of Alternative 5 is that it would provide far less highway capacity than other build alternatives (see **Table IV-1**, page IV-1). Because the M-NCPPC balances land use and transportation capacity in each area master plan, Alternative 5 would not be able to accommodate the level of growth that has been planned for the Gaithersburg, Germantown, and Clarksburg areas. Within each of these area master plans, the most intense development is proposed along the I-270 Corridor. In Gaithersburg and Germantown, this development area is known as the MD 355/I-270 Technology Corridor. M-NCPPC has projected future growth in the M-NCPPC planning areas that comprise the study area for the Midcounty Corridor Study, and their findings are reported in their Transportation Policy Area Review (TPAR) Report dated April, 2010. That report projects growth in households and jobs by 2040 as demonstrated in **Table VII-5**.

Table VII-5: Amount of New Development Planned by M-NCPPC

AREA	2010-2040	
	HOUSEHOLDS	JOBS
Clarksburg	9,811	16,465
Germantown	9,291	29,349
Gaithersburg	15,421	46,752
Montgomery Village/Airpark	75	2,946
TOTAL PLANNED GROWTH	34,598	95,512
Percentage that this Growth Represents of the Planned Growth in the Total Technology Corridor	43%	50%



The planned growth is essential for growing the economy, and to fulfill Maryland and Montgomery County objectives of enhancing the bioscience corridor along I-270 (see Pages 3-1 through 3-3 of the *Draft EER*). This planned economic growth relies on providing adequate capacity in the local transportation network to support the associated growth in households and jobs. To evaluate the capacity provided by each alternative, a screenline analysis was used to determine how each alternative would affect the number of vehicles traveling north and south through the study area on both the existing road network and the proposed alternative. Three screenlines (A, B, and C) were established across the northern, middle, and southern portions of the study area, respectively, crossing each of the primary north-south roadways (**Figure VII-8**). The nodes represent the locations where traffic was projected.

The results of the screenline analysis are shown in **Chart VII-2**. As depicted in the bar graph, Alternative 5 would result in the lowest projected north-south travel through the study area of any build alternative. This is because Alternative 5, despite reducing congestion and travel time along MD 355, would not substantially increase capacity or connectivity. While this finding may be viewed as beneficial by those who want to maintain the status quo, it would not support the master plan levels of growth of industry, office parks, R&D facilities, and other land uses in the MD 355/I-270 Technology Corridor. If Alternative 5 were selected, growth projections in the above planning areas would have to be substantially downsized and planned development would need to be reduced through local master plan amendments.

One agency commented that Alternative 5 would better serve the businesses along MD 355 than Alternative 8 or Alternative 9 because Alternative 5 would not divert traffic from the MD 355 corridor, thus sustaining the customer base for the businesses. As MCDOT discussed in the May 2013 *Draft EER*, the office parks, the industrial businesses, the research facilities, and the hospital do not rely on drive-by traffic for their customer base. Most of the businesses on MD 355 within the study area are “destination” businesses, such as big box stores, grocery stores, restaurants, furniture stores, and service providers (Verizon, dry cleaners, automotive repairs, equipment rentals, storage facilities, and financial services). “Destination” businesses are those businesses to which a customer will travel with that specific destination in mind. Local residents will continue to frequent the retail “destination” businesses even if their commute does not take them past these stores. In contrast, “opportunity” businesses, such as gas stations, convenience stores, and fast food establishments, are those businesses at which a passing motorist may decide to stop on the spur of the moment, even though these stops were not planned. It is the “opportunity” businesses that would suffer the most by diversions of traffic.

However, few of the businesses along MD 355 are “opportunity” businesses. In addition, if Alternative 5 were selected, the business impacts attributable to changes in access (described above) would be expected to negate any advantage gained by retaining all the drive-by traffic in the MD 355 corridor.

Conclusion: Alternative 5 does not adequately satisfy the project purpose and need, does not accommodate planned growth, has significant property and community impacts, adversely affects local businesses, does not conform to local planning, and is not recommended by the M-NCPPC Planning Board. Therefore, Alternative 5 is not a practicable alternative.

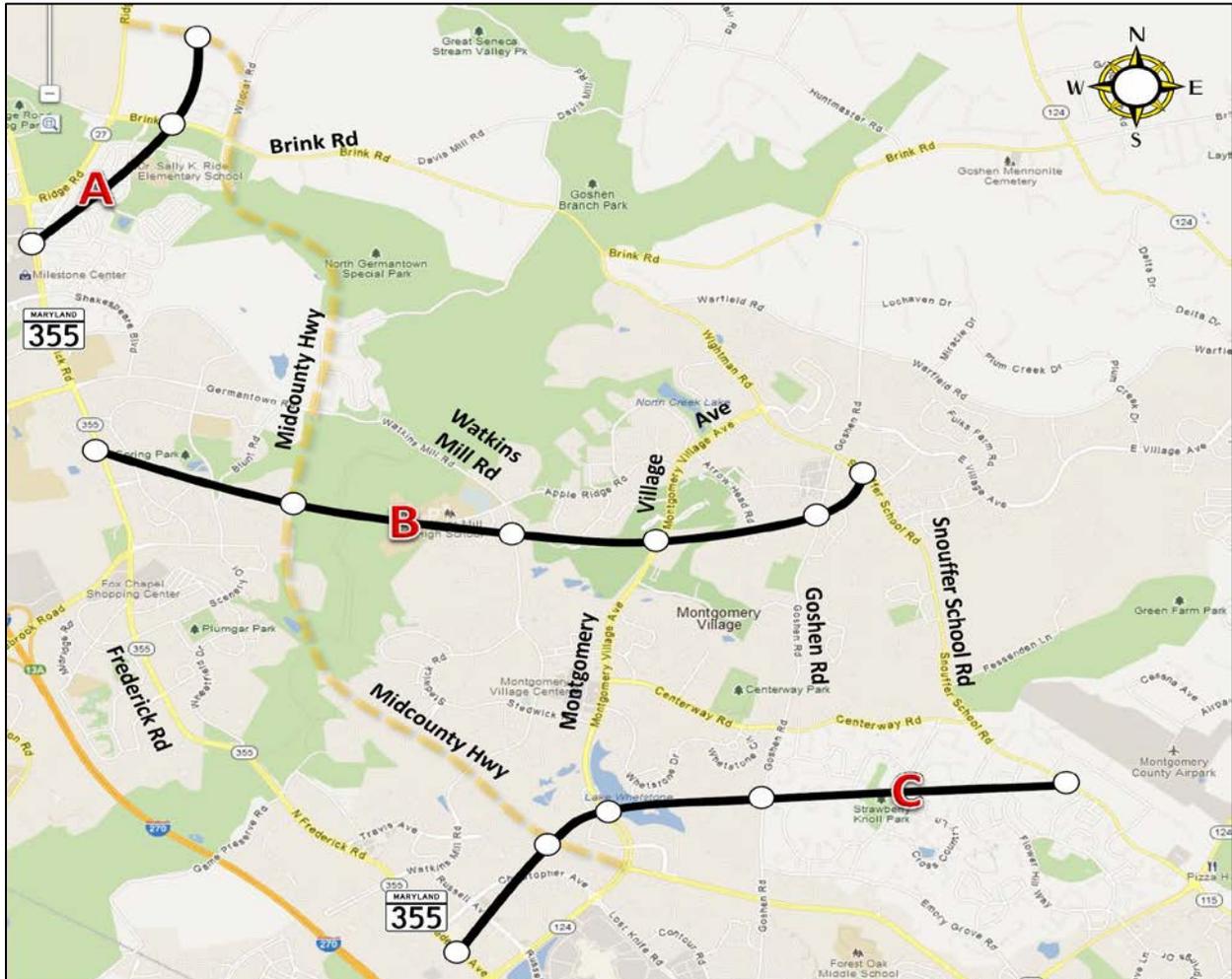


Figure VII-8: Screenline Locations

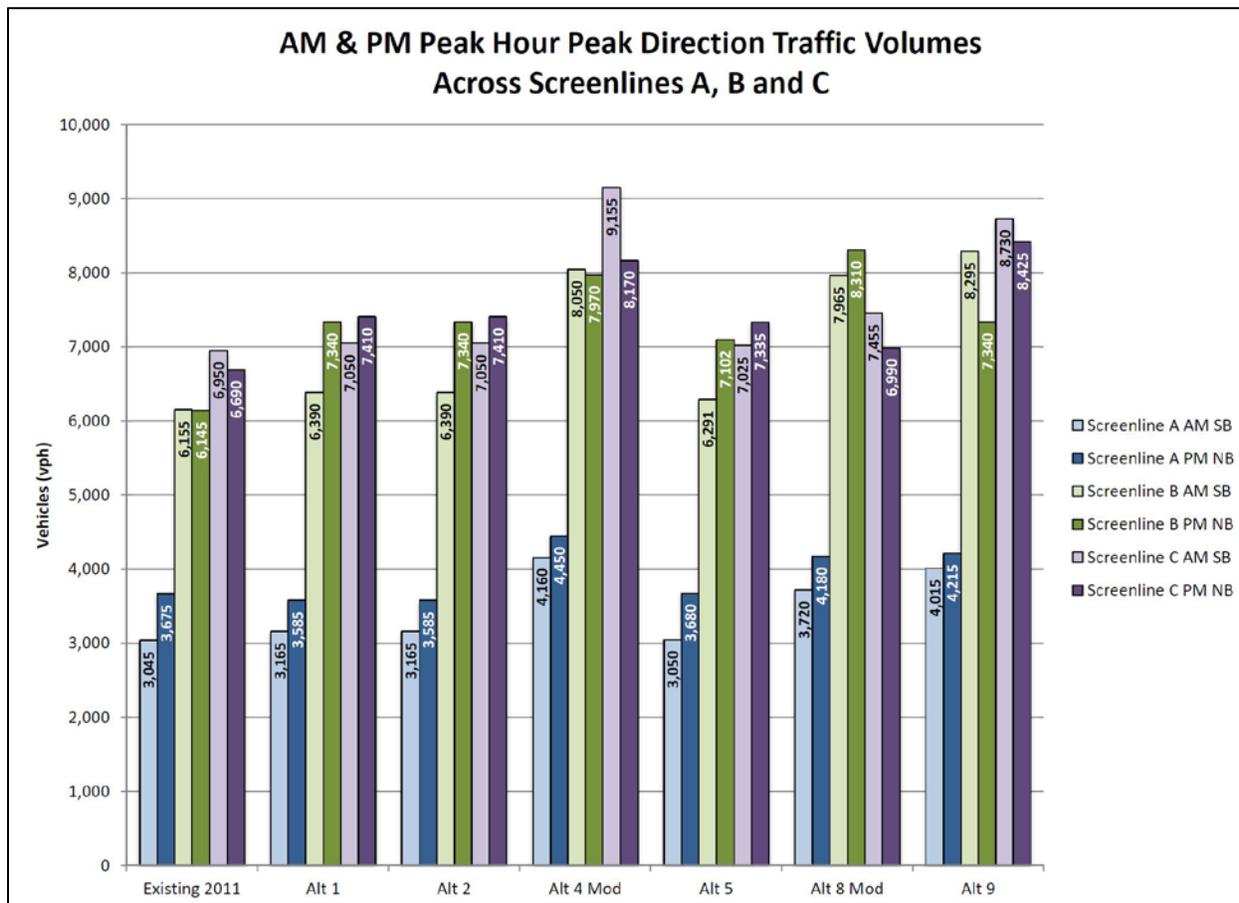


Chart VII-2: 2030 Traffic Projected to Cross Screenlines A, B, C in Peak Hour/Peak Direction

BRT on MD 355 North

M-NCPPC has recently completed the *Countywide Transit Corridors Functional Master Plan (CTCFMP)*, which identifies a planned 80 mile BRT network comprising ten corridors and the Corridor Cities Transitway. The CTCFMP was approved and adopted by the County Council on November 26, 2013. Two of the ten proposed corridors in the network are located along MD 355 and are identified as MD 355 North and MD 355 South. MD 355 South is located south of the study area and extends eight miles along the MD 355 corridor between the Bethesda Metro Station and the Rockville Metro Station. The Master Plan generally recommends separate dedicated lanes for this Corridor, which is south and outside the study area.

MD 355 North extends approximately 12 miles from the Rockville Metro Station to Redgrave Place in Clarksburg; the portion located north of Shady Grove Road is located within the study area. The northern segment of the transitway between Redgrave Place and Shakespeare



Boulevard is master planned to operate within mixed traffic on existing travel lanes. South of Shakespeare Boulevard, the system is generally master planned as a separate dedicated two-lane median transitway comprised of four travel lanes and two transit lanes. The planned lane configurations for portions of the MD 355 North corridor are typically based on repurposing two of the existing six travel lanes on MD 355 as dedicated transit lanes. However, it is important to note that the lane configurations are preliminary and the final lane determinations would be based on a detailed assessment of estimated ridership, operations, traffic analysis and potential environmental and community impacts.

Current county funding is supporting preliminary studies of BRT along the Georgia Avenue and Veirs Mill Road corridors by MTA/SHA. The County and the State also plan to initiate studies of the “high priority” corridors along MD 355 South and US 29 with \$10M in state funds made available from the new state gas tax revenues.

While various residents, coalitions and agency representatives have suggested that BRT be studied as an alternative to the roadway improvement alternatives currently included in the MCS, the County Master Plan does not view BRT as a substitute alternative to the proposed roadway improvements but as a transit improvement that should further enhance travel in the study area.

It is important to note that Midcounty Highway (Alternative 9A) remains within the County Master Plan as a key transportation element to support planned growth within the study area. The proposed roadway improvement alternatives in the MCS provide numerous transportation benefits that cannot be solely provided by MD 355 BRT alone including additional capacity, improved safety, and accommodation of planned growth, improved travel times, and improved mobility for all. Of special importance for the safety and security of the community is the improved response time for police services and emergency vehicles.

The capacity of MD 355 BRT, for example, cannot replace the capacity provided by a new four-lane arterial highway (Alternative 9A). Furthermore, a significant portion of the MD 355 BRT corridor is intended to be implemented by repurposing two of the existing six travel lanes, which will reduce vehicular capacity within the study area. Consequently, BRT would potentially need to provide capacity and attract ridership that is equivalent to the two repurposed lanes on MD 355 as well as the four lanes associated with the master planned Midcounty Highway. The daily ridership estimates (approximately 21,500) for the MD 355 North BRT are less than one half the estimated daily traffic volumes on the proposed Mid County Highway by 2040. Furthermore, half of the estimated ridership on MD 355 BRT will be people who are currently using existing transit facilities, clearly indicating that the BRT cannot supplant the estimated traffic capacity of the proposed project, or meet the forecasted demand.

Finally, the ability to fund and implement MD 355 BRT North has not been determined and cannot be implemented in the near future. Implementation of the MD 355 North BRT would



likely take many years to fund since its priority is behind two other multi-billion transit priorities in the County: the Purple Line and the Corridor Cities Transitway, which will also require millions of additional dollars in operating cost subsidies. In summary, MD 355 BRT is a long term transit improvement that will further enhance transportation in the study area but that will not serve as a substitute for the master planned roadway improvements.

In the July 2011 *Countywide Bus Rapid Transit Study*, prepared by Parsons Brinkerhoff, 20 potential BRT corridors were evaluated. Of these, 16 were advanced for refined assessment. MD 355-North BRT was evaluated as a 14.6-mile corridor with 16 stations from the MD 355/Stringtown Road intersection to Rockville Metro Station. According to the Parsons Brinkerhoff study, MD 355-North would require the largest operating and maintenance cost (\$41 million per year, almost twice the O&M cost of the corridor with the next highest O&M cost, and more than five times the median O&M cost of all corridors). Of this annual cost for O&M, only 25% would be recovered by fares, thus the annual O&M subsidy would need to be as high as \$30 million per year.

Conclusion: In consideration of the above issues, MCDOT's position is that development of a BRT network, and the eventual implementation of one or more BRT projects, is on a separate track from the Midcounty Corridor Study. Furthermore, the Midcounty Highway and BRT need not be viewed as an "either/or" proposition. Transit serves people whose residence or destination is within close proximity of a transit station. Highways serve many users who cannot take advantage of transit, including transporters of goods and services, and those whose destination is not served by the transit corridor. Each mode provides some independent functions, and appeals to specific users. Transit should be judged on its benefits, such as ridership, reductions in travel time, reductions in VMT, and cost-effectiveness. It is not necessary that a transit project be able to serve as a substitute for a highway project, or vice versa, in order for either project to be deemed cost effective. Therefore, MCDOT believes BRT should be considered on its own merits, and the Midcounty Highway should be considered on its own merits.

5. *Combination Alternatives*

Some agencies and citizens suggested that various combinations of alternatives would better serve the project needs than Alternatives 8 or 9, without incurring as much impact to the natural environment. The following combinations have been suggested:

Alternative 5 in combination with Alternative 4 Modified - Alternative 5 by itself is already effective at addressing congestion, travel time, and safety. Its drawbacks are that it has substantial impacts on businesses and does not provide enough transportation capacity to accommodate the planned land use. Combining Alternative 5 and Alternative 4 Modified would address the capacity deficit; however, this combination would have several negative



consequences that make it unacceptable. This alternative would maximize impacts to businesses, combining the impacts to the retail businesses along MD 355 with the impacts to businesses in the Montgomery Airpark Industrial Park. Third, this alternative would combine the partial acquisition from 180 properties along Alternative 5 with the partial acquisition from 353 properties along Alternative 4 Modified (totaling 533 partial property acquisitions). Additionally, the transportation capacity added would be much less than the Preferred Alternative.

Alternative 5 in combination with Alternative 2 - While Alternative 2 evaluated small scale improvements at 16 intersections, only eight of the 16 intersections would be improved to an acceptable LOS. Seven of these eight intersections would also be improved under Alternative 5. Therefore, the combination of these two alternatives would reduce congestion to an acceptable level at only one more intersection than Alternative 5 alone. Like Alternative 5, this combination would adversely impact several businesses along MD 355, fail to provide adequate capacity to accommodate the planned land use and not eliminate any of the challenges/impacts described previously for Alternative 5. Alternative 5 would provide substantially less vehicular, pedestrian and bicycle connectivity benefits than Alternative 9 and poses potential conflicts with the newly master planned BRT route along MD 355.

Alternative 4 Modified in combination with Alternative 2 - This combination would reduce congestion at only three more intersections than Alternative 4 Modified alone, resulting in eight intersections with unacceptable LOS on MD 355. As with Alternative 4 Modified, the capacity improvements provided by this combination alternative would be furthest from MD 355. This distance from MD 355, and the limited number of east-west connections between the Alternative 4 Modified corridor and the MD 355/I-270 Technology Corridor, would limit its ability to support planned growth in the Technology Corridor. This combination alternative would also have the same drawbacks as Alternative 4 Modified, previously discussed.

Conclusion: In consideration of these findings and the limited improvements gained from these new combination alternatives, these alternatives are not considered practicable alternatives.

6. *Alternative 8*

Alternative 8, the truncated version of Alternative 9, would result in a 4,200-foot gap in Midcounty Highway between Watkins Mill Road and Montgomery Village Avenue. This alternative was proposed for the purpose of avoiding the aquatic impacts of Alternative 9 on Whetstone Run and associated wetlands and floodplain, south of Watkins Mill Road. Since Alternative 8 was first proposed, MCDOT has further analyzed the aquatic impacts of Alternative 9, reducing the wetland impacts in this area to 1,857 square feet and the floodplain impact to 37,386 square feet (0.86 acres).



The gap in the Midcounty Highway resulting from Alternative 8 would have several undesirable consequences. Traffic that wishes to continue along Midcounty Highway would travel by way of local roads such as Stedwick Road, Russell Avenue, and Christopher Avenue. In addition to the resultant increase in through traffic on these local roads, Alternative 8 would be less effective than Alternative 9 in terms of reducing the projected crash rate along the corridor (**Chart IV-1**, page IV-7), reducing the number of congested intersections (**Figure VII-9**), and diverting traffic from MD 355 (**Chart VII-3**). In addition, the gap would reduce the amount of traffic projected to use Alternative 8 between Middlebrook Road and Watkins Mill Road by 42% compared to Alternative 9. However, the reduced traffic volume would still warrant construction of four lanes; therefore, Alternative 8 would result in substantially reduced effectiveness with no corresponding cost savings. Finally, Alternative 8 would provide only 17.9 lanes miles of new highway capacity (**Table IV-1**, page IV-1), a 20% reduction compared to Alternative 9, which would necessitate a reduction in planned growth.

Conclusion: Alternative 8 will result in a substantial reduction in transportation and economic benefits for a very small reduction in aquatic impacts. Consequently, Alternative 8 is not a practicable alternative.

7. *Northern Terminus Option B*

Since Northern Terminus Option B was first suggested by MDE, MCDOT has consistently expressed its concerns related to operations and safety. The June 2010 Draft Alternatives Retained for Detailed Study report recommended dismissing Option B and presented a number of concerns with respect to operations, lack of access control, the introduction of driveways, lack of a direct connection to Snowden Farm Parkway, and impacts to residences.

By letter dated October 15, 2010, MCDOT agreed to study both Northern Terminus Option B and Northern Terminus Option D in greater detail, to ensure there would be at least one viable alternative to Option A. However, Option B has operational and safety concerns caused by the dogleg movement on Brink Road/Ridge Road/Snowden Farm Parkway, and the merger of two traffic corridors (Midcounty Highway and Brink Road) onto a section of Brink Road that allows access to residential properties.

Compared to Option A and Option D, Option B would have the following disadvantages:

- Option B would introduce 13 driveways and five intersections to an otherwise access-controlled roadway. Alternately Options A and D would have only one un-signalized intersection (Wildcat Road) and no driveways.

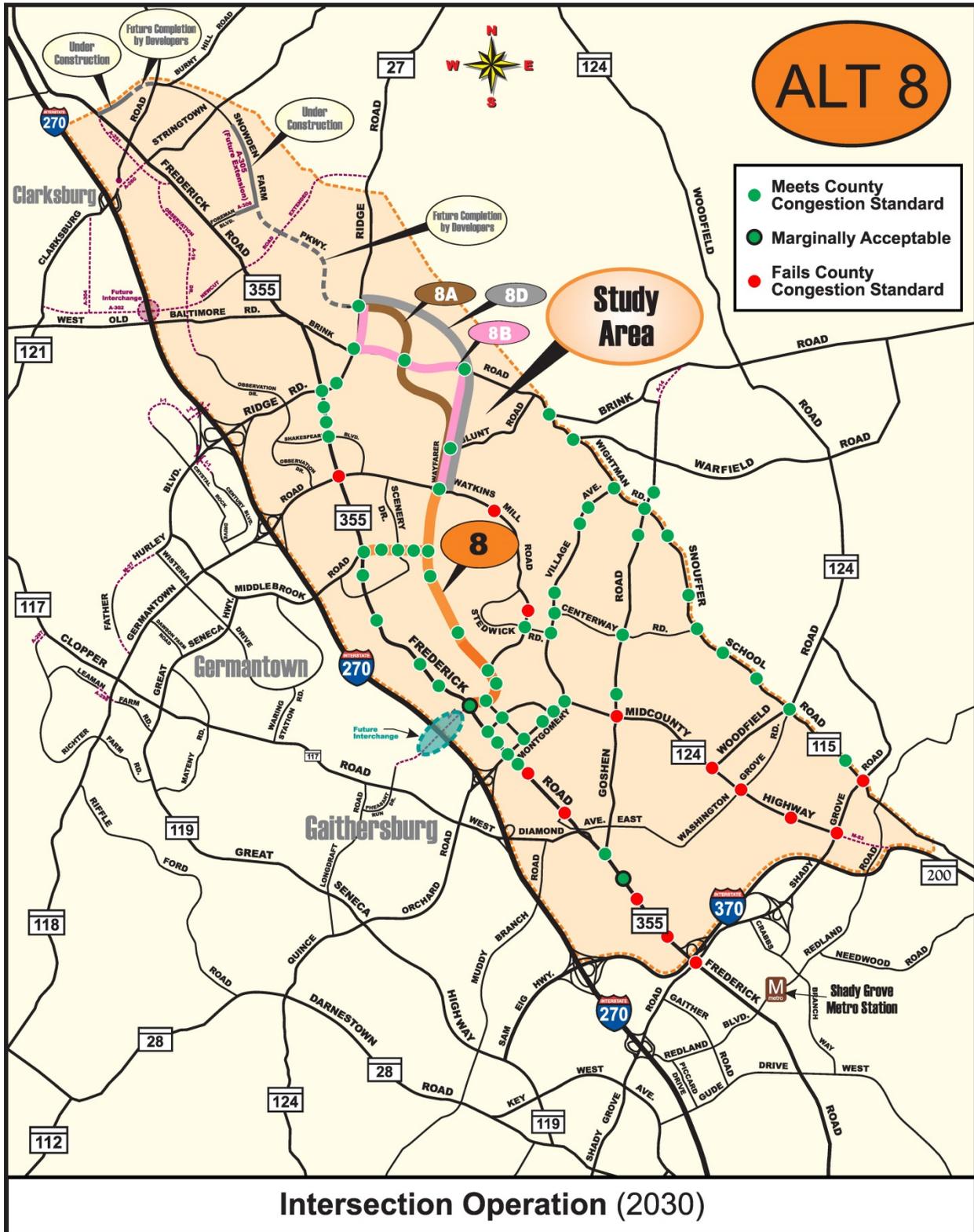
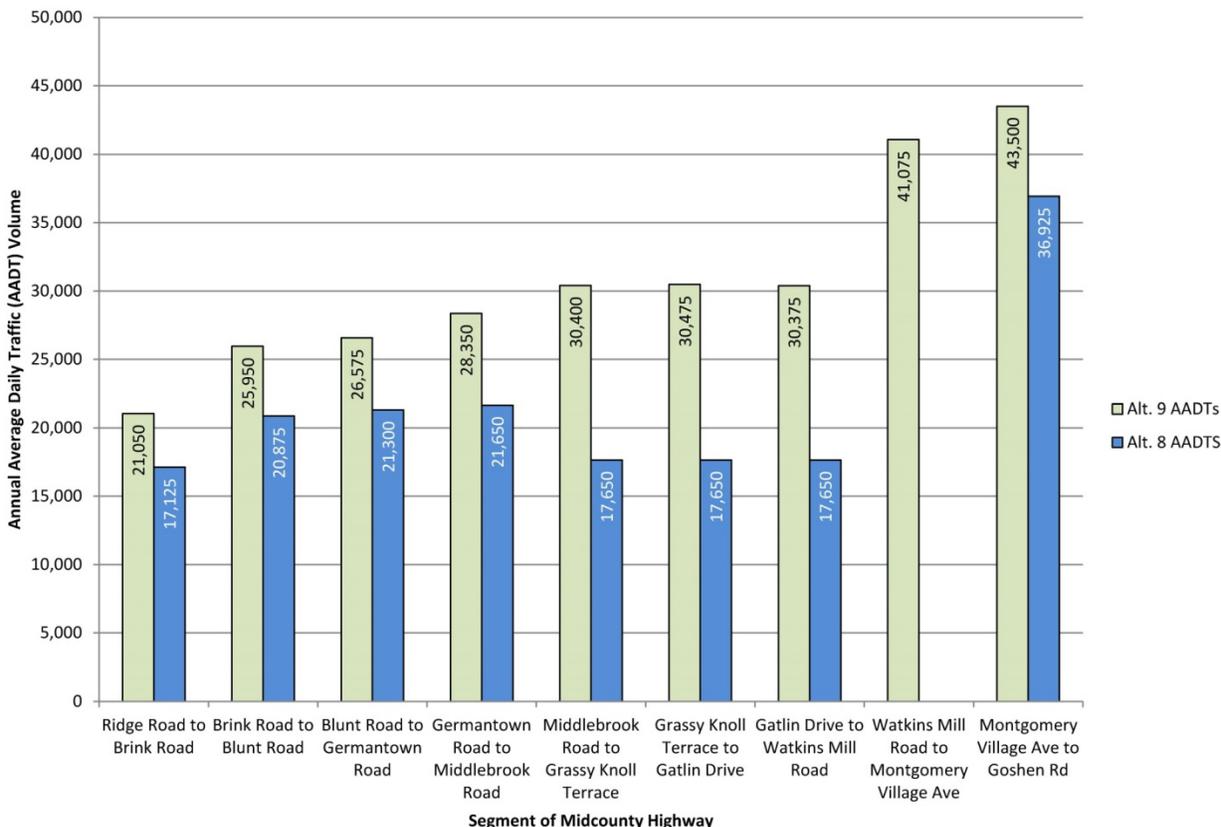


Figure VII-9: Alternative 8 - Intersection Operation (2030)

Chart VII-3: 2030 AADTs on Midcounty Highway, Alternative 9 vs. Alternative 8



- Option B would require north-south Midcounty Highway traffic to make three turns at successive intersections. Traffic analyses indicate that these turns would result in long queues and weaving at the Ridge Road/Brink Road and Ridge Road/Snowden Farm Parkway intersections, making the intersections operate at an unacceptable level of congestion and significantly increasing the travel time compared to Option A and Option D. **Table VII-6** presents the revised travel time along each of the alternatives that include a Northern Terminus Option. The revised travel times reflect the results of the SimTraffic analysis that was conducted after the *Draft EER* was circulated (see discussion in **Section IV**). It is apparent from the table that travel times are substantially greater along Option B versus Option A and Option D.

In addition to the longer travel times, Option B also has several operational disadvantages:

- It is highly undesirable to design a major highway that requires through traffic to make successive left and right turns along the route. Such a pattern, commonly referred to as a “dog-leg” introduces inefficient merging, lane shifting and weaving operations which



will reduce intersection capacity, increase travel times, and increase opportunities for crashes.

- Option B would also violate driver expectancy by introducing a 1.5-mile segment of uncontrolled-access highway (along Brink and Ridge Roads) within a route that would otherwise have partial control of access both to the north and to the south. This could result in increased potential for crashes, particularly since the sudden change in access control would not be expected by motorists that are unfamiliar with the area.
- With Option B, regional Midcounty Highway traffic would be routed along an existing local road (Brink Road). Local residents would lose a portion of their property, would be subjected to higher noise levels, would be subjected to higher traffic volumes in front of their homes, would experience more difficulty making left turns in and out of their driveways, and would have to contend with higher-speed regional traffic. Mixing local and regional traffic along the corridor would increase the potential for crashes.
- Merging two highways (Brink Road and Midcounty Highway) into a single corridor would make it difficult to add future capacity to either highway, since Option B would displace much of the front yards of the adjacent properties, and would require relocation of well heads. Any additional widening in the future would likely lead to residential displacements.
- Option B would impact 24 more residential properties than Option A and 17 more than Option D.
- The M-NCPPC Planning Board supports the selection of Option A.

Table VII-6: Travel Time Comparison of the Northern Terminus Options Travel Times

DIRECTION		ALTERNATIVE						
		1	8A	8B	8D	9A	9B	9D
Peak Hour Travel Time between Ridge Rd/Snowden Farm Pkwy Intersection and Goshen Rd/Midcounty Hwy Intersection	Southbound AM Peak	26	17	22	17	12	16	12
	Percent Change	0	-35%	-15%	-35%	-54%	-38%	-54%
	Northbound PM Peak	26	18	23	18	11	14	11
	Percent Change	0	-31%	-12%	-31%	-58%	-46%	-58%

Conclusion: In summary, Option B would violate many of the principles of highway design, including safety practices. Due to the resulting unacceptable congestion, the travel time, the numerous access points, the weaving, the undesirable grade, the dog-leg movements for through traffic, and the elimination of access controls, Option B would fail to satisfy the purpose and need and is not a practicable alternative.



8. Northern Terminus Option D

MCDOT developed Option D as an alternative to Option A in response to concerns from M-NCPPC Parks Department staff that Option A would impact a mature, high-quality, forest relatively free of invasive species. Following a thorough analysis of Option D, the following disadvantages have been identified:

- Option D would introduce a new four-lane highway through an existing residential area on Brink Road;
- Option D would require the displacement of one residence, 21304 Lawland Court;
- An additional three properties with water supply wells and/or septic systems that could be impacted by this alignment;
- Option D would impact 3.8 more acres of forest than Option A (a 5% increase);
- Option D would encroach into the Agricultural Reserve, impacting 13.8 more acres (78% more) of prime and statewide important farmland than Option A. The Montgomery County Planning Board as well as many commenters were concerned with the potential for pressure to develop lands along Option D in the Agricultural Reserve or adjacent lands;
- Option D would be constructed on lands previously not identified for development;
- Option D would therefore not conform with the area master plans; and
- The M-NCPPC Planning Board, owner and operator of the affected parkland unanimously expressed its preference for Option 9A over Option 9D.

Conclusion: In view of the numerous land use, community and property owner impacts resulting from Option D, Option D is not a practicable alternative.

D. Recommended Structure Types and Dimensions at Water Resource Crossings – Preferred Alternative 9A

The recommendation of Alternative 9A as the Preferred Alternative includes the following structure types and dimensions at the stream and wetland crossings (all impacts numbers based on base mapping in the *Draft EER*):

- An 80-foot long single-span bridge with 18 feet of under clearance is proposed at this location, avoiding impacts to WUS 69 and Feature W 70 (**Figure VII-10**).

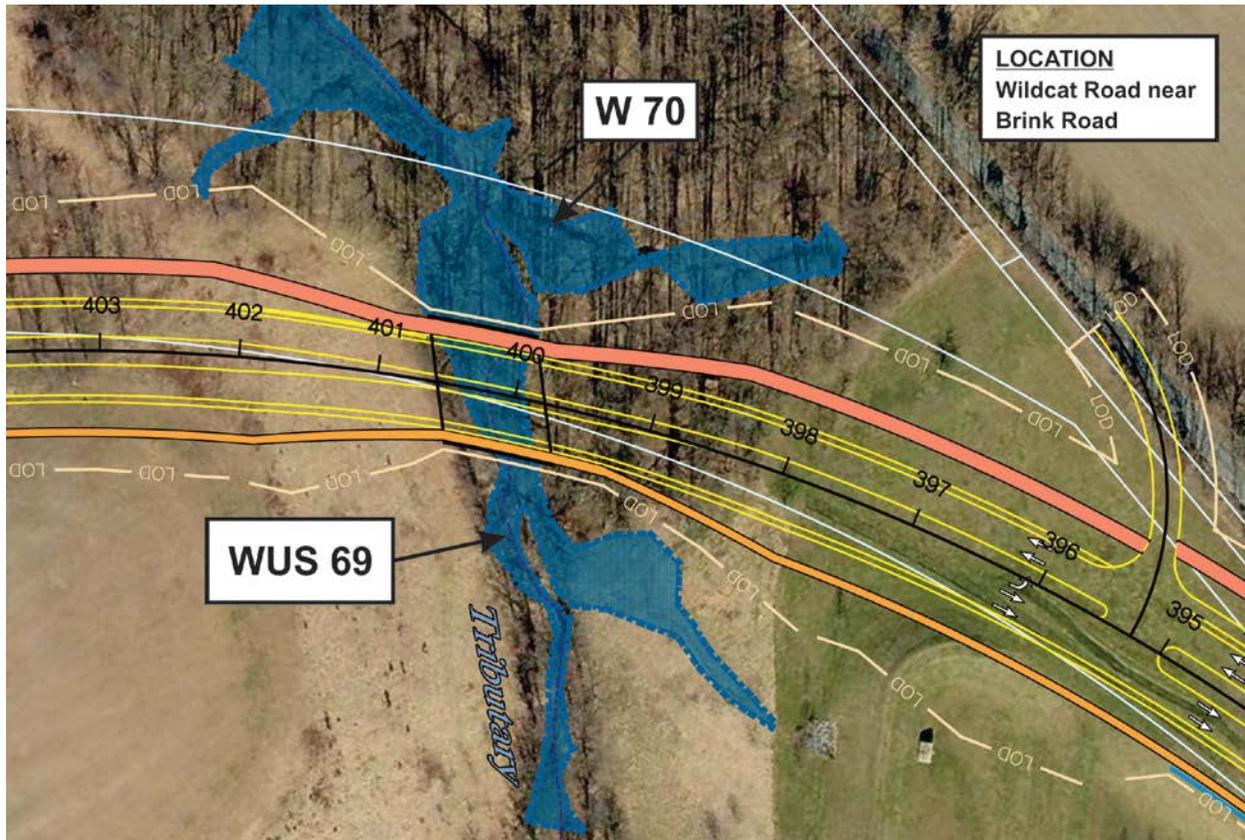


Figure VII-10: Location of WUS 69, W 70

- The alignment was adjusted in this area to avoid the forested wetlands abutting WUS 71. Stream impacts here total 229 LF (**Figure VII-11**).
- Construction of a 170-foot long bridge in the vicinity of Station 265 that would span Brandermill Tributary and the wetlands (W 79). Relocation of the Seneca Creek Greenway Trail would result in the discharge of fill in 0.2 acres of palustrine forested wetlands (**Figure VII-12**).

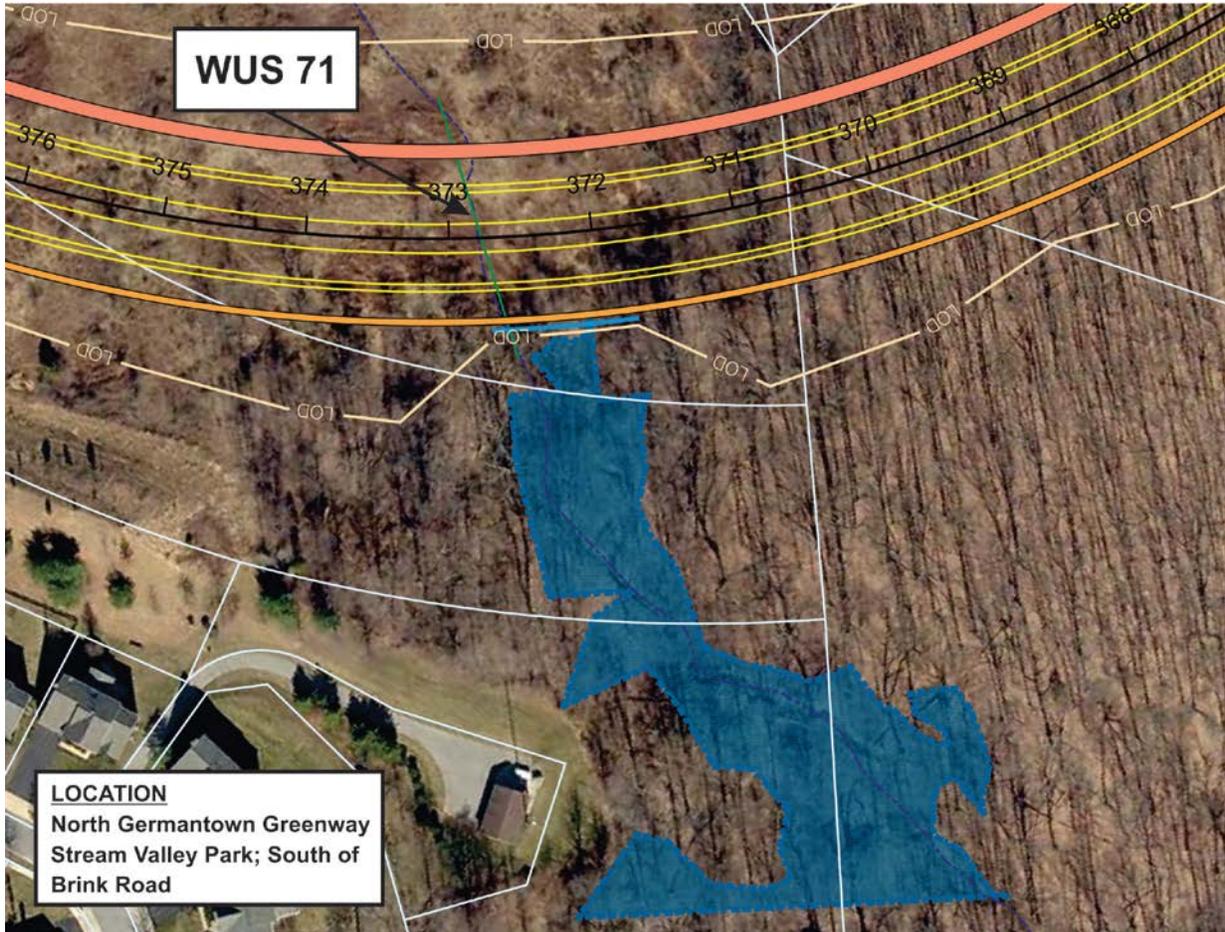


Figure VII-11: Location of WUS 71

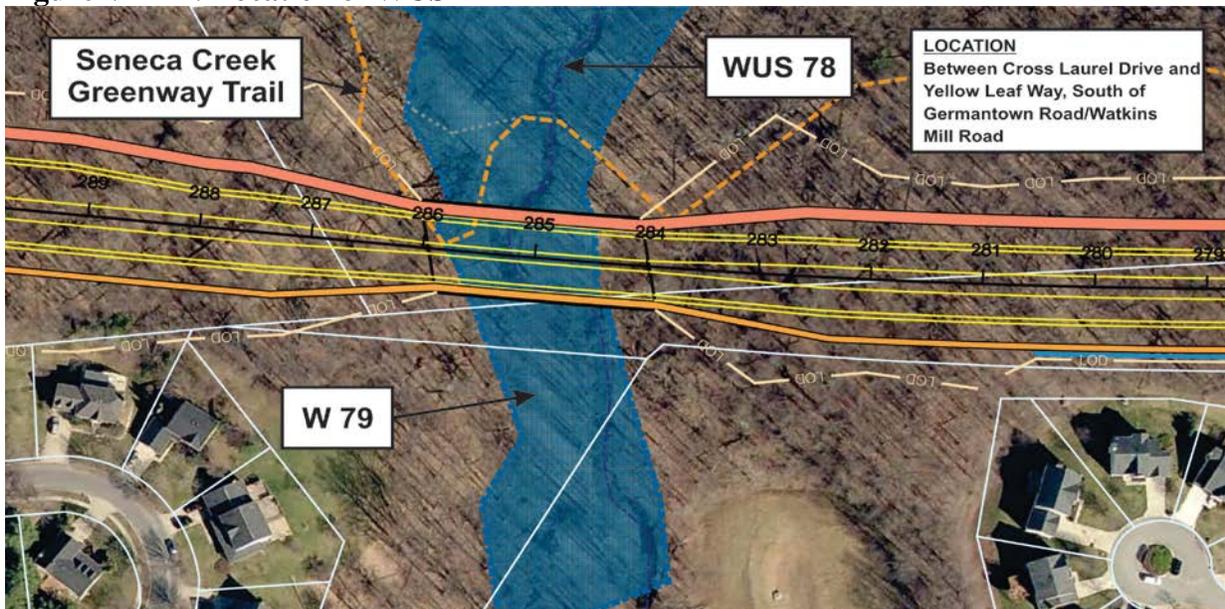


Figure VII-12: Location of WUS 78 and W 79

- Construction of a 500-foot, three-span bridge in the vicinity of Station 237, spanning both branches of Seneca Creek, and resulting in the discharge of fill in 0.50 acres of palustrine forested wetland (W 77). Prior to obtaining concurrence on the Alternatives Retained for Detailed Study, MCDOT presented an analysis of alternative bridge lengths for this crossing to the study team. A specific bridge length was not agreed upon, however, the agencies expressed their concern that both branches of the stream be spanned, and that there be no stream relocation, armoring, or piping of either branch. MCDOT is proposing a 500-foot bridge which would address all of these concerns, as well as avoid any loss of benthic and stream bank habitat, avoid impacts to the geomorphology of the stream, preserve fish passage, maintain the existing riparian wildlife corridor, pass the 100-year flood without increasing backwater elevation on developed properties, and span the Seneca Creek Greenway Trail (**Figure VII-13**).
- An unnamed ephemeral channel (Feature 74) that conveys storm water from the Clusters of Stedwick community to wetland W 63 would be piped at Station 204, resulting in the discharge of fill in 0.21 acres of palustrine forested wetland. Feature 74 is not believed to constitute a water of the U.S., but this will be determined by the regulatory agencies. A bridge is not warranted at this location for the following reasons: the profile of the highway is too low to allow more than a few feet of under clearance beneath a bridge, there is no riparian wildlife corridor to be accommodated by constructing a bridge since the east side of the highway is developed, there are no formal park trails to be accommodated beneath the highway, the channel does not provide aquatic habitat, and there are no unique or sensitive aquatic species in the channel (**Figure VII-14**).

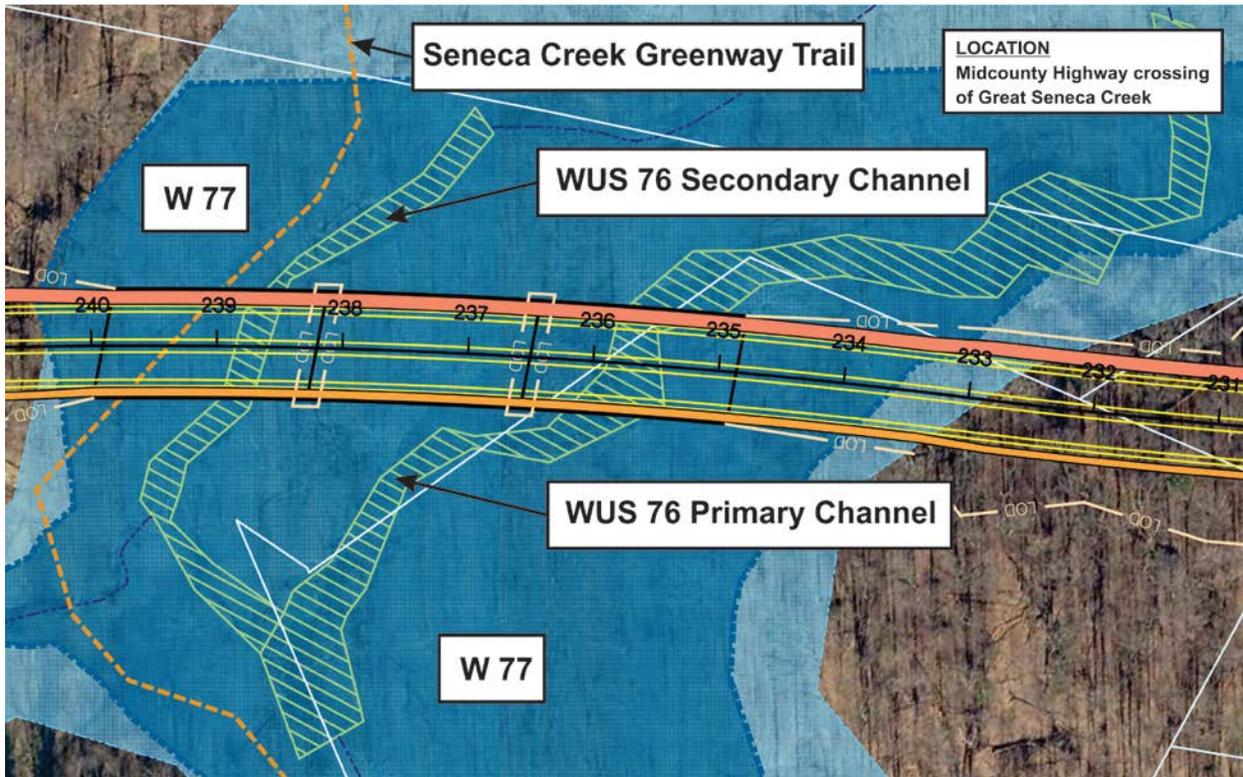


Figure VII-13: Location of WUS 76 and W 77

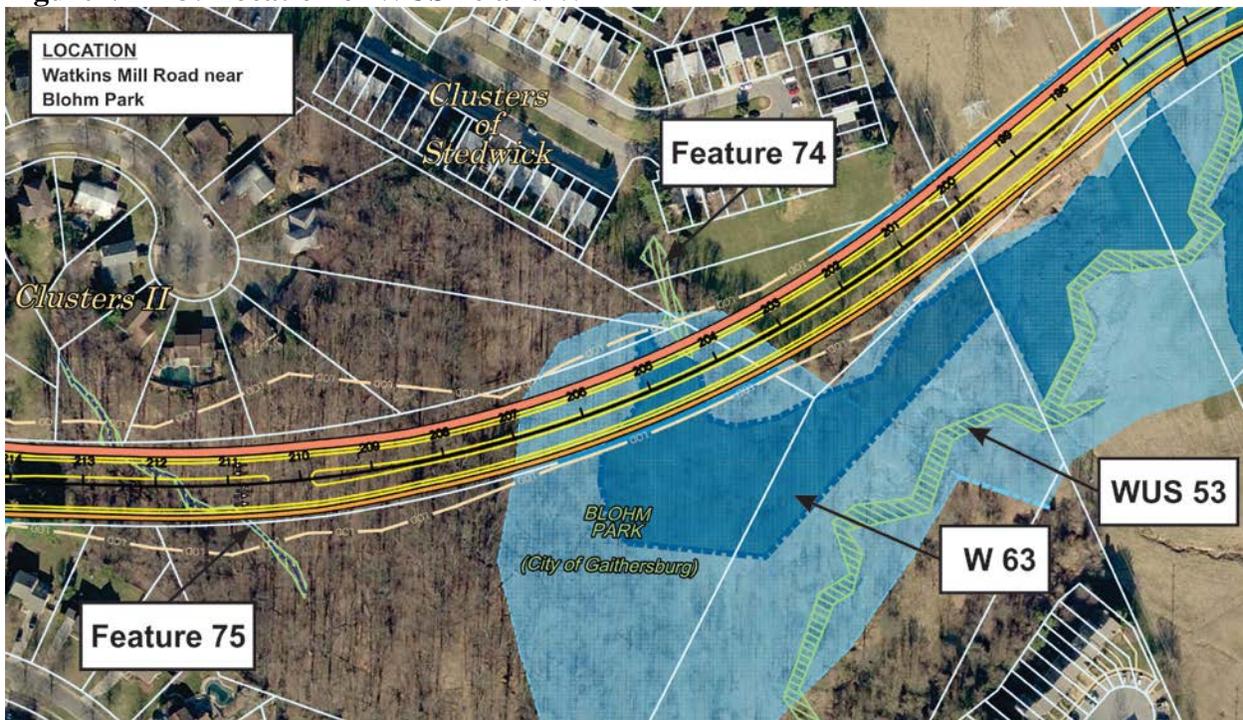


Figure VII-14: Location of WUS 53, W 63, Feature 74, and Feature 75



- Relocation of 989 feet of Whetstone Run (WUS 53) and construction of a 230-foot, two-span bridge over Whetstone Run and wetlands W 58, W57, W 61/62, and W 64 in the vicinity of Station 195. The construction of a center pier would permanently impact 731 square feet (0.017 acres) of wetland. The 230-foot bridge length would result in an increase in backwater elevation of one foot during a 100-year storm event. The increased flooding would be confined to a property owned by the City of Gaithersburg which consists of wetland and floodplain. No developed property would be affected by the increased flooding. Eleven feet of under clearance would provide deer and hiker passage. The existing hiking trail would be relocated to pass beneath the bridge (**Figure VII-15**).
- Widening of the existing bridge carrying Watkins Mill Road over Whetstone Run (WUS 53). The length, under clearance, and pier location of the existing bridge would be duplicated with the widening. There would be no discharge of fill in wetlands or stream (**Figure VII-16**).

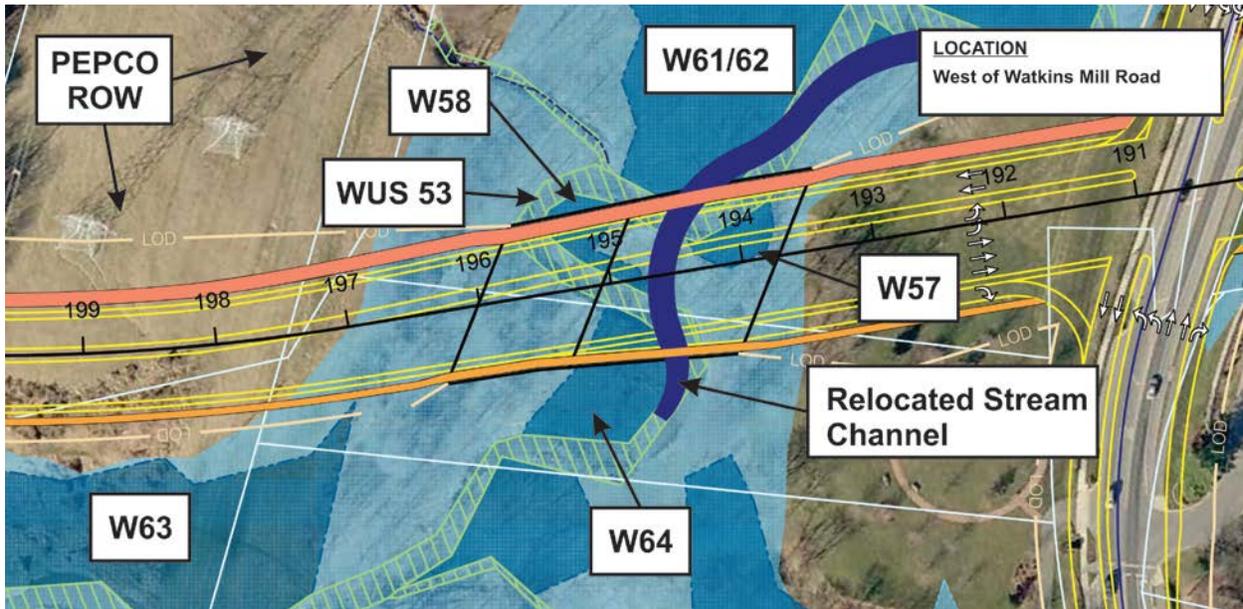


Figure VII-15: Location of WUS 53, W 57, W 58, W 61/62, W 63, and W 64

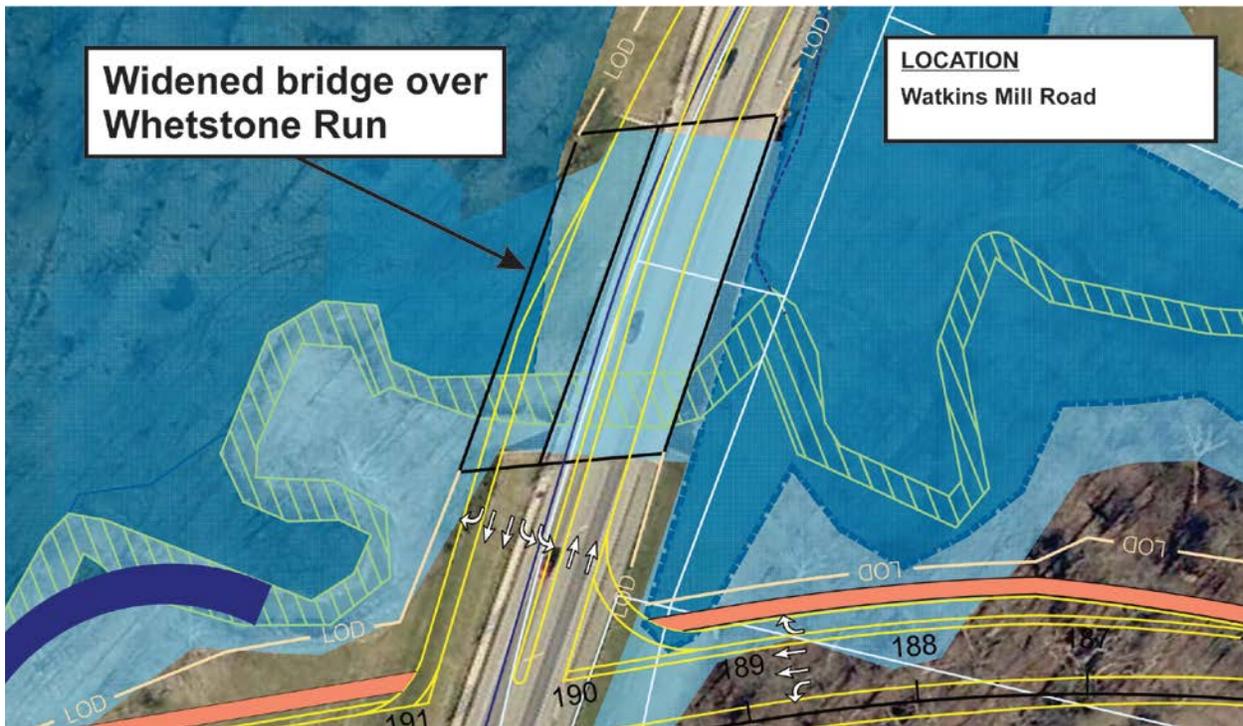


Figure VII-16: Widened Bridge on Watkins Mill Road over Whetstone Run

- Construction of a retaining wall from approximate Station 182+80 to approximate Station 183+45 resulting in the discharge of fill in 1,857 square feet (0.017 acres) of wetland W 57A (**Figure VII-17**).
- Construction of a 150-foot culvert in Walkers Run (WUS 66) in the vicinity of Station 165. At approximate Station 163, fill would be discharged in 3,463 square feet (0.079 acres) of a small, low-quality, depressional, palustrine wetland (W 67A) fed by untreated stormwater runoff. This wetland is unavoidable due to the proximity of adjacent residences. The hydraulic opening of the culvert in Walkers Run would be determined during final design; however, it would have an opening similar to the 50 square foot opening of the eight-foot diameter culvert located a short distance upstream at Christopher Avenue. The culvert would be designed to accommodate fish passage. A bridge is not proposed at the crossing of Walkers Run due to the following: the in-stream habitat is marginal, there are no unique or sensitive aquatic species in the stream, the existing riparian wildlife corridor is marginal for deer as the narrow forested stream corridor is bisected three times upstream by existing pipe culverts, there are no formal hiking trails to be accommodated, and the profile of the highway would allow very little underclearunder clearance (**Figure VII-18**).

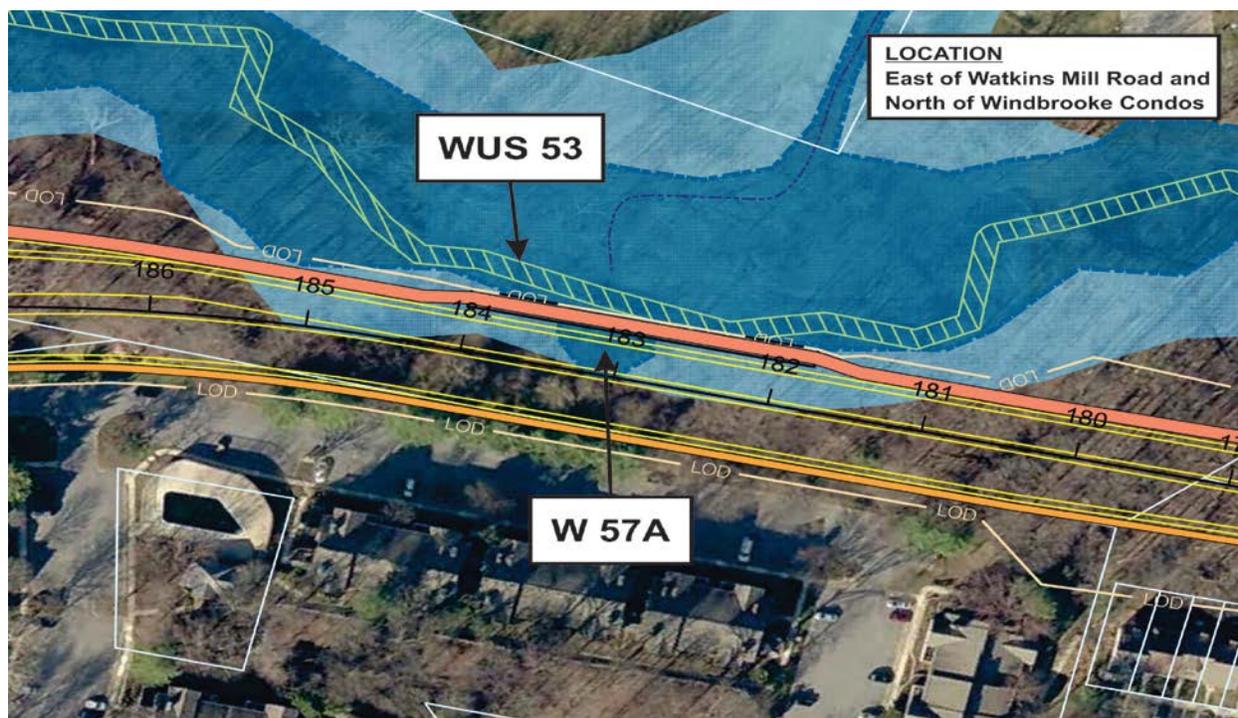


Figure VII-17: Location of WUS 53 and W 75A

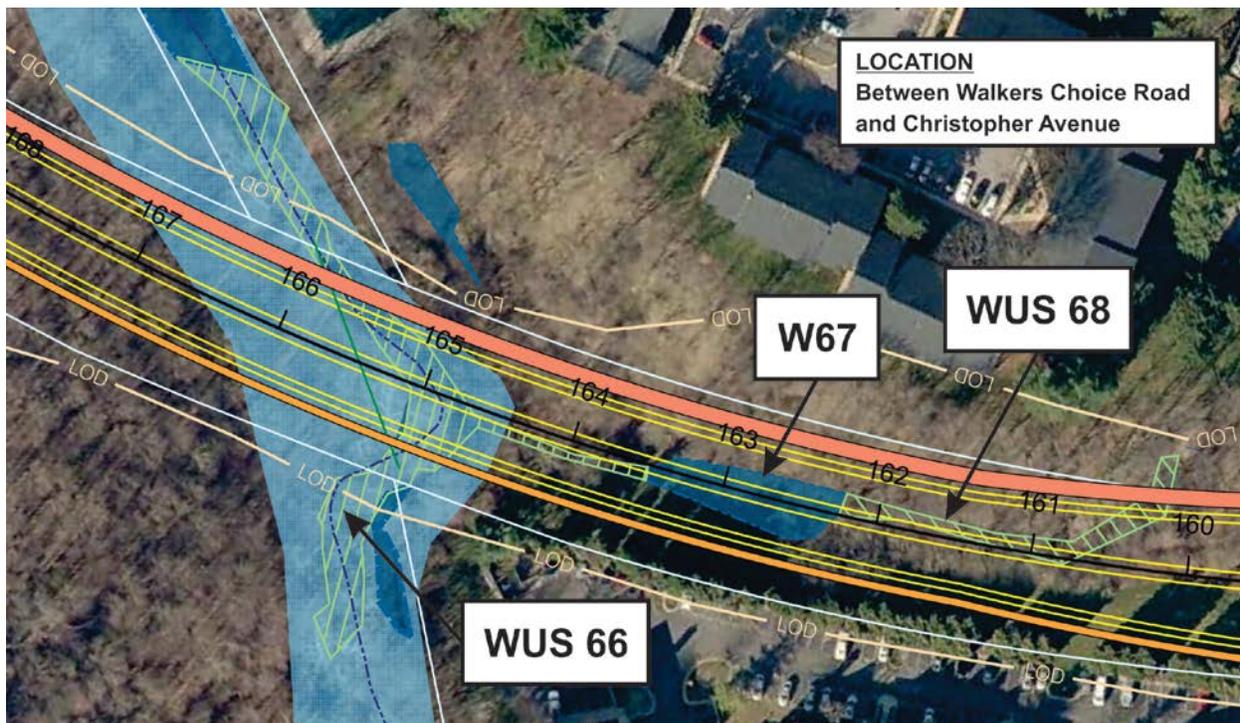


Figure VII-18: Location of WUS 66, W 67, and WUS 68

- The headwalls of an existing culvert carrying Whetstone Run (WUS 52) beneath existing Midcounty Highway in the vicinity of Station 125 would be reconstructed to a higher elevation to accommodate the widening of Midcounty Highway without increasing the culvert length. Approximately ten linear feet of stream would be affected by the construction (**Figure VII-19**).
- The headwalls of an existing culvert carrying Whetstone Run (WUS 52) beneath Goshen Road in the vicinity of 119 would be reconstructed to a higher elevation to accommodate the widening of Goshen Road without increasing the culvert length. Approximately 60 linear feet of stream would be affected by the construction (**Figure VII-20**).

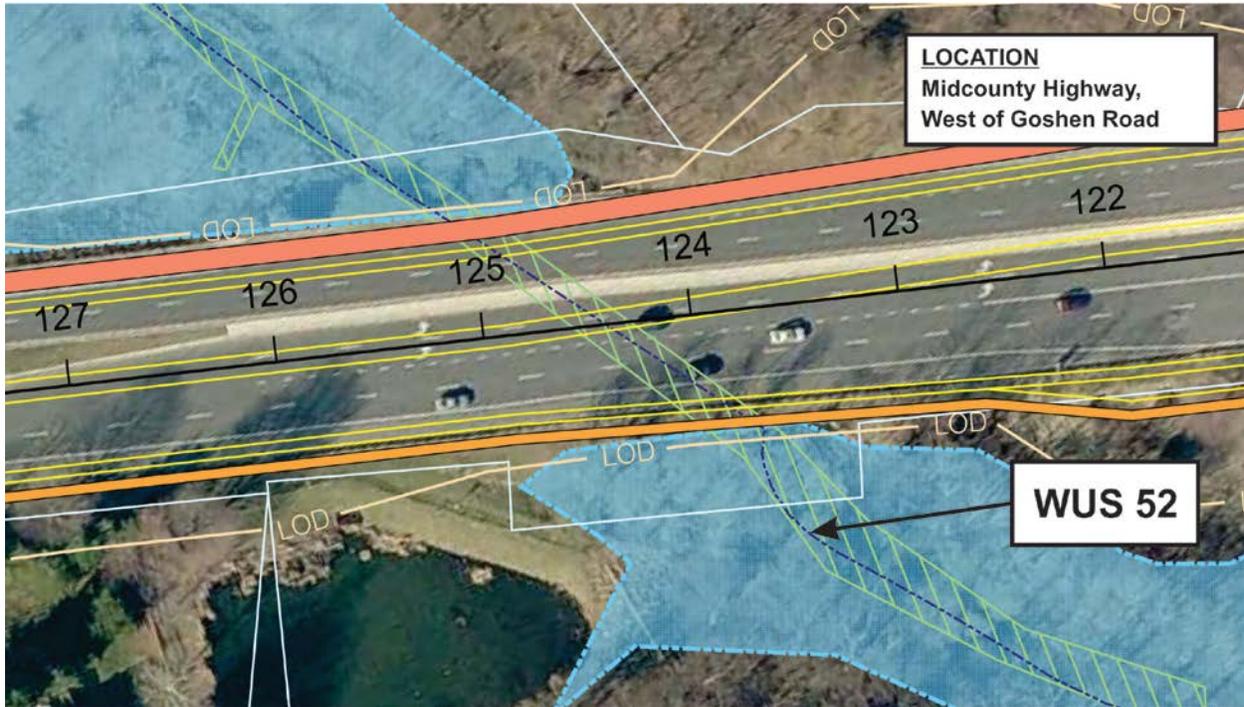


Figure VII-19: Location of WUS 52 west of Goshen Road

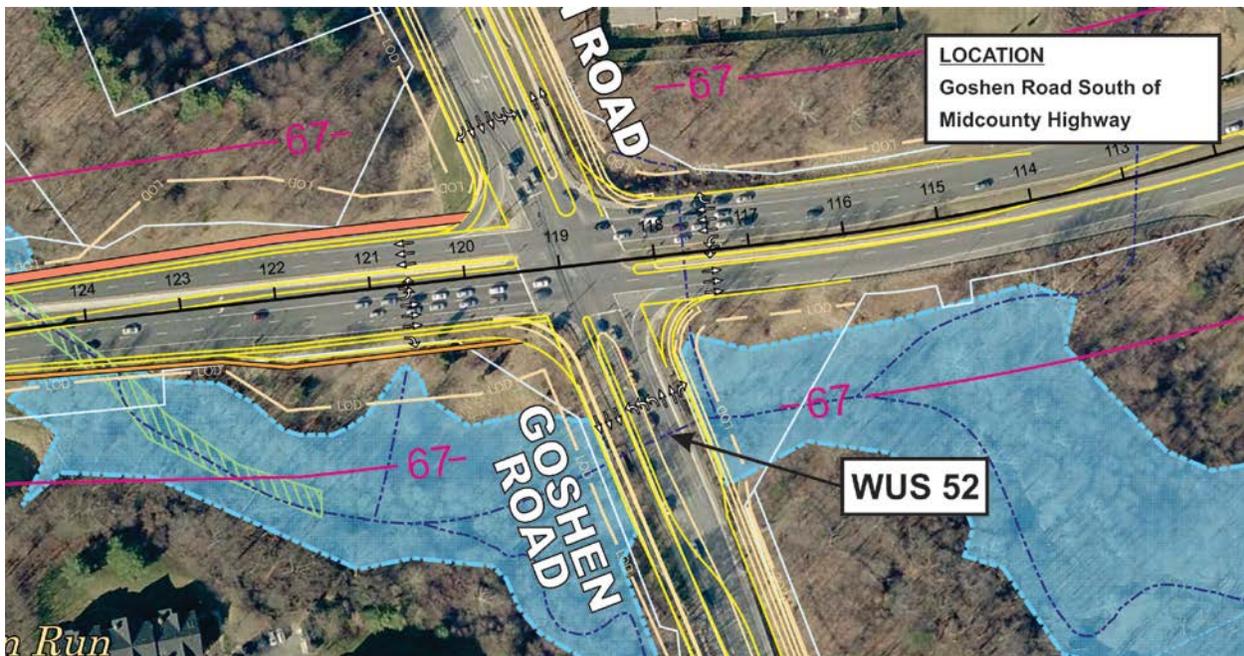


Figure VII-20: Location of WUS 52 under Goshen Road