Westbard
Sector Plan
Appendix

Approved Draft April 2016
MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION

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Sector Plan

Appendix

Prepared by the Montgomery County Planning Department

MontgomeryPlanning.org

Approved Draft April 2016

MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION

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Appendix A: Charrette

A.1 Charrette Summary

November 10 through November 18, 2014

A.1.1 Overview

A Charrette as experienced at Westbard, is an intense planning session where citizens, designers and multiple agencies collaborate on a vision for a development or planning area. It provides a forum for ideas and offers the unique advantage of giving immediate feedback to the planners and urban designers. More importantly, it creates consensus and allows everyone who participates to be a mutual author of the plan. This is contrary to conventional planning processes that takes months and months of endless meetings, and puts the Planning Department in the middle of presenting to citizens and agencies. A Charrette allows all the various agencies, Planning Department and citizens (all Stakeholders) to work together in a condensed week-long event all at the same table hearing and talking to each other. It provides for immediate understanding of issues and provides a forum for direct dialogue and responses to concerns.

Charrettes save time and money through...

- Reduced rework via short design feedback loops
- Time-compressed work sessions
- Creation of broad support from community members, professionals, and staff

Charrettes increase probability for implementation through...

- An integrated team design process
- Bringing all decision makers together for a compressed period of time

Charrettes promote trust between citizens and government through...

- Meaningful public involvement and education in which input may affect the outcome
- The building of long-term community goodwill

Charrette:

A French word meaning “cart”, often used to describe the final, intense work effort expended by art and architecture students to meet a project deadline. This use of the term is said to originate from the École des Beaux Arts in Paris during the 19th century, where teachers circulated a cart, or “charrette”, to collect final drawings while students frantically put finishing touches on their work.

- Broad stakeholder involvement- no one takes over
- Design based on shared guiding principles

This Charrette took place within a large office space at the Westwood II mall located inside the Sector Plan area on Westbard Avenue from November 10 through November 18. Evening presentations and meetings occurred at the Walt Whitman High School with the final presentation at Westland Middle School.

A.1.2 Day One

To begin the day, the Planning team opened up the office space in the Westwood II building and then gave 2 Westbard area site tours to more than 20 stakeholders in each tour. Individual meetings with property owners and agencies also began the first day with the general public invited to watch every meeting if they desired. The Charrette team then conducted an open public meeting that evening to solicit the values, vision, and needs of the more than 200 stakeholders in attendance. Elements of what makes great urbanism and an active public realm were presented by staff, as well as the rationale behind this creation of a new Sector Plan for Westbard. The public was then asked to express their likes, dislikes, concerns, wants and needs for the Westbard area. Following the presentations and input, all those in attendance were asked to split up into 8 groups to create a vision diagram from their group that was then presented by one of the participants. At the onset of this process, all in attendance were asked to be cordial to each other, respect everyone's opinions, and that no one would see 100 percent of what they wanted in the final Sector Plan proposal. The overall goal was to build consensus among all attendees in order that everyone would get a majority of the urban design elements that were important to them.

A.1.3 Day Two

The Staff Planning Team broke off the next day to synthesize the best aspects of the 8 alternatives generated Monday evening into a set of 3 Framework Plan alternatives. Meetings with different agencies, property owners and neighborhood groups were had throughout the day, including 6:30am meetings for those who could not meet during the day or evening. All meetings were held at the Charrette office. The Framework Plans were created over the course of the day and represented different aspects of urban design that were important and heard from the previous night. Building heights, a new elementary school location, open spaces, environmental improvements, new connections and street designs were all discussed and put into the Framework alternatives that were then presented and discussed the second evening to an assembly of more than 200 people. The discussion was lively and emotions ran high among many of the attendees. Within these alternatives, ideas were tested by the Parks and Planning staff team in relation to economic probability, site and environmental constraints, different agency requirements and construction methods. From the many comments and concerns, staff went back to the Charrette office that evening and began to develop 2 refined, Preferred Alternatives for the third evening presentation the next day.

A.1.4 Day Three

The Charrette office opened once again at 6:30am and continued meetings with stakeholder groups throughout the day. The staff team created 2 Framework Alternatives from comments heard the previous evening and calculated the general concept program numbers from the designs including amount of square footage for commercial, office and light industrial uses, and the number of represented residential units. These 2 Plans were color rendered, sketched site plans showing open spaces, landscape, streets and trails, structured parking, and potential new buildings. The building layouts and locations were derived from land-owner's input, public ideas, and from best urban design theories and practices. These layouts also helped the team to crosscheck proposed designed program against zoning allowances for the entire Sector Plan area. The presentation to approximately 160 stakeholders that evening was a dramatic contrast from the previous night. Residents were relieved to see that their ideas and concerns were addressed in the new Framework Alternatives. Consensus had been created, although many still wanted to see some different adjustments here and there. The focus of most comments that evening had to do with ultimate building heights and street designs. At the end of the evening's presentation and comments, the audience clapped with their gratitude and support to the team.

A.1.5 Day Four - The Final Presentation

Over the course of the Friday and following Monday and Tuesday, the 2 Framework Alternative Plans were tweaked again to address final comments from the Charrette attendees the previous Thursday evening. Final conceptual program numbers were revised (mostly down) and final rendered drawings were created for the Final Presentation Tuesday evening at the Westland Middle School. More than 200 attended the final presentation, of which approximately one third had attended the Charrette the previous week. Most of the comments at this presentation were in opposition to the plan or any change at all in Westbard, with almost no people who had attended the Charrette speaking out at this event. Some adjustments to building heights were incorporated into the plan from these comments. In general, the Charrette developed Plan you are reviewing today has remained intact.

The following images and information include primary challenges, most asked questions, the schedule, and Charrette Wrap-Up Presentation to the Planning Board.

A.1.6 Top Ten Challenges at Westbard - Created at, and before the Charrette

1. Maintain heights that reinforce the existing neighborhood context and scale.
2. Provide options to help mitigate school capacity concerns.
3. Establish better internal neighborhood connections yet reduce commuter cut-thru traffic.
4. Use the relocation of the Westbard library to help create a civic center within the community.
5. Expand pedestrian and bicycle connections throughout Westbard – in particular between neighborhoods, schools, open spaces and civic institutions.
6. Enhance and create east-west connections between Massachusetts Avenue and River Road.
7. Address vehicular and pedestrian conflicts at River Road and the Capital Crescent Trail
8. Enhance the Willet Branch Stream to be an accessible, natural public amenity within the community.
9. Preserve and enhance light industrial uses so that they may continue to thrive and expand off of River Road.
10. Maintain and enhance local, family-owned retail and business services.

A.1.7 The Three Most Asked Questions to Planning Staff

1. What is the justification for updating the 1982 Sector Plan and changing the zoning in Westbard?
2. How will this Plan address the additional traffic created by new development and increased density?
3. How will MCPS and this Plan address the addition of more students generated by new development when local schools are already at or above full capacity?

A.1.8 Charrette Re-cap

- Day 1: Visioning Session: characteristics and concept; precedents – Eight groups
- Day 2: Presentation of three Schematic Diagrams
- Day 3: Presentation of two Concept Plans
- Day 4: Final Charrette Presentation to Community

Concept Framework Plan includes:

- Big Ideas- Vision
- A Preliminary Plan
- Visualizations and Diagrams
- Numbers

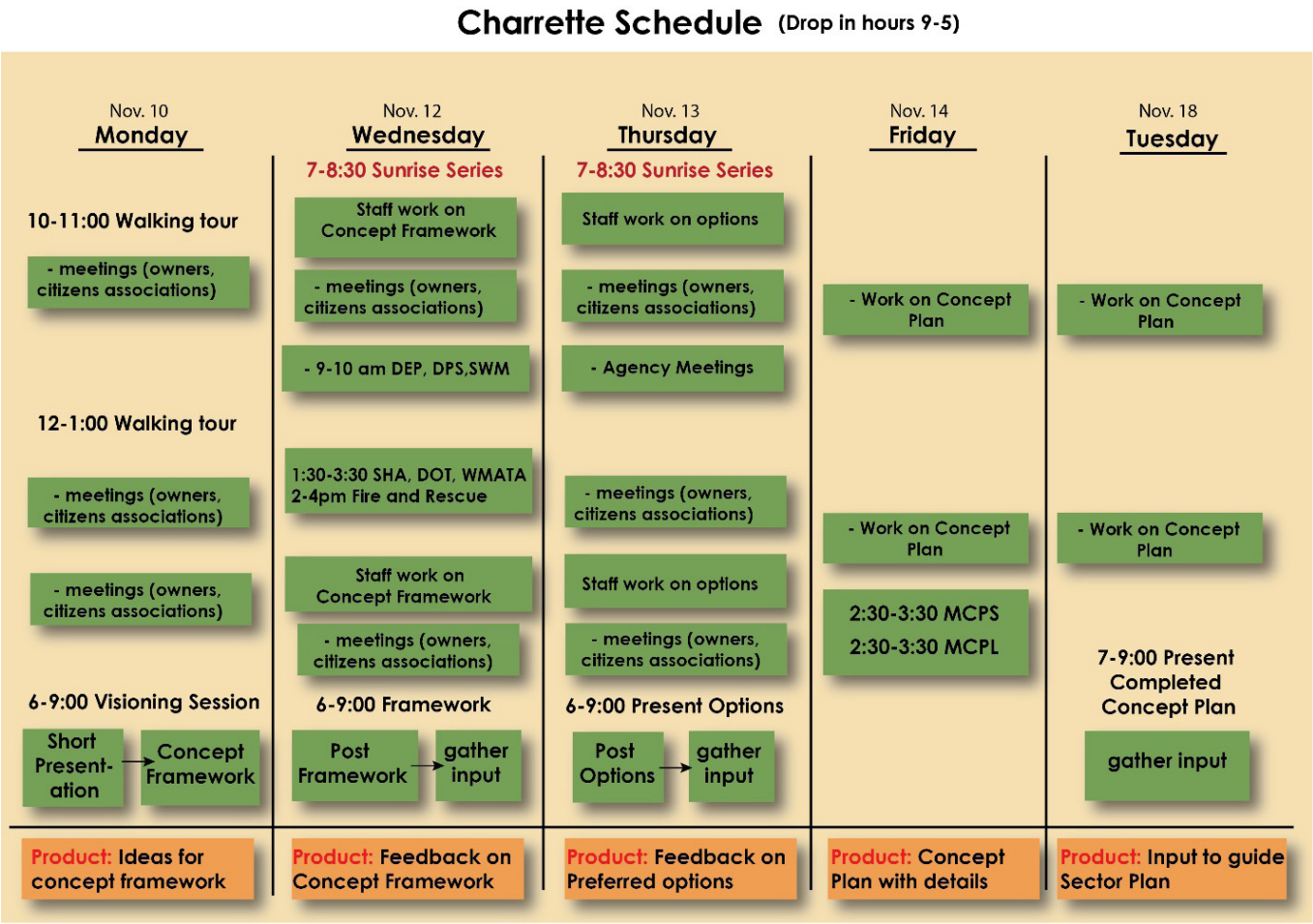


Figure A.1: Westbard Charrette Schedule

A.2 Day One: Nov. 10, 2014

Westbard residents and community members participating in day one visioning exercises

A.2.1 Visioning Exercise Produced Eight Community Based Plans

- Set up office at Westbard site
- Site tours for residents
- General public and agency stakeholder meetings
- 200 + attendees
- Great Sub-Urbanism 101 presentation
- Visioning exercise at Walt Whitman H.S.
    - Connections
    - Open spaces
    - Focal points in community
    - Building types

A.2.2 Key Points/Ideas

A. Streets

- River Rd (local & regional traffic)
- Connection from River Road to Westbard
- Pedestrian connections
- Close northern most entry to Giant (2 new entries)
- Slow down traffic
- Westbard circle parking
- Main street within Giant site (new street)
- Street lights at corners on River Rd
- Curve Westbard at Fairfield
- Dorsey Lane going thru near Ridgewells
- Create grid of streets and trails
- Boulevard on River with five stories at each side
- New street between River and Westbard Avenue
- Multi modal at Westbard
- Roads to disperse traffic
- Shuttle circulator to Metro

B. Building Types

- Housing units → effect on schools
- Low density housing and shops
- Affordable housing
- Maintain history
- Townhouse scale
- Townhouses facing Kenwood Place, Gate Kenwood Place
- Westbard Ave. higher density than step down
- Restaurants, dry clean, grocery, etc.
- Want town square, civic gathering space
- New local library (Giant site)
- No destination regional shopping
- Retail both sides Westbard Ave- ample parking

C. Open Space

- More green space (industrial area)
- Athletic fields, play areas for kids
- More access to Capital Crescent trail
- Maintain pedestrian flow & green space
- Preserve Little Falls pkwy (impervious surface)
- Green space/town center at Giant shopping center
- Encourage walking
- Safety for biking across Mass Ave
- Stream buffers, restore watershed, community green

Figure A.2: Basemap of Existing Conditions in Westbard

Group 1

Group 2

Group 3

Group 4

Group 5

Group 6

Group 7

Group 8

Figure A.3: Eight Community Based Plans Produced through Visioning Exercise

A.3 Day Two: Nov. 12, 2014

Westbard residents and community members talk with planning staff about their ideas for Westbard on the second day of the charrette

A.3.1 6:30 AM - 8:30 AM

- Sunrise series
- Meeting with business owners

A.3.2 9 AM - 5 PM

- Meetings with Citizen's Associations and individual residents
- Received community input in the form of comment cards, sketches and notes
- Staff prepared 3 schematic diagrams derived from community visioning session on Monday

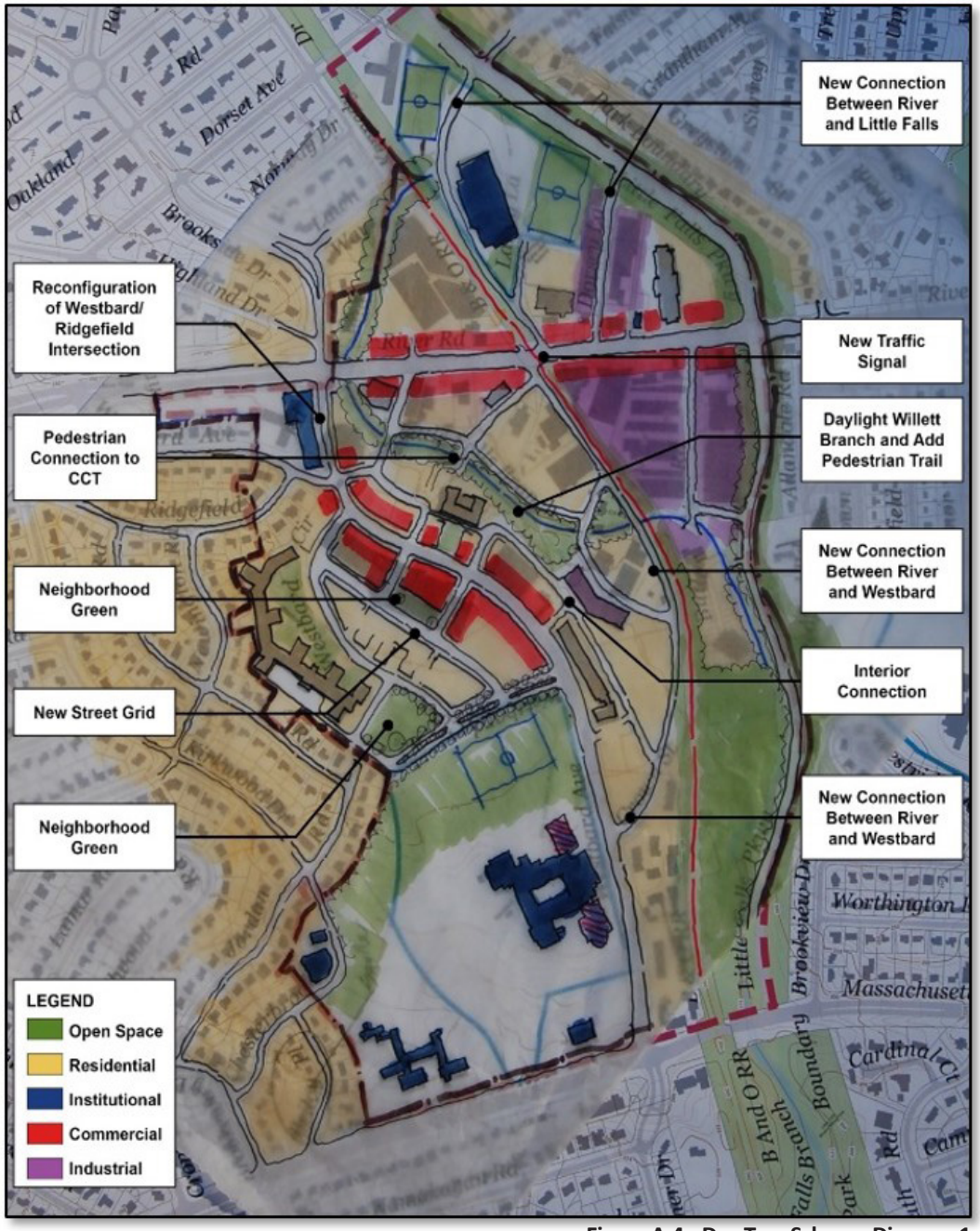


Figure A.4: Day Two Scheme Diagram 1

A.3.3 6 PM - 9 PM at Whitman H.S. (200+ Attendees)

Presentation and feedback on three scheme diagrams:

A. Scheme Diagram 1: Large Ideas

- Reconfigure Ridgefield Rd. at Westbard
- Potential new school site at Ridgefield Rd.
- Create neighborhood green at Giant site
- New grid at Giant site
- Potential expansion of Westland M.S.
- New Capital Crescent Trail street from Westbard to River
- New trail connections to CC Trail
- New internal streets throughout
- Restoration of Willett Branch
- Butler St. connection to Little Falls Pkwy.
- Dorsey Ln. connection to Little Falls Pkwy.
- Largest amount of light industrial to remain

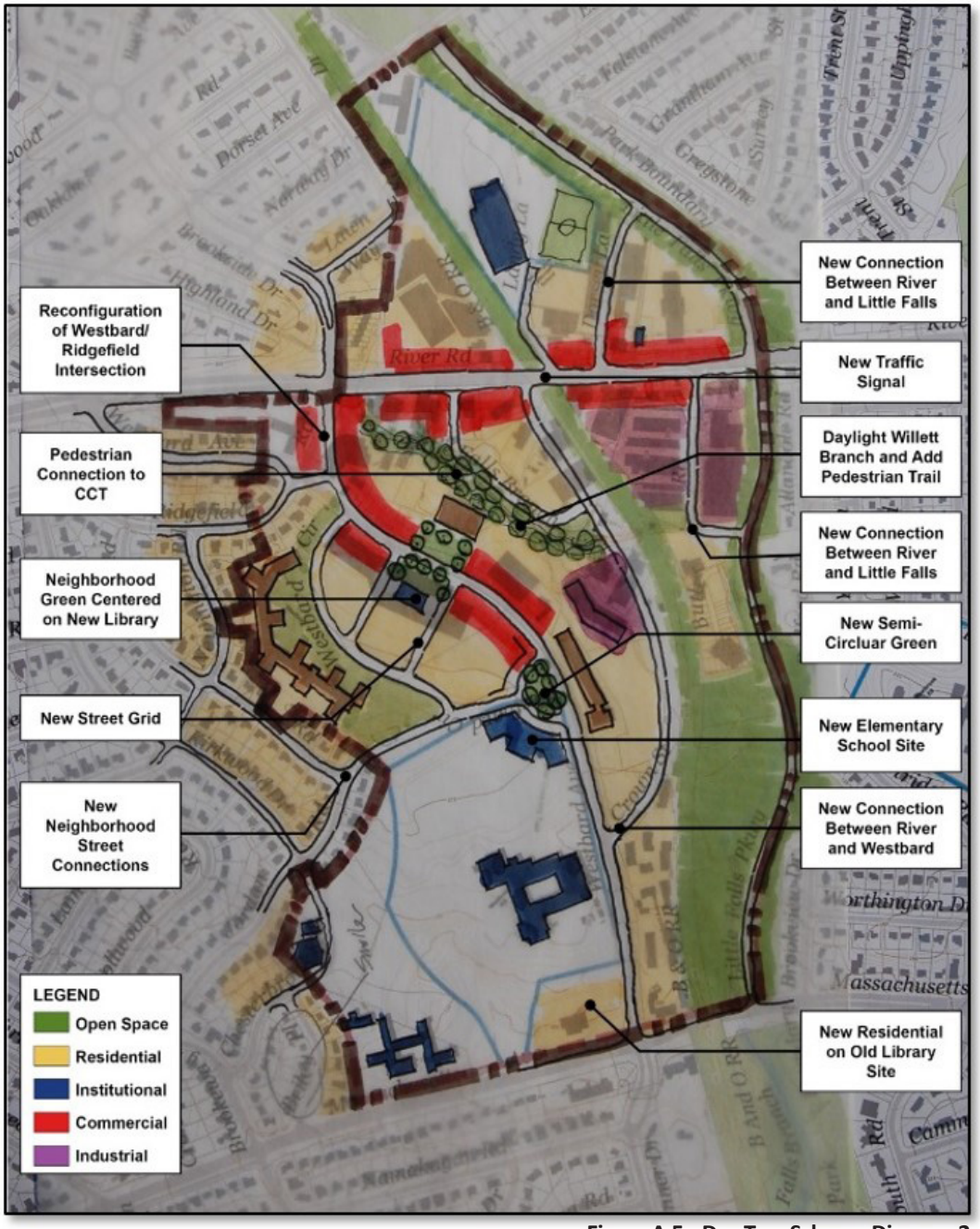


Figure A.5: Day Two Scheme Diagram 2

B. Scheme Diagram 2: Large Ideas

- Reconfigure Ridgefield Rd. at Westbard
- Potential new school site Westland M.S. site
- Create central square and library at Giant site
- New grid at Giant site
- New Capital Crescent Trail street from Westbard to River
- New trail connections to CC Trail
- New internal streets throughout
- Restoration of Willett Branch
- Butler St. connection to Little Falls Pkwy.
- Dorsey Ln. connection to Little Falls Pkwy.
- Small amount of light industrial to remain
- New residential at former library site

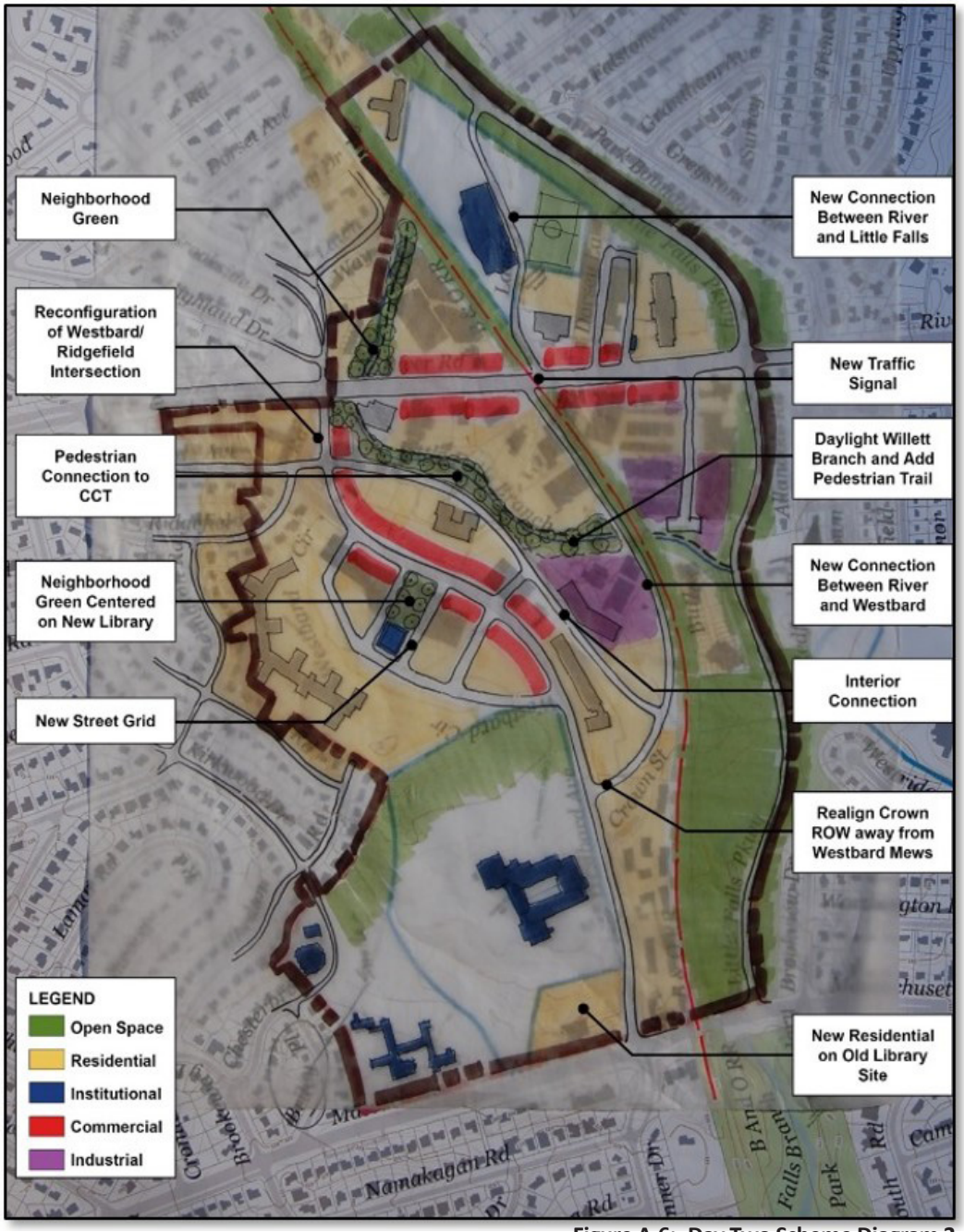


Figure A.6: Day Two Scheme Diagram 3

C. Scheme Diagram 3: Large Ideas

- Keep Ridgefield Rd. at Westbard
- Potential new school site at library site
- Create central square and library at Giant site
- New grid at Giant site
- New Capital Crescent Trail street from Westbard to River
- New trail connections to CC Trail
- Realign Crown Street ROW further north
- New internal streets throughout
- Restoration of Willett Branch
- No Little Falls connections
- Smallest amount of light industrial to remain

A.4 Day Three: Nov. 13, 2014

Planning staff and community members discuss the issues facing Westbard on day 3 of the charrette.

A.4.1 6:30 AM - 8:30 AM

- Sunrise series
- Meeting with individual citizens

A.4.2 9 AM - 5 PM

- Meetings with Citizen's Associations and individual residents
- Livestreamed all meetings
- Received community input in the form of comment cards, sketches and notes
- Staff prepared two concept plans based on community feedback Wednesday evening
    - Corrections and modifications
    - Additions
    - Further refinements

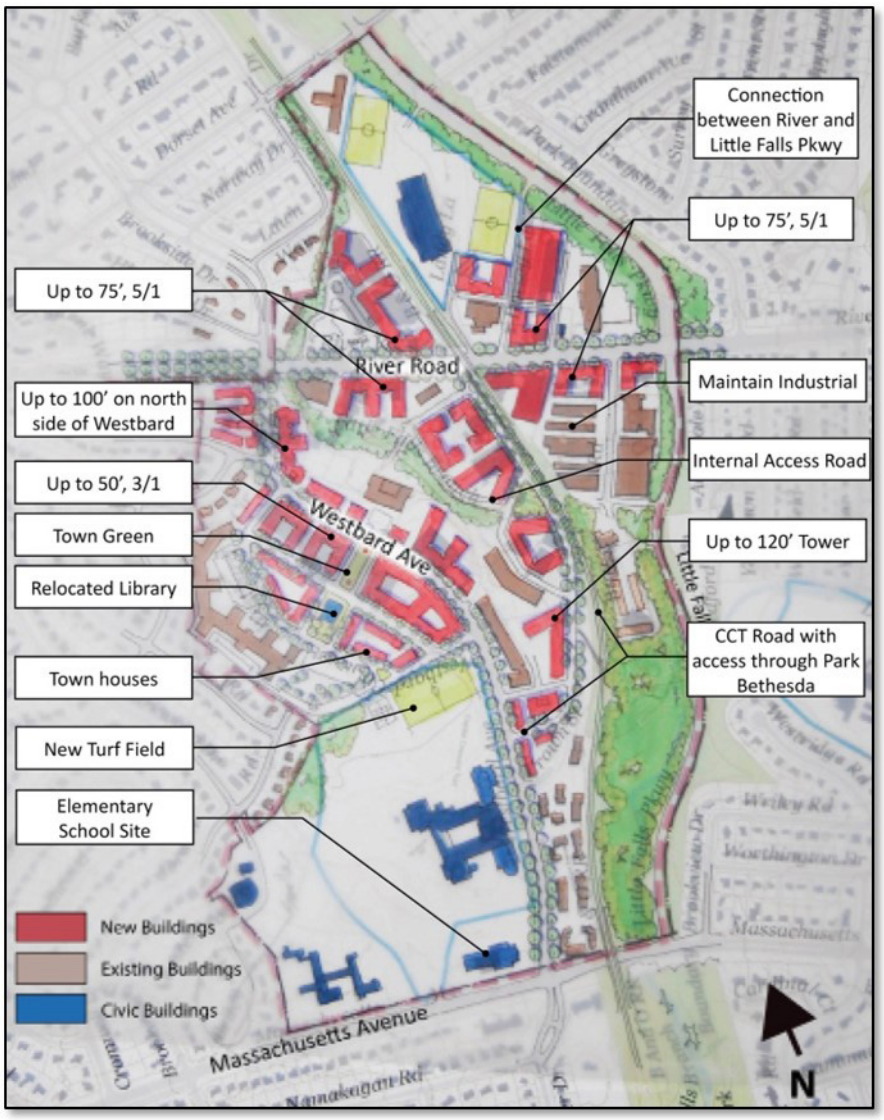


Figure A.7: Framework Plan Alternative 1

A.4.3 6 PM - 9 PM at Whitman H.S. (160+ Attendees)

Presentation and feedback on two preferred concept plans:

A. Concept 1: Large Ideas – Highest Density

- Reconfigure Ridgefield Rd. at Westbard
- Potential new school site at library site.
- Create town square at Giant site
- New library at town square
- New grid at Giant site
- Potential expansion of Westland M.S.
- New CC street from Westbard to River, north of Crown St. ROW
- New trails connections to CC Trail
- New internal streets throughout
- Restoration of Willett Branch
- Butler St. connection to Little Falls Pkwy.
- A new Dorsey Ln. (west of current location) connection to Little Falls Pkwy.
- Largest amount of light industrial to remain
- 75' tall along River Road
- 50' tall along Westbard except at Ridgefield at 100' tall.
- 120' tall at Park Bethesda site

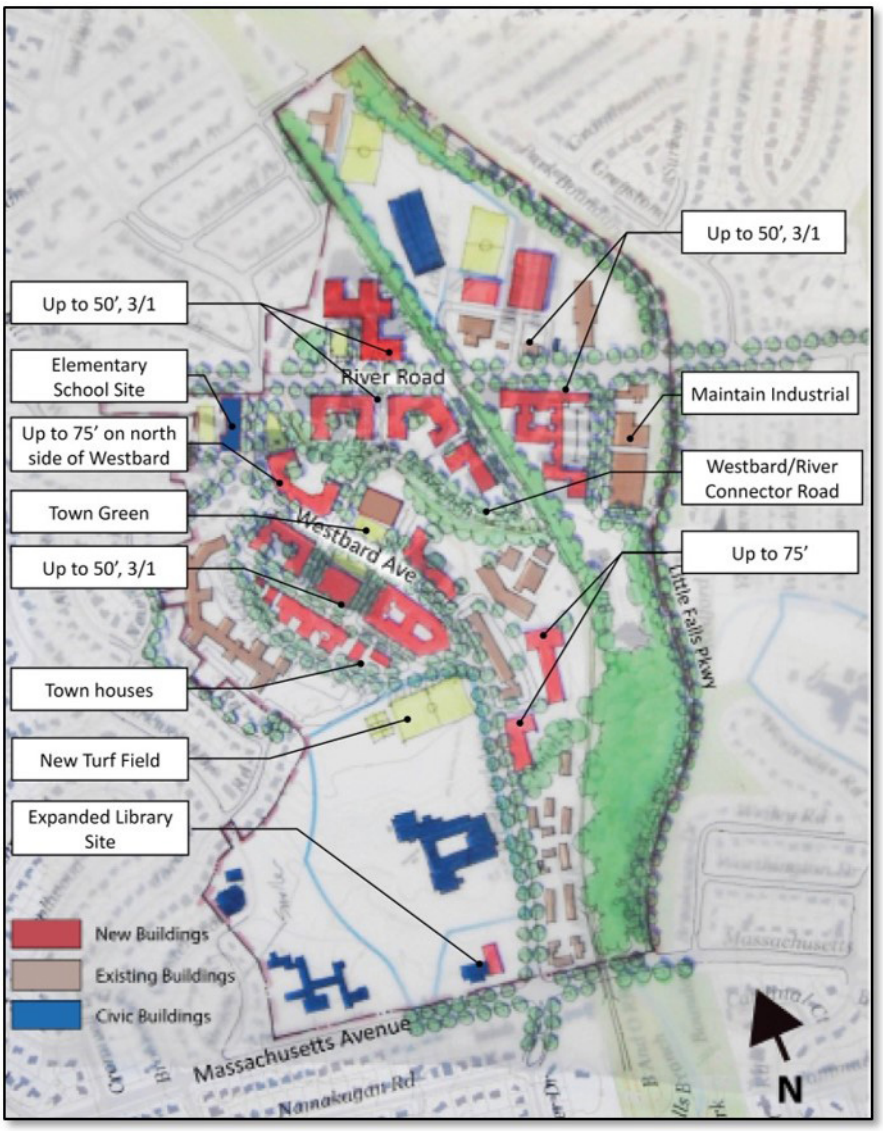


Figure A.8: Framework Plan Alternative 2

B. Concept 2: Large Ideas – Lower Density

- Reconfigure Ridgefield Rd. at Westbard
- Potential new school site at Ridgefield Rd.
- Create town green at Giant site
- New grid at Giant site
- New Westbard to River Rd. street, behind Westwood Tower
- New trails connections to CC Trail
- New internal streets throughout
- Restoration of Willett Branch
- Butler St. connection to Little Falls Pkwy.
- A new Dorsey Ln. loop
- Small amount of light industrial to remain
- 50' tall along River Road
- 50' tall along Westbard except at Ridgefield at 75' tall.
- 75' tall at Park Bethesda site

A.5 Preliminary Concept Framework Plan

Figure A.9: Existing Site Map

Figure A.10: Preferred Concept Framework Map

A.5.1 Westwood II Area

- Reconfigure Ridgefield Rd. at Westbard Ave.
- Naturalization of Willett Branch
- 100’ tall allowed east of Ridgefield Road.
- 75’ tall allowed at River Road
- Primarily mixed-use buildings to the north, east and south and townhouse construction to the west

Figure A.11: Existing Westwood II Area Aerial Photo

Figure A.12: Concept Plan Diagram for Westwood II Area

A.5.2 Westwood Shopping Center Area

- New street grid a Giant site
- New civic plaza and library at Giant site
- 50’ tall south of Westbard Ave. and 75’ tall north of Westbard Ave.
- Primarily mixed-use buildings with large local retail below
- Townhomes located to the west and south of the site

Figure A.13: Existing Westwood Shopping Center Aerial Photo

Figure A.14: Concept Plan Diagram for Westwood Shopping Center Area

Figure A.15: Existing Capital Crescent Trail Aerial Photo

Figure A.16: Concept Plan Diagram for Capital Crescent Trail Area

A.5.3 Capital Crescent Trail Area

- New Crescent Trail road from Westbard Ave. to River Rd.
- New grid of streets adjacent to Willett Branch
- Additions to Westland M.S.
- New school site at old library site
- Butler Road connection to Little Falls Pkwy
- Primarily mid-rise construction buildings (50'- 75' tall) with 120' tall allowed behind Park Bethesda
- Additional bike and pedestrian linkages to Capital Crescent Trail
- Townhouses located just north of Crown Street and the Westbard Mews townhouses

Figure A.17: Concept Framework Plan - Heights

Figure A.18: Concept Framework Plan - New Streets and Civic Buildings

Figure A.19: Concept Framework Plan - Open Spaces and Trails

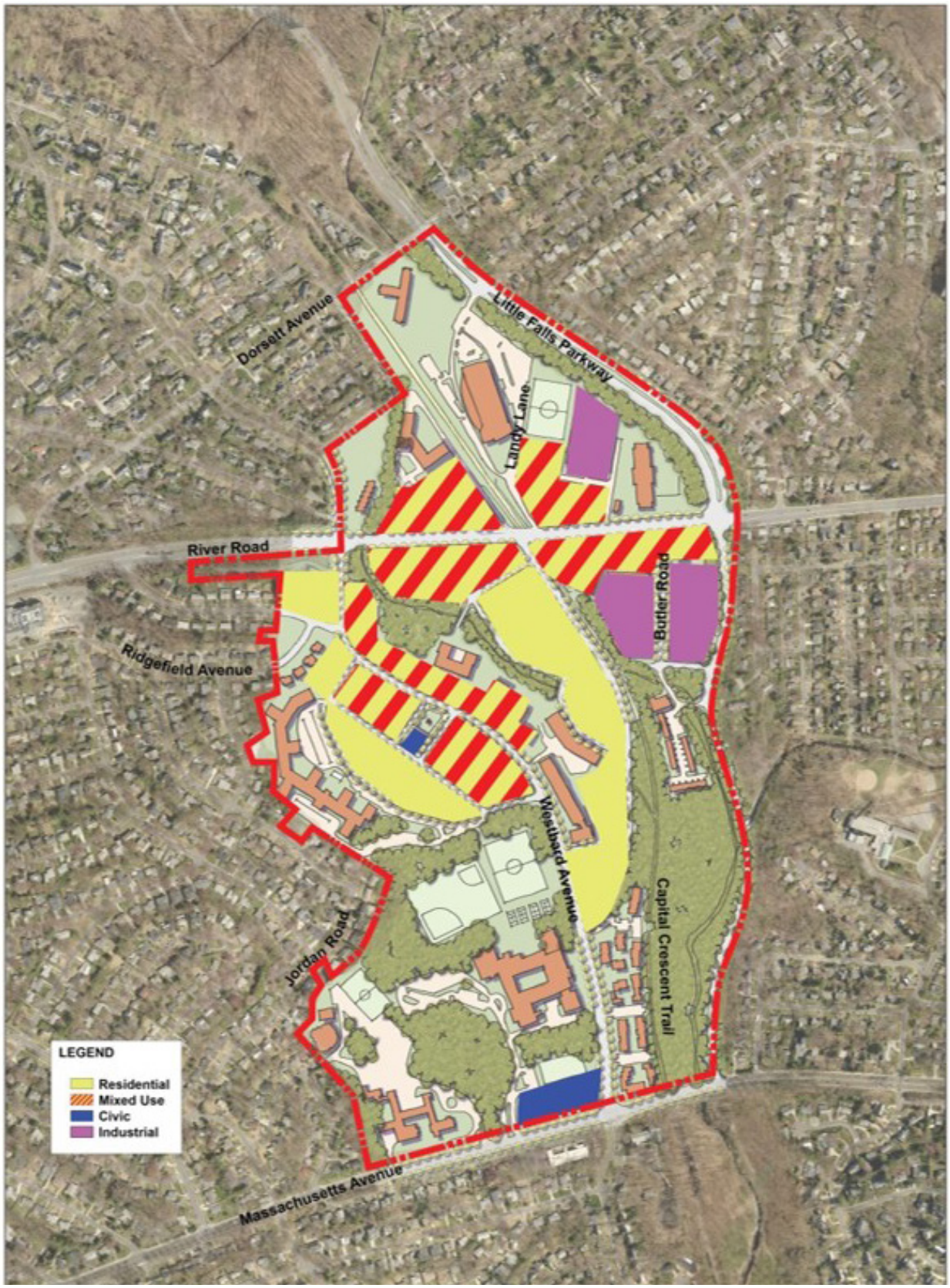
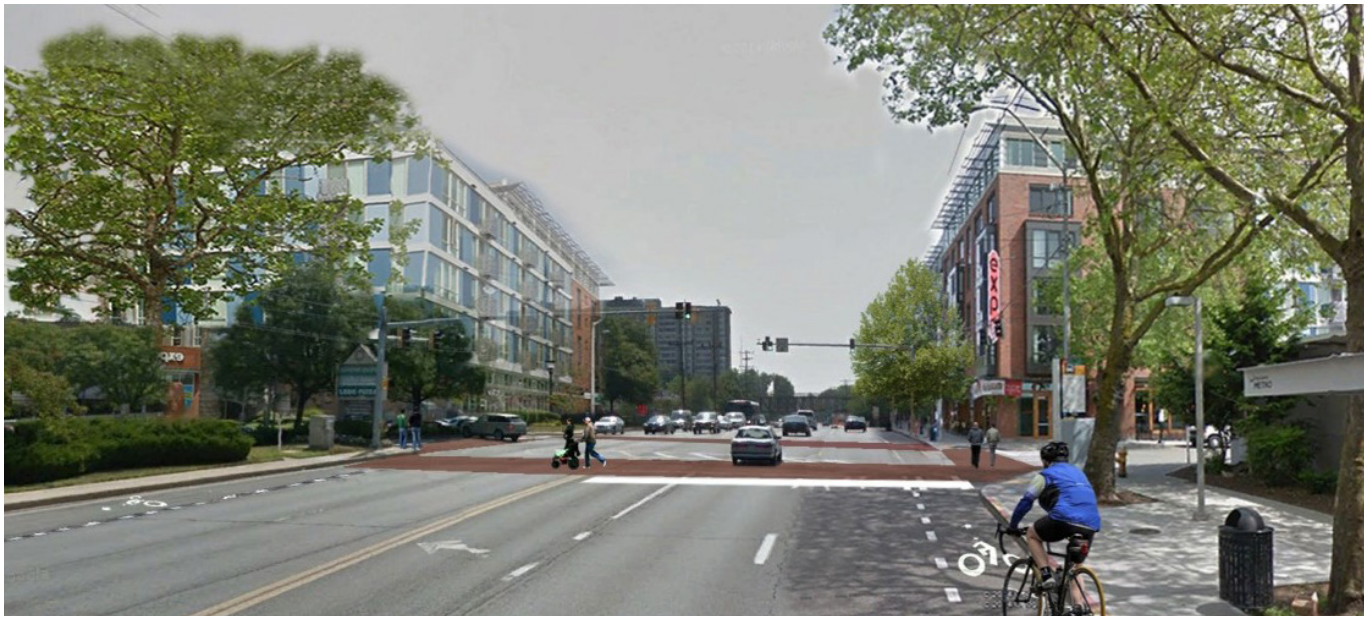


Figure A.20: Concept Framework Plan - Land Uses

Existing photo of Westbard Avenue

Computer-rendered perspective of Westbard Avenue

Existing photo of River Road



Computer-rendered perspective of River Road

Figure A.21: Concept Framework Plan

Appendix B: Transportation

B.1 Executive Summary

This appendix represents a compilation of existing conditions at the time the Westbard Sector Plan was drafted and provides a summary of the methodology and analysis behind the Sector Plan transportation recommendations. Those recommendations are intended to promote a multimodal transportation system through a complete network of streets that encourage equitable roadway utilization by all modes of transportation within the Westbard community over the life of the Sector Plan. It is anticipated that an enhanced multimodal transportation network resulting from this plan's recommendations will meet future transportation demand within the Sector Plan area. In order to achieve this goal, transportation recommendations included in the Sector Plan focus on strategic improvements to existing transportation infrastructure as a means of improving connectivity and mobility through the horizon year of this document.

An on-call consultant was hired to assist with the assessment of intersection system performance for the master plan vision, using the regional Metropolitan Washington Council of Governments (MWCOG) travel demand model, National Cooperative Highway Research Program (NCHRP) 765 post-processing assessments and Critical Lane Volume/Highway Capacity Manual techniques as generally used to implement the County's Adequate Public Facilities Ordinance (APFO) described in the Planning Board's *Local Area Transportation Review / Transportation Policy Area Review Guidelines*.

Major recommendations within the Sector Plan are as follows:

- River Road should contain four-divided travel lanes and have separated bike lanes.
- Westbard Avenue should contain four travel lanes with a shared use path or separated bike lanes as specified in the Sector Plan.
- A new two-lane connector road from Westbard Avenue to River Road should run within close proximity of the Capital Crescent Trail.

- Westbard Avenue should be reconfigured at Ridgefield Road to prioritize the traffic movement from Westbard Avenue to Ridgefield Road, instead of Ridgefield Road to River Road.
- Enhance transit service through public and/or private buses.
- Establish a multimodal bus hub at the redevelopment area along Westbard Avenue.
- Create a safer at-grade crossing of River Road at the Capital Crescent Trail.
- Transportation Demand Management programs as appropriate with new development or redevelopment areas should be considered.

B.2 Existing Conditions

The Westbard Sector Plan study area is located along two major regional roads, River Road (MD 190) and Massachusetts Avenue (MD 396). These roads connect the southwest portion of the Bethesda-Chevy Chase Plan Area, as well as areas beyond the Capital Beltway, to major employment areas in Bethesda and Friendship Heights, and to the regional Metrorail system. River Road and Massachusetts Avenue also serve as the only two roads that connect the Westbard area from east to west. Little Falls Parkway is a limited access park road that runs along the eastern boundary of the study area with truck restrictions. Westbard Avenue and Ridgefield Road serve as the local roads that connect a majority of the study area. There are few local streets that provide connections to the existing developments. Most of the developments in the study area have access to either Westbard Avenue or River Road. A tremendous asset in the community is the Capital Crescent Trail (CCT), on the old B&O Railroad right-of-way. This pedestrian and bicycle trail is a major regional connection that also provides limited local service in the Westbard area.

A majority of trips to, from, within and through Westbard are made using private automobiles. Most of the vehicles traveling through the Westbard area are on River Road and Massachusetts Avenue, with the majority on River Road before Little Falls Parkway, and an even distribution on Massachusetts Avenue and River Road from Little Falls Parkway to destinations closer to the District of Columbia border. While the automobile still needs to be accommodated in the area, data trends, at least in the study area, indicate a shift in mode choice or commuting patterns away from the automobile. This change is shown with the 2010 decennial census and 2013 American Community Survey both published by the United States Census Bureau as well as yearly average annual daily traffic (AADT) downward trending data published by the Maryland State Highway Administration (SHA). The census data (census tract 7057.01 used as it represents most of the study area) is shown in Table B.1 with updated 2014 data. The trends still indicate that driving alone to work has been falling over the

Table B.1: Means of Commuting to Work

	2010		2011		2012		2013		2014	
Means of Commuting	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Drive alone	1,494	70%	1,534	70%	1,487	69%	1,467	65%	1,397	62%
Carpooled	206	10%	228	10%	144	7%	184	8%	227	10%
Public transit	205	10%	176	8%	193	9%	230	10%	274	12%
Walked	25	1%	27	1%	33	2%	42	2%	28	1%
Taxi, bike, other	32	2%	48	2%	74	3%	76	3%	79	4%
Worked at home	164	8%	180	8%	219	10%	246	11%	252	11%
Total	2,126	100%	2,193	100%	2,150	100%	2,245	100%	2,257	100%

*Census tract 7057.01

Source: US Census Bureau

Table B.2: Average Annual Daily Traffic on River Road and Massachusetts Avenue

													2006-2014			2004-2014		
River Road	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Difference #	%Change	Avg. Annual %Change	Difference #	%Change	Avg. Annual %Change
Goldsboro to Little Falls Parkway	40,525	42,975	42,150	41,732	36,010	34,931	34,932	33,200	33,331	33,062	31,560	30,900	-10,832	-26.0%	-4.20%	-12,075	-28.1%	-3.60%
Little Falls Parkway to D.C. line	28,025	24,475	24,050	23,812	22,830	22,151	22,152	21,450	21,541	21,372	20,120	20,061	-3,751	-15.8%	-2.42%	-4414	-18.0%	-2.19%

													2006-2014			2004-2014		
Massaschusetts Avenue	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Difference #	%Change	Avg. Annual %Change	Difference #	%Change	Avg. Annual %Change
Sangamore Road to Little Falls Parkway	17,050	17,125	17,075	16,901	19,602	15,580	15,581	15,672	16,270	16,141	16,172	16,123	-778	-4.6%	-0.67%	-1,002	-5.9%	-0.67%
Little Falls Parkway to D.C. line	26,250	26,525	30,575	30,271	30,272	24,500	24,501	24,652	23,970	23,781	23,832	26,690	-3,581	-11.8%	-1.78%	165	0.6%	0.07%

Source: Maryland State Highway Administration (SHA)

past five years with the means of commuting, such as carpooling and taking public transit, increasing. The SHA AADT data is shown in Table B.2, which shows daily traffic decreasing on River Road through the study area while traffic on Massachusetts Avenue stays roughly flat.

B.2.1 Sector Plan Study Area and Plan Boundary

The boundaries for the Sector Plan study area are shown in Figure B.1. This includes all of the commercial area in the Westbard area generally between Massachusetts Avenue to the south, Little Falls Parkway to the north and east, and Ridgefield Road to the west. The definition of the Plan area is important in that it is the first step in establishing the interface between the regional transportation model and the Sector Plan local area model intersection analysis. The Plan boundary is formally established by the Planning Board during its deliberations on the Plan scope of work. The more detailed transportation analysis is conducted for the area within the Plan Boundary.

The Traffic Analysis Zones (TAZs) that were used for the long range analysis do not align exactly with the study area; however, allocation of land uses into the appropriate TAZs that make up the Westbard study area was done based on the proposed changes in land use by the district boundaries. See Table B.4 for the distribution (in households and jobs) of the proposed land uses among the two TAZs that make up the Westbard Sector Plan area.

Figure B.1: Sector Plan Study Area and Vehicular Access

B.2.2 Major Roadways

River Road (MD 190) is a major highway with two travel lanes in each direction and a center turn lane throughout the majority of the study area. At Ridgefield Road and Little Falls Parkway, the center turn lane becomes a dedicated left turn lane. The current 1982 approved and adopted Westbard Sector Plan calls for a right-of-way of 128 feet.

Massachusetts Avenue (MD 396) is a major road with two travel lanes in each direction. This road is not technically within the Westbard Sector Plan. The 1990 approved and adopted Bethesda-Chevy Chase Master Plan states that the existing right-of-way should be retained at 120 feet.

Westbard Avenue is currently an unclassified road from Massachusetts Avenue to Ridgefield Road. The unclassified segment continues to include Ridgefield Road from Westbard Avenue to River Road, since these two segments of roadway technically operate as one segment. The road is currently two undivided travel lanes in each direction with a master plan right-of-way of 70 feet.

Little Falls Parkway is a park road owned by the Maryland-National Capital Park and Planning Commission. Since it is a park road, there is no classification, although the intent of the road is to be a park road that has a few access points. The road has two divided travel lanes in each direction north of River Road and one undivided travel lane in each direction from River Road to Massachusetts Avenue.

B.2.3 Intersection Capacity and Roadway Operations

There are a number of ways to measure the quality of service provided by a transportation network. In Montgomery County, the method of measuring

network performance is established by the County's Subdivision Staging Policy (formerly called the Growth Policy). This policy requires consideration of the critical lane volume (CLV) at major intersections as the key metric used to measure the quality of service provided by the network. CLVs are essentially the sum of vehicles passing through an intersection at a single point (the most critical point of the intersection) during the peak hour. The level of CLVs considered acceptable varies by Policy Area within the County. Master Plan intersections included in this analysis are located within the Bethesda-Chevy Chase Policy Area, which currently has a congestion standard of 1,600 CLV set by the Montgomery County Council.

A. Existing Intersection Performance

Figure B.2 below shows the existing CLVs at the six studied intersections within and adjacent to the Westbard Sector Plan boundary. As shown in Figure B.2 and Table B.3, all six intersections operate within the acceptable 1,600 CLV threshold.

The six intersections studied are:

1. River Road/ Ridgefield Road
2. River Road/Little Falls Parkway
3. River Road/Willard Avenue
4. Ridgefield Road/Westbard Avenue
5. Massachusetts Avenue/Westbard Avenue
6. Massachusetts Avenue/Little Falls Parkway

B. River Road Operations

One of the problems on River Road is the vast amount of curb cuts that exist. These are openings in the curb that allows vehicles to access a site. The extensive number of curb cuts in such a short distance also

Figure B.2: Existing Intersection Critical Lane Volumes

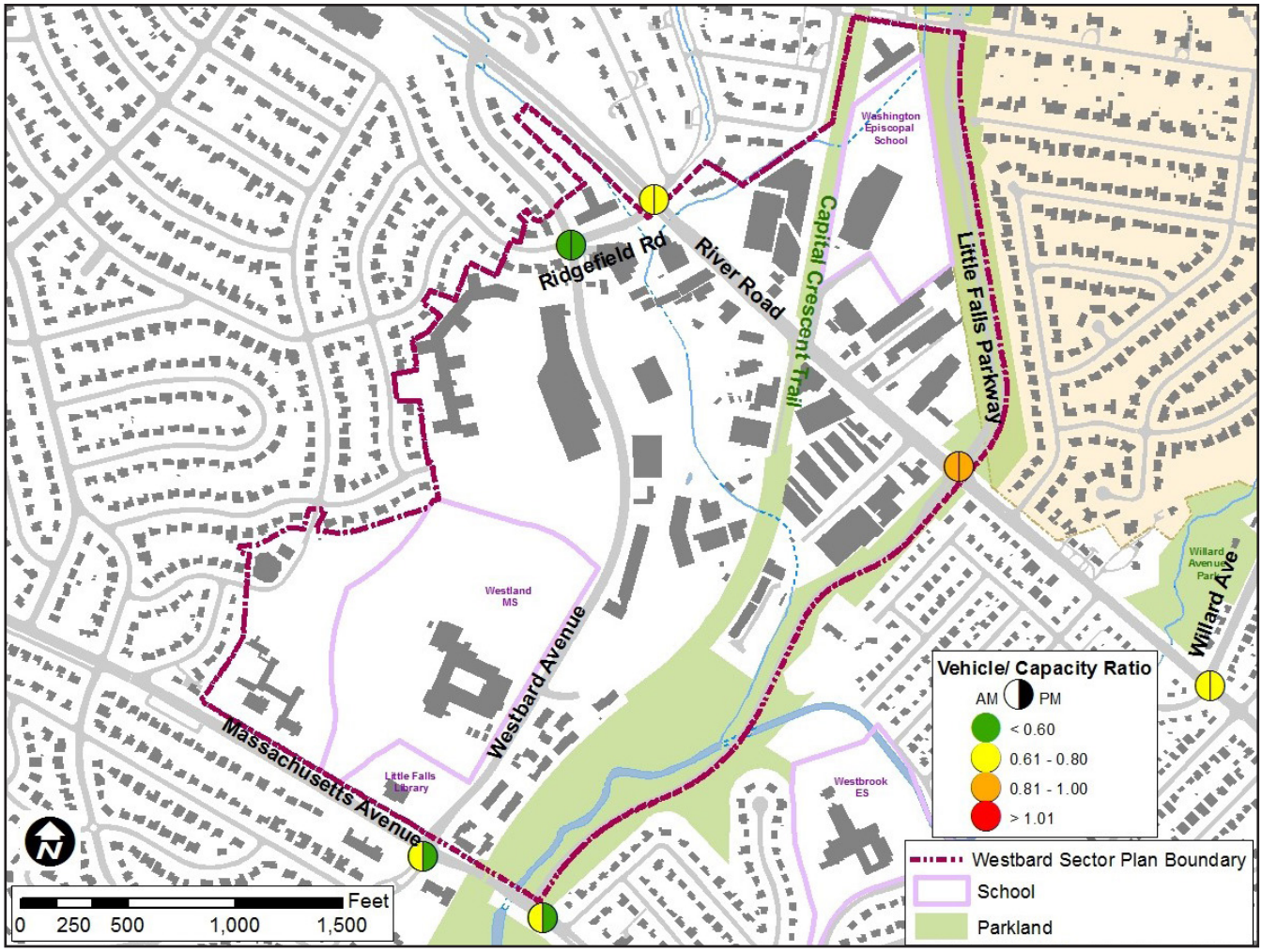


Table B.3: Existing AM and PM Volume to Capacity Rations and Critical Lane Volumes

Intersection	AM Existing CLV		PM Existing CLV	
	CLV	V/C	CLV	V/C
River Road/Ridgefield Road	1,130	0.71	1,047	0.65
River Road/Little Falls Parkway	1,321	0.83	1,291	0.81
River Road/Willard Avenue	1,215	0.76	1,241	0.78
Ridgefield Road/Westbard Avenue	558	0.35	531	0.33
Massachusetts Avenue/Westbard Avenue	976	0.61	913	0.57
Massachusetts Avenue/Little Falls Parkway	1,097	0.69	931	0.58

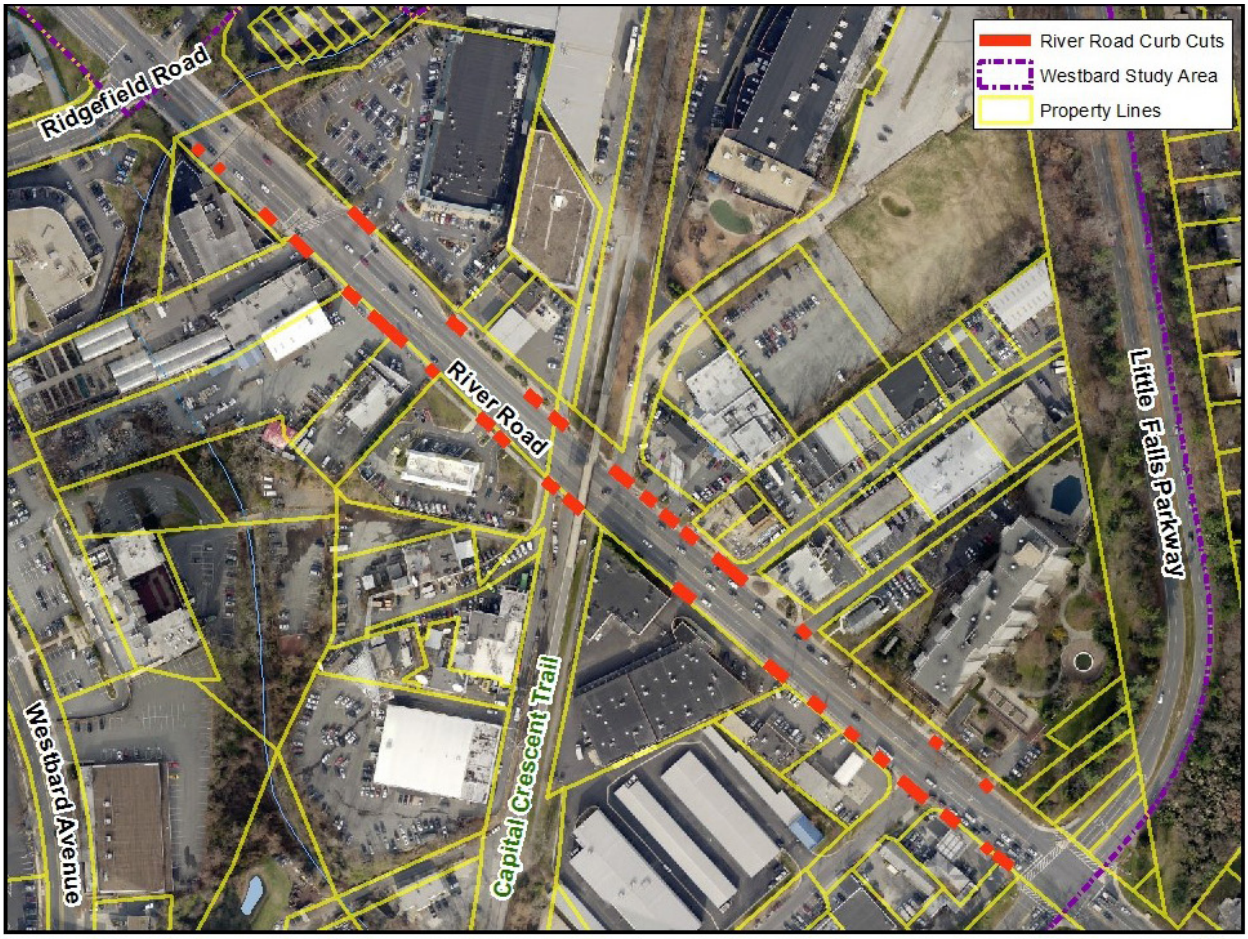


Figure B.3: River River Road Curb Cuts

contributes to traffic stress on the road. This leads to queuing on River Road as vehicles wait to turn into a site. Curb cuts are acceptable and wanted but need to be consolidated in a logical pattern for vehicles but also for pedestrians and bicyclists. The closing of the excessive amount of curb cuts would occur with redevelopment when sites would be requested to have inter-parcel access with each other and local parallel roads to River Road. This closing of curb cuts would allow vehicles to access each development without having to access River Road, thus avoiding the many turns that occur on the road today. In addition, a median would funnel vehicles to logical points where left turns could be made and are expected.

Figure B.3 shows the extensive number of curb cuts that exist along River Road today. The length of River Road in the study area is approximately 1,800 feet long. In the eastbound direction, there are 20 curb cuts that total about 630 feet and in the westbound direction there are 12 curb cuts that total about 400 feet. Along this stretch of road, in a more urban type environment, there should only be about five curb cuts, or one every 300 feet.

B.2.4 Transit

The Westbard Sector Plan area is currently served by Ride-on Route 23 and the Washington Metropolitan Area Transit Authority (WMATA) Route T2. Ride-on Route 23 runs from Sibley Hospital to the Friendship Heights Metrorail station. The service runs Monday through Friday every 30 minutes with a late bus every hour after 8 p.m. There is also Saturday service every 30 minutes from 6 a.m. to 8 p.m. WMATA Route T2 runs form the Rockville Metrorail Station to the Friendship Heights Metrorail Station with service every 25 minutes in the peak period and 30 minutes in the off-peak Monday through Friday 5:30 a.m. to 11 p.m.

Figure B.4: Ride-on Route 23

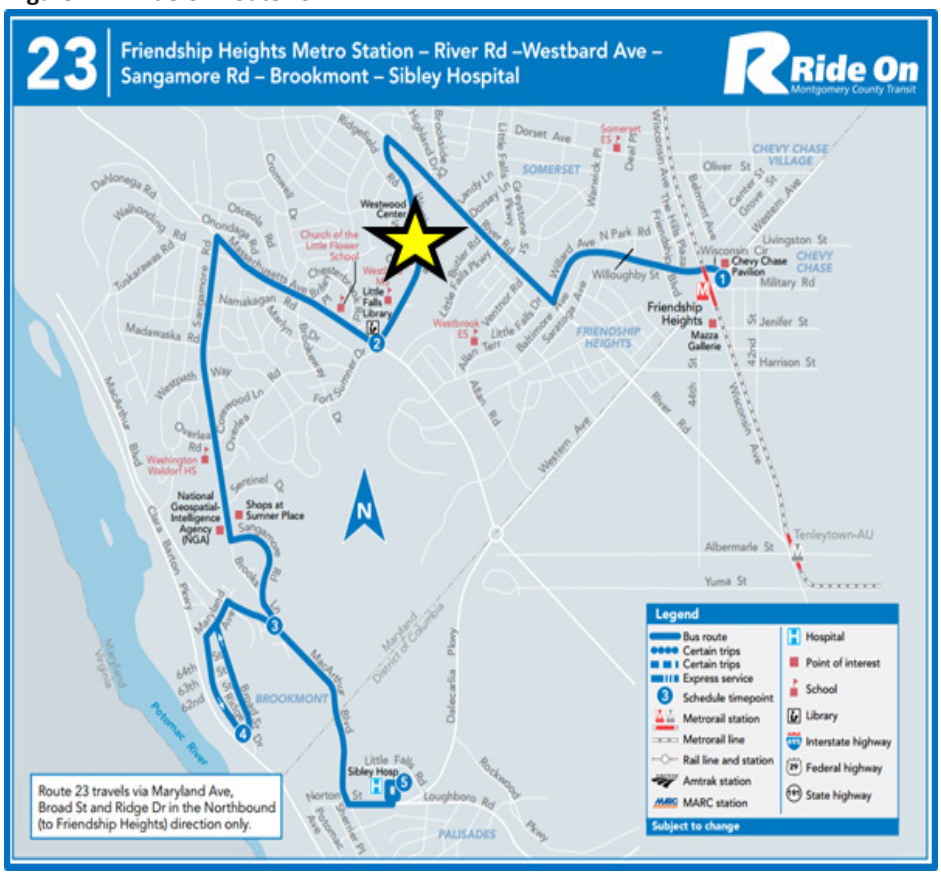


Figure B.5: Washington Metropolitan Area Transit Authority Route T2

Weekend service is every 30 minutes from 7 a.m. to 7 p.m.

Route 23 service is shown in Figure B.4 and WMATA Route T2 is shown in Figure B.5. The star marks the center of the Sector Plan study area on Westbard Avenue in front of the Giant supermarket.

B.2.5 Bicycle and Pedestrian Facilities

A. Bicycle Facility Classification

Bicycle facilities in Montgomery County are designed to be used by a wide variety of bicyclists with differing travel purposes, abilities and levels of comfort with vehicular traffic. In response to that variety, there exists a range of bicycle accommodation available for implementation. Existing and proposed bicycle facilities within the Sector Plan area include the following (See also, Figure B.6):

a) Shared use path: A paved path that is typically 10 feet wide but can vary between 8 and 14 feet wide, designated for bicycles and pedestrians that is separated from motorized traffic by a curb, barrier or landscape panel.

b) Bike lane: A portion of a roadway designated by striping, signing or pavement markings for the preferential or exclusive use of bicycles, and on which through-travel by motor vehicles is not allowed.

c) Shared use roadway: A roadway open to both bicycle and motor vehicle travel, and which is designated as a preferred route for bicycle use by warning or informational signs.

d) Separated bike lane: Also known as a protected bike lane or cycle track; a bikeway that is physically separated from motor vehicles and pedestrian facilities. The separation may be vertical, such as a curb; horizontal, such as a landscape panel or parking lane; or a combination.

e) Buffered bike lane: a bikeway separated from a motor vehicle travel lane with an area of striped pavement.

The current 2005 Countywide Bikeways Functional Master Plan calls for the following bicycle facilities:

- A dual bikeway on River Road (MD 190) consisting of a shared use path on the north side of the road and shared roadway.
- A shared roadway on Massachusetts Avenue (MD 396).
- A shared roadway on Little Falls Parkway (existing).
- Capital Crescent Trail (CCT) (existing).

Figure B.6: Types of Bicycle Facilities

B. Bicycle Level of Traffic Stress Test

This Sector Plan uses the Level of Traffic Stress (LTS) method which is currently being used in the update to the County's Bicycle Master Plan to identify roadways stress on bicyclists. LTS analysis measures the amount of stress that bicyclists feel when riding on a roadway alongside vehicular traffic. A synopsis of the LTS methodology is presented in Figure B.7. The existing conditions LTS results are presented in Figure B.8.

The LTS study of the Sector Plan area revealed the following:

- Riding from east to west through the Sector Plan area can only occur on River Road or Massachusetts Avenue, which are both classified as an LTS 4 (high stress route), making east-west travel difficult.
- The CCT is a great north-south bicycle facility, which shows up as LTS 1 (lowest stress route).
- There are no low-stress (LTS 1) connections to the CCT.
- There is a lack of local bicycle routes in the Sector Plan area.

Figure B.7: Level of Traffic Stress

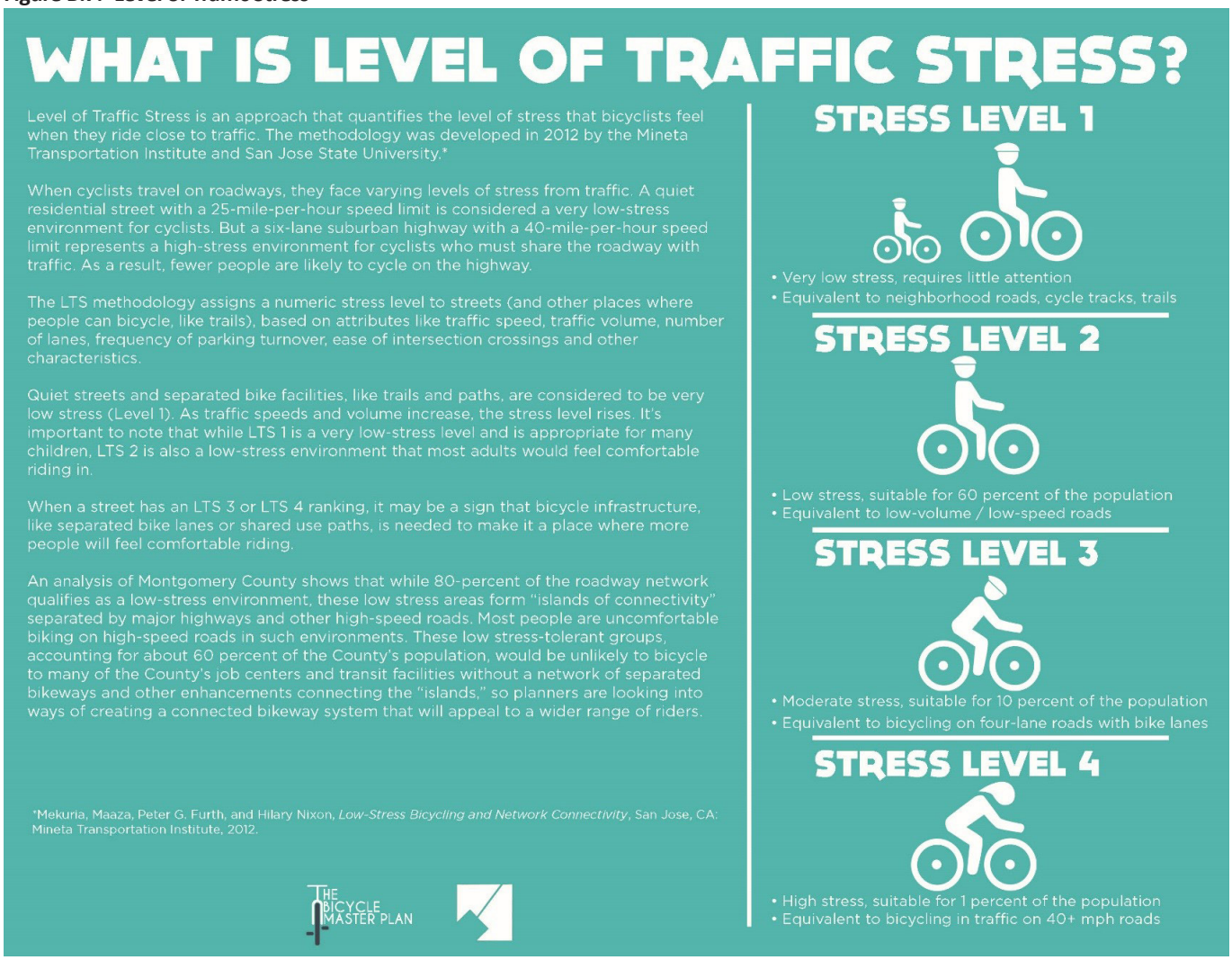
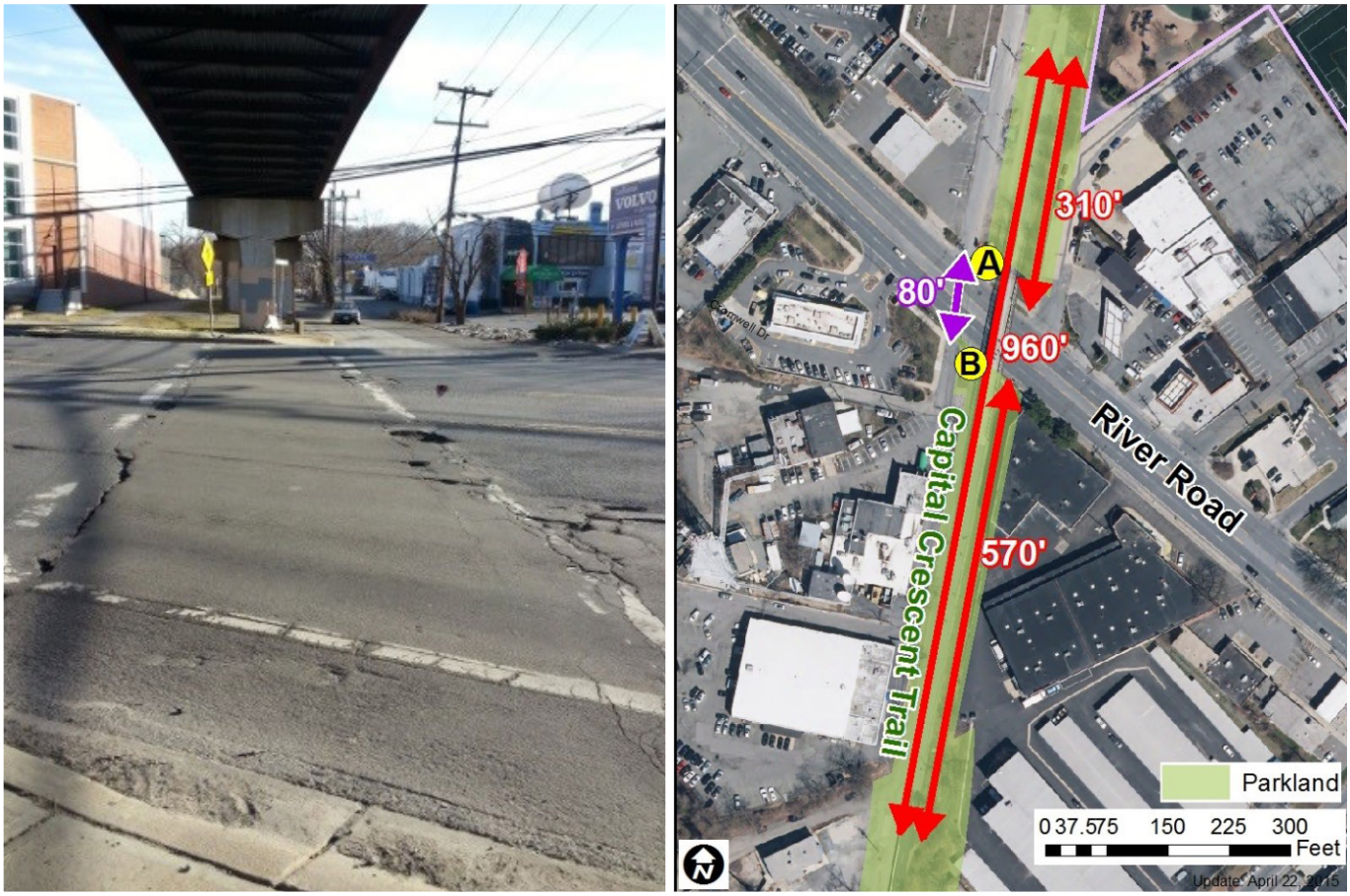


Figure B.8: Existing Level of Traffic Stress Results

B.2.6 Pedestrian

The existing at-grade pedestrian crossing of River Road at the Capital Crescent Trail lacks sufficient infrastructure to facilitate an easier, faster and safer crossing of River Road at-grade. The image on the left in Figure B.9 shows the current pedestrian conditions to cross River Road. There is only a sign and a non-highly-visible crosswalk indicating to vehicles that pedestrians can cross River Road in this location. The image on the right in Figure B.9 indicates the distance that would be required for a pedestrian to safely cross River Road using the CCT versus crossing at-grade. A person trying to get from point A to point B using the CCT would take about 7.5 minutes to travel the 1,840 feet walking at a pace of 4 feet per second. If a safer crossing of River Road is provided, then the crossing time between point A and B is reduced to about 20 seconds.

Figure B.9: At-grade Pedestrian Crossing of River Road at the CCT



B.3 Travel Demand Forecasting Methodology and Process

The following steps were undertaken to develop peak hour forecasts and conduct operational analysis of plan area intersections. The first section describes the travel demand modeling conducted to generate 2040 daily forecasts and the second outlines the process used to gather existing intersection counts and develop 2040 peak hour forecasts.

B.3.1 Travel Demand Modeling

The Metropolitan Washington Council of Governments (MWCOG) travel demand model version V2.3.52 was used as the basis for forecasting vehicle trips on the road network. The baseline for the model incorporates land use and regional transportation network changes from the Round 8.2 Cooperative Forecasts. Two different analysis years were used to estimate the impacts of the proposed land use change in the Westbard area. The first was year 2015 that established current year conditions, and the second was year 2040 that incorporated background growth, changes from the proposed Westbard Master Plan, as well as nearby master plan proposed changes. Land use verification was also done to ensure that the model incorporated known changes in nearby land uses that were not associated with any proposed Sector Planchanges.

No modifications were made to the local road network as the existing roads contained the number of travel lanes called for in the currently approved 1982 Westbard Sector Plan. Additionally, no modifications were made to the current or future transit networks in the model. The Traffic Analysis Zones (TAZs) structure of the model in the study area remained intact as it was determined that the TAZs were sufficient to forecast vehicle trips resulting from the proposed change in land use.

The two applicable TAZs from the MWCOG model in the Westbard study area are shown below in Table B.4 along with the 2040 land use inputs. The 2040 model run also incorporates the proposed land use changes associated with the revisions for Bethesda and Lyttonsville Sector Plans. The Intelligence Community Campus – Bethesda (ICC-B) is also accounted for in the 2040 land use and is part of the Round 8.2 baseline land use that was used in the model.

Daily volumes were taken from the model, instead of peak period volumes, as this makes for a simpler comparison to available Average Annual Daily Traffic (AADT), which is used to help estimate the peak hour impacts that are the subject of the Critical Lane Volume analysis presented later on in this report. Daily traffic forecasts were estimated utilizing procedures from the *National Cooperative Highway Research Program (NCHRP) 765: Analytical Travel Forecasting Approaches for Project-Level Planning and Design.*

The forecasts were developed individually for each intersection in isolation but were tied back to the existing counts that were collected. Since the Sector Plan is a long-term vision for the area, land uses can vary based on development applications, and access points can be moved, the forecasts were not fully balanced between intersections; however, quality control was conducted to ensure that the forecasts between the intersections did not vary widely. When development applications are submitted with traffic studies, the intersections will be reviewed to ensure that all vehicles entering and exiting a development or turning at intersections will capture the appropriate traffic.

The 2015 baseline model results (using Round 8.2 land use) were used as the base year traffic assignment. The 2040 model results (using Round 8.2 land use with the exception of the proposed land use changes in Westbard as well as the proposed changes in the Bethesda and Lyttonsville Sector Plans) were used as the future year traffic assignment. The daily forecasts resulting from the NCHRP 765 post-processing were taken as-is with minimal manual adjustments.

B.3.2 Existing and 2040 Intersection Analysis

Existing intersection counts from fall 2014 and one intersection count from spring 2015 (Massachusetts Avenue and Little Falls Parkway) were provided as the basis for 2015 existing conditions and to calibrate year 2040 forecasts. The AM and PM peak hours were extracted for each location based on the peak hour as indicated by the existing intersections counts. Daily roadway volume was extracted from Geographic Information Systems (GIS) shapefiles acquired from the Maryland State Highway Administration (SHA). The daily data used for this study was AADT from the year 2013.

Table B.4: Land Use Inputs for 2040 Vision Plan

TAZ	Households	Population			Employment				
		Household	Group Quarters	Total	Industrial	Retail	Office	Other	Total
641	1,283	2,759	0	2,759	156	217	66	97	536
642	3,795	10,186	138	10,324	718	1,197	1,039	948	3,902
Total	5,078	12,945	138	13,083	874	1,414	1,105	1,045	4,438

NADMS for Journey to Work							
		From Area			To Area		
	Plan Area	Auto Ps	NADMS	Total Ps	Auto Ps	NADMS	Total Ps
Bethesda	637	3090.15	1158.148	62.5%	9344.33	4960.89	46.9%
	662	4211.55	1462.301	65.3%	28464.97	13331.92	53.2%
	663	4969.46	1889.119	62.0%	8039.25	4386.052	45.4%
	Total	**12271.16**	**4509.568**	**63.3%**	**45848.55**	**22678.86**	**50.5%**
Westbard	641	1091.41	581.125	46.8%	1141.77	870.9707	23.7%
	642	3343.1	2194.889	34.3%	1592.08	1268.876	20.3%
	Total	**4434.51**	**2776.014**	**37.4%**	**2733.85**	**2139.847**	**21.7%**
Greater Lyttonsville	626	5104.13	1997.914	60.9%	940.43	550.7414	41.4%
	628	1826.22	817.55	55.2%	1695.44	996.8821	41.2%
	630	668.01	359.5836	46.2%	2883.14	1896.926	34.2%
	631	1205.22	597.125	50.5%	306.89	181.135	41.0%
	Total	**8803.58**	**3772.172**	**57.2%**	**5825.9**	**3625.685**	**37.8%**

The intersection peak hour forecasts (k-factors) were calculated for each approach of the analysis intersections based on the existing intersection Turning Movement Count (TMCs) and AADT data, where available. The k-factors were applied to the post-processed daily traffic volume on each approach of each intersection to calculate an initial estimate of peak hour traffic. Where a k-factor was unavailable due to incomplete AADT data, approach volume was estimated based on available data at the intersection. The ratio of existing year approach volumes and forecasted approach volumes (on available approaches) was used to scale existing year approach volumes (for approaches without data).

For example, if an intersection had existing year AADT data for the north, south, and east legs but not the west leg, future year approach volume was calculated for the north, south, and east legs. Then, a ratio of existing TMC volume and this calculated approach volume was calculated for these three approaches. These ratios were averaged and applied to the existing approach volume on the west leg to obtain a future year approach volume for the west leg.

The intersection traffic was balanced. The initial estimates of traffic on inbound links to the intersection were summed, as were the estimates of the outbound traffic. These two sums were averaged, and the individual inbound and outbound approaches were scaled proportionally based on this total. This was done because each approach link has its own k-factor and growth rate from the traffic forecasts which will often lead to unbalanced traffic coming into and out of the intersection.

Forecast turning movements were estimated based on the existing TMCs and the approach link volumes calculated as mentioned above. An iterative balancing technique was applied to ensure the growth applied was reasonable based on the proposed land use changes near a particular intersection. The existing TMCs act as a seed value for the balancing and the 2040 forecast link volumes are the target values for the balancing. No manual adjustments were made to the resulting balanced turning movement volumes; some link volume totals differed slightly from those forecasted due to rounding of numbers during the balancing process.

B.4 Future Year (2040) Analysis of Proposed Land Use Changes

B.4.1 Master Plan Area Traffic Analysis

A. Intersection Critical Lane Volume (CLV) Results

The traffic analysis conducted forecasted future traffic volumes, which estimated projected levels of congestion in the year 2040 at key roadway intersections within and just outside of the Plan area. The analysis assumed that the roadway network in the year 2040 would be the same as it is today, except for the new connector road, which would run from the intersection of Westbard Circle/Westbard Avenue to River along the west side of the CCT. This road was not added to the larger MWCOG model, but was instead added after the model was run using the NCHRP 765 post processing method as mentioned above in the methodology section. The results of the CLV analysis are shown in Figure B.10 and Table B.5.

As shown in this Figure and Table, the intersections continue to stay within the CLV threshold of 1,600. Background growth and the Lyttonsville Sector Plan, Bethesda Sector Plan and ICC-B campus were assumed in the future year 2040 analysis. While the River Road/ Little Falls Parkway intersection does approach a volume-to-capacity (v/c) of 1.0, it does not reach that threshold. A v/c ratio of 1.0 or higher indicates that the intersection has exceed the acceptable CLV threshold for an area. It should be noted that the intersection of Ridgefield Road/River Road improves in the PM peak hour under the proposed land use change. This is due to the new connector road that allows for some vehicles that originally had to travel to Ridgefield Road to access westbound River Road, to instead access River Road at this location. The left turn volume on Ridgefield Road to access westbound River Road is reduced, which improves the CLV of the intersection.

One other reason that the CLVs do not exceed the congestion threshold is due to the rebalancing of land uses within the Sector Plan area. Table B.6 shows that

Figure B.10: Future Intersection Critical Lane Volumes

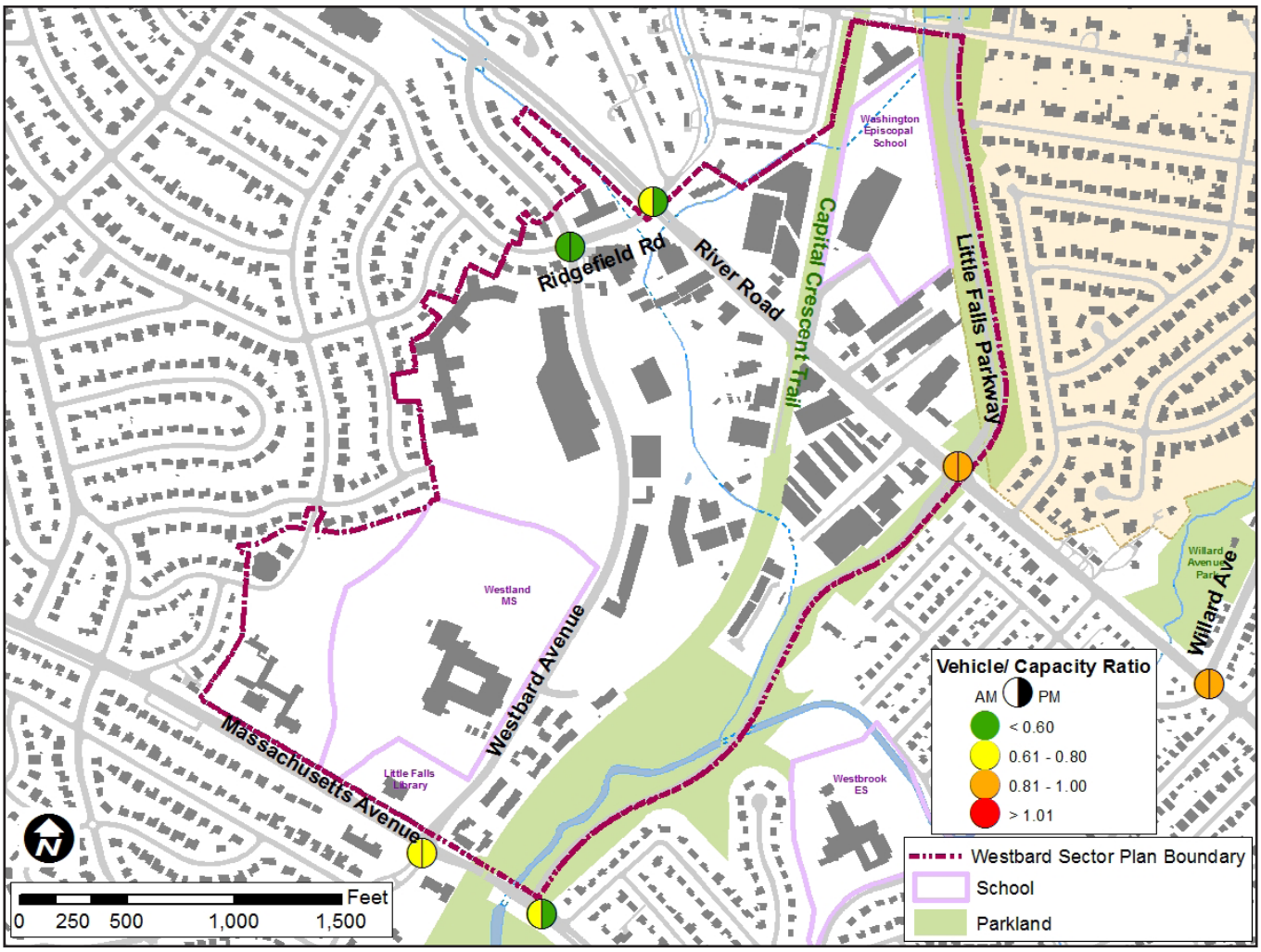


Table B.5: Future AM and PM Volume to Capacity Rations and Critical Lane Volumes

Intersection	AM Existing CLV		PM Existing CLV		AM Future CLV		PM Future CLV	
	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C
River Road/Ridgefield Road	1,130	0.71	1,047	0.65	1,218	0.76	954	0.60
River Road/Little Falls Parkway	1,321	0.83	1,291	0.81	1,501	0.94	1,554	0.97
River Road/Willard Avenue	1,215	0.76	1,241	0.78	1,312	0.82	1,370	0.86
Ridgefield Road/Westbard Avenue	558	0.35	531	0.33	903	0.56	858	0.54
Massachusetts Avenue/Westbard Avenue	976	0.61	913	0.57	1,096	0.69	1,027	0.64
Massachusetts Avenue/Little Falls Parkway	1,097	0.69	931	0.58	1,244	0.78	1,127	0.70

the current 1982 Westbard plan compared to the proposed plan is essentially vehicle trip neutral. This is shown in the bottom line in Table B.6. Additionally, the proposed plan is more balanced in terms of the number of vehicles entering and exiting the study area in the AM and PM peak hours compared to the current plan, which can be clearly seen in the AM peak hour when comparing the split distribution of the current plan to the proposed plan. The better balancing of the land uses, which enables a more evenly distributed number of vehicles entering and exiting the Sector Plan boundary, allows the road network to be better used and balanced in terms of commuting patterns by not having two-thirds of the traffic enter Westbard in the morning and then leave in the evening, as is the case with the current plan.

B.4.2 Model - Commuting Information Outputs

A cordon line (or circle boundary) was drawn around the TAZs that make up the Sector Plan Boundary to determine the number of vehicles that travel into the plan area, from the plan area to a destination outside of the cordon line, or through the plan area on their way to another destination. The model revealed that roughly 80 percent of the vehicles crossing the plan boundary are traveling through the area to other destinations. That means they are commuting, for example, from points west along River Road or Massachusetts Avenue to access employment destination in the District of Columbia. This is important because no change in the land use, other than a dramatic re-concentration of jobs and/or housing on the scale of Bethesda, is likely to affect these trips. These are trips that need to be accommodated on the regional roads, such as River Road or Massachusetts Avenue. Improving operations of River Road, as noted in the existing conditions, can help by increasing the capacity of road and reducing the neighborhood cut-through traffic that surrounds the Sector Plan boundary.

B.4.3 Additional Operational Considerations

Three considerations were assessed during the analysis process and they are each described in below.

A. Incorporating the Effects of the Intelligence Community Campus - Bethesda Sangamore Facility

As part of the 2005 Base Realignment and Closure (BRAC) activities, the mission for the former National

Table B.6: Vehicle Trip Comparison – Current 1982 Plan to Proposed Plan

Current Max Plan (current zoning)

Development	Units/SF	AM Peak Hour Trips			PM Peak Hour Trips		
		In	Out	Total	In	Out	Total
MF Residential (M-NCPPC)	1,684	148	593	741	533	275	808
Retail (M-NCPPC)	576,933	589	544	1,133	2,357	2,176	4,534
Office (M-NCPPC)	145,591	208	31	240	39	191	230
Light Industrial (ITE-110)	1,372,585	1,347	184	1,530	217	1,589	1,805
Total		**2,293**	**1,352**	**3,644**	**3,147**	**4,230**	**7,377**
Split Distribution		63%	37%		43%	57%	

Proposed Max Plan

Development	Units/SF	AM Peak Hour Trips			PM Peak Hour Trips		
		In	Out	Total	In	Out	Total
MF Residential (M-NCPPC)	3,604	317	1,269	1,586	1,142	588	1,730
Retail (M-NCPPC)	544,803	558	515	1,074	2,233	2,062	4,295
Office (M-NCPPC)	247,444	359	54	413	64	312	376
Light Industrial (ITE-110)	493,895	434	59	494	66	483	549
Total		**1,669**	**1,897**	**3,566**	**3,505**	**3,445**	**6,950**
Split Distribution		47%	53%		50%	50%	

Current Plan to Proposed Plan	AM Peak Hour Trips			PM Peak Hour Trips		
	In	Out	Total	In	Out	Total
Total Peak Hour Trip Difference	**-624**	**545**	**-79**	**358**	**-785**	**-427**

Geospatial-Intelligence Agency's (NGA) Sumner Site at 4600 Sangamore Road has been revised so that it is now the home of the Intelligence Community Campus – Bethesda (ICC-B). The site was reviewed by the Planning Board as mandatory referral number 2011105-MDP-4 in September 2011. Community concerns relate to the fact that the campus is located in a residential neighborhood and that the potential exists for cut-through traffic in Westbard via residential streets such as Overlea Road. The November 2011 Transportation Management Plan for the ICC-B site confirms the assumptions already embedded in the MWCOG model that, while the facility had reduced operations during reconstruction to transfer from NGA to ICCB activities, the 3,000 jobs anticipated at the ICCB site for the foreseeable future are included in the background land use assumptions for the Westbard Sector Plan.

B. Little Falls Parkway Traffic Operations

Concerns regarding the extent of current and future delays along Little Falls Parkway between River Road and Massachusetts Avenue were raised as part of this Plan. In this segment, Little Falls Parkway is reduced from four lanes (through the River Road intersection) to two lanes (south of River Road). The concern was that the single-lane roadway segment might constrain traffic flow and that perhaps reversible lane operations should be considered.

The existing and forecast CLV values shown in Table B.2 indicate that the intersection of Little Falls Parkway and River Road currently operates within the 1,600 CLV standard and is forecast to operate within the CLV standards under the 2040 Vision Plan scenario. The likelihood of delays due to the southbound Little Falls Parkway merge from two lanes to one lane immediately south of River Road are very slight. This segment of Little Falls Parkway is nearly fully access controlled; there is one driveway and Willet Bridge Road is the only side street that serves a small area of localized land uses. No trucks or parking are allowed on this segment of Little Falls Parkway, so the "link" capacity (segment of road) is roughly 1,600 to 1,800 vehicles per hour, and the highest peak-hour, peak direction volume for 2040 forecast for this link is under 700 vehicles per hour.

Reversible lane operations are not an effective treatment for Little Falls Parkway. Generally, reversible lane arterials are only considered feasible when the directional split exceeds about 65% (guidance tends to range from 60% to 70% as a minimum threshold). Little Falls Parkway has peak period directional splits on either side of River Road ranging from 51% to 57%.

Community members expressed concerns about delays on southbound Little Falls Parkway approaching Massachusetts Avenue, potentially influencing some motorists using the grassy shoulder to bypass queued vehicles waiting to turn left. A peak period (6-hour) traffic count was taken at the Massachusetts/Little Falls Parkway intersection on April 14, 2015. No unusual delays or illegal shoulder use were observed during the traffic count and the CLV values in Table B.2 indicating LOS A and B conditions are consistent with conditions observed in the field.

C. Road Diet for Westbard Avenue

Westbard Avenue currently has a four-lane undivided typical section between Ridgefield Road and Massachusetts Avenue. The forecast 2040 Vision peak hour traffic volumes are about 500 peak hour, peak direction vehicles (southbound in the AM peak, northbound in the PM peak). The off-peak direction volumes are about 300 in both AM and PM peak hours. The total forecast average daily traffic volumes are in the range of 8,000 to 10,000 ADT, well within the rule of thumb (up to 15,000 ADT) that can be accommodated on a two-lane roadway (with good access management) or three-lane roadway with a two-way left turn lane (where driveways and cross streets are more frequent). Further operational analysis would be required to assess elements such as pedestrian crossings, bicycle accommodations and transit operations, but a reduction from four lanes would be an appropriate treatment from a planning perspective based on forecast traffic volumes.

D. Urban Road Code Designation

The Westbard Sector Plan area should be designated as an urban road code area. This designation is intended to improve safety in areas with a lot of pedestrian activity. The designation is necessary for the roads to be eligible for alternative road designs that improve safety by narrowing travel lanes, having smaller curb radii, lowering target speeds (25 miles per hour) and allowing for more bicycle accommodation. This designation only applies to the roads and other

transportation elements within the public right-of-way and not to the built environment that is being recommended in the land use section of the Sector Plan.

Recommendations for Roadways

- River Road (MD 190) should continue to be classified as a major highway and contain four travel lanes with a median to accommodate left turns. The right-of-way should be a minimum of 110-feet.
- Westbard Avenue should be classified as a minor arterial from Massachusetts Avenue to Westbard Circle and contain four travel lanes. The right-of-way should be a minimum of 74-feet. On-street off-peak parking should be considered.
- Westbard Avenue/Ridgefield Road should be classified as a business district street from Westbard Circle to River Road and contain four travel lanes. The right-of-way should be a minimum of 100-feet. On-street off-peak parking should be considered.
- A new connector should be constructed from Westbard Avenue to River Road with two undivided travel lanes. The right-of-way should be a minimum of 52-feet or as minimal as possible to limit the impacts to park facilities.
- A grid of streets should be created on the Westwood Shopping Center property (Giant Food) to provide connectivity for future development.
- Reconfigure Westbard Avenue heading toward River Road to prioritize the traffic movement from Westbard Avenue to Ridgefield Road, instead of Ridgefield Road to River Road. This reconfiguration would create Westbard Avenue extended that would connect directly with River Road. Ridgefield Road would be reconfigured and would no longer connect directly to River Road.
- Designate the Sector Plan boundary as an urban road code area.

E. Bicycle Level of Traffic Stress Test Results and Recommendations

The results of the LTS test are shown in Figure B.11. The recommendations to improve bicycling within the Westbard Area are:

- Separated bicycle lanes on the north side of River Road. This changes the LTS from 4 to 1.
- Separated bicycle lanes on the north segment of Westbard Avenue and shared use path on the southern segment of Westbard Avenue. This changes the LTS from 2/3 to 1.
- Increase local connectivity to and from the CCT to allow it to be more integrated into the community. This can occur with the new connector road that is recommended as part of the road network.
- Designate the area as an urban road code area, which is also recommended under the road network.

The improvements as recommended above are intended to provide a network of LTS 1 (low stress) bikeways that will make Westbard more accessible to users of all bicycle riding groups.

F. Transportation Demand Management (TDM) Recommendation

A specific Non-Auto Mode Share (NADMS) goal is not being recommended for the Westbard area; however, new development should strive to minimize its impact on the transportation network by encouraging the use of travel modes other than single occupancy vehicles.

TDM should be considered as a mitigation strategy and thus is recommended as part of any development in the Westbard area. TDM strategies could include the use of the latest information technology techniques to encourage teleworking, provide sufficient information to enable commuters and other trip makers to choose travel modes and travel times, or decide if travel is actually necessary at that time. Strategies also include encouraging transit use, shared parking for uses which have different peak demand periods, instituting paid parking or other parking reduction strategies are encouraged. The appropriate mix of uses is also a TDM strategy that helps to reduce congestion by providing services within close proximity to minimize trips and trip lengths, or by better balancing trips on the road

Figure B.11: Future Bicycle Level of Traffic Stress

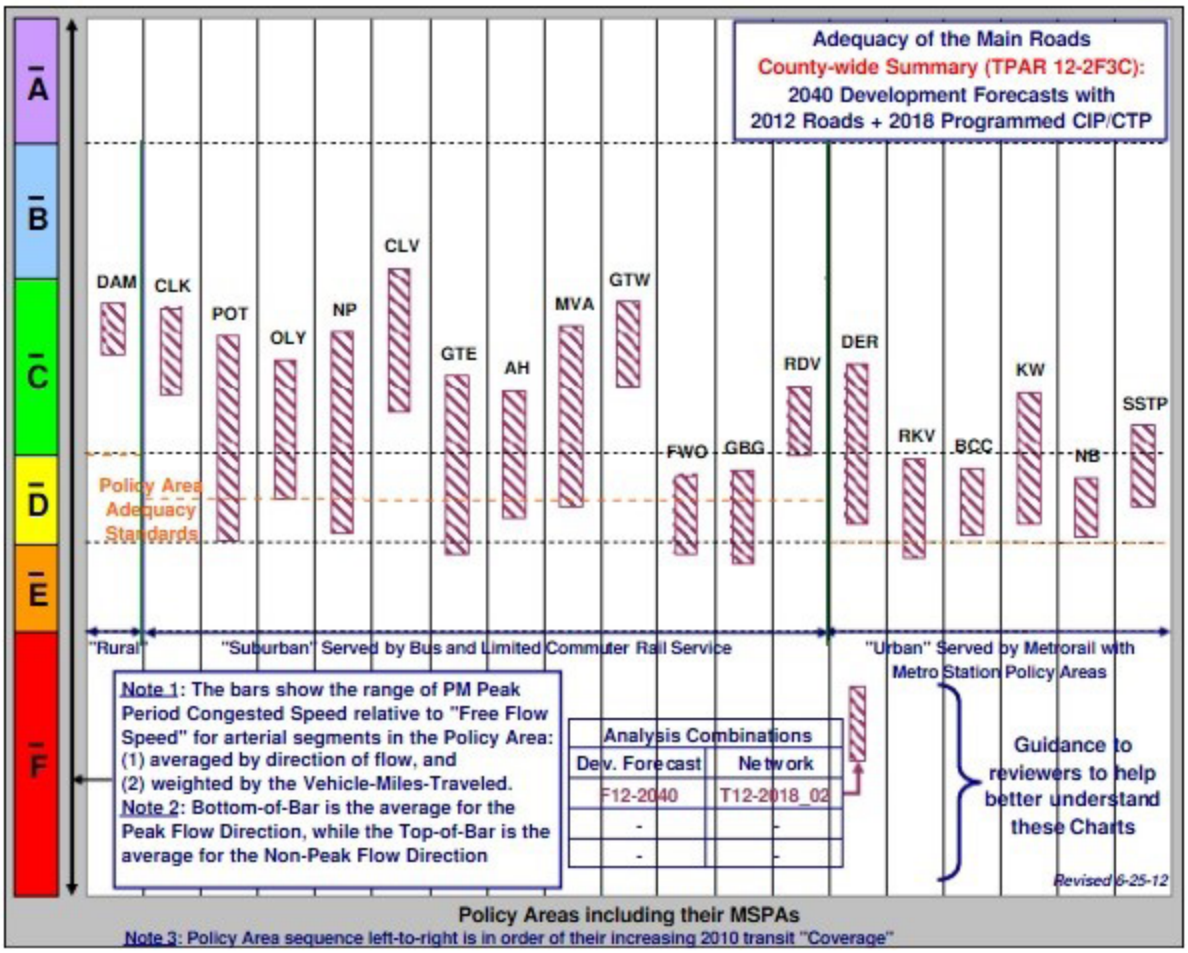
network to promote non-peak period directional travel or off-peak period travel. The TDM program should be specific to a given site, given the proposed mix of uses, density and location within the Westbard area.

G. Policy Area Roadway Network Adequacy Test

In support of the 2012 Subdivision Staging Policy (SSP), a Transportation Policy Area Review (TPAR) analysis was performed for each policy area in the county to test the roadway network's adequacy in 2040. The year 2040 TPAR analysis took into account buildout of all the adopted master plans by the year 2040 in combination with the implementation of all the unbuilt master planned projects anticipated to be constructed by 2040. It should be noted that this differs from TPAR analysis for year 2024 that is currently used in the context of the regulatory review process. In the 2012 SSP year 2040 TPAR analysis, the Bethesda-Chevy Chase Policy Area is shown to be adequate for the roadway test. Given that the Westbard Sector Plan area is a small subset of a much larger policy area and the planned growth in Westbard is anticipated to be relatively minor compared to what is zoned but not built, the transportation network is considered to be in balance with the land use and densities proposed by the Westbard Sector Plan.

Note that the analysis conducted for this Sector Plan is not intended to be a blanket traffic study for new development in Westbard. Instead, it is intended to demonstrate that at a high level, the anticipated year 2040 transportation network, in combination with improvements as recommended in the plan, can adequately support the zoning recommendations and increased densities in the Westbard Sector Plan.

Figure B.12: 2040 Development Forecasts and Road Adequacy



B.5 Conclusion

The recommendations as outlined previously are intended to promote a multimodal transportation system through a complete network of streets that encourages equitable roadway utilization by all modes of transportation within the Westbard community over the life of the Sector Plan. It is anticipated that an enhanced multimodal transportation network, resulting from this plan's recommendations, will meet future transportation demand within the Sector Plan area through the horizon year of this document.

Appendix C: Environment

C.1 Introduction

The most remarkable environmental feature in Westbard is the presence of the mainstem of Willett Branch. Few, if any, development centers in Montgomery County can say that they've got a river running through them. Although Willett Branch has been engineered as a storm drain and is still being used for illicit dumping, it has the potential to be an asset, a unifying feature and wonderful natural area right in the midst of Westbard.

Other remarkable features are the greenways adjacent to and within Westbard, such as Little Falls Parkway, the Capital Crescent Trail and Willett Branch. With some guidance from the Sector Plan, the Willett Branch could become an accessible walkable greenway all the way through Westbard, connecting in three different locations the Capital Crescent Trail and Little Falls Parkway. The main roads like River Road and Westbard Avenue are also an opportunity through redevelopment to create continuous green canopied roads from end to end through Westbard.

Although Westbard boasts a 42% canopy cover, much of this area is in poor condition. Trees and forest edges are threatened by invasive plants, such as vines that smother the canopy. Furthermore, there are many areas within Westbard that are completely lacking trees and canopy cover, creating an intense and unhealthy urban heat island effect. The Sector Plan recommends that forest mitigation requirements for development in Westbard be met within Westbard by improving and enhancing existing forest in this area.

Westbard's history of heavy industrial uses has left its mark on the area. A 1956 United States Geological Survey map shows several rail road spurs serving sites such as a granite quarry and a gas storage facility. A number of sites restrict development due to industrial contamination. These areas will need both long and short-term mitigation in order to redevelop. Although there are former known munitions dumps in the Washington region, the U.S. Army Corps of Engineers knows of no munitions on sites in or near Westbard.

Westbard is largely characterized by a harsh landscape with more than two thirds of the imperviousness devoted to cars. As redevelopment takes place, surface areas for roads and parking should be reduced,

but what is built be shaded and more inviting and more healthy landscape.

The overall goal is to move Westbard closer to environmental sustainability and make this area a more healthy, desirable and livable place by planning to support and improve its remarkable environmental features.

C.2 Existing Conditions

C.2.1 Little Falls Watershed

- The Little Falls subwatershed is one of the County's most urban stream systems and some of the oldest developed areas of the County.
- Most of the development in this subwatershed occurred before today's requirements for protected stream buffer, wetlands and floodplains, and treatment of stormwater runoff, which has resulted in very poor water quality and very little aquatic life.
- The original drainage pattern of Little Falls has been extensively altered. Small feeder streams, which once supplied water and aquatic life, have been covered over to make room for development or dried up due to extensive impervious surfaces.
- Little Falls receives much of its drainage from highly impervious areas in the Bethesda Central Business District and Friendship Heights.

C.2.2 Willett Branch

- Two thirds of Westbard drains to Willett Branch, a major tributary to Little Falls.

70% of stream channels in Willett Branch are enclosed in storm drains or lined with concrete ditches. High velocity uncontrolled runoff is a major impact to downstream channel stability.

C.2.3 Stream Channelization

Channelized and piped areas throughout the subwatershed deliver flows into downstream channels at accelerated velocities and often with very high temperatures after flowing through open concrete channels or across paved surfaces warmed by the summer sun.

While stream channelization may solve local flooding problems, it also results in environmental impacts such as:

- Thermal pollution.
- Reduced aquatic life.
- Habitat loss/lack of shade and food source.
- Concentrating runoff further downstream.

Channelization provides absolutely no habitat for aquatic life resulting in a broken place in the food web.

Redevelopment in Bethesda and the surrounding neighborhood is slowly adding stormwater management to areas that were developed without it.

C.2.4 Impervious Cover

- Westbard has a 57% impervious cover. This level is analogous to levels expected in highly urbanized downtown areas.
- Impervious cover seals off soil and the potential for infiltration. Therefore, all rainfall rapidly runs off, overloading storm drainage systems and conveying pollutants directly to streams without the benefit of purification via soil infiltration.
- Much of the originally sloping landscape has been terraced to create usable development pads. This treatment has created even steeper slopes between sites, exacerbating the erosion potential.
- Significant areas of existing impervious cover are unnecessary and the result of outdated design standards.

C.2.5 Canopy Cover

Most of the impervious cover of Westbard is unshaded creating an urban heat island effect (UHIE).

UHIE is created by an area with low levels of vegetation and therefore increased levels of solar radiation collected by thermal mass such as brick, concrete, pavement and impervious surfaces. This heat amplifies and extends times of intensive heat, creating negative impacts:

- Health hazards associated with volatile organic compounds (VOCs) and heat exposure.
- Increased energy use in cars and buildings.
- Increased stormwater runoff.
- Poor air quality.

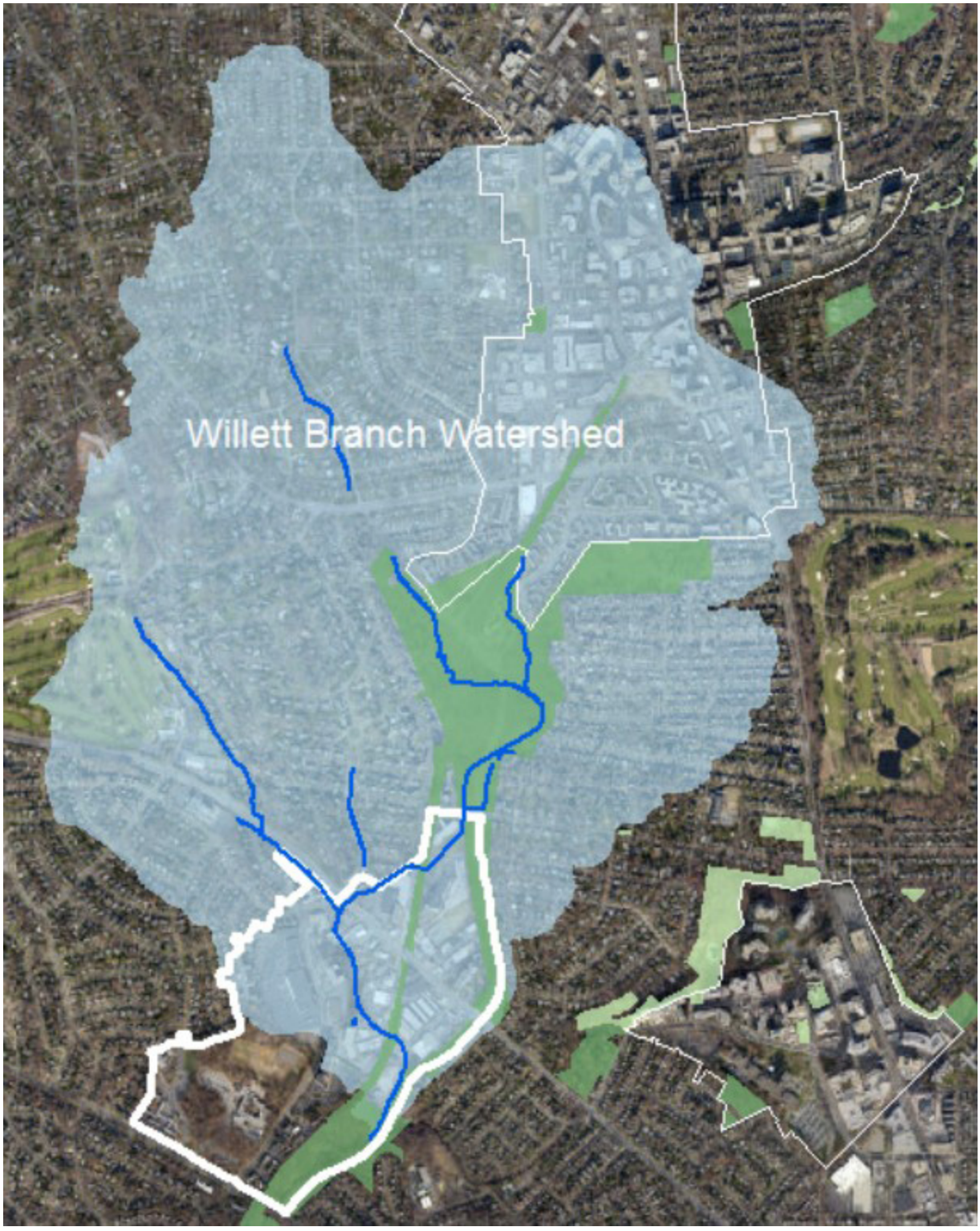
C.3 Willett Branch

Willett Branch has a large watershed that extends well beyond the boundaries of Westbard and includes much of downtown Bethesda and Kenwood Country Club. By the time flows reach Westbard, Willett Branch is contained within a concrete channel that continues until just before its confluence with Little Falls. Development practices of the past in much of Bethesda and the neighborhoods to the south and west of Bethesda made this necessary by piping and often burying the small streams of the watershed and forcing stormwater runoff to flow uncontrolled to storm drains and the major stream channels. Figure C.1 clearly shows that only the main branches remain above the surface. Without concrete armoring, erosion of Willett Branch's stream banks would destabilize this stream system and among other issues create siltation problems downstream. Although stormwater retrofits within this watershed are slowly taking place throughout the watershed as redevelopment takes place, it will be a very long time before it is safe to remove Willett Branch from reinforced stream channels containing engineered elements.

Within Westbard along the main stem of Willett Branch there are approximately 850 feet of tunnels enclosing segments of the stream flow. Apart from storm events, the flow of Willett Branch appears to be minimal. There are a number of reasons for this lack of flow. The concrete channel disconnects Willett Branch from ground water which, under normal circumstances, would supply a large percentage of stream flow (base flow) in addition to surface flow. Also, due to poor development practices, rainfall does not get the opportunity to infiltrate, but is rather forced to flow downstream as quickly as possible. This creates extreme flows during storm events and minimal flow at other times. Finally, the concrete channels of Willett Branch within Westbard are approximately 12 feet wide at the bottom. Normal flow spread over this width will appear very shallow except during storm events. In fact, the entire stream channel within Westbard is walkable, including the tunnels.

Willett Branch in Westbard cannot be restored to a natural condition until the upstream hydrology in

Figure C.1: Willett Branch Watershed



Bethesda has been controlled. This being said, there are a number of long and short-term measures that are recommended in the Sector Plan that would improve Willett Branch, not only for the purpose of water quality, but also to make it a more accessible natural feature and an amenity for the community.

The following is a description of the conditions of Willett Branch and recommendations about improvements that could be implemented in the short and long term.

C.3.1 Northern Area

Willett Branch enters the Westbard area at the very northern planning area boundary. The Dorset Avenue crossing is a low and narrow box culvert. For approximately 150 feet, the stream becomes channelized as it flows past the Kenwood House condos.

It then goes underground as it flows into a very wide 150-foot-long tunnel. This tunnel is under the Episcopal Episcopal School (WES) ball field. A large sewer line also crosses under the ball field parallel to the Willett Branch tunnel.

Just beyond the end of the tunnel, the stream crosses under the Capital Crescent Trail and returns to the surface.

Recommendations

- Willett Branch crossings at Dorset Avenue and the Capital Crescent Trail should take place with an environmentally sensitive crossing consisting of a wider span that can accommodate naturalized channel and pedestrian path/trail along stream.
- Future redevelopment of the Kenwood House should provide an increased buffer area from the stream. Stream channel enhancement and naturalization should take place where possible.
- Should the WES property change hands and redevelop, Willett Branch should be returned to the surface and given a natural buffer.
- This daylighting of the stream should include a trail connection between Little Falls Park and the Capital Crescent Trail.

Figure C.2: Northern Area

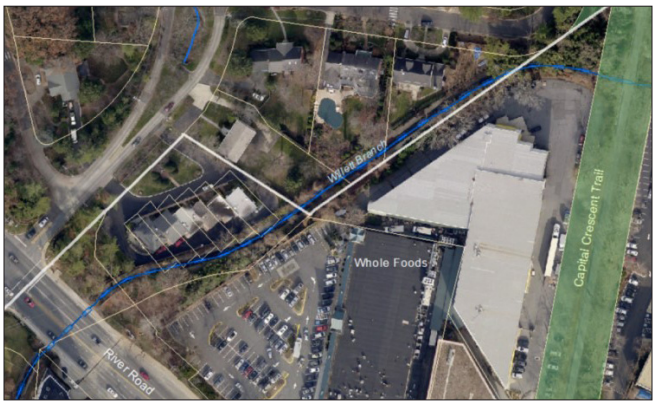


Figure C.3: Kenwood Branch Confluence Area

C.3.2 Kenwood Branch Confluence Area

Continuing in a concrete channel, Willett Branch straddles the boundary between Westbard and the Kenwood neighborhood. It flows past Kenwood storage facility and the Whole Foods parking Lot. The stream is approximately 12 feet lower than the surface of the parking lot.

On the other side of the parking lot is a row of six townhouses built in the 1960s with no stormwater management and featuring paving that abuts the stream channel. Willett Branch next crosses under River Road within a large tunnel. It is near this point that the tributary that flows down the median of Brookside Drive is piped into Willett Branch.

Recommendations

- Redevelopment of the Kenwood Storage Facility or the Whole Foods shopping center should widen the non-developed area adjacent to Willett Branch.

- A trail along Willett Branch should link the Capital Crescent Trail with River Road.
- Redevelopment of the townhomes should provide a stream buffer along the Willett Branch channel.
- Reconstruct the River Road Bridge with an environmentally sensitive crossing that accommodates naturalized channel and a pedestrian path/trail along stream.

C.3.3 Westwood II Area

Willett Branch reemerges south of River Road much deeper in the landscape and flows across the Westwood II building property. A tributary to Willett Branch joins with the stream from across Ridgefield Road. At this point, the stream valley is barely wider than the stream channel itself. The walls of the stream channel are between 15 and 25 feet high. In addition, the building and parking are held up by a massive retaining wall. The stream goes into another large 250 foot tunnel as it crosses under the landscaping business and roofing company.

The Kenwood building on River Road is held up by a retaining wall. Redevelopment of this site is unlikely. River Road dedication and stream setbacks would leave little space for a building.

Recommendations

- The non-developed area surrounding the stream should be widened and re-naturalized as re-development takes place.
- The area of the stream in the tunnel should be daylighted if redevelopment takes place.

C.3.4 Radio Tower Area

Willett Branch emerges from the tunnel inside a 30+ foot deep canyon where fill from the adjacent uses have created extremely steep slopes. The canyon is between 70 and 200 feet wide and covered with forest. Properties include Bowlmor, a bowling alley, and the HOC Westwood II apartment building on the west side of the stream valley and the radio tower/ Imperial Investments and small properties on the east side. At the base of the radio tower is a wide floodplain that is developed with a seldom-used overflow parking lot that serves the HOC-leased apartment tower that is owned by Equity One.

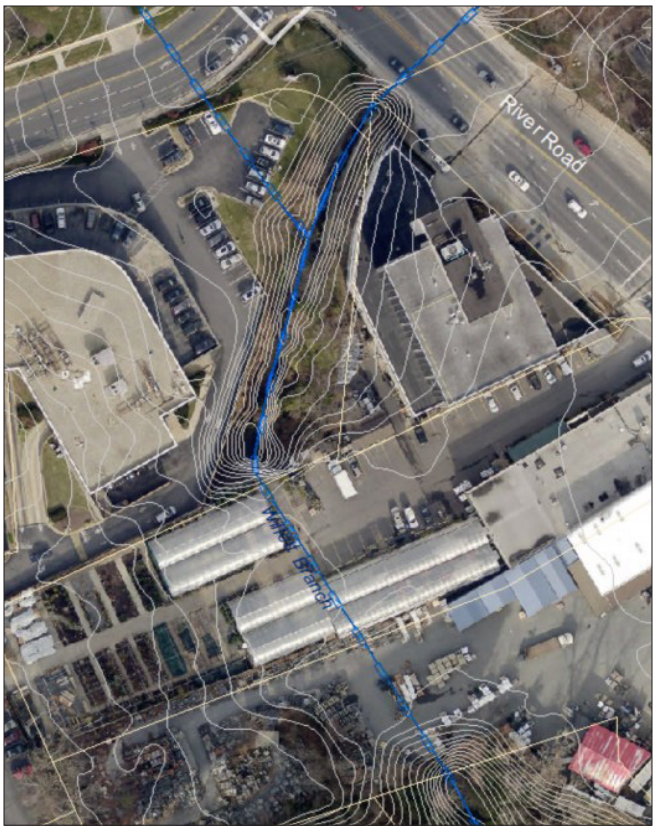


Figure C.4: Westwood II Area

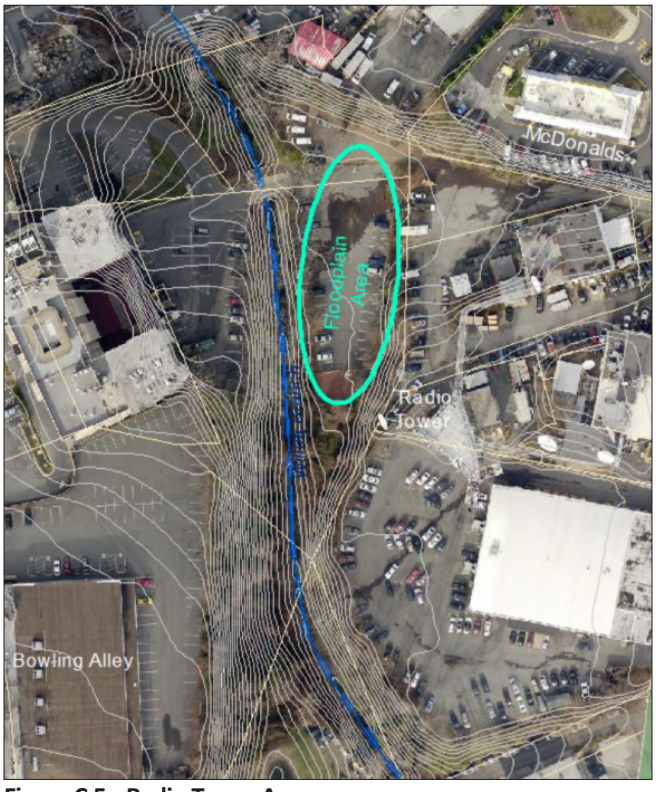


Figure C.5: Radio Tower Area

Figure C.6: Industrial Area

Although not open to general traffic, the bridge in this location is one of the few vehicle/pedestrian crossings of Willett Branch within Westbard.

Recommendations

- The floodplain area could be redesigned as an off-site stormwater management area/amenity for redevelopment in Westbard.

C.3.5 Industrial Area

The stream then flows under a driveway bridge crossing. This driveway originates at River Road, parallels the Capital Crescent Trail on Parkland and then leads to an industrial area currently the home to a landscape company and a small business. This industrial area is also the former site of a granite quarry. The stream is still in a 25 feet deep canyon that is about 80 feet wide and forested up to the concrete channel of the stream.

Recommendations

- Properties west of the Capital Crescent Trail and on either side of Willett Branch are on grade with the trail and have the potential to become public amenity areas along the trail. If publicly owned, these properties could provide a wider buffer area for the stream.

C.3.6 Butler Road Area

As it passes for the second time under the Capital Crescent Trail, Willett Branch enters a 450 foot tunnel. The tunnel continues at the base of Butler Road across the parking areas of several businesses until it reaches

Figure C.7: Butler Road Area

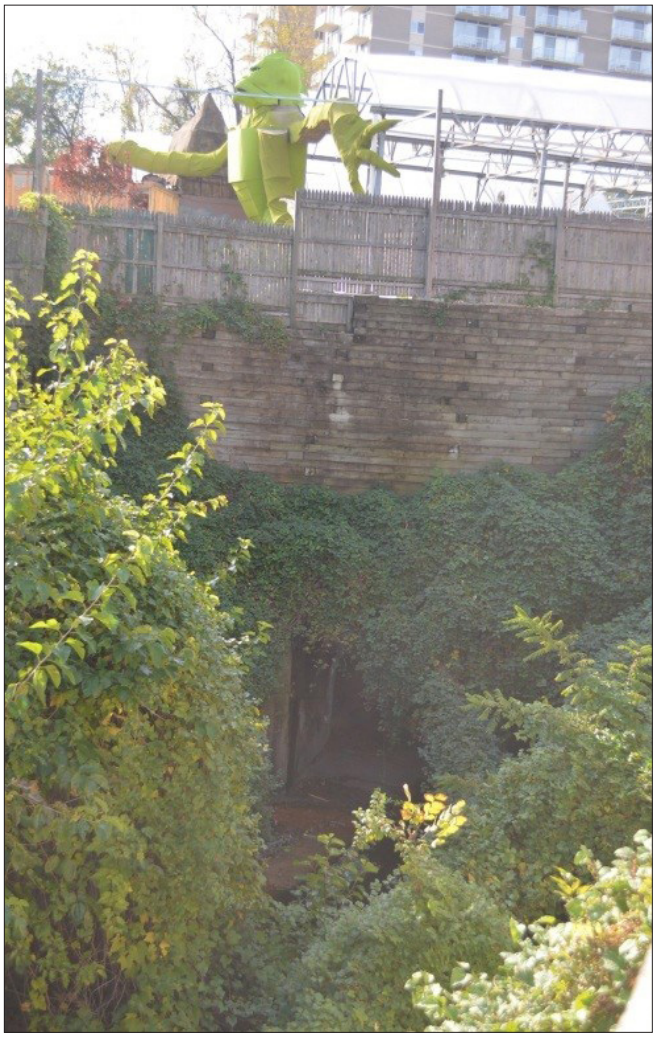
Little Falls Park in the vicinity of the new townhouses at Willet Bridge Road. There, it emerges at the road's entrance bridge to cross Willett Branch. The stream channel is only 6 to 8-feet deep in this location, although the stream is still channelized. The stream parallels the new townhouses flowing south within Park property until it reaches the confluence with Little Falls mainstem near the southern boundary of the plan area.

Recommendations

- This area is another place for a pedestrian connection between Little Falls Stream Valley Park and the Capital Crescent Trail.
- This area would be a good location for stormwater management retrofits as well as public access to the stream.

C.3.7 General Recommendations for Willett Branch

- Pedestrian access to Willett Branch should be studied. This should include options for parallel trails both at the top of adjacent slopes, within the channel and across the channel.
- As redevelopment takes place, efforts should be made to return the landscape near Willett Branch closer to its pre-fill condition.



Entrance to American Plant Food's Willett Branch tunnel

Capital Crescent Trail over Willett Branch

Inside the tunnel

C.4 Site Specific Recommendations

Site specific recommendations for Willett Branch naturalization- upstream to downstream within Westbard.

C.4.1 Dorset Avenue Stream Culvert

Along northern tip of planning boundary (immediately outside of formal Westward planning area boundary).

Existing Condition

Box culvert is low and narrow, limiting opportunities for future comprehensive stream naturalization and an associated pedestrian corridor.

Recommendations

When roadway culvert needs replacement or extensive repairs, reconstruct with an environmentally sensitive crossing (wider span accommodating naturalized channel and potentially include a pedestrian passage along stream).

Long-term recommendation since it may be many decades before culvert needs extensive repairs/ replacement.

C.4.2 Little Falls Stream Valley Park east of Kenwood House

Existing Condition

Straight, channelized stream section located near corner of high-rise building and garage access.

Recommendations

Area between Kenwood House Co-op and Little Falls Parkway. Enhance or naturalize stream channel (including a meander) to the extent feasible (limitations with the existing nearby Washington Suburban Sanitary Commission sewer infrastructure).

C.4.3 Kenwood House Co-op.

Anticipated to remain as existing use/condition.

Recommendations

Any future redevelopment should provide an increased buffer from stream, particularly along eastern edge of site. Provide enhancement of stream channel/valley with re-grading and naturalized plantings. Remove use of concrete in/near stream channel where possible.

C.4.4 Washington Episcopal School (former location of Marriot Headquarters)

Existing Condition

North Willett Branch enters a 500 foot long tunnel underneath the Washington Episcopal School ball fields.

Recommendations

Generally anticipated to remain as existing school use, although one acre of site is anticipated for redevelopment as a midrise building. There are specific staff recommendations outlined for both scenarios of either the school remaining or the school vacating entirely (although the latter scenario is not anticipated for the foreseeable future).

- The school site has its main entrance off Little Falls Parkway (south of Dorset Ave). Decades ago, the school property used to be the Marriott Headquarters which had reportedly obtained the original agreement with Parks on the access. The access appears to be overdesigned (for current use) and also includes considerable acceleration and deceleration lanes. Furthermore, there is considerable maintenance by the school within the Parkway land beyond the immediate access area.

As part of school redevelopment activity the WES should be required to renegotiate the access agreement with Parks staff to replant the areas that are currently maintained for 100 feet or more in either direction of the entrance. This area contains turf grass to the north and sparse grass/bare soil under tree canopy towards the south, rather than the forest settings typically associated with the Parkway.

Remove the acceleration and deceleration lanes associated with the entrance to the extent possible and naturalize area. Stormwater management opportunities should also be explored.

Remove the small concrete channel that parallels Parkway; restore with rip-rap and native plantings. Incorporate stormwater management if possible.

These modifications would be considered short-term recommendations.

- If the school decides to close and a new use is proposed: The ball fields and courts associated with the stream corridor should be demolished and the stream channel daylighted and naturalized. The floodplain would be restored within the general footprint of the ball field, providing stormwater management opportunities. Allow for a formal trail connection from Little Falls Parkway to CCT. An example of the vision for this area is the stream naturalization project recently completed at Evans Parkway Park.
- Long-term recommendation since it is unknown when, and if the school use will be vacated; however, Planning Staff notes that the concrete channel bottom within the culvert has significant buckling that is readily observable from the inside of the tunnel. The damage likely shortens the anticipated lifespan of the structure.

C.4.5 Capital Crescent Trail Stream Overpass

Existing Condition

Bridge span is narrow with vertical walls limiting opportunities for future comprehensive stream naturalization.

Recommendations

When the bridge needs replacement or extensive repairs, reconstruct with an environmentally sensitive crossing. This should include a wider span accommodating naturalized channel and potentially include a pedestrian path/trail along stream.

Long-term recommendation, since it may be many decades before culvert needs extensive repairs/ replacing.

C.4.6 Whole Food/Storage Sites

Potential Short-term Enhancements

- Improve existing vegetative buffer with supplemental native plantings.
- Remove invasive species.
- Explore interim trail connection/access easement.

Redevelopment/Long-term Recommendations

- Provide functioning buffer and stream enhancements to the extent possible.
- Include a trail connection from River Road to CCT along east side of stream corridor.
- Floodplain enhancement near stream.
- Shift redevelopment away from stream.

C.4.7 River Road Overpass

Recommendations

When roadway culverts needs replacement or extensive repairs, reconstruct with an environmentally sensitive crossing consisting of a wider span that accommodates a naturalized channel and potentially includes a pedestrian path/trail along the stream.

- Project would be considered a long-term recommendation, since it may be many decades before culvert needs extensive repairs/replacing.
- Willett Branch Trail should cross the stream within the right-of-way just north of River Road so that the trail continues under River Road on the west side of the stream.
- Willett Branch Trail should provide access to River/Brookside Drive intersection.

C.4.8 Kenwood Court Townhomes

Existing Condition

Row of six townhouses along north side of stream. Built in the 1960s with no stormwater management and featuring paving that abuts the stream channel edge at points.

Recommendations

Has some potential for environmental retrofits that could include rain gardens, stormwater management planter boxes or rain barrels, pervious paving, and native plantings particularly along edges. The enhancements would be relatively simple to perform, however there is no foreseeable regulatory requirement to compel the retrofits, but the homeowners association may qualify for grants or other sources of funding to proactively enhance the environmental conditions.

C.4.9 Manor Care

A comprehensive stream naturalization is needed to stabilize banks address blockage/sediment and the invasive plants

Existing Condition

The associated stream has vertical/undercut banks within 6 feet of the edge of River Road; area has heavy pockets of invasive plants. As the stream enters a culvert, there's a log jam with extensive blockage and considerable buildup of sediment.

Recommendations

Parcel 902, a small adjacent property, should also be included in this enhancement project.

- Coordination with State Highway Administration will be necessary to complete this work.
- The linear parking lot should be deconstructed and reforested as part of the stream naturalization.
- This work may provide off-site forest conservation credit for mitigation requirements in Westbard.
- Daylight the tributary on the north side of Ridgefield Road. This will serve as an amenity area for the new development.
- This project has the potential to be a short-term recommendation due to anticipated redevelopment and the threatened stability of a major roadway and existing infrastructure/ drainage.

Example of naturalized stream with waterfall and adjacent to retail

C.4.10 Westwood Center II Shopping Center

Recommendations

- Provide buffer and stream enhancements for mainstem to the extent possible within the stream valley buffer.
- Provide pedestrian access along north side of stream since opportunities are currently limited on the south side.
- Daylight the currently piped tributary to Willett Branch.
- Provide artful conveyance for the daylighted tributary channel. Full buffer for the tributary is not recommended at this location.
- Exposing channel would provide environmental enhancement over existing condition.
- The drop in elevation from existing tributary to the mainstem channel bottom would allow for elements such a waterfall.
- Site would benefit from the ambient sounds of water.
- Allowing development nearby, such as a pocket park for seating/dinning at this particular setting, provides a dramatic/dynamic landscape feature celebrating the watershed. However the encroachments to the stream valley buffer would need to be offset by supplemental environmental enhancements in other portions of the stream.
- Remove large failing retaining wall and create amenity area with naturalized elements rather than over-engineered structure that fragments the landscape.
- Provide pedestrian access to Willett Branch Trail.

C.4.11 Kenwood Office Building (circa 1975)

Existing Condition

This small site has a limited footprint almost entirely covered with midrise building.

Recommendations

No known plans for redevelopment/provide general standard recommendations.

- Renovation of the building should create a setback from the stream and deconstruct the retaining wall holding up the building's first-floor skirt.
- New building must incorporate an amenity area along Willett Branch.

C.4.12 American Plant Food/Roofing Center

Existing Condition

Site is built on extensive fill directly over the stream channel. The upstream edge of site has an extensive timber wall likely built in the 1980s and nearing the end of its functional life span.

The downstream edge of site has a large, informally built concrete retaining wall apparently constructed with end-of-the-day concrete. (Concrete trucks returning from a jobsite with a partial load remaining must dump out contents before it sets within the trucks storage drum. Landowners sometimes make their sites available to accept the leftover concrete and use it to create low quality pavement or structures.) A large, 3-6-inch crack runs up the entire height of the wall and is readily observable. No rebar that would typically be used to strengthen concrete is visible within the crack.

It is critical to note, even if no stream work was proposed, that redevelopment of the site, particularly near the stream/failing walls, would require extensive earth moving to address the failing infrastructure. Furthermore, depending on the quality of fill material (clean fill dirt vs. concrete, rubble, debris etc.), hauling the material away to an appropriate receiving facility may be more cost effective than processing it into a compactible base material.

If the plant nursery and roof center redevelop:

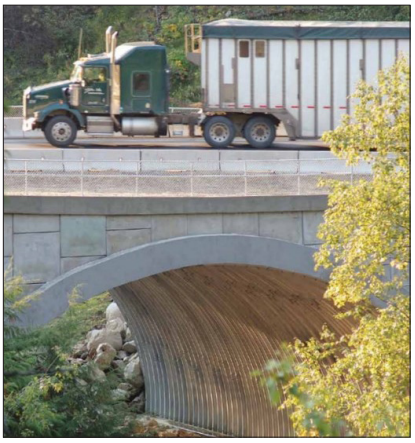
- The existing fill and associated walls should be removed and the stream daylighted. The channel should be naturalized to the extent possible
- A crossing is allowed to maintain a usable vehicular and pedestrian connection between the remaining developable property on the east and west side of the stream channel. This bridge may be pedestrian only if the property is subdivided and vehicle crossing is no longer required.
- Initial recommendation for a bridge was contested by property owner and bottomless culvert arch was agreed upon.
- Arch could incorporate native stone per historic recommendation on use of local materials or have sloped sides that include terracing and access leading to the new trail.
- Allow for pedestrian trail to tie into Park trail.

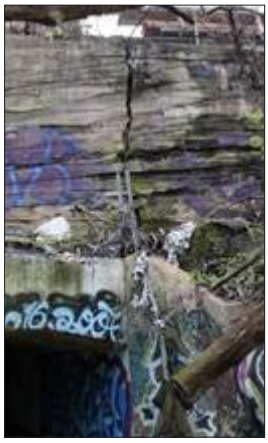
C.4.13 Cemetery Site

Existing Condition

Site currently has informal gravel parking pad on east bank and extensive mounds of dumped unstable soil at top of concrete stream bank. West bank has an approximately 6,000 square feet of a forestlike setting.

- Provide buffer and stream enhancements to the extent possible.





- Landscape setting respectful of site history may be most suitable use.
- Allow for pedestrian trail along west bank.

C.4.14 Radio Tower Area

Existing Condition

The site consists mainly of a seldom-used overflow parking lot that serves the HOC-leased apartment tower that is owned by Equity One.

- The floodplain area could be redesigned from a flat parking lot into a sizable offsite stormwater management (SWM) amenity area for both of the shopping center redevelopments. Per the Little Sugar Creek example, the floodplain capacity in the setting would be restored and allow for detention and storage of overflow from the Willet branch mainstem. SWM benches and terraced seating areas can be incorporated into redesign stream channel.
- Existing groundwater is visible at surface below the McDonalds' retaining wall that flows onto the parking pad. The consistent drainage currently sustains a population of wetland plants in the area. The flows would also sustain/enhance the proposed facility during the times between storm events.
- Project may be a short-term recommendation, since the owner has extensive redevelopment plans within the vicinity.
- Bridge should be replaced with an environmentally sensitive crossing and be limited to pedestrians, emergency access and maintenance vehicles.

C.4.15 Bowlmor Site

Existing Condition

Site appears to have extensive fill with apparently man-made steep slopes reaching approximately 50 foot in height. Slope has a forest setting, although some heavy pockets of invasive species are present.

Recommendations

Prior to re-construction on site, the soils would need to be evaluated for suitability relative to stability for building foundations, infiltration etc.

- Potentially, the soils would need to be excavated and re-compacted to appropriate standards for construction.
- Even if soils were to remain in current condition, removal of invasive species could potentially de-stabilize slope.
- However, stabilizing/recreating slope could be achieved with terraces and the use of bio-engineering with willow cuttings (dormant live cuttings approximately 6-12 feet long are buried perpendicularly within the slope with the ends remaining exposed above the surface). In spring-time, the cuttings sprout and grow into trees with extensive/fibrous root systems, which further stabilize the soils.
- The terracing could potentially incorporate a switch back trail that would provide access to the stream and CCT.
- Project would be considered as a short-term recommendation, since the site is expected to redevelop soon and the soils may need extensive stabilization to accommodate the proposed development.

C.4.16 Schnabel Engineering Site and Adjacent Property to North

Recommendations

- Park acquisition of the Schnabel site and or the site to north.
- Parks would provide associated stream naturalization/enhancements.

C.4.17 Mini Storage Warehouse

Existing Condition

- Not likely to redevelop although the landscape operations on north end of site need basic clean-up and improved practices particularly since immediately adjacent to stream.

Recommendations

- As part of the stream naturalization, the stormwater management could be updated and potentially added to the proposed park.

C.4.18 CCT Overpass

Recommendations

When culverts below the trail needs replacement or extensive repairs, reconstruct with an environmentally sensitive crossing (wider span accommodating naturalized channel and potentially include a pedestrian path/trail along stream).

- Project would be a considered long-term recommendation, since it may be many decades before culvert needs extensive repairs/replacing.

C.4.19 Butler Road Area

Existing Condition

Many constraints such as access easement to the Willet Bridge Townhome site, existing utilities and contaminated soils.

Recommendations

- Explore opportunities for stormwater management and aesthetic landscapes plantings/ setting.
- Daylight and naturalize Willett Branch.
- Create pedestrian connection between CCT and Little Falls Park.

C.4.20 Willet Bridge Townhome Site

Recommendations

- Project to remove concrete channel and provide imbricated rip-rap or other treatments would be considered a long-term recommendation, since there are now severe constraints with the existing townhomes and Parkway in close proximity.

C.5 General Recommendations

C.5.1 Sustainability and Environment Recommendations

- Environmental buffers must be reclaimed from the built environment in order to facilitate the Willett Branch Greenway. Roads, buildings, parking lots or similar types of permanent structures should be minimized within the stream buffer and carefully designed to complement the greenway park.
- Minimize the use of retaining walls, fill, culverts and similar practices that are high-maintenance and/or carry the potential for catastrophic failure. Numerous examples of such failing infrastructure are found in Westbard today.
- Maintain/restore the natural character of the Willett Branch by avoiding an over-engineered and fragmented landscape.
- Complement the steam valley park with the proposed new development by minimizing severe grade changes, walls and fencing.

Figure C.8: Interim Stream Bank Repair without Concrete

Naturalized stream demonstrates the elements of an enhanced floodplain, landscape amenities and pedestrian connections envisioned for Phase I of the Willett Branch Urban Greenway.

When existing infrastructure falls into disrepair and needs replacement, an environmentally sensitive reconstruction should occur. For instance:

- Should sections of the concrete stream channel need to be repaired prior to large scale stream naturalization, repairs should be done with large stone rather than reinstalling smooth concrete. An example of this was done recently by the Parks Department a few blocks outside of the formal planning area boundary- on the east side of Little Falls Parkway, approximately 600 feet north of Dorset Ave (see Figure C.8). The large stones could be reincorporated in the ultimate stream naturalization design.

Little Sugar Creek, Charlotte, NC

- Bridges, Road Crossings, and Capital Crescent Trail stream crossings should be replaced with environmentally sensitive crossing that would have wider spans that accommodate a naturalized channel along with pedestrian and wildlife passages where appropriate.
- Townhouses on the west side of Willett Branch were built with no stormwater management and with pavement directly abutting the stream channel. Environmental retrofits should be part of any new permits or redevelopment associated with this area. Short-term measures that would help to enhance the environmental setting could include rain gardens, rain barrels, pervious paving, micro-bioretention, planter boxes and native plantings along the channel. The enhancements would be relatively simple to perform. The HOA may qualify for grants of other sources of funding to proactively enhance the environmental conditions.

Where applicable, provide easements for stream naturalization access.

C.5.2 Stormwater Management (SWM)

Most of the development in Westbard was completed prior to the current environmental regulations. Among the numerous environmental issues that resulted from the unconstrained development patterns, there is very little SWM associated with the vast impervious areas within Westbard. As properties redevelop, they will be subject to the current environmental regulations such as stormwater management. However since re-development may not be regulated as strictly as new development in regards to SWM, waivers for significant portions of the SWM runoff would likely be sought by developers. The waivers would limit the SWM benefits to the already impaired Willett Branch stream. Therefore, the Westbard Sector Plan recommends as a priority, that each redevelopment project seek to maximize on-site SWM treatment, rather than accepting waivers. This should include the treatment of existing impervious areas beyond the limits of the redevelopment areas. Such efforts may be considered favorably when developers as seeking concessions for other regulations that may limit the redevelopment projects.

Supplemental methods of SWM could include:

- Green roofs (supported by page 11 of Public Hearing Draft of the Westbard Sector Plan).
- Planter boxes connected to downspouts.
- Raingardens, bioretention.
- Grass swales/bioswales, including removal of concrete/asphalt lined channels and daylighting of piped conveyances.
- Engineered structures (i.e. hydrodynamic structures, water quality inlets, underground treatment/storage vaults).
- Infiltration trenches/areas.
- Greenspaces/pervious areas (i.e. minimizing new impervious areas and removing obsolete areas).
- Dry wells.
- Sand filters.
- Water harvesting (rain barrels/cisterns).
- Use of permeable pavement where pavement is needed.
- Soil restoration.

C.5.3 Soil and Groundwater Contamination

As a former center for industrial activities, many of the properties in Westbard are restricted to their current use and any change in land use, particularly or residential uses would require further cleanup efforts. State requirements must be met in order for redevelopment to take place.

Although there are former known munitions dumps in the Washington region, the U.S. Army Corps of Engineers knows of no munitions on sites in or near Westbard.

C.5.4 Little Falls Stream Valley Park

There is an extensive bicycle pump track/jump course that has been unofficially constructed in the conservation park immediately adjacent to the south of Willet Bridge Road. The site of the current informal facility is about 1,000 feet away from the proposed skate park site.

- The earth works within the conservation park have been leveled by Parks staff twice, but have been rebuilt shortly thereafter each time.
- The determination of those building the bike course underscores the need for such a facility. However, the existing course has a considerable area of bare unstable soil that releases sediment in to the nearby stream. Also, vegetation has been cleared, and even some larger trees are adversely affected by the excavations and soil mounded at their bases (to form ramps).
- The existing informal facility helps justify the new skate park which needs to be open to bike usage as well. Opening the new park to bike use should obviate the need of the existing site which could then be stabilized and restored.

C.5.5 Boulders

The most downstream section of the stream within the planning area contains large ancient boulders, which have been rounded smooth over time.

Similar boulders, some of which are over 6 foot in diameter, can be found in the vicinity of the plan area. Impressive examples of the large oval boulders can be found near the end of Willett Parkway, east of the Bethesda Pool; and another occurs along the pathway behind the Milton/Loughborough historic site. Other stones of the same type were recently excavated during the construction of the townhouses at Willet Bridge Road.

It is likely that additional stones will be encountered during future projects, particularly when the work is occurring near low-lying drainages courses. A recommendation of the Sector Plan is that the specimen boulders encountered during construction be salvaged and incorporated into the landscape as placemaking elements.

C.6 Westbard Sewer Map

Figure C.9: Major Trunk Sewers Along Willett Branch in Westbard

C.7 Letter from Army Corps of Engineers

Nelson, Katherine

From: Hughes, Edward NAB <Edward.T.Hughes@usace.army.mil>
Sent: Thursday, March 19, 2015 8:48 AM
To: Nelson, Katherine
Cc: Takash, Andrea NAB
Subject: Westbard Master Plan (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Dear Ms. Nelson,

Hello. I am Ed Hughes and I manage the Formerly Used Defense Site (FUDS) environmental restoration program for the US Army Corps of Engineers, Baltimore District. Our area of responsibility for FUDS projects includes the state of Maryland, the District of Columbia, Pennsylvania, Delaware and Virginia. In the past year or so there have been a few inquiries regarding this property on Westbard Avenue and whether or not it was formerly used by the Army. It was not. We have no information supporting the existence of any Spring Valley related World War I activity or munitions burials at that location or anywhere nearby.

There are several FUDS locations listed as located in Bethesda or nearby (Defense Mapping Agency Topographic Center, Powder Mill, Fort Mansfield, Fort Simmons and Fort Bayard (DC)). We have no historical information which indicates that any of these sites had anything to do with any Spring Valley WWI activities or any munitions burials either.

I hope this helps clarify the situation. Please feel free to contact me if you have any questions.

Regards,

Ed

Ed Hughes PE, PMP
Program Manager, Formerly Used Defense Sites (FUDS) Cleanup Program USACE Baltimore District
410-962-4937 Office

Classification: UNCLASSIFIED
Caveats: NONE

Appendix D: Urban Design, Parks and Open Space

D.1 Parks, Trails and Open Spaces Overview

Open space in the Westbard Sector Plan area is provided through two linear parks corridors: the Little Falls Stream Valley and the Capital Crescent Trail Special Park, which is a hard surface rail-trail. The Westbard Sector Plan area is made up of several shopping centers clustered along a major thoroughfare (River Road) and surrounded by residential neighborhoods. Although Westbard does not feature the density of urban and urbanizing areas in the County like Bethesda, Silver Spring and Wheaton, the close proximity of single-family homes, apartments and townhomes creates demand for parks and open spaces in this area along with the retail and small amount of office spaces uses.

There is no specific center to this Sector Plan area and the area does not contain any local, neighborhood, or recreational M-NCPPC parks. There are, however, several local and neighborhood park spaces located within a mile of the Westbard Sector Plan area (see list below) and several of those parks provide opportunities for linkages to the open space corridors running through Westbard. The Parks Department has determined an overall need for more recreational space in this part of the Downcounty area, as competition for rectangular and diamond field space continues and requests for other amenities like skate parks increase.

D.1.1 Existing Parks and Open Spaces

A. Public Parks

M-NCPPC Parks within a mile of downtown Bethesda include:

- Bethesda Pool (Montgomery County Department of Recreation).
- Brookdale Neighborhood Park.
- Capital Crescent Trail.
- Glen Mar Neighborhood Park.

Figure D.1: Existing Parks

- Little Falls Stream Valley Park.
- Norwood Local Park.
- Westmoreland Hills Local Park.
- Willard Avenue Neighborhood Park.
- Woodacres Local Park.

The following parks are within a mile of Westbard Sector Plan area and are owned and managed by the Town of Somerset or the Village of Friendship Heights:

- Founders Park (Somerset).
- Somerset Park (Somerset).
- Capella Park (Somerset).
- William Tyler Page Park (Somerset).
- Hubert Humphrey Friendship Park (Friendship Heights).
- Willoughby Park (Friendship Heights).

B. School Facilities

The Westbard Sector Plan area includes Westland Middle School and direct access through parkland to Westbrook Elementary School. Both schools provide some recreational amenities. Westland Middle School maintains three full size basketball courts, a diamond field with a baseball infield and a softball infield on either side, a small rectangular play field, and four tennis courts. These facilities are typically available to the public after school hours and on weekends.

Westbrook Elementary School is accessible just outside of the Sector Plan area via a path through Little Falls Stream Valley. The school has a diamond field and an open grassy area for informal play. Little Flower School, a private school for children Kindergarten through eighth grade, maintains a small artificial turf rectangular field that is unavailable to the public.

C. Trails and Bikeways

The Capital Crescent Trail (CCT) is a significant open space feature running through the Westbard Sector Plan area. The hard-surface trail begins at the Georgetown waterfront in Washington, DC and runs directly into the heart of Bethesda at the intersection of Bethesda and Woodmont Avenues. At this intersection, the trail continues north to join the Georgetown Branch Trail (GBT) (SP-6 in the 2005 Countywide Bikeways Functional Master Plan) and then across to the Metropolitan Branch Trail (SP-12) in Silver Spring. The CCT/GBT also links to the Rock Creek Trail just east of Jones Bridge Road. All of these park trails and bikeways are used year-round by cyclists, runners, walkers, in-line skaters and are vital corridors for commuters and recreational trail users alike.

The Little Falls Stream Valley has several natural surface trails that follow the stream valley corridor. In the Westbard Sector Plan area, cyclists also use the wide shoulders on Little Falls Parkway as a bikeway. At the southern end of the Sector Plan area, along Massachusetts Avenue, there is a hard-surface trail that enters the Little Falls Stream Valley Park and follows the stream on the opposite side of the Capital Crescent Trail. This lower trail is used more by local walkers and joggers for recreation, while the Capital Crescent Trail has more cyclists using the trail for transportation purposes.

D.2 Parks, Trails and Open Space Analysis

D.2.1 Parks and Open Space Hierarchy

The hierarchy is an analysis tool that park planners use in the early stages of the planning process to assess the open space system in a Master or Sector Plan area.

(Guidelines from the Parks, Recreation, and Open Space Plan, 2012)

Urban Park Pattern and Role

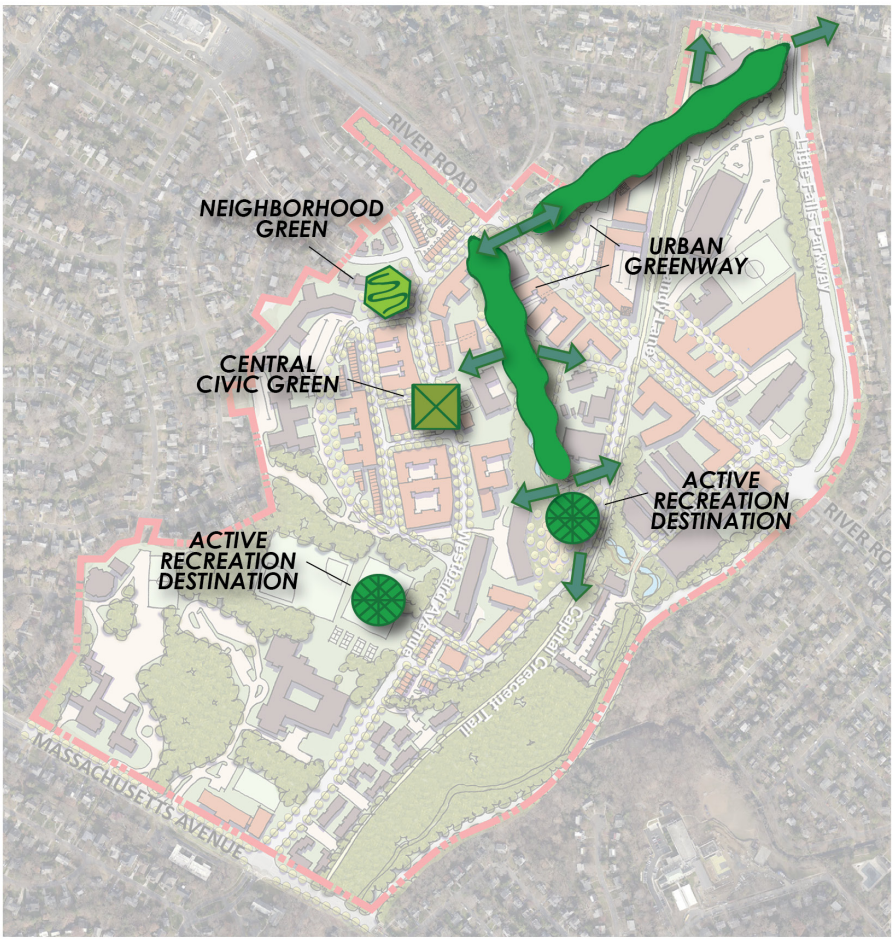
Each area master plan should include a system of open spaces based on the roles of each type of open space.

The following hierarchy should be applied to any new urbanizing area.

For the Sector Plan Area:

Publicly Provided Open Space Type	Comment on Westbard
Active recreation destinations located within or near the plan area, including courts, playgrounds, and lawn areas large enough for pickup soccer, fes-tivals or events	No such space currently exists in Westbard. Westland Middle School has 4 tennis courts, 1 rectangular field, a basketball court and two diamond fields. These are not open to the public on weekdays.
A central "civic green" urban park (see Chapter 3 of PROS 2012), ranging in size from 1/2 acre to 2 acres, depending on projected densities, located in close proximity to a public transit hub, next to activating uses, with a mixture of hard and soft surfaces in-cluding a central lawn area for events	No central civic open space exists in West-bard.
An interconnected system of sidewalks and trails to connect parks and open spaces	This is currently lacking in Westbard. More connections are needed from the west side of Westbard Avenue to the CCT. There is a large need for pedestrian enhancements overall, especially along River Road and from the properties on the east side of Westbard to River Road.
Wooded areas that will provide a sense of contact with nature	This should/could also include areas of native landscaping and natural areas, such as a wet-land, urban meadow, or restored stream buffer. Opportunity exists to naturalize Willett Branch and create a stream valley park there.

Figure D.2: Westbard Parks Hierarchy



A HIERARCHY

Each area master plan should include a system of open spaces based on the roles of each type of open space. The amount and size of open spaces may vary from plan to plan and should be directly proportional to the projected density, and adjusted to the pattern of existing open space and other factors such as community-specific needs.

The following hierarchy should be applied to any new urbanizing area:

FOR THE SECTOR PLAN AREA:

- Active recreation destinations located within or near the plan area, including courts, playgrounds, and lawn areas large enough for pick up soccer, festivals or events, etc.
- A central "civic green" urban park (Chapter 3), ranging in size from ½ to 2 acres, depending on projected densities, located in close proximity to a public transit hub, next to activating uses, with a mixture of hard and soft surfaces including a central lawn area for events.
- An interconnected system of sidewalks and trails to connect parks and open spaces.
- Wooded areas that will provide a sense of contact with nature.

FOR EACH URBAN NEIGHBORHOOD: A neighborhood green, urban buffer park, or community use recreational park.

FOR EACH BLOCK: An urban square, plaza, or green area.

FOR EACH BUILDING: An outdoor recreation space.

FOR EACH RESIDENCE: A private outdoor space.

Table D.1: M-NCPPC Park Facilities within and near the Westbard Sector Plan area

M-NCPPC Facilities	# within 2 miles	# within 1 miles	# Within Boundary
Basketball Courts	10	5	0
Half Basketball Courts	3	2	0
MCRD Pool	1	1	0
Multipurpose Court - Half	2	2	0
Park Activity Buildings	2	1	0
Playgrounds	22	11	0
Adult Soccer Fields	5	4	0
Softball Fields	5	3	0
Tennis Courts	25	12	0
Youth Soccer Fields	5	2	0
Youth Softball Fields	4	3	0
Capital Crescent Trail	yes	yes	yes
Natural Surface Trails	yes	yes	yes
Hard surface trails	yes	yes	yes
Managed Open Space / Natural Areas* this is any landscaped or natural areas not including a constructed park facility	~265 acres	~214 acres	~26 acres

D.2.2 Goals

Parks, Trails and Open Space recommendations seek to meet the following goals:

1. Develop new park spaces.
2. Improve connections between new and existing spaces.
3. Improve the public realm by providing public open space.
4. Retain and enhance existing parkland.

D.2.3 Regulatory Framework and Policy Guidance

A. State Level:

- The Economic Growth, Resource Protection, and Planning Act of 1992
- Article 66B of the Maryland Annotate Code

The Economic Growth, Resource Protection, and Planning Act of 1992 requires local governments to incorporate and implement seven visions through the Comprehensive Plan and to adopt a "Sensitive Areas" element in the Plan, in addition to other elements:

> *"The Visions. …the [planning] commission shall implement the following visions through the plan… (2) sensitive areas are protected … (4) stewardship of the Chesapeake Bay and the land is a universal ethic… (Codified at § 3.06(b), Article 66B, Annotated Code of Maryland)."*

Maryland Annotated Code Article 66B further defines and instructs planning agencies and jurisdictions to protect "Sensitive Areas", which include:

> *"1) streams and their buffers; 2) 100-year floodplains; 3) habitats or threatened and endangered species, and 4) steep slopes." (Codified at § 3.05(a)(2), Article 66B, Annotated Code of Maryland)."*

B. County Level:

Montgomery County Environmental Guidelines

Approved by the Planning Board in 1992, the Montgomery County Environmental Guidelines are "a compilation of existing policies and guidelines that affect the protection of sensitive natural resources during the development process. Maryland's Economic Growth, Resource Protection and Planning Act of 1992 established the requirement that all local governments provide for protection of sensitive areas during the planning and development process."

The Montgomery County Environmental Guidelines state on page 17:

> *"In Montgomery County, protecting and improving the water quality and ecological health of the County's streams is a major planning goal. The goal is particularly important because the County is part of the Chesapeake Bay watershed. Preservation and clean-up of the Bay is a major State priority.*
>
> *A. 1. Recommended Guidelines for Stream Buffers:*
>
> *b. No buildings, structures, impervious surfaces, or activities requiring clearing or grading will be permitted in stream buffers, except for infrastructure uses, bikeways, and trails found to be necessary, unavoidable, and minimized by the Park and Planning Department environmental staff working closely with the utility or lead agency."*

The Environmental Guidelines designate Willett Branch as a Use I-P stream with a corresponding 100-foot stream valley buffer on either side of the stream channel edge. This riparian buffer provides terrestrial resources to protect water quality and control runoff. The steepness of existing slopes, floodplain limits, and soil types can expand the minimum buffer width. Ultimately the stream buffer is determined by a Natural Resources Inventory Forest Stand Delineation (NRI/FSD) performed by a qualified professional and approved by M-NCPPC.

Table D.2: Advantages of Urban Parks

PARK TYPE	PARK TYPE DESCRIPTION	TYPICAL FACILITIES*	APPROX. SIZE
COUNTYWIDE PARKS - Parks in this category serve all residents of Montgomery County			
Countywide Urban Parks	Serve residents, visitors, and workers of an entire urban high-density transit-oriented development area, and may be programmed with numerous activities that attract residents from other parts of the County. Parking is located in structures underground or in nearby public parking lots, garages or along adjoining streets, rather than on-site. Parks may be lighted at night along major walkways and for certain activities such as events, or court sports. Subcategories include Civic Greens, Countywide Urban Recreational Parks, and Urban Greenways.		
	CIVIC GREENS		
	Formally planned, flexible, programmable open spaces that serve as places for informal gathering, quiet contemplation, or large special event gatherings. Depending on size, they may support activities including open air markets, concerts, festivals, and special events but are not often used for programmed recreational purposes.	A central lawn is often the main focus with adjacent spaces providing complementary uses. May include gardens, water features and shade structures.	1/2 acre minimum
	COUNTYWIDE URBAN RECREATIONAL PARKS		
	Oriented to the recreational needs of a densely populated neighborhood and business district. They provide space for many activities.	May include athletic fields, playing courts, picnicking, dog parks, sitting areas and flexible grassy open space. Programming can include farmer's markets, outdoor exercise classes, and community yard sales. There is space for a safe drop-off area and nearby accessible parking for those who cannot walk to the park.	Varies
	URBAN GREENWAYS		
	Linear parks that provide trails or wide landscaped walkways and bikeways and may include other recreational and natural amenities. May occur along road rights of way or "paper" streets.	Trails, walkways and bikeways, with extra space for vegetative ground cover and trees. Should link other green spaces, trails and natural systems.	Varies

PARK TYPE	PARK TYPE DESCRIPTION	TYPICAL FACILITIES*	APPROX. SIZE
COMMUNITY USE PARKS - Parks in this category serve residents of surrounding communities			
Community Use Urban Parks	Serve residents and workers in urban neighborhoods and districts. These parks may be programmed for more localized events, but not countywide events. No parking is available on the park property. Subcategories include Urban Buffer Parks, Neighborhood Greens, and Community Use Urban Recreational Parks.		
	URBAN BUFFER PARKS		
	Serve as green buffers at the edges of urban, high density development adjacent to lower density residential areas. They provide a green space within which residents and workers of an urban area may relax and recreate.	Landscaping, sitting/picnic areas, play equipment, courts, and shelters.	1/4 acre Minimum
	NEIGHBORHOOD GREENS		
	Serve the residents and workers from the surrounding neighborhood or district, but may be designed for more activity than an urban buffer park. These formally planned, flexible open spaces serve as places for informal gathering, lunchtime relaxation, or small special event gatherings.	Lawn area, shaded seating and pathways. May include a play area, a skate spot, a community garden, or similar neighborhood facilities.	1/4 acre Minimum
	COMMUNITY USE URBAN RECREATIONAL PARK		
	These parks serve the residents and workers from the surrounding neighborhood or district, and are designed for more active recreation than an urban buffer park or a neighborhood green.	Sport courts, skate spots, and may include lawn areas, playgrounds or similar neighborhood recreation facilities.	1/10 acre Minimum

Established floodplains are regulated by Montgomery County Department of the Environment, Department of Permitting Services, and the Federal Emergency Management Agency (FEMA). Development is generally limited within the 100-year floodplain and will require permitting by local, state, and federal agencies. Montgomery County Code Chapter 19, Article II and Executive Regulation 108-92 govern any construction activity in or near a 100-year floodplain.

The recommendations in the Westbard Sector Plan to create an Urban Greenway are predicated on the statutory framework and guidance stating that sensitive areas must be protected and redevelopment cannot occur in the stream buffer.

Vision 2030

Vision 2030, approved by the Planning Board in 2010, is the long-term strategic plan for parks and recreation in Montgomery County, developed in conjunction with the Montgomery County Recreation Department. With over more than a year of surveys, public meetings, and focus groups, this strategic plan guides parks and recreation services for the next 20 years.

Parks, Recreation and Open Space Plan (PROS)

Parks, Recreation and Open Space Plan (PROS), approved by the Planning Board in 2012, guides park and trail planning needs analyses, site selection studies, and recommendations in sector and master plans. The 2012 PROS Plan includes six new types of urban parks, expanding the urban park type category:

Countywide Category:

- Civic Greens
- Countywide Urban Recreational Parks
- Urban Greenways

Community Use Category:

- Urban Buffer Parks
- Neighborhood Greens
- Community Use Urban Recreational Park

D.3 Existing Urban Form

The built environment in and around Westbard is predominantly characterized by single-family houses, large arterial streets, shopping centers and low, single-story, single-use industrial buildings. It is a suburban, auto-oriented environment. The commercial area evolved into a service area for residents and businesses. The local residents' needs are served by the shops located in the strip malls on Westbard Avenue and River Road, and the light industrial class businesses located along Dorsey and Butler Lanes. The services in the strip malls include grocery stores, dry cleaners, a drug store, coffee shops, restaurants, gas stations, a nursery, fast food and convenience stores. The services in the light industrial areas include auto repair shops, self-storage facilities, a veterinarian, a dog kennel, and a fitness center.

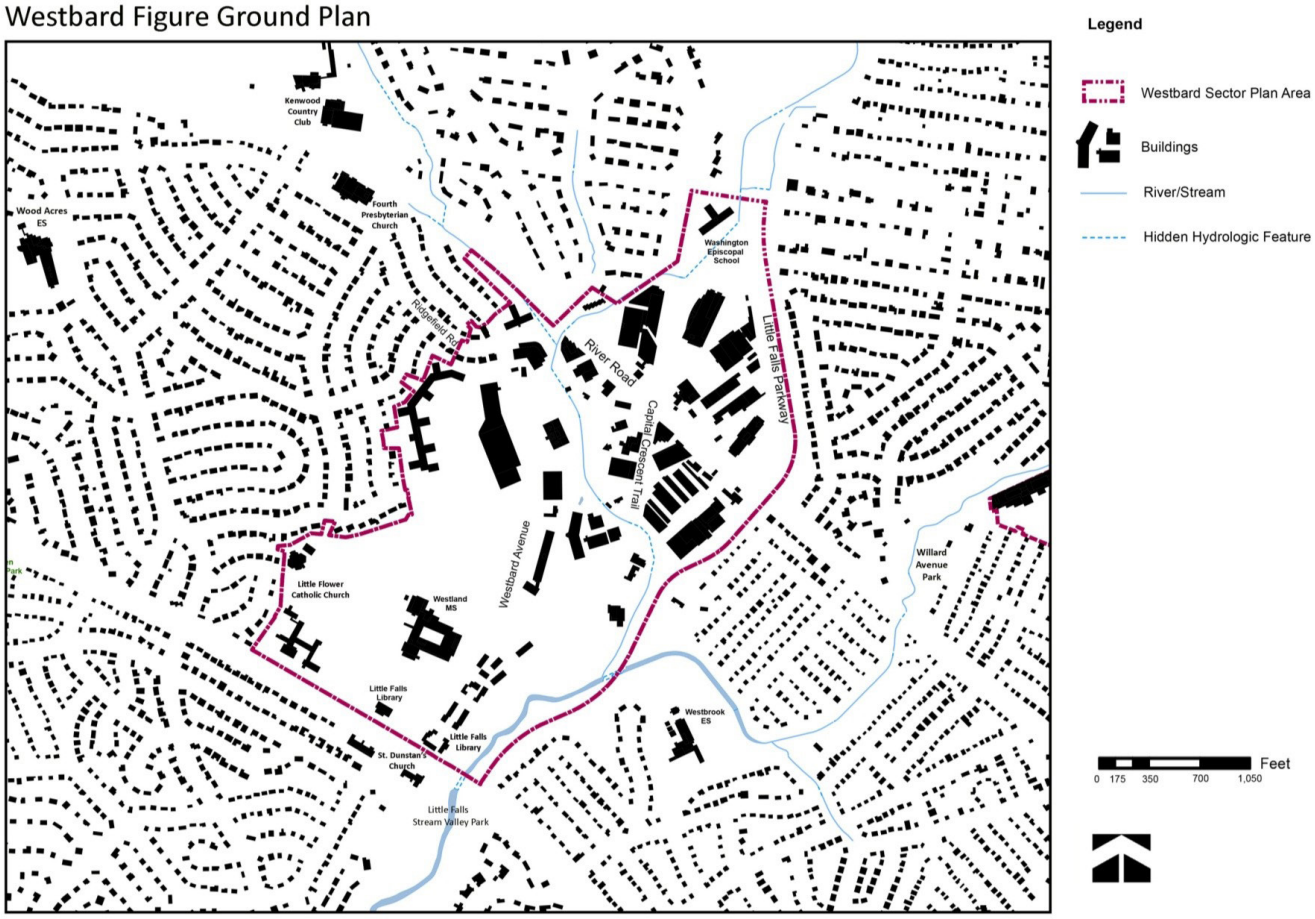
Other uses that have a more regional draw include home improvement and landscape contractors, Ridgewells caterer and the office building on River Road called Kenwood House.

The built environment is clearly oriented toward accessing the shops and services via automobile. Wide roads, curb cuts and parking lots dominate the built environment. Because of the focus on automobile access, pedestrian access is secondary and the resulting pedestrian environment is decidedly unfriendly. Most of the sidewalks on River Road are directly adjacent to the travel lanes, placing pedestrians in close proximity to fast moving traffic, while Dorsey and Butler Lanes have no sidewalks at all. Most of the views from River Road are of the parking lots located between the buildings and streets.

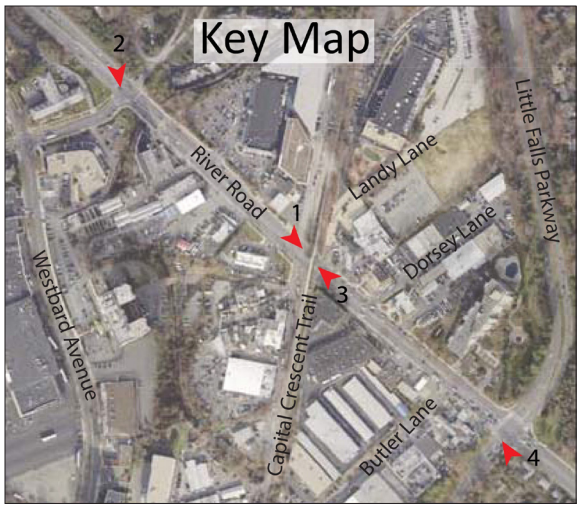
Westbard Avenue, a wide four-lane street, is lined by the loading docks of the Giant Food store for much of its length. The four-foot wide sidewalk is separated from the curb by a five- to six-foot wide grass strip with shade trees in several locations. The experience for the pedestrian walking along either side of Westbard Avenue is of the Westwood Shopping Center loading docks or the parking lots that serve the apartment buildings and businesses along this street.

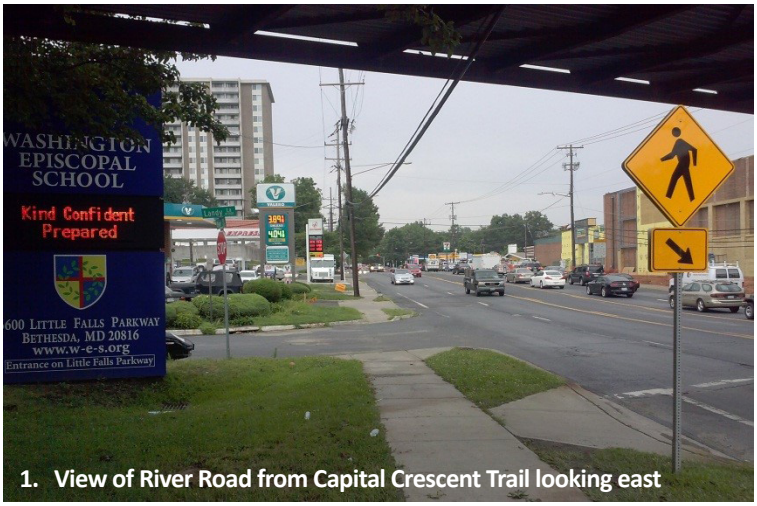
Figure D.3: Figure Ground Map

Westbard Figure Ground Plan

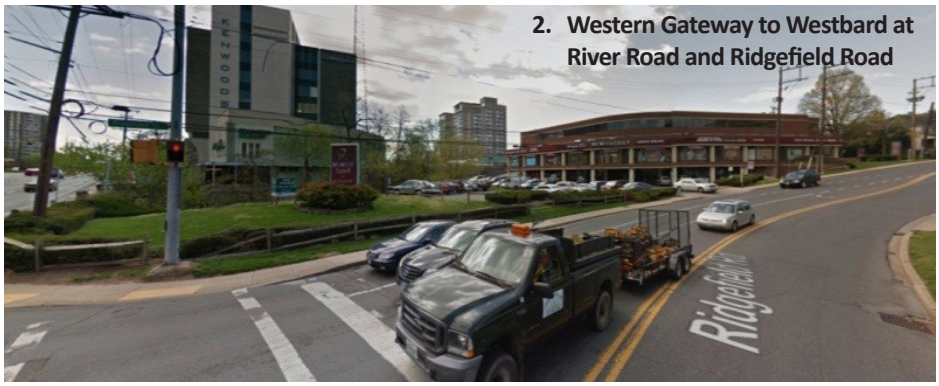


The figure ground plan of the Westbard Sector Plan area graphically illustrates the suburban nature of the built environment. The uniformly spread out arrangement of the buildings in the surrounding neighborhoods is typical of single-family development. The arrangement of buildings creates a regular and discernable pattern of streets. The arrangement of the buildings within the 1982 Sector Plan boundaries is typical of strip shopping center development; large, isolated buildings surrounded by open spaces, usually large parking lots. Other than River Road, there is no discernable arrangement of buildings that indicates a regular street pattern to the north and south. Such a pattern usually indicates an environment that does not support walkability, or the comfortable movement through the space by people travelling on foot.



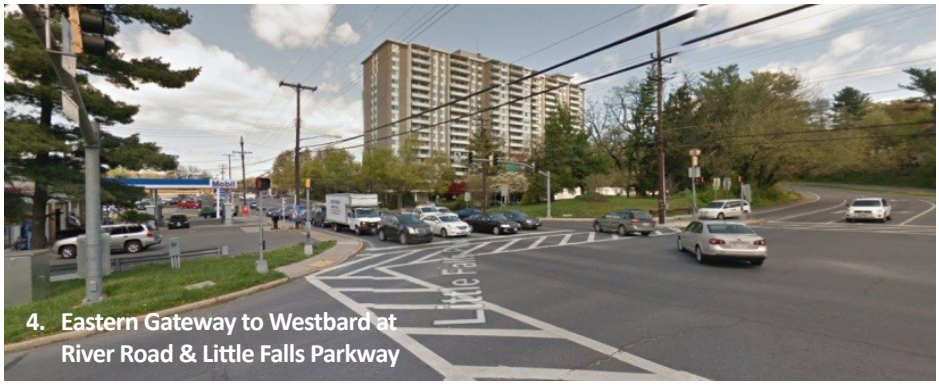


1. View of River Road from Capital Crescent Trail looking east

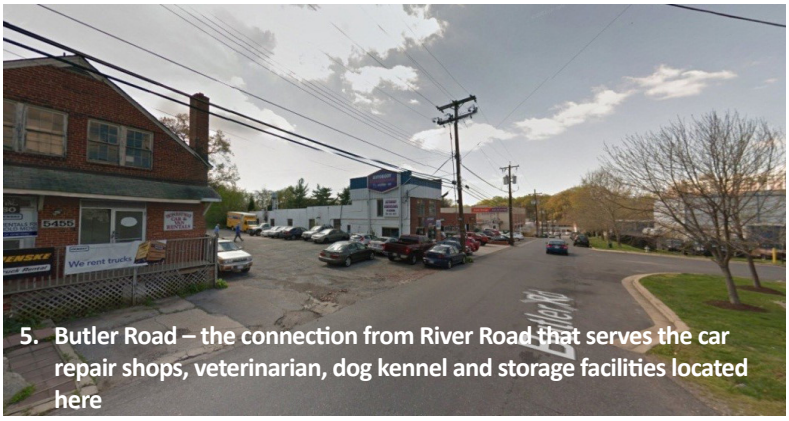


2. Western Gateway to Westbard at River Road and Ridgefield Road

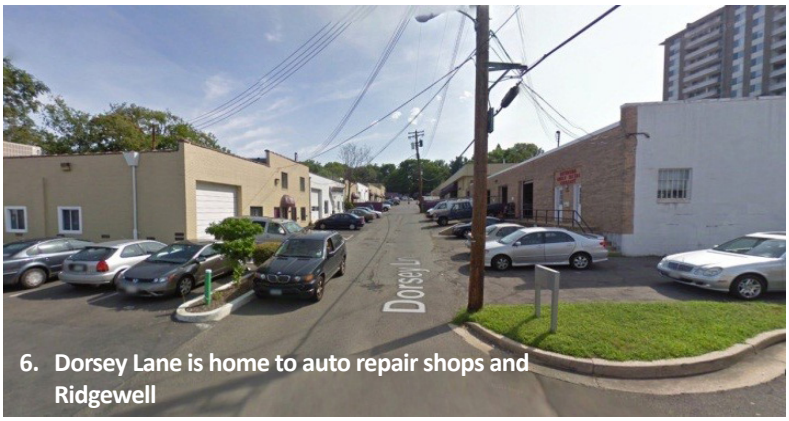
3. View of River Road looking west. The automobile-oriented nature of this is clear



4. Eastern Gateway to Westbard at River Road & Little Falls Parkway



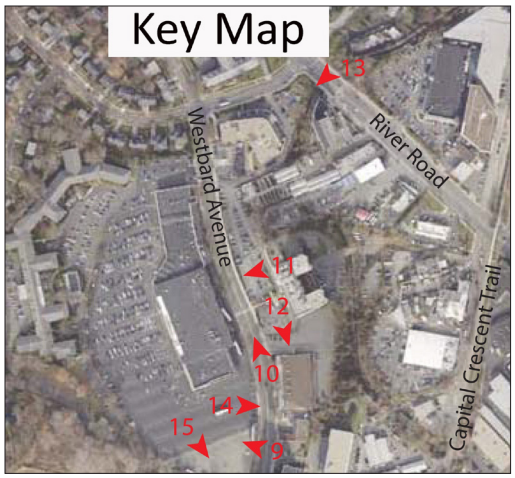
5. Butler Road – the connection from River Road that serves the car repair shops, veterinarian, dog kennel and storage facilities located here



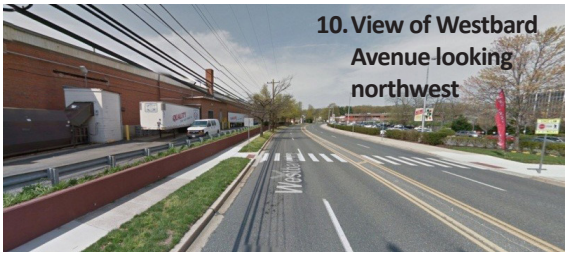
6. Dorsey Lane is home to auto repair shops and Ridgewell

7. Dorsey Lane looking south – a majority of the land on Dorsey Lane is leased by Ridgewell Caterers

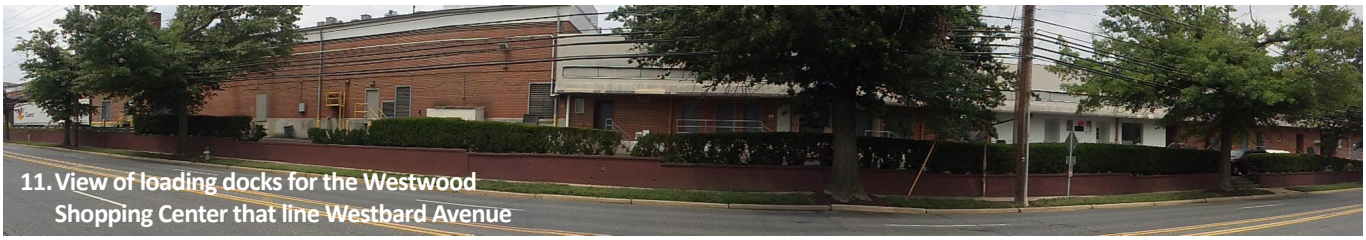
8. The un-named alley(s) south of River Road and adjacent to the Capital Crescent Trail that service the industrial uses in this area



9. View of the parking lot at the Westwood Shopping Center on Westbard Avenue



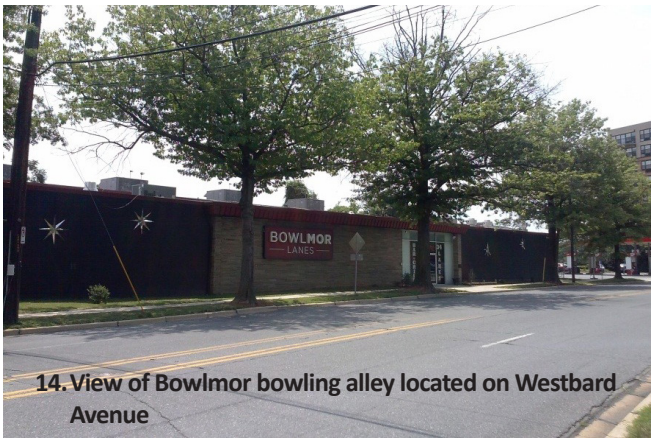
10. View of Westbard Avenue looking northwest



11. View of loading docks for the Westwood Shopping Center that line Westbard Avenue

12. View of Westwood Towers from the sidewalk on Westbard

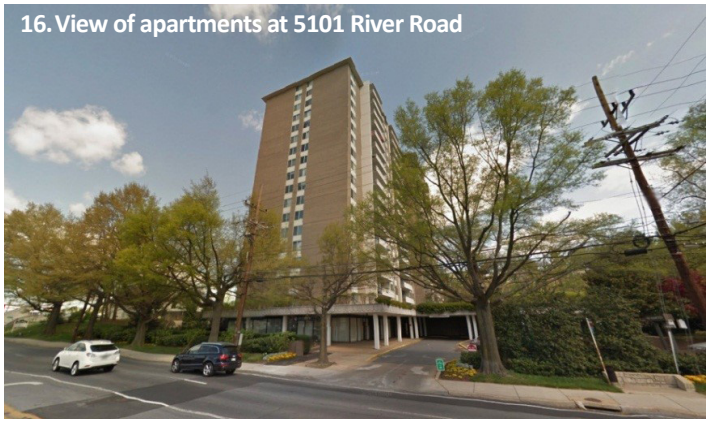
13. View of intersection at River Road and Ridgefield Road



14. View of Bowlmor bowling alley located on Westbard Avenue

15. View of parking lot adjacent to the Westwood Shopping Center


Key Map
17
19
18
16
21
20
Capital Crescent Trail
Butler Lane
Westbard Avenue

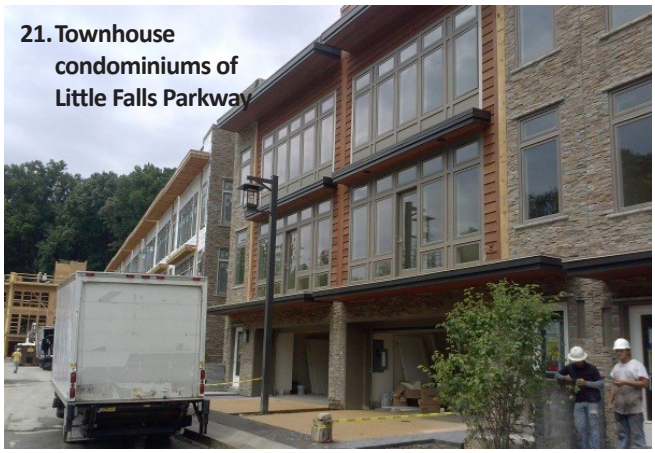

16. View of apartments at 5101 River Road


17. Westwood Apartments on Westbard Avenue


18. Park Bethesda Apartments on Westbard Avenue


19. Kenwood Place Garden Apartments on Westbard Circle


20. Townhouses on Westbard


21. Townhouse condominiums of Little Falls Parkway

D.4 Parks, Trails and Open Space Recommendation Details

D.4.1 Civic Green at Westwood Center

Size: Approximately 0.5 acre, no less than 0.3 acre.

Vision and Purpose: A formally planned, flexible, programmable open space that:

- Provides a place for informal gathering, quiet contemplation or large special event gatherings.
- May support community activities, including open air markets, concerts, festivals and special events, but will not be used for programmed recreational purposes.

D.4.2 Neighborhood Green Urban Park at Westwood Center

The 1982 Westbard Sector Plan (page 34) called for this park, but it was never built. Park should provide needed space for facilities, such as a playground, community open space or possible dog spot.

Size: Approximately 0.5 acre, no less than 0.3 acre.

Vision and Purpose: Flexible open space that serves the immediate residents and day time workers.

- Provides a needed transition between the planned Westwood Center development and the Springfield neighborhood.
- Establishes a place for informal gathering, lunchtime relaxation, or small special event gatherings.

Parks, Trails and Open Space Recommendations

Figure D.4: Westbard Parks Recommendation Map

Proposed Legacy Open Space Urban Designations in Westbard Sector and Bethesda Downtown Plans

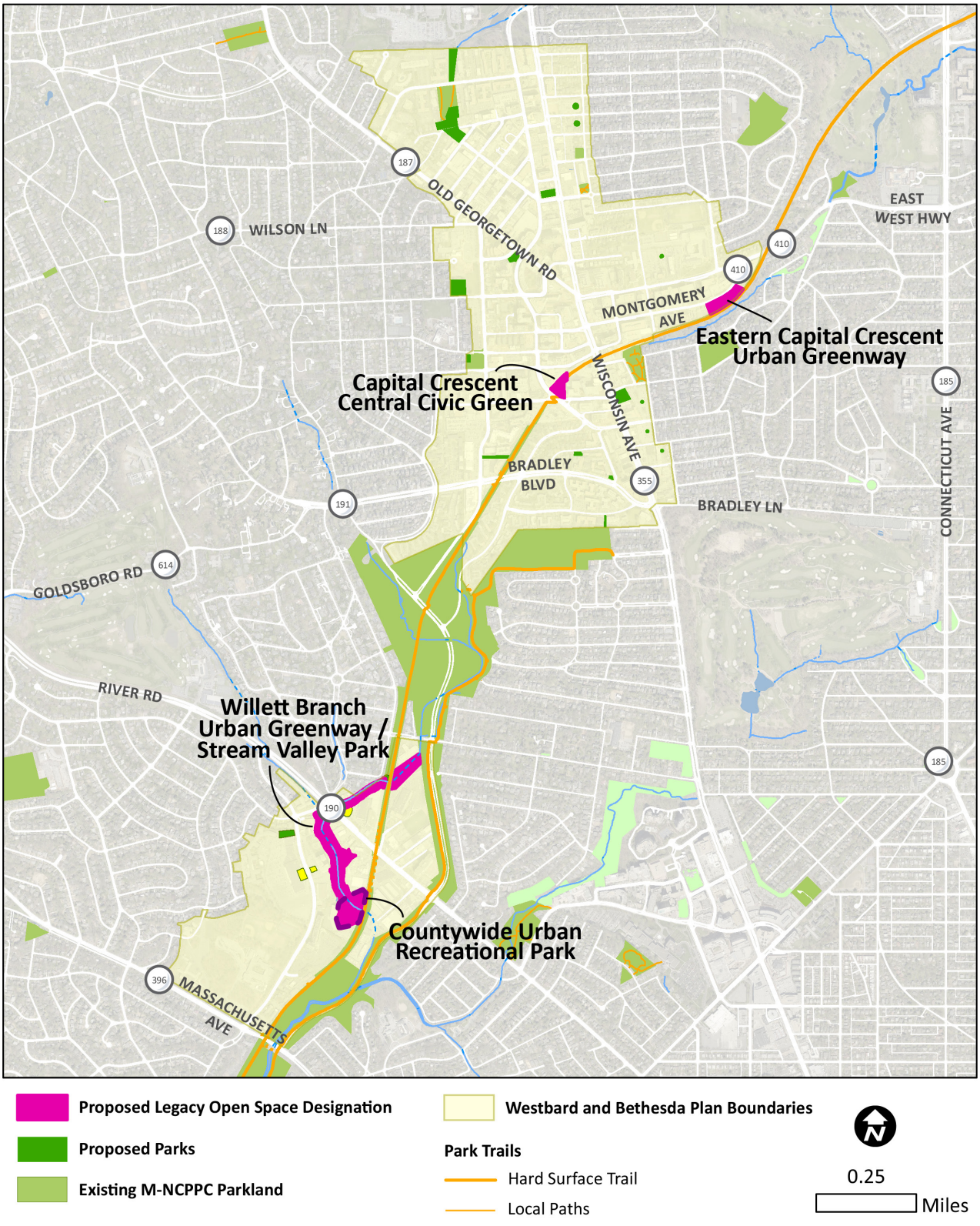


Figure D.5: Westbard and Bethesda Proposed Legacy Open Space Urban Designations

D.4.3 Community Open Space at Kenwood Station

Size: Approximately 10,000 square feet.

Vision and Purpose: An open, green area for seating and shade.

- A space for eating lunch, meeting friends, sitting in the shade, getting on and off the Willett Branch trail and waiting to walk across River Road.

D.4.4 Westland Middle School Rectangular Field

If/when Montgomery County Public Schools (MCPS) decides to redevelop the athletic fields at Westland Middle School, this Sector Plan recommends:

- Move rectangular fields closer to the Westwood development to better use available space and create larger fields (adult size).
- This location will better accommodate the current range of users (weekday school use and the weekend community use).

D.4.5 Countywide Urban Recreational Park

Size: Approximately 2 acres, along the Capital Crescent Trail.

Vision and Purpose: An open, level area alongside the Capital Crescent Trail that offers a variety of recreational activities.

- Serves local residents and those beyond the Westbard area.
- Provides space for active recreation facilities, such as a skate park, pump track, dog park, adult fitness equipment.
- Acts as a gateway to the naturalized Willett Branch Urban Greenway and Trail.

D.4.6 Legacy Open Space Designations

Recommendations

Over the past decade, the Department has renewed its focus on urban parks and the new types and preferred locations for urban park amenities. As outlined in the Vision 2030 report (2010) and the 2012 PROS Plan, our urban areas have the lowest levels of service for parks and recreation per population. In order to promote livable communities with convenient access to parks, additional urban parkland will have to be acquired. Much of that new urban parkland will be created through the development review process using traditional and innovative zoning tools, such as dedication or density transfers. However, a portion of new urban parkland still will need to be purchased, in whole or part, using traditional acquisition methods through the CIP. The Legacy Open Space (LOS) Program is one of the primary funding sources for land acquisition and includes an Urban Open Space resource category.

Legacy Open Space staff has taken a second look at the proposed parks in the Bethesda and Westbard plans to determine if any additional sites merit designation as LOS Urban Open Spaces. After analysis and review with the LOS Advisory Group and Park and Planning Department staff, three additional sites of countywide significance that should be designated as LOS Urban Open Spaces were designated. See Figure D.4 for the locations of the proposed LOS Urban Open Spaces in the Sector Plan area.

The unifying theme for these Urban Open Spaces is that they provide for a variety of types of green and recreational spaces along the County's most heavily used trail, the Capital Crescent Trail. The four sites include two Urban Greenways, one Countywide Urban Recreational Park, and one Central Civic Green. These sites all meet the LOS criteria to increase access to open space and recreation in dense urban communities, to promote interconnectivity of the urban green infrastructure, and to provide community open space for casual use and large community gatherings. These park spaces adjacent to the Capital Crescent Trail clearly rise to the level of being "best of the best" open spaces in the entire County that deserve designation as Legacy Open Space and active efforts to implement as public parkland.

D.5 Willett Branch Urban Greenway Recommendations

D.5.1 Background

Willett Branch is a stream in the Little Falls watershed, which drains directly into the Potomac River. Willett Branch's own watershed drains 1,248 acres, which includes portions of downtown Bethesda, the Kenwood County Club and suburban residential neighborhoods. In the Westbard Sector Plan area, the stream is two miles upstream of the Potomac River and runs entirely in a concrete channel, exposed to daylight in most areas and through culverts and tunnels in other sections.

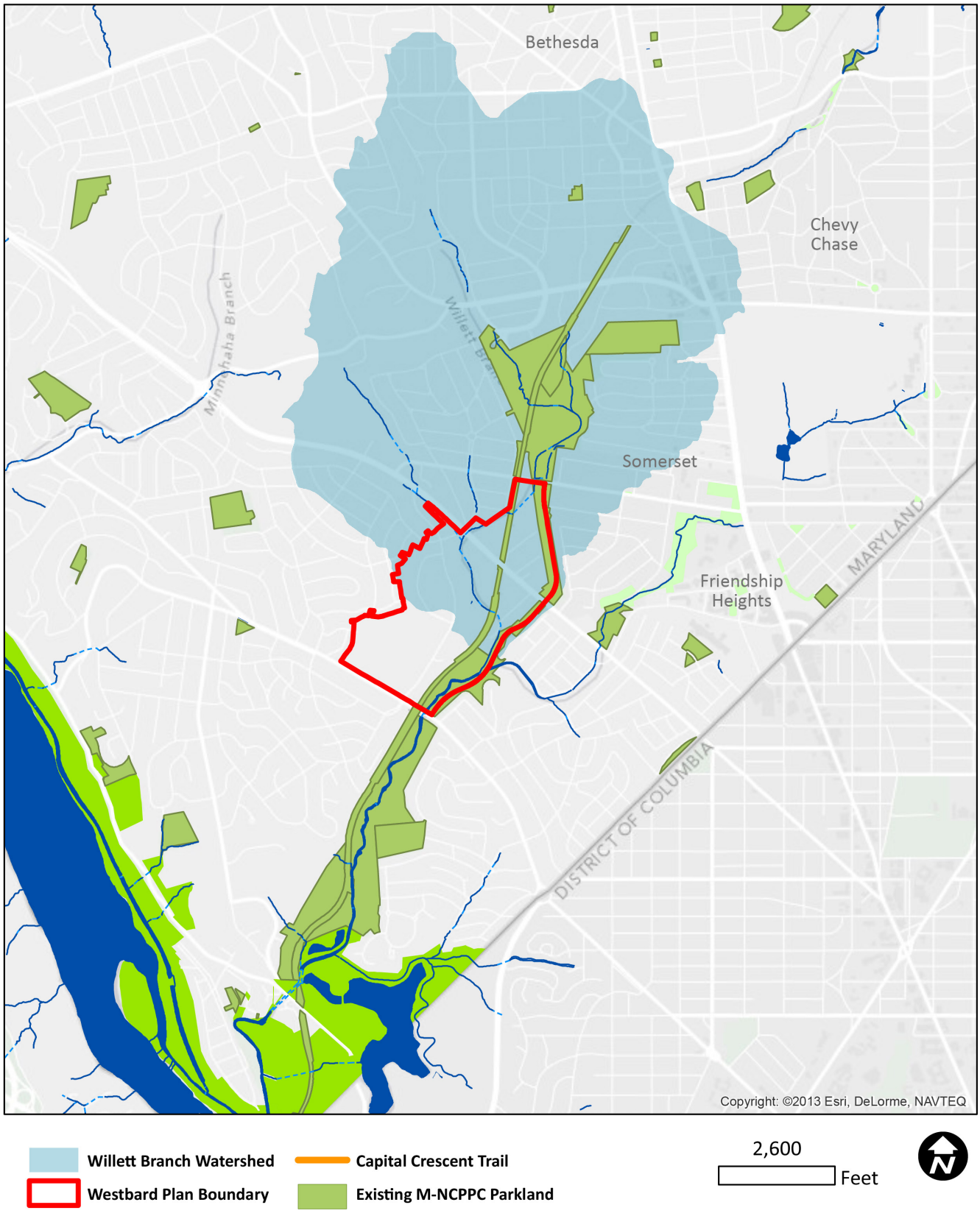
Few, if any, commercial development centers in Montgomery County have a river or stream running directly through the middle. In the 1950s, Willett Branch was engineered into a concrete-lined trapezoidal channel to function as a storm drain. Today it remains as such; however in an extremely deteriorated condition and is used for illicit dumping and graffiti. High velocity, uncontrolled runoff from significant impervious cover on surrounding properties is a major impact to the stream, particularly when this stream joins Little Falls. More than two-thirds of Westbard's impervious surfaces are devoted to roads and parking lots for vehicles. Major trunk sewer lines are parallel to the stream.

As explained above, Westbard lacks an interconnected system of park and open space facilities to serve present-day and future residents. In spite of these challenges, the Willett Branch stream valley can become a community asset, a unifying feature and a rare natural area right in the heart of Westbard.

This Sector Plan reimagines the Willett Branch corridor as a greenway corridor that creates new parkland, improves the ecological functioning of the stream and creates pedestrian connections.

This idea for Willett Branch as an urban greenway initially developed as a recommendation in the environmental section of the Plan; however, the Parks Department decided to take on the idea as an M-NCPPC parks, trails and open space

Figure D.6: Willett Branch Watershed Map



recommendation in early July 2015, before the Working Draft presentation to the Planning Board. Parks Department ownership of the corridor can provide consistent standards for design, naturalization, maintenance, policing and programming.

D.5.2 Willett Branch Existing Conditions

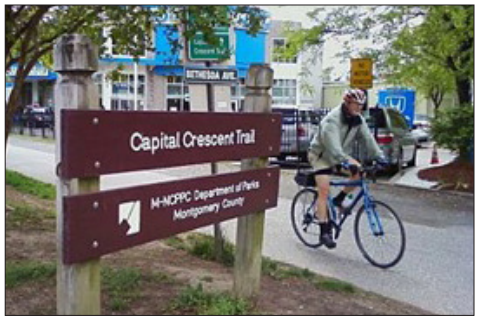
In 1930 and then again in 1950 the Washington Suburban Sanitary Commission (WSSC) installed sewer lines in the area of Willett Branch. In 1956, WSSC engineered Willett Branch into the concrete-lined trapezoidal channel that exists today. The majority of the land uses and developments adjacent to the stream have not changed since they were developed in the late 1950s and 1960s. Many of these properties have significant retaining walls and are built on layers of fill and culverts. This infrastructure is failing, along with the trapezoidal channel itself. Even if the Westbard Sector Plan was not updated and did not contain this greenway recommendation, this infrastructure must be replaced. The following images illustrate the existing conditions of Willett Branch, including but not limited to these issues:

- Failing infrastructure.
- Abandoned infrastructure.
- Concrete lined trapezoidal channel created impaired stream ecology.
- Buildings in the stream buffer.
- Barriers to the stream.
- Direct storm drainage into stream.
- Large areas of pavement in the buffer.
- Retaining walls.
- Dumping (and the physical appearance of a dump, inviting more dumping).
- Buried stream (culverts and tunnels).

Failing infrastructure associated with Willett Branch

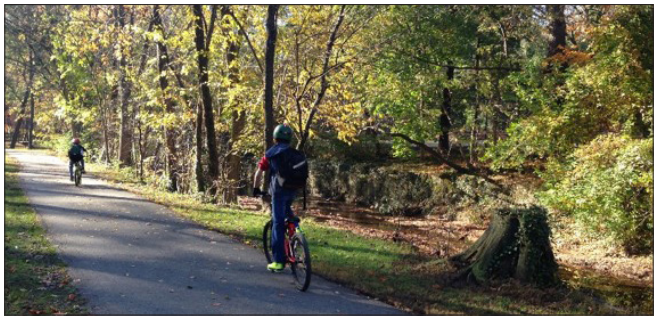
D.5.3 Vision for the Future Willett Branch Urban Greenway

The Willett Branch Urban Greenway will be an accessible, walkable trail, and an ecologically improved and naturalized stream corridor.



Purpose:

- Provide greatly needed pedestrian and bicycle linkages across the Plan area and between the two existing linear parks.
- Improve the ecological functioning of Willett Branch, and thus Little Falls, the Potomac and the Chesapeake Bay.



Features:

- A hard surface trail loop offering users an alternative, quieter trail experience and increased connections.
- A naturalized stream.
- Interpretive signage.

D.5.4 Defining Terms

What is a naturalized stream?

Stream Naturalization	Stream Daylighting	Stream Restoration
Removing concrete-lined channels to create a more natural – although still channelized – stream. The goals include cleaner water, stable banks and improved habitat for aquatic life and wildlife.	Physically uncovering and opening up a buried/piped stream. The goals include cleaner water, stable banks and improved habitat for aquatic life and wildlife. A daylight stream might be "naturalized" or "restored," depending on available space and land ownership conditions.	The process of repairing impaired streams where the goals are cleaner water, stable banks and improved habitat for aquatic life and wildlife, while attempting to mimic natural conditions.

Example of naturalization (Evan's Parkway)

Stream daylighting (Little Sugar Creek, Charlotte, NC)

Restoration (Craddock St Tributary to Upper Paint Branch)

D.5.5 Ecological Benefits of Stream Naturalization

Ecological benefits of naturalizing Willett Branch include:

- Opportunity for infiltration through connectivity with groundwater.
- Increased nutrient uptake.
- Instream habitat creation.
- Improved water quality through biological nutrient cycling.
- Enhanced riparian buffer.
- Reduction in erosive flows directed towards Little Falls.

D.6 Willett Branch Urban Greenway Preliminary Implementation Details

At the July 2015 Working Draft presentation to the Planning Board, the Board asked for more information on the Willett Branch Urban Greenway recommendation, including preliminary implementation details. The following information was presented at the December 3, 2015 Westbard Work Session at the Planning Board.

D.6.1 Phasing

Further analysis of the Willett Branch Urban Greenway recommendation indicated that the idea fell into two phases, based on staff understanding – at the time of the Work Session – of the likely timing of future redevelopment in the Sector and the recommendation to acquire the Countywide Urban Recreational Park. These two phases are called:

A. Initial Phase:

- From the Capital Crescent Trail, south of River Road to approximately the Roof Center property.
- This phase includes the proposed Countywide Recreational Park.

B. Long-term Phase:

- Section at the Washington Episcopal School.
- Section at Kenwood Station.
- Section from Westwood II and Kenwood building to the Roof Center.
- Section downstream of the Capital Crescent Trail to the Hoyt property.

Parks, Trails and Open Space Recommendations

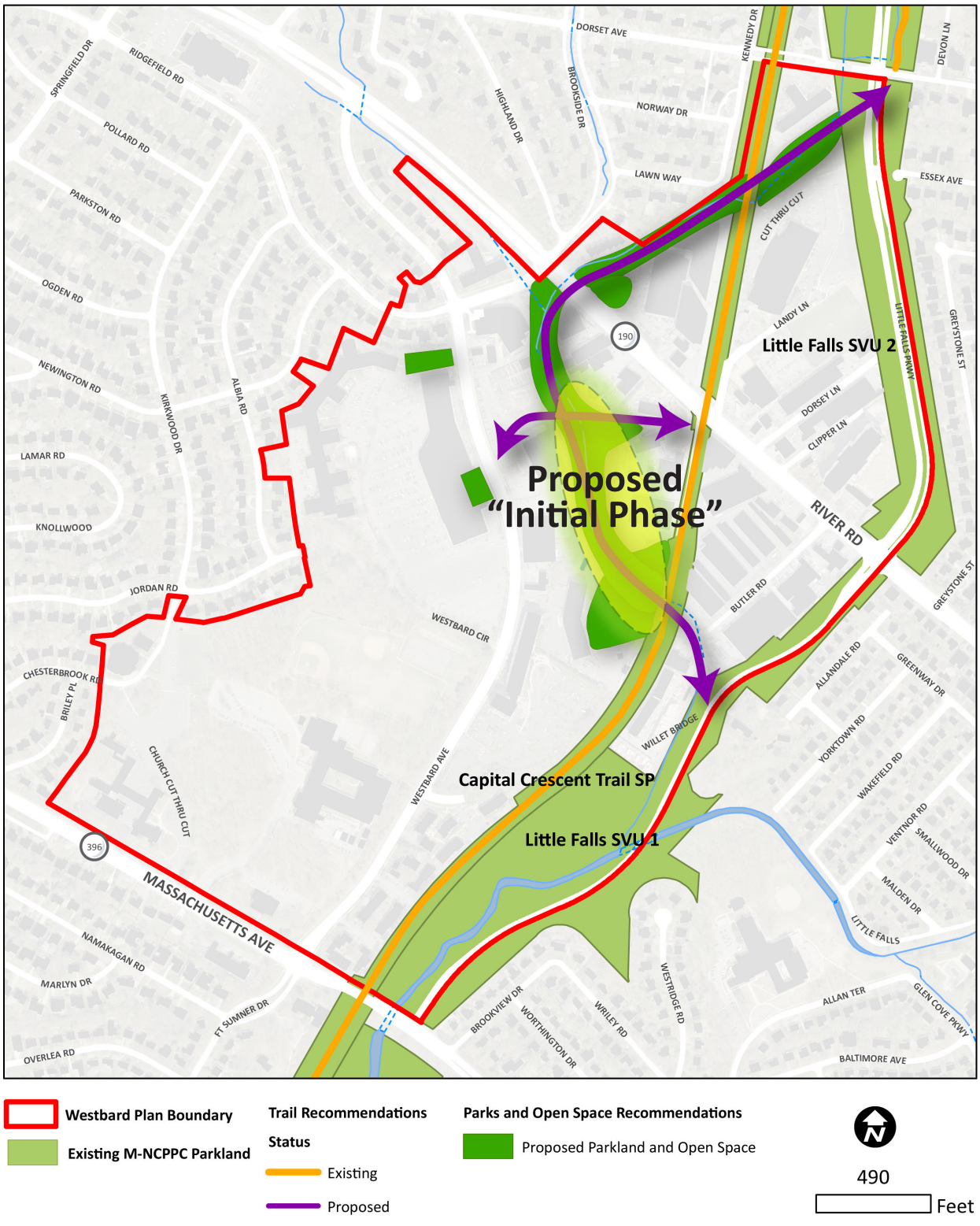


Figure D.7: Westbard Parks Recommendations Initial Phase Area Map

The preliminary implementation analysis indicated the following major actions are needed to realize the vision for the Initial Phase area:

- Property Acquisition.
- Stream naturalization.
- Park development.
- Cultural, historical and archaeological resources.

D.6.2 Property Acquisition

Numerous tools exist for acquisition and naturalization of primarily undevelopable portions of properties that will make up the Willett Branch Greenway. They include, but are not limited to:

- Dedication through the regulatory review process:
    - See the Montgomery County Environmental Guidelines and Section 66B of the Maryland Annotated Code regarding protection of stream buffers for a perennial Use I-P stream.
- Fee-simple acquisition via:
    - Legacy Open Space (LOS) funds. Both the Willett Branch Greenway and the Countywide Urban Recreational Park are designated as LOS Urban Open Spaces in the Sector Plan under Parks, Trails and Open Space (see Section 2.4.2 E).
    - Program Open Space (POS).
    - Advanced Land Acquisition Revolving Fund (ALARF).
- Private sector contributions, including:
    - Off-site improvements.
    - Contributions to an established amenity fund.
- Other local, state and federal sources.

D.6.3 Stream Naturalization

The stream naturalization component of the project includes:

- Demolition of the existing concrete channel and impervious areas in portions of the stream buffer dedicated to the Parks Department as parkland for the greenway.
- Removal of demolished materials and non-native invasive species.
- Construction of the naturalized stream channel, including but not limited to:
    - Step pools.
    - Cross vanes with riffle aprons.
    - Stone revetments.
    - Significant landscaping and mature plantings for a stabilized riparian zone.

The Parks Department has recent success with projects like this, including a stream naturalization project at Evans Parkway Park on Georgia Avenue, where a concrete lined trapezoidal channel was naturalized in the area where the stream channel runs through parkland.

D.6.4 Park Development

The following facilities and elements are envisioned as the Preliminary Program of Requirements for the Willett Branch Urban Greenway and the Countywide Urban Recreational Park.

Willett Branch Urban Greenway
Hard-surface trail
Naturalized stream corridor
Re-created wetland
Interpretive signage
Boardwalk over wetland area
Seating
WiFi access

Westbard Countywide Urban Recreational Park
Dog park
Skate park
Outdoor fitness equipment
Trail / Pathways
Landscaping
Seating
WiFi access

D.6.5 Cultural, Historical and Archaeological Resources

In response to the Planning Board's request at the July 2015 Working Draft presentation for more details on the Willett Branch Urban Greenway and the proposed Parks Department ownership of the corridor, staff in the Cultural Resources Stewardship section began focused research on a potential cultural resource as it pertained to the Initial Phase. This evaluation aimed to better understand community considerations, stewardship responsibilities, project scope, design issues and the costs associated with a potential archaeological resource, a former cemetery, in the proposed Willett Branch Urban Greenway and stream naturalization project. Although there is no above-ground evidence of a cemetery, there is historical evidence that one used to exist.

The Parks Department's protocol when undertaking construction in parkland is to conduct archaeological reconnaissance in areas of "high archaeological potential." One such area consists of Parcels 175 and 177, presently owned by Equity One and Galway Group. These parcels include part of the Westwood Towers building, part of its parking lot and drive, and a gravel area where cars park on Parcel 177. The 1911 tax assessment recorded that Parcels 175 and 177, once a 1.04-acre single parcel owned by White's Tabernacle, were "used as grave yard." White's Tabernacle was a chapter of the Ancient United Order of the Sons and Daughters, Brothers and Sisters of Moses, an African American benevolent society. This White's Tabernacle parcel had been in African American ownership since 1869. Historic Preservation Section staff found newspaper death notices for three people interred in a "Moses Cemetery," two in 1912 and one in 1935. The cemetery was identified as being in "Friendship, Md." and "Friendship Heights, Md." "Friendship" was the name for a large tract of land that stretched from the Potomac River up to the Westbard area. This reference to a "Moses Cemetery" may be the River Road cemetery (a "Moses Cemetery" was known to exist at Gibson Grove on Seven Locks Road in Cabin John and there were several Moses Lodges).

Staff from the Parks Department and the Planning Department conducted oral history interviews where people recalled "a few tombstones" still standing in the 1950s on the "Rivers Property," (today's Parcels 238 and 240), named for Jane and Sarah Rivers, African American landowners. These two parcels are presently owned by Equity One and feature the Westwood Towers and its parking.

Aerial imagery from 1948 shows Willett Branch as it winds along the eastern edge of the parcels, the Rivers House still standing on Parcel 238, and the Bethesda Blue Granite Company's quarry on Parcel 240**. One can't make out a definitive cemetery on Parcels 175 and 177 with the naked eye. Sometimes, stereoscopic analysis of historic aerials by trained experts can yield more information. The quarry was recalled by several residents as a popular swimming hole and a place where people would "jump horses by the quarry and . . . cut through the cemetery and it was cleared because there was a trail back there." The aerial photograph shows the trail north of the quarry and how it becomes a road, called Outlet Road, a right-of-way that still exists today (the road behind the McDonald's). An earlier oral history with Cleveland Clipper, as in Clipper Lane, quotes him stating that they "had to leave a road for the funeral to take bodies up there to that graveyard."

Despite this evidence for a graveyard, there is no clear indication in the historic record of the number of graves, their condition, what happened as a result of subsequent disturbance, or the possible disinterment of human remains for the land's eventual development.

The historic record clearly indicates that the land was disturbed prior to its current appearance. In 1930 and then again in 1950, The Washington Suburban Sanitary Commission (WSSC) constructed sewers through the area, including the graveyard parcels. WSSC drawings from 1930 show a trunk sewer line added beside the stream and running through the Ancient United Order of Moses property. After two sewer lines were installed, greater disturbance to the land came in the late 1950s when WSSC built a channelized storm drain to replace Willett Branch. Engineering drawings

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***Update 4.15.2016: The Bethesda Blue Granite Quarry was located on and/or near tax parcels 352, 354, 401, and 404, where a Countywide Urban Recreation Park (skate park) is proposed. The Rivers family owned parcel 240, and both Light Detection Radar imagery conducted in 2016 and the 1948 historic aerial reveal machine-made excavation on this site, which potentially indicates a quarry-like operation there as well.*

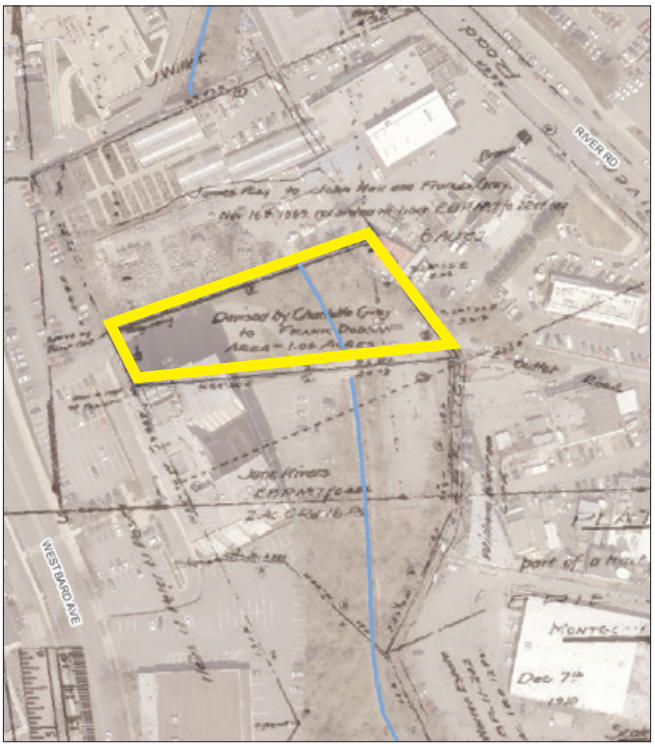


Figure D.8: 1911 Map of Parcels 175 and 177

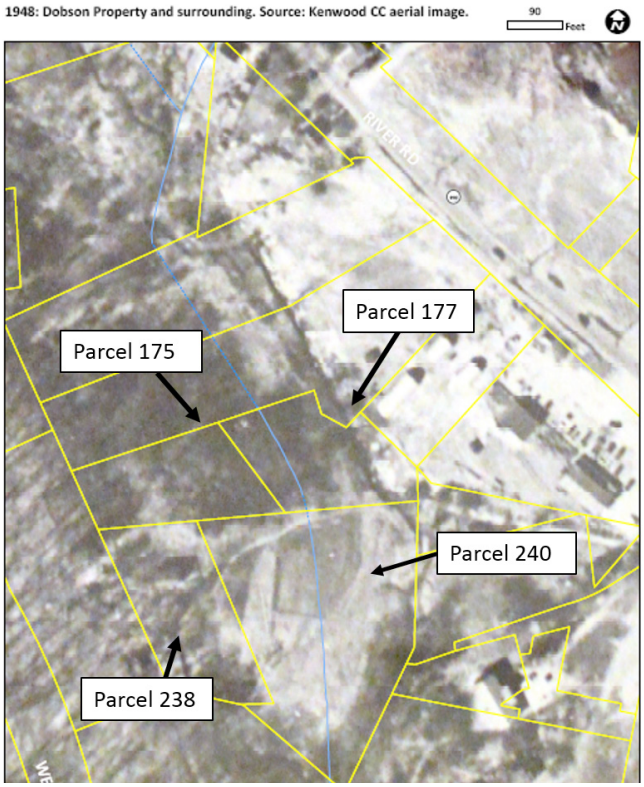


Figure D.9: 1948 Map of Parcels 175, 177, 238 and 240

show that the storm drain path was located west of the actual stream, and effectively bisected the parcels. The storm drain was built between 1959 and 1963, resulting in the concrete lined channel that exists today.

The graveyard may have been abandoned or its bodies relocated to a different site, spurred by these kind of land disturbances or by other disturbances at a different time. Alternately, human remains may exist underneath layers of development. Despite research, evidence for what became of the graves is not yet clear and may never be clear from the written and oral records. What is known is that White's Tabernacle sold its land in 1958. Despite the disturbance and consequent paving and development of the land, the former graveyard is considered to have "high archaeological potential."

D.6.6 Archaeological Protocol and Future Interpretation

Given the historical research findings, there is potential for human remains to be located within the proposed project area. Because of this, the Parks Department recommends that a cemetery delineation be conducted in these areas. The Maryland Historical Trust, the state agency that acts as the State Historic Preservation Office, recommends these surveys take place as early as possible in the planning process to facilitate design, manage costs and protect the resource.

While cemetery delineations are best practice, they are not required unless the project uses state or federal money or permits. If so, then the Section 106 process of the National Historic Preservation Act is initiated. Section 106 is a process for identifying cultural resources and evaluating them for inclusion on the National Register of Historic Places. If the resource is found to be National Register eligible, then adverse effects to the resource must be mitigated. At present, cultural resources within these parcels have not yet been recorded or evaluated.

The other circumstance when a delineation would be required would be if any project encounters human remains during construction. In that case the extent and nature of the remains needs to be determined before work can resume in that area.

The standard methodology for delineation of unmarked graves involves conducting a geophysical survey, most often with ground penetrating radar. Based on those results, mechanical stripping of the

upper soil layers is often necessary to confirm the presence or absence of graves. If, as is the case on these parcels, the ground is paved, the asphalt would be removed in a test area and the upper soil would be removal and area examined, and the asphalt replaced after the work is completed. An example of mechanical stripping of the soil to discover a cemetery underneath can be found at Freedmen's cemetery in Alexandria, Virginia, where unmarked graves were located below fill layers.

Because it is the Parks Department's mission to be good stewards of any cultural resources, Parks will conduct a cemetery delineation prior to any construction if this land comes into Commission ownership. Parks would also obtain federal permits for the stream naturalization and therefore go through the 106 process.

D.6.7 Cultural Resources Stewardship and Community Outreach

If the survey confirms the presence of graves, and depending on the size of the affected land area, plans for a future park can incorporate them into the design, as was done at Darnestown Heritage Park, a Parks Department property that contained an unmarked graveyard found through archaeological work, including mechanical stripping. It is essential in projects such as this to involve the community – especially the descendant community. Parks would work with interested members to develop interpretive signage that shares the history of this community that has been lost to time and those would be included in final design of the park project. For further information, contact the Department of Parks, Park Planning and Stewardship Division, Cultural Resources Stewardship Section.

D.6.8 Approximate Cost Estimates Associated with the Initial Phase

The tables below show approximate cost estimates for the major actions associated with the Initial Phase.

Table D.3: Initial Phase Cost Estimates

Countywide Urban Recreational Park	Range	Assumptions
Property Acquisition (approx. 2 acres)	$2.5 – $3.5 million / acre	Based on assessed values today, subject to change
Park Development	$4.5 – $5 million	Includes design, engineering, and construction; subject to change
Range estimate (total)	$9 – $12 million	

Willett Branch Stream Naturalization	Range	Assumptions
Stream Naturalization and Associated Park Improvements	$4 – $6 million	Engineering, demolition, removals, construction. Based on other stream naturalization projects, subject to change
Cultural, Historic and Archaeological Resources	$34,000	Geophysical survey for potential cemetery, mechanical soil removal to confirm presence or absence of graves, creation of interpretive signage
Range estimate (total)	$4 – $6 million	

Operating Budget Impact	$180,000	Annual, approximate

D.6.9 Long-term Vision Phase

The recommendation for the long-term vision phase is to continue the greenway along Willett Branch, including stream naturalization and hard surface trail.

A. Washington Episcopal School site:

- Daylight Willett Branch if/when the Washington Episcopal School redevelops.
- Example: Evans Parkway.

B. Kenwood Station site:

- Maintain a separation between the Kenwood neighborhood and commercial buildings.
- Hard Surface Spur Trail from Capital Crescent Trail allows direct, safe pedestrian and bicycle access from the Capital Crescent Trail to the Kenwood Station site.
- Plan recommends M-NCPPC acquire the land adjacent to Willett Branch that is currently part of the storage unit facility property.

C. Westwood II and Kenwood Building properties to the Roof Center Properties:

- Continue greenway along Willett Branch, including stream naturalization and hard surface trail.
- Use environmentally-sensitive crossings.

D. Downstream of the Capital Crescent Trail to the Hoyt property

- Daylight and naturalize stream.
- Preserve / improve the trail connection.

Parks, Trails and Open Space Recommendations

Figure D.10: Westbard Parks Recommendations Long-term Phase Area Map

D.7 Conclusion

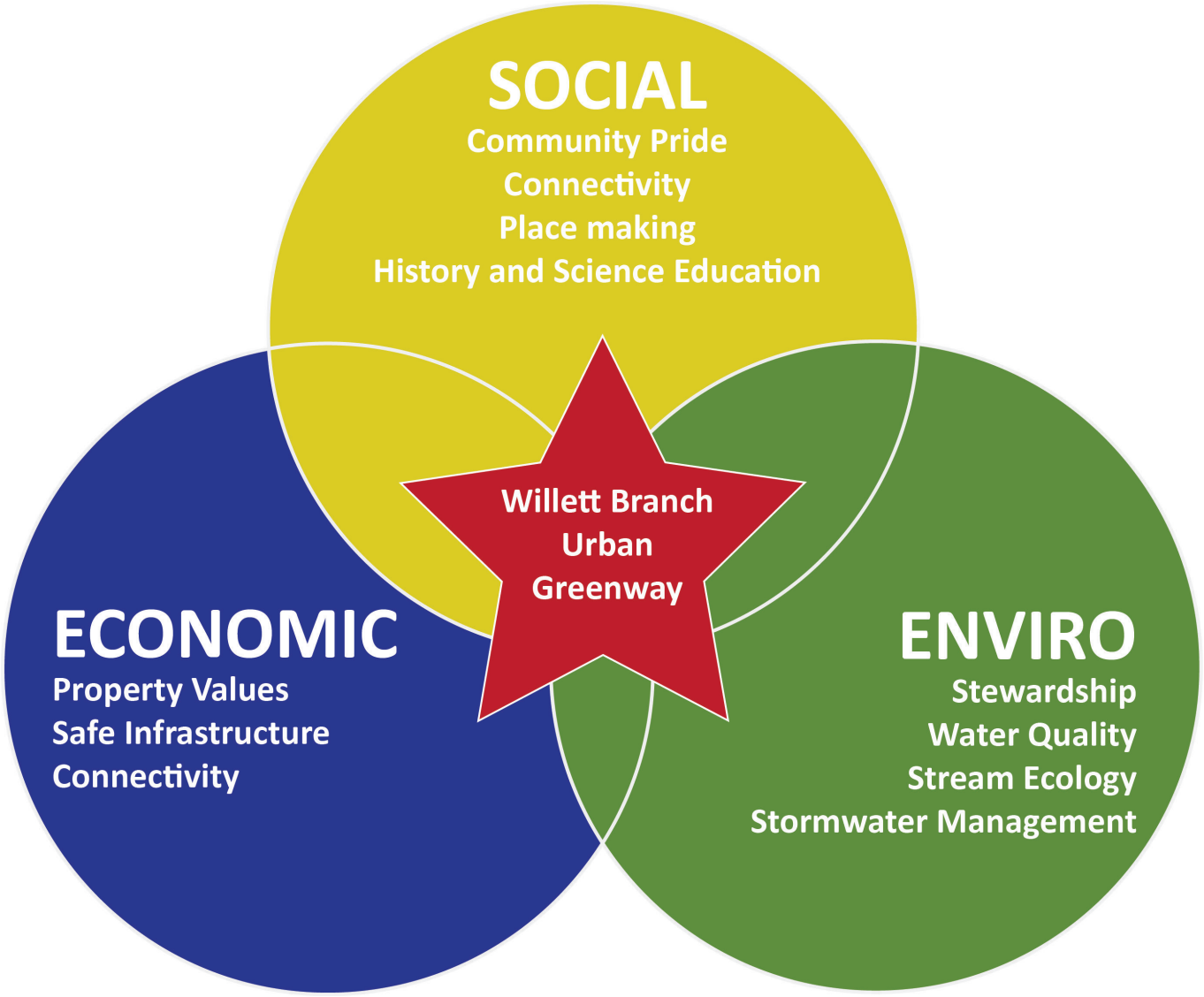
The benefits of naturalizing Willett Branch in the Westbard Sector Plan area are numerous and interrelated. Transforming this stream corridor can create shared pride for a space that has been called "shameful" by the community. With a new trail, a bridge and access points in multiple areas, this greenway corridor will create a new place, improve pedestrian and bicycle connectivity, and increase opportunities for social interaction. The greenway will shed light on the forgotten African American history of this area and create educational opportunities for students and visitors. A naturalized stream also provides a learning environment for ecology and environmental science education.

The economic benefits are obvious: businesses and residences located next to a celebrated park consistently have higher property values than those located next to a trash-filled, graffiti covered, derelict dumping ground. Safer infrastructure provides long-term financial and physical stability for property owners and increased connectivity means customers can more easily reach businesses.

As explained previously, the environmental benefits of naturalizing this greenway corridor are tremendous. There is very little living in Willett Branch today. Removing the concrete-lined channel and pavement in the riparian zone will allow water to infiltrate into the soil and stream bottom, thus reconnecting stormwater to groundwater. Naturalization of the channel and edges will create instream habitat for aquatic life, allow for increased nutrient uptake, and improve water quality through biological nutrient cycling. A naturalized riparian zone and stream buffer will provide shade, while step pools and cross vanes will create riffles and increase dissolved oxygen in the stream, which is critical for aquatic life. By creating opportunities for stormwater infiltration both in the stream and at the edges, naturalization of this corridor will reduce the intensity of the erosive flows currently hitting Little Falls where the two streams meet.

The Willett Branch Urban Greenway is the central feature in the future vision of Westbard as a "green, mixed-use, walkable center with strengthened connectivity."

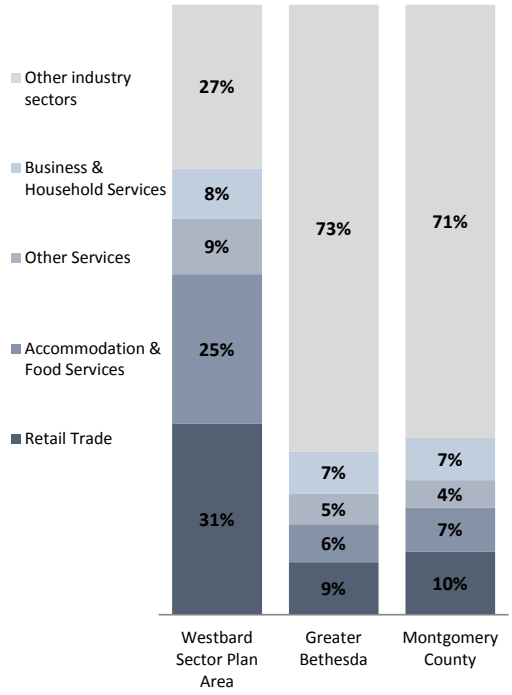
Figure D.11: Willett Branch Venn Diagram



Appendix E: Economics

E.1 Business and Employment Data

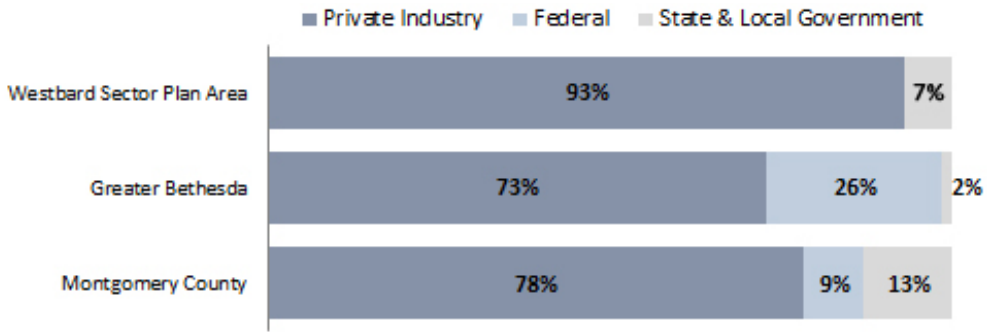
Figure E.1: Employment by Industry Sector (2013)
Source: Maryland DLLR, *Quarterly Census of Earnings & Wages 2013 Q4*; Research & Special Projects Division



E.1.1 At-Place Employment

- Nearly 1,800 people work in the Westbard Sector Plan 1982 Boundary ("Westbard"). This number accounts for approximately 1.7 percent of employment in Greater Bethesda, the larger area within which Westbard is located.
- Approximately nine out of 10 jobs in Westbard are in private establishments (see Figure E.2). In contrast, more than one in four jobs in Greater Bethesda is in the public sector.
- Retail establishments employ nearly one in three Westbard workers (see Figure E.3). This is a much higher share of the job base than in both Greater Bethesda and the county as a whole, where retail accounts for only one in 10 jobs.
- Westbard has a relatively higher concentration of jobs in automotive repair, dry cleaning, landscaping and other services compared to the rest of Greater Bethesda and the County as a whole.
- Accommodation and food service enterprises supply one in four jobs in Westbard.

Figure E.2: Public and Private Sector Employment (2013)
Source: Maryland DLLR, *Quarterly Census of Earnings & Wages 2013 Q4*; Research & Special Projects Division



E.1.2 Business Establishments

- Westbard's 18 retail enterprises (categorized as "Retail" in Table E.2) – employ a total of 520 workers. Grocery stores and supermarkets, primarily Whole Foods Market and Giant Food, account for roughly 300 of these retail jobs.
- Eight food service establishments, including restaurants and caterers (which fall within the "Accommodation and Food Services" category in Table E.2) employ a total of 405 workers. Catering enterprises, predominantly Ridgewell's and affiliated companies, supply most of Westbard's jobs from food service establishments.
- Westbard has more than 50 businesses in the "Consumer Services" and "Business and Household Services" sectors as shown in Table E.2. These two categories, which include auto repair shops, dry cleaners, beauty salons, and landscaper contractors, together employ nearly 300 people.

Table E.1: Largest Employers (2013)

Westbard Sector Plan 1982 Boundary
Source: Maryland DLLR, *Quarterly Census of Earnings & Wages 2013 Q4*

ESTABLISHMENT	LINE OF BUSINESS	EMPLOYMENT RANGE
Purple Tie	Caterers	100 to 249
Whole Foods Market	Supermarkets & Grocery Stores	100 to 249
Ridgewell's	Caterers	100 to 249
Giant Food Store	Supermarkets & Grocery Stores	100 to 249
Washington Episcopal Day School	Elementary & Secondary Schools	50 to 99
American Plant	Nursery, Garden & Farm Supply Stores	50 to 99

Table E.2: Private Establishments by Industry (2013)

Westbard Sector Plan 1982 Boundary
Source: Maryland DLLR, *Quarterly Census of Earnings & Wages 2013 Q4*

INDUSTRY	NUMBER OF ESTABLISHMENTS	PERCENT OF ESTABLISHMENTS	NUMBER OF JOBS	TOP THREE BUSINESSES (BY NUMBER OF JOBS)
Retail	18	16%	520	Supermarkets and grocery stores; nurseries/garden centers; and gas stations.
Accommodation & Food Services	8	7%	405	Caterers; full-service restaurants; and snack/beverage bars.
Other sectors	25	22%	245	Elementary school and secondary schools; recreation centers; commercial banking.
Consumer services	27	23%	150	Automotive repair; dry cleaning services; and beauty salons.
Business & Household Services	9	8%	135	Landscaping; pest control; and office administrative services.
Real Estate	11	9%	105	Residential and commercial property managers; storage unit leasing.
Professional, Scientific & Tech Services	12	10%	70	Veterinary, management, and engineering services.
Health Care & Social Assistance	6	5%	20	Physical; occupational and speech therapists; physician offices; and dentist offices.
Total Establishments	**116**	**100%**	**1,650**	

E.1.3 Workforce

- Westbard's workforce is somewhat younger compared to surrounding areas, with 25 percent of workers in the 1982 Plan Boundary under the age of 30 compared to around 19 percent in Bethesda and 21 percent in Montgomery County as a whole.
- Men make up 56 percent of Westbard's workers, substantially higher than the 44 percent and 48 percent male share of employees in Bethesda and the County, respectively.
- The majority (59 percent) of Westbard workers earn $3,333 or less per month, compared to 35 percent of workers in Bethesda as a whole and 42 percent of workers countywide.
- Hispanics/Latinos make up 20 percent of Westbard's workers, double the Hispanic workforce share in Bethesda and Montgomery County.
- Westbard workers are relatively less likely to have graduated from high school or to hold a bachelor or advanced degree. Even so, 43 percent of people working in Westbard have some post-secondary education, with 23 percent having attained a bachelor or higher degree.

Table E.3: Employee Demographic (2011)

Westbard Sector Plan 1982 Boundary, Greater Bethesda, and Montgomery County
Source: U.S. Census Bureau, Center for Economic Studies, *LEHD OnTheMap*

	WESTBARD	GREATER BETHESDA	MONTGOMERY COUNTY
WORKER AGE			
Age 29 or younger	25%	19%	21%
Age 30 to 54	53%	58%	57%
Age 55 or older	22%	22%	22%
WORKER SEX			
Male	56%	44%	48%
Female	44%	56%	52%
JOBS BY EARNINGS			
$1,250 per month or less	18%	11%	14%
$1,251 to $3,333 per month	41%	24%	27%
More than $3,333 per month	41%	65%	58%
WORKER RACE			
White Alone	70%	67%	68%
Black or African American Alone	22%	20%	20%
American Indian or Alaska Native Alone	0%	1%	0%
Asian Alone	7%	10%	10%
Native Hawaiian or Other Pacific Islander Alone	0%	0%	0%
Two or More Race Groups	1%	2%	1%
HISPANIC/NON-HISPANIC WORKERS			
Not Hispanic or Latino	80%	90%	89%
Hispanic or Latino	20%	10%	11%
WORKER EDUCATIONAL ATTAINMENT			
Less than high school	13%	7%	8%
High school or equivalent, no college	19%	13%	15%
Some college or associate degree	20%	19%	20%
Bachelor's degree or advanced degree	23%	41%	35%
Not Available	25%	19%	21%

E.1.4 Commuting Patterns

- Virtually all Westbard workers live outside the 1982 Plan Boundary.
- Most people (47 percent) live outside Montgomery County, including in Prince George's County (14 percent), the District of Columbia (11 percent) and Fairfax County (7 percent).

E.1.5 Commercial Space

- The Westbard Sector Plan 1982 Boundary has experienced no change in total commercial square footage – commercial space being composed of office, retail, flex and industrial space – since 2009 (see "Inventory (SF)" in Table E.4).
- The total amount of industrial, flex and retail space in the Westbard Sector Plan area has remained relatively constant over the past decade. However, office space in Westbard has declined approximately 58 percent since 1982,

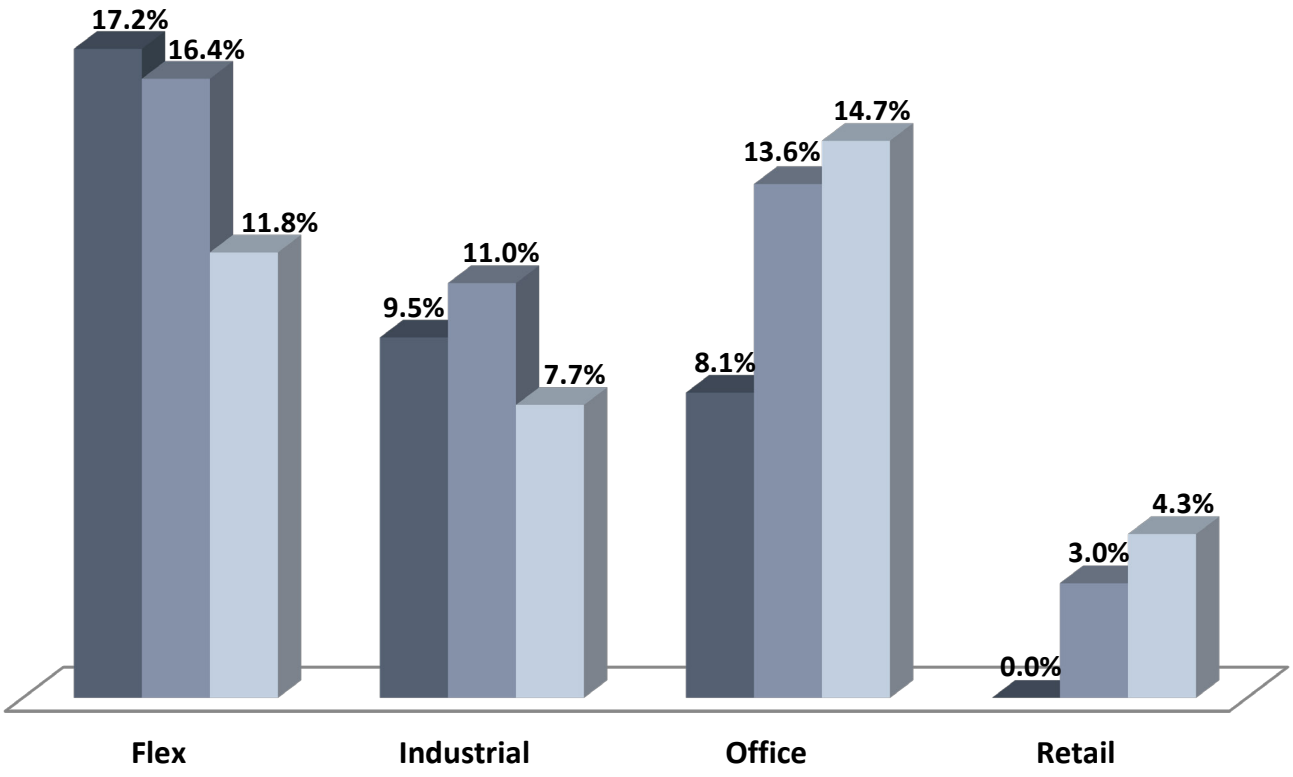
Table E.4: Commerical Space Trends since 2009 (3Q 2014)						
Westbard Sector Plan 1982 Boundary Source: Montgomery County Planning Department analysis of CoStar data						
	2009	**2010**	**2011**	**2012**	**2013**	**2014**
BUILDINGS						
Flex	3	3	3	3	3	3
Industrial	12	12	12	12	12	12
Office	8	8	8	8	8	8
Retail	25	25	25	25	25	25
Total	48	48	48	48	48	48
INVENTORY (SF)						
Flex	47,232	47,232	47,232	47,232	47,232	47,232
Industrial	73,405	73,405	73,405	73,405	73,405	73,405
Office	251,428	251,428	251,428	251,428	251,428	251,428
Retail	347,062	347,062	347,062	347,062	347,062	347,062
Total	719,127	719,127	719,127	719,127	719,127	719,127
OCCUPIED (SF)						
Flex	44,154	39,120	39,120	39,120	39,120	39,120
Industrial	72,905	73,030	71,605	67,205	62,805	66,405
Office	241,340	242,317	237,917	237,809	231,970	231,123
Retail	345,662	342,774	343,554	345,246	346,749	347,062
Total	704,061	697,241	692,196	689,380	680,644	683,710
VACANCY RATE (SF)						
Flex	6.5%	17.2%	17.2%	17.2%	17.2%	17.2%
Industrial	0.7%	0.5%	2.5%	8.4%	14.4%	9.5%
Office	4.0%	3.6%	5.4%	5.4%	7.7%	8.1%
Retail	0.4%	1.2%	1.0%	0.5%	0.1%	0.0%
VACANT (SF)						
Flex	3,078	8,112	8,112	8,112	8,112	8,112
Industrial	500	375	1,800	6,200	10,600	7,000
Office	10,088	9,111	13,511	13,619	19,458	20,305
Retail	1,400	4,288	3,508	1,816	313	-
Total	15,066	21,886	26,931	29,747	38,483	35,417

largely the result of gradual conversions to residential and institutional uses after large office tenants (NIH, Marriott) relocated approximately 20 to 30 years ago. The office market has stabilized in recent years, with no further reductions in office space since 2006.

- Industrial and Flex Space comprise approximately 17 percent of the commercial space in the Westbard Sector Plan Area. It is represented in light purple in Figure E.4.
- The Westbard Plan Area accounts for 89.6 percent of industrial and flex space in Bethesda, and 0.5 percent of industrial and flex space within the County.
    - The majority of industrial and flex spaces in Westbard are located along local streets and lanes that intersect River Road, such as Dorsey and Clipper Lanes, the Capital Crescent Trail, and Butler Road.
    - Vacancy rates for industrial buildings in Westbard have fluctuated greatly over the past 5 years (ranging from 0.7 percent to 14.4 percent), reflecting more tenant turnover (see Table E.4).

- Retail comprises approximately 48 percent of the commercial space in Westbard, consisting of nearly 350,000 square feet (sf). It is represented in blue in Figure E.3.
    - Two shopping centers exist within the Westbard Sector Plan 1982 Boundary: The Westwood Shopping Center (about 100,000 SF), and Kenwood Station (about 30,000 SF), located at the intersection of River and Ridgefield Road.
    - Retail space in Westbard is currently fully leased, and its 5-year average vacancy rate of 0.5 percent is 3 percent lower than Bethesda and 3.5 percent lower than the County for the same period.
- Office comprises approximately 35 percent of the commercial space in the Westbard Plan Area. It is represented in green in Figure E.4.
    - The two most prominent office buildings are the Kenwood Office Building and Westwood Center 2, which comprise about 42 percent of the office space in the Westbard Plan Area. Remaining office space is composed of smaller suites and low-rise buildings.
    - Office vacancy rates in Westbard have increased over the past 5 years (currently at 8.1 percent), although they remain lower than Bethesda (13.6 percent) and the County (11.1 percent) for the same period.

Figure E.3: Vacancy Rates by Commercial Sector (3Q 2014)
Source: Montgomery County Planning Department analysis of CoStar data



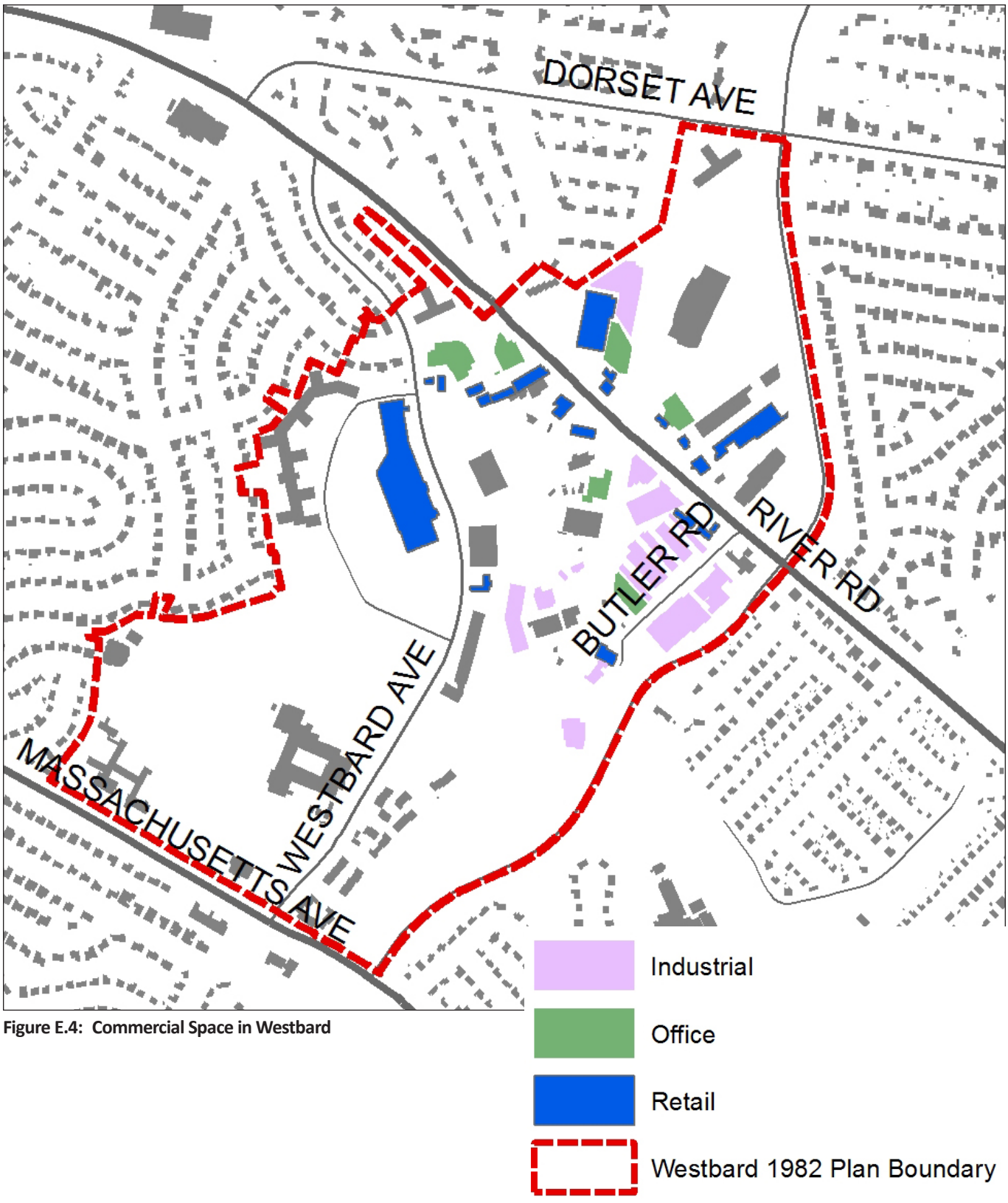


Figure E.4: Commercial Space in Westbard

Appendix F: Demographics

F.1 Demographics

F.1.1 Demographic Summary

2010 US Decennial Census

The demographic summary is compiled from 2010 US Census data. The geographic boundaries used to create Westbard's "Summary Plan Area" boundary are 19 Census-designated blocks – which are approximate but do not align precisely with the Westbard 1982 Plan boundary. The "Summary Study Area" is created using 259 Census-designated blocks that provide a richer profile of the surrounding area's demographic characteristics. Refer to maps below for exact geographic boundaries.

Figure F.1: Westbard Census Blocks for 2010 Data

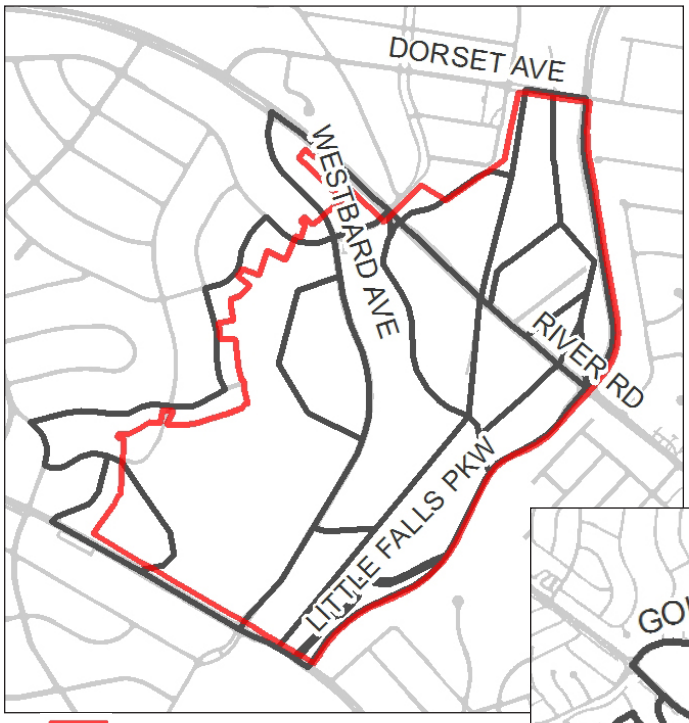


Figure F.2: Summary Study Area with 259 Census Blocks

- In 2010, approximately 1,970 people resided in 1,190 households in the Westbard Summary Plan Area (see Table F.1).
- In 2010, the Summary Plan Area had a greater share of millennials and seniors relative to the County. Millennials, approximately 20 to 34 years in age, represented 25 percent of Westbard residents, whereas the County's share was a lower 19 percent. Seniors, age 65 and older, were about 24 percent of the Westbard population in 2010, but represented a lower 12 percent share in the County (see Table F.1).
- The Westbard Summary Plan Area is less racially and ethnically diverse than the County. In 2010, the population was about 64 percent non-Hispanic white, 7 percent African American, and 11 percent Hispanic compared to 49 percent, 17 percent, and 17 percent respectively Countywide.
- About of 59 percent of households in the Westbard Summary Plan Area were occupied by renters, compared to 32 percent of all County households.
- About 50 percent of the Westbard Summary Plan Area's households were composed of one-person households. This compares to a 25 percent share in one-person households Countywide. Consequently, the average household size in the Westbard Summary Plan Area is lower at 1.8 than the County's average of 2.7.

Figure F.3: Age Distribution (2010)
Source: 2010 Decennial US Census

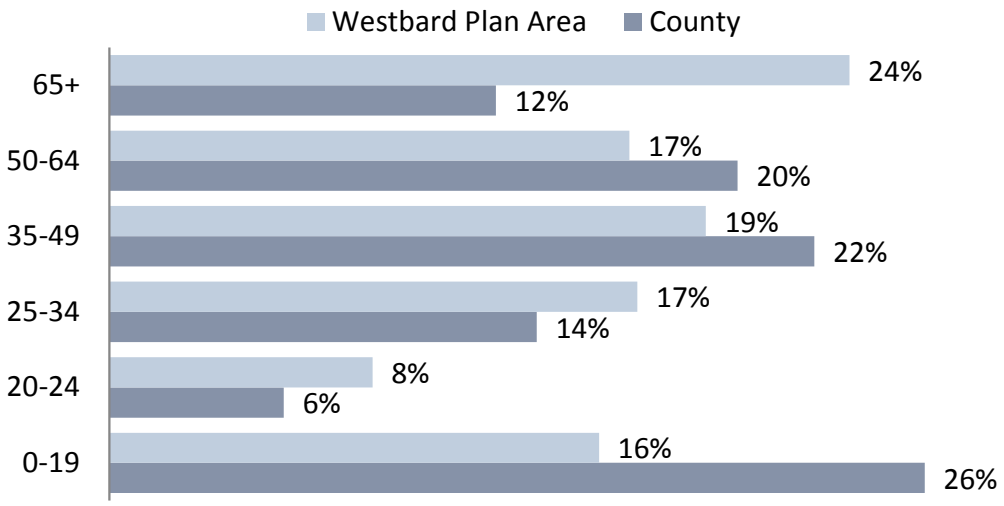


Table F.1: Population and Households (2010)

Source: US Census Bureau, 2010 Decennial Census, Summary File 1; Research & Special Projects, Montgomery County Planning Department.

	Westbard					
	Summary Plan Area		Summary Study Area		County	
POPULATION (2010)	**count**	**percent**	**count**	**percent**	**count**	**percent**
Total population (% of County)	1,967	0.2	19,960	2.1	971,777	
Age Distribution						
0-4 years	76	3.9	1,061	5.3	63,732	6.6
5-19 years	231	11.7	3,684	18.5	188,825	19.4
20-24 years	165	8.4	821	4.1	54,031	5.6
25-34 years	331	16.8	1,793	9.0	132,393	13.6
35-49 years	374	19.0	4,080	20.4	218,387	22.5
50-64 years	326	16.6	4,322	21.7	194,640	20.0
65 years and older	464	23.6	4,199	21.0	119,769	12.3
Race and Hispanic Origin Combined						
Not Hispanic:	1,752	89.1	18,631	93.3	806,379	83.0
White	1,250	63.5	16,062	80.5	478,765	49.3
Black	144	7.3	571	2.9	161,689	16.6
Asian or Pacific Islander	278	14.1	1,386	6.9	135,104	13.9
Other race	80	4.1	612	3.1	30,821	3.2
Hispanic or Latino (may be of any race)	215	10.9	1,329	6.7	165,398	17.0

	Westbard					
	Summary Plan Area		Summary Study Area		County	
HOUSEHOLDS (2010)	**count**	**percent**	**count**	**percent**	**count**	**percent**
Housing units (% of County)	1,188	0.3	9,299	2.5	375,905	
Households (% of housing units)	1,065	0.3	8,723	2.3	357,086	95.0
Tenure						
Owner-occupied	436	40.9	5,873	67.3	241,465	67.6
Renter-occupied	629	59.1	2,850	32.7	115,621	32.4
Households by Type						
Family households	424	39.8	5,211	59.7	244,898	68.6
Nonfamily households	641	60.2	3,512	40.3	112,188	31.4
Household Size						
1-person	529	49.7	2,929	33.6	89,264	25.0
2-persons	331	31.1	2,900	33.2	108,694	30.4
3-persons	128	12.0	1,157	13.3	60,216	16.9
4 or more persons	77	7.2	1,737	19.9	98,912	27.7
Average household size	1.80		2.28		2.70	
Owner-occupied	1.76		2.45		2.81	
Renter-occupied	1.83		1.95		2.47	

The 2010 US Census data is compiled from block level data aggregating 19 blocks for the WestbardSector Plan 1982 Boundary and 259 blocks for the Study Area.

F.1.2 Education, Occupation and Income

2008-2012 American Community Survey

The education, occupation and income figures are compiled from the 2008-2012 American Community Survey, a statistical survey administered by the US Census bureau. The geographic boundaries used to create Westbard's "Education, Occupation & Income (EOI) Study Area" boundary are 15 Census block groups within a one-mile radius of the center of the 1982 Plan Area Boundary (roughly defined as 5353 Westbard Avenue), which is designed to provide a richer profile of the surrounding area's education, occupation and income characteristics. Refer to Figure F.5 for exact geographic boundaries.

Figure F.4: Household Income (2012)
Source: 2008-2012 American Community Survey, 5-year estimates

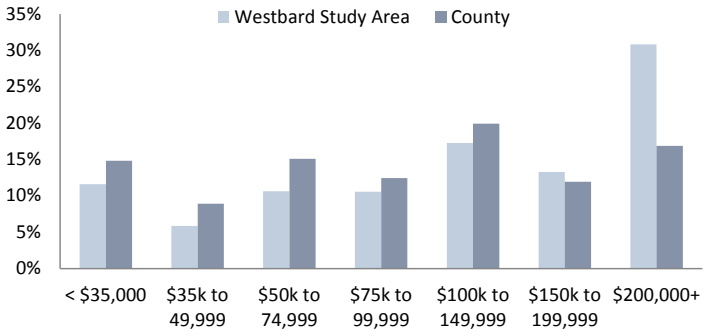
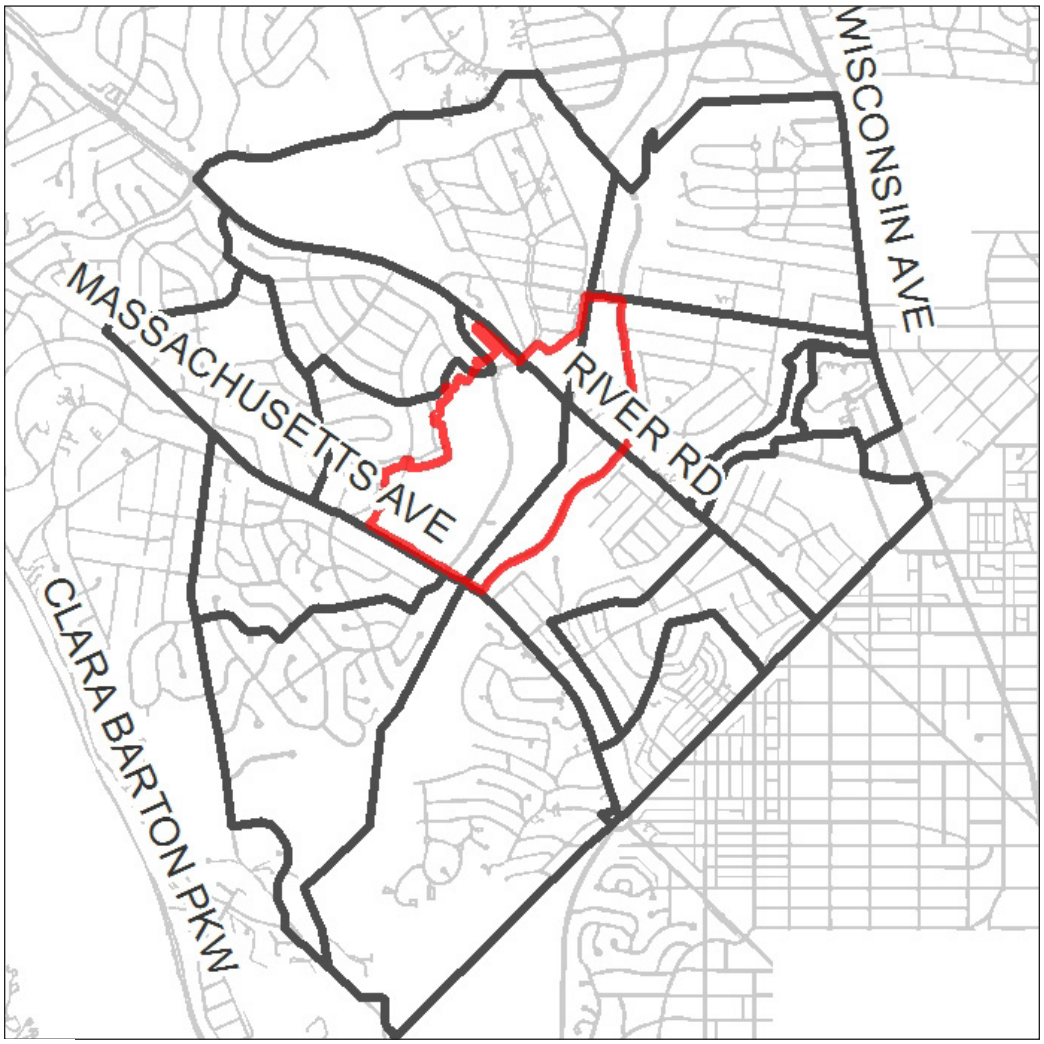


Figure F.5: Employment, Occupation and Income Census Blocks



- The average household income in the Westbard EOI Study Area was $199,498, about $69,000 higher than the County's average of $130,415 in 2012 (see Table F.2).
- In the EOI Study Area, about nine in 10 (86 percent) of the adults age 25 years and older had a bachelor, graduate or professional degree compared to about six in 10 (57 percent) countywide.
- About three in 10 (30 percent) employed residents in the Westbard EOI Study Area held professional, scientific and management occupations compared to about 22 percent countywide (see Table F.3).
- The EOI Study Area, with 3.8 percent of its residents having incomes below the poverty level, had a lower incidence of poverty compared to 6.5 percent found countywide.

Table F.2: Employee Demographics (2011)

Source: 2008-2012 American Community Survey 5-year estimate, US Census Bureau

	EOI STUDY AREA[1]		MONTGOMERY COUNTY	
	estimate	percent	estimate	percent
Educational Attainment				
Persons 25 years and older:	14,903		667,634	
Less than high school diploma	178	1.2	59,814	9.0
High school graduate	570	3.8	94,335	14.1
Some college or associate degree	1,323	8.9	133,578	20.0
Bachelor's degree	4,596	30.8	177,612	26.6
Graduate or professional degree	8,236	55.3	202,295	30.3
Occupation				
Civilian employed population:	9,998		522,564	
Professional, scientific, and management	2,977	29.8	113,945	21.8
Educational services, health care and social assistance	2,060	20.6	111,911	21.4
Public administration	1,529	15.3	57,717	11.0
Arts, entertainment, and recreation, and accommodation	442	4.4	43,496	8.3
Retail trade	273	2.7	39,095	7.5
Other services, except public administration	647	6.5	36,078	6.9
Finance and insurance, and real estate	1,019	10.2	36,067	6.9
Construction	101	1.0	30,635	5.9
Information	594	5.9	18,452	3.5
Manufacturing	160	1.6	15,637	3.0
Transportation and warehousing, and utilities	52	0.5	12,333	2.4
Wholesale trade	132	1.3	6,295	1.2
Agriculture, forestry, fishing and hunting, and mining	12	0.1	903	0.2
2012 Household Income Distribution				
Households:	9,198		357,579	
Under $15,000	358	3.9	19,054	5.3
$15,000 to $34,999	710	7.7	33,936	9.5
$35,000 to $49,999	539	5.9	31,921	8.9
$50,000 to $74,999	977	10.6	53,933	15.1
$75,000 to $99,999	970	10.5	44,451	12.4
$100,000 to 149,999	1,588	17.3	71,288	19.9
$150,000 to 199,999	1,220	13.3	42,665	11.9
$200,000+	2,836	30.8	60,331	16.9
Average 2012 household income	$199,498		$130,415	
People whose income is below the poverty level:	778	3.8	63,154	6.5

[1] The EOI Study Area consists of fifteen Census Block Groups within one-mile radius of the sector plan.

F.1.3 Employed Residents

2008-2012 American Community Survey

The employed residents are compiled from the 2008-2012 American Community Survey, a statistical survey administered by the US Census bureau. The geographic boundaries used to create Westbard's "Employment Study Area" boundary are 15 Census block groups within a one-mile radius of the center of the 1982 Plan Area Boundary (roughly defined as 5353 Westbard Avenue), which is designed to provide a richer profile of the surrounding area's employment characteristics. Refer to Figure F.6 for exact geographic boundaries.

- The share of private wage and salary-employed residents was lower in the Westbard Employment Study Area, at about 68 percent, than in the County at 71 percent (see Table F.3).
- The share of government-employed residents was the same in the Westbard Employment Study Area and the County at 22 percent.
- Higher shares of Westbard Employment Study Area residents use public transportation for work trips (about 22 percent) than in the County (16 percent).
- Conversely, the proportion of the population that drives alone to work is lower in the Westbard Employment Study Area at 61 percent, than in the County with an 70 percent share (see Figure F.7).
- Just over 60 percent of employed residents in the Westbard Employment Study Area commuted to another state or the District of Columbia for work, compared to about 30 percent Countywide.

Figure F.6: Employment Study Area Boundary Block Groups for 2012 ACS 5-year Data

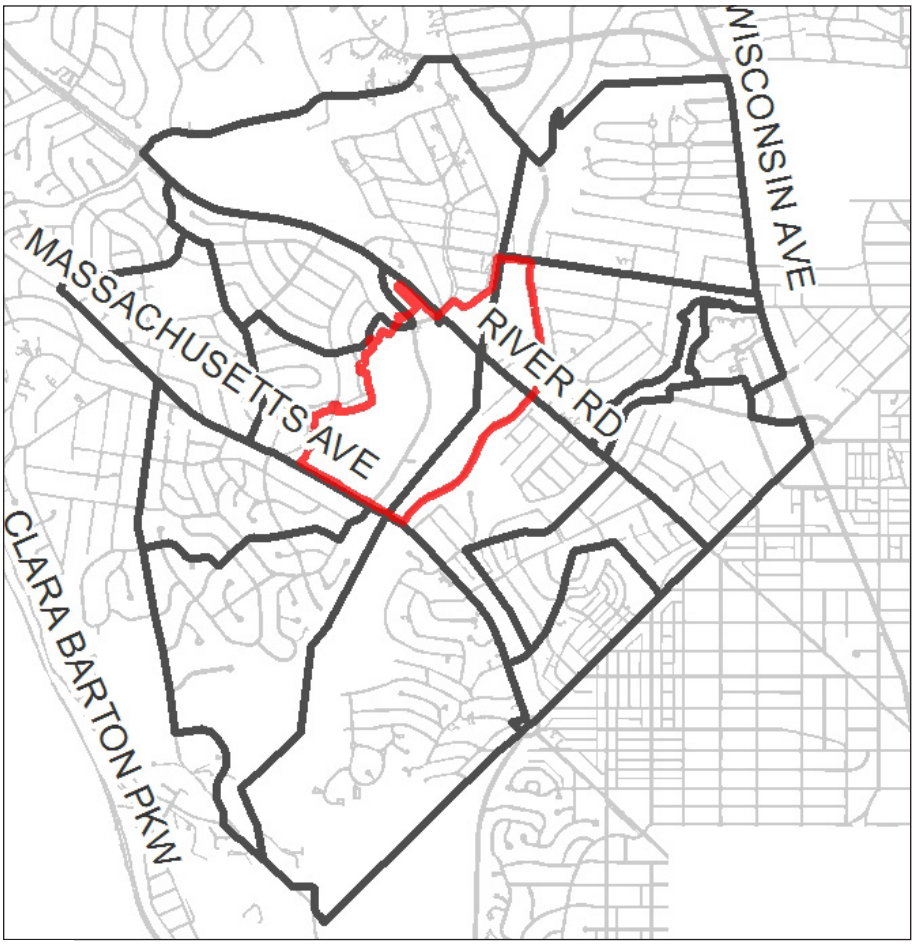


Figure F.7: Commute Mode (2012)
Source: 2008-2010 American Community Survey, 5-year estimates

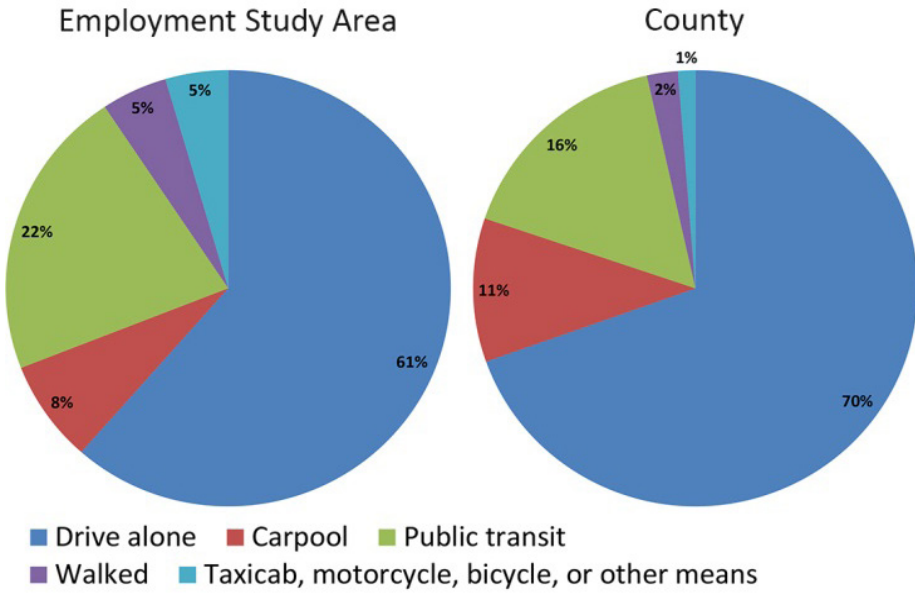


Table F.3: Employed Residents (2012)

Source: 2008-2012 American Community Survey 5-year estimate, US Census Bureau

	EMPLOYMENT STUDY AREA[1]		MONTGOMERY COUNTY	
	estimate	percent	estimate	percent
Population 16 years and over:	16,331		769,401	
Civilian employed population	9,998	61.2	522,564	67.9
Class of Worker				
Private wage and salary	6,753	67.5	373,042	71.4
Government	2,231	22.3	113,102	21.6
Self-employed in own not incorporated business	1,014	10.1	35,800	6.9
Work Location				
In County	3,551	36.0	306,357	59.4
Outside County, in Maryland	339	3.4	55,769	10.8
In another state or District of Columbia	5,965	60.5	153,221	29.7
Work Trip				
Drove	6,026	69.1	390,451	80.2
Alone	5,365	61.5	338,563	69.5
Carpool	661	7.6	51,888	10.7
Public transportation	1,883	21.6	79,308	16.3
Walked	419	4.8	10,949	2.2
Taxicab, motorcycle, bicycle, or other means	398	4.6	6,178	1.3
Average travel time to work (minutes)	29.5		33.9	

[1] The Employment Study Area consists of fifteen Census Block Groups within one-mile radius of the sector plan.

Figure F.8: Forecast Plan Area Boundary Transportation Analysis Zone (TAZ)

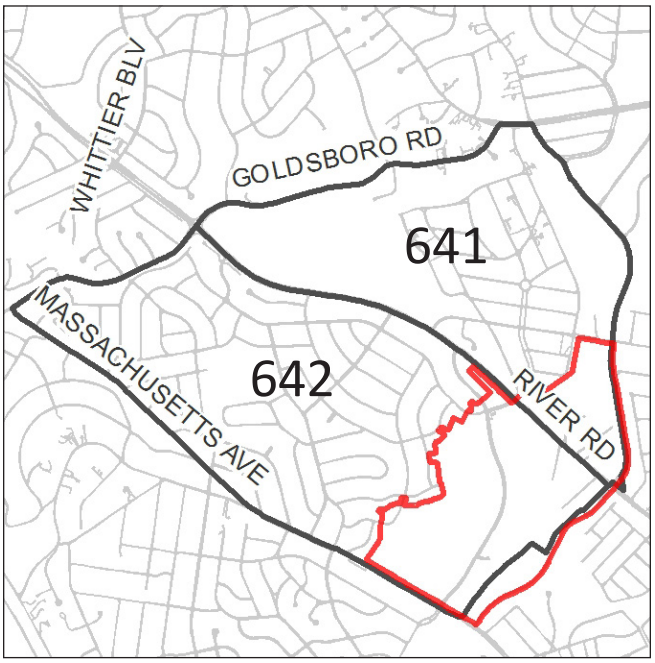
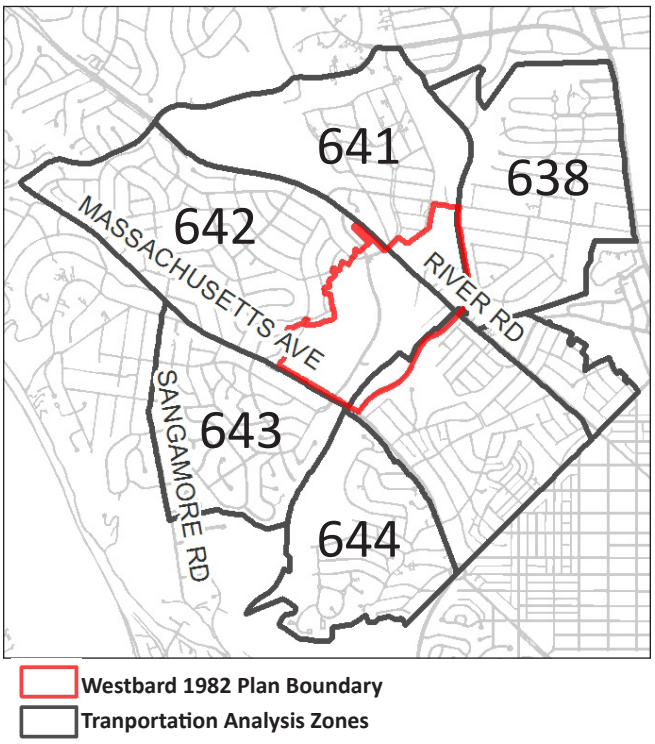


Figure F.9: Forecast Study Area Boundary Transportation Analysis Zone (TAZ)



F.1.4 Past and Future Growth

U.S. Census & COG Cooperative Forecast Round 8.3

Past and future population forecasts in the Westbard area are based on traffic analysis zone (TAZ) boundaries, which do not align precisely with the Westbard 1982 Plan boundary. The forecasts are derived by adding the 5-year growth from the Round 8.3 Council of Governments Cooperative Forecast, to the 2010 Decennial US Census based numbers in the respective TAZs. The geographic boundaries used to create Westbard's "Forecast Plan Area" boundary are defined as TAZs 641 and 642 (see Figure F.8). The Westbard "Forecast Study Area" boundary, which is designed to provide a richer profile of the surrounding area's population and household growth projections, is defined as TAZs 638, 640, 641, 642, 643, 644, and 645. Refer to Figure F.9 for exact geographic boundaries.

- Increases of about 1, 550 people, 660 households, and 200 additional jobs are forecasted for the Westbard Forecast Plan Area between 2010 and 2040 (see Table F.4).
- The population in Forecast Plan Area is expected to increase at a faster pace than the County's rate during the forecasted years. Between 2010 and 2040, population in the Forecast Plan Area is expected to increase by 26 percent, whereas the County is forecasted to grow by 24 percent (see Table F.4).
- The households in the Forecast Plan Area are expected to grow at the same rate as in the County, 27 percent, between 2010 and 2040.
- In the same time period, the employment growth rate in the Forecast Plan Area of 6 percent is expected to lag the County's employment growth rate of 40 percent.

Figure F.10: Population and Household Growth Forecast Area

Source: Adjusted Cooperative Forecast Round 8.3 and 2010 Decennial US Census

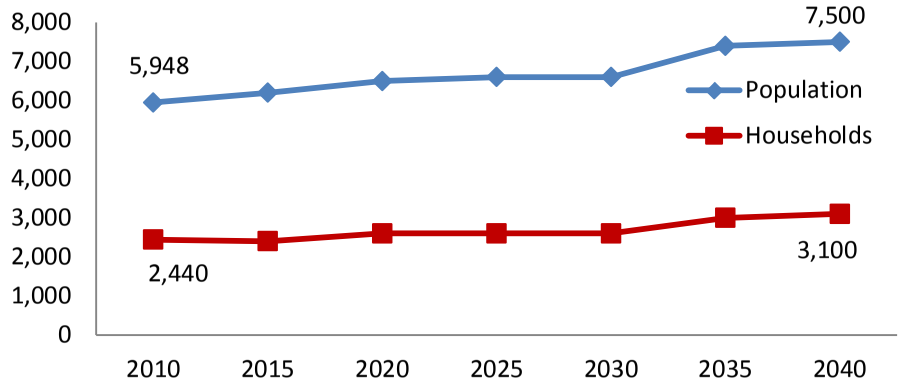


Table F.4: Forecast Summary (2010 to 2040)[1]

Source: Adjusted Metropolitan Washington Council of Governments Cooperative Forecast Round 8.3, 2010 Decennial US Census

	2010			2040			2010 to 2040 GROWTH			PERCENT CHANGE		
	Westbard[2]		County	Westbard[2]		County	Westbard[2]		County	Westbard[2]		County
	Forecast Plan Area	Forecast Study Area		Forecast Plan Area	Forecast Study Area		Forecast Plan Area	Forecast Study Area		Forecast Plan Area	Forecast Study Area	
Population	5,948	15,645	972,600	7,500	18,200	1,203,000	1,552	2,555	230,400	26%	16%	24%
Households	2,440	5,832	361,000	3,100	6,600	460,200	660	768	99,200	27%	13%	27%
Employment	3,100	4,000	510,300	3,300	4,200	715,100	200	200	204,800	6%	5%	40%

[1] The population and household forecasts for the Westbard Forecast Plan Area and Forecast Study Area are derived by adding the 5-year growth from the Round 8.3 COG Cooperative Forecast to the 2010 Decennial U.S. Census base numbers compiled for the traffic analysis zones defining the areas. The employment forecast is from the Round 8.3 COG Cooperative Forecast.

[2] The forecast is based on traffic analysis zone (TAZ) boundaries, which do not align precisely with the Census geographies used for other demographic and economic analysis in this report. As a result, the total population, household and job counts reported in the forecast will vary from those cited in other sections. The Westbard Forecast Plan Area is defined for this analysis as TAZs 641 and 642. The Westbard Forecast Study Area includes TAZs 638, 640, 641, 642, 643, 644, and 645.

F.1.5 Housing Characteristic

2008-2012 American Community Survey

The housing characteristics compiled from the 2008-2012 American Community Survey, a statistical survey administered by the US Census bureau. The geographic boundaries used to create Westbard's "Housing Study Area" boundary comprise three Census tracts that include 705502, 705601 and 705701, which is designed to provide a richer profile of the surrounding area's housing characteristics. Refer to Figure F.11 for exact geographic boundaries.

- Average monthly owner costs in the Westbard Housing Study Area total $3,832 and exceed the County's average of $2,638 by 31 percent (see Table F.5).
- At $3,038, the average monthly rent in the Westbard Housing Study Area is greater than Montgomery County's average rent by a difference of $1,432 (see Table F.5).
- Approximately 33 percent of homeowners in the Westbard Housing Study Area face a housing cost burden defined as exceeding 35 percent of their monthly income. Conversely, 40 percent of renters in the Study Area pay more than 35 percent of monthly income toward rent. Countywide, the housing cost burden for owners and renters was 27 and 41 percent, respectively.
- Most for-sale units in the Westbard Housing Study Area exist in multi-family structures. Approximately 984 multi-family units are housed in buildings that have 20 or more units. Approximately 885 single-family, detached homes exist in the Housing Study Area, although most are not within the Westbard Sector Plan 1982 Boundary area (the Housing Study Area is larger than the Westbard 1982 Plan area).

Figure F.11: Housing Study Area Boundary 2010 Census Tracts

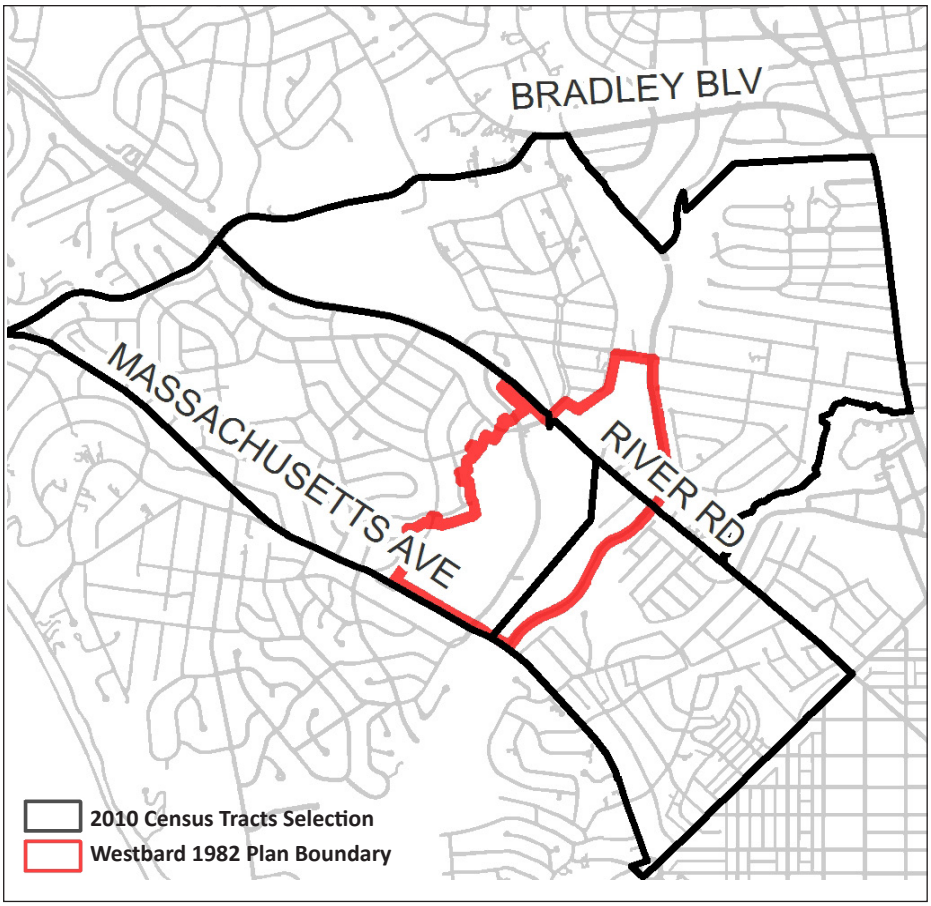


Table F.5: Housing (2012)

Source: 2008-2012 American Community Survey 5-year estimate, U.S. Census Bureau.

	HOUSING STUDY AREA[1]		MONTGOMERY COUNTY	
	estimate	**percent**	**estimate**	**percent**
Units in Structure1	**1,967**	**100.0**	**375,973**	**100.0**
1-unit, detached	885	45.0	182,216	48.5
1-unit, attached	65	3.3	68,403	18.2
2 to 9 units	9	0.5	25,432	6.8
10 to 19 units	11	0.6	36,545	9.7
20 or more units	984	50.0	62,722	16.7
Selected Monthly Owner Costs1				
Housing units with a mortgage:	**816**	**100.0**	**192,382**	**100.0**
Less than $1,000	39	4.8	5,945	3.1
$1,000 to $1,499	14	1.7	18,916	9.8
$1,500 to $1,999	67	8.2	32,133	16.7
$2,000 or more	696	85.2	135,388	70.4
Average monthly owner costs	$3,832		$2,880	
Gross Rent1				
Occupied units paying rent:	501	100.0	110,399	100.0
Less than $500	142	2.2	4,614	4.2
$500 to $749	-	1.0	3,186	2.9
$750 to $999	21	5.7	6,764	6.1
$1,000 to $1,499	61	37.2	38,983	35.3
$1,500 or more	419	53.9	56,852	51.5
Average monthly rent[2]	$3,038		$1,606	
Households Spending More Than 35% of Income on Housing Costs2				
Homeowners with a mortgage	270	33.1	52,361	27.3
Renters	203	40.5	44,912	41.1

[1]Westbard Housing Study Area for Units in Structure, Selected Monthly Owner Costs, Average Monthly Owner Costs, and Gross Rents are comprised of block groups that include 705502.3, 705601.1 and 705701.3.

[2]Westbard Housing Study Area for Average monthly rent, and Households Spending More than 35% of Income on Housing Costs are comprised of Census Tracts that include 705502, 705601, and 705701.

Appendix G: Build-out Scenarios

G.1 Build-out Scenarios

G.1.1 Build-out Calculations

Under the CR family of zones, there is the potential for a variety of build-out options. The total number of residential units and the total amount of commercial square feet that results from approved densities in a Sector Plan cannot begin to be known until regulatory applications are submitted under the new zoning. However, staff has evaluated the Concept Framework Plan as updated by the Planning Board's zoning recommendions*. It is important to note that the Planning Board has limited height in certain areas of Westbard and square footage of development will be limited in significant part by building heights and how much can physically fit on a particular site. Below are the calculations based on the concept plan:

Table G.1: Build-out Calculations

	Existing Plan	Build-out current Zoning (total)	Build-out per Sector Plan (total)
Residential Units	1,134 units	1,684 units	2,500 units*
Commercial Square Footage	390,237 SF	722,524 SF	618,200 SF
Industrial Square Footage	667,573 SF	1,372,585 SF	667,573 SF

* Assuming an averge residential unit size of approximately 1,250 square feet. This includes hallways, interior public spaces, loading and reception areas. Smaller unit size of approximatley 900 square feet was taken into consideration for estimated affordable housing projects.

Figure G.1: Concept Framework Plan

Planning staff has attempted, through the Concept Framework Plan, to project what a logical mix of commercial and residential may be achieved over time when site and buildability constraints are considered. Factors that were considered when creating the Concept Framework Plan included:

- Open space requirements
- Transportation and circulation requirements
- Environmental constraints
- Lot dimension and configuration constraints
- Potential structural and constructability constraints
- Potential market viability of use types
- Properties that were not likely to redevelop

(Example – Washington Episcopal School Site was assumed will most likely stay a school despite having a CR zone designation)

G.1.2 Discussion of the Full Build-out Scenarios

A. Full Commercial Build-out:

Of the 1.5 million square feet in the full build-out scenario for commercial, 520,752 square feet the potential is yielded by the Washington Episcopal School at a commercial 1.0 FAR (CRT 1.0, C-1.0, R-1.0) which staff, in the development of the Concept Framework Plan, considered to be very unlikely.

In addition, Westwood Shopping center, owned by Equity One, in the full build-out scenario for commercial, yields over 620,000 square feet, or 248,000 square feet more than the that anticipated in the Concept Framework Plan. This yield is unachievable given the open space and street requirements and the height limit of 60 feet. Therefore, of the 1.5 million square feet of commercial listed in the maximum build-out above, at a minimum, 768,752 square feet of commercial development are highly unlikely. The same can be said much of the other properties recommended for the CRT zone in the Westbard Sector Plan.

B. Full Residential Build-out:

Of the 5,059 total units in the full build-out scenario for residential, 1,465 residential units are considered highly unlikely given open space and street requirements and the height limit established by the zoning requirements of the Sector Plan.

Table G.2: New Unit and MPDU Unit Counts

Potential New Units and MPDU unit counts	
Existing Units	1104
Existing Rental Units	469
Existing Rent Restricted Units	43
Potential New Units	1378
Min. 15% moderately priced dwelling units in new construction	207

G.2 Binding Elements for Washington Episcopal Day School

Sites 9 and 10 in Sector Plan

1. Land Use

a. Residential: Independent Seniors (at least one resident in each unit will be over the age of 55).

b. Non-residential: Private Educational Institution for grades nursery through eighth grade.

c. Other: In the cross-hatched areas denoted on the Development Plan, no buildings other than accessory buildings and structures such as storage sheds, gazebos, restrooms and bleachers shall be constructed, and the existing athletic field will be retained.

d. Parking: Parking for all uses shall be on-site.

2. Density

a. Residential: Not more than 121 dwelling units, including MPDUs.

b. Non-residential: 175,000 SF Institutional (PEI)

3. Building Height

a. Residential: Eight (8) stories not to exceed 97 feet.

b. Non-residential: Proposed addition will be not more than four (4) stories not to exceed 55 feet.

c. Accessory Structures: Any accessory building including bleachers, shall not exceed 15 feet in height.

4. Building and Parking Setbacks: Building, parking, playing fields and other amenity locations will be as shown on the Development Plan with minor adjustments permitted.

5. Access

a. A cul-de-sac at the terminus of Landy Lane will be dedicated to public use.

b. Along Landy Lane, from River Road to the School campus, subject to issuance of necessary permits from Montgomery County, Applicant will install a sidewalk.

c. Sidewalk to be installed by Applicant extending to the Little Falls Parkway right-of-way line.

d. Other sidewalks to be installed as shown on the Development Plan.

e. Truck deliveries will be limited solely to the River Road/ Landy Lane ingress/ egress.

f. Promptly, upon approval of the requested rezoning, Applicant will request the State Highway Administration to install a traffic signal at the intersection of River Road and Landy Lane. Applicant will coordinate with the Citizens Coordinating Committee on Friendship Heights. Inc. and other interested parties to support the request for a traffic signal. Applicant will contribute to the cost of installation of the traffic signal in accordance with the terms of an agreement between Applicant and CCCFH.

6. Community Facilities: Applicant will contribute to a facility supporting the Capital Crescent Trail, the nature and extent of the contribution to be determined in cooperation with the Department of Parks and the Coalition for the Capital Crescent Trail at site plan.

7. Use Facilities

a. Facilities designated on the Development Plan with an "*" will be available for use by residents of the multi-family building along with students, faculty, and administration of Washington Episcopal Day School (WES) under a shared use agreement between WES and the owner of the multi-family building. Use of these facilities will be supplemented by programmatic activities intended to integrate the residential and institutional uses.

b. Community use of School facilities for other than residents of multi-family building to be arranged with WES.

8. Circulation

a. No traffic entering the Subject Property will queue or stack up onto public streets.

b. General locations for student drop-off/ pick-up designated on the Development Plan.

c. Gates or other control measures shall be employed with the goal of preventing, to the extent possible, the School's property being used for cut-through traffic (other than for School operations or School functions) between Landy Lane/ River Road and Little Falls Parkway.

9. Green Area: Green Area shall not be less than 54% of lot area.

10. Phasing

a. Phase 1 will be development of the multi-family residential building, extension of Landy Lane, installation of sidewalks and creation of two drop-off/ pick-up points, as shown on the Development Plan.

b. Phase 2, to occur at one or more unspecified times in the future, includes improvements to the School as shown on the Development Plan.

c. Simultaneous with construction of the multi-family residential building, existing office buildings on the Subject Property will be demolished, the underlying land will be stabilized with grass and the area may be used for recreational purposes either as a lawn of improved as an athletic field (including the potential of an underground garage).