Wisconsin Avenue Corridor Transportation Study

Final Report

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The District of Columbia Department of Transportation

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EXECUTIVE SUMMARY

The District of Columbia Department of Transportation (DDOT) initiated a study investigating traffic management and pedestrian safety improvements in the Wisconsin Avenue corridor of Northwest Washington, DC, in response to citizens' concerns. The Louis Berger Group, Inc. (Consultant) was contracted to conduct the study with assistance from DDOT staff and OP staff. This report refers to the Consultant team and DDOT and OP staff as the "Study Team."

The study would not have been possible without the assistance of area residents and the Advisory Neighborhood Commissions (ANC). The Study Team held meetings with area residents to discuss transportation issues and improvement options. Area residents provided additional input via email and regular correspondence.

The main goals of the Wisconsin Avenue Corridor Transportation Study (WACTS) study were to examine existing and future traffic conditions to identify problems, and to determine short-term and long-term traffic management and infrastructure improvements to address those problems. The objectives are to reduce traffic congestion, especially during peak morning and evening travel hours and mid-day Saturday, improve pedestrian and traffic safety, help resolve parking demand and supply issues in favor of residents, and protect surrounding residential streets from traffic impacts stemming from the major roadways. Future conditions were specifically examined from the perspective of the potential exacerbation of all these issues due to anticipated development along the Wisconsin Avenue corridor.

The study began in September 2004 and was completed in November, 2005. The Study Team first met with residents in the WACTS area to identify issues and concerns. Data collection took place between September 2004 and January 2005 to expand the understanding of existing conditions during peak and off-peak periods and mid-day Saturday. The quantitative assessment of existing conditions based on collected data was combined with field evaluations throughout the study area to verify transportation issues and concerns raised by residents.

This report includes transportation issues and deficiencies in the transportation infrastructure identified during the study. It provides a summary assessment of the traffic impacts due to future development for four scenarios, ranging from low to high development. The scenarios were developed after considering comments received by residents in the WACTS study area. It also includes proposed improvement recommendations. The Study Team analyzed the effectiveness of the proposed recommendations in mitigating the impacts of future traffic growth. The following section summarizes the characteristics of the Wisconsin Avenue corridor and surrounding neighborhoods and the main findings of the study:

Corridor Characteristics

- The 2.84 mile corridor traverses the study area in a northwest-southeast direction, stretching from Fessenden Street to Whitehaven Parkway.
- North of Calvert Street Wisconsin Avenue is a two-way, six lane undivided principal arterial. South of Calvert Street it is a two-way, four-lane undivided principal arterial.

- The posted speed limit along Wisconsin Avenue is 30 mph from Fessenden Street to Garfield Street, decreasing to 25 mph south of Garfield Street. Parking is permitted on both sides of the road along the majority of Wisconsin Avenue during off-peak periods, and prohibited during peak periods in the predominant flow direction.
- Five (5) major arterial roadways enter and/or exit Wisconsin Avenue within the study area at various locations. These arterials are as follows:
    - River Road (entry only);
    - Nebraska Avenue;
    - Massachusetts Avenue;
    - Garfield Street; and
    - Calvert Street.
- The study team investigated the 27 signalized intersections along Wisconsin Avenue (within the study area) plus an additional 12 signalized or unsignalized intersections selected based on resident comments or concerns.
- Concentrations of commercial establishments are located throughout the study area and nearby, attracting residents and visitors to the area: the Friendship Heights area (a few blocks north of WACTS study area), the Tenleytown area (between Chesapeake Street and Albemarle Street), the Macomb Street area (between Porter Street and Woodley Road), and the Glover Park area (between Calvert Street and Hall Street).
- There are four religious institutions along the Wisconsin Avenue corridor and 15 schools on Wisconsin Avenue or in close proximity.

Resident Transportation Concerns

- The main transportation related concerns and issues include pedestrian safety, cut-through traffic, truck/bus noises, speeding, parking, u-turns, queuing/back-ups, and the potential for additional traffic associated with new developments.

Pedestrians and Safety

- Areas of relatively high pedestrian activity along Wisconsin Avenue coincide with the abutting land uses in the area which include commercial, retail, high-rise residential and institutional uses. The following areas have the highest volume of pedestrian movements:
    - Between and including Brandywine Street and Tenley Circle,
    - Between and including Van Ness Street and the Fannie Mae Office Building Entranceway/Friendship Post Office Entranceway intersections (Rodman Street/Upton Street), and
    - Between Newark Street and Hall Place.
- There are no significant traffic safety deficiencies within the study area except at the Wisconsin Avenue/Calvert Street intersection, (56 accidents in three years). The dominant collision types at this Wisconsin Avenue/Calvert Street intersection were rear end (15 or 27.3% of total accidents), side-swipe (13 or 23.4%), and eight (8) incidents of collisions

with parked cars. Based on these characteristics and field observations, it was determined that the probable causes include the number of lanes dropping from three lanes to two in the southbound direction (increasing from two lanes to three in the northbound direction), as well as inadequate pavement markings and signage that clearly delineate the left-turn lanes and travel paths.

Speeding and Pedestrian Safety

- Vehicular speeds are generally within range of the posted limits, along the roadways surveyed.
- Selected roadway radar spot speed surveys concluded that speeding occurs in both directions along 37th Street. In particular, it was noted that motorists do not consistently observe the "15 MPH When Children Are Present" signs located along 37th Street, between Tilden and Quebec Streets.

Public Transportation

- The Washington Metropolitan Area Transit Authority (WMATA) provides bus service in the study area mainly along Wisconsin Avenue, Nebraska Avenue, Massachusetts Avenue, and Woodley Road. The WMATA Metrorail Red line serves residents and visitors at the Tenleytown-AU station within the study area and at the Friendship Heights station just north of the study area.
- The majority of Metrorail patrons, 67 percent, walk to the Tenleytown-AU station and 11 percent of patrons arrive at the station via Metrobus. Approximately seven (7) percent of Metro users were dropped off by someone and six (6) percent drove and parked. Over 100 patrons got to the station by bicycle during this particular survey period.
- WMATA provides 20 bicycle racks and 20 lockers at the Tenleytown-AU Metro station and only 35 percent of the lockers are currently utilized (100 percent bicycle locker utilization at Friendship Heights station).
- American University provides daily shuttle services from AU campuses to Tenleytown Metro station for AU students, faculty, and staff only. Weekday and weekend operations run every 10 minutes and 15 minutes, respectively.

Traffic Volume

- Wisconsin Avenue and the major intersecting arterials (Nebraska and Massachusetts Avenues) serve significant through/commuter traffic demands. Wisconsin Avenue weekday traffic ranges from 27,350 vehicles per day (south of Massachusetts Avenue) to 36,000 vehicles per day (south of Tenley Circle).
- The Saturday and Sunday average daily traffic (ADT) volumes along the corridor are relatively uniform, with daily volumes in the range of 30,920 and 25,770, respectively.
- Wisconsin Avenue weekday ADT volumes are generally higher than the Saturday volumes, except for the segment situated just south of Massachusetts Avenue where the Saturday volumes are marginally higher.

- The weekday morning and afternoon peak-hours were from 7:45 to 9:00AM and from 5:15 to 6:30 PM. The Saturday traffic peak was observed between 12:15 and 1:45 PM.
- Distinct northbound and southbound peak periods exist along the Wisconsin Avenue corridor. Traffic volume was considerably greater for AM peak periods compared to PM peak periods. The average southbound - northbound split for AM peak periods was approximately 60% - 40% for the entire corridor. The reverse (northbound) movement is dominant during the afternoon peak period, with the average northbound - southbound split approximately 55% - 45%.
- Auto traffic makes up between 95 percent and 99 percent of all traffic on the recorded streets.
- Wisconsin Avenue carries 50 to 180 heavy trucks per day, which is less than one percent of the average daily traffic along Wisconsin Avenue. The heavy truck volume was higher along Nebraska Avenue near Tenley Circle. Nebraska Avenue at Tenley Circle carried almost double the heavy truck volume recorded for Wisconsin Avenue at Tenley Circle.
- Light truck (e.g., FedEx, UPS deliveries, etc.) volume along Wisconsin Avenue ranged between 700 and 1,000 trucks per day which represented two (2) to 3.5 percent of total traffic along the corridor.
- Over 100 buses per day were recorded on Wisconsin Avenue within the study area. Approximately 500 buses per day were recorded along Nebraska Avenue west of Tenley Circle.

Travel Time (Average Speed including wait time)

- Consistent delays were observed for northbound movement along Wisconsin Avenue at Garfield Street and Massachusetts Avenue intersections, and in the Tenley Circle and Whole Food at Tenleytown areas. However, travel speed generally increased after the Brandywine intersection where traffic speeds up going downhill.
- For southbound movement, delays were frequent in the Tenley Circle area, and at the Van Ness Street, Massachusetts Avenue, and Garfield Street intersections. Travel speed generally increases south of Calvert Street where traffic speeds up going downhill.

Queues

- At most of the initial six locations along Wisconsin Avenue where queuing (back-up) observations were performed, all of the queued vehicles were able to clear the intersection during a single signal cycle.
- The most critical queuing that was observed occurs at Garfield Street during the afternoon peak hour, averaging 18 queued vehicles with a maximum of 33 queued vehicles. Additionally, for eastbound traffic at Van Ness Street during the morning peak hour, the average number of vehicles queued was 7 with a maximum of 30 queued vehicles.
- An additional field reconnaissance was conducted during peak periods at selected intersections due to queuing concerns expressed by residents. The Study Team verified that queuing exists at the intersections of Van Ness Street at Reno Road, River Road at 45th

Street, and 37th Street south of Benton Street. The main cause of the queuing was heavy traffic volumes during the peak hour such that a single signal cycle length was not sufficient to clear all vehicles.

Parking

- The parking analysis area extended 750 feet on either side of the centerline of Wisconsin Avenue. The parking analysis for the Tenleytown Metrorail station extended to a radius of 1250 feet, or approximately a quarter of a mile, representing the typical distance a person will readily walk to a Metrorail station.
- Most resident comments with regard to parking may be classified into one of four (4) major areas of concern:
  - insufficient number of on-street parking spaces available in some residential areas;
  - commuters, shoppers or restaurant patrons parking on local neighborhood streets;
  - difficulty in finding parking spaces along Wisconsin Avenue when residents need to make a quick stop; and
  - the effect of parking on emergency services.

Wisconsin Avenue Corridor

- There are various classes of parking space such as residential permit parking/2 hour limit parking, various metered parking and unrestricted or handicap parking.
- There are a total of 593 on-street parking spaces along Wisconsin Avenue and approximately 2,700 off-street parking lot/garage spaces in the parking analysis area. Of 593 on-street parking spaces, 243 spaces (41%) were metered, 246 spaces (41%) unrestricted, 82 spaces (13%) other, and 23 spaces (4%) loading.
- A substantial number of parking spaces (more than 240, and over 40 percent of total available spaces) are not regulated. This may be due to missing parking regulation signs. In front of Fannie Mae (southbound Wisconsin Avenue), parking is not regulated during off-peak hours and appears to be used by Fannie Mae employees. In some areas, parking is prohibited during school hours (St. Ann's School and Sidwell Friends).
- Loading zones are designated in both directions along Wisconsin Avenue: 5 spaces northbound and 18 spaces southbound.
- It was observed that during peak delivery periods in some cases, passenger cars were illegally parked in loading zones. These situations resulted in delivery trucks double parking and effectively limiting Wisconsin Avenue to a single lane of roadway capacity in either direction during portions of the off-peak period.
- The demand for on-street parking along Wisconsin Avenue is very high with a few very specific exceptions. During weekday off-peak hours, average parking utilization was approximately 90 percent. On Saturday, it was observed that vehicles parked along the corridor exceeded the available spaces (some were illegally parked).
- Near the commercial areas adjacent to the Tenleytown-AU Metrorail station and the Glover Park Whole Foods area, the metered on-street parking was fully utilized. In

other areas, such as Wisconsin Avenue between Davis Street and Fulton Street or between Ellicott Street and Fessenden Street, on-street parking utilization was relatively low.

Parking Garage/Lot

- There are 15 public parking garages and lots within the parking analysis area which provide approximately 2,700 spaces. There is very high commuter demand in the Fannie Mae area and for the offices located between Calvert Street and 35th Street. Parking facilities in these areas are fully utilized during weekdays. However, parking facilities which mainly serve shopping customers demonstrate much lower utilization. Average parking utilization for all facilities was 86% during weekdays and 61% on Saturday.
- Despite the shortage of on-street parking near the Tenleytown-AU Metrorail station, average parking facility usage reached only 54%, even with free parking validation for shopping at specified properties.

Side Streets

- Most side streets in the parking analysis area are designated for residential parking. For arterial roadways such as Nebraska Avenue, Massachusetts Avenue and River Road, parking is restricted during AM and PM peak periods in the direction of the predominant flow. Other minor arterials and collector roadways also restrict peak hour parking while permitting parking at other times.
- Side streets provide approximately 6,100 parking spaces in the defined parking analysis area. Metered parking is available near the Tenleytown/AU Metrorail station with a few more metered spaces in the Glover Park area. There are over 700 unregulated side street parking spaces in the parking analysis area. These spaces are mostly along arterial roadways (e.g., Nebraska Avenue, Massachusetts Avenue, River Road) where parking is restricted during peak hours.
- Side street parking utilization in the parking analysis area is two-thirds (66%) full during weekdays. On Saturday, parking utilization increases to approximately 76% for side streets.
- The Study Team investigated parking utilization on weekday evenings (after 8:00PM) for selected areas of Tenleytown, the Macomb Street restaurant district, and Glover Park. The field observation concluded that parking utilization in these areas was approximately 90%.

Effect of Parking on Emergency Service Response Times

- The evaluation of the impact of on-street parking on the provision of emergency services is outside the scope of this study. We note the concern and advise its review, in the context of a broader citywide review.

Existing Conditions: Traffic Levels of Service (LOS)

- Wisconsin Avenue as a whole is running fairly smoothly with minor delays during weekday peak hours with an average Level of Service (LOS) rating of C. Somewhat longer delays are encountered on Saturdays (LOS C and D).
- Existing LOS for Wisconsin Avenue signalized intersections during weekdays are at a reasonable level, mostly maintaining LOS C or better with a few exceptions. Wisconsin Avenue intersections at Upton Street, Cathedral Avenue, and Garfield Street experience LOS D in the AM peak hour with average delay time ranging from a half minute to one minute.
- Deteriorated LOS is experienced at Fessenden Street, Albemarle Street, and Calvert Street where existing land uses (retail activity) attract more visitors on Saturdays. The worst LOS observed at a signalized intersection was at the Albemarle Street/Wisconsin Avenue intersection (LOS E) on Saturday with average delay time of almost one minute.
- Unsignalized intersection LOS analysis shows that due to fairly constant traffic flow along 34th Street, drivers on Newark Street at the 34th Street/Newark Street intersection experience delays during weekday and Saturday peak hours, averaging over 40 seconds delay during AM peak periods. Similarly, drivers from Fort Drive and 40th Street have difficulty entering Albemarle Street or crossing it, because of constant traffic flow along Albemarle Street. The average wait time for the drivers on Fort Drive and 40th Street at this intersection extends up to half a minute. It is also very difficult for drivers from 38th Street to enter Massachusetts Avenue during the PM peak hour.

Development Scenarios

As part of the WACTS, the Study Team evaluated four (4) development scenarios occurring over a 10-year period (year 2014). These scenarios portray a range of low, medium, high and maximum potential development. Exhibit ES1 illustrates each development scenario. As Exhibit ES2 shows, the increased square footage over existing developments ranges from approximately 300,000 sq.ft. to 8.9 million sq.ft. The main purpose of the development scenario analysis is for the WACTS to account for a range of foreseeable additional traffic generated by different levels of development along Wisconsin Avenue.

Exhibit ES1: Summary of Development Scenario Descriptions

Scenario 1: Baseline

- Wisconsin Avenue Corridor 2004 (Base) Traffic Counts
- Developments under construction or scheduled to begin construction (inside study area)
- Friendship Heights Area Development under construction
  - Chase Point
  - Chevy Chase Center
  - Hecht's
- Natural Growth Factor based on MWCOG model (plus GEICO)

Scenario 2: Medium

Scenario 1 + Potential MORs / Potential PUDs +
- Mazza Gallerie Parking Lot
- Lord & Taylor Parking Lot
- "Social" Safeway
- Boys and Girls Club
- Lord & Taylor
- WMATA
- Buick site

Scenario 3: High

Scenario 1 + Maximum MORs* / Potential PUDs (same as in Scenario 2) /
- "Social" Safeway (MOR)
- Boys and Girls Club (MOR)

+ Friendship Heights Addendum
Specified land parcels adjacent to Wisconsin Ave. will be developed to max. PUD size, height and floor area ratio (FAR) for particular zoning districts

Scenario 4: Maximum

Scenario 1 + Maximum PUDs* along entire Wisconsin Avenue corridor /
- "Social" Safeway (MOR)
- Boys and Girls Club (MOR)

+ Friendship Heights Addendum
Specified land parcels adjacent to Wisconsin Ave. will be developed to max. PUD size, height and floor area ratio (FAR) for particular zoning districts

Note: MOR refers to matter-of-right and PUD refers to planned unit development.
* with exceptions – properties developed within 10 years and/or properties currently at 80% or more of MOR for Scenario 3, or at 80% or more of PUD for Scenario 4, are not considered for redevelopment.

Exhibit ES2: Summary of Estimated Total Square Footage by Scenario

		Scenario 1	Scenario 2	Scenario 3	Scenario 4
Current Construction Projects (sq.ft.)		1,966,723	1,966,723	1,966,723	1,966,723
WACTS Area	***Residential (dwelling unit)***	290	910	3,488	4,875
	Commercial (sq.ft.)	9600	288,749	1,519,900	1,885,700
	Office (sq.ft.)	0	299,459	1,651,600	2,179,000
	WACTS Sub-total	**299,600**	**1,498,208**	**6,659,500**	**8,939,700**
Friendship Heights Addendum (sq.ft.)		0	4,127,924	5,084,797	5,084,797
South of WACTS Area (sq.ft.)		0	734,750	734,750	734,750
	Scenario Total	**2,266,323**	**8,327,605**	**14,445,770**	**16,725,970**

Note: Total was calculated assuming each dwelling unit at 1,000 sq.ft. The square footage is increased by 20% to accommodate common areas

Future Conditions

Applying the standard practice recommended by the Institute of Transportation Engineers and using the ITE Trip Generation 7th Edition, total additional trips for each type of development were estimated for each scenario. The estimated trips were then reduced by a specific percentage depending on whether the facility was close to a Metrorail station (within ¼ mile) or further away. The rationale and sources for the assumptions are discussed in the report. Chapter 4 of the report examines the future conditions without consideration of potential traffic management or infrastructure improvements. Chapter 7 presents future conditions with consideration of traffic management such as signal optimization and infrastructure improvements. The following compares conditions with and without improvements, and summarizes conditions with improvements.

Arterial Level of Service (LOS for the corridor as whole)

- The level of development considered under Scenarios 1 and 2 can be managed during weekday peak hours with modest infrastructure improvements and signal optimization. Scenarios 1 and 2 for the weekday peak hour attain LOS C and D, which are typically acceptable LOS for a large urbanized area.
- A longer delay will be experienced during Saturday mid-day peak hours for Scenarios 1 and 2 because of heavy traffic flow in both travel directions and permitted parking on either side of Wisconsin Avenue. Saturday peak hour LOS is D for Scenario 1, dropping to LOS E for Scenario 2.
- LOS for Scenarios 3 and 4 goes to E or F for all weekday and Saturday peak hours even with signal optimization.

Intersection LOS

Exhibit ES-3 summarized signalized intersection LOS by scenario.

Exhibit ES3: Summary of Signalized Intersections, LOS by Scenario

	Existing	Scenario 1	Scenario 2	Scenario 3	Scenario 4
LOS A through C					
AM Peak	32	31	29	26	26
PM Peak	33	33	30	23	18
Saturday Mid-day	31	30	28	21	18
LOS D					
AM Peak	1	2	3	3	1
PM Peak	0	0	3	4	4
Saturday Mid-day	2	2	2	7	3
LOS E					
AM Peak	0	0	1	4	4
PM Peak	0	0	0	6	7
Saturday Mid-day	0	1	1	2	6
LOS F					
AM Peak	0	0	0	0	2
PM Peak	0	0	0	0	4
Saturday Mid-day	0	0	2	3	6

Recommendations and Summary

The Study Team met with area residents and compiled a comprehensive list of transportation issues for the study area, followed by extensive data collection, field investigations, and assessments of existing conditions. These issues are summarized in Exhibit ES4. The Study Team then developed suggested improvements as shown in Exhibits ES5A through ES5C. (Long-term recommendations are identified in *italics*.) The recommendations in this study are mainly intended to address pedestrian and traffic safety, traffic and parking management, optimizing signal timing, preventing illegal traffic movement along the Wisconsin Avenue corridor, and reducing unwanted traffic on neighborhood streets. It should be noted that "punch lists" of the minor maintenance issues like faded signs or striping have been provided to DDOT, and may already be corrected at the time of this report release.

A number of the recommendations in WACTS concern pedestrian crossings and accessible ramps, as well as signage and pavement repair. Accomplishing these "housekeeping chores" will clarify the rules for all, and create a safer environment for pedestrians.

The forecasts are made with specific assumptions as to modal split and modal share (auto/ walk/ transit.) A shift in general behavior to favor more walking and more transit use would change these forecasts. The Metropolitan Washington Council of Governments posts various alternative transportation modes and available Transportation Demand Management (TDM) programs in the region on its website and presents them as the Commuter Connections program. The Study Team encourages this type of promotion of TDM programs to improve transportation conditions at a regional level that will have positive effects at the local level.

Some of the parking recommendations are made to improve traffic flow, while others are to maintain residential parking availability for "true" residents and "legitimate" visitors to neighborhoods. Still other parking recommendations refer to commercial uses. Parking remains a serious concern, citywide, and the WACTS Study Team in general supports the findings and recommendations of the Mayor's Taskforce on Parking.

Recommendations of both short-term (within 12 months) and long-term (over 12 months) implementation must still go through an appropriate DDOT process. Specific projects, if approved, will be conducted based on available capital funds. The long-term lane use improvements suggested in this report may be also considered as a strategy for future transportation policy for the Wisconsin Avenue corridor to accommodate continued transportation demand in the area and maintain residents' quality of life.

Exhibits ES4: Transportation Issues

CLICK HERE

Exhibits ES5A: Recommendations for Wisconsin Avenue Intersections – 1 of 2

CLICK HERE

Exhibits ES5B: Recommendations for Wisconsin Avenue Intersections – 2 of 2

CLICK HERE

Exhibits ES5C: Recommendations for Selected Intersections

CLICK HERE

1 INTRODUCTION

Wisconsin Avenue is a major roadway connecting Maryland and the District of Columbia (DC) in the northwest portion of the city. Its character changes with the varied land use patterns found along the route from suburban Maryland to downtown DC. For example, an intensely developed corridor of commercial and retail establishments in the Friendship Heights area (on both the Maryland and District of Columbia side of the border) leads to a primarily residential area. Prior to reaching Georgetown where retail and commercial development is once again the predominant land use, Wisconsin Avenue is bordered with a mix of residential and noncommercial development, including large religious, educational, non-profit, and government facilities. Traffic volumes change along its length as other major roadways, such as Nebraska Avenue and Massachusetts Avenue, intersect it and bring and carry away traffic. Wisconsin Avenue is also a commuter route connecting the Maryland suburbs to downtown DC. Moreover, there are significant pressures to increase development densities near two major Metrorail stations along its length within the DC.

Wisconsin Avenue currently carries approximately 36,000 vehicles on an average weekday at its peak point south of Tenley Circle. Average Saturday traffic volume drops slightly at the same location. Some intersections experience regular patterns of backups and delays. Residents are concerned about increasing traffic (in general and related to more intense development) and the impact on their quality of life, in particular when that traffic diverts from Wisconsin Avenue to cut through neighborhoods to avoid backups. Pedestrian safety and parking issues both on Wisconsin Avenue and in surrounding neighborhoods have also been expressed by residents.

In response to these concerns, the District of Columbia Department of Transportation (DDOT) authorized the Wisconsin Avenue Corridor Transportation Study (WACTS) to investigate traffic management and pedestrian safety improvements in the Wisconsin Avenue corridor of Northwest Washington, DC. The Louis Berger Group, Inc. (Consultant) conducted the study with assistance from DDOT staff and Office of Planning (OP) staff. This report refers to the Consultant team, DDOT, and OP staff as the “Study Team.”

The main goals of the study were to examine existing and future traffic conditions at a corridor level and for specific intersections under a range of development scenarios, to determine short-term and long-term traffic management and infrastructure improvements, which could potentially ameliorate the anticipated conditions. The improvements are intended to reduce traffic congestion, especially during peak morning and evening travel hours and mid-day Saturday, improve traffic and pedestrian safety, and address insufficient parking space issues. Improved performance of the Wisconsin Avenue operation would reduce undesired commuter vehicles traveling through the neighborhood streets to avoid main arterial roadway congestion and protect surrounding residential streets from traffic impacts

The specific study area of WACTS is bounded by the following streets (Exhibit 1-1):

- Fessenden Street N.W. (north);
- 45th Street N.W. (west);
- Reno Road N.W./34th Street N.W. (east); and
- Whitehaven Parkway N.W. (south).

WACTS began in September 2004 and is scheduled to be complete by early summer 2005. This draft report includes a comprehensive assessment of the current condition of the transportation system, transportation issues and deficiencies in the transportation infrastructure that have been identified through the study process, as well as proposed improvement recommendations after considering comments from the study area residents. It also provides a close examination of future development under four different growth scenarios, and the traffic impacts of the same. Finally, it summarizes the effectiveness of the proposed recommendations in mitigating the impacts of future traffic growth. The study process is summarized in Exhibit 1-2.

Background of Friendship Heights Addendum

The DC Office of Planning (OP) requested a traffic impact analysis for additional developments deemed likely to take place in the Friendship Heights area. This area was previously studied in the DDOT's Friendship Heights Transportation Study (FHTS); however, community residents have expressed concern that the FHTS did not include the traffic implications of various developments that might be built in the Friendship Heights area, consistent with the Draft Upper Wisconsin Avenue Corridor Study (UWACS). Therefore, the Friendship Heights Addendum (FHA) was proposed by the OP and is being conducted concurrently with the Wisconsin Avenue Corridor Transportation Study.

The FHA request consisted of examining what were seen as the most likely potential additional developments posited in the Draft UWACS plan (under two scenarios- anticipated growth and high-growth) and identifying the potential impacts on future traffic conditions in the Friendship Heights area and on the Wisconsin Avenue corridor. The study also examined the need for traffic management and/or infrastructure improvements beyond those already prescribed in the FHTS for selected sites in the Friendship Heights area. The Study Team prepared a separate report fulfilling tasks in FHA scope of work. More discussion of FHA is provided in Sections 3 and 4 of this report as part of the description of the development scenarios.

Exhibit 1-1: Study Area

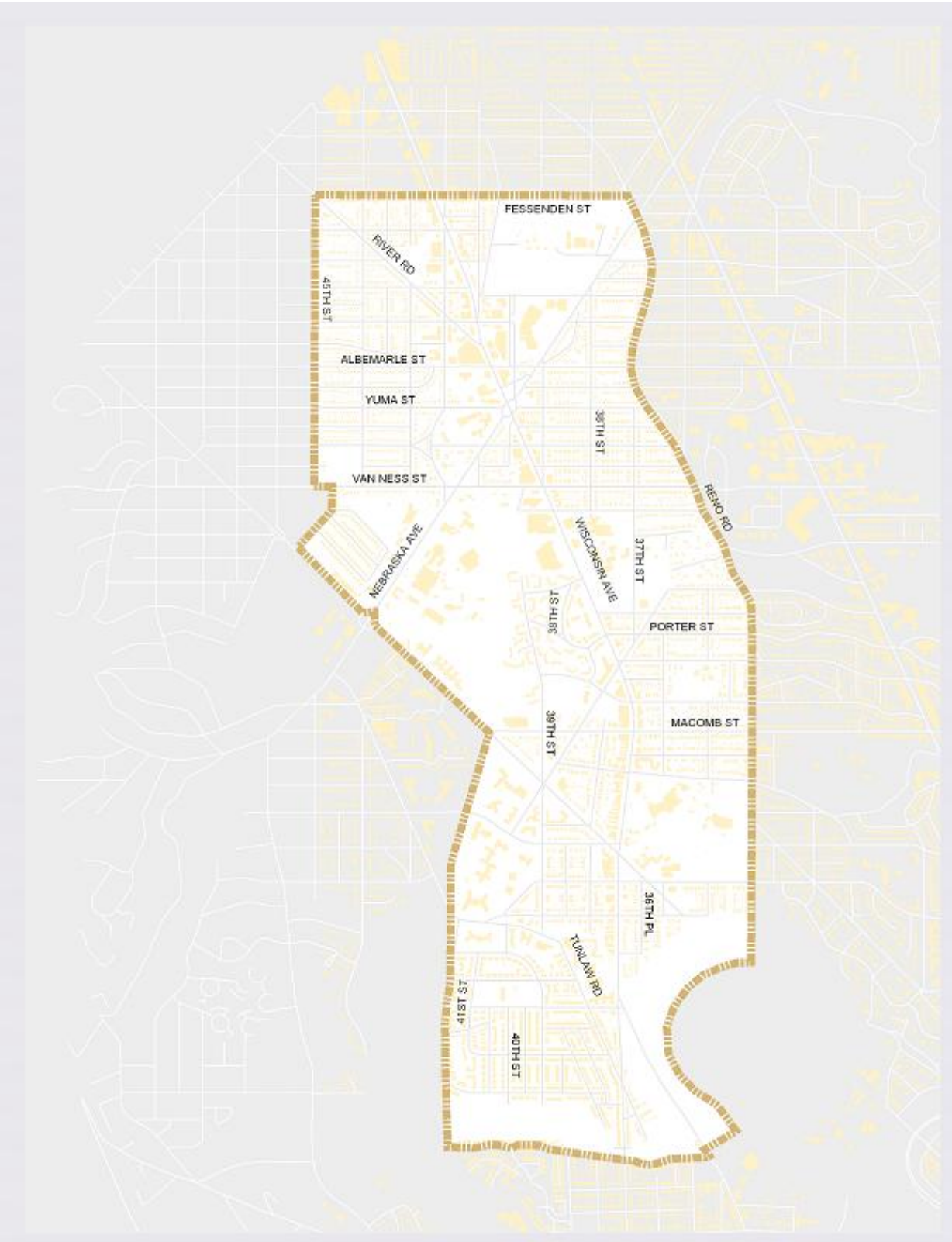
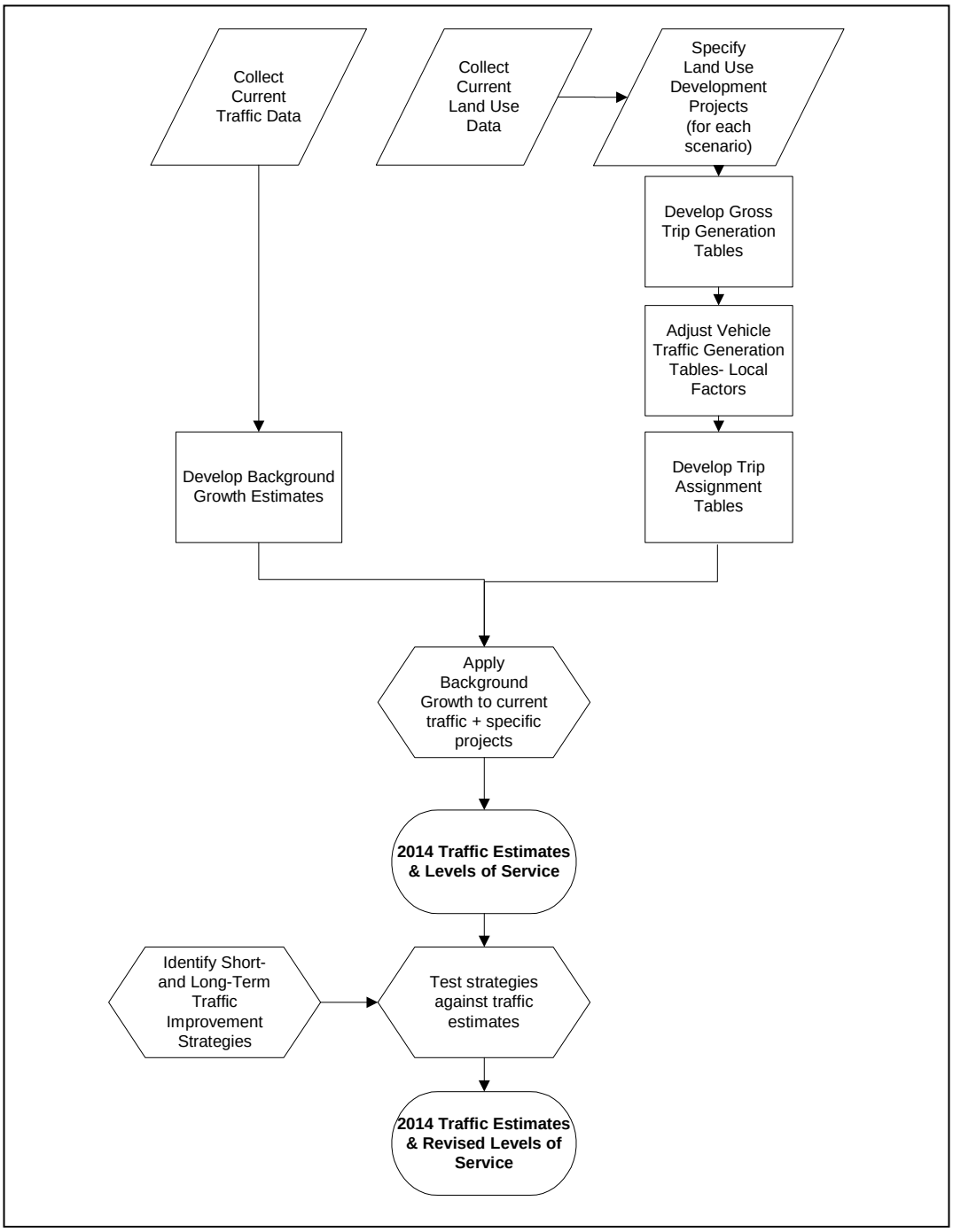


Exhibit 1-2: Study Process



2 EXISTING CONDITIONS - WACTS

The Study Team conducted an extensive data collection effort between September 2004 and January 2005. Data was collected on existing conditions in the WACTS area in order to investigate and verify transportation issues and concerns raised by area residents. The quantitative assessment of existing conditions based on collected data was supplemented through field observations and evaluations during weekday peak and off-peak hours and Saturday.

2.1 MAJOR ROADWAYS AND INTERSECTIONS

Five (5) major arterial roadways enter and/or exit Wisconsin Avenue within the study area at various locations. These arterials are as follows:

- River Road (entry only);
- Nebraska Avenue;
- Massachusetts Avenue;
- Garfield Street; and
- Calvert Street.

The study team investigated the 27 signalized intersections along Wisconsin Avenue (within the study area) plus an additional 12 signalized or unsignalized intersections selected based on resident comments or concerns (see section 2.2 for detail on resident comments.) The following section describes the roadway and land use characteristics for the Wisconsin Avenue corridor. The section also describes key characteristics of the intersections that were investigated.

Wisconsin Avenue and Main Intersections

Roadway Characteristics

North of Calvert Street Wisconsin Avenue is a two-way, six lane undivided principal arterial. South of Calvert Street it is a four-lane undivided principal arterial. The 2.84 mile corridor traverses the study area in a northwest-southeast direction, stretching from Fessenden Street to Whitehaven Parkway. The posted speed limit along Wisconsin Avenue is 30 mph from Fessenden Street to Garfield Street, decreasing to 25 mph south of Garfield Street. Parking is permitted on both sides of the road along the majority of Wisconsin Avenue during off-peak periods, and prohibited during peak periods in the predominant flow direction. This is discussed in greater detail in section 2.5.7, below.

Turning Movement Characteristics

Left turn movements are permitted throughout much of the corridor. However, most of these Wisconsin Avenue corridor intersections are not provided with exclusive turn lanes. The major exception is the Brandywine Street intersection, where left-turn movements for northbound and southbound Wisconsin Avenue traffic at Brandywine Street from an exclusive left turn lane is also allocated a separate signal phase. Northbound movement at Upton Street also has a separate left-turn signal phase but no exclusive lane. Exhibit 2-1 illustrates the lane configuration of these intersections. Exhibit 2-1 also shows the lane configuration of 12 selected signalized or unsignalized intersections in the study area.

Exhibit 2-1: Lane Configuration

CLICK HERE

Left-turns are prohibited during AM and PM peak periods (7:30AM to 9:00AM and 4:00PM to 6:30PM) for southbound Wisconsin Avenue traffic at Albemarle Street. For northbound Wisconsin Avenue traffic at Albemarle Street, the left-turn restriction is applied from 7:00AM through 6:30PM. Tenley Circle operates in a counterclockwise direction and only right turns are permitted from Tenley Circle.

A majority of the intersections also prohibit right-turn on red or prohibit right-turns between 7AM and 7PM. Exhibit 2-2 shows the intersections where right-turn on red is prohibited along Wisconsin Avenue and for major intersecting streets. The no right turn on red restriction is typically applied to intersections where there are high volumes of pedestrian crossings or a heavy traffic volume on the streets with the green phase.

Exhibit 2-2: Right-Turn Restriction Signs Along Wisconsin Avenue Corridor

ID	Intersections Along Wisconsin Avenue	Approaches			
		Wisconsin NB	Wisconsin SB	Side Street WB	Side Street EB
1	Fessenden Street	X			
2	Ellicott Street	X			
3	Davenport Street				
4	Brandywine Street				
5	Whole Foods –Tenleytown Entrance				
6	Albemarle Street				X
7	Tenley Circle North		X		
9	Tenley Circle South	X			
11	Van Ness Street			X	
12	Upton Street				
13	Fannie Mae Parking Entrance				
14	Rodman Street	X			X
15	Porter Street	X		X	
16	Newark Street	X	X		X
17	Macomb Street	X	X	X	
18	Woodley Road	X	X	X	X
19	Cathedral Avenue	X			
20	Massachusetts Avenue	X	X		
21	Garfield Street	X	X		
22	Edmunds Street	X			
23	Calvert Street	X		X	
24	Whole Foods -Glover Park Entrance				
25	Hall Place				
26	Whitehaven Street				
27	Whitehaven Parkway				

During field reconnaissance, the Study Team observed illegal eastbound through and westbound left-turn movements at the Upton Street at the intersection with Wisconsin Avenue during both AM and PM peak periods. Illegal left-turn movements were also observed from the southbound and eastbound approaches of Wisconsin Avenue at Massachusetts Avenue.

Bus Stops

Wisconsin Avenue is a major transit corridor. Many WMATA bus routes use Wisconsin Avenue; bus stops are located at the majority of the Wisconsin Avenue intersections (more discussion in section 2.2) which are located on the near side (at the approach to an intersection). Exhibit 2-3 shows the location of bus stops along Wisconsin Avenue.

Exhibit 2-3: Bus Stops Along Wisconsin Avenue Corridor

ID	From	To	Wisconsin Avenue Northbound	Wisconsin Avenue Southbound
1	Fessenden Street	Ellicott Street	X	
2	Ellicott Street	Davenport Street	X	
3	Davenport Street	Brandywine Street		
4	Brandywine Street	Whole Foods – Tenlytown Entrance	X	
5	Whole Foods – Tenlytown Entrance	Albemarle Street		
6	Albemarle Street	Tenley Circle North		
7	Tenley Circle North	Tenley Circle South	X	
9	Tenley Circle South	Van Ness Street		X
11	Van Ness Street	Upton Street	X	
12	Upton Street	Fannie Mae Entrance	X	
13	Fannie Mae Entrance	Rodman Street		X
14	Rodman Street	Porter Street	X	X
15	Porter Street	Newark Street	X	X
16	Newark Street	Macomb Street	X	X
17	Macomb Street	Woodley Road	X	X
18	Woodley Road	Cathedral Avenue	X	X
19	Cathedral Avenue	Massachusetts Avenue		X
20	Massachusetts Avenue	Garfield Street	X	X
21	Garfield Street	Edmunds Street		
22	Edmunds Street	Calvert Street	X	
23	Calvert Street	Whole Foods -Glover Park Entrance		
24	Whole Foods -Glover Park Entrance	Hall Place		
25	Hall Place	Whitehaven Street	X	X
26	Whitehaven Street	Whitehaven Parkway		X

Note: "X" represents existence of a bus stop.

Surrounding Land Use Characteristics

The Wisconsin Avenue corridor includes a number of commercial clusters, attracting residents and visitors to the area. The major commercial clusters are found in the Friendship Heights area (a few blocks north of WACTS study area), the Tenleytown area (between Chesapeake Street and Albemarle Street), the Macomb Street area (between Idaho Avenue and Lowell Street), and the Glover Park area (between Calvert Street and Hall Street).

Wisconsin Avenue also serves several religious institutions. There are three churches and one synagogue located within one block of Wisconsin Avenue:

- Saint Ann's Catholic Church
- Wisconsin Avenue Baptist Church
- Washington National Cathedral
- Temple Micah

The National Cathedral is a significant tourist attraction, as well as a house of worship.

Both Saint Ann's Catholic Church and the Washington National Cathedral provide educational opportunities for their parishioners and other interested candidates. There are 15 schools located on Wisconsin Avenue or in close proximity (Exhibit 2-4).

Exhibit 2-4: Schools in Study Area

Schools	Location	Private / Public	Grade	Number of Students (appx.)[1]
Woodrow Wilson High School	3950 Chesapeake Street	Public	9 – 12	1,420
Pheobe Hearst Elementary School	3950 37th Street	Public	Pre-K – 3	159
Janney Elementary School	4130 Albemarle Street	Public	Pre-K – 6	456
Alice Deal Junior High School	3815 Fort Drive	Public	7 – 9	960
Stoddert School	4001 Calvert Street	Public	Pre-K – 5	228
Eaton Elementary School	3301 Lowell Street	Public	Pre-K – 6	413
Georgetown Day High School	4200 Davenport Street	Private	9 – 12	1,000
Sheridan School	4400 36th Street	Private	K- 8	216
Potomac College	4000 Chesapeake Street	Private	Adult	200
National Cathedral School	Wisconsin Avenue/ Woodley Road	Private	4 – 12	565
Saint Albans School for Boys	3665 Massachusetts Avenue	Private	4 – 12	550
Beauvoir School	3500 Woodley Road	Private	Pre-K – 3	390
St. Ann's Academy	Nebraska Avenue/ Tenley Circle	Private	Pre-K – 6	231
Sidwell Friends School	3825 Wisconsin Avenue	Private	Mid to high school	800 - 850
American University Tenley Campus[2]	Tenley Circle	Private	university	500

Notes:
1. Student figures are obtained through contacting the administrative office and/or via official website.
2. Tenley Campus serves the Washington Semester Program, which is mostly self-contained, including classrooms and dormitory facilities for short-term students.

Other Intersections and Roadways

An additional twelve intersections were examined in the WACTS study based on resident requests and comments. The lane configurations for these intersections are included in Exhibit 2-1. Major roadway intersections prohibit right-turn on red or prohibit right turns between 7AM and 7PM. Exhibit 2-5 summarizes the intersections where right-turn movement is prohibited on red for these intersections.

Exhibit 2-5: No Right-Turn Signs at Other Intersections

ID	From (north-south direction)	To (east-west direction)	Signalized or Unsignalized Intersection	Approaches			
				NB	SB	WB	EB
1	River Road	42nd Street/ Brandywine Street	Signalized	X	X	X	X
2	Nebraska Avenue	Albemarle Street	Signalized	X	X	X	X
3	River Road	Chesapeake Street	Signalized	X			X
4	Fort Drive	Albemarle Street	Unsignalized				
5	42nd Street	Albemarle Street	Unsignalized	X	X	X	X
6	Nebraska Avenue	Van Ness Street	Signalized		X		
7	34th Street	Garfield Street	Signalized				
8	34th Street	Cleveland Avenue	Signalized	X			
9	34th Street	Newark Street	Unsignalized				
10	37th Street	Calvert Street	Signalized				
11	37th Street	Tunlaw Street	Unsignalized				
12	38th Street	Massachusetts Avenue	Unsignalized				

Note: "X" represents a location of the sign.

One-way streets are common in the District. Within the study area, there are 12 stretches of one-way roadway sections as shown in the following list:

1. Brandywine Street at River Road – westbound Brandywine Street from 42nd to River Road
2. River Road – southwestbound River Road from Brandywine Street to Wisconsin Avenue
3. 40th Street – southbound 40th Street from Brandywine Street to Albemarle Street
4. Tenley Circle – one-way counter clockwise
5. 39th Street – northbound 39th Street from Wisconsin Avenue to Nebraska Avenue
6. Idaho Avenue – from Wisconsin Avenue to Porter Street (east side); from Wisconsin Avenue to Newark Street (west side)
7. North Street – eastbound North Street from Wisconsin Avenue towards Washington National Cathedral
8. Edmunds Street – westbound Edmunds Street from 35th Place to Wisconsin Avenue
9. Davis Street – eastbound Davis Street from Wisconsin Avenue to 36th Place
10. 37th Street – southbound 37th Street from Calvert Street to Tunlaw Street
11. Hall Place – eastbound Hall Place from Wisconsin Avenue
12. 35th Street – southbound 35th Street from Wisconsin Avenue to Whitehaven parkway

One-way streets are usually used to control traffic movements such as preventing certain directional vehicular movement flows, accommodating heavier directional vehicle movements, etc. With proper signage and implementation, one-way streets can help address cut-through traffic problem and reduce accident frequency; however, they can also facilitate vehicular speeding.

2.2 RESIDENT CONCERNS AND ISSUES

The Study Team and the District of Columbia Department of Transportation (DDOT) have received important feedback and insightful comments from residents in the WACTS area throughout the course of the study. Public meetings were held on October 6 and 7, 2004, January 19 and 27th, 2005 at St. Ann's Catholic Church and the Guy Mason Recreational Center. Final meetings were held November 14th and 17th, 2005 at St. Mary Armenian Church and the Guy Mason Recreational Center. Comments were also received via email and letter.

Numerous residents expressed their concerns on issues such as pedestrian safety, cut-through traffic, truck/bus noises, speeding, parking, u-turns, queuing/back-ups, and potential for additional traffic associated with new developments. Many of these issues were expressed for locations along Wisconsin Avenue and on major roadways such as Nebraska Avenue, Massachusetts Avenue, Albemarle Street, Macomb Street, and Calvert Street, and in some cases where these roadways cross Wisconsin Avenue. Exhibits 2-6A through 2-6C illustrate the locations and types of concerns expressed by residents during the Study Team's initial public outreach effort (October, 2004). Additional sites and issues were identified during subsequent meetings and communications. Please see Section 7 for additional discussion of residents' issues and comments.

Exhibit 2-6A: Resident Concerns and Issues – Northern Section of Study Area

CLICK HERE

Exhibit 2-6B: Resident Concerns and Issues – Central Section of Study Area

CLICK HERE

Exhibit 2-6C: Resident Concerns and Issues – Southern Section of Study Area

CLICK HERE

2.3 PUBLIC TRANSPORTATION

The Tenleytown-AU Metrorail station entrances are located on the east and west sides of Wisconsin Avenue, N.W., north of Albemarle Street within the study area. The Friendship Heights Metrorail station is also located on Wisconsin Avenue just north of study area (at Jenifer Street and Western Avenue). Various bus lines serve the stations, as well as neighborhoods and schools in between. Details about the Washington Metropolitan Area Transit Authority (WMATA) services are provided below.

2.3.1 WMATA Metrorail

The WMATA Metrorail Red line serves residents and visitors at the Tenleytown-AU station within the study area and at the Friendship Heights station just north of the study area. There are two Metrorail station entrances and exits for the Tenleytown-AU station and five for the Friendship Heights station. Train service for the Red Line begins at 5:31AM from Shady Grove station and begins at 5:19AM from Glenmont station. The last train service departs from the Shady Grove station at 12:18AM and from the Glenmont station at 11:52PM. Headways (time between scheduled trains) vary throughout the day.

WMATA regularly conducts a Metrorail passenger survey to estimate the percentage of total riders residing in each jurisdiction. The results from the 2002 Metrorail Passenger Survey show that approximately 6,200 patrons use the Tenleytown-AU Metrorail Station. The following are characteristics of patrons using the Tenleytown-AU Station.

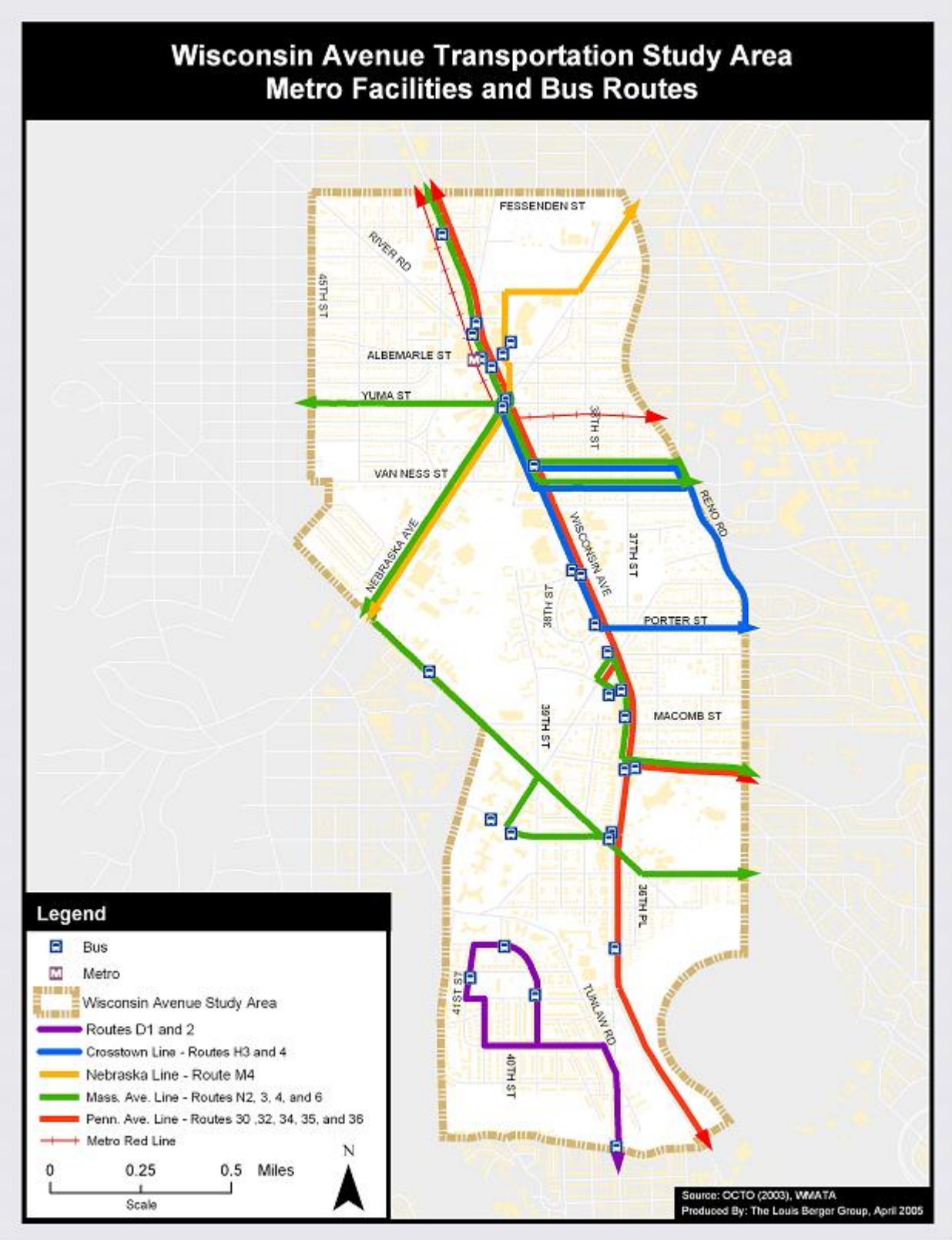
- Most patrons (67 percent) walk to the station.
- Approximately 11 percent of metro users arrive at the station by WMATA Metrobus.
- Approximately seven (7) percent of metro users were dropped off by someone and six (6) percent drove and parked.
- More than 100 patrons got to the station by bicycle during this particular survey period.
- WMATA provides 20 bicycle racks and 20 lockers at the Tenleytown-AU Metrorail station. However, only 35 percent of the lockers are utilized.

The Friendship Heights Metrorail station carries approximately 8,900 patrons. About 64 percent of Metrorail patrons walk to the station while 14 percent arrive at the station by WMATA Metrobus or Ride On bus. The survey also indicated that 36 patrons traveled to the station by bicycle during the survey period. WMATA provides 50 bicycle racks and 22 lockers at the Friendship Heights Metrorail station, which are fully utilized.

2.3.2 WMATA Metrobus Lines

WMATA provides bus service in the study area mainly along Wisconsin Avenue, Nebraska Avenue, Massachusetts Avenue, and Woodley Road. As shown in Exhibit 2-7, there are a total of nine (9) WMATA lines.

Exhibit 2-7: WMATA Bus Route and Transportation Facilities



Massachusetts Avenue Line (Routes N 2, 3, 4 and 6)
WMATA Routes N2, 3, and 4 operate during weekdays and Route N6 operates daily between the Friendship Heights Metrorail station and Farragut Square/Federal Triangle. Routes N3, 4 and 6 enter the study area via Western Avenue (west of Wisconsin Avenue) and Route N2 enters via Wisconsin Avenue. Route N2 starts its operation at 5:49AM and ends at 6:47PM (weekdays only). Service for Routes N3, 4, and 6 begins at 5:36AM and extends to after midnight (Friday operation extends to 2:10AM). Route N6 operates weekend service: Saturday (5:47AM-1:37AM) and Sunday (6:40AM-10:50AM) and has limited holiday service. All routes have variable headways (period of time between scheduled buses) ranging from 9 minutes to 30 minutes.

Van Ness – Wesley Heights Loop (Route N8)
WMATA Route N8 provides loop service daily between the Van Ness-UDC Metrorail station and Wesley Heights/Glover Park area via Van Ness Street, Wisconsin Avenue and Yuma Street within the study area. Operation begins at 6:00AM and ends at 11:30PM. Saturday and Sunday services operate on a similar schedule with longer headways. There is no separate holiday service schedule.

Crosstown Line (Routes H3 and 4)
WMATA Routes H3 and 4 operate daily between the Tenleytown-AU Metrorail station and Brookland-CUA Metrorail station, traveling the study area via Wisconsin Avenue between Tenley Circle and Porter Street and Fort Driver/40th Street between Brandywine Street and Tenley Circle. Service begins at 4:42AM and ends at 3:00AM on weekdays. Saturday and Sunday services operate on a similar schedule with longer headways. The routes also provide limited holiday service.

Pennsylvania Avenue Line (Routes 32, 34, 35, 36)
WMATA Routes 32, 34, 35, and 36 operate seven days a week between the Friendship Heights Metrorail station, Georgetown, The Mall, and Southern Avenue Station in Maryland, entering the study area via Wisconsin Avenue. Weekday service begins at 4:16AM and ends at 2:18AM. Saturday service begins at 4:40AM and ends at 2:18AM. Sunday service begins at 4:42AM and ends at 1:40AM. This route also provides limited holiday service. All routes have variable headways ranging from 8 minutes to 30 minutes.

Nebraska Line (Route M4)
WMATA Route M4 operates Monday through Friday looping around Tenleytown connecting Pinehurst Circle and Sibley Hospital/Palisades. Operations begin at 5:56AM and end at 9:33PM. Route M4 travels the corridor between Nebraska Avenue N.W. and 30th Place N.W. Northbound services travel on Fort Drive and southbound service travels on 40th Street to the Tenleytown-AU Metrorail station. There is no separate holiday service schedule.

U Street – Garfield Line (Routes 90, 92, and 93)
WMATA Routes 90, 92, and 93 operate daily between McLean Garden and Congress Heights. The Western section of the service area is within the study area traveling along Wisconsin Avenue between Idaho Avenue and Woodley Road. Service begins at 4:28AM and ends at

1:24AM on weekdays. Saturday and Sunday services operate on a similar schedule with longer headways. There is no separate holiday service schedule.

Benning Road Line (Route X 3)
Similar to U Street-Garfield Line, WMATA Route X3 operates from McLean Garden. The commuter shuttle service connects McLean Garden and Minnesota Avenue Station and travels along Wisconsin Avenue between Idaho Avenue and Woodley Road within the study area. Morning operation is from Minnesota Avenue to McLean Garden, which begins at 6:00AM and ends at 8:38AM. Afternoon operation is from McLean Garden to Minnesota Avenue, which begins at 3:34PM and ends at 5:40PM.

Deal Junior High School Lines (Route D32)
WMATA Route D32 serves Deal Junior High School Monday through Friday when school is in session. Operations provide two services in the morning hours and one in the afternoon hour via Nebraska Avenue from Columbia Heights Metrorail station. Only the afternoon route travels on Wisconsin Avenue between Tenley Circle and Porter Street.

Wilson High School Line (Routes W45, 46, and 47)
WMATA Routes W45, 46, and 47 serve Wilson High School Monday through Friday when school is in session. Operations provide two services in the morning and three in the afternoon. Only Route 47 travels via Wisconsin Avenue from Tenley Circle to Porter Street in the afternoon.

2.3.3 Other Services

American University Shuttle Service
American University (AU) has multiple buildings (4000 Brandywine Street, 4200 Wisconsin Avenue, and a block north of Tenley Circle) in the study area. AU provides daily shuttle services from AU campuses to Tenleytown Metrorail station for AU students, faculty, and staff only. Weekday operations begin at 7:00AM and end at 12:15AM. Service is provided every 10 minutes (every 15 minutes after 11:00PM).Weekend operations begin at 8:15AM and ends at 12:30AM, providing service every 15 minutes. Friday and Saturday services extend to 3:00AM.

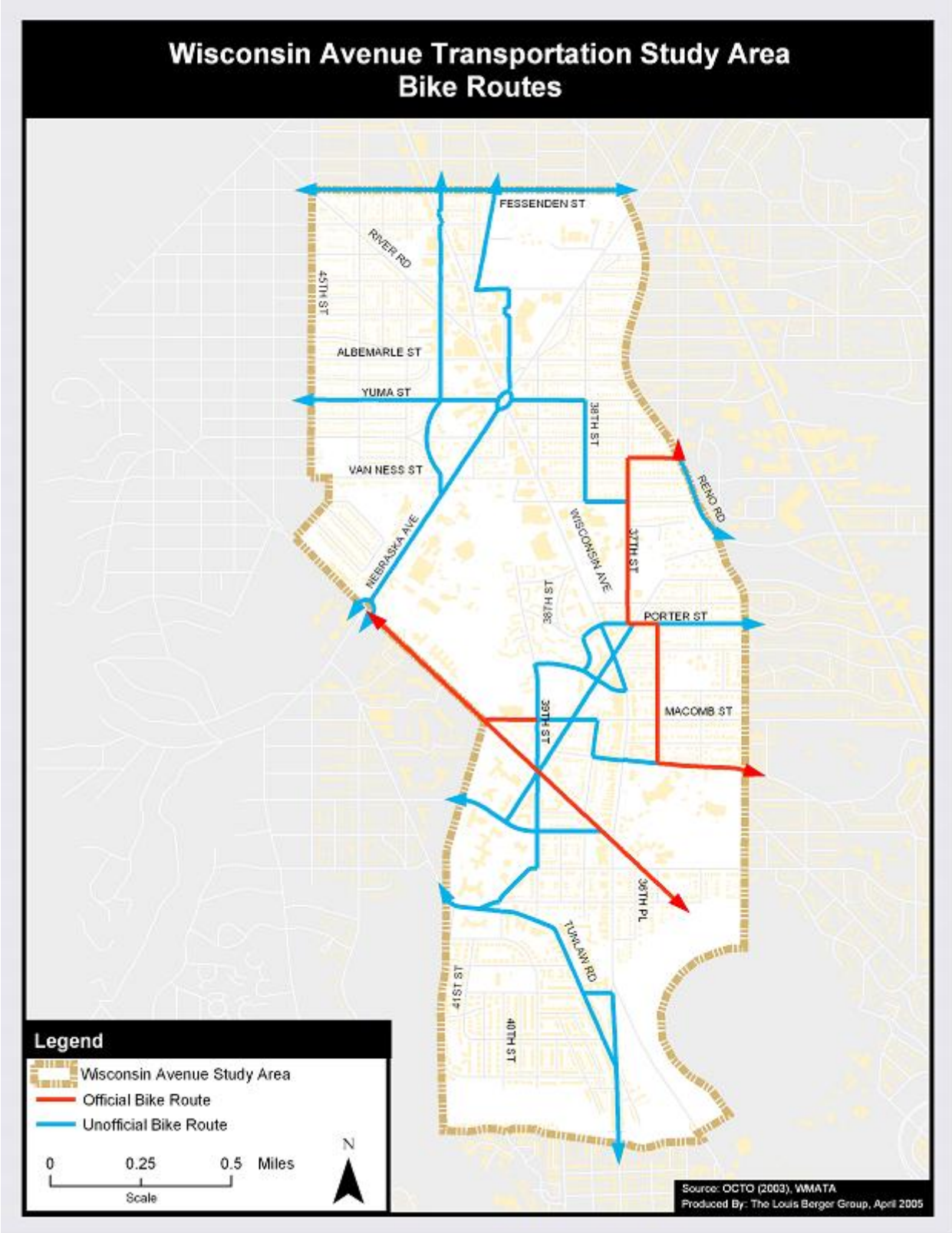
Detailed bus schedules and route information are provided in Appendix A.

2.4 ALTERNATIVE TRANSPORTATION MODES

The WMATA partnership with Flexcar and/or Zipcar offers a car sharing option for Metrorail riders at Tenleytown Metrorail station. This provides an alternative transportation option for area residents to run errands, shop or reach any other business or social event not easily accessible via transit.

One officially designated bike route via Massachusetts Avenue travels through the study area. Several unofficial bicycle routes have been identified by experienced cyclists for their scenic quality or links to other routes. Exhibit 2-8 illustrates the routes presented in the Washington DC Regional Bike Map (5th Edition) created by ADC The Map People.

Exhibit 2-8: Study Area Bike Route Map



2.5 DATA COLLECTION AND FIELD OBSERVATION

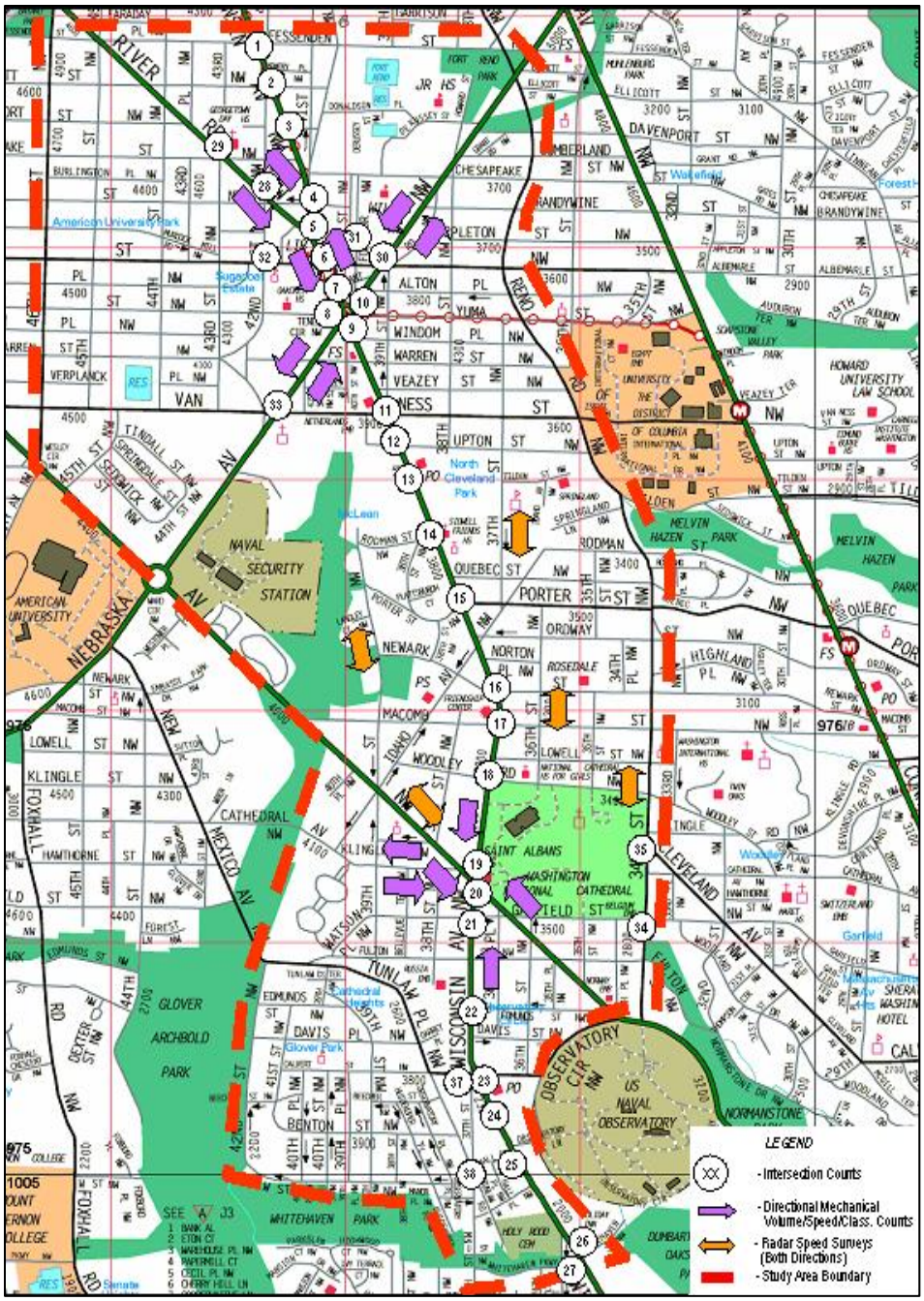
The data collection and analyses were undertaken in accordance with traffic engineering principles and procedures established by the Institute of Transportation Engineers (ITE) and the Federal Highway Administration (FHWA). In order to collect representative data and field observations, data were collected on "typical" weekdays (e.g., mid-week, sunny day, etc.) and weekends which were not impacted by national and local holidays, unfavorable weather, or other factors such as traffic accidents.

Data collection specifically targeted issues and concerns raised by residents throughout the study, which were discussed in section 2.2. The major data collection efforts and field observations included:

- traffic volumes (including peak-hour turning movements)
- vehicle classification
- speeds and travel time
- vehicle queues
- safety (accident data and pedestrian crossings)
- parking (inventory, restrictions, utilization and violations)

Exhibit 2-9 shows the data collection sites for the above efforts. The remainder of this section includes a detailed discussion of the data collection and field observation process as well as summary findings.

Exhibit 2-9: Data Collection Locations – Peak Hour Turning Movement Counts



Source: O.R. George and Associates

2.5.1 Traffic Volumes

Traffic volumes in the study area were analyzed by examining average daily traffic volumes, average weekday peak hour traffic volumes, and peak-hour turning movements at key intersections.

Mechanical Traffic Volumes

Traffic counts were collected using mechanical tube devices over a one-week period during the months of November and December for ten (10) roadway segments at four locations:

- Location #1: North of Tenley Circle
  - Wisconsin Avenue
  - Nebraska Avenue East
  - River Road
- Location #2: South of Tenley Circle
  - Wisconsin Avenue
  - Nebraska Avenue West
- Location #3 North of Massachusetts Avenue
  - Wisconsin Avenue (south)
  - Cathedral Avenue
  - Massachusetts Avenue
- Location #4: South of Massachusetts Avenue
  - Wisconsin Avenue (north)
  - Massachusetts Avenue

Wisconsin Avenue and the major intersecting arterials (Nebraska and Massachusetts Avenues) serve significant through/commuter traffic demands. As shown in Exhibit 2-10, the weekday Average Daily Traffic (ADT) volumes along Wisconsin Avenue range from 27,350 (south of Massachusetts Avenue) to 36,000 (south of Tenley Circle). The Saturday and Sunday ADT volumes along the corridor are relatively uniform, with daily volumes in the range of 30,920 and 25,770, respectively. The weekday ADT volumes are generally higher than the Saturday volumes, with respect to Wisconsin Avenue. The exception is the segment situated just south of Massachusetts Avenue where the Saturday volumes are marginally higher.

Exhibit 2-10: Average Weekday and Weekend Daily Traffic Volumes (vehicles per day)

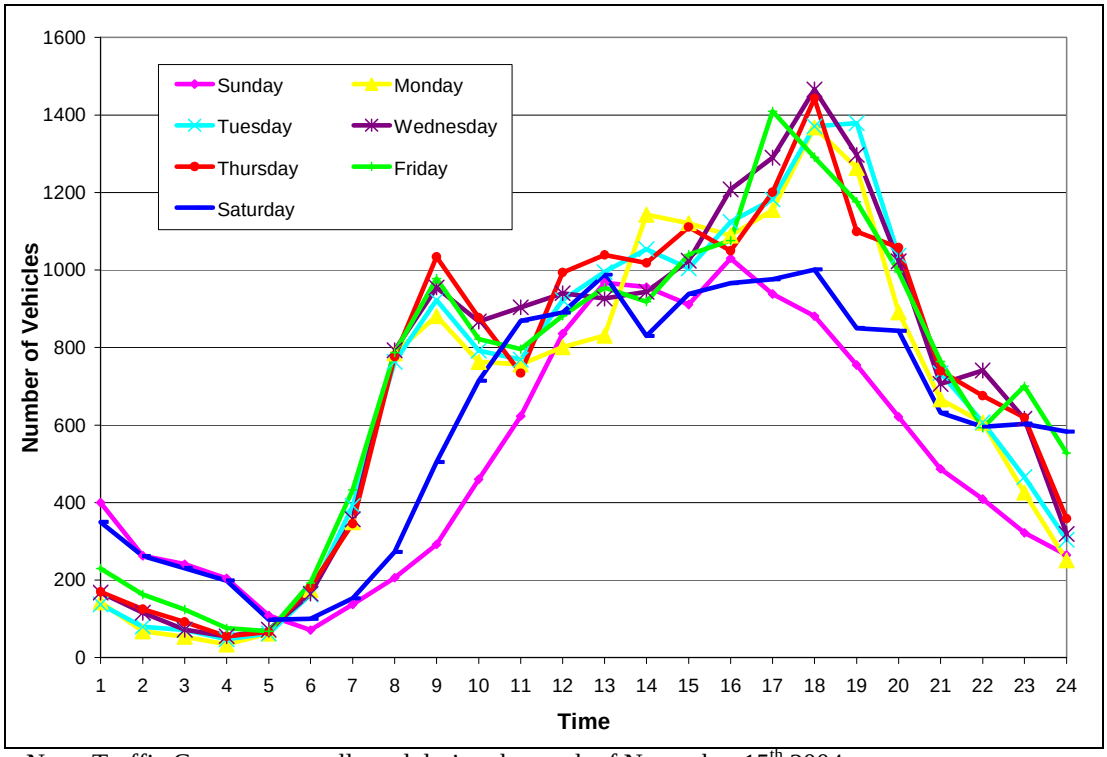
Location on Military Road/Missouri Avenue	Average Weekday	Saturday	Sunday
Wisconsin Avenue, N.W. (North of Tenley Circle)	34,340	30,750	25,630
Wisconsin Avenue, N.W. (South of Tenley Circle)	36,000	31,780	26,390
Wisconsin Avenue, N.W. (North of Massachusetts Ave.)	30,750	30,220	25,290
Wisconsin Avenue, N.W. (South of Massachusetts Ave.)	27,350	28,800	24,770
River Road, N.W. (West of Wisconsin Avenue)	5,780	5,580	4,810
Nebraska Avenue, N.W. (East of Tenley Circle)	13,870	11,020	8,120
Nebraska Avenue, N.W. (West of Tenley Circle)	17,270	13,240	10,980
Massachusetts Avenue, N.W. (East of Wisconsin Avenue)	32,680	19,350	19,690
Massachusetts Avenue, N.W. (West of Wisconsin Avenue)	23,670	14,470	12,970
Cathedral Avenue, N.W. (West of Wisconsin Avenue)	5,240	4,420	3,730

Source: O.R. George & Associates

The Study Team analyzed mechanical count data to find out the hourly traffic pattern for Wisconsin Avenue. As shown in Exhibits 2-11A and 2-11B, an example from the counts collected north of Tenley Circle, there are distinct northbound and southbound peak periods. As expected, the major flow for the AM peak period was southbound and northbound for the PM peak. It is also worth noting that traffic volume was considerably greater for AM peak periods compared to PM peak periods. Similar characteristics were also observed from the Wisconsin Avenue mechanical count data collected at other locations.

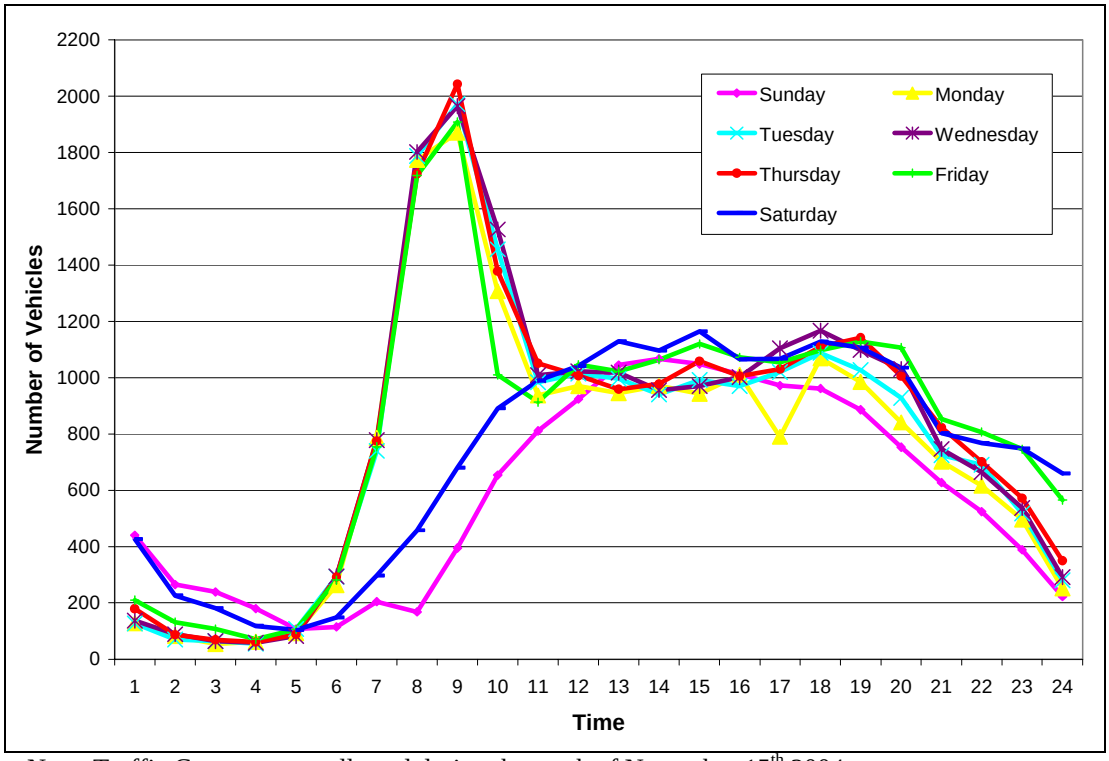
Detailed mechanical traffic volume data is provided in Appendix B.

Exhibit 2-11A: Weekday Traffic Volume for Wisconsin Ave. Northbound – South of Tenley Cir.



Note: Traffic Counts were collected during the week of November 15th 2004.

Exhibit 2-11B: Weekday Traffic Volume for Wisconsin Ave. Southbound – South of Tenley Cir.



Note: Traffic Counts were collected during the week of November 15th 2004.

Turning Movement Counts

Peak hour turning movement counts were gathered for a total of 39 intersections, 37 as part of this study, and two as part of the Friendship Heights Transportation Study (FHTS). There are 27 signalized intersections along Wisconsin Avenue within the study area. Two intersections were selected by DDOT (intersection numbers 28 and 29). An additional ten (10) intersections were selected from the intersection list suggested by residents. The Study Team received 20 suggestions of problem intersections; this list was pared to ten (10) (intersection numbers 30 through 39) based on the number of accidents from 2001 through 2003. Two of the intersections (at Fessenden Street and Ellicott Street) had turning movement data collected as part of the FHTS in April, 2003. These data were adjusted upwards to estimate 2004 traffic volumes for the study. The following is a complete list of the 39 intersections:

1. Wisconsin Avenue and Fessenden Street (collected for FHTS in April 2003)
2. Wisconsin Avenue and Ellicott Street (collected for FHTS in April 2003)
3. Wisconsin Avenue and Davenport Street
4. Wisconsin Avenue and Brandywine Street
5. Wisconsin Avenue at Whole Food/Metrorail Entrance
6. Wisconsin Avenue and Albemarle Street
7. Tenley Circle Location #1: at north of Tenley Circle
8. Tenley Circle Location #2: at west of Tenley Circle
9. Tenley Circle Location #3: at south of Tenley Circle
10. Tenley Circle Location #4: at east of Tenley Circle
11. Wisconsin Avenue and Van Ness Street
12. Wisconsin Avenue and Upton Street
13. Wisconsin Avenue at Fannie Mae Parking Entrance
14. Wisconsin Avenue and Rodman Street
15. Wisconsin Avenue and Porter Street
16. Wisconsin Avenue and Newark Street
17. Wisconsin Avenue and Macomb Street
18. Wisconsin Avenue and Woodley Road
19. Wisconsin Avenue and Cathedral Avenue (signal only on southbound)
20. Wisconsin Avenue and Massachusetts Avenue
21. Wisconsin Avenue and Garfield Street
22. Wisconsin Avenue and Edmunds Street
23. Wisconsin Avenue and Calvert Street
24. Wisconsin Avenue at Whole Food Entrance in Glover Park
25. Wisconsin Avenue and Hall Place
26. Wisconsin Avenue and Whitehaven Street
27. Wisconsin Avenue and Whitehaven Parkway
28. River Road and 42nd Street and Brandywine Street
29. Nebraska Avenue and Albemarle Street
30. River Road & Chesapeake Street
31. Albemarle Road and Fort Drive & 40th Street
32. Albemarle Road and 42nd Street
33. Van Ness Street and Nebraska Avenue
34. 34th Street and Garfield Street
35. 34th Street and Cleveland Avenue
36. 34th Street and Newark Street
37. 37th Street and Calvert Street
38. 37th Street and Tunlaw Road
39. 38th Street and Massachusetts Avenue

The counts were collected during morning (6:30AM to 9:30AM) and afternoon (4:00PM to 7:00PM) peak-periods, on a typical weekday (Tuesday, Wednesday, or Thursday) from October through December 2004 (while school was in session). The Study Team also collected traffic counts for a typical midday on Saturday from 12:00 – 2:00 PM or 12:00 – 4:00 PM. As demonstrated in Exhibits 2-14 and 2-15, these periods capture peak activity times related to the mixed retail, commercial and residential land uses along the corridor.

The turning movement volumes shown in Exhibits 2-12A through 2-12C demonstrate that the study corridor carries a significant level of through/commuter traffic in both directions. Consistent with the daily traffic volumes identified in Exhibit 2-10, and the daily patterns of travel identified in Exhibits 2-11A and 2-11B, the turning movement counts confirm the peak travel patterns and volumes. Exhibit 2-13 summarizes the peak hour characteristics at key intersections which indicate that weekday morning and afternoon traffic peaks occur from 7:45 – 9:00 AM and 5:15 – 6:30 PM, respectively. The Saturday traffic peak was observed between 12:15 and 1:45 PM. The peak period directional traffic movement along Wisconsin Avenue is southbound during the morning peak hour, with an average southbound - northbound split of approximately 60% - 40% for the entire corridor. The reverse (northbound) movement is dominant during the afternoon peak period, with the average northbound - southbound split approximately 55% - 45%. Detailed turning movement counts are provided in Appendix C.

Exhibit 2-12A: Weekday AM Peak Hour Traffic Turning Movement Volumes

CLICK HERE

Exhibit 2-12B: Weekday PM Peak Hour Traffic Turning Movement Volumes

CLICK HERE

Exhibit 2-12C: Saturday Mid-day Hour Traffic Turning Movement Volumes

CLICK HERE

Exhibit 2-13: AM and PM Peak Hours at Key Intersections

Intersection	AM Peak	PM Peak
Wisconsin Avenue, N.W.		
@ Davenport Street	7:45 – 8:45	5:15 – 6:15
@ Brandywine Street	7:45 – 8:45	5:45 – 6:45
@ Whole Food/Metrorail Entrance	8:00 – 9:00	5:15 – 6:15
@ Albemarle Street	7:30 – 8:30	5:30 – 6:30
Tenley Circle, N.W.		
@ Wisconsin Avenue (North)	7:45 – 8:45	5:30 – 6:30
@ Yuma Street (East)	8:00 – 9:00	5:30 – 6:30
@ Nebraska Avenue (East)	8:15 – 9:15	5:30 – 6:30
@ Fort Drive	8:00 – 9:00	5:30 – 6:30
@ Wisconsin Avenue (South)	7:45 – 8:45	5:15 – 6:15
@ Yuma Street (West)	8:00 – 9:00	5:30 – 6:30
@ Nebraska Avenue (West)	8:15 – 9:15	5:15 – 6:15
Wisconsin Avenue, N.W.		
@ Van Ness Street/39th Street	7:30 – 8:30	5:15 – 6:15
@ Upton Street	7:45 – 8:45	5:15 – 6:15
@ Fannie Mae Parking Entrance	7:45 – 8:45	5:15 – 6:15
@ Rodman Street	7:45 – 8:45	5:00 – 6:00
@ Porter Street	7:45 – 8:45	5:15 – 6:15
@ Newark Street	7:45 – 8:45	5:00 – 6:00
@ Macomb Street	7:30 – 8:30	5:15 – 6:15
@ Woodley Road	7:45 – 8:45	5:15 – 6:15
@ Cathedral Avenue	7:45 – 8:45	5:30 – 6:30
@ Massachusetts Avenue	7:45 – 8:45	5:30 – 6:30
@ Garfield Street	8:00 – 9:00	5:15 – 6:15
@ Edmunds Street	8:00 – 9:00	5:15 – 6:15
@ Calvert Street	8:00 – 9:00	5:00 – 6:00
@ Whole Food Entrance	8:00 – 9:00	5:00 – 6:00
@ Hall Place	8:00 – 9:00	5:00 – 6:00
@ Whitehaven Street	8:00 – 9:00	5:15 – 6:15
@ Whitehaven Parkway	8:00 – 9:00	5:00 – 6:00
34th Street, N.W.		
@ Garfield Street	7:45 – 8:45	5:15 – 6:15
@ Cleveland Avenue	8:00 – 9:00	6:00 – 7:00
@ Newark Street	7:45 – 8:45	5:30 – 6:30
37th Street, N.W.		
@ Calvert Street	7:45 – 8:45	5:30 – 6:30
@ Tunlaw Road	8:00 – 9:00	5:00 – 6:00
Albemarle Road, N.W.		
@ Fort Drive/40th Street	8:00 – 9:00	5:30 – 6:30
@ 42nd Street	7:45 – 8:45	5:15 – 6:15
River Road, N.W. @ 42nd Street	7:30 – 8:30	5:30 – 6:30
Brandywine Street @ 42nd Street	7:30 – 8:30	5:30 – 6:30
Albemarle Road, N.W. @ Nebraska Avenue	7:45 – 8:45	5:00 – 6:00
Chesapeake Street@ River Road	7:45 – 8:45	5:45 – 6:45
Van Ness Street, N.W. @ Nebraska Avenue	7:45 – 8:45	5:30 – 6:30
38th Street, N.W. @ Massachusetts Avenue	7:45 – 8:45	5:30 – 6:30

2.5.2 Vehicle Classification

The mechanical traffic counters recorded vehicle classification information as well as traffic counts using a vehicle classification guideline from the Federal Highway Administration (FHWA) and American Association of State Highway and Transportation Officials (AASHTO). Four major vehicle classifications: passenger cars, light trucks, buses, and heavy trucks, were used to identify the volume of non-passenger vehicle traffic and vehicle types in the study area. Exhibit 2-14 indicates that passenger cars and other two-axle vehicles (light trucks) constitute from 95 to 99 percent of the daily traffic volumes.

Exhibit 2-14: Average Daily Traffic Classified by Vehicle Types

Roadway Segment	Auto (%)	Light Trucks (%)	Buses (%)	Heavy Trucks (%)	Total Traffic Volume
Wisconsin Ave (N. of Tenley Circle)	33,344 (97.1%)	721 (2.1%)	171 (0.5%)	103 (0.3%)	34,340
Wisconsin Ave (S. of Tenley Circle)	34,596 (96.1%)	1,008 (2.8%)	216 (0.6%)	180 (0.5%)	36,000
Wisconsin Ave., Southbound Only (N. of Massachusetts Ave)	15,295 (94.9%)	563 (3.5%)	161 (1.0%)	97 (0.6%)	16,100
Wisconsin Ave., Northbound Only (S. of Massachusetts Ave)	12,147 (95.8%)	380 (3.0%)	101 (0.8%)	51 (0.4%)	12,680
River Rd (W. of Wisconsin Ave)	5,514 (95.4%)	156 (2.7%)	23 (0.4%)	87 (1.5%)	5,780
Nebraska Ave (E of Tenley Circle)	13,496 (97.3%)	222 (1.6%)	83 (0.6%)	194 (1.4%)	13,870
Nebraska Ave (W of Tenley Circle)	15,784 (91.4%)	639 (3.7%)	484 (2.8%)	363 (2.1%)	17,270
Massachusetts Ave (W of Wisconsin Ave)	15,120 (96.0%)	425 (2.7%)	126 (0.8%)	95 (0.6%)	15,750
Massachusetts Ave (E of Wisconsin Ave)	11,754 (95.8%)	319 (2.6%)	110 (0.9%)	86 (0.7%)	12,270

Source: O. R. George & Associates

Notes:

1. FHWA F Scheme and Numetrics Vehicle Length vehicle classification methods were used along the study corridor.
2. Light trucks are defined in this study as two-axle, four-tire trucks.
3. The data is based on one-week mechanical traffic counts.

Wisconsin Avenue carries 50 to 180 heavy trucks per day, which is less than one percent of the average daily traffic along Wisconsin Avenue. The heavy truck volume was higher along Nebraska Avenue near Tenley Circle. Nebraska Avenue at Tenley Circle carried almost double the heavy truck volume recorded for Wisconsin Avenue at Tenley Circle. The highest volume of light trucks, which includes FedEx and UPS deliveries, was recorded along Wisconsin Avenue and ranged between 700 and 1,000 trucks per day. This represented two (2) to 3.5 percent of total traffic along the corridor.

As noted in Section 2-3, Metrobus services operate along Wisconsin, Nebraska and Massachusetts Avenues. Tour and charter buses also operate along the corridor. More than 100 buses per day were recorded on Wisconsin Avenue within study area and approximately 500

buses per day were recorded along Nebraska Avenue west of Tenley Circle. Appendix D presents detailed vehicle classification data at the five roadway segments discussed above.

2.5.3 Vehicular Speed

Driving speed and travel times on major roadways are important measures of existing traffic conditions. The data presented in Exhibit 2-15 and field observations indicate that vehicular speeds are generally within range of the posted limits, along the roadways surveyed. Patterns of excessive speeds were recorded in both directions along Cathedral Avenue, just west of Wisconsin Avenue.

Exhibit 2-15: Average Vehicle Speed Recorded – Mechanical Traffic Count/Speed

Location	Posted Speeds	Average Weekday		Saturday	
		Mean Speed (MPH)	85th Percentile (MPH)	Mean Speed (MPH)	85th Percentile (MPH)
Wisconsin Avenue, N.W. (N. of Tenley Cir.)					
- Northbound	30	25	33	24	31
- Southbound	30	26	33	25	32
- Both Directions	30	26	33	24	32
Wisconsin Avenue, N.W. (S. of Tenley Cir.)					
- Northbound	30	25	30	22	29
- Southbound	30	21	27	21	28
- Both Directions	30	23	29	22	28
Wisconsin Avenue, N.W. (N. of Massachusetts Ave.)					
- Southbound	30	21	27	21	28
Wisconsin Avenue, N.W. (S. of Massachusetts Ave.)					
- Northbound	30	22	28	24	31
River Road, N.W. (W. of Wisconsin Ave.)					
- Northbound	25	19	24	19	24
- Southbound	25	20	26	19	26
- Both Directions	25	19	25	19	25
Nebraska Avenue, N.W. (E. of Tenley Cir.)					
- Northbound	30	23	29	24	29
- Southbound	30	26	34	24	33
- Both Directions	30	25	32	24	31
Nebraska Avenue, N.W. (W. of Tenley Cir.)					
- Northbound	30	26	30	22	29
- Southbound	30	25	30	25	30
- Both Directions	30	25	30	24	29
Massachusetts Ave., N.W. (E. of Wisconsin Ave.)					
- Westbound	30	25	32	26	34
Massachusetts Ave., N.W. (W. of Wisconsin Ave.)					
- Eastbound	25	23	29	24	30
Cathedral Avenue, N.W. (W. of Wisconsin Ave.)					
- Eastbound	25	28	34	29	34
- Westbound	25	37	44	37	33

Source: O. R. George & Associates

Radar spot speed surveys were conducted during the off-peak period for typical weekdays along five (5) roadway segments, based on concerns raised by residents in the study area. Survey locations along 37th Street and 34th Street are near schools. Key findings from the speed survey data are presented in Exhibit 2-16. Observed vehicular speeds were generally within range of the posted limits, except at 37th Street. The Study Team observed excessive speeds in both directions along the 37th Street roadway locations and particularly observed that motorists do not observe the "15 MPH When Children Are Present" signs located along 37th Street, between Tilden and Quebec Streets.

Exhibit 2-16: Radar Spot Survey Results at Selected Roadway Locations

Location	Posted Speeds	Average Weekday	
		Mean Speed (MPH)	85th Percentile (MPH)
37th Street, N.W. (Tilden St. – Quebec St.)			
- Northbound	15 – 25	23	27
- Southbound	15 – 25	25	30
36th Street, N.W. (Ordway St. – Macomb St.)			
- Northbound	25	19	22
- Southbound	25	19	22
34th Street, N.W. (Woodley Rd. – Lowell St.)			
- Northbound	15 – 25	24	27
- Southbound	15 – 25	24	26
Cathedral Street, N.W. (39th St. – Massachusetts Ave.)			
- Eastbound	25	27	31
- Westbound	25	26	30
39th Street, N.W. (Rodman St. – Massachusetts Ave.)			
- Northbound	25	23	26
- Southbound	25	25	27

Source: O. R. George & Associates

The detailed vehicle speed and speed radar spot speed survey results with the mechanical count data are presented in Appendix B and Appendix E, respectively.

2.5.4 Wisconsin Avenue Corridor Average Travel Time

Floating car surveys were conducted to observe typical speeds and travel times along Wisconsin Avenue between Fessenden Street and Whitehaven Parkway on September 10th and 11th, 2004, two typical weekdays and Saturdays. Members of the Study Team drove the corridor several times in each direction during weekday peak periods and mid-day Saturday and recorded the elapsed travel times and distance between predetermined travel points. The data collectors were instructed to drive at the same speed as most of the vehicles traversing the study area; therefore, in some cases, the data collectors traveled at speeds above the speed limit. As noted earlier, Wisconsin Avenue in the study area has two different speed limits: 30 mph between Fessenden Street and Garfield Street and 25 mph south of Garfield Street.

As shown in Exhibit 2-17, the average speed on Wisconsin Avenue was slower than the posted speed limits. The slowest travel time was observed on Saturday, particularly for northbound movement.

Travel speed varied throughout the corridor. Consistent delays were observed for northbound movement at Garfield Street and Massachusetts Avenue intersections, Tenley Circle area and at Whole Foods in the Tenleytown area. However, travel speed generally increased after the Brandywine intersection as traffic tends to speed up going downhill in this section of the corridor. For southbound movement, delays were frequent at Tenley Circle area, Van Ness Street intersection, and Massachusetts Avenue and Garfield Street intersections. Travel speed generally increases south of Calvert Street. Appendix F presents detailed floating car travel time study results.

Exhibit 2-17: Average Travel Speed – Floating Car Survey at Selected Segments

CLICK HERE

2.5.5 Vehicular Queues

Wisconsin Avenue is a critical north-south roadway for major intersecting arterials, creating vehicular queues (vehicles waiting at intersections) especially during morning and afternoon peak hours, causing travel delays for many travelers. The Study Team targeted the following six (6) major intersections for peak hour queuing observations.

1. Wisconsin Avenue at Brandywine Street and Albemarle Street (for northbound movement, observed beyond the Whole Foods Entrance; for southbound, observed beyond the Whole Foods Entrance)
2. Wisconsin Avenue at Nebraska Avenue (4 approaches)
3. Wisconsin Avenue at Van Ness Street (4 approaches)
4. Wisconsin Avenue at Garfield Street (2 approaches)
5. Wisconsin Avenue at Calvert Street (2 approaches)
6. Wisconsin Avenue at Whitehaven Parkway (2 approaches)

At most locations, all of the queued vehicles were able to clear the intersection during a single signal cycle. The Study Team found two approaches where the queues could not clear in a single signal cycle during the data collection period (Exhibit 2-18). As Exhibit 2-18 shows, the most severe queuing occurs at Garfield Street during the afternoon peak hour, averaging 18 queued vehicles with a maximum of 33 queued vehicles. Additionally, for eastbound traffic at Van Ness Street during the morning peak hour, the average number of vehicles queued was 7 with a maximum of 30 queued vehicles. More detailed field survey results are provided in Appendix G.

Exhibit 2-18: Vehicular Queuing

Location	Peak Hour	Average Queue (# of vehicles)	Maximum Queue (# of vehicles)	Percent Cleared
Wisconsin Ave @ Van Ness St Eastbound Approach	AM	7	30	68.2%
Wisconsin Avenue @ Garfield St. Northbound Approach	PM	18	33	80.0%

Source: O.R. George & Associates
Note: Above approaches are where the queues could not clear in a single signal cycle as observed during the data collection period.

An additional six (6) intersections were examined in a field reconnaissance during AM and PM peak hours due to queuing concerns expressed by residents. As shown in Exhibit 2-19, the Study Team verified that queuing exists at the intersections of Van Ness Street at Reno Road, River Road at 45th Street, and 37th Street south of Benton Street. The main cause of the queuing was heavy traffic volumes during the peak hour such that a single signal cycle length was not sufficient to clear all vehicles.

Exhibit 2-19: Selected Intersection Vehicle Queuing Observation

Location	Queuing Condition	Possible Reason
Van Ness St. @ Reno Rd.	AM Peak, Southbound Reno Rd	Heavy traffic volume on 34th Street and southbound left-turn movement
Wisconsin Ave. @ Upton St.	None	None
Wisconsin Ave. @ Warren St.	None observed; conditions exist to create problem	(Left-turn movement for southbound Wisconsin Ave traffic may block through-movement)
Albemarle St. @ 38th St.	None observed; conditions exist to create problem	(Heavy Nebraska Ave traffic makes it difficult for a vehicle from Albemarle Street @ 38th Street to turn onto Nebraska Avenue)
River Rd. @ 45th St.	PM Peak, Northbound River Rd	Proximity to other River Road signals at Western Ave and Garrison St and 46th Street and heavy peak hour traffic causes traffic back-ups
37th St. south of Benton St.	AM peak, southbound 37th Street at Tunlaw St	All-way stop at 37th Street at Tunlaw Street causes back-ups during AM peak hours

2.5.6 Safety

Accident Data

An assessment of safety conditions in the study area is another important component for understanding existing road conditions. The Study Team obtained accident data from the District of Columbia Department of Transportation (DDOT) from 2001 through 2003. DDOT had accident data available for 37 intersections in the study area.

Exhibit 2-20 summarizes the accident rate computed for each location. The accident rate is defined as the number of accidents per million entering vehicles (MEV's). Typically, accident rates of 2.0 and greater warrant further evaluation to determine appropriate remedial safety measures.

There are no significant traffic safety deficiencies within the study area, based on the data and analysis regarding vehicular speeds and crash occurrences. However, some consideration should be given to the Wisconsin Avenue/Calvert Street intersection, (based on the relatively high crash experience – 56 accidents in three years). Further analysis found that the dominant collision types at the Wisconsin Avenue/Calvert Street intersection were rear end (15 or 27.3% of total accidents) and side-swipe (13 or 23.4%). There were also eight (8) incidents of collisions with parked cars. Based on these characteristics and field observations, it was determined that the probable causes include the number of lanes dropping from three lanes to two in the southbound direction (visa versa for northbound), as well as inadequate pavement markings and signage that clearly delineate the left-turn lanes and travel paths.

Exhibit 2-20: Accident Data Summary between 2001 and 2003

	Accidents (2001-2003)	Average per Year	Estimated Accident Rate per Million Entered Vehicles
Wisconsin Ave @ Fessenden St	28	9	0.8
Wisconsin Ave @ Albemarle Rd	23	8	0.6
Wisconsin Ave @ Van Ness St	31	10	0.7
Wisconsin Ave @ Upton St	39	13	0.9
Wisconsin Ave @ Porter St	24	8	0.6
Wisconsin Ave @ Macomb St	21	7	0.6
Wisconsin Ave @ Calvert St	56	19	1.6
Wisconsin Ave @ Hall St	19	6	0.6
River Rd @ 42nd St	7	2	0.7
34th St @ Newark St	9	3	0.5
Calvert St @ 37th St	8	3	0.7

Detailed accident data for each of the 37 intersections is provided in Appendix H.

Pedestrian Movements

Pedestrian movements were recorded at the same 37 intersections listed earlier in section 2.5.2 *Turning Movement Traffic Counts*. Pedestrian volume counts were collected during weekday and Saturday peak periods to identify critical intersections for both passenger car and pedestrian crossing safety. The weekday morning and afternoon peak hour pedestrian volumes are shown in Exhibit 2-21A (PM peak volumes in parentheses). The Saturday peak hour pedestrian volumes are presented in Exhibit 2-21B. As expected, observations confirm that there is a strong relationship between pedestrian activity and the adjacent land uses. Areas of relatively high pedestrian activity are as follows:

a) Wisconsin Avenue, between and including Brandywine Street and Tenley Circle. (See intersections 4 through 7 in the Exhibits.) The abutting land uses include the Tenleytown- AU Metrorail Station, several institutional developments (including the Tenley Campus of American University), as well as several retail, commercial and residential uses.

b) Wisconsin Avenue, between and including Van Ness Street and the Fannie Mae Office Building Entranceway/ Friendship Post Office Entranceway intersections (Rodman Street/Upton Street). (See intersections 11 through 13). The abutting land uses include commercial, retail, high-rise residential and institutional uses.

c) Wisconsin Avenue, between Newark Street and Hall Place. The abutting land uses include landmarks such as the Washington National Cathedral alongside Beauvoir Elementary School and Saint Albans (intersections 18, 19, and 20); the U.S. Naval Observatory (note especially intersection 25) and varied high-rise apartment buildings, commercial, retail and institutional uses.

d) Albemarle between 42nd Street and 39th Street. (See intersections 6, 30, 31 and 32). Abutting land uses include institutions such as Wilson High and Janney Elementary Schools, as well as residences, retail and commercial uses, and a Metro station.

Complete pedestrian crossing data are provided in Appendix I.

Exhibit 2-21A: Average Weekday Peak Hour Pedestrian Crossing Volumes

CLICK HERE

Exhibit 2-21B: Saturday Mid-day Pedestrian Crossing Volumes

CLICK HERE

2.5.7 Parking

Parking is a major problem in the District of Columbia. Most resident comments with regard to parking may be classified into one of three (3) major areas of concern: 1) insufficient number of on-street parking spaces available for residents; 2) commuters, shoppers or restaurant patrons parking on local neighborhood streets; and 3) difficulty in finding parking spaces along Wisconsin Avenue when residents need to make a quick stop.

Considering comments received from residents and given the large size of the study area, the Study Team developed a strategic approach to effectively analyze parking conditions in the study area. There are two key components to the approach:

1. Given the study area focus on Wisconsin Avenue, it was agreed that the parking analysis area would extend 750 feet on either side of the centerline of Wisconsin Avenue. The parking analysis for the Tenleytown-AU Metrorail station would extend to a radius of 1250 feet, or approximately a quarter of a mile, representing the typical distance a person will readily walk to a Metrorail station. Exhibit 2-22 illustrates the extent of the parking area boundaries. The parking analysis was conducted at the block level for typical weekdays and Saturday.

2. Parking utilization was observed weekdays after morning peak hours, during late afternoon and evening hours and mid-day Saturdays. The observation times were selected to capture occurrences of commuter and non-resident parking on neighborhood streets. Evening restaurant-related parking conditions (on a Thursday evening) were observed for the Glover Park and Macomb Street areas.

Parking Restrictions Along Wisconsin Avenue Corridor

To maximize roadway capacity for peak hours, parking is not permitted along Wisconsin Avenue in the peak hour travel direction on weekdays during peak periods (7:00AM through 9:30AM and 4:00PM through 6:30PM). As shown in Exhibit 2-23 (page 43), in some sections of Wisconsin Avenue corridor, parking is prohibited at all times.

Exhibit 2-22: Parking Analysis Area

CLICK HERE

Exhibit 2-23: Peak Hour Parking Restriction along Wisconsin Avenue Corridor

ID	To	From	NB		SB	
			AM	PM	AM	PM
1	Fessenden	Ellicott		X	X	
2	Ellicott	Davenport		X	X	
3	Davenport	Brandywine		X	X	
4	Brandywine	Whole Foods -Tenley Circle		X	X	
5*	Whole Foods -Tenley Circle	Albemarle		X	X	
6	Albemarle	Tenley North		X	X	X
7**	Tenley North	Tenley South	X	X	X	X
9	Tenley South	Van Ness		X	X	
11*	Van Ness	Upton		X	X	
12	Upton	Fannie Mae		X	X	
13***	Fannie Mae	Rodman		X	X	X
14***	Rodman	Porter		X	X	X
15	Porter	Newark		X	X	X
16	Newark	Macomb		X	X	
17	Macomb	Woodley		X	X	
18	Woodley	Cathedral	X	X	X	X
19*	Cathedral	Massachusetts	X	X	X	X
20*	Massachusetts	Garfield	X	X	X	X
21	Garfield	Edmunds	X	X	X	
22	Edmunds	Calvert		X	X	X
23	Calvert	Whole Foods -Glover Park		X	X	
24	Whole Foods -Glover Park	Hall PL		X	X	
25	Hall PL	Whitehaven St		X	X	
26	Whitehaven St	Whitehaven Pkwy		X	X	X

Notes:
* (SB) No parking allowed at any time
** (NB/SB) No parking allowed at any time
*** (NB) No parking allowed at any time

Parking Inventory

The parking inventory for the WACTS was conducted during October and December 2004. The inventory effort recorded the available number of off-peak parking spaces along Wisconsin Avenue and the side streets within the agreed-upon boundaries. There are various classes of parking space such as residential permit parking/2 hour limit parking, various metered parking and unrestricted or handicap parking.

Exhibits 2-24, A through C illustrate the full parking inventory observed in the defined analysis area, for the northern, central and southern sections of the study area respectively.

Exhibit 2-24A: Parking Inventory – Northern Section

CLICK HERE

Exhibit 2-24B: Parking Inventory – Central Section

CLICK HERE

Exhibit 2-24C: Parking Inventory – Southern Section

CLICK HERE

Wisconsin Avenue

On-street parking along Wisconsin Avenue accommodates the parking needs from the abutting lane use along the corridor. There are a total of 593 on-street parking spaces along Wisconsin Avenue and approximately 2,700 off-street parking lot/garage spaces in the parking analysis area. Exhibit 2-25 summarizes the types and numbers of on-street parking spaces available off-peak or in the non-peak flow direction:

Exhibit 2-25: Parking Characteristics – Wisconsin Avenue Corridor

	Number of Spaces			
	Northbound	**Southbound**	**Total**	**Percent**
Metered	108	135	243	41%
15 minutes	7	0		
30 minutes	0	4		
1 hour	10	72		
2 hours	85	59		
3 hours	6	0		
2-hour permit/residential	5	32	37	6%
No Parking on School Days	16	28	44	7%
Unrestricted	154	92	246	41%
Loading spaces	5	18	23	4%
Total	288	305	593	100%

A substantial number of the on-street parking spaces (more than 240, and over 40 percent of total available spaces) are not regulated. This may be due to missing parking regulation signs. In front of Fannie Mae (southbound Wisconsin Avenue), parking is not regulated during off-peak hours. If this represents a conscious policy decision then there should be no change; if not, these spaces could be metered or restricted to 2 hour parking for the visitors of the nearby businesses. In some areas, parking is prohibited during school hours (St. Ann's School and Sidwell Friends). In other areas, such as Fannie Mae, parking is unrestricted outside peak hours (which seems to be used by Fannie Mae employees).

Loading zones are designated in both directions along Wisconsin Avenue: 5 spaces northbound and 18 spaces southbound. The Study Team observed that during peak delivery periods the available spaces were insufficient to accommodate the demand, and in some cases passenger cars illegally parked in loading zones. These situations resulted in delivery trucks double parking and effectively limiting Wisconsin Avenue to a single lane of roadway capacity in either direction during portions of the off-peak period.

Side Streets

On-street parking on the side streets is generally characterized by commercial or high density land uses and some parking restrictions in the areas closest to Wisconsin Avenue. As the distance from Wisconsin Avenue increases, land use becomes predominantly residential, with 2 hour/ resident permit parking. Most side streets in the parking analysis area are designated for residential parking. For arterial roadways such as Nebraska Avenue, Massachusetts Avenue and River Road, parking is restricted during AM and PM peak periods in the direction of the predominant flow. Other minor arterials and collector roadways also restrict peak hour parking while permitting parking at other times.

Side streets provide approximately 6,100 parking spaces in the defined parking analysis area. As shown in Exhibit 2-26, the most common parking spaces available are 2 hour parking permit/ residential permit parking (over 4,700 spaces). Metered parking is available near the Tenleytown/AU Metrorail station with a few more metered spaces in the Glover Park area. There are over 700 unregulated side street parking spaces in the parking analysis area. These spaces are mostly along arterial roadways (e.g., Nebraska Avenue, Massachusetts Avenue, River Road) where parking is restricted during peak hours. Exhibits 2-24A through 2-24C (pages 44-46) provide a detailed breakdown of available side street parking and locations.

Exhibit 2-26: Parking Inventory for Side Streets

	Permitted	Metered	Other	Total
Time Restricted Parking				
15 minutes	52	-		
30 minutes	-	8		
1 hour	2	47		
2 hours	4764	132		
3 hours	-	145		
4 hours	24	113		
7 hours	-	18		
2 hour sign			39 (1%)	
Unrestricted Parking			712 (12%)	
Loading			34 (1%)	
Total	**4,842 (79%)**	**463 (8%)**	**746 (13%)**	**6,094**

Parking Utilization

Wisconsin Avenue

In general, the demand for on-street parking along Wisconsin Avenue is very high with a few very specific exceptions. During weekday off-peak hours, average parking utilization was approximately 90 percent. On Saturday, it was observed that vehicles parked along the corridor exceeded the available spaces (some were illegally parked). High parking utilization was observed near the commercial areas near the Tenleytown Metrorail station and the Glover Park Whole Foods area, the metered on-street parking was fully utilized. In other areas, such as Wisconsin Avenue between Davie Street and Fulton Street or between Ellicott and Fessenden, on-street parking utilization was relatively low. Parking utilization details for weekday and Saturday are illustrated in Exhibits 2-27 and 2-28, A through C (pages 50-55).

During the data collection period, the Study Team observed a significant number of vehicles parked illegally during the peak travel periods when parking is prohibited. Even one parked car would cause a major blockage of traffic flow by taking up one lane, contributing to queues, unsafe traffic maneuvers, and potential accidents.

Side-Streets

In general, side street parking utilization in the parking analysis area is two-thirds (66%) full during weekdays. On Saturday, parking utilization increases to approximately 76% for side streets. The Study Team investigated parking utilization on weekday evenings (after 8:00PM) parking utilization for selected areas of Tenleytown, the Macomb Street restaurant district, and

Glover Park. The field observation concluded that parking utilization in these areas was approximately 90%. Parking utilization details for weekday and Saturday are illustrated in Exhibits 2-27 and 2-28, A through C (pages 50-55).

Off Street Parking: Garages and Lots

There are 15 public parking garages and lots within the parking analysis area, which provide approximately 2,700 spaces. There is very high commuter demand in the Fannie Mae area and for the offices located between Calvert Street and 35th Street. Parking facilities in these areas are fully utilized during weekdays. However, parking facilities, which mainly serve shopping customers, have much lower utilization. Average parking utilization for all facilities was 86% during weekdays and 61% on Saturday.

The Study Team also noted that while there is a shortage of on-street parking near the Tenleytown Metrorail station, average parking facility usages reached only 54% even with free parking validation for shopping at specified properties. This may be due to perceptions that parking facilities are less convenient than on-street parking.

Detailed parking data are provided in Appendix J.

Exhibit 2-27B: Weekday Parking Utilization – Central Section

CLICK HERE

Exhibit 2-27C: Weekday Parking Utilization – Southern Section

CLICK HERE

Exhibit 2-28A: Saturday Parking Utilization – Northern Section

CLICK HERE

Exhibit 2-28B: Saturday Parking Utilization – Central Section

CLICK HERE

Exhibit 2-28C: Saturday Parking Utilization – Southern Section

CLICK HERE

Exhibit 2-27A: Weekday Parking Utilization – Northern Section

CLICK HERE

2.6 EXISTING TRAFFIC CONDITIONS: LEVELS OF SERVICE

The existing operating performance condition of roadways and intersections are measured by the level of service (LOS). Traffic volumes, lane configurations, and signal timing all contribute to the capacity analysis of roadways and intersections. The LOS analysis uses a six-tier ranking from A to F to evaluate overall intersection capacity compared to existing traffic volume. LOS A indicates a free flow and LOS F represents an intersection capacity failure condition with long delays. A detailed definition of LOS is provided in Appendix K.

2.6.1 Arterial LOS

Wisconsin Avenue is a Class IV road under the Highway Capacity Manual (2000 version) Urban street classification. The classification of an urban street is determined based on average through-vehicle travel speed for the segment or for the entire street under consideration. The average travel speed is computed from the running times on the urban street and the control delay of through movements at signalized intersections. Based on the results from the floating car survey (discussed in section 2.5.4), average travel time of the Wisconsin Avenue corridor was computed to range from 13 mph to 16 mph (Exhibit 2-29). This translates to arterial LOS of D and C. Therefore, Wisconsin Avenue corridor is running smoothly with minor delays during weekday peak hours (LOS C) with somewhat longer delays on Saturdays (LOS C and D).

Exhibit 2-29: Wisconsin Avenue Arterial Level of Service

	Wisconsin Avenue Northbound (Whitehaven Pkwy. – Fessenden St.)	Wisconsin Avenue Southbound (Fessenden St. – Whitehaven Pkwy.)	Arterial LOS for Northbound	Arterial LOS for Southbound
Weekday AM Peak	14 mph*	16 mph	D	C
Weekday PM Peak	16 mph	14 mph**	C	C
Saturday (Mid-day Peak)	13 mph	13 mph	D	D

* 13.5 mph and ** 14.4 mph

2.6.2 Intersection LOS

The Study Team also used Synchro, a traffic modeling/analysis program, to evaluate existing traffic conditions at the signalized intersections in the study area. Existing traffic volumes, lane configurations, and signal timing were used to develop a base case traffic model. A traffic simulation of the existing base case condition was then developed using SimTraffic, Synchro's associated traffic simulation software. SimTraffic was used at the public meetings to visually depict the existing traffic flow condition on the major streets in the study area.

Exhibits 2-30 and 2-31 show existing levels of service for the study area for the weekday morning and afternoon peak hours and mid-day peak hour Saturday. Generally, existing levels of service for Wisconsin Avenue during weekdays are at a reasonable level, mostly maintaining LOS C or better with a few exceptions. Wisconsin Avenue intersections at Upton Street, Cathedral Avenue, and Garfield Street experience LOS D in the AM peak hour with average

delay time ranging from half a minute to one minute. While these intersections' LOS improves to LOS C or better during the Saturday peak hour, some intersections experience deteriorated LOS. Deteriorated LOS is experienced at Fessenden Street, Albemarle Street, and Calvert Street where existing land uses (retail activity) attract more visitors on Saturdays. The worst level of service observed at a signalized intersection was at the Albemarle Street/Wisconsin Avenue intersection (LOS E) on Saturday with average delay time of almost one minute.

In addition to the 35 signalized intersections, four (4) unsignalized intersections were evaluated for the study. Levels of service at these intersections were measured using the *Highway Capacity Manual Unsignalized Intersection Capacity Analysis (HCS)*. Unsignalized intersections allow the major street to be traveled without interruption or delay, while traffic on the minor street often experiences lengthy delays trying to enter or cross the heavier volumes on the major street.

The unsignalized intersection LOS analysis specifically examined the minor street delay. The analysis shows that due to constant traffic flow along 34th Street, drivers on Newark Street at the 34th Street/Newark Street intersection experience delays during weekday and Saturday peak hours. The longest delay is experienced in the AM peak hour, averaging more than 40 seconds. Similarly, drivers from Fort Drive and 40th Street have difficulty entering Albemarle Street or crossing it, because of constant traffic flow along Albemarle Street. The average wait time for the drivers on Fort Drive and 40th Street at this intersection extends up to half a minute. It is also very difficult for drivers from 38th Street to enter Massachusetts Avenue during the PM peak hour for the same reason (average wait time of more then 30 seconds). Saturday operation is smoother than weekdays. The LOS at these unsignalized intersections was B through D with relatively minor delay.

Exhibit 2-30: Signalized Intersection Existing Levels of Service

Signalized Intersections	Weekday AM Peak	Weekday PM Peak	Mid-day Saturday
Wisconsin Ave. @ Fessenden St.	B	B	**D**
Wisconsin Ave. @ Ellicott St.	A	A	C
Wisconsin Ave. @ Davenport St.	A	B	B
Wisconsin Ave. @ Brandywine St.	B	B	C
Wisconsin Ave. @ Whole Foods Ent. (Tenleytown)	A	A	A
Wisconsin Ave. @ Albemarle St.	B	B	E
Wisconsin Ave. @ Tenley Circle North	C	C	C
Wisconsin Ave. @ Tenley Circle South	B	B	B
Wisconsin Ave. @ Van Ness St.	B	C	C
Wisconsin Ave. @ Upton St.	**D**	B	C
Wisconsin Ave. @ Fannie Mae	B	B	C
Wisconsin Ave. @ Rodman St.	A	A	A
Wisconsin Ave. @ Porter St.	C	B	B
Wisconsin Ave. @ Newark St.	B	B	B
Wisconsin Ave. @ Macomb St.	B	B	A
Wisconsin Ave. @ Woodley Rd.	B	C	B
Wisconsin Ave. @ Cathedral Ave.	D	C	B
Wisconsin Ave. @ Massachusetts Ave.	C	C	A
Wisconsin Ave. @ Garfield St.	D	C	C
Wisconsin Ave. @ Edmunds St.	A	A	A
Wisconsin Ave. @ Calvert St.	C	B	**D**
Wisconsin Ave. @ Whole Foods Ent. (Glover Park)	A	B	C
Wisconsin Ave. @ Hall St.	A	A	A
Wisconsin Ave. @ Whitehaven Sts	A	A	A
Wisconsin Ave. @ Whitehaven Pkwy.	B	B	A
River Rd. @ 42nd St. & Brandywine St.	C	B	B
Nebraska Ave. @ Albemarle St.	B	B	B
River Rd. @ Chesapeake St.	B	A	A
Albemarle St. @ 42nd St.	B	B	B
Van Ness St. @ Nebraska Ave.	B	B	B
34th St. @ Garfield St.	C	B	B
34th St. @ Cleveland Ave.	B	B	B
37th St. @ Calvert St.	C	C	C

Exhibit 2-31: Unsignalized Intersection Existing Levels of Service

Unsignalized Intersections (*minor street*)	Weekday AM Peak	Weekday PM Peak	Mid-day Saturday
Albemarle St. @ *Fort Dr. & 40th St.** (east/west)	C/C	C/**D**	B/C
34th St. @ *Newark St.** (east/west)	**D/E**	**D/D**	C/**D**
37th St. @ Tunlaw St. (ALL WAY STOP)	**C**	**D**	B
Massachusetts Ave. @ *38th St.**	C	**E**	B

* Levels of service for unsignalized intersections were measured based on the Highway Capacity Manual Unsignalized Intersection Capacity Analysis. The delay is for the minor street approach only which are shown in italics.

2.7 EXISTING CONDITION SUMMARY

Through extensive data collection and field reconnaissance, the Study Team identified key transportation issues for all intersections examined in the WACTS. Exhibit 2-32 provides the summary table.

Exhibit 2:32: Summary of Key Transportation Issues

	Unsignalized Intersection	High Accident Rate	Speeding	Weekday Parking Utilization (>75%)	Weekend Parking Utilization (>75%)	High Pedestrian Counts	Poor Sight-Distance	Queuing	High Side Street Traffic Volume	Illegal Traffic Movements
Wisconsin @ Fessenden										
Wisconsin @ Ellicott					X					
Wisconsin @ Davenport					X					
Wisconsin @ Brandywine										
Wisconsin @ Whole Food in Tenleytown					X	X	X			
Wisconsin @ Albemarle						X			X	
Tenley Circle				No Parking	No Parking	X			X	
Wisconsin @ Nebraska East									X	
Wisconsin @ Nebraska West									X	
Wisconsin @ Van Ness				X	X	X		X	X	X
Wisconsin @ Upton				X	X					X
Wisconsin @ Rodman										
Wisconsin @ Porter										
Wisconsin @ Newark				X	X	X				
Wisconsin @ Macomb				X	X	X				
Wisconsin @ Woodley				X	X	X				
Wisconsin @ Massachusetts						X			X	
Wisconsin @ Garfield				No Parking – SB Only				X	X	
Wisconsin @ Edmunds			X							
Wisconsin @ Calvert		X			X	X			X	
Wisconsin @ Whole Food in Glover Park			X	X	X					
Wisconsin @ Hall			X	X	X	X				
Wisconsin @ Whitehaven St				No Parking	No Parking					
Wisconsin @ Whitehaven Pkwy			X	No Parking	No Parking					
River @ 42nd & Brandywine				X	X					X
Nebraska @ Albemarle									X	
River @ Chesapeake										
Albemarle @ Fort & 40th	X			X		X				
Albemarle @ 42nd										
Van Ness @ Nebraska										
34th @ Garfield										
34th @ Cleveland										
34th @ Newark	X						X			
37th @ Calvert						X				
37th @ Tunlaw	X						X			
38th @ Massachusetts	X						X			X

3 FUTURE DEVELOPMENT SCENARIO ANALYSIS

A key element in the transportation study is to estimate future conditions, evaluate the impact of potential developments in the study area, and develop suitable improvements (if feasible) to address projected deterioration in traffic conditions. The Wisconsin Avenue Corridor Transportation Study (WACTS) includes assessments of the area's future traffic condition for a 10-year horizon from the study's inception in the fall of 2004. The following section describes how scenarios were developed, defines alternatives, and presents the assumptions used to estimate land use intensity. Chapter 4 discusses the traffic impact methodology and presents traffic impact estimates based on the scenarios developed in Chapter 3.

3.1 SCENARIO DEVELOPMENT

As part of the WACTS, the Study Team evaluated four (4) development scenarios occurring over a 10-year period (2004 to 2014). These scenarios portray a range of low (baseline), medium, high and maximum potential development. The main purpose of the development scenario analysis is to account for a range of foreseeable additional traffic generated by future build-out options (development) along Wisconsin Avenue, including a scenario of complete build-out to maximum planned unit development (PUD)[1] potential. The range of different development densities helps determine the lower- and upper-end traffic estimates generated by future developments along the corridor. Additionally, the analysis assesses whether or not the existing transportation infrastructure (with minor improvements) can accommodate maximum, high, or even moderate levels of development. This in turn gives guidance to the DC Office of Planning as to feasible zoning densities and also helps the Study Team evaluate short-term and long-term transportation improvement needs in the WACTS area.

Friendship Heights Addendum (FHA)

The Friendship Heights Addendum (FHA) was created to conduct traffic analysis pertaining to potential developments in Friendship Heights (above and beyond the developments identified for the original 2003 DDOT Friendship Heights Transportation Study). As discussed in Chapter 1, OP requested DDOT to conduct a traffic impact analysis on additional developments deemed possible or likely to take place in the Friendship Heights area. High-density developments have been initially outlined in the revised Draft Upper Wisconsin Avenue Corridor Study (UWACS) Strategic Framework Plan; the "Illustrative Plan" was subsequently officially withdrawn by OP. The FHA is being conducted concurrently with the WACTS which had not been studied in and traffic impacts from projected Friendship Heights developments are factored into the WACTS estimates, as explained below.

[1] Planned Unit Development (PUD) is a planning tool intended to achieve development and public benefits that area superior to those that would result from "matter-of-right" projects. A PUD involves extensive review by public bodies and neighborhood residents and needs to be approved by Zoning Commission. A "matter-of-right" (MOR) development is one which complies with current stated standards of the Zoning Regulations. The District's Department of Consumer and Regulatory Affairs manages the permit process that does not provide for public input with regard to either design or use.

SCENARIOS IN THE WACTS

Exhibit 3-1 summarizes the four (4) Development Scenarios that were analyzed. Greater detail is provided in the text that follows.

Exhibit 3-1: Summary of Development Scenario Descriptions

Scenario 1: Baseline

Wisconsin Avenue Corridor 2004 (Base) Traffic Counts + Developments under construction or scheduled to begin construction (inside study area) + Friendship Heights Area Development under construction
- Chase Point
- Chevy Chase Center
- Hecht's

X Natural Growth Factor based on MWCOG model (plus GEICO)

Scenario 2: Medium

Scenario 1 + Potential MORs / Potential PUDs +
- Mazza Gallerie Parking Lot
- Lord & Taylor Parking Lot
- "Social" Safeway
- Boys and Girls Club
- Lord & Taylor
- WMATA
- Buick site

Scenario 3: High

Scenario 1 + Maximum MORs* / Potential PUDs (same as in Scenario 2) /
- "Social" Safeway (MOR)
- Boys and Girls Club (MOR)

+ Friendship Heights Addendum
Specified land parcels adjacent to Wisconsin Ave. will be developed to max. PUD size, height and floor area ratio (FAR) for particular zoning districts

Scenario 4: Maximum

Scenario 1 + Maximum PUDs* along entire Wisconsin Avenue corridor /
- "Social" Safeway (MOR)
- Boys and Girls Club (MOR)

+ Friendship Heights Addendum
Specified land parcels adjacent to Wisconsin Ave. will be developed to max. PUD size, height and floor area ratio (FAR) for particular zoning districts

* With exceptions – See text below.
Note: MOR represents matter-of-right and PUD represents planned unit development.

Scenario 1 Baseline

Scenario 1 serves as the baseline for the other scenarios. Scenario 1 includes four basic elements, as follows:

Existing Traffic Counts

Traffic counts were collected in fall 2004 for the WACTS. These counts were used as the basis for development traffic impact analysis. (See section 2.5 for detail.)

Natural (Background) Growth

Future growth is comprised of growth in traffic related to specific developments within or near a study area and to growth in the corridor related to growth in population and employment beyond the study area (background or natural growth). In the same way, past growth patterns are comprised of a mixture of development impacts inside and outside the study area.

The Metropolitan Washington Council of Governments (MWCOG) model, which is a collaborative effort of local jurisdictions to plan for long-range traffic and facilities requirements as well as air quality, examines land use and accompanying growth trends in households, employment and traffic throughout the region. It is therefore the most authoritative source for future forecasts available. Natural growth rate information was obtained from the MWCOG regional model, Version 2.1/TP+, Release C with Round 6.3 socioeconomic forecast database. Observing the MWCOG traffic assignments based on the socioeconomic forecast database Round 6.3, the Study Team calculated an average growth rate for the Northwest Washington D.C. area between forecast years 2005 and 2025. This growth rate accounts for any known land use changes in the Washington D.C. metropolitan area and reflects regional growth as well as local growth such as in the Friendship Heights area. Anticipated GEICO traffic (Friendship Heights, Maryland) is added to the natural growth in the Friendship Heights area[2].

Projects Under Construction or Scheduled to Begin Construction in the Study Area

The Study Team identified the following three (3) projects for the study area:

- Cityline at Tenley (condominiums above Best Buy and Container Store)
- 4600 Brandywine Associates (condominiums and retail - Zoning Commission approved 11-8-04)
- Georgetown Heights (condominiums at Calvert and Wisconsin)

Projects Under Construction or Scheduled to Begin Construction in the Friendship Heights Area

The Study Team identified the following three (3) projects:

- Chase Point, DC (formally called Washington Clinic)
- Chevy Chase Center, MD
- Hecht's, MD

The other three development scenarios: Scenarios 2, 3 and 4 have been defined through a cooperative effort with DDOT, residents, and other stakeholders. Scenario 1 traffic volumes serve as a basis for the analysis of Scenarios 2, 3 and 4. Basic descriptions of these scenarios are provided below.

Scenario 2: Potential Development[3]

Scenario 2 represents a mid-range of development. High potential areas for PUD zoning and MOR development are included in this scenario based on recommendations from the Office of Planning and the community. It includes the natural growth from Scenario 1, plus additional growth in the WACTS study area, from the Friendship Heights area and from south of the study

[2] Trip generation from the anticipated GEICO development is included for all scenario analyses.

[3] For this scenario, the Study Team believes that while some matter-of-right development may occur over the next 10 years in properties not designated as MORs or PUDs for this analysis, it is equally as likely that some of the MORs or PUDs identified may not develop or may develop to a less intensive level than noted.

area as noted below. Scenario 2 assumes that all other properties will retain their current land use, size, density and zoning. Five (5) developments in the Friendship Heights area are identified in the FHA and two (2) potential developments are cited south of the study area. The list of high potential redevelopment sites (PUDs and MORs) for analysis in the scenario follows:

<u>High Potential Development Inside the Study Area</u>

- Marten's Volvo (PUD max)
- Whole Foods block (PUD max)
- Outer Circle at Ellicott and Wisconsin (MOR max)
- Post Office (MOR max)

<u>Additional growth in the Friendship Heights Area and South of the Study Area</u>

- Mazza Gallerie Parking Lot - FHA
- Lord & Taylor Parking Lot – FHA
- Lord & Taylor - FHA
- WMATA - FHA
- Buick - FHA
- "Social" Safeway
- Boys and Girls Club (next door to Safeway)

Scenario 3: Current Zoning (Matter-Of-Right) with Potential PUDs

This scenario assumes, in addition to the Scenario 1 natural growth and development of the high potential PUD sites (Marten's Volvo site and Whole Foods block) identified in Scenario 2, that many other properties along Wisconsin Avenue in the WACTS study area will be razed and/or redeveloped as necessary to fully build up to the limits of current matter-of-right zoning (MOR) (see exceptions below). In most cases, the assumed land use mix for development reflects current uses proportioned to fit the site. For example, a current parcel with the first story retail and the second story office would be assumed to be rebuilt with one story retail and two, three or more stories office (based on the maximum size permitted with MOR for that particular parcel and zone). Information on the amount of development included is based on the current zoning categories and the gross floor area allowed for residential and non-residential uses, respectively. It is assumed that all sites in the corridor would be developed to those limits with the following exceptions:

(1) sites which have been redeveloped in the last 10 years based on DC Office of Tax and Revenue Real Property Tax Administration Computer-Assisted Mass Appraisal (referred as CAMA data) (discussed in section 3.2); and
(2) sites for which the floor area ratio (FAR)[4] of the existing development is at least 80% of the amount of development that would be allowed under MOR limits.

<u>Additional Development in the Immediate Friendship Heights Area - Friendship Heights Addendum PUD</u>

[4] Floor area ration (FAR) is expressed as a ratio of total floor area in all above grade floors of a building to the land area of the lot that the building is situated upon. For example, an FAR of 1.0 could be a one-story building covering 100 percent of the lot, a two-story building covering 50 percent of the lot.

As part of the Scenario 3 analysis, the FHA identifies four (4) developments to be included in the scenario in addition to the Scenario 2 analysis. This scenario assumes that specific land parcels adjacent to Wisconsin Avenue in the Friendship Heights area would be developed to maximum size, height, and FAR based on the particular zoning districts.

- Mazza Gallerie
- Parking lot behind Mazza Gallerie (Scenario 2)
- Lord and Taylor (Scenario 2)
- Lord and Taylor parking lot/garage (Scenario 2)
- Southwest corner of 44th and Jenifer Streets
- Southwest corner of Wisconsin Avenue and Jenifer Street
- WMATA (Scenario 2)
- Buick dealership (Scenario 2)
- Northwest corner of Wisconsin Avenue and Harrison Street

Additional Development Immediately South of the Study Area

As part of the Scenario 3 analysis, for the area immediately south of the study area, the study includes the likely developments included in Scenario 2:

- "Social" Safeway (Scenario 2)
- Boys and Girls Club: next door to Safeway (Scenario 2)

Scenario 4: Planned Unit Development (PUD)

This scenario assumes that most properties along Wisconsin Avenue in the WACTS area will be razed and/or redeveloped as necessary to fully build up to the limits of current zoning with a planned unit development (PUD). In most cases, the assumed land use mix for development reflects current uses proportioned to fit the site. For example, a current parcel with the first story retail and the second story office would be assumed to be rebuilt with one story retail and two, three or more stories office (based on the maximum size permitted with PUD for that particular parcel and zone). Information on the amount of development included is based on the current zoning categories with a PUD and the gross floor area allowed for residential and non-residential uses, respectively. It is assumed that all sites in the corridor would be developed to those limits with the following exceptions:

(1) sites which have been redeveloped in the last 10 years based on DC Office of Tax and Revenue Real Property Tax Administration Computer-Assisted Mass Appraisal (referred as CAMA data) (discussed in section 3.2); and
(2) sites for which the floor area ratio (FAR)[5] of the existing development is at least 80% of the amount of development that would be allowed under PUD limits.

Additional Development in the Immediate Friendship Heights area - Friendship Heights Addendum PUD and Immediately South of the study area

[5] Floor area ratio (FAR) is expressed as the ratio of total floor area in all above grade floors of a building to the land area of the lot that the building is situated upon. For example, an FAR of 1.0 could be a one-story building covering 100 percent of the lot, a two-story building covering 50 percent of the lot, etc.

Consistent with Scenario 3, as part of the Scenario 4 analysis, the FHA includes four (4) developments in addition to the Scenario 2 analysis. The likely developments included in Scenario 2 for the area immediately south of the study area are carried through to Scenario 4.

Exhibit 3-2 summarizes sites and zoning that were analyzed as part of the FHA for the WACTS scenarios.

Exhibit 3-2: Sites Analyzed As Part of the Friendship Heights Addendum for WACTS Scenarios

Sites in the Friendship Heights Area	Current Zoning	Zoning to be Analyzed		
		WACTS Scenario 1	WACTS Scenario 2	WACTS Scenarios 3 and 4*
Mazza Gallerie	C-3-A	Current zoning	Current zoning	C-R (PUD Max)
Parking Lot behind Mazza Gallerie	C-3-A	Current zoning	C-R (PUD Max)	C-R (PUD Max)
Lord and Taylor	C-2-A	Current zoning	C-2-C; C-2-A (PUD Max)	C-2-C/ C-2-A (PUD Max)
Lord and Taylor Parking Lot/Garage	C-2-A; R-5-B; R-2	Current zoning	C-2-A; R-5-B; R4 (PUD Max)	C-2-A; R-5-B; R4 (PUD Max)
SW Corner of 44th and Jenifer Streets	C-2-A	Current zoning	Current zoning	C-2-C (PUD Max)
SW Corner of Wisconsin Avenue and Jenifer Street	C-2-B	Current zoning	Current zoning	C-2-C (PUD Max)
WMATA Bus Garage	C-2-B;R-5-B	Current zoning	C-2-C/ R-5-B (PUD Max)	C-2-C/ R-5-B (PUD Max)
Buick Dealership	R-5-B	Current zoning	C-2-C (PUD Max)	C-2-C (PUD Max)
NW Corner of Wisconsin Avenue and Harrison Street	R-5-B	Current zoning	Current zoning	C-2-A (PUD Max)

Source: DC Office of Planning

* Any zoning change that might occur in Friendship Heights would derive from a landowner request in the form of a request for PUD development and PUD related map changes. Any zoning changes must go through the zoning commission approval process.

3.2 DEVELOPMENT LAND USE DATABASE

The Study Team assembled a land use database as a key input to the traffic impact analysis for each scenario. The database was developed using the DC Office of Tax and Revenue Real Property Tax Administration Computer-Assisted Mass Appraisal (CAMA) database, comprehensive real property information available, as a starting point. Using the CAMA database, the Study Team was able to determine the existing and potential gross build area (GBA) under MOR and PUD. These gross build areas were then used to estimate the potential number of trips generated by each new development and by block basis. The study distinguished between scenarios based on changes in intensity of land use, as described above. The following section explains how the gross build area was determined for each scenario.

3.2.1 Methodology

The first step taken after receiving the CAMA data information from the OP was to verify the information received. As part of this process, the Study Team confirmed that it included all the properties located within the boundaries set for the redevelopment traffic impact analysis.

The second step was to identify the properties that are known to have underground parking garages. CAMA data includes underground parking facilities in its gross build area. Underground parking does not in and of itself generate additional trips; therefore, estimated square footage for parking was subtracted from the total gross build area. If a property is known to include a below-grade parking facility, the total gross building area is reduced by 20 percent to account for parking garage spaces. It is expected that over the entire corridor, the accumulated error will be minimal. For specific locations where residents advised the study team of larger parking facilities (as a proportion of total use) appropriate adjustments were made to the square footage.

Third, the Study Team identified the residential and non-residential components of each development. Based on zoning definition, different development limitations (e.g., maximum floor area ratio) are assigned for each zone and for MOR and PUD. Detailed zoning definitions are provided in Appendix L. Checks were made for properties that are already developed as PUDs or that were down-zoned in the past and therefore exceed the maximum MOR or even the PUD GBA.

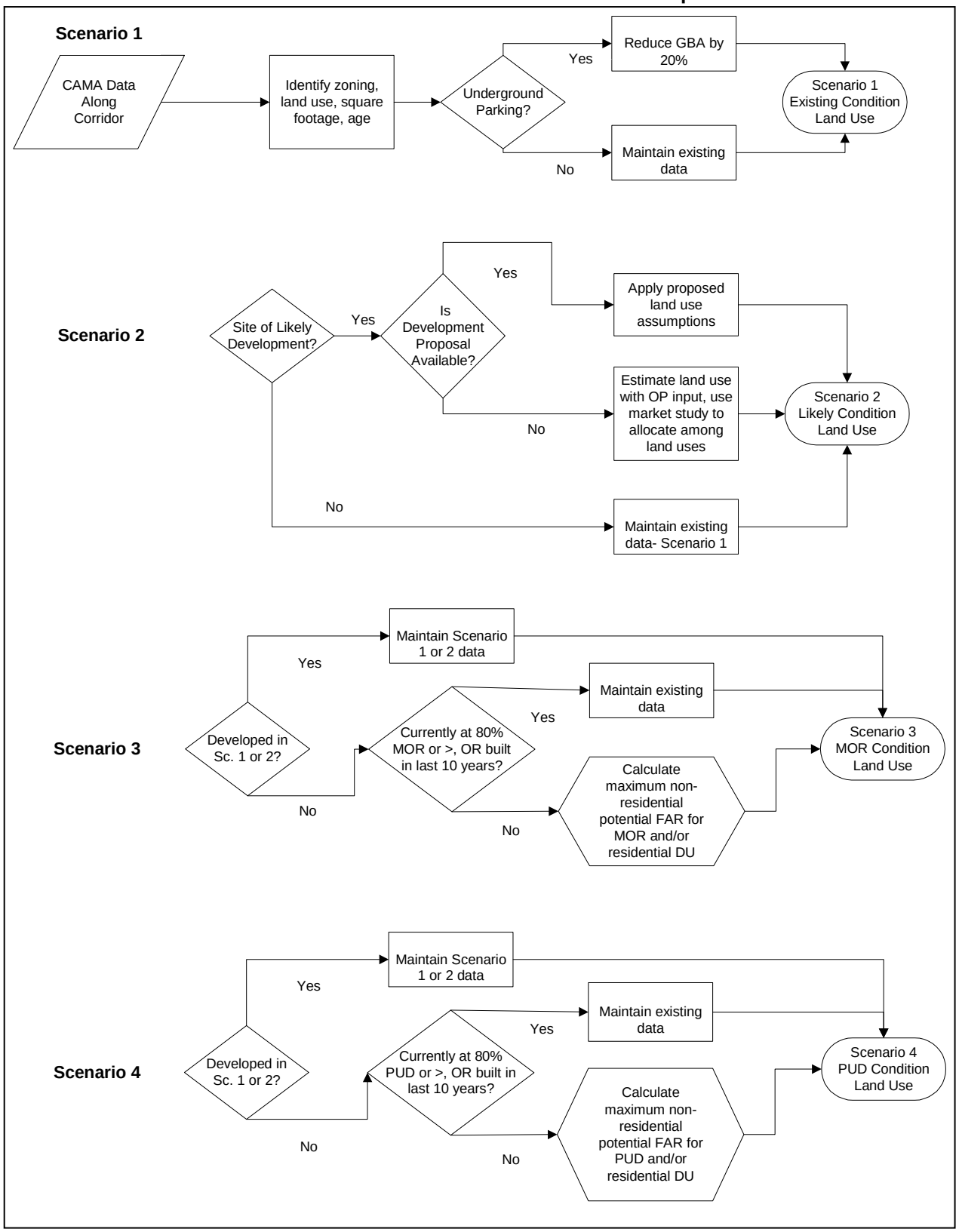
The CAMA land use database provides very detailed and disaggregated land use categories. To simplify the data handling, the Study Team considered only four major land uses: residential, office, commercial and schools.[6] Other uses such as clinics and hospitals as well as religious facilities and public utilities were assumed not to change and were therefore omitted from the analysis of incremental changes.

The next step consisted of creating variables that described the screening process suggested by DDOT and the residents. It was determined that only properties meeting the following criteria would be considered in the scenario analysis: properties that are over 10 years old and have less GBA than 80% of the corresponding MOR (Scenario 3) or PUD (Scenario 4). Based on these criteria and block by block basis land use information, summary tables were created for adjusted GBA for existing (Scenario 1), potential (Scenario 2), MOR (Scenario 3), and PUD (Scenario 4) development possibilities. Control totals were verified at each step of the aggregation and formatting process to ensure the process was performed accurately.

The outcome of this process was a series of summary GBA tables by scenario, block, and major land use. The tables provide the existing, MOR or PUD GBA on a block by block basis and the sum for the corridor (depending on the scenario) for properties that meet the screening criteria. These tables are available in Appendix M. Exhibit 3-3 illustrates the steps applied to the CAMA data to develop the base land use “platform” and the additive land use identified for each scenario.

[6] In a few instances, where a higher-generating use such as a grocery store is planned to be built or expanded, specific rates for that land use were applied.

Exhibit 3-3: Land Use Database Process Steps



3.2.2 Assumptions

As shown in Exhibit 3-3 (page 68), the Study Team applied several key assumptions to CAMA data to develop the database for each scenario. The following section describes four major land use assumptions:

1. Land Use/Zoning
2. Residential Zone
3. Floor Area Ratio
4. Schools, Churches, and Non-residential Uses in R-1B Zones

1. Land Use/Zoning

In general, scenarios 2, 3 and 4 assume land use mixtures consistent with the existing land use mix. The land use mix was established for each property based on a variable in the CAMA database called "usecode". If the current land use is mixed development, the scenarios also assume mixed use development. For Scenario 2, if no detailed information from the prospective developers was known, the land use assumptions for properties identified were established based approximately on current zoning and adjusted based on the draft UWACS market analysis.

For cases of mixed use buildings such as the first floor being retail with upper levels as offices or residential, for future MOR or PUD estimates (Scenarios 3 and 4), ground level retail square footage is kept the same and density is adjusted for residential or office space. Furthermore, for MOR and PUD estimates, zonings usually have various lot occupancy limitations for residential units and different floor area ratios between residential and non-residential development. Future development size density was calculated within the zoning requirement.

2. Residential Zone

The Study Team used the number of dwelling units (DU) as the measure of development density for lots zoned R1 through R4. For zones R1 and R2, it is assumed that each lot is one (1) DU. Therefore, the number of dwelling units would not change whether the development is MOR or PUD. The number of dwelling units for zones R3 and R4 are calculated assuming an average land area for each unit at a minimum of 900 sq.ft. For example, if the lot size is 3,700 sq.ft. for zone R3 and R4, then the assumed number of MOR or PUD dwelling units will be four (4); however, if the lot size is 3,500 sq.ft., then the number of dwelling units would be three (3). This assumption generates the maximum number of dwelling units for a lot. This assumption might overstate the potential number of dwelling units because of varying lot shapes, setback requirements, and similar issues, but differences should not be significant within the overall parameters of the study.

3. Floor Area Ratio

For each zoning area, the Floor Area Ratio (FAR) limitations for residential and non-residential uses vary. The residential uses are normally restricted through development densities as noted above. The non-residential uses are restricted by a maximum FAR. Thus, the most intensive development of a property from the traffic point of view can be achieved by developing the maximum non-residential gross build area plus the remaining allowable area as residential space.

The Maximum FAR planning assumptions for each scenario are summarized in Exhibit 3-4. As mentioned above, additional restrictions apply for residential and non-residential developments within each zone.

Specific net to gross, or gross to net ratios are applied to particular land uses. Reflective of common areas such as lobbies, elevators, staircases and maintenance areas, the gross leasable area (GLA) for condos, apartments, and specialty retail is less than the gross building area (GBA). In order to achieve an average 1,000 sf per dwelling unit, square footage for condos and apartments is estimated to increase by 20 percent to accommodate common areas (with no change to the number of dwelling units assumed.)

ITE trip generation rates for most land uses are based on GBA, so no adjustment is needed. However, trip generation rates for specialty retail are based on GLA. If specialty retail information was received from developers, it is assumed to reflect GLA so no adjustment is necessary. When estimating MOR and PUD developable areas based on GBA, for specialty retail only, the assumption is made that GLA is 80 percent of GBA. For all other development, square footage is evaluated at 100 percent for trip generation.

Exhibit 3-4: Commercial and Residential Zones in the Study Area

Commercial Zones

Zone	Purpose	Scenario 1 FAR	Scenario 2 FAR	Scenario 3 FAR	Scenario 4 FAR
C-1	Neighborhood shopping	Current or UC*	Sc.1 + likely**	1.0 MOR	1.0 PUD
C-2-A	Community Business Center	Current or UC*	Sc.1 + likely**	2.5 MOR	3.0 PUD
C-2-B	Community Business Center	Current or UC*	Sc.1 + likely**	3.5 MOR	6.0 PUD
C-3-A	Major Business & Employment Ctr.	Current or UC*	Sc.1 + likely**	4.0 MOR	4.5 PUD
C-2-C	Community Business Center	Current or UC*	Sc.1 + likely**	6.0 MOR	6.0 PUD
C-R	Mixed Residential, Retail and Office	Current or UC*	Sc.1 + likely**	6.0 MOR	8.0 PUD

Residential Zones

Zone	Purpose	Scenario 1 FAR	Scenario 2 FAR	Scenario 3 FAR	Scenario 4 FAR
R-1-B	Single family	Current or UC*	Sc.1 + likely**	1 DU/ lot	1 DU/ lot
R-2	Single & semi-detached	Current or UC*	Sc.1 + likely**	1 DU/ lot	1 DU/ lot
R-3	Row houses & single family	Current or UC*	Sc.1 + likely**	1 DU/ 900 sf	1 DU/ 900 sf
R-4	Row houses & row conversions	Current or UC*	Sc.1 + likely**	1 DU/ 900 sf	1 DU/ 900 sf
R-5-A	Low density apartments	Current or UC*	Sc.1 + likely**	0.9 MOR	1.0 PUD
R-5-B	Moderate density apartments	Current or UC*	Sc.1 + likely**	1.8 MOR	3.0 PUD
R-5-D	Medium-high density apartments	Current or UC*	Sc.1 + likely**	3.5 MOR	4.5 PUD

*UC refers to buildings under construction or scheduled for construction
** "Likely" refers to high potential areas for PUD zoning and matter-of-right (MOR) development.

4. Schools, Churches and Non-residential Uses in R-1B Zones

No changes are made to institutional properties such as schools, churches, hospitals, clinics or public utilities. A minor expansion in enrollment from 800 to 850 students at Sidwell Friends School is included in the Report. Special attractors, such as the Performing Arts Center identified for St. Albans School, should be the subject of a separate study. Such facilities typically do not generate daily peak hour traffic, but may increase traffic for special events on an intermittent basis, sometimes in the peak, sometimes off-peak.

The new auto parking garages at the National Cathedral will eliminate overflow parking on neighborhood streets and on the Close. The National Cathedral does not propose to hire more staff for the Cathedral or the school because of the construction of the garages, based on discussion with knowledgeable staff. It is agreed that with the garage and the new light, traffic patterns for employees and volunteers will shift slightly from neighborhood streets and the Close to the new entrances, but will not affect overall traffic volumes in the area.

At Woodley Road, the potential light cycle modification for the tour buses should not result in a problem as long as this approach is actuated and calls in the signal phase only when a bus is exiting. Tours are conducted during off-peak hours, from 9:45 AM to 4:30 PM, thus the tourist traffic (bus and auto) should not have an impact on peak traffic.

The Cathedral has no current plans to plan for or move forward with a Conference Center. If at some point in the future a conference center were to become a priority for the Cathedral, a full traffic study would be required.

Exhibit 3-5 shows the total square footage and dwelling unit added for each scenario. Appendix M provides block by block basis square footage and dwelling unit data for each scenario.

Exhibit 3-5: Summary of Estimated Total Square Footage by Scenario

		Scenario 1	Scenario 2	Scenario 3	Scenario 4
Current Construction Projects (sq.ft.)		1,966,723	1,966,723	1,966,723	1,966,723
WACTS Area	290	910	3,488	4,875	2,631
	9600	288,749	1,519,900	1,885,700	1,739,700
	0	299,459	1,651,600	2,179,000	1,374,350
	WACTS Sub-total	**299,600**	**1,498,208**	**6,659,500**	**8,939,700**
Friendship Heights Addendum (sq.ft.)		0	4,127,924	5,084,797	5,084,797
South of WACTS Area (sq.ft.)		0	734,750	734,750	734,750
	Scenario Total	**2,266,323**	**8,327,605**	**14,445,770**	**16,725,970**

Note: Total was calculated assuming each dwelling unit at 1,000 sq.ft. The square footage is increased by 20% to accommodate common areas

The next chapter describes how the square footage and dwelling unit estimates for each scenario are accounted for in future traffic estimates.

4 FUTURE CONDITIONS

The Study Team conducted traffic impact analyses for the four different levels of development intensity hypothesized in the scenarios considered for year 2014. The following section describes the methodology and the future condition analysis results.

4.1 SCENARIO ANALYSIS METHODOLOGY

Using the land use database developed by the Study Team and described in section 3.2, the gross build area (GBA) and dwelling unit per block data was converted into the number of trips generated at the block level in the peak period (AM Peak, PM Peak and Saturday Peak). Considering that the trips estimated for Scenarios 1, 2, 3 and 4 are added to the existing traffic counts increased by the natural growth factor, it is necessary to identify the incremental GBA generated by the different levels of development intensity, not the total GBA. Therefore, for properties slated for redevelopment, it was necessary to subtract the adjusted existing GBA from the scenario totals before proceeding to multiply the new GBA by the trip generation rates.

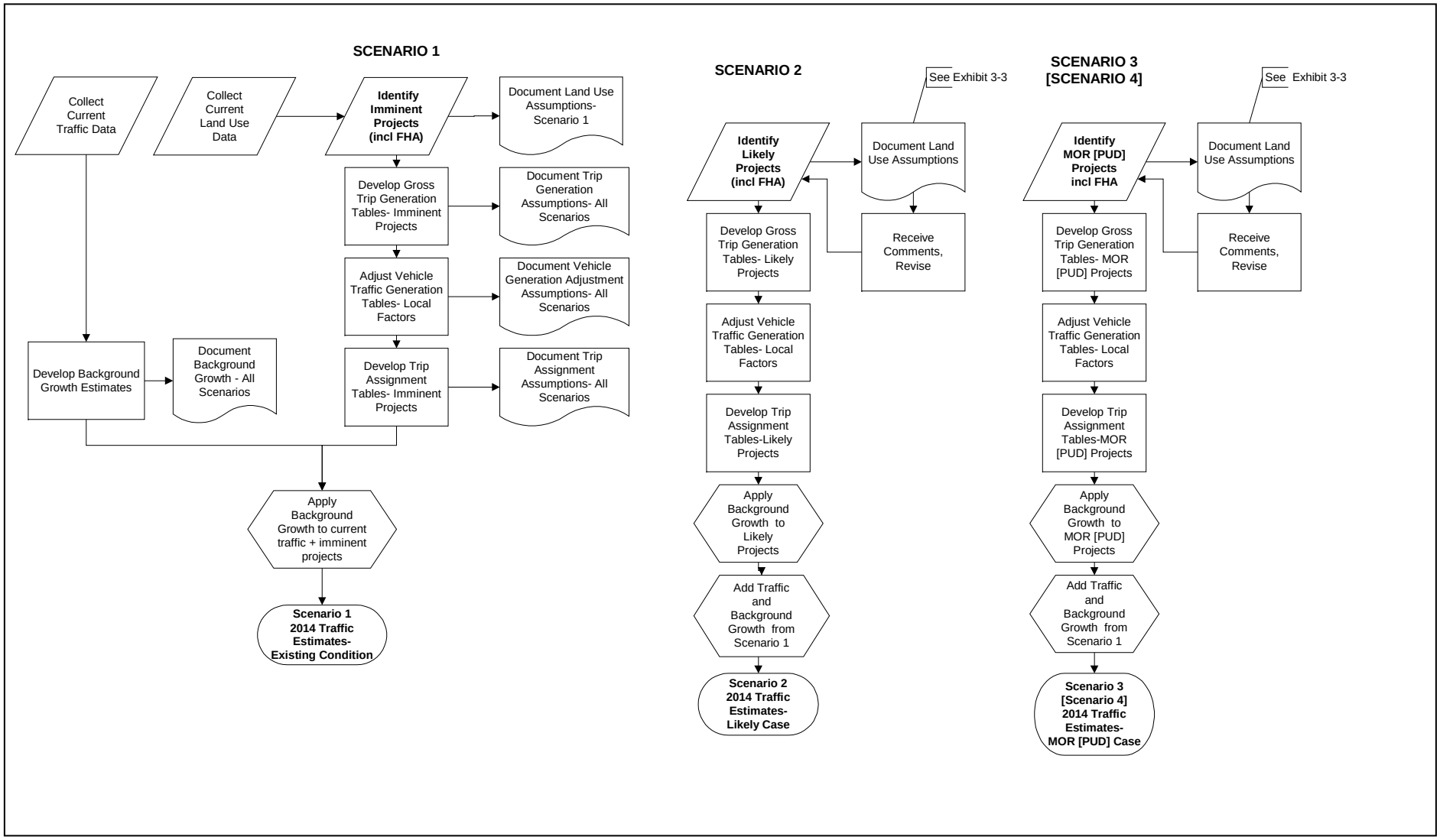
The trips rates vary based on land use. For example, separate trip rates exist for luxury condos, high-rise condos, low-rise condos/town-homes, apartments and high-rise apartments. The occupants of each of these residences have different socio-economic characteristics as well as life-styles that influence their trip making patterns. Therefore, each has a different trip rate. As described in section 3.2, all the housing units in the corridor were combined into residential uses. The most onerous trip rate, that of luxury condos, was applied to this combined category to generate the highest potential number of trips for non-specified new residential developments. The same procedure was followed for commercial and office land uses.

Trip tables were prepared by time period (e.g., AM peak, PM peak, and weekend), and by point of origin or final destination. Based on traffic counts collected, the study concluded that 62% of the trips made were southbound during AM peak hours. Therefore, 62% of the additional trips generated in the AM peak for new developments were assumed to travel southbound with 38 percent northbound. For PM peak hours, the north-south split was 55%-45%. After establishing the directional northbound / southbound traffic flow split in the corridor, the next step was to determine when vehicles would enter and leave Wisconsin Avenue. This was accomplished by considering the traffic counts taken at each of the signalized intersections along the corridor. It was assumed that the additional trips would follow the same pattern of travel that currently exists throughout the corridor. If currently at a given intersection 20% of the southbound traffic turns left, then 20% of total additional southbound traffic would be assigned to a left turn.

For the traffic attracted by the new developments, the process was conducted in reverse. The analysis started at the intersection closest to the development with the additional traffic attracted from the south (for example). To calculate the example, the proportion of the northbound traffic coming from the eastbound left movement in the previous intersection (say 30%) would be determined. Based on that information, it would then be assumed that 30% of the attracted additional traffic would be coming from the eastbound left turn at the previous intersection.

The methodology described above is illustrated in Exhibit 4-1, below.

Exhibit 4-1: Scenario Analysis Methodology



Natural Growth

As described in Scenario 1 definition (section 3.1), natural growth rate information was obtained from the Metropolitan Washington Council of Governments (MWCOG) regional model, Round 6.3 socioeconomic forecast database. The average annual growth rate for the Northwest Washington D.C. area between forecast year 2005 and 2025 for selected roadway sections ranged from 0.11% to 0.62% (Exhibit 4-2). This growth rate accounts for any known land use changes in the Washington D.C. metropolitan area and reflects regional growth as well as local growth.

Exhibit 4-2: Natural Growth Rate

ROADWAY SECTION	Estimated Average Daily Traffic 2005	Forecasted Average Daily Traffic 2025	Average Annual Growth Rate 2005-2025
Wisconsin Avenue, N.W. DC	64,466	65,892	0.11%
Nebraska Avenue, N.W. DC	43,623	46,256	0.29%
Massachusetts Avenue, N.W. DC	28,065	31,738	0.62%
Reno Road, N.W. DC	12,771	13,506	0.28%

Source: MWCOG Round 6.3 socioeconomic forecast database

4.2 DEVELOPMENT TRAFFIC FORECAST

The standard practice recommended by the Institute of Transportation Engineers (ITE) was followed to estimate the trips for each development scenario. The methodology begins with a base trip generation rate for a particular type of facility (e.g., mid-rise apartment complex or office), expressed in terms of an independent variable (e.g., number of dwelling units or gross square footage). The Study Team employed the trip rates developed by the ITE Trip Generation 7th Edition. The base rates are for the most part typical of suburban development, as evidenced by the source studies for the data. Therefore, base trip generation rates are typically adjusted upward or downward, based on specific local characteristics (e.g., a rural, town, small urban or large urban setting, and absence or presence and intensity of transit.).

These ITE base trip generation rates[7] were then multiplied by the appropriate independent variable (e.g., number of dwelling units or gross square footage). This base trip number for each type of facility was then reduced by a specific percentage. The trip reduction percentage was determined based on whether the facility was considered close to a Metrorail station (within ¼ mile) or more distant from the Metrorail station. The rationale and sources for the assumptions used follow.

> **Pass-by Trips- Commercial**: *10%.* Trip generation rates are obtained from observations and studies of facilities, with most observations occurring in suburban, dispersed settings. Some types of facilities invite opportunistic trips and "spur of the moment" decisions (e.g., diverting to

[7] Some residents have suggested using trip rates other than the ITE rates. Trips rates developed by ITE and by the Maryland-National Capital Park and Planning Commission (M-NCPPC) are applied to new developments in similar fashion, with both applying deductions for pass-by, diversion, and proximity to Metrorail stations. In most cases, for comparable land uses, the ITE rates are somewhat higher or significantly higher (double to almost triple the rates in some instances) than the Appendix C "Local Area Transportation Review Guideline", July 2004 rates established for Montgomery County Central Business Districts. Applying the Montgomery County rates would significantly reduce the trip generation for the corridor.

the doughnut or coffee shop, or stopping by the department store on the way home). These types of trips do not add to the volume of traffic on the roadway, as the basic origin-destination trip already exists. This type of pass-by activity is enhanced in compact urban settings such as the Wisconsin Avenue corridor in the WACTS study area, where several errands can easily be combined into a single stop due to the proximity of the service stores and the walkability of the community. This reduces the number of vehicle trips. ITE supports 10% as a conservative estimate for pass-by trips in general; some studies increase this factor to 20% to 30% for desirable, small-scale retail establishments. Typically, there is a greater concentration of commercial activity near Metrorail stations, which would in turn generate a greater number of pass-by trips than in areas farther from stations. However, in the sections of the Wisconsin Avenue corridor considered under the WACTS, commercial zones that could attract a significant number of pass-by trips are distributed along the corridor both near and far from the Metrorail stations.

Walking Trips- Related to mixed use development (internal capture): *10% close to a Metrorail station, 5% away from a Metrorail station*. Planned-unit and mixed-use developments typically combine retail uses on lower levels with residential or office uses on upper levels. This increases the "livability" of an area, with round-the-clock activity. It also reduces vehicle trips for residents or employees in the facility, as many trip purposes (e.g., errands, shopping, recreation, medical or dental visits, etc.) can be accommodated in one's own building, or close enough to walk rather than drive. In most settings, the highest percentage of walking trips is observed in the vicinity of Metrorail stations, the same is true in this case (10%). However, the Wisconsin Avenue section under study has many areas where commercial activity is concentrated; this is in addition to the frequent bus stops promotes for significant pedestrian activity away from the Metrorail station (5%).

Transit Trips- Related to Metrorail Service: *30% close to a Metrorail station, 20% away from a Metrorail station*. The most significant local factor affecting trip generation is the presence of high-quality transit service in the area. Two Metrorail stations, Tenleytown-AU and Friendship Heights Metrorail stations serve areas in the northern section of WACTS within easy five-minute walking distance. With extended service hours, high frequency of service, and high marks for safety and reliability, Metrorail clearly is an attractor. Further, persons who will pay a premium to live or establish an office or other facility near a Metro will have a higher propensity than normal to use Metro for everyday business and travel. A major research study that included data from the Washington region noted that proximity to stations has a major impact on modal split. "If the worker was coming from Washington, D.C., the transit modal share was 52 percent…The study also found a number of housing projects near suburban Metrorail stations where the transit modal splits exceeded 50 percent…for work trips." [8] Studies in other areas also support the finding that transit availability significantly reduces vehicle trips. The assumptions used for this study may therefore be deemed conservative: rather than a 50 percent reduction in vehicle trips associated with 50 percent transit use, the Study Team have assumed a 30 percent reduction in trips to/from a location close to a Metrorail station, and a 20 percent reduction for trips to/from a location farther away from a Metrorail station.

The specific reduction assumptions are summarized in Exhibit 4-3.

[8] Transit Cooperative Research Program, Research Results Digest, June 1995, Number 7, "An Evaluation of the Relationships Between Transit and Urban Form".

Exhibit 4-3: Summary Adjustment Factors for Trip Generation Rates

Categories	Within 0.25 Mile Distance from Metrorail Station	Outside of 0.25 Mile Distance from Metrorail Station with Bus Service
Trip Reductions		
Pass-by Trips - Commercial	10 %	10 %
Walking Trips	10 %	5 %
Transit – Commercial Trips	30 %	20 %
Trip Distribution		
As trips enter/leave developments	Varies	Varies
Once on the street network	According to trip counts	According to trip counts

After adjusting the total number of trips generated for parcels in each scenario, (by multiplying the trips generated by the trip reduction percentages), the trips are distributed on the street network. In order to perform this distribution, assumptions are made as to the trip patterns followed by the residents, clients and workers as they leave or enter the proposed developments. Once on the street network, it is assumed that they follow the trip patterns reflected by the traffic counts gathered at selected intersections in the study area. This procedure was described in section 4.1.

The final step is to aggregate the existing traffic increased by the natural growth rate and the additional trips generated by the increase in GBA from the new developments. Exhibits 4-4A through 4-4F show peak hour traffic volumes of all the intersections where detailed analyses were conducted, with the proposed developments described above. Appendix N provides the traffic forecast for each scenario on a block by block basis.

Exhibit 4-4A: 2014 Projected Future Traffic Volume for AM Peak Hour – Wisconsin Avenue Northbound

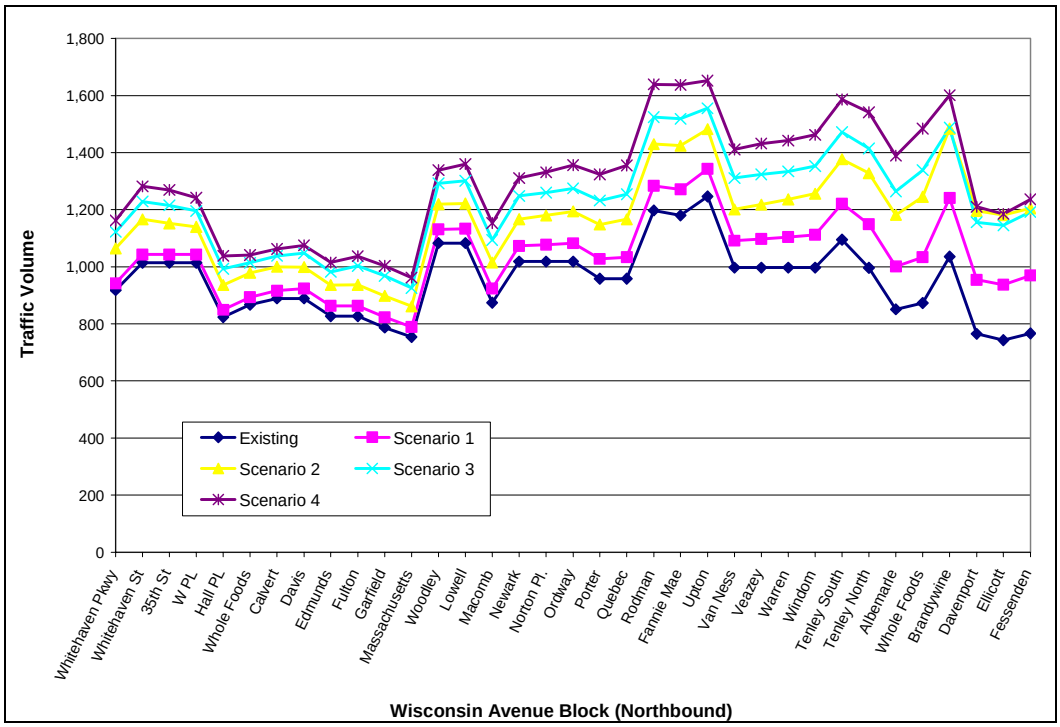


Exhibit 4-4B: 2014 Projected Future Traffic Volume for AM Peak Hour – Wisconsin Avenue Southbound

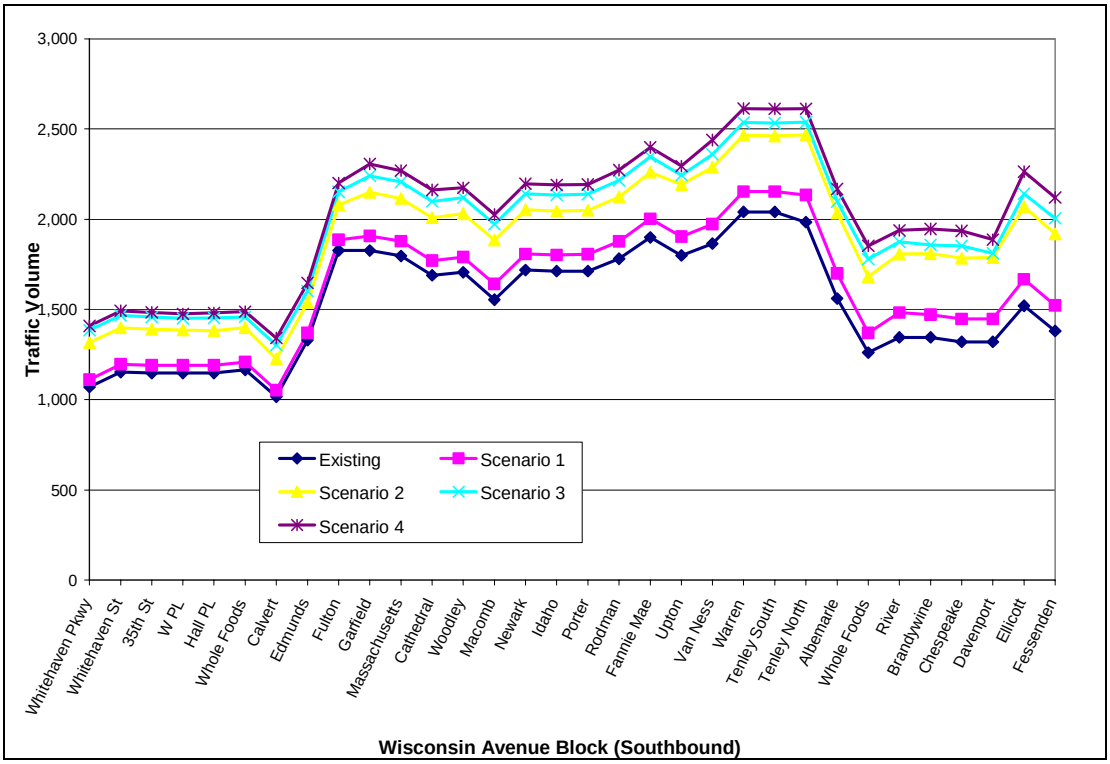


Exhibit 4-4C: 2014 Projected Future Traffic Volume for PM Peak Hour – Wisconsin Avenue Northbound

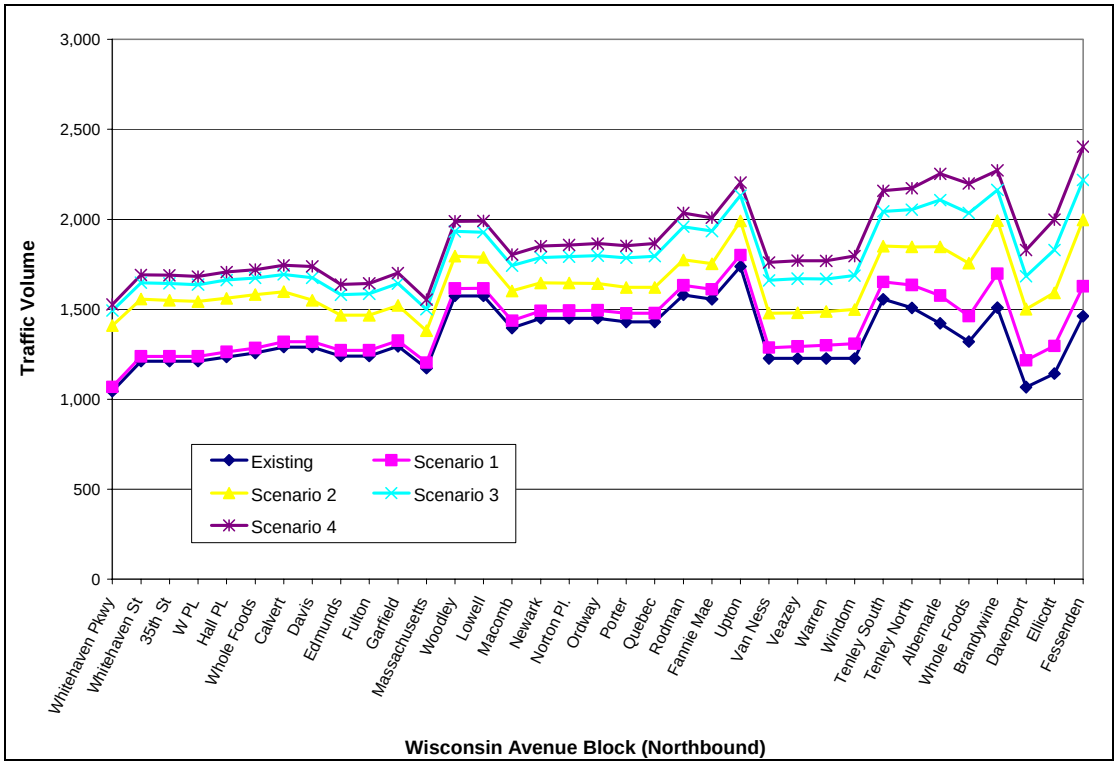


Exhibit 4-4D: 2014 Projected Future Traffic Volume for PM Peak Hour – Wisconsin Avenue Southbound

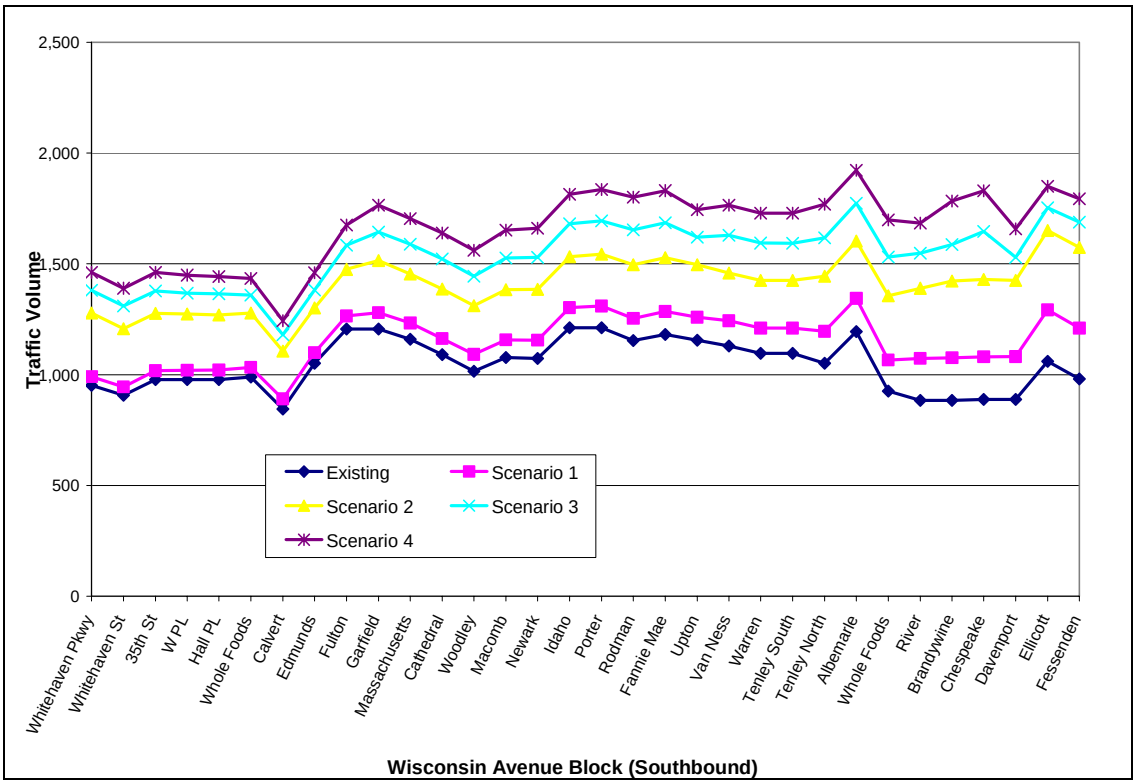


Exhibit 4-4E: 2014 Projected Future Traffic Volume for Saturday Mid-Peak Hour – Wisconsin Avenue Northbound

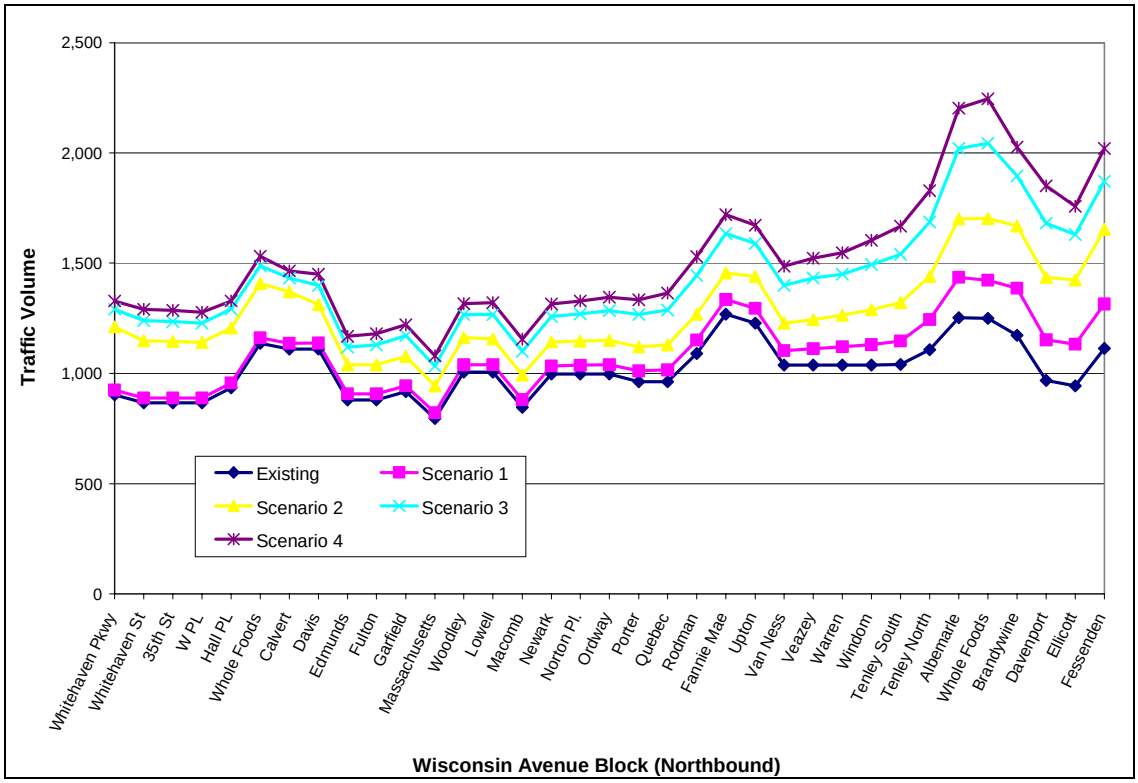
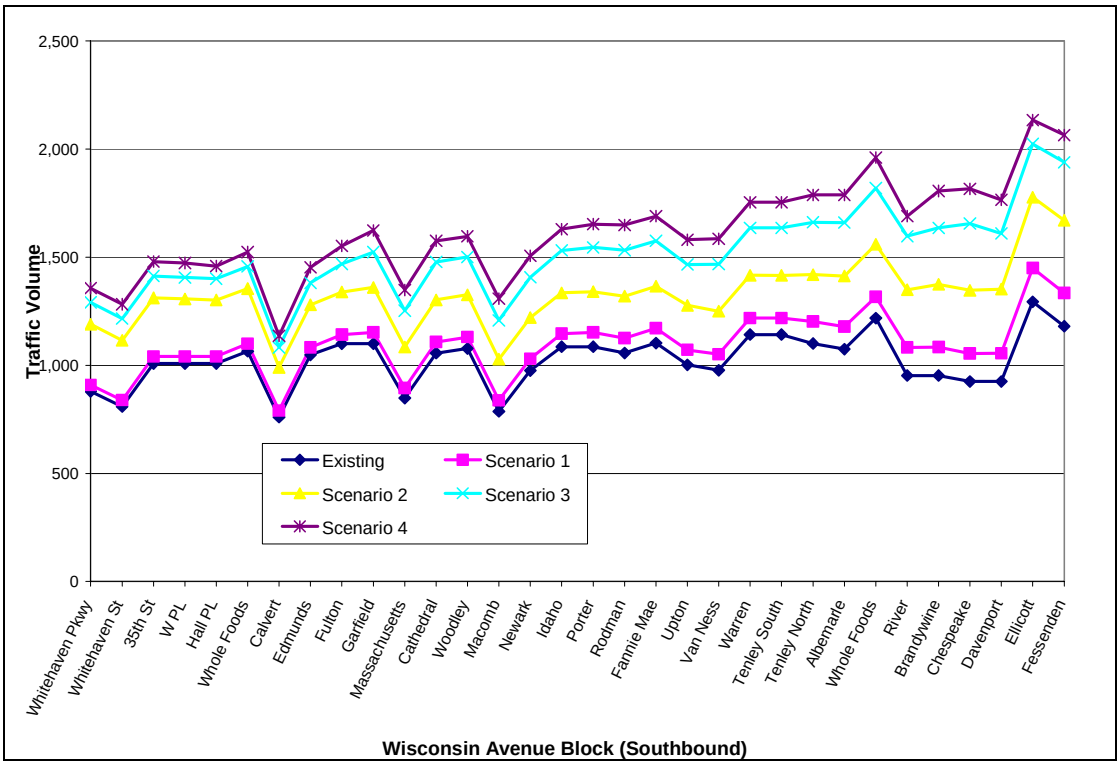


Exhibit 4-4F: 2014 Projected Future Traffic Volume for Saturday Mid-Peak Hour – Wisconsin Avenue Southbound



4.3 FUTURE LEVELS OF SERVICE

Future traffic conditions were analyzed using the same methodology employed to analyze the level of service under existing conditions.

4.3.1 Future Arterial Level of Service

The Study Team concludes that the level of development considered under Scenarios 1 and 2 can be managed, during weekday peak hours, by the existing infrastructure within the LOS set as the desired target. However, even with Scenarios 1 and 2, a longer delay will be experienced during Saturday mid-day peak hours because of heavy traffic flow on both travel directions and permitted parking on either sides. Exhibits 4-5A through 4-5C summarizes the LOS analysis at the corridor level.

Comparing Scenario 1 to Scenarios 3 and 4 demonstrates failure or near failure in the PM Peak and on Saturdays for the corridor as a whole. If the high-density development options depicted in Scenarios 3 and 4 are seriously contemplated, major improvement strategies will be required. Potential long-term lane use strategies are identified and discussed in Section 6.5. It is not anticipated that such strategies would be required within the ten-year time frame of the study.

Exhibit 4-5A: Future Wisconsin Avenue Arterial Level of Service – AM Peak

	Wisconsin Avenue Northbound (Whitehaven Pkwy. – Fessenden St.)	Wisconsin Avenue Southbound (Fessenden St. – Whitehaven Pkwy.)	Arterial LOS for Northbound	Arterial LOS for Southbound
Existing (2004)	13.5 mph	15.8 mph	D	C
Scenario 1	11.8 mph	14.0 mph	D	D
Scenario 2	11.2 mph	11.5 mph	E	D
Scenario 3	8.5 mph	9.2 mph	F	E
Scenario 4	7.6 mph	8.3 mph	F	E

Exhibit 4-5B: Future Wisconsin Avenue Arterial Level of Service – PM Peak

	Wisconsin Avenue Northbound (Whitehaven Pkwy. – Fessenden St.)	Wisconsin Avenue Southbound (Fessenden St. – Whitehaven Pkwy.)	Arterial LOS for Northbound	Arterial LOS for Southbound
Existing (2004)	15.8 mph	14.4 mph	C	C
Scenario 1	13.8 mph	13.6 mph	D	D
Scenario 2	11.7 mph	8.9 mph	D	E
Scenario 3	8.1 mph	5.0 mph	F	F
Scenario 4	6.7 mph	4.1 mph	F	F

Exhibit 4-5C: Future Wisconsin Avenue Arterial Level of Service - Saturday

	Wisconsin Avenue Northbound (Whitehaven Pkwy. – Fessenden St.)	Wisconsin Avenue Southbound (Fessenden St. – Whitehaven Pkwy.)	Arterial LOS for Northbound	Arterial LOS for Southbound
Existing (2004)	12.5 mph	12.5 mph	D	D
Scenario 1	10.4 mph	10.7 mph	E	E
Scenario 2	6.1 mph	7.2 mph	F	F
Scenario 3	4.4 mph	4.9 mph	F	F
Scenario 4	3.8 mph	4.0 mph	F	F

4.3.2 Intersection Level of Service

Future traffic conditions were analyzed using the same methodology employed to evaluate the level of service under existing conditions. Exhibits 4-6A through 4-6C show the results from the future traffic analysis for all four (4) scenarios. Under Scenario 1, LOS remains C or better during AM peak hours except at the intersection of Wisconsin Avenue and Garfield Street. During AM peak and Saturday mid-day peak hours, the intersections with LOS D or worse in the "existing condition" continue to deteriorate. With the increasing development density (from Scenario 2 to Scenario 4) compared to Scenario 1: baseline development, the LOS will deteriorate over time because the traffic volumes increase. Exhibit 4-7 (page 85) shows a simple tally of the number of intersections at D or below. It illustrates the change as development increases for each time period. The number of intersections failing (LOS F) for each scenario increases from 0 (existing), to 2 (Scenario 1), to 5 (Scenario 2), to 7 (Scenario 3), to 10 (Scenario 4).

As described in section 2.6.2, four (4) unsignalized intersections were evaluated using the Highway Capacity Manual Unsignalized Intersection Capacity Analysis. The future LOS analysis shows that due to the expected increase in traffic flow along 34th Street, drivers on Newark Street at the 34th Street/Newark Street intersection will experience longer delays during weekday and Saturday peak hours. The longest delay is experienced in the AM peak hour, averaging one minute for eastbound Newark Street. Delay time is also relatively long at the 37th Street/Tunlaw Street four-way stop intersection during the PM peak hour. Traffic flow is heavy for both roadways contributing to average delay of 46 seconds. The worst delay is expected for drivers from 38th Street entering Massachusetts Avenue during PM peak hours. The increased traffic flow along Massachusetts Avenue in future years will worsen the condition. The average delay at 38th Street at the intersection of 38th Street/Massachusetts Avenue is expected to reach over two minutes.

Exhibit 4-6A: 2014 Future Level of Service Forecast - AM Peak Hour

Intersections	**Existing LOS**	**2014 LOS**			
Signalized Intersections		**Scenario 1**	**Scenario 2**	**Scenario 3**	**Scenario 4**
Wisconsin Ave. @ Fessenden St.	B	C	C	C	**D**
Wisconsin Ave. @ Ellicott St.	A	B	A	B	B
Wisconsin Ave. @ Davenport St.	A	A	A	A	A
Wisconsin Ave. @ Brandywine St.	B	B	C	C	C
Wisconsin Ave. @ Whole Foods Ent. (Tenleytown)	A	A	A	A	A
Wisconsin Ave. @ Albemarle St.	B	B	C	C	C
Wisconsin Ave. @ Tenley Circle North	C	C	**D**	**E**	**E**
Wisconsin Ave. @ Tenley Circle South	B	B	B	B	B
Wisconsin Ave. @ Van Ness St.	B	B	C	C	C
Wisconsin Ave. @ Upton St.	**D**	**D**	**E**	**E**	**F**
Wisconsin Ave. @ Fannie Mae	B	C	C	**F**	**F**
Wisconsin Ave. @ Rodman St.	A	A	A	B	B
Wisconsin Ave. @ Porter St.	C	C	C	C	C
Wisconsin Ave. @ Newark St.	B	B	B	C	C
Wisconsin Ave. @ Macomb St.	B	B	B	B	B
Wisconsin Ave. @ Woodley Rd.	B	B	C	C	**D**
Wisconsin Ave. @ Cathedral Ave.	**D**	**D**	**E**	**F**	**F**
Wisconsin Ave. @ Massachusetts Ave.	C	C	**D**	**D**	**E**
Wisconsin Ave. @ Garfield St.	**D**	**E**	**E**	**F**	**F**
Wisconsin Ave. @ Edmunds St.	A	A	A	A	A
Wisconsin Ave. @ Calvert St.	C	C	**E**	**E**	**F**
Wisconsin Ave. @ Whole Foods Ent. (Glover Park)	A	A	A	B	B
Wisconsin Ave. @ Hall St.	A	A	A	A	A
Wisconsin Ave. @ Whitehaven Sts	A	A	A	A	B
Wisconsin Ave. @ Whitehaven Pkwy.	B	B	B	B	B
River Rd. @ 42nd St. & Brandywine St.	C	C	C	**F**	**F**
Nebraska Ave. @ Albemarle St.	B	B	B	B	B
River Rd. @ Chesapeake St.	B	C	C	B	C
Albemarle St. @ 42nd St.	B	B	B	B	B
Van Ness St. @ Nebraska Ave.	B	B	B	B	B
34th St. @ Garfield St.	C	C	C	C	C
34th St. @ Cleveland Ave.	B	B	B	B	B
37th St. @ Calvert St.	C	C	C	C	C
Unsignalized Intersections					
Albemarle St. @ *Fort Dr. & 40th St.** (east/west)	C/C	C/C	C/C	C/C	C/C
34th St. @ *Newark St.** (east/west)	**D/E**	**E/F**	**E/F**	**E/F**	**E/F**
37th St. @ Tunlaw St. (ALL WAY STOP)	**C**	**D**	**D**	**D**	**D**
Massachusetts Ave. @ *38th St.**	C	**C**	**C**	**C**	**C**

* Levels of service for unsignalized intersections were measured based on the Highway Capacity Manual Unsignalized Intersection Capacity Analysis. The delay is for the minor street approach only which are shown in italics.

Exhibit 4-6B: 2014 Future Level of Service Forecast - PM Peak Hour

Intersections	**Existing LOS**	**2014 LOS**			
Signalized Intersections		**Scenario 1**	**Scenario 2**	**Scenario 3**	**Scenario 4**
Wisconsin Ave. @ Fessenden St.	B	B	**D**	**E**	**F**
Wisconsin Ave. @ Ellicott St.	A	A	B	B	C
Wisconsin Ave. @ Davenport St.	B	B	B	B	**D**
Wisconsin Ave. @ Brandywine St.	B	B	D	**F**	**F**
Wisconsin Ave. @ Whole Foods Ent. (Tenleytown)	A	A	A	A	A
Wisconsin Ave. @ Albemarle St.	B	B	**D**	**F**	**F**
Wisconsin Ave. @ Tenley Circle North	C	B	C	C	C
Wisconsin Ave. @ Tenley Circle South	B	B	B	C	**D**
Wisconsin Ave. @ Van Ness St.	C	C	C	**E**	**E**
Wisconsin Ave. @ Upton St.	B	B	C	**E**	**F**
Wisconsin Ave. @ Fannie Mae	B	B	**E**	**F**	**F**
Wisconsin Ave. @ Rodman St.	A	A	A	A	A
Wisconsin Ave. @ Porter St.	B	B	C	C	**D**
Wisconsin Ave. @ Newark St.	B	B	B	C	**E**
Wisconsin Ave. @ Macomb St.	B	B	C	**F**	**F**
Wisconsin Ave. @ Woodley Rd.	C	C	C	**D**	**D**
Wisconsin Ave. @ Cathedral Ave.	C	D	C	**F**	**F**
Wisconsin Ave. @ Massachusetts Ave.	C	C	C	**D**	**E**
Wisconsin Ave. @ Garfield St.	C	D	**E**	**E**	**F**
Wisconsin Ave. @ Edmunds St.	A	A	A	A	A
Wisconsin Ave. @ Calvert St.	B	B	D	**D**	**E**
Wisconsin Ave. @ Whole Foods Ent. (Glover Park)	B	C	**E**	**F**	**F**
Wisconsin Ave. @ Hall St.	A	A	A	A	A
Wisconsin Ave. @ Whitehaven Sts	A	A	A	A	A
Wisconsin Ave. @ Whitehaven Pkwy.	B	B	B	B	B
River Rd. @ 42nd St. & Brandywine St.	B	C	C	C	C
Nebraska Ave. @ Albemarle St.	B	B	B	B	B
River Rd. @ Chesapeake St.	A	B	B	B	B
Albemarle St. @ 42nd St.	B	B	B	B	B
Van Ness St. @ Nebraska Ave.	B	C	C	C	C
34th St. @ Garfield St.	B	C	C	C	C
34th St. @ Cleveland Ave.	B	B	B	B	B
37th St. @ Calvert St.	C	C	C	C	C
Unsignalized Intersections					
Albemarle St. @ *Fort Dr. & 40th St.** (east/west)	C/**D**	C/**D**	C/**D**	C/**D**	C/**D**
34th St. @ *Newark St.** (east/west)	**D/D**	**D/E**	**D/E**	**D/E**	**D/E**
37th St. @ Tunlaw St. (ALL WAY STOP)	**D**	**E**	**E**	**E**	**E**
Massachusetts Ave. @ *38th St.**	**E**	**F**	**F**	**F**	**F**

* Levels of service for unsignalized intersections were measured based on the Highway Capacity Manual Unsignalized Intersection Capacity Analysis. The delay is for the minor street approach only which are shown in italics.

Exhibit 4-6C: 2014 Future Level of Service Forecast – Saturday Mid-day Hour

Intersections	**Existing LOS**	**2014 LOS**			
Signalized Intersections		**Scenario 1**	**Scenario 2**	**Scenario 3**	**Scenario 4**
Wisconsin Ave. @ Fessenden St.	**D**	**F**	**F**	**F**	**F**
Wisconsin Ave. @ Ellicott St.	C	C	D	**E**	**F**
Wisconsin Ave. @ Davenport St.	B	B	C	**D**	**E**
Wisconsin Ave. @ Brandywine St.	C	C	**D**	**E**	**E**
Wisconsin Ave. @ Whole Foods Ent. (Tenleytown)	A	A	C	**D**	**F**
Wisconsin Ave. @ Albemarle St.	**E**	**F**	**F**	**F**	**F**
Wisconsin Ave. @ Tenley Circle North	C	B	C	**D**	**D**
Wisconsin Ave. @ Tenley Circle South	B	B	B	B	B
Wisconsin Ave. @ Van Ness St.	C	C	C	C	**D**
Wisconsin Ave. @ Upton St.	C	C	**E**	**F**	**F**
Wisconsin Ave. @ Fannie Mae	C	C	**F**	**F**	**F**
Wisconsin Ave. @ Rodman St.	A	A	A	A	A
Wisconsin Ave. @ Porter St.	B	B	C	**E**	**F**
Wisconsin Ave. @ Newark St.	B	B	B	**E**	**E**
Wisconsin Ave. @ Macomb St.	A	B	A	**D**	**E**
Wisconsin Ave. @ Woodley Rd.	B	B	B	C	**D**
Wisconsin Ave. @ Cathedral Ave.	B	**D**	**D**	**F**	**F**
Wisconsin Ave. @ Massachusetts Ave.	A	B	B	B	B
Wisconsin Ave. @ Garfield St.	C	C	C	C	**D**
Wisconsin Ave. @ Edmunds St.	A	A	A	A	A
Wisconsin Ave. @ Calvert St.	**D**	**D**	**F**	**F**	**F**
Wisconsin Ave. @ Whole Foods Ent. (Glover Park)	C	C	**F**	**F**	**F**
Wisconsin Ave. @ Hall St.	A	A	A	A	A
Wisconsin Ave. @ Whitehaven Sts	A	A	A	A	A
Wisconsin Ave. @ Whitehaven Pkwy.	A	A	B	C	**D**
River Rd. @ 42nd St. & Brandywine St.	B	C	C	C	C
Nebraska Ave. @ Albemarle St.	B	B	B	B	B
River Rd. @ Chesapeake St.	A	A	A	A	A
Albemarle St. @ 42nd St.	B	B	B	B	B
Van Ness St. @ Nebraska Ave.	B	B	B	B	B
34th St. @ Garfield St.	B	C	C	C	C
34th St. @ Cleveland Ave.	B	B	B	B	B
37th St. @ Calvert St.	C	C	C	C	C
Unsignalized Intersections					
Albemarle St. @ *Fort Dr. & 40th St.** (east/west)	B/C	B/C	B/C	B/C	B/C
34th St. @ *Newark St.** (east/west)	C/**D**	**D/D**	**D/D**	**D/D**	**D/D**
37th St. @ Tunlaw St. (ALL WAY STOP)	B	B	B	B	B
Massachusetts Ave. @ *38th St.**	B	C	C	C	C

* Levels of service for unsignalized intersections were measured based on the Highway Capacity Manual Unsignalized Intersection Capacity Analysis. The delay is for the minor street approach only which are shown in italics.

Exhibit 4-7: Summary of Intersections with LOS Below D by Scenario

	Existing	Scenario 1	Scenario 2	Scenario 3	Scenario 4
LOS D					
AM Peak	3	2	2	1	2
PM Peak	0	0	4	3	3
Saturday Mid-day	2	2	3	3	5
LOS E					
AM Peak	0	1	4	3	2
PM Peak	0	0	3	4	4
Saturday Mid-day	1	0	1	4	4
LOS F					
AM Peak	0	0	0	4	6
PM Peak	0	0	0	6	9
Saturday Mid-day	0	2	5	7	10

5 PROGRAMMED IMPROVEMENTS

There are several scheduled roadway improvements in the WACTS area that are currently underway or ongoing from the District of Columbia Department of Transportation (DDOT). Additionally, two (2) engineering design/streetscape projects and two (2) transportation planning projects were conducted within the WACTS study area and in the vicinity: Reconstruction of Nebraska Avenue N.W. – 41st Street to Tenley Circle (2004), The Georgetown Project (ongoing), Upton Street Improvement (2004) and Friendship Heights Transportation Study (2003). Details are as follows:

- Reconstruction of Nebraska Avenue N.W. project started the construction in spring of 2005.
- The Georgetown project, a joint effort by the DDOT and utility companies, is to provide a major upgrade of Georgetown's underground utility infrastructure and the streetscape. DDOT completed the resurfacing of Wisconsin Avenue from M Street to P Street and streetscape work from M Street to Q Street. Currently, DDOT is finishing up traffic signal manholes and streetlight conduit infrastructure work and will complete the remaining streetscape work between Q Street and Reservoir Street.
- Implementation of improvements recommended in the Upton Street Improvements and Friendship Heights Transportation Study will be gradually implemented based on DDOT funding availability.

Additionally, the Maryland - National Capital Park & Planning Commission (M-NCPPC) has a set of transportation improvement requirements to be accomplished in tandem with proposed developments in the Maryland portion of Friendship Heights community. These will affect the operation of the Wisconsin Avenue corridor. More details are provided in section 5.2.

5.1 ONGOING DDOT PROJECTS

As part of DDOT's ongoing effort to improve roadways in Washington DC and as part of Wards 3 and 4 Roadway Improvement Project, Wisconsin Avenue and selected side streets near the WACTS study area have been under construction or will be resurfaced or reconstructed. The following projects are identified in DDOT website: "Current Project" and "Budgeted Project" (marked with an *) and in the Wards 3 and 4 Roadway Improvement Project (marked as **):

On-going Projects

- Wisconsin Avenue from Veazey Street to Tenley Circle North (resurfacing)*
- Wisconsin Avenue from 41st Street to Jenifer Street (resurfacing)*
- Ellicott Street from 41st Street to 42nd Street (resurfacing)**
- Woodley Road from Cathedral Avenue to 29th Street (resurfacing)**
- 36th Street from Macomb Street to Porter Street (reconstruction)**
- 36th Place from Garfield Street to Davis Street (upgrading)**

Scheduled Projects

- 37th Street from Van Ness Street to Veazey Street (regular pavement cover)*
- 38th Street from Albemarle Street to Chesapeake Street (regular pavement cover work)*
- Ellicott Street from 43rd Place to 44th Street (regular pavement cover work)*

Additionally, DDOT began implementing a citywide pedestrian countdown system. Final implementation is scheduled to be completed by Spring 2005. This advises pedestrians on the remaining time available to cross street and tells drivers how soon the signal will switch. There have been general positive responses from DC residents with this improvement.

5.2 TRANSPORTATION IMPROVEMENTS IN FRIENDSHIP HEIGHTS IN MONTGOMERY COUNTY

Through discussions with the Transportation Planning Division of the M-NCPPC that, the Study Team learned that the M-NCPPC requires the following transportation improvements be made prior to the approval of the development plans of GEICO, Hecht's and the Chevy Chase Center in the Friendship Heights area in Maryland:

The following lists are from a *Memorandum*, dated April 3, 2003, from the Transportation Planning Division to the Development Review Division of the M-NCPPC regarding the Preliminary and Project Plan for the Hecht's development. This list was reconfirmed by M-NCPPC in March 2005. The study-related improvements were selected from the *Memorandum* for this report. Please note that all developments such as the Chevy Chase Center development and GEICO also have to meet the requirements imposed by the M-NCPPC.

1. Maintain a 120-foot right-of-way for Wisconsin Avenue
2. Maintain a 120-foot right-of-way for Western Avenue, including a 25-foot truncation at Wisconsin Avenue
3. Provide separate left turn lane along eastbound and WB Western Avenue at River Road by restriping the existing lane designation and change the traffic signal phasing to provide concurrent signal phasing along Western Avenue
4. Restripe the existing southbound Friendship Boulevard approach to the Western Avenue/Jenifer Street intersection within the existing curbs from the existing one left turn lane and one through/right lane to one left turn lane, one through lane, and one through/right lane. A new signal phasing is needed at this intersection to provide split phasing for Friendship Boulevard and Jenifer Street.
5. The applicant shall join the Friendship Heights Transportation Management Organization and enter into a Traffic Mitigation Agreement with M-NCPPC and DPQT to assist in attaining the objectives of the Transportation Management District, including making a best effort to achieve and maintain a non-auto driver mode share of 39 percent of employees. The Traffic Mitigation Agreement shall be included in the Site Plan Enforcement Agreement for the proposed development.
6. Consensus was reached to provide a new landscaped median on Wisconsin Avenue that would extend from Willard Avenue to Western Avenue where a new left turn lane would be provided.

The above improvement recommendations by the M-NCPPC will directly impact the Friendship Heights area, such that improved traffic movement on Western Avenue and Wisconsin Avenue will enhance traffic flow on Wisconsin Avenue. They will also help reduce cut-through traffic using local streets in the Friendship Heights area, especially during peak periods.

6 ISSUES AND IMPROVEMENT RECOMMENDATIONS

The Study Team compiled a comprehensive list of generic transportation issues to be considered for the study area. Area residents were asked to identify specific instances and sites of concern during public meetings held in October 2004 and January 2005. The meetings were followed by field investigations, analysis and assessments of existing conditions. The Study Team then developed and discussed the preliminary improvements recommendations with area residents. The following are the Study Team's recommendations to improve safety and transportation operations in the study area.

The following section describes the various traffic issues which have been identified on the corridor as a whole, as well as specific issues identified at critical roadway segments and at key intersections. For each issue identified, alternative recommendations have been suggested to improve traffic operations safety, and address other concerns followed by a brief explanation or the rational for the recommendation. Each subsection of the chapter is organized as follows:

- Issues: states the concern, problem or need for improvement
- Recommended Short-Term Improvement(s): various solutions that could potentially address the issues and may be implemented within 12 months. This section includes a description of all the improvement alternatives considered in the evaluation. Based on the evaluation of the alternatives, some of the preliminary improvements may not be recommended for actual implementation.
- Recommended Long-Term Improvement(s): various solutions that could potentially address the issues, but the implementation would generally take longer than 12 months but less than 10 years.
- Evaluation(s): analysis of recommendations.

The following sections first discuss the Wisconsin Avenue corridor as a whole. Then, Wisconsin Avenue is divided into three segments with detail recommendations in each segment, followed by discussions of the 12 study intersections not on Wisconsin Avenue.

6.1 WISCONSIN AVENUE CORRIDOR (AS A WHOLE)

Issues:

Traffic

- Left turning vehicles create significant capacity reduction and safety risks in the traffic stream, especially during the peak hours.
- Poorly maintained pavement markings for safe and efficient movement of vehicles and pedestrians.
- Some signals would be more efficient with green time adjustments or phasing revisions.
- Capacity constraints result in undesirable delays and queues at certain intersections.

Safety

- One intersection (at Calvert Street) had a record of a high number of accidents.
- Many signs exist, but some are confusing.
- High pedestrian activity is evident at some of the intersections.
- Excessive vehicle speed was observed in certain segment of the corridor.
- Speed limit signs are present on many segments, but their visibility is sometimes obscured by uncontrolled vegetation and/or less than ideal placement.

Parking

- Some parking limit signs are confusing.
- Directional peak hour flows rely on parking prohibitions (SB in the AM peak hours and NB in the PM peak hours). Occasionally, vehicles are illegally parked and disrupt the traffic flow.

General Short Term Improvement(s):

- Adjust signal timings to optimize allocation of green time for the current traffic flows.
- Change signal phasing to improve capacity where warranted.
- Where warranted, provide advance signal phase to clear left turning traffic from the left lane.
- Monitor and enforce the posted speed limits.
- Provide consistent location of speed limit signs, preferably just downstream from each intersection.
- Provide adequate pavement markings for crosswalks, stop lines, lane lines, and lane use designation. Due to heavy traffic volumes, markings need to be renewed often.
- Restripe pedestrian crosswalks to current DDOT standards.
- Install parking stall striping to define parking limits.
- Provide adequate signage, including warning and regulatory signs as well as directional signing.
- Identify locations where turn restrictions are needed and install turn restriction signage. (e.g. No Turn on Red, No Left Turn in peak hour)
- Replace faded signs along the corridor.
- Install “School Zone Ahead” signs in areas close to schools. (e.g. Whitehaven Parkway/ 35th Street Intersection)
- Reconstruct all non-conforming wheel chair ramps to current ADA and DDOT standards.
- Relocate improperly placed wheel chair ramps.
- Install signal mast arms to help improve signal visibility and provide uniform signal locations along the corridor. Mast arm brackets 8 feet in length can be installed on existing poles without modifying the foundations.
- Clear overgrown vegetation to improve visibility of signs and signals.
- Adjust parking ban restriction times if warranted.

General Long Term Improvement(s):

- Provide efficient coordination of closely spaced intersections.
- Provide signal actuation systems to reduce unnecessary stops and delays in the arterial flow and to optimize the allocation of green time.
- Install semi-actuated traffic signal systems at certain side street/ drive entrance intersections.
- Install traffic signal detection equipment on side streets to permit semi-actuated signal operations. Use of video detection equipment would reduce the maintenance associated with loop detection installed in the pavement.
- Install pedestrian push buttons to actuate side street signal phase at semi-actuated signal systems.
- Install pedestrian count-down signals in high pedestrian activity intersections. Since the initiation of this study, DDOT has already installed these at many intersections. This improvement program should be continued for the remaining intersections.
- Reconstruct curb radius at intersections to balance the need for providing improved vehicular turning movements onto side streets vs. the need to provide safe pedestrian crossings.
- Discontinue/close/reduce the wide pavement area at certain side streets to Wisconsin Avenue.
- Wherever possible, require new curb cuts and relocate curb cuts onto side streets to minimize the number of conflict points on the arterial road.
- Repave segments of the roadway surface at particular intersections to improve vehicular flow.
- Convert side/intersecting streets to one-way traffic flow. (e.g., reconstruct 42nd Street/ Emory Place/ Wisconsin Avenue intersection to allow one way movement WB).
- Consider the relocation of bus stops from the near side of an intersection to the far side of the intersection to improve traffic flow.
- Consider bus turn-out lanes where there is high demand and where space is available.
- Install internally illuminated signs to reinforce turn prohibitions, especially where turn restrictions are limited to certain hours.
- Install additional street lighting along the corridor where warranted.
- Install additional streetscaping features along the corridor. (e.g. additional trees between the sidewalk and the roadway)
- Reconfigure/realign intersection geometry to improve safety and capacity.

The goals for the Wisconsin Avenue corridor are to enhance safety, increase mobility, and reduce congestion. The following section provides the types of improvements needed along the corridor.

6.2 WISCONSIN AVENUE ROADWAY SEGMENTS

6.2.1 Fessenden Street to Tenley Circle

Issue(s):

- Four travel lanes are narrow (10 foot wide) and additional two lanes on either side are alternating parking/ travel lanes.
- A single left turning vehicle can block the left lane of travel and can cause the drivers following behind to switch lanes.
- Non-actuated traffic signals located at low-volume side streets cause unnecessary interruptions in the heavy arterial flow on Wisconsin Avenue.
- Signals are closely placed at Tenley Circle.
- A steep grade between Ellicott Street and Brandywine Street requires additional accelerating and decelerating.
- Some of sign posts are twisted.
- The corridor has numerous bus stops and bus traffic is heavy along the roadway.
- Signal placement is not consistent. Some locations have mast arms, others do not.
- Heavy pedestrian traffic crossing four/six lanes of high-speed traffic creates more potential for unsafe conditions.
- Some lane markings are faded and missing.
- Wheel chair ramps do not conform to ADA and DDOT standards.
- Some pedestrian crosswalk markings are faded.
- Turning vehicle volumes are high at certain locations.
- Pavement condition is poor in some isolated locations.

Recommended Short Term Improvement(s):

See Exhibits 6-1 through 6-3 for the discussion below.

- Adjust signal timings and phasing to provide sufficient green time for the arterial flow and reduce the green time for the side streets.
  - Fessenden Street,
  - Brandywine Street,
  - Albemarle Street, and
  - Tenley Circle North.
- Provide improved pavement markings to assist in proper lane utilization:
  - Fessenden Street WB and EB,
  - Brandywine Street WB, and
  - Albemarle Street EB.
- Provide consistent placement and legend of turn prohibition signing.
- Establish parking limits with “L” striping on the:
  - West leg of Fessenden Street,
  - West leg of Ellicott Street
  - East leg of Davenport Street,
  - East leg of Brandywine Street,
  - West leg of Brandywine Street, and
  - West leg of Albemarle Street.

- Restripe pedestrian crosswalks across Wisconsin Avenue to current DDOT standards at the following locations:
  - Fessenden Street,
  - Davenport Street,
  - Brandywine Street,
  - River Road,
  - Whole Foods entrance in Tenleytown,
  - Albemarle Street, and
  - Tenley Circle.
- Install signal Mast arms along Wisconsin Avenue at:
  - Fessenden Street,
  - Davenport Street,
  - Brandywine Street,
  - Whole Foods entrance in Tenleytown,
  - Albemarle Street,
  - Tenley Circle NB, and
  - Tenley Circle SB.
- Replace faded signs at:
  - "No Parking Anytime" on WB Fessenden Street,
  - "No Parking Anytime" on EB Fessenden Street,
  - "2 Hour Parking" on NB 42nd Street, and
  - "No Standing Anytime" on Albemarle Street.
- Install speed limit signs at:
  - North of Fessenden Street. – NB Wisconsin Avenue,
  - South of Fessenden Street. – SB Wisconsin Avenue,
  - North of Davenport Street. – NB Wisconsin Avenue,
  - South of Davenport Street. – SB Wisconsin Avenue,
  - North of Brandywine Street. – NB Wisconsin Avenue,
  - South of Brandywine Street. – SB Wisconsin Avenue, and
  - South of Albemarle Street. – SB Wisconsin Avenue.
- Install graphical lane use signs at:
  - WB Fessenden Street,
  - EB Fessenden Street, and
  - EB Albemarle Street.
- Install new "No Parking" to corner signs on:
  - West leg of Fessenden Street,
  - West leg of Ellicott Street,
  - East leg of Davenport Street (2 locations),
  - East leg of Brandywine Street (2 locations),
  - West leg of Brandywine Street,
  - In front of Whole Food (2 locations), and
  - West leg of Albemarle Street.
- Restripe worn stop bars at all intersections.

Recommended Long Term Improvement(s):

- Install semi-actuated traffic signal systems for traffic signal systems at the low-volume side street intersections that meet the warrants in the Uniform Manual of Traffic Control Devices:
  - At Davenport Street, and
  - For the left turn lanes at Brandywine Street.
- Install pedestrian actuation equipment to allow safe crossing of Wisconsin Avenue at intersections with semi-actuated traffic signal systems.
- Provide internally illuminated signs to actively display turn prohibitions during restricted hours on NB and SB Wisconsin Avenue at Albemarle Street.
- Install pedestrian count down signals across the Whole Foods entrance in Tenleytown.
- Reconstruct wheel chair ramps to current ADA and DDOT standards at the NE quadrant at Brandywine Street and Wisconsin Avenue.
- Repave deteriorated pavement section on WB and EB Ellicott Streets.
- Modify the curbing layout at the intersection of Wisconsin Avenue and River Road to improve the approach angle for River Road. This will improve the approach angle for River Road, improve the SB to WB Wisconsin Avenue turning movement, and shorten the pedestrian crossing length.
- Increase radius on the southeast quadrant for the right turn movement from NB Wisconsin Avenue into Whole Foods.
- Designate 42nd Street to be one-way NB from Wisconsin Avenue to Fessenden Street and reconstruct curb line at the corner of Wisconsin Avenue and Emery Place
- Reconstruct curb line at the intersection of Wisconsin Avenue and 41st Street to control speeds and discourage use by through traffic.

Evaluation(s):

- Signal timings calibrated to current traffic volumes will decrease delays and improve level of service.
- Improved signage provides clear, concise, and improve driver knowledge and therefore safety.
- New mast arms will provide visibility of signal heads and provide uniformity of signal head locations.
- Semi-actuated traffic signals at the medium to low -volume side streets will reduce the number and duration of interruptions to the arterial flow of traffic on Wisconsin Avenue.
- Reduced stops and starts on Wisconsin Avenue will reduce the potential for rear-end accidents.
- Reduced stops and starts on Wisconsin Avenue will reduce the noise generated from accelerating and decelerating vehicles.
- Enhanced signing will improve operations and safety.
- Internally illuminated signs increase driver recognition and adherence to restrictions.
- Paving deteriorated pavement sections improves traffic flow.
- Reducing curb openings skewed intersections reduces speed and discourages cut through traffic on minor side streets.
- Pedestrian count down signals provide safer and more efficient pedestrian crossings.

- Upgrading existing non-conforming wheel chair ramps improves accessibility.
- Replacing faded or missing pavement markings improves visibility and safety.

Exhibit 6-1: Fessenden St. To Tenley Circle – Part 1

CLICK HERE

Exhibit 6-2: Fessenden St. To Tenley Circle – Part 2

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Exhibit 6-3: Fessenden St. To Tenley Circle – Part 3

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6.2.2 Tenley Circle to Massachusetts Avenue

Issue(s):

- Four travel lanes are narrow (10 foot wide) and additional two lanes on either side are alternating parking/ travel lanes.
- A single left turning vehicle can block the left lane of travel and can cause the drivers following behind to switch lanes.
- Non-actuated traffic signals located at low-volume side streets cause unnecessary interruptions in the heavy arterial flow on Wisconsin Avenue.
- Some of sign posts are twisted.
- The corridor has numerous bus stops and bus traffic is heavy along roadway.
- Signal placement is not consistent. Some intersections have mast arms, others do not.
- Heavy pedestrian traffic crossing four/six lanes of high-speed traffic creates more potential for unsafe conditions.
- Some lane markings are faded and missing.
- Wheel chair ramps do not conform to ADA and DDOT standards.
- Some pedestrian crosswalk markings are faded.
- Turning vehicle volumes is high.
- Pavement condition is poor in some isolated locations.
- There is a long queue at Van Ness Street intersection.
- Poor pavement condition in some isolated locations.

Recommended Short Term Improvement(s):

See Exhibits 6-4 through 6-8 for the discussion below.

- Adjust signal timings and phasing to provide sufficient green time for the arterial flow and reduce the green time for the side streets.
  - Upton Street,
  - Fannie Mae parking,
  - Woodley Road,
  - Massachusetts Avenue, and
  - Massachusetts Avenue at Cathedral Avenue.
- Replace the existing WB solid green signal heads with right arrow green signal heads.
- Eliminate 3 parking spaces on the west leg of Van Ness to establish a left turn pocket for the NB movement of Van Ness WB.
- Provide improved pavement markings to assist in proper lane utilization.
  - EB Van Ness Street,
  - EB Upton Street, and
  - EB Newark Street.
- Restripe pedestrian crosswalks across Wisconsin Avenue to current DDOT standards at:
  - Windom Place,
  - Warren Street,
  - Veazey Street,
  - Van Ness Street,
  - Upton Street,
  - Fannie Mae parking entrance,
  - Rodman Street,

- Porter Street,
- Idaho Avenue,
- Norton Place,
- Newark Street,
- Macomb Street,
- Woodley Road,
- Massachusetts Avenue, and
- Massachusetts Avenue at Cathedral Avenue.

➢ Establish parking limits with "L" striping on the:
- East leg of Van Ness Street,
- West leg of Rodman Street,
- West leg of Porter Street , and
- West leg of Macomb Street.

➢ Install signal mast arms along Wisconsin Avenue at:
- Van Ness Street,
- Upton Street,
- Rodman Street (NB Only),
- Porter Street,
- Newark Street,
- Macomb Street, and
- Woodley Street.

➢ Replace faded signs at:
- "No Left Turn" on NB Wisconsin Avenue south of Van Ness Street,
- "No Parking / Standing" on NB Wisconsin Avenue north of Upton Street,
- "No Parking / Standing" on NB Wisconsin Avenue north of Rodman Street,
- "No Parking / Standing" on NB Wisconsin Avenue north of Newark Street, and

"No Parking Anytime" on Newark Street (3 locations).

➢ Install "Do Not Enter" signs at:
- North end of Idaho Avenue (2 Locations)

➢ Install speed limit signs at:
- North of Van Ness Street – NB Wisconsin Avenue,
- South of Van Ness Street – SB Wisconsin Avenue,
- North of Upton Street – NB Wisconsin Avenue,
- South of Upton Street – SB Wisconsin Avenue,
- North of Fannie Mae – NB Wisconsin Avenue,
- South of Fannie Mae – SB Wisconsin Avenue,
- North of Rodman Street – NB Wisconsin Avenue,
- South of Rodman Street – SB Wisconsin Avenue,
- South of Porter Street – SB Wisconsin Avenue,
- North of Macomb Street – NB Wisconsin Avenue,
- South of Macomb Street – SB Wisconsin Avenue,
- South of Massachusetts Avenue – SB Wisconsin Avenue, and
- South of Massachusetts Avenue – NB Wisconsin Avenue.

➢ Install graphical lane use signs at:
- EB Van Ness Street,
- EB Upton Street,

- EB Newark Street,
- WB Woodley Road,
- EB Cathedral Street west of Massachusetts Avenue, and
- SB Wisconsin Avenue south of Massachusetts Avenue.

➢ Install new "No Parking" to corner signs on:
- West leg of Rodman Street (2 locations),
- West leg of Porter Street (2 locations), and
- West leg of Macomb Street (2 locations).

➢ Install new "Pedestrian Crossing" signs at:
- Windom Place,
- Warren Street, and
- Veazey Street.

Second Option:

Eliminate the northern and southern mid-block pedestrian crossings at Windom Place and Veazey Street, directing pedestrians to cross at nearby signalized crossings.

➢ Relocate obstructed speed limit sign north of Massachusetts Avenue – NB Wisconsin Avenue.

➢ Restripe worn stop bars at all intersections.

Recommended Long Term Improvement(s):

➢ Increase radius on the southeast quadrant for the right turn movement from NB Wisconsin Avenue to EB Van Ness Street.

➢ Increase radius on the southeast quadrant for the right turn movement from NB Wisconsin Avenue into Post Office parking lot across from Fannie Mae.

➢ Install pedestrian head signals at Porter Street.

➢ Install pedestrian count-down signals at the Porter Street and Cathedral Street intersections.

➢ Provide internally illuminated signs to actively display turn prohibitions during restricted hours at Van Ness Street and Massachusetts Avenue.

➢ Reconstruct wheel chair ramps to current ADA and DDOT standards at:
- NE quadrant at Upton Street and Wisconsin Avenue (2 locations),
- SE quadrant at Upton Street and Wisconsin Avenue,
- NE quadrant at Fannie Mae and Wisconsin Avenue,
- NW quadrant at Fannie Mae and Wisconsin Avenue,
- SE quadrant at Fannie Mae and Wisconsin Avenue,
- SW quadrant at Fannie Mae and Wisconsin Avenue,
- NE quadrant at Whole Foods and Wisconsin Avenue,
- NE quadrant at Rodman Street and Wisconsin Avenue,
- NW quadrant at Porter Street and Wisconsin Avenue,
- SW quadrant at Porter Street and Wisconsin Avenue,
- NE quadrant at Newark Street and Wisconsin Avenue (2 locations), and
- SE quadrant at Newark Street and Wisconsin Avenue

➢ Repave deteriorated pavement sections on Wisconsin Avenue north of Van Ness Street north of Rodman Street, and along WB Upton Street.

- Reconstruct curb line at the intersection of Wisconsin Avenue and 39th Street to control speeds and discourage use by through traffic.
- Reconstruct curb line at the intersection of Wisconsin Avenue and Idaho Ave./Ordway St. to discourage improper turning movements, , accompanied by the following two more improvements:
  - Install graphical No Left Turn sign at the West end of Ordway Street in the (1 Location)
  - Install "Keep Right" sign at the West end of Ordway Street (1 Location)

Evaluation(s):

- Signal timings calibrated to current traffic volumes will decrease delays and improve level of service.
- Improved signage provides clear, concise, and improve driver knowledge and therefore safety.
- New mast arms will provided visibility of signal heads and provide uniformity of signal head locations.
- Reduced stops and starts on Wisconsin Avenue will reduce the potential for rear-end accidents.
- Reduced stops and starts on Wisconsin Avenue will reduce the noise generated from accelerating and decelerating vehicles.
- Enhanced signing will improve operations and safety.
- Internally illuminated signs increase driver recognition and adherence to restrictions.
- Internally illuminated signs increase driver recognition and adherence to restrictions.
- Paving deteriorated pavement sections improves traffic flow.
- Reducing curb openings skewed intersections reduces speed and discourages cut through traffic on minor side streets.
- Upgrading existing non-conforming wheel chair ramps improves accessibility.
- Replacing faded or missing pavement markings improves visibility and safety.

Exhibit 6-4: Tenley Circle to Massachusetts Ave. – Part 1

CLICK HERE

Exhibit 6-5: Tenley Circle to Massachusetts Ave. – part 2

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Exhibit 6-6: Tenley Circle to Massachusetts Ave. – part 3

CLICK HERE

Exhibit 6-7: Tenley Circle to Massachusetts Ave. – part 4

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Exhibit 6-8: Tenley Circle to Massachusetts Ave. – part 5

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6.2.3 Massachusetts Avenue to Whitehaven Parkway

Issue(s):

See Exhibits 6-9 through 6-12.

- Four travel lanes are narrow (10 foot wide) and additional two lanes on either side are alternating parking/ travel lanes.
- The six lane section is reduced to four lanes south of Calvert Street.
- A single left turning vehicle can block the left lane of travel and can cause the drivers following behind to switch lanes.
- Sharp curb radius in the southeast quadrant for the heavy movement from NB Wisconsin to EB Calvert Street.
- Non-actuated traffic signals located at Edmunds Street causes unnecessary interruptions in the heavy arterial flow on Wisconsin Avenue.
- Signals are closely placed at Whitehaven Parkway and Whitehaven Street.
- A steep grade between Hall Place and Whitehaven Parkway requires additional accelerating and decelerating.
- Some of sign posts are twisted.
- The corridor has numerous bus stops and bus traffic is heavy along roadway.
- Signal placement has no consistency. Some are on mast arms, others are just on poles.
- Heavy pedestrian traffic crossing four/six lanes of high-speed traffic creates more potential for unsafe conditions.
- Some lane markings are faded and missing.
- Wheel chair ramps do not conform to ADA and DDOT standards.
- Some pedestrian crosswalk markings are faded.
- Turning vehicle volumes is high.
- Poor pavement condition in some isolated locations.
- Signal pole is loose and tilting across from Whitehaven Parkway.

Recommended Short Term Improvement(s):

- Adjust signal timings and phasing to provide sufficient green time for the arterial flow and reduce the green time for the side streets.
  - Garfield Street,
  - Calvert Street, and
  - Whole Food Entrance in Glover Park.
- Provide consistent placement and legend of turn prohibition signing.
- Restripe pedestrian crosswalks across Wisconsin Avenue to current DDOT standards at:
  - Garfield Street,
  - Edmunds Street,
  - Whole Foods Entrance in Glover Park,
  - Hall Place,
  - W Street,
  - Whitehaven Street, and
  - Whitehaven Parkway.
- Install signal Mast arms along Wisconsin Avenue at:
  - Garfield Street,
  - Edmunds Street,

- Calvert Street,
- Hall Place,
- Whitehaven Street, and
- Whitehaven Parkway.

➢ Straighten and tighten signal pole across from Whitehaven Parkway.
➢ Replace faded signs at:
- "No Parking Anytime" on Garfield Street,
- "No Standing or Stopping" on Wisconsin Avenue NB between Whitehaven Parkway and Whitehaven Street.
- "No Left Turn Except to Alley" on Hall Street,
- "No Parking/Loading" on Hall Street,
- "2 Hour Parking" on Hall Street,
- "No Standing Anytime" on Hall Street and
- "No Parking" on Whitehaven Parkway.

➢ Install a new "No Turn on Red" at Whole Foods Exit.
➢ Install speed limit signs at:
- South of Edmunds Street – SB Wisconsin Avenue,
- North of Hall Place – NB Wisconsin Avenue,
- South of Hall Place – SB Wisconsin Avenue,
- South of Whitehaven Parkway – SB Wisconsin Avenue,
- North of Whitehaven Street. – NB Wisconsin Avenue, and

➢ Restripe worn stop bars at all intersections.

Recommended Long Term Improvement(s):

➢ Install semi-actuated traffic signal systems at Edmunds Street intersection.
➢ Install pedestrian push buttons to actuate side street signal phase at semi-actuated signal systems.
➢ Increase radius on the southeast quadrant for the right turn movement from NB Wisconsin Avenue to EB Calvert Street.
➢ Reconstruct wheel chair ramps to current ADA and DDOT standards at:
- NW quadrant at Edmunds Street and Wisconsin Avenue,
- NW quadrant at Calvert Street and Wisconsin Avenue,
- NW quadrant at Calvert Street and 37th Street,
- SE quadrant at Calvert Street and 37th Street,
- NE quadrant at Whole Foods and Wisconsin Avenue,
- NE quadrant at Hall Place and Wisconsin Avenue, and
- SE quadrant at Hall Place and Wisconsin Avenue.

Evaluation(s):

➢ Signal timings calibrated to current traffic volumes will decrease delays and improve level of service.
➢ Improved signage provides clear, concise, and improve driver knowledge and therefore safety.
➢ New mast arms will provided visibility of signal heads and provide uniformity of signal head locations.

- Semi-actuated traffic signals at the medium to low -volume side streets will reduce the number and duration of interruptions to the arterial flow of traffic on Wisconsin Avenue.
- Reduced stops and starts on Wisconsin Avenue will reduce the potential for rear-end accidents.
- Reduced stops and starts on Wisconsin Avenue will reduce the noise generated from accelerating and decelerating vehicles.
- Enhanced signing will improve operations and safety.
- Internally illuminated signs increase driver recognition and adherence to restrictions.
- Paving deteriorated pavement sections improves traffic flow.
- Reducing curb openings at skewed intersections reduces speed and discourages cut through traffic on minor side streets.
- Pedestrian count down signals provide safer and more efficient pedestrian crossings.
- Upgrading existing non-conforming wheel chair ramps improves accessibility.
- Replacing faded or missing pavement markings improves visibility and safety.

Exhibit 6-9: Massachusetts Ave. to Whitehaven Pkwy. – part 1

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Exhibit 6-10: Massachusetts Ave. to Whitehaven Pkwy. – part 2

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Exhibit 6-11: Massachusetts Ave. to Whitehaven Pkwy. – part 3

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Exhibit 6-12: Massachusetts Ave. to Whitehaven Pkwy. – part 4

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6.3 INTERSECTIONS

6.3.1 River Road and 42nd Street and Brandywine Street

Looking North

Looking South

Issue(s):

- Overgrown vegetation obstructs view of the EB signals east of the intersection.
- Intersection layout is confusing.
- Wheel chair ramps do not conform to ADA and DDOT standards.

Recommended Short Term Improvement(s):

See Exhibit 6-13. (Intersection number: 28)

- Trim Vegetation.
- Install "Do Not Block Intersection Sign" on EB Brandywine Street and NB 42nd Street.
- Correct sign direction on NB River Road.
- Adjust signal timing to provide more time for River Road.

Recommended Long Term Improvement(s):

- Reconstruct the small section of Brandywine between 42nd Street and River Road to be one lane wide.
- Reconstruct wheel chair ramps along Brandywine from 42nd Street and River Road to current ADA and DDOT standards.

Evaluation(s):

- Clearing overgrown vegetation in front of the signals would make the signal more prominent and make drivers aware of the allowable movements.
- Upgrading existing non-conforming wheel chair ramps improves accessibility.
- Improved signage provides clear, concise, and improve driver knowledge and therefore safety.
- Reconstruction to one lane will reduce the likelihood of wrong way travel and will reduce the pedestrian crossing distance.

6.3.2 River Road and Chesapeake Street

Looking North

Looking South

Issue(s):

- Overgrown vegetation obstructs visibility of signals.
- Poor pavement section on WB Chesapeake Street.

Recommended Short Term Improvement(s):

See Exhibit 6-13. (Intersection Number: 29)

- Remove/clear vegetation overgrowth or relocate sign.
- Repave 20ft x 20ft area of deteriorated pavement on WB Chesapeake Street.
- Install "Do Not Block Intersection" signs on EB Chesapeake Street and NB 42nd Street.

Recommended Long Term Improvement(s):

- None

Evaluation(s):

- Clearing overgrown vegetation in front of the signals would make the signal more prominent and make drivers aware of the allowable movements.
- Better maintained roadway improves vehicular flow.
- Improved signage provides clear, concise, and improve driver knowledge and therefore safety.

6.3.3 Nebraska Avenue and Albemarle Street

Looking North

Looking South

Issue(s):

- Intersection in close proximity to 39th Street and Nebraska Avenue.
- Overgrown vegetation obstructs visibility of signs.
- Overgrown vegetation obstructs visibility of signals.
- Lack of good signing.

Recommended Short Term Improvement(s):

See Exhibit 6-13. (Intersection Number: 30)

- Remove/clear vegetation overgrowth or relocate sign.
- Establish two lanes between Fort Drive and Nebraska Avenue between 7:00-9:30 AM and 4:00-6:30 PM by implementing a parking restriction for the 3 parking spaces along Albemarle, accompanied by the following two more improvements:
  - Replace "Left Turn Lane Must Turn Left" sign with graphical lane use sign.
  - Restripe EB Albemarle Street approach with a left turn and thru-right lane use markings.
- Install intersection warning sign for EB traffic approaching 39th Street.
- Install "Do Not Block Intersection Sign" on WB Albemarle Street.
- Establish parking limits with "L" striping on the:
  - South leg of 39th Street,
  - West leg of Albemarle EB.
- Install new "No Parking" to corner signs on:
  - East leg of Albemarle Street (1 locations)

Recommended Long Term Improvement(s):

- None.

Evaluation(s):

- Clearing overgrown vegetation in front of the speed limit signs will make the sign more prominent and make drivers aware of the legal speed limit
- Eliminating parking spaces will provide improved capacity and safety of intersection.

- Improved signage provides clear, concise, and improve driver knowledge and therefore safety.
- Improving the curb line radius will improve turning movements and decrease encroachment on opposing lanes.

6.3.4 Albemarle Street and Fort Drive and 40th Street

Looking East

Issue(s):

- Lack of good signing.
- Faded signs on Fort Drive.

Recommended Short Term Improvement(s):

See Exhibit 6-13. (Intersection Number: 31)

- Replace faded "No Stopping" sign on Fort Drive.
- Install graphical lane use sign on SB 40th Street approach.
- Restripe lane use markings on SB 40th Street.

Recommended Long Term Improvement(s):

- Consider possible four-way stop control if warranted.

Evaluation(s):

- Four-way stop control would improve access from the side street and will slow vehicular speeds, but will reduce flow on Albemarle Street.

Exhibit 6-13: Intersections – River Rd./42nd St./Brandywine St., River Rd./Chesapeake St., Nebraska Ave./Albemarle St., and Albemarle St./Fort Dr./40th St.

CLICK HERE

6.3.5 Albemarle Street and 42nd Street

Looking East

Issue(s):

- Lack of good signing.
- Twisted sign on EB Albemarle Street.
- Faded sign on 42nd Street.

Recommended Short Term Improvement(s):

See Exhibit 6-14. (Intersection Number: 32)

- Replace faded "No Stopping" sign on NB 42nd Street approach.
- Establish parking limits with "L" markings on all approaches.

Recommended Long Term Improvement(s):

- None

Evaluation(s):

- Clear delineation of parking limits at the intersection corners improves sight distances for both pedestrians and vehicles and increases safety and capacity.
- Improved signage provides clear, concise, and improve driver knowledge and therefore safety.

6.3.6 Van Ness Street and Nebraska Avenue

Looking South

Looking West

Issue(s):

- Lack of "No Parking" signs on the WB Van Ness Street approach.
- Lack of "No Parking" signs on the NB Nebraska Avenue approach.
- Conflicting parking restriction on NB Nebraska Avenue.
- Missing sidewalk segment between Nebraska Avenue and 42nd Street.

Recommended Short Term Improvement(s):

See Exhibit 6-14. (Intersection Number: 33)

- Install "No Parking Signs on the WB Van Ness Street and NB Nebraska Avenue approach.
- Provide improved pavement markings.

Recommended Long Term Improvement(s):

- Construct sidewalk along Van Ness Street.
- Install pedestrian head with count-down signals.

Evaluation(s):

- Clear delineation of parking limits at the intersection corners improves sight distances for both pedestrians and vehicles and increases safety and capacity.
- New sidewalk will enhance pedestrian safety.
- Pedestrian signals heads will allow pedestrians to cross the intersection more safely.

6.3.7 34th Street and Garfield Street

Looking East

Looking North

Issue(s):

- Steep gradient on the SB 34th Street approach.
- Lack of left turn lane for the SB 34th Street approach, requiring all vehicles to stop for one left turning vehicle.
- Lack of left turn lane for the EB Garfield Street approach, requiring all vehicles to stop for one left turning vehicle.
- Lack of clear parking limits on 34th Street.
- Faded pavement markings.

Recommended Short Term Improvement(s):

See Exhibit 6-14. (Intersection Number 34)

- Install "No Parking" sign on 34th Street.
- Restrict parking on 34th Street to be a minimum of 40 feet from the corner.
- Stripe pedestrian crosswalks to current DDOT standards on all four approaches.

Recommended Long Term Improvement(s):

- None

Evaluation(s):

- Clear delineation of parking limits at the intersection corners improves sight distances for both pedestrians and vehicles and increases safety and capacity.
- Replacing faded or missing pavement markings improves visibility and safety.

6.3.8 34th Street and Cleveland Avenue

Looking North

Issue(s):

- Lack of wheel chair ramps.
- No delineated pedestrian crosswalk on Cleveland Avenue.
- Faded signs on NB 34th Street south of Cleveland Avenue.
- 34th Street NB approach, signal indications are vertical arrows only, unclear if right turn onto Cleveland Avenue is allowed.

Recommended Short Term Improvement(s):

See Exhibit 6-14. (Intersection Number: 35)

- Replace faded "No Parking" sign on NB 34th Street.
- Install "No Parking" sign on Cleveland Avenue.
- Remove the broken lane line and establish parking limits with "L" markings on Cleveland Avenue.
- Stripe a pedestrian crosswalk to current DDOT standards on Cleveland Avenue.
- Replace NB 34th Street approach signal identifications with solid green balls or install "No Right Turn" sign.
- Install graphic lane use sign for the SB 34th Street approach.

Recommended Long Term Improvement(s):

- Reconstruct wheel chair ramp on 34th Street across from the SE corner of Cleveland Avenue and NE corner of Cleveland Avenue to current ADA and DDOT standards.

Evaluation(s):

- Clear delineation of parking limits at the intersection corners improves sight distances for both pedestrians and vehicles and increases safety and capacity.
- Replacing faded or missing pavement markings improves visibility and safety.
- Improved signage provides clear, concise, and improve driver knowledge and therefore safety.
- Upgrading existing non-conforming wheel chair ramps improves accessibility.

Exhibit 6-14: Intersections – Albemarle St./42nd St., Van Ness St./Nebraska Ave., 34th St./Garfield St., and 34th St./Cleveland Ave.

CLICK HERE

6.3.9 34th Street and Newark Street

Looking East

Looking @ Sight Obstruction

Issue(s):

- Sight restrictions on the SW corner.
- Lack of clear parking limits on Newark Street.

Recommended Short Term Improvement(s):

See Exhibit 6-15. (Intersection Number: 35)

- Improve sight distance on SW corner by relocating fence and trimming overgrown vegetation.
- Install "No Parking" to corn sign on Newark Street.
- Establish parking limits with "L" striping on 34th Street.

Recommended Long Term Improvement(s):

- None

Evaluation(s):

- Improved intersection sight distance will reduce accident potential.
- Control of parking limits at the intersection improves intersection sight distance and improves turning movements.
- Improved signage provides clear, concise, and improve driver knowledge and therefore safety.

6.3.10 37th Street and Calvert Street

Looking North

Issue(s):

- Proximity to Wisconsin Avenue requires inefficient signal operation.
- Short storage distance between 37th Street and Wisconsin Avenue presents potential for queues to extend into next intersection, creating significant safety potential.

Recommended Short Term Improvement(s):

See Exhibit 6-15. (Intersection Number 37)

- Modify signal timing to minimize need to store queued vehicles between the two closely-spaced intersections.

Recommended Long Term Improvement(s):

- None

Evaluation(s):

- Improved signal timing would increase the efficiency of the signal operation at Wisconsin Avenue/Calvert Street and Calvert Street/37th Street by minimizing queued vehicles between the two closely-spaced intersections.

6.3.11 37th Street and Tunlaw Street

Looking North

Looking East

Issue(s):

- Faded pavement markings.
- Two extra stops signs on EB Tunlaw Street.
- Broken pavement on SB 37th Street.
- Traffic signs facing wrong direction.

Recommended Short Term Improvement(s):

See Exhibit 6-15. (Intersection Number: 38)

- Remove two additional stop signs from SEB Tunlaw Street.
- Restripe pedestrian crosswalks to current DDOT standards.
- Restripe lane use markings on SB 37th Street.
- Repave 30ft x 50ft area of deteriorated pavement.
- Rotate traffic signs to face on-coming traffic.

Recommended Long Term Improvement(s):

- None.

Evaluation(s):

- Removal of additional stop signs will reduce driver uncertainty of the proper stopping point and the potential of rear end accidents.
- Replacing faded or missing pavement markings improves visibility and safety.
- Improved signage provides clear, concise, and improve driver knowledge and therefore safety.
- Better maintained roadway improves vehicular flow.

6.3.12 38th Street and Massachusetts Avenue

Looking West

Issue(s):

- Parked vehicles on Massachusetts Avenue restrict sight distance.
- Lack of clear parking limits on Massachusetts Avenue.
- Lack of clear parking limits on 38th Street.

Recommended Short Term Improvement(s):

See Exhibit 6-15. (Intersection Number 39)

- Install "No Parking" to corner sign on Massachusetts Ave. west of 38th Street.
- Install "No Parking" to corner sign on 38th Street.
- Re-establish centerline pavement markings on 38th Street.

Recommended Long Term Improvement(s):

- Install crosswalk across Massachusetts Avenue if warranted.
- Reconstruct wheel chair ramp on the NW corner of 38th Street and Massachusetts Avenue to current ADA and DDOT standards

Evaluation(s):

- Control of parking limits at the intersection improves intersection sight distance and improves turning movements.
- Upgrading existing non-conforming wheel chair ramps improves accessibility.
- Improved signage provides clear, concise, and improve driver knowledge and therefore safety.

Exhibit 6-15: Intersections – 34th St./Newark St., 37th St./Calvert St., 37th St./Tunlaw St., and 38th St./Massachusetts Ave.

CLICK HERE

6.4 ADDITIONAL REQUESTS

6.4.1 37th Street between Upton Street and Quebec Street

Issue(s):

- Heavy pedestrian activity between school and athletic facilities
- Excessive speeds.

Recommended Short Term Improvement(s):

- Install speed limit signs on 37th Street
- Install pedestrian crosswalk markings across 37th Street at school crossing and signs.

Recommended Long Term Improvement(s):

- Install speed platform at pedestrian crossing.

Evaluation(s):

- Signs and markings will increase driver awareness of pedestrian activity.
- Speed limit signs with adequate enforcement will reduce speeds.
- If these measures do not provide improved conditions, a speed platform should reduce speeds further and improve safety.

Moreover, Sidwell Transportation Management Plan, prepared by Wells & Associates, LLC (January 2004) for Sidwell School, provides the additional recommendations:

- Drop off and pick up children only on the southbound side of the street
- Treat 37th Street as a one-way street southbound during drop-off and pick-up
- No parking in front of the building; reserved for student drop-off only
- Do not cross 37th Street; instead use the nearest intersection and stop sign to cross safely

The Study Team supports the above recommendations which will further improve the pedestrian crossing safety in the vicinity of Sidwell School and Hearst Elementary School.

6.4.2 Wisconsin Avenue and Fulton Street

Issue(s):

- Citizens concern with poor sight distance.

Recommended Short Term and Long Term Improvement(s):

- None

Evaluation(s):

- The intersection geometry provides proper sight distance.

6.5 LONG-TERM POLICY GUIDELINE FOR WISCONSIN AVENUE CORRIDOR

The Study Team investigated more comprehensive and major improvement concepts for the Wisconsin Avenue corridor for much longer-term implementation. Because of the physical limitation of the corridor, there is competing demand for the corridor among passenger vehicles, buses, commercial vehicles, parking, and pedestrians. During peak hours, commuter traffic dominates the corridor while local residents have difficulty getting to their destinations. Therefore, over the long term, one way to manage the area's growth and maintain the characteristics of the community is to consider alternative lane uses for Wisconsin Avenue. Long-term strategic approach with the alternative lane use of the Wisconsin Avenue corridor may be a key to successfully manage the area's growth and maintain the characteristics of community. The following section discusses four (4) alternative lane uses investigated under the WACTS as guidance for future transportation policy of the area.

Wisconsin Avenue – North of Calvert Street

The northern portion of Wisconsin Avenue (from Fessenden Street to Calvert Street) generally has 60 feet of pavement within a 120 foot right-of-way. The 60 feet of pavement width is currently striped for six lanes, each 10 feet wide. Except during the peak traffic hours, there are two southbound lanes and two northbound lanes with a parking lane on each side to service the parking demands of both the commercial and residential users of the road. (Refer to Typical Section A in Exhibit 6-16.) During the AM peak traffic hour (7:00 AM to 9:30 AM), parking is prohibited on the west side of the road, allowing a third travel lane for southbound traffic (see Section B, Exhibit 6-16). During the PM peak traffic hour (4:00 PM to 6:30 PM), parking is prohibited on the east side of the road, allowing a third travel lane for northbound traffic (see Section C, Exhibit 6-17).

Prohibiting street parking during the peak hours facilitates traffic flow in several ways:

- It increases the capacity of the road in the predominate travel direction by 50% (from 2 to 3 lanes)
- It eliminates parking maneuvers, which can disrupt the traffic flow in the center lane.
- It enhances bus operations because the buses can stay in the right lane and do not have to turn into and out of the center travel lane.

As a result of this improved capacity, most of the signalized intersections along Wisconsin Avenue provide a good level of service (LOS) and relative little delay during the AM and PM peak hours. However, because parking is not restricted on Saturday, some of the intersections experience a worse LOS on Saturday, even though the traffic volumes are lower. This same degradation of capacity is observed at times on either side of the peak hours (for example from 6:30 PM to 7:00 PM at some locations) and when vehicles park illegally during the peak hours.

As traffic volumes along the corridor increase, the LOS will deteriorate and intersection delay will increase. These conditions can be improved in several possible ways:

> Alternative 1: Provide a dedicated exclusive bus lane in the right lane during the peak hours. (See Sections D and E, Exhibit 6-17). This will provide improved flow for bus

operations and could encourage greater utilization of the buses. A single bus can provide the same carrying capacity as 40 or more single-occupant passenger vehicles.

Alternative 2A: Change the limits of the parking prohibitions to include extended AM and PM peak hours and include some Saturday hours.

Alternative 2B: Change the limits of the parking prohibitions to include some Saturday hours where warranted.

Alternative 2C: Restrict parking on both sides of the street during the peak hours and provide three lanes of flow both northbound and southbound. (See Section F, Exhibit 6-18).

Alternative 3: At selected intersections, especially these with heavy left turning volumes, the capacity demands may be best met by widening the road from 60 feet to 72 feet and providing a center left turn bay. (See Section G, Exhibit 6-18). This lane-use configuration currently exists at the intersection of Wisconsin Avenue and Brandywine Street. This approach could be implemented in connection with future development sites along the corridor. Intersections which should be considered a higher priority for left turn bays include:

- Wisconsin Avenue NB at Upton Street
- Wisconsin Avenue NB at Calvert Street
- Wisconsin Avenue SB at Whole Foods in Tenleytown
- Wisconsin Avenue SB at Whole Foods in Glover Park
- Wisconsin Avenue SB at Van Ness Street
- Wisconsin Avenue SB at Porter Street
- Wisconsin Avenue NB at Macomb Street

Alternative 4: In addition to or in lieu of the Wisconsin Avenue widening described above, additional intersection capacity should be considered by widening (adding lanes to) the side street approaches. This will provide additional capacity by reducing the green signal time required for the side streets (as approximately twice as many cars can get through the light in the same amount of time). This alternative will provide greater green time for the Wisconsin Avenue arterial. Side street widening should be implemented as needed in connection with future development.

Wisconsin Avenue – South of Calvert Street

The southern portion of the study corridor (from Calvert Street to Whitehaven Parkway) has a narrower pavement width (55 feet vs. 60 feet). In this segment, there are four travel lanes (10 feet wide each) and two narrow (7.5 feet +/-) parking lanes. Parking is also restricted (southbound direction in the AM peak and northbound direction in the PM peak). Because of the narrow width, a third travel lane cannot be added. Peak hour parking restriction, however, assists in traffic flow because there is a wider clear space between the travel lane and the curb, and there are no parking maneuvers to conflict with the right lane flow. Furthermore, because the traffic volume in this segment is less than the northern section by approximately 30 percent, most of the intersections still operate at an acceptable LOS. The narrow pavement width limits the alternative cross section treatments that can be considered on this portion of Wisconsin Avenue.

Exhibit 6-16: Typical Section Alternatives – part 1

CLICK HERE

Exhibit 6-17: Typical Section Alternatives – part 2

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Exhibit 6-18: Typical Section Alternatives – part 3

CLICK HERE

6.6 PARKING MANAGEMENT

Both short-term and long-term parking recommendations were discussed in sections 6.2 through 6.5. These recommendations are geared towards helping improve traffic flow along the Wisconsin Avenue corridor and increasing the efficiency of turning movements from major side streets.

Parking is a complex issue in the study area as well as district-wide. The Study Team strongly encourages a multi-faceted approach. The list below describes five approaches which can address parking issues identified in the study.

- Consider modifying the current residential parking program to a finer zone level.
- Strengthen enforcement of the existing residential parking restrictions.
  (The previous two recommendations will preserve additional parking capacity for residents.)
- Strengthen metered enforcement along Wisconsin Avenue and adjacent streets, especially in the Tenleytown area
- Require future developments to provide sufficient parking so as not to exacerbate existing parking problems in the Tenleytown and Glover Park areas.
- Make parking facility information be more visible to users.

The Study Team also reviewed the Mayor's Parking Taskforce Report (2004) (referred to as "the Report"). The recommendations can address parking issues identified throughout the study area and have general agreement with the Study Team's conclusions. They are annotated below.

1. Define and implement new parking zone designations
The Report proposes to replace the current ward-based residential parking program (RPP) with a neighborhood-based RPP consisting of 30 zones. Two of these zones, zone number 11 (Friendship Heights, American University Park, and Tenleytown) and 14 (Cathedral Heights, McLean Gardens, Glover Park) are within the WACTS area.

2. Develop inventory of on-street and off-street parking for use in parking management
The parking inventory database developed for WACTS supports this objective.

3. Adjust RPP program regulations and enforcement
Current RPP enforcement is from 7:00AM to 8:30PM. Extended hours have been proposed in the Mayor's Parking Taskforce Report. The Study Team agrees that extending RPP enforcement hours to midnight, especially in Glover Park and McLean Garden area neighborhoods, will ease the residents' evening hour parking problems.

4. Revise the visitor parking program
The Report proposes to establish visitor parking passes that may be purchased and that will be barcoded to assist in enforcement. It also proposes a pilot testing. The Study Team agrees with this approach, in concept.

5. Increase overall enforcement
Increasing pay levels and improving security for enforcement personnel is proposed.

6. Simplify the existing meter rates
WACTS identified five different types of meters (from 15-minutes to 3-hours) along the Wisconsin Avenue corridor. A simplified meter system of 30-minutes and 2-hours will be sufficient in the WACTS area to accommodate parking needs.

7. Increase meter fees
The study concluded that DC average meter rate was insufficient to encourage parking turnover and efficient use of existing metered spaces. It is important that the meter rate should be at least competitively priced with off-street parking rate.

8. Expand the time and days for meter parking enforcement in commercial areas
Reinstating weekend meter operations could free much-needed, short-term parking options along the Wisconsin Avenue corridor. It may also encourage shoppers to park at off-street parking facilities, especially in the Tenleytown and Glover Park shopping areas.

9. Simplify and increase parking fines
The Taskforce recommends increasing and simplifying the fines as follows:

i. $50 fine for standard violations such as expired meter, alley parking, bus stop parking, distance violations, meter violations, and RPP violations
ii. $150 fine for safety violations such as parking near fire hydrant, parking in a rush hour lane, parking in a snow emergency lane

Although not mentioned by the Taskforce, violations such as parking or standing in a rush hour lane might warrant more aggressive tactics, especially for repeat offenses. This could include graduated fines for repeat offenders (such as delivery vehicles), and towing.

10. Remove the current parking exceptions
Removing current DC bans on enforcing parking meters on Saturday will alleviate the parking situation in the Tenleytown and Glover Park shopping areas.

The Taskforce Report also includes the following recommendations.

- Designate on-street parking into four types: A) residential areas where demand is less than supply, B) residential areas where demand exceeds supply, C) mixed residential/commercial areas where demand exceeds supply, and D) commercial area.
- Dedicate parking permit fees, meter fees, and fines to first cover parking enforcement and administration
- Change the taxing and enforcement structure for private lots to ensure that taxes are collected on monthly contracts
- Institute incentives for private parking lot owners to convert daily parking to short-term parking
- Refine reciprocity criteria

Additionally, as a long-term recommendation, the Task Force recommends changing parking requirements for new construction to "unbundled" the cost of parking from the cost of housing units, in particular for affordable housing units, to give homeowners the option of reducing their housing cost if they choose not to have a parking place. The Task Force also recommends pilot studies to test pricing and permit options to ensure that pricing, particularly on-street parking, bears a closer relationship to full costs and to supply and demand. The WACTS area appears be an excellent location for pilot testing some of the recommended strategies, in cooperation with the residents and the ANCs.

There are many components in good parking management. The Mayor's Parking Taskforce recommendations provide a sound basis for DDOT's future parking policy. All of the on-street parking recommendations in the Taskforce report address parking issues expressed by residents in the WACTS area.

It is a balancing act between accommodating demand by increasing the parking supply and restricting the number of vehicles allowed within the District by limiting the parking options. It is the Study Team's recommendation that first, parking for residents and neighborhood businesses in the WACTS area needs to be better managed. Implementing and enforcing neighborhood level RPP system will preserve more spaces for residents. Moreover, simplified parking meter rates which are more competitive with off-street parking facilities will encourage usage of the facilities. In order to effectively implement this, DDOT needs to coordinate with off-street parking facilities to provide and encourage short-term parking that is competitively priced with metered parking.

7 SUMMARY OF FINDINGS AND RECOMMENDATIONS

The main goals of the WACTS were to examine existing and future transportation conditions, and to identify traffic engineering solutions to improve traffic and pedestrian safety and reduce traffic congestion, especially during morning and evening peak hours along the Wisconsin Avenue corridor. Improving traffic flow on major roadways will encourage through-traffic to remain on main streets and avoid using local neighborhood streets. The Scope of Work for the WACTS is provided in Appendix O.

The Study Team held three sets of public meetings with area residents to discuss existing transportation issues and receive comments regarding the development scenario analysis. (See Appendix P for the public meeting summary.) Residents also provided input via e-mail, regular correspondence, and meetings with DDOT representatives. Inputs received via e-mail are presented in Appendix Q. A fourth set of public meetings has been convened in November, 2005 to present the final report.

7.1 TRANSPORTATION ISSUES

Residents and the Study Team identified a wide range of transportation issues for both current and anticipated future conditions. Major issues include pedestrian safety, parking (both in residential areas and along Wisconsin Avenue), bicycle accommodation, current traffic operations, and concern about the impact of future development on future traffic operations. This last issue is addressed through development scenarios, summarized in section 7.2 and carried forward through the remainder of the conclusions.

Pedestrian safety concerns stem from high commercial activity and other activity centers (e.g., churches, synagogues, schools, etc.) along the Wisconsin Avenue corridor, which contribute to vehicle and pedestrian movement conflicts. Safety concerns also arise from the poor condition of many pedestrian crossing markings.

Residential parking dilemmas included long-term parking on local streets by non-residents without “Zone 3 Permits”, illegal parking by non-residents on local streets, and a seeming disregard for parking enforcement. Parking problems on the main thoroughfares include double parking by commercial trucks while loading and unloading. Bicycle issues include the lack of bicycle routes to the Tenleytown-AU Metrorail station. Issues regarding current and future traffic operations include congestion along Wisconsin Avenue at critical intersections due to high traffic volumes on side streets, speeding due to roadway geometry, lack of adequate turn lanes (especially left-turn lanes at selected intersections), and non-optimized signal timing. These issues are summarized in Exhibit 7-1.

Exhibit 7-1: Transportation Issues

CLICK HERE

7.2 DEVELOPMENT SCENARIO ANALYSIS

To account for a range of foreseeable additional traffic generated by future build-out options, the Study evaluated four development scenarios (low, medium, high, and maximum) occurring over a 10-year period extending to 2014.

Future traffic conditions are expected to deteriorate over time and as development density increases (from Scenario 2 to Scenario 4) compared to Scenario 1 (no future development). Traffic conditions at certain intersections are expected to deteriorate more quickly based on anticipated development patterns.

The Study Team concludes that the level of development considered under Scenarios 1 and 2 can be managed, most of the time, by the existing infrastructure within the LOS set as the desired target. If a higher development density than Scenario 2 is to be considered in the future, another study addressing infrastructure improvement to accommodate additional demand needs to be conducted. Such a study might begin by analyzing the very long term alternatives for lane usage discussed in section 6.4.

7.3 TRANSPORTATION IMPROVEMENT RECOMMENDATIONS

The Study Team met with area residents and compiled a comprehensive list of transportation issues for the study area followed by extensive data collection, field investigations, and assessments of existing conditions. The Study Team then developed suggested recommendations to improve safety and transportation operations in the study area. The recommendations are summarized and illustrated in Exhibits 7-2A through 7-2C. The implementation of these improvements would improve pedestrian and vehicular safety and transportation operations throughout the study area. Long-term recommendations, that would require programming into the capital budget cycle, are identified in *italics*.

Exhibit 7-2A: Recommendations for Wisconsin Avenue Corridor Intersections – 1 of 2

CLICK HERE

Exhibit 7-2B: Recommendations for Wisconsin Avenue Corridor Intersections – 2 of 2

CLICK HERE

Exhibit 7-2C: Recommendations for Selected Intersections

CLICK HERE

In addition to the improvements noted in the previous exhibits, the major study recommendation is to optimize signal timing along the corridor. Optimization includes 1) adjusting the signal timings for the different phases, 2) modifying the cycle length, 3) modifying the phasing, and 4) adjusting the pedestrian crossing times within pedestrian crossing time standards. Optimum signal timing balances the needs of all of the users of the corridor including pedestrians. The computer program that was utilized (Synchro) looks at all of the intersections as a system. If a change is made at one intersection, the program predicts how this change will affect flow at the other intersections.

One of the key controlling factors for signal optimization for the Wisconsin corridor is pedestrian walk time across Wisconsin Avenue, which is set at rates used in standard engineering practice. Side streets are provided at least that much green time to exit. The LOS at each intersection represents the weighted average of the delay for each approach. Therefore, the process of signal optimization, and the reported results, take into account both pedestrian crossing time and delay for vehicles on side streets. The emphasis on improving the flow along Wisconsin Avenue, while maintaining reasonable pedestrian crossing times and LOS on side streets, is to encourage drivers to stay on the main thoroughfares, and resist the temptation to cut through on local neighborhood streets.

Weekday Peak Arterial LOS

With improvements and signal optimization changes, the future level of service (LOS) for the corridor as a whole is slightly lower than current levels for Scenarios 1 and 2 on weekdays, compared to existing conditions. As shown in Exhibits 7-3 A and B (for AM Peak and PM Peak, respectively) [9], the optimized arterial LOS is uniformly at LOS D for the AM Peak for Scenarios 1 and 2. For the PM Peak, the arterial LOS is LOS C for Scenario 1 and LOS D for Scenario 2. LOS in the counter-flow direction (north in the AM Peak, south in the PM Peak) represents the flow with only two lanes available. Timing geared to improve prevailing traffic operations cannot at the same time facilitate counter-flow operations. This could be alleviated by implementing parking restrictions on both sides of the road during peak hours, or by implementing one of the lane usage alternatives discussed in section 6.5.

Scenarios 3 and 4 indicate failure of the arterial as a whole. AM Peak Southbound is able to achieve LOS E for Scenario 3, but the northbound AM Peak and both PM Peak movements are at LOS F. The poor LOS in Scenario 3 and 4 could be alleviated by implementing selected lane usage alternatives discussed in section 6.5.

Saturday Arterial and Intersection LOS

As shown in Exhibit 7-3 C, for the peak Saturday period, LOS in both directions is D for Scenario 1 and E for Scenario 2. Saturday peak hour LOS deteriorates to F for both Scenarios 3

[9] At the corridor level, for a Class IV street like Wisconsin Avenue, LOS is defined by average through-vehicle travel speed (including wait time). LOS C is between 14.3-19.9 mph. LOS D is between 11.2 – 14.3 mph. LOS E is between 8.7 – 11.2 mph. LOS F is less than or equal to 8.7 mph. LOS F represents the case where volume exceeds capacity.

and 4. This same patterns is seen in the intersection LOS (Exhibit 7-4 C).[10] Levels of service could be increased to LOS C or better for the corridor and for most intersections for Scenarios 1 and 2 at least, by the simple expedient of eliminating on-street parking on Saturdays - either at strategic times, at strategic intersections, for some combination of times and locations, or along major stretches of the corridor for major portions of the day. The Study Team did not include this as a recommendation due to concerns for businesses without dedicated parking facilities and for residents' convenience, and because some residents have expressed concerns about removing on-street parking along Wisconsin Avenue.

Exhibit 7-3A: Future Wisconsin Avenue Arterial Level of Service – AM Peak

	Northbound without Signal Improvement	***Northbound with Signal Improvement***	**Southbound without Signal Improvement**	***Southbound with Signal Improvement***
Exiting (2004)	D	***D***	C	***C***
Scenario 1	D	***D***	D	***D***
Scenario 2	E	***D***	D	***D***
Scenario 3	F	***F***	E	***E***
Scenario 4	F	***F***	F	***F***

Exhibit 7-3B: Future Wisconsin Avenue Arterial Level of Service – PM Peak

	Northbound without Signal Improvement	***Northbound with Signal Improvement***	**Southbound without Signal Improvement**	***Southbound with Signal Improvement***
Exiting (2004)	C	***C***	C	***C***
Scenario 1	D	***C***	D	***C***
Scenario 2	D	***D***	E	***D***
Scenario 3	F	***F***	F	***F***
Scenario 4	F	***F***	F	***F***

Exhibit 7-3C: Future Wisconsin Avenue Arterial Level of Service - Saturday

	Northbound without Signal Improvement	***Northbound with Signal Improvement***	**Southbound without Signal Improvement**	***Southbound with Signal Improvement***
Exiting (2004)	D	***D***	D	***D***
Scenario 1	E	***D***	E	***D***
Scenario 2	F	***E***	F	***E***
Scenario 3	F	***F***	F	***F***
Scenario 4	F	***F***	F	***F***

[10] Under Scenario 2, with signal optimization and improvements, the following Wisconsin Avenue intersections continue to have LOS D or worse on Saturday mid-day: Fessenden Street, Albemarle Street, Fannie Mae entrance, Whole Food entrance in Glover Park, and Calvert Street.

Weekday Peak Intersection LOS

Exhibits 7-4 A, B and C provide LOS detail at the intersection level for AM Peak, PM Peak and Saturdays, respectively.

For Scenario 1 with optimized signals, 31 of 33 intersections in the AM Peak, and all intersections in the PM Peak, are at LOS C or above. For Scenario 2 with optimized signals, 29 of the 33 intersections for the AM Peak and 30 of the 33 intersections for the PM Peak are at LOS C or above. The following Wisconsin Avenue intersections are at LOS D or worse at peak periods on weekdays, largely due to heavy side street traffic:

- Tenley Circle North, Cathedral Avenue, Massachusetts Avenue, and Garfield Street (LOS E) in the AM peak hour, and
- Albemarle Street, Fannie Mae entrance, Whole Food entrance in Glover Park in the PM Peak hour.

Consistent with the pattern in Arterial LOS, many more intersections fail or approach failure for Scenarios 3 and 4. Details on forecast year 2014 intersection capacity analysis results and optimized signal systems are presented in Appendices R and S.

Exhibit 7-4A: Existing and Projected Levels of Service with Optimized Signal Timing – Weekday AM Peak Hour

Signalized Intersections	Existing LOS	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Wisconsin Ave. @ Fessenden St.	B	C	C	C	C
Wisconsin Ave. @ Ellicott St.	A	B	B	B	B
Wisconsin Ave. @ Davenport St.	A	A	A	A	A
Wisconsin Ave. @ Brandywine St.	B	B	C	C	C
Wisconsin Ave. @ Whole Foods Ent. (Tenleytown)	A	A	A	A	A
Wisconsin Ave. @ Albemarle St.	B	B	C	C	C
Wisconsin Ave. @ Tenley Circle North	C	C	**D**	**E**	**E**
Wisconsin Ave. @ Tenley Circle South	B	B	B	B	B
Wisconsin Ave. @ Van Ness St.	B	B	C	C	C
Wisconsin Ave. @ Upton St.	C	C	B	**D**	**E**
Wisconsin Ave. @ Fannie Mae	B	C	C	**D**	**D**
Wisconsin Ave. @ Rodman St.	A	A	A	B	B
Wisconsin Ave. @ Porter St.	C	C	C	C	C
Wisconsin Ave. @ Newark St.	B	B	B	C	C
Wisconsin Ave. @ Macomb St.	B	B	B	B	B
Wisconsin Ave. @ Woodley Rd.	B	B	C	C	C
Wisconsin Ave. @ Cathedral Ave.	C	**D**	**D**	**E**	**E**
Wisconsin Ave. @ Massachusetts Ave.	C	C	**D**	**D**	**E**
Wisconsin Ave. @ Garfield St.	**D**	**D**	**E**	**E**	**F**
Wisconsin Ave. @ Edmunds St.	A	A	A	A	A
Wisconsin Ave. @ Calvert St.	C	C	C	**E**	**F**
Wisconsin Ave. @ Whole Foods Ent. (Glover Park)	A	A	A	B	B
Wisconsin Ave. @ Hall St.	A	A	A	A	A
Wisconsin Ave. @ Whitehaven Sts	A	A	A	A	B
Wisconsin Ave. @ Whitehaven Pkwy.	B	B	B	B	B
River Rd. @ 42nd St. & Brandywine St.	C	C	C	C	C
Nebraska Ave. @ Albemarle St.	B	B	B	B	B
River Rd. @ Chesapeake St.	B	C	C	C	C
Albemarle St. @ 42nd St.	B	B	B	B	B
Van Ness St. @ Nebraska Ave.	B	B	B	B	B
34th St. @ Garfield St.	C	C	C	C	C
34th St. @ Cleveland Ave.	B	B	B	B	B
37th St. @ Calvert St.	C	C	C	C	C

Exhibit 7-4B: Existing and Projected Levels of Service with Optimized Signal Timing – Weekday PM Peak Hour

Signalized Intersections	Existing LOS	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Wisconsin Ave. @ Fessenden St.	B	B	C	**D**	**E**
Wisconsin Ave. @ Ellicott St.	A	A	B	B	C
Wisconsin Ave. @ Davenport St.	B	B	B	B	C
Wisconsin Ave. @ Brandywine St.	B	C	C	**D**	**E**
Wisconsin Ave. @ Whole Foods Ent. (Tenleytown)	A	A	A	A	A
Wisconsin Ave. @ Albemarle St.	B	B	**D**	**E**	**F**
Wisconsin Ave. @ Tenley Circle North	C	B	C	C	C
Wisconsin Ave. @ Tenley Circle South	B	B	B	C	**D**
Wisconsin Ave. @ Van Ness St.	C	C	C	**E**	**E**
Wisconsin Ave. @ Upton St.	B	B	C	C	**E**
Wisconsin Ave. @ Fannie Mae	B	B	**D**	**E**	**F**
Wisconsin Ave. @ Rodman St.	A	A	A	A	A
Wisconsin Ave. @ Porter St.	B	B	C	C	C
Wisconsin Ave. @ Newark St.	B	B	B	C	**D**
Wisconsin Ave. @ Macomb St.	B	B	C	C	**E**
Wisconsin Ave. @ Woodley Rd.	C	C	C	C	**D**
Wisconsin Ave. @ Cathedral Ave.	C	C	C	**E**	**F**
Wisconsin Ave. @ Massachusetts Ave.	C	C	C	**E**	**D**
Wisconsin Ave. @ Garfield St.	C	C	C	**D**	**E**
Wisconsin Ave. @ Edmunds St.	A	A	A	A	A
Wisconsin Ave. @ Calvert St.	B	B	C	**D**	**E**
Wisconsin Ave. @ Whole Foods Ent. (Glover Park)	B	C	**D**	**E**	**F**
Wisconsin Ave. @ Hall St.	A	A	A	A	A
Wisconsin Ave. @ Whitehaven Sts	A	A	A	A	A
Wisconsin Ave. @ Whitehaven Pkwy.	B	B	B	B	B
River Rd. @ 42nd St. & Brandywine St.	B	B	B	C	C
Nebraska Ave. @ Albemarle St.	B	B	B	B	B
River Rd. @ Chesapeake St.	A	B	B	B	B
Albemarle St. @ 42nd St.	B	B	B	B	B
Van Ness St. @ Nebraska Ave.	C	C	C	C	C
34th St. @ Garfield St.	B	C	C	C	C
34th St. @ Cleveland Ave.	B	B	B	B	B
37th St. @ Calvert St.	C	C	C	C	C

Exhibit 7-4C: Existing and Projected Levels of Service with Optimized Signal Timing – Saturday Mid-day Peak Hour

Signalized Intersections	Existing LOS	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Wisconsin Ave. @ Fessenden St.	C	**D**	**E**	**F**	**F**
Wisconsin Ave. @ Ellicott St.	C	C	C	**D**	**E**
Wisconsin Ave. @ Davenport St.	B	B	C	C	**D**
Wisconsin Ave. @ Brandywine St.	C	C	C	**D**	**E**
Wisconsin Ave. @ Whole Foods Ent. (Tenleytown)	A	A	C	**D**	**F**
Wisconsin Ave. @ Albemarle St.	**D**	**E**	**F**	**F**	**F**
Wisconsin Ave. @ Tenley Circle North	C	B	C	**D**	**D**
Wisconsin Ave. @ Tenley Circle South	B	B	B	B	B
Wisconsin Ave. @ Van Ness St.	C	C	C	C	**D**
Wisconsin Ave. @ Upton St.	C	C	C	**D**	**F**
Wisconsin Ave. @ Fannie Mae	C	C	**D**	**E**	**F**
Wisconsin Ave. @ Rodman St.	A	A	A	A	A
Wisconsin Ave. @ Porter St.	B	B	C	**D**	**E**
Wisconsin Ave. @ Newark St.	B	B	B	**D**	**E**
Wisconsin Ave. @ Macomb St.	A	B	B	C	C
Wisconsin Ave. @ Woodley Rd.	B	B	B	C	C
Wisconsin Ave. @ Cathedral Ave.	B	C	C	E	**E**
Wisconsin Ave. @ Massachusetts Ave.	A	B	B	B	B
Wisconsin Ave. @ Garfield St.	C	C	C	C	C
Wisconsin Ave. @ Edmunds St.	A	A	A	A	A
Wisconsin Ave. @ Calvert St.	**D**	**D**	**F**	**F**	**F**
Wisconsin Ave. @ Whole Foods Ent. (Glover Park)	C	C	**D**	**E**	**E**
Wisconsin Ave. @ Hall St.	A	A	A	A	A
Wisconsin Ave. @ Whitehaven Sts	A	A	A	A	A
Wisconsin Ave. @ Whitehaven Pkwy.	A	A	B	C	C
River Rd. @ 42nd St. & Brandywine St.	B	C	C	C	C
Nebraska Ave. @ Albemarle St.	B	B	B	B	B
River Rd. @ Chesapeake St.	A	A	A	A	A
Albemarle St. @ 42nd St.	B	B	B	B	B
Van Ness St. @ Nebraska Ave.	B	B	B	B	B
34th St. @ Garfield St.	B	C	C	C	C
34th St. @ Cleveland Ave.	B	B	B	B	B
37th St. @ Calvert St.	C	C	C	C	C

For all three cases combined (AM Peak, PM Peak, and Saturday), a simple tally of the number of intersections at D or worse are shown in Exhibit 7-5. More intersections will have LOS E and F as development increases.

Exhibit 7-5: Summary of Intersections with LOS D or Below by Scenario

	Existing	Scenario 1	Scenario 2	Scenario 3	Scenario 4
LOS A through C					
AM Peak	32	31	29	26	26
PM Peak	33	33	30	23	18
Saturday Mid-day	31	30	28	21	18
LOS D					
AM Peak	1	2	3	3	1
PM Peak	0	0	3	4	4
Saturday Mid-day	2	2	2	7	3
LOS E					
AM Peak	0	0	1	4	4
PM Peak	0	0	0	6	7
Saturday Mid-day	0	1	1	2	6
LOS F					
AM Peak	0	0	0	0	2
PM Peak	0	0	0	0	4
Saturday Mid-day	0	0	2	3	6

7.4 CONCLUSION

The Study Team concludes that the transportation improvements discussed in this report, in tandem with signal optimization will improve transportation operations in the corridor, contributing to pedestrian and traffic safety, and keeping through traffic on the major arterials and off local streets.

The forecasts are made with specific assumptions as to modal split and modal share (auto/ walk/ transit.) A shift in general behavior to favor more walking and more transit use would change these forecasts. Metropolitan Washington Council of Governments (MWCOG) posts various alternative transportation modes and available Transportation Demand Management (TDM) programs in the region on its website and presents them as the Commuter Connections program. The Study Team encourages this type of promotion of TDM programs to improve transportation conditions at a regional level that will have implications at the local level.

A number of the recommendations in this report concern pedestrian crossings and accessible ramps, as well as signage and pavement repair. Accomplishing these “housekeeping chores” will clarify the rules for all, and create a safer environment for pedestrians.

Some of the parking recommendations are made to improve traffic flow, while others are to maintain residential parking availability for “true” residents and “legitimate” visitors to neighborhoods. Still other parking recommendations refer to commercial uses. Parking remains a serious concern, citywide, and the WACTS Study Team in general supports the findings and recommendations of the Mayor’s Taskforce on Parking.

Recommendations of both short-term (within 12 months) and long-term (over 12 months) implementation must still go through an appropriate DDOT process. Specific projects, if

approved, will be conducted based on available capital funds. Planning cost estimates of these improvements are presented in Appendix T.

The short-term and long-term improvements can reasonably accommodate the development scenarios 1 and 2, which are considered the likely levels of development within this ten-year study time frame. Moderate delays at intersections are primarily encountered on Saturdays due to the prevalence on on-street parking, which is maintained under these recommendations.

As noted in the Study, if development approaches the levels identified in Scenarios 3 and 4, the long-term lane use improvements suggested in this report may be considered or required to accommodate continued transportation demand in the area, albeit with a cost to residents' quality of life.