I. PURPOSE AND NEED

MD 210 MULTI-MODAL STUDY

I. PURPOSE AND NEED

A. Project Location, Description and Purpose

The purpose of this multi-modal study is to address safety and the increasingly severe and frequent traffic congestion along this 10-mile long segment of MD 210 in an environmentally sensitive manner, while promoting aesthetic quality, community cohesiveness, multi-modal accessibility, and pedestrian/bicycle mobility.

The project area is located along MD 210 (Indian Head Highway) from I-95/495 (Capital Beltway) to MD 228 (Figure I-1).

MD 210 is a six-lane divided arterial highway with partial control of access. The northbound and southbound roadways are separated by a paved and/or grassed median, which includes a concrete barrier in some areas. Paved shoulders with open grading and guardrail exist generally along the outside of the roadways. Access to and from MD 210 is mainly provided at signalized major intersections with some non-signalized access points in between. Within the project area, MD 210 is paralleled intermittently on one or both sides by two-lane, two-way service roads. The discontinuity of these service roads prevents them from being a significant benefit to the capacity or operation of MD 210 or its intersections.

MD 210 serves as a major route connecting I-95/I-495 (the Capital Beltway), the District of Columbia, and Virginia with southern Prince George's County and Charles County. To avoid traffic congestion along MD 210 and its intersections, some commuters divert to county roadways, which parallel and/or cross MD 210, resulting in congestion on the side roads. These two-lane roads were intended to handle local traffic only and not the high volumes of through traffic that are being diverted from MD 210.

Although they are within the study area, the Oxon Hill Road and MD 228 intersections are being or have been improved under separate projects. Reconstruction of the I-95/495/MD 210 Interchange (Woodrow Wilson Bridge Project) will include the provision of a grade separated interchange at MD 210/Oxon Hill Road, including loop ramps in the southeast and southwest quadrants of this intersection. Bald Eagle Road over the Beltway will be reconstructed to provide pedestrian/bicyclists and vehicular access to Oxon Hill children's farm.

MD 228 improvements, which have been completed, consisted of three separate projects including the extension of MD 228 from Bealle Hill Road to MD 210, followed by dualization of MD 228 within the same area and finally, a continuous flow intersection at the intersection of MD 210 and MD 228.

B. Need

1. Deficiencies

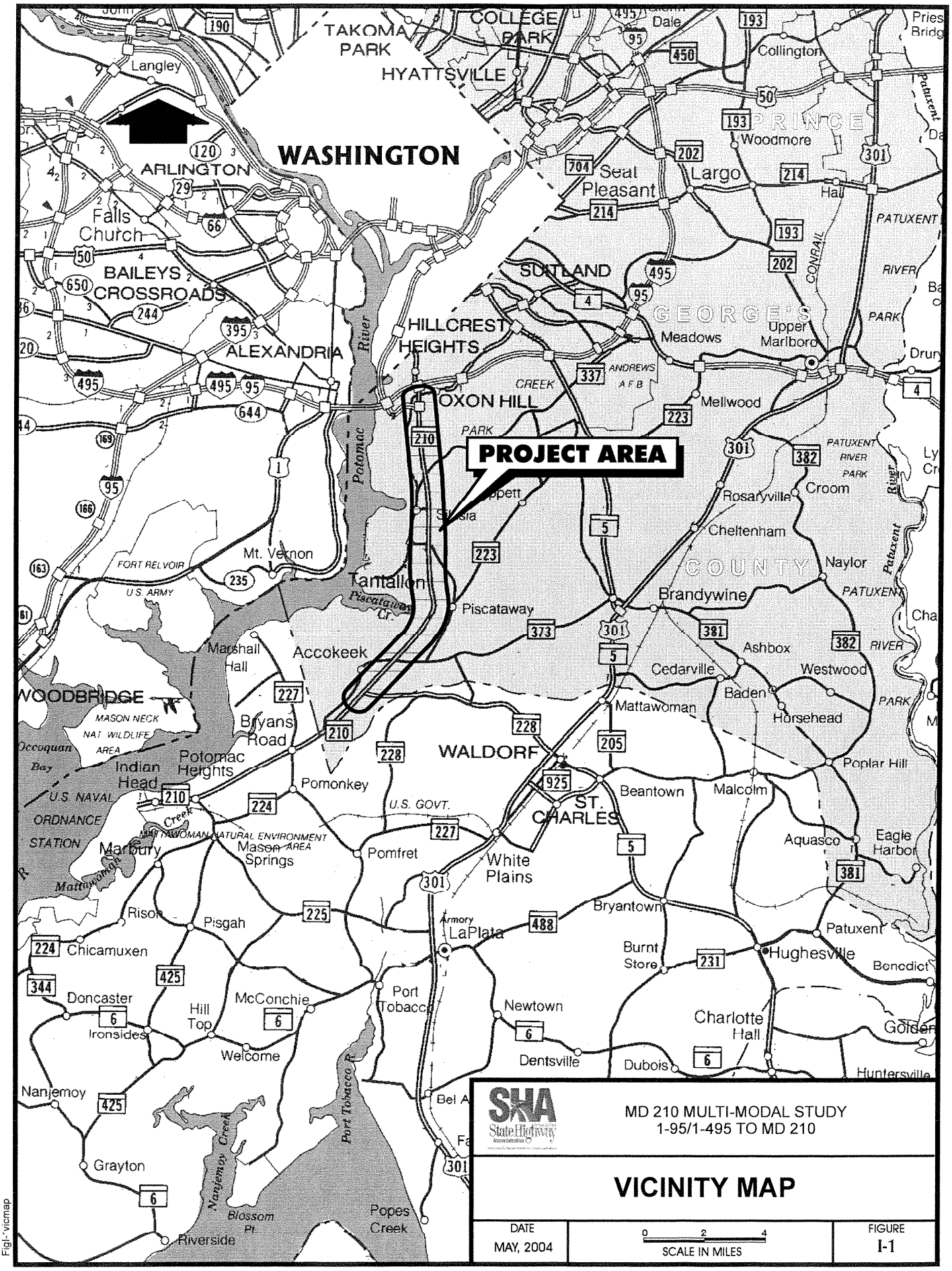
This project planning study began in the fall of 1997, following a feasibility study conducted by SHA, to address the increasingly severe and frequent traffic congestion along this 10-mile segment of MD 210.

Peak hour delays and congestion have become particularly prevalent at the 11 signalized intersections along this segment of MD 210 for through traffic and traffic accessing or crossing MD 210 from the side roads. Because the MD 210 intersections at Oxon Hill Road and MD 228 are being addressed by other projects, this study has focused on MD 210 and its nine signalized intersections from south of Oxon Hill Road to north of MD 228. Please see Figure I-2 for the locations of the study area intersections.

Observations of intersection traffic operations indicate that peak hour traffic entering or crossing MD 210 from side roads often requires several traffic signal cycles to go through the intersection. At many of these locations, short auxiliary lanes are prevented from being used by vehicles in queues approaching the traffic signal, resulting in, what is in effect, one lane approaching the intersection. In addition, the severe skew angle and sharp curvature at side road approaches reduce capacity below what it would normally be for the given number of lanes at a perpendicular intersection. Further complicating operations at several intersections (particularly Old Fort Road North and Fort Washington Road) is the close proximity of the service road intersections to MD 210. These service roads create unsignalized conflict points immediately adjacent to the main intersection.

2. Traffic

The existing 2000 average daily traffic (ADT) volumes on MD 210, as shown on Figure I-3, range from approximately 68,600 vehicles per day (VPD) at a point just south of the I-295 "S-curve" ramps to 43,600 VPD north of MD 228. This is the average number of vehicles passing a location on the road in both directions during a 24-hour period. South of MD 228, traffic volumes drop by 37% to 27,600 VPD on four lanes, and north of the Capital Beltway, traffic volumes drop by 42% from 37,600 to 22,000 VPD on four lanes. As shown on Figure I-4, the projected daily volumes for the MD 210 no-build condition in the year 2020 range from 92,000 VPD south of the I-295 "S-curve" ramps to about 63,000 VPD north of MD 228.

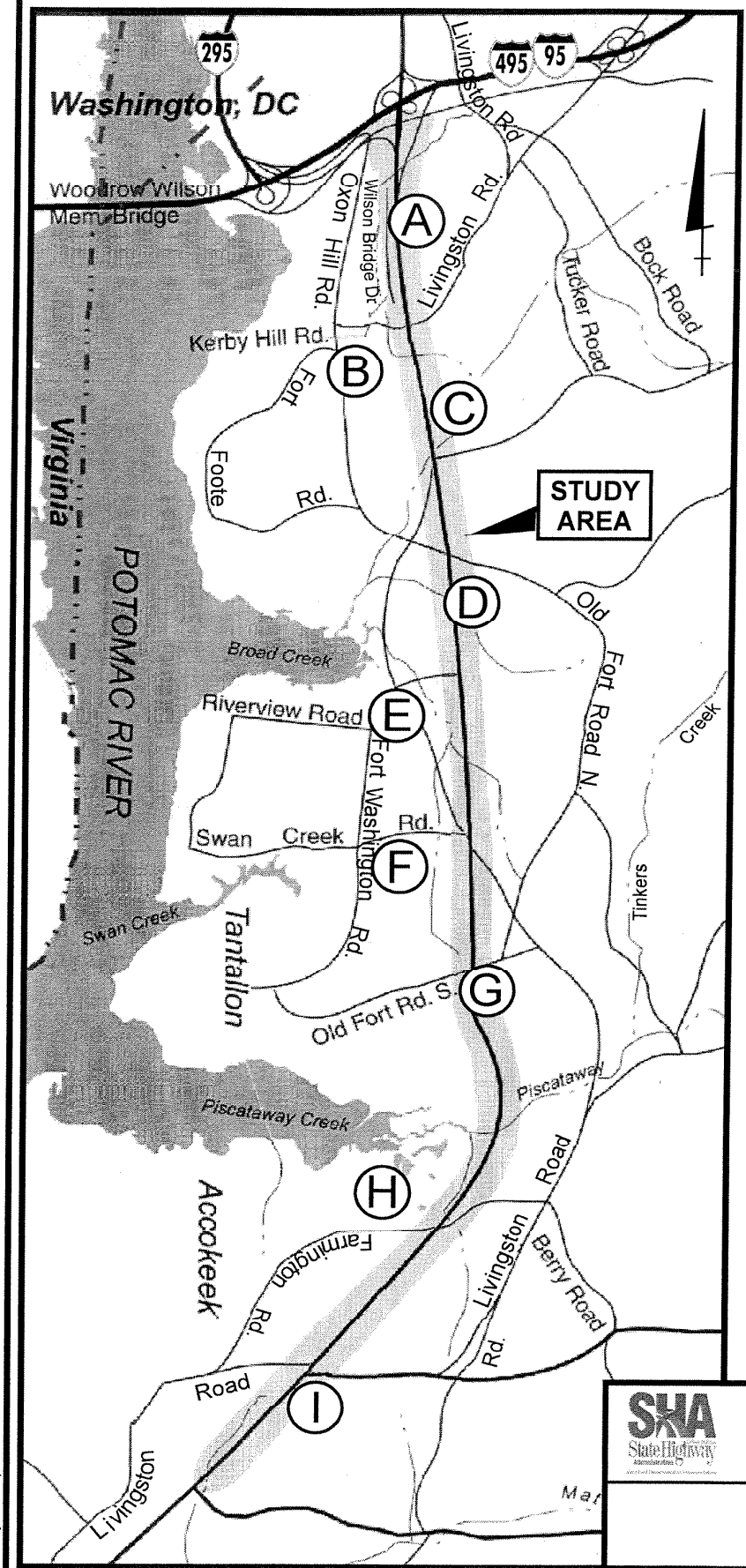


SHA State Highway Administration

MD 210 MULTI-MODAL STUDY
1-95/1-495 TO MD 210

VICINITY MAP

DATE	SCALE IN MILES	FIGURE
MAY, 2004	0 2 4	I-1



LEGEND

A - Wilson Bridge Drive
B - Kerby Hill Road
C - Palmer/Livingston Road
D - Old Fort Road North
E - Ft. Washington Road
F - Swan Creek Road
G - Old Fort Road South
H - Farmington Road
I - MD 373

SHA State Highway Administration

MD 210 MULTI-MODAL STUDY
1-95/1-495 TO MD 210

STUDY AREA MAP

DATE		FIGURE
MAY, 2004	0 2 4 SCALE IN MILES	I-2

Fig I-2-StudyAreaMap

An analysis was performed using the Metropolitan Washington Council of Governments (MWCOG) Regional Travel Demand Model output for the design year 2020 to determine general origins and destinations of traffic projected to be using MD 210 at two locations - just south of MD 228 and just south of the S-curve (I-295) ramps. The breakdown of flow between regional groupings of traffic analysis zones using MD 210 is illustrated on Figures I-5 and I-6. At a point just south of MD 228, approximately 75% of the MD 210 ADT is projected to be oriented either to or from Charles County. At a point just south of the I-295 ramps, approximately 40% of the MD 210 ADT is projected to be oriented either to or from Charles County.

The traffic flow along any type of highway or through any intersection is measured in terms of level of service (LOS). LOS at a given location is graded A through F, with LOS A representing excellent traffic flow with little or no delay, and LOS F representing "failing" traffic flow with total congestion where several signal cycles are required to clear traffic through an intersection. The Volume-to-Capacity (V/C) ratio is the volume of traffic desiring to travel through the intersection divided by the theoretical capacity of the intersection in a given period.

Level of Service (LOS) analyses for existing MD 210 have been performed for 2000 and the projected 2020 traffic volumes. Existing (2000) peak hour, peak direction volumes on MD 210 range from 4,450 vehicles near the Wilson Bridge Drive intersection to 2,900 vehicles near the MD 373 intersection. Levels of service for existing conditions, summarized in Figure I-3, indicate that four of the eleven signalized intersections in the study area are currently operating at failing conditions during the morning peak period and six of the eleven signalized intersections are currently operating at failing conditions during the evening peak period.

The current vehicle occupancy level on MD 210 ranges from 1.20 to 1.23 occupants per vehicle during the peak periods based on observations made in October 2000.

Since the through-traffic on MD 210 requires most of the green time at the signalized intersections, congestion and delay are also experienced by motorists on the intersecting streets. Signals along MD 210 operate with an average cycle length of 210 seconds. Traffic on the intersecting streets often experience significant intersection delays and vehicle queues when approaching MD 210. Currently, some side streets only receive 12 seconds of green time per cycle forcing many commuters on the local roads to wait two to three traffic cycles to access or cross MD 210 during the morning and evening peak periods. If congestion along MD 210 is not addressed this condition is expected to become worse by the year 2020.

Future operations throughout the day are predicted to worsen and the number of hours each day that intersections will operate at LOS F will increase. For example, the Kerby Hill Road intersection currently operates at LOS F for approximately four hours per day, from 6:00 a.m. to 8:00 a.m. and 3:00 p.m. to 5:00 p.m. By the year 2020, if no improvements are made, the total daily duration of failing conditions at this intersection is projected to be 11 hours. In addition, all eleven-study area intersections will reach LOS F, and some intersections will be handling nearly twice the volume of traffic they are designed to handle. 2020 levels of service are summarized on Figure I-4.

3. Safety

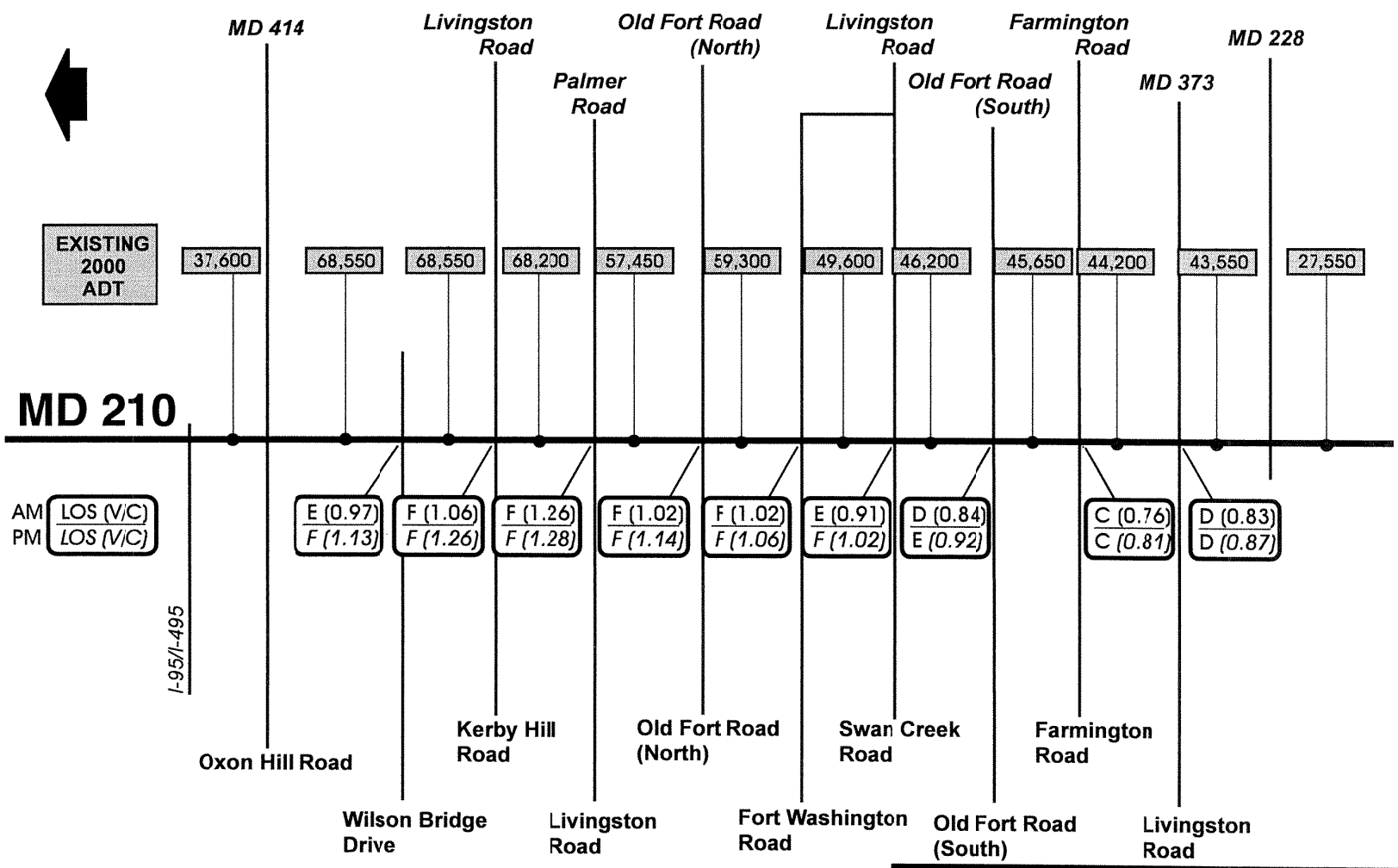
A review of a three-and-a-half-year accident history (January, 2000 through June, 2003) indicates that a total of 727 accidents occurred along MD 210 from MD 228 to I-95/495 during this period. Intersection collisions and rear-ends were the primary types of accidents and are caused by traffic congestion. The accident data were broken down into four segments: MD 228 to Fort Washington Road, Fort Washington Road to Palmer Road/Livingston Road, Palmer Road/Livingston Road to the I-295 ramps and the I-295 ramps to the I-95/I-495 interchange.

The average accident rate for MD 210 between MD 228 and Fort Washington Road (6.0 miles) from 1997 through July, 2000 was 85.3 accidents per 100 million vehicle miles of travel (acc/100 mvm), which was less than the statewide average accident rate of 113.7 acc/100 mvm for similarly designed rural/urban highways. The rates for parked vehicle and crashes categorized as "other" were significantly higher than the statewide average.

The average accident rate for MD 210 between Fort Washington Road and Palmer Road/Livingston Road (1.64 miles) from 1997 through July, 2000 was 136.5 acc/100 mvm, which was less than the statewide average accident rate of 156.5 acc/100 mvm for similarly designed highways. The rates for sideswipe and crashes categorized as "other" were significantly higher than the statewide average.

On the section of MD 210 between Palmer/Livingston Roads and the I-295 ramps (2.3 miles), the average accident rate was 140.3 acc/100 mvm, which was less than the statewide accident rate of 159.7 acc/100 mvm for similar highways. The rate for crashes categorized as "other" was significantly higher than the statewide average.

On the section of MD 210 between the I-295 ramps and the I-95/495 interchange (0.6 mile), the average accident rate was 427.8 cc/100 mvm, which was significantly higher than the statewide accident rate of 159.7 acc/100 mvm for similarly designed highways. The rates for all categories of crashes were significantly higher than the statewide average.

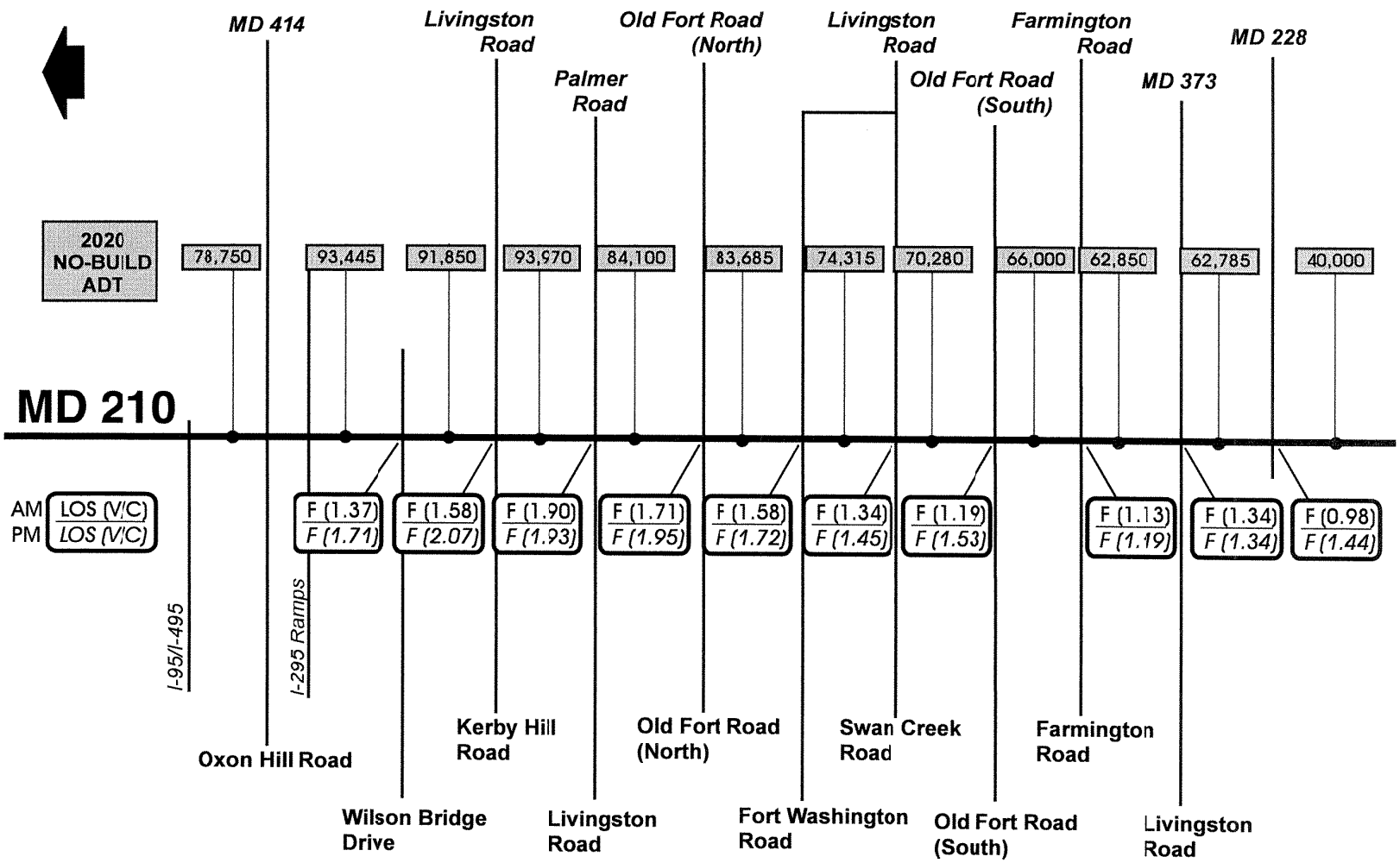


SHA State Highway Administration

MD 210 MULTI-MODAL STUDY
1-95/1-495 TO MD 210

EXISTING (2000) AVERAGE DAILY TRAFFIC(ADT) AND LEVELS OF SERVICE (LOS)

DATE		FIGURE
MAY, 2004	NOT TO SCALE	I-3

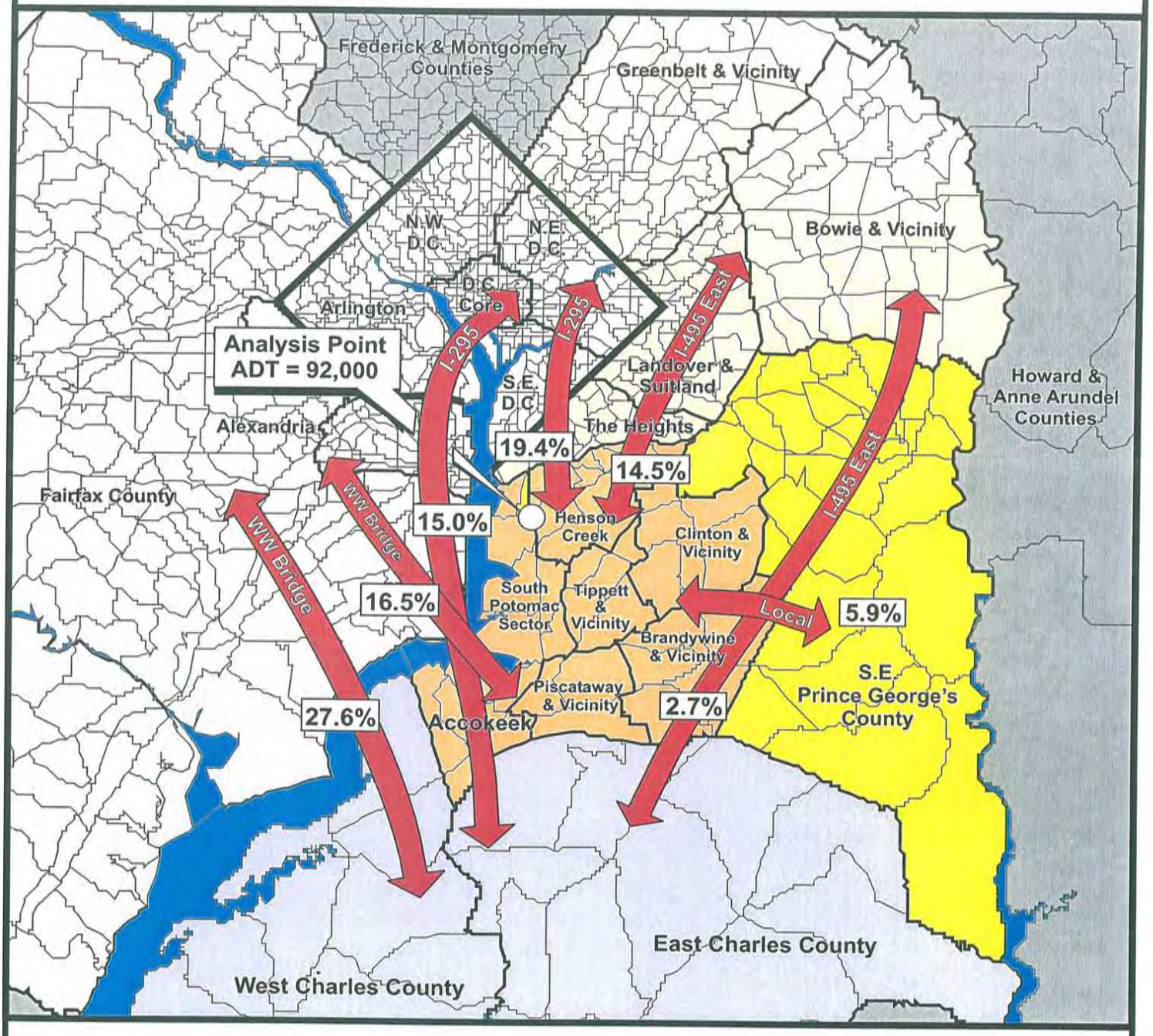


SHA State Highway Administration

MD 210 MULTI-MODAL STUDY
1-95/1-495 TO MD 210

2020 AVERAGE DAILY TRAFFIC(ADT) AND LEVELS OF SERVICE (LOS) PROJECTIONS

DATE		FIGURE
MAY, 2004	NOT TO SCALE	I-4

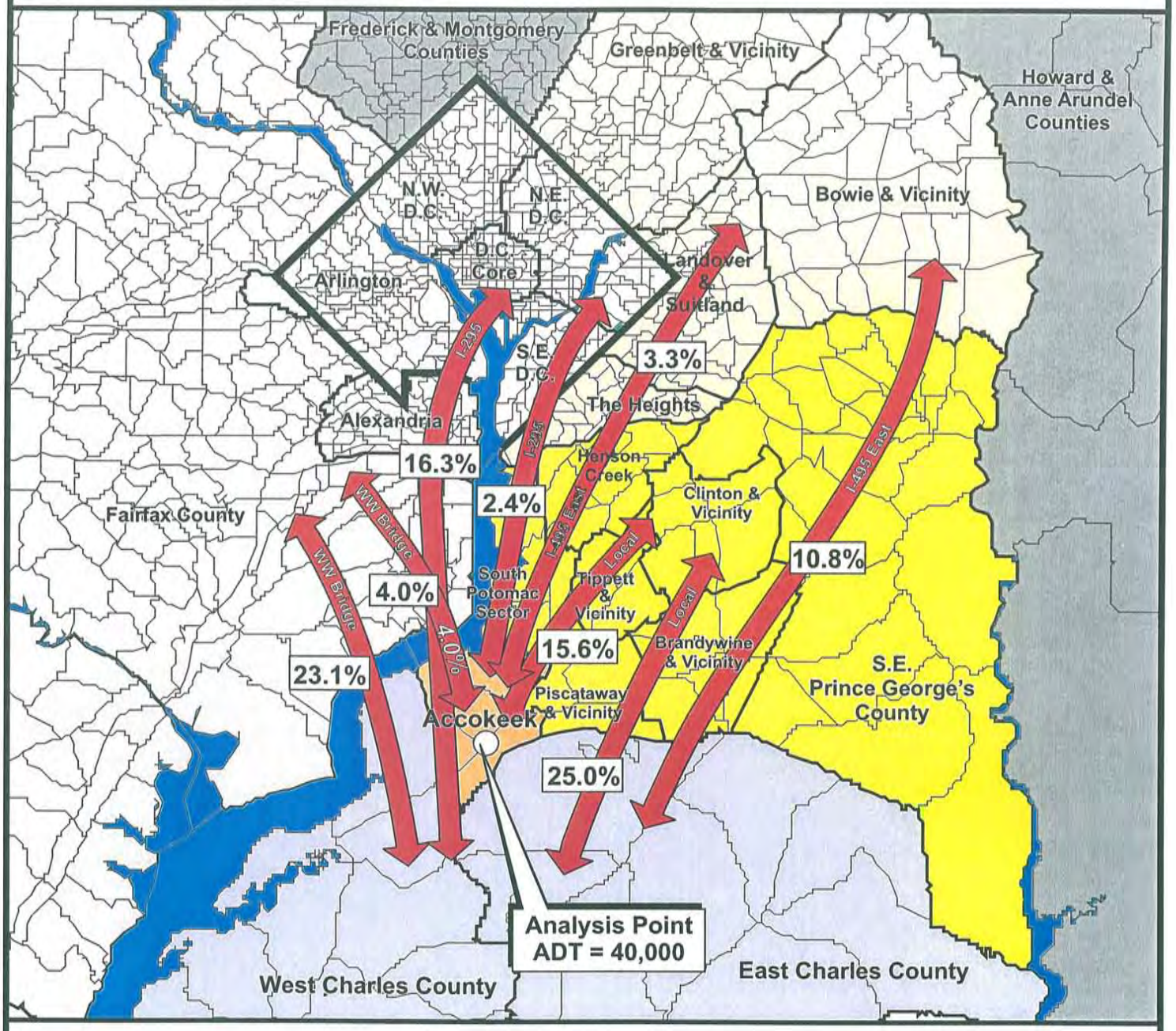


SHA State Highway Administration

MD 210 MULTI-MODAL STUDY
1-95/1-495 TO MD 210

YEAR 2020 - ORIGIN / DESINATION OF AVERAGE DAILY TRIPS ALONG MD 210 AT NORTH END OF CORRIDOR

DATE		FIGURE
MAY, 2004	NOT TO SCALE	I-5



SHA State Highway Administration

MD 210 MULTI-MODAL STUDY
1-95/1-495 TO MD 210

YEAR 2020 - ORIGIN / DESINATION OF AVERAGE DAILY TRIPS ALONG MD 210 AT SOUTH END OF CORRIDOR

DATE		FIGURE
MAY, 2004	NOT TO SCALE	I-6

Two locations within the study area qualified as Priority Candidate Safety Improvement intersections during the study period: MD 210 at Kerby Hill Road/Livingston Road (in 2001 and 2002), and MD 210 at MD 414/Oxon Hill Road (in 2002). The MD 414/Oxon Hill intersection is being addressed as part of the Woodrow Wilson Bridge Project.

C. Existing and Proposed Land Use

Existing and proposed development is composed of primarily residential and commercial land uses. The land use along MD 210, from the Capital Beltway to Henson Creek (included in the Subregion VII, Henson Creek and South Potomac planning area) is higher density suburban type development. The MD 210 corridor south of Henson Creek is traditionally a suburban, mostly single family residential, atmosphere with a strain of commercial development at major intersections. The commercial development along this corridor includes Livingston Square, Fort Washington, Potomac, Old Forte Village, Tantallon-Livingston and Forest Plaza Shopping Centers. Residential land use accounts for approximately 50 percent of the developed area. Residential growth within Subregion V is expected to increase.

One major development is planned near MD 210 beyond the study limits. The National Harbor project has been proposed along I-95/495 between the Potomac River and Oxon Hill Road and is currently being constructed. Numerous minor developments are planned throughout the MD 210 corridor, primarily in the southern half, and in northern Charles County.

D. System Linkage

MD 210 serves as a major route connecting I-95/495, the District of Columbia, and Virginia with Southern Prince George's County and Charles County. This facility is on the National Highway System and it is also part of the State Primary System. MD 210 is functionally classified as a Rural Other Principal Arterial on the Federal Functional Classification System south of Piscataway Creek and an Urban Freeway/Expressway north of Piscataway Creek.

The previously two-lane section of MD 228 between MD 210 and the Charles County Line has been recently reconstructed as a four-lane divided highway. This project included a major reconstruction and capacity upgrade to the MD 210/MD 228 intersections.

Several park and ride facilities currently serve the MD 210 Corridor: (1) Oxon Hill, located on Oxon Hill Road west of MD 210, owned by Prince George's County, with 650 spaces, experiencing usage of 35% to 40% of capacity; (2) ABC Drive-In, located at MD 210 service drive north of Palmer/Livingston Roads intersection, owned by Prince George's County,

with 100 spaces experiencing usage of 10% of capacity; (3) Fort Washington, located on Swan Creek Road west of MD 210, owned by Prince George's County, with 400 spaces experiencing usage of 25% to 30% of capacity; and (4) Livingston Road, located on MD 373 east of MD 210, owned by SHA, with 550 spaces, has recently opened.

Transit services along the MD 210 Corridor include services by the Maryland Mass Transit Administration (MTA) and Washington Metropolitan Area Transit Authority (WMATA), as well as vanpool services coordinated by the Tri-County Council Van Service.

The Mass Transit Administration operates a long-distance commuter bus service along MD 210 between Charlotte Hall and Washington DC, via Waldorf. This service includes 36 trips (18 round trips) that operate during morning and evening peak periods with an average headway of five to ten minutes. The average daily ridership is approximately 1,100 and makes no stops in Prince George's County.

WMATA currently operates five lines on MD Route 210 south of I-495 (D13, D14, W15, W17, W19) with a daily total ridership of approximately 2,200. Other routes operating on roadways parallel to MD Route 210 between Oxon Hill Road and MD 228 (P17, P18, P19, W13, W14) have an average weekday ridership of approximately 2,600. In addition, 45 vanpools coordinated by the Tri-County Council Van Service operate along MD 210.

E. <u>County Comprehensive Plan</u>

The proposed project is located in the Prince George's County Subregion V (Clinton, Accokeek, Piscataway, Brandywine, and Vicinity planning area) and Subregion VII (Henson Creek and South Potomac) planning areas. The Prince George's County Council has designated MD 210 as a growth policy corridor from the District of Columbia to Livingston Road in their Adopted and Approved Biennial Growth Policy Plan (BGPP).

Maryland Route 210 north of Piscataway is included in Prince George's County Subregion VII. Recognizing the growth in this area, the Subregion VII Master Plan recommends major improvements along the MD 210 corridor. The plan identifies MD 210 South of the Capital Beltway as expressway/freeway in this planning area.

Transportation improvements to MD 210 are also recommended in the Subregion V Master Plan. Improving traffic circulation and operational problems and addressing regional traffic diversion from residential frontage properties and residential roadways along this segment of MD 210 is recommended in the master plan. The master plan calls for incremental upgrades to accommodate commuters using the roadway as a route to Washington, DC. It also

recommends upgrades to make the facility more transit friendly, efficient to handle future employment growth and capable of circulating large through-traffic movements.

F. Conclusion

In summary, MD 210 within the study area experiences severe traffic congestion during the morning and evening peak periods. The projected traffic volumes indicate that congestion will worsen, particularly at the intersections.

Delays along the side streets during the morning and evening peak periods are long and anticipated to worsen, if no improvements are implemented along this corridor. Elected officials and area residents are anxious to resolve significant intersection delays along side streets and the inability to access MD 210 from local roads during peak periods. SHA – Selected Alternative 5A Modified will improve traffic congestion along MD 210, accessibility problems along the corridor and adjacent side roads and will address the high accident rates experienced along MD 210.