

**Table 29: Roadway Capacity Results Review for Existing and 2019 Background/Future**

Intersection	Locations & Scenarios with LOS F <i>EX = Existing Conditions</i> <i>BG = 2016 Background (without Development)</i> <i>TF = 2016 Total Future (with Development)</i> <i>HZ = 2027 Total Future (with Development)</i>	Percent of Vehicular Traffic Attributable to Development (in HZ scenario)		Discussion & Recommendations
		AM Peak	PM Peak	
<b>South Capitol Street &amp; I Street</b>	EB I Street AM Peak: BG, TF, HZ WB I Street AM Peak: HZ			The delays at this intersection are due to the existing intersection configuration. The delays projected for the eastbound movement along I Street are at LOS E during the existing AM Peak Period and degrade to LOS F under background 2016 conditions, without the site. The AM Peak Period LOS on eastbound I Street is further exacerbated in the 2016 and 2027 Total Future scenarios. The intersection operates under overall acceptable conditions during the morning, afternoon, Saturday evening, and Game Day peak hours in the 2016 Total Future conditions. With the addition of the inherent growth to 2027, the westbound approach degrades to unacceptable conditions during the AM and Game Day peak hours, which causes the overall intersection to operate under unacceptable conditions as well. The reconfiguration of the eastbound approach from separate left-through and right turn lanes to separate left and through-right lanes could alleviate some of the delays experienced at this intersection, although this improvement would be necessary regardless of the development of the site.
	EB I Street PM Peak: HZ	0.6%	1.7%	
<b>South Capitol Street Southbound &amp; M Street</b>	Overall intersection Game Day Peak: HZ EB I Street Game Day Peak: BG, TF, HZ WB I Street Game Day Peak: HZ			As noted previously in this study, these two intersections are planned to be redesigned from a grade separated condition to an at-grade single intersection by the 2027 Horizon year. The delays projected prior to the redesign only occur during Game Day conditions under the BG and TF 2016 scenarios. Delays anticipated during the 2027 Horizon year are due to the planned redesign of the intersection and are exacerbated by background and site growth.
	Overall intersection AM Peak: HZ NB S Capitol Street AM Peak: HZ WB M Street Game Day Peak: HZ	0.5%	1.4%	
<b>South Capitol Street Northbound &amp; M Street</b>	NB S Capitol Street Game Day Peak: BG, TF			
<b>Potomac Avenue &amp; South Capitol Street</b>	Overall intersection AM Peak: BG, TF NB S Capitol Street AM Peak: EX, BG, TF			The delays at the intersection are due to the existing lane configurations and signal timings. Southbound operations are much worse in the afternoon peak period due than northbound operations during the morning peak period to the existing configuration of the Frederick Douglas Bridge as two lanes southbound and three lanes northbound. This intersection carries a significant volume of regional through traffic, so signal timings are programmed in order to favor the South Capitol Street vehicular traffic over that on Potomac Avenue. The addition of the trips generated by the background developments and the site-generated trips exacerbates the existing failing operation during the afternoon peak hour. The addition of the trips generated by the background developments and the site-generated trips also leads to the failing operation of the intersection in the morning peak hour due to the northbound approach. However, no signal timing or infrastructure changes are available to improve the existing operation of the intersection. These issues were directly studied in the South Capitol Street FEIS, including recommendations such as the planned traffic oval, which was examined under the 2027 Horizon year scenario. Based on the incorporation of the planned traffic oval for the 2027 Horizon year scenario, delays on westbound S. Capitol Street oval approach to S. Capitol Street are anticipated during the PM and Game Day peak hours. This is primarily due to the significant southbound through volumes as described above.
	Overall intersection PM Peak: EX, BG, TF EB Potomac Avenue PM Peak: EX, BG, TF WB Potomac Avenue PM Peak: EX, BG, TF NB S Capitol Street PM Peak: EX, BG, TF SB S Capitol Street PM Peak: EX, BG, TF WB S Capitol Street Oval PM Peak: HZ	0.9%	2.2%	
<b>South Capitol Street &amp; N Street</b>	Overall intersection Game Day Peak: EX, BG, TF EB Potomac Avenue Game Day Peak: EX, BG, TF WB Potomac Avenue Game Day Peak: EX, BG, TF NB S Capitol Street Game Day Peak: BG, TF SB S Capitol Street Game Day Peak: EX, BG, TF WB S Capitol Street Oval Game Day Peak: HZ			As noted previously in this study, this intersection is planned to be redesigned by the 2027 Horizon year. The delays at this intersection are due to the existing intersection configuration. The delays projected for the southeastbound movement along S Capitol Street exist during the PM and Game Day peak periods as local, S. Capitol Street ramp traffic merges with through S. Capitol Street traffic at the intersection. This condition is exacerbated during the 2016 background and total future scenarios. In addition, through volumes on S. Capitol Street cause the westbound N Street approach to operate beyond capacity during the background and total future PM peak periods. The redesign of the intersection greatly improves operations for all 2027 Horizon year scenarios, allowing the intersection to operate within acceptable levels of service.
	WB N Street PM Peak: BG, TF SEB S Capitol Street PM Peak: EX, BG, TF	0.3%	0.4%	
	Overall intersection Game Day Peak: BG, TF SEB S Capitol Street Game Day Peak: EX, BG, TF			

Intersection	Locations & Scenarios with LOS F <i>EX = Existing Conditions</i> <i>BG = 2016 Background (without Development)</i> <i>TF = 2016 Total Future (with Development)</i> <i>HZ = 2027 Total Future (with Development)</i>	Percent of Vehicular Traffic Attributable to Development (in HZ scenario)		Discussion & Recommendations
<b>M Street &amp; 1st Street</b>	NB 1st Street PM Peak: HZ  Overall intersection Game Day Peak: HZ EB M Street Game Day Peak: HZ NB 1st Street Game Day Peak: HZ	1.7%	3.3%	This intersection operates within overall acceptable levels of service under all scenarios with the exception of the 2027 Horizon year game day peak hour. Background and site traffic as well as gameday traffic propagate delays that are beyond acceptable levels along eastbound M Street and northbound 1 <sup>st</sup> Street. A similar condition is anticipated to exist during the PM peak period along northbound 1 <sup>st</sup> Street, however, the overall intersection will continue to operate at an acceptable level of service during this condition. Retiming of the traffic signal would allow the intersection to operate acceptably during the 2027 Horizon year. <b><u>This report recommends that the Applicant coordinate with DDOT to retime the traffic signal at this intersection.</u></b>
<b>M Street &amp; New Jersey Avenue</b>	NB New Jersey Ave Game Day Peak: HZ	0.9%	1.6%	This intersection operates within overall acceptable levels of service under all scenarios with the exception of the 2027 Horizon year game day peak hour. Because this unacceptable level of service is only experienced during the game day peak hour, we do not recommend that any changes be made to this intersection as a part of overall project.
<b>N Street &amp; New Jersey Avenue/Tingey Square</b>	N Street & New Jersey Ave: Operates at acceptable levels for EX, BG, and TF  Tingey Square: WB Tingey Street AM: HZ SB New Jersey Ave AM: HZ  EB N Street PM: HZ WB Tingey Street PM: HZ  EB N Street Game Day: HZ WB Tingey Street Game Day: HZ SB New Jersey Ave Game Day: HZ	4.1%	9.8%	This intersection operates within overall acceptable levels of service under Existing, Background, and 2016 Total Future scenarios. For the purpose of the 2027 Horizon year, the intersection (and those in the immediate vicinity) will be combined to form Tingey Square. All approaches to the square are currently proposed as yield-controlled; however, appropriate traffic control measures will be further analyzed. Some approaches of Tingey Square operate at an unacceptable LOS during the AM, PM, and Game Day peak periods. It should be noted that if the intersection were to remain in its current alignment, it would also operate at unacceptable levels during the PM and Game Day peak periods. Background traffic, particularly from the Yards Parcels F, G, H, and I, combine with other background growth and site traffic resulting in unacceptable levels of service. <b><u>This report recommends that the Applicant coordinate with DDOT to install appropriate traffic control measures for the efficient operation of Tingey Square.</u></b>
<b>M Street &amp; 4th Street</b>	NB 4th Street AM Peak: HZ NB 4th Street PM Peak: HZ NB 4th Street Game Day Peak: HZ	1.5%	3.3%	This intersection operates within overall acceptable levels of service under all scenarios. However, the northbound 4 <sup>th</sup> Street approach is anticipated to operate at LOS F during the PM and game day peak hours in 2027. Since site trips account for a small percentage of the overall vehicular traffic at this intersection, the northbound delays result from other background growth within the study area. Retiming of the traffic signal would allow the intersection to operate acceptably during the 2027 Horizon year. <b><u>This report recommends that the Applicant coordinate with DDOT to retime the traffic signal at this intersection.</u></b>
<b>M Street &amp; 5<sup>th</sup> Street</b>	SB 5 <sup>th</sup> Street AM Peak: HZ  EB Left M Street PM Peak: HZ SB 5 <sup>th</sup> Street PM Peak: TF, HZ  EB Left M Street Game Day Peak: HZ SB 5 <sup>th</sup> Street Game Day Peak: BG, TF, HZ	1.4%	2.6%	As identified in previous studies, the delay along the stop-controlled southbound approach is due to the addition of trips generated along M Street by the background developments during the afternoon and game day peak hours. Although no site-generated trips are added to the southbound leg of this intersection, the addition of the site-generated through trips on M Street exacerbates this failing operation. 2027 Horizon year scenarios anticipate excessing southbound delays during the AM peak hour as well as overall delays during the afternoon and game day peak hours. Constructing a signal at this intersection allows for it to operate under acceptable conditions during all scenarios, however this improvement would be needed regardless of the development of the site.

Table 30: Vehicular Level of Service Results with Proposed Improvements (Existing, Background)

Intersection	Approach	Existing Conditions (2013)								Background Conditions (2016)								
		AM Peak Hour		PM Peak Hour		Sat Peak Hour		Game Day Peak Hour		AM Peak Hour		PM Peak Hour		Sat Peak Hour		Game Day Peak Hour		
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	
<b>I Street &amp; South Capitol Street</b>	<b>Overall</b>	<b>30.5</b>	<b>C</b>	<b>18.8</b>	<b>B</b>	<b>16.5</b>	<b>B</b>	<b>27.0</b>	<b>C</b>	<b>43.0</b>	<b>D</b>	<b>24.1</b>	<b>C</b>	<b>16.1</b>	<b>B</b>	<b>38.2</b>	<b>D</b>	
	Eastbound	76.5	E	45.3	D	28.6	C	61.3	E	178.0	F	72.7	E	30.7	C	157.8	F	
	Westbound	51.4	D	39.3	D	28.8	C	44.5	D	63.4	E	46.9	D	31.0	C	57.7	E	
	Northbound	26.4	C	7.4	A	7.5	A	23.6	C	31.1	C	7.5	A	7.2	A	18.4	B	
	Southbound	20.1	C	17.2	B	20.1	C	17.2	B	20.6	C	17.5	B	24.5	C	17.6	B	
	<b>Improvements:</b>	<b>Overall</b>	--	--	--	--	--	--	--	--	<b>32.5</b>	<b>C</b>	<b>21.8</b>	<b>C</b>	<b>17.3</b>	<b>B</b>	<b>28.1</b>	<b>C</b>
	<i>Modify lane configuration such that the EB movement has a left turn lane and a thru-right lane</i>	<i>Eastbound</i>	--	--	--	--	--	--	--	--	49.9	D	52.2	D	29.6	C	65.3	E
		<i>Westbound</i>	--	--	--	--	--	--	--	--	63.4	E	46.9	D	31.0	C	57.7	E
		<i>Northbound</i>	--	--	--	--	--	--	--	--	31.1	C	7.5	A	7.2	A	18.4	B
		<i>Southbound</i>	--	--	--	--	--	--	--	--	20.6	C	17.5	B	20.4	C	17.6	B
<b>M Street &amp; 5th Street</b>	Eastbound Left	1.2	A	0.8	A	0.5	A	1.0	A	2.3	A	3.3	A	1.4	A	3.2	B	
	Southbound	18.2	C	28.8	D	10.0	A	31.2	D	24.2	C	55.2	F	10.9	B	72.6	F	
	<b>Improvements:</b>	<b>Overall</b>	--	--	--	--	--	--	--	30.1	C	27.4	C	27.0	C	31.9	C	
	<i>Install Signal</i>	<i>Eastbound</i>	--	--	--	--	--	--	--	30.4	C	34.9	C	19.3	B	43.1	D	
		<i>Westbound</i>	--	--	--	--	--	--	--	30.9	C	18.4	B	37.5	D	18.3	B	
	<i>Southbound</i>	--	--	--	--	--	--	--	8.6	A	15.6	B	3.6	A	15.7	B		

Table 31: Vehicular Level of Service Results with Proposed Improvements (Total Future 2016 with Canal Street, Total Future 2016 without Canal Street)

Intersection	Approach	Total Future Conditions with Canal Street (2016)								Total Future Conditions without Canal Street (2016)								
		AM Peak Hour		PM Peak Hour		Sat Peak Hour		Game Day Peak Hour		AM Peak Hour		PM Peak Hour		Sat Peak Hour		Game Day Peak Hour		
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	
<b>I Street &amp; South Capitol Street</b>	<b>Overall</b>	<b>41.8</b>	<b>D</b>	<b>24.6</b>	<b>C</b>	<b>19.5</b>	<b>B</b>	<b>39.4</b>	<b>D</b>	<b>41.8</b>	<b>D</b>	<b>24.6</b>	<b>C</b>	<b>19.5</b>	<b>B</b>	<b>39.3</b>	<b>D</b>	
	Eastbound	178.0	F	76.0	E	31.3	C	165.3	F	178.0	F	76.0	E	31.3	C	165.3	F	
	Westbound	63.4	E	47.6	D	31.9	C	60.0	E	63.4	E	47.6	D	31.9	C	59.2	E	
	Northbound	28.9	C	7.7	A	12.4	B	18.4	B	28.9	C	7.7	A	12.4	B	18.4	B	
	Southbound	20.2	D	17.6	B	23.1	C	17.6	B	20.2	D	17.6	B	23.1	C	17.6	B	
	<b>Improvements:</b>	<b>Overall</b>	<b>31.3</b>	<b>C</b>	<b>22.0</b>	<b>C</b>	<b>19.5</b>	<b>B</b>	<b>28.5</b>	<b>C</b>	<b>31.3</b>	<b>C</b>	<b>22.0</b>	<b>C</b>	<b>19.3</b>	<b>B</b>	<b>28.4</b>	<b>C</b>
	<i>Modify lane configuration such that the EB movement has a left turn lane and a thru-right lane</i>	Eastbound	49.9	D	52.6	D	30.0	C	66.0	E	49.9	D	52.6	D	30.0	C	66.0	E
	Westbound	63.4	E	47.6	D	31.9	C	60.0	E	63.4	E	47.6	D	31.9	C	59.2	E	
	Northbound	28.9	C	7.7	A	12.4	B	18.4	B	28.9	C	7.7	A	12.4	B	18.4	B	
	Southbound	20.2	C	17.6	B	20.5	C	17.6	B	20.2	C	17.6	B	23.1	C	17.6	B	
<b>M Street &amp; 5th Street</b>	Eastbound Left	2.3	A	3.3	A	1.5	A	3.3	B	2.3	A	3.3	A	1.5	A	3.2	B	
	Southbound	24.2	C	57.6	F	11.4	B	77.2	F	24.2	C	57.6	F	11.4	B	75.6	F	
	<b>Improvements:</b>	<b>Overall</b>	<b>30.2</b>	<b>C</b>	<b>26.0</b>	<b>C</b>	<b>27.5</b>	<b>C</b>	<b>30.5</b>	<b>C</b>	<b>30.2</b>	<b>C</b>	<b>26.0</b>	<b>C</b>	<b>27.5</b>	<b>C</b>	<b>30.9</b>	<b>C</b>
	<i>Install Signal</i>	Eastbound	30.5	C	32.8	C	21.2	C	40.9	D	30.5	C	32.8	C	21.2	C	41.5	D
	Westbound	30.9	C	17.8	B	36.2	D	17.7	B	30.9	C	17.8	B	36.2	D	17.9	B	
Southbound	8.6	A	16.1	B	4.1	A	16.2	B	8.6	A	16.1	B	4.1	A	16.1	B		

Table 32: Vehicular Level of Service Results with Proposed Improvements (Total Future 2027)

Intersection	Approach	Total Future Conditions (2027)								
		AM Peak Hour		PM Peak Hour		Sat Peak Hour		Game Day Peak Hour		
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	
<b>I Street &amp; South Capitol Street</b>	<b>Overall</b>	<b>79.5</b>	<b>E</b>	<b>76.1</b>	<b>E</b>	<b>20.2</b>	<b>C</b>	<b>100.0</b>	<b>F</b>	
	Eastbound	507.9	F	429.5	F	35.9	D	648.1	F	
	Westbound	81.5	F	71.1	E	34.3	C	104.9	F	
	Northbound	31.6	C	27.3	C	15.6	B	16.2	B	
	Southbound	21.5	C	18.0	B	16.0	B	17.7	B	
	<b>Improvements:</b>	<b>Overall</b>	<b>39.1</b>	<b>D</b>	<b>35.9</b>	<b>D</b>	<b>19.9</b>	<b>B</b>	<b>40.7</b>	<b>D</b>
	<i>Modify lane configuration such that the EB movement has a left turn and a thru-right lane</i>	Eastbound	88.9	F	79.6	E	33.3	C	112.4	F
		Westbound	81.5	F	71.1	E	34.3	C	104.9	F
		Northbound	31.6	C	26.1	C	15.7	B	16.2	B
		Southbound	21.5	C	18.0	B	16.0	B	17.7	B
<b>M Street &amp; 1st Street</b>	<b>Overall</b>	<b>23.8</b>	<b>C</b>	<b>48.0</b>	<b>D</b>	<b>24.5</b>	<b>C</b>	<b>101.7</b>	<b>F</b>	
	Eastbound	23.4	C	33.2	C	23.7	C	140.5	F	
	Westbound	4.7	A	7.9	A	10.0	A	7.2	A	
	Northbound	72.4	E	135.5	F	47.2	D	191.3	F	
	Southbound	32.5	C	39.8	D	32.4	C	39.3	D	
	<b>Improvements:</b>	<b>Overall</b>	<b>21.3</b>	<b>C</b>	<b>33.4</b>	<b>C</b>	--	--	<b>69.4</b>	<b>E</b>
	<i>Adjust signal timings</i>	Eastbound	19.3	B	34.7	C	--	--	107.4	F
		Westbound	6.5	A	10.0	A	--	--	9.3	A
		Northbound	63.6	E	66.2	E	--	--	97.0	F
		Southbound	25.7	C	30.9	C	--	--	30.7	C
<b>M Street &amp; 4th Street</b>	<b>Overall</b>	<b>32.4</b>	<b>C</b>	<b>68.6</b>	<b>E</b>	<b>18.5</b>	<b>B</b>	<b>60.4</b>	<b>E</b>	
	Eastbound	14.2	B	19.9	B	8.5	A	20.4	C	
	Westbound	10.7	B	10.4	B	8.8	A	11.7	B	
	Northbound	119.3	F	244.9	F	36.1	D	241.2	F	
	Southbound	35.6	D	35.4	C	31.8	C	36.2	D	
	<b>Improvements:</b>	<b>Overall</b>	<b>19.0</b>	<b>B</b>	<b>36.1</b>	<b>D</b>	--	--	<b>34.9</b>	<b>C</b>
	<i>Adjust signal timings</i>	Eastbound	22.6	C	30.6	C	--	--	30.8	C
		Westbound	8.6	A	17.3	B	--	--	20.2	C
		Northbound	33.4	C	77.2	E	--	--	75.0	E
		Southbound	24.8	C	24.5	C	--	--	25.1	C
<b>M Street &amp; 5th Street</b>	Eastbound Left	8.4	A	27.8	F	2.5	A	24.4	F	
	Southbound	282.9	F	Err	F	15.4	C	Err	F	
	<b>Improvements:</b>	<b>Overall</b>	<b>23.6</b>	<b>C</b>	<b>15.0</b>	<b>B</b>	<b>22.3</b>	<b>C</b>	<b>17.8</b>	<b>B</b>
	<i>Install signal</i>	Eastbound	26.4	C	20.0	B	19.3	B	24.3	C
		Westbound	22.1	C	6.7	A	27.0	C	6.6	A
		Southbound	15.5	B	31.9	C	8.6	A	32.5	C

### 3.3 Non-Auto Impacts

#### 3.3.1 Transit

The trip generation estimates for the DC Water PUD show that a significant amount of new transit riders will be generated. Phase 1 is projected to generate over 1,300 transit trips on a weekday, and the complete PUD is projected to generate around 4,500 transit trips per weekday.

As stated in Section 1, there is a significant amount of transit service nearby, including the Metrorail green line and several bus routes. The Navy Yard Metrorail station is approximately a quarter-mile walk from the PUD. A similar distance separates the site from major bus service along M Street. Several routes have frequent service on every day of the week, including the DC Circulator Union Station-Navy Yard route and Metrobus' U Street- Garfield line.

WMATA's studied capacity of Metrorail stations in its *Station Access & Capacity Study*<sup>15</sup>. The study analyzed capacity of Metrorail stations for their vertical transportation, for example the capacity of the station at elevators, stairs, and escalators to shuttle patrons between the street, mezzanine, and platforms. The study also analyzed stations capacity to process riders at farecard gates. For both analyses, vertical transportation and farecard gates, volume to capacity ratios were calculated for existing data (from 2005) and projections for the year 2030.

Based on findings presented in the *Station Access & Capacity Study*, the Navy Yard station can accommodate the additional riders generated by the DC Water PUD. The study did not find any high volume to capacity ratios at the station, with the exception of the farecard gates at the eastern end of the Navy Yard mezzanine, which had a volume to capacity ratio of 0.61, which WMATA does not consider a problem worthy of improvement but instead a concern that should be reevaluated in the future. The WMATA study does note that the capacity analyses were performed prior to the expansion of the western Navy Yard portal in anticipation of National's Park, and thus the concerns noted for 2030 at the eastern farecard gates may not be observed in future studies.

WMATA also studies capacity for its bus routes. *DC's Transit Future System Plan*<sup>16</sup>, lists the bus routes with the highest load factor (a ratio of passenger volume to bus capacity). None of the Metrobus routes that travel near the RiverFront PUD site are cited for having unacceptable load factors. Thus, the local bus service can accommodate the future riders generated by the DC Water PUD.

#### 3.3.2 Bicycle

Of all of the modes analyzed in this report, the trip generations estimates for cycling are the lowest. For Phase 1, the projected trips are around 225 per weekday and around 525 per weekday for the entire PUD. Although bicycling will be an important mode for getting to and from the site, with significant bicycle facilities located on site and quality routes to and from the site, the impacts from bicycling will be relatively less than impacts to other modes.

The cyclists traveling to and from the site area expected to take advantage of the existing and planned routes that exist. Cyclists can use the bike lanes on Potomac Avenue and 1<sup>st</sup> Street SE to access M Street and other local destinations. Continuing north past M Street on 1<sup>st</sup> Street SE, cyclists can use K and I Streets to travel east/west to both 4<sup>th</sup> Street SW, and the one-way pair of 4<sup>th</sup> and 6<sup>th</sup> Streets SE. These north-south routes provide quality access to downtown and Capitol

<sup>15</sup> *Station Access & Capacity Study Final Report*, April 2008, Washington Metropolitan Area Transit Authority

<sup>16</sup> *DC's Transit Future System Plan Final Report*, April 2010, District of Columbia Department of Transportation

Hill. Additional, P Street SW, across South Capitol Street from the site can also be used to access 4<sup>th</sup> Street SW, and via the Anacostia Riverwalk Trail, 15<sup>th</sup> Street, and other major facilities near the National Mall.

Based on the trip generation estimates for bicycling, and the quality of the routes near the project's location, the DC Water PUD will not have a negative impact to bicycle facilities in the study area.

### 3.3.3 Pedestrian

The DC Water PUD is located in a walkable area, with connections to major existing and future retail locations, employment sites, residential neighborhoods, and transit. The trip generation estimates project around 240 walking trips per weekday for Phase 1, and around 1,300 per weekday for the entire RiverFront PUD.

The origins and destinations of these trips are likely to be:

- Employment opportunities where residents can walk to work, such as the USDOT headquarters, Navy Yard, and other office buildings on the M Street corridor.
- Retail locations, such the planned restaurants and shops at The Yards, and other retail sites along the M Street corridor.
- Nationals Park, where residents can walk.

Based on these origins/destinations, most pedestrians generated by the DC Water PUD will walk along 1<sup>st</sup> Street SE to reach destinations on the M Street corridor. There will also be use of Tingey & N Streets SE to walk to The Yards, USDOT, and Navy Yard.

In addition to these trips, the transit trips generated by the site will also generate pedestrian demand between the site and nearby transit stops. The vast majority of these transit riders will walk north/south on 1<sup>st</sup> Street SE to reach bus stops and the Navy Yard Metrorail station portal.

Most of the sidewalks surrounding the site are of high quality, although there are significant gaps in the network. The sidewalks closest to the DC Water PUD such as those along Potomac Avenue SE, and 1<sup>st</sup> Street SE north until N Street SE, and all sidewalks surrounding Nationals' Park are of high quality.

Outside of this area, some sidewalks are narrow or of sub-par quality, including:

- Most streets on Buzzard Point south of Q Street SW;
- East side of 1<sup>st</sup> Street NE between N and M Streets;
- Tingey/N Streets within The Yards; and
- Half Street SE between M and N Street.

Fortunately, the gaps within the network will be filled in with planned redevelopment projects. The Yards will reconstruct and upgrade Tingey Street, N Street, and the eastern side of 1<sup>st</sup> Street SE. Redevelopment on both sides of Half Street will create a high quality pedestrian experience adjacent to the Navy Yard Metrorail portal. Redevelopment of several sites on Buzzard Point along with improvements from the South Capitol Street EIS preferred alternative will vastly improve sidewalk conditions along Buzzard Point.

The capacity of sidewalks to handle the projected number of pedestrians will not be negatively impacted by this project, as long as future redevelopments build sidewalks to DDOT standards. DDOT requires that all sidewalks are a minimum of 6 feet wide, with sidewalks on arterial streets 8 to 10 feet wide depending on the location. The proposed widths of the sidewalks adjacent to the site property meet the District standard. The *Highway Capacity Manual* (HCM) outlines methodologies for calculating capacity of sidewalks based on the sidewalk widths. According to methodologies contained in the HCM, the LOS grade on a 6 foot wide sidewalk does not reach LOS D until the sidewalk volumes reach 2,000 pedestrians per hour. Similarly, LOS E is not reached until volumes reach 3,000 pedestrians per hour. The existing pedestrian counts adjacent to the site combined with the projected pedestrian trips associated with the site will not approach these thresholds. Thus, the sidewalk capacity will not be exceeded, and there will be no detrimental impacts.

Based on the trip generation estimates for walking, the quality of the routes near the project's location taking into account the streetscapes that will be redeveloped and improved, the DC Water PUD will not have a negative impact to pedestrian facilities in the study area.

### 3.4 Crash Analysis

This section of the report reviews available crash data within the study area, reviews potential impacts of Phase 1 of the proposed PUD on crash rates, and makes recommendations for mitigation measures where needed.

#### 3.4.1 Summary of Available Crash Data

A safety analysis was performed to determine if there was an abnormally high accident rate at any study area intersection. Accident data was obtained from the files of Gorove/Slade, previously provide by the District Department of Transportation (DDOT). This data set included all signalized intersections adjacent to the site from 2008 to 2010. (No new data was provided to Gorove/Slade by DDOT in time to be included in this study.) This data was reviewed and analyzed to determine the accident rate at each location. For intersections, the accident rate is measured in accidents per million-entering vehicles (MEV). The accident rates per intersection are shown in Table 33.

According to the Institute of Transportation Engineer's *Transportation Impact Analysis for Site Development*, an accident rate of 1.0 or higher is an indication that further study is required. Three intersections in the study area meet this criterion (as shown in red in Table 33 and detailed in Table 34). The PUD needs to be developed in a manner to help alleviate, or at minimum not add to, the conflicts at these intersections.

**Table 33: Intersection Crash Rates**

Intersection	Total Crashes	Pedestrian Crashes	Bike Crashes	Rate per MEV*
M Street & South Capitol Street	76	2	0	<b>3.69</b>
N Street & South Capitol Street	43	0	0	<b>1.06</b>
Potomac Avenue & South Capitol Street	45	0	0	0.84
M Street & Half Street	10	1	0	0.72
M Street & 1st Street	12	1	0	0.75
N Street & 1st Street	2	0	0	0.28
M Street & New Jersey Avenue	16	0	0	<b>1.15</b>
M Street & 4th Street	12	1	0	<b>1.01</b>
M Street & 5th Street	5	0	0	0.34
I Street & 1st Street	2	0	0	0.34

\* - Million Entering Vehicles; volumes estimated based on turning movement count data



The crash summary data in Table 33 shows three intersections with a crash rate over 1.0 crashes per million entering vehicles—the rate which is considered a threshold for further analysis. A rate over 1.0 does not necessarily mean there is a significant problem at an intersection, but rather it is a threshold used to identify which intersections may have higher crash rates due to operational, geometric, or other issues.

For these three intersections, the crash type information from the DDOT crash data was reviewed to see if there is a high percentage of certain crash types. Generally, the reasons for why an intersection has a high crash rate cannot be derived from crash data, as the exact details of each crash are not represented. However, some summaries of crash data can be used to develop general trends or eliminate some possible causes.

Table 34 contains a breakdown of crash types reported for the four intersections with a crash rate over 1.0 per MEV.

**Table 34: High Crash Rate Intersections by Crash Type**

Intersection	Rate per MEV	Right Angle	Left Turn	Right Turn	Rear End	Side Swiped	Head On	Parked	Fixed Object	Ran Off Road	Ped. Involved	Backing	Unspecified	Total
M Street & South Capitol Street	<b>3.69</b>	11 14%	12 16%	1 1%	11 14%	25 33%	1 1%	0 0%	2 3%	0 0%	2 3%	5 7%	0 0%	<b>76</b>
M Street & New Jersey Avenue	<b>1.15</b>	0 0%	2 13%	1 6%	5 31%	3 19%	0 0%	1 6%	1 6%	0 0%	0 0%	0 0%	0 0%	<b>16</b>
N Street & South Capitol Street	<b>1.06</b>	3 0%	2 13%	1 6%	25 31%	9 19%	0 0%	2 6%	0 6%	0 0%	0 0%	0 0%	0 0%	<b>43</b>
M Street & 4th Street	<b>1.01</b>	1 8%	0 0%	0 0%	4 33%	2 17%	0 0%	1 8%	0 0%	0 0%	1 8%	2 17%	0 0%	<b>12</b>

### 3.4.2 Potential Impacts

This section reviews the three locations with existing crash rates over 1.0 MEV and reviews potential impacts of the proposed development.

- M Street & South Capitol Street

This intersection was found to have a significantly high crash rate, with 3.69 crashes per MEV over the course of the 3-year study period. The majority of the crashes at this intersection were side swiped vehicles, turning vehicles, rear-end crashes, and right-angle crashes. Sideswipe crashes can often occur when a vehicle going straight through an intersection makes a last-second lane change to get around a vehicle waiting for a gap to make a left turn from a shared through/left lane, as is the case in this location since this section of M Street does not have separate turning lanes at this intersection in both directions. Additionally, the configuration of this intersection as a grade-separated diamond intersection leads to a high concentration of turning vehicles. However, this report does not recommend mitigation measures at this intersection due to future changes proposed in the South Capitol Street FEIS. Additionally, the PUD is not projected to make significant changes to the commuting patterns, operations, or geometry of this intersection.

- *N Street & South Capitol Street*

This intersection is just over the threshold of 1.0 crashes per MEV, with a rate of approximately 1.06 crashes per MEV. The majority of crashes at this intersection were side rear-end crashes and swiped vehicles. Sideswipe crashes can often occur when a vehicle going straight through an intersection makes a last-second lane change to get around a vehicle waiting for a gap to make a left turn from a shared through/left lane, as is the case in this location since this section of M Street does not have separate turning lanes at this intersection. Elevated rear-end collision rates are typical at intersections controlled by a traffic signal. However, this report does not recommend mitigation measures at this intersection due to future changes proposed in the South Capitol Street FEIS. Additionally, the proposed development is not projected to make significant changes to the commuting patterns, operations, or geometry of this intersection.

- *M Street & New Jersey Avenue*

This intersection is just over the threshold of 1.0 crashes per MEV, with a rate of approximately 1.15 crashes per MEV. The majority of crashes at this intersection were side swiped vehicles and rear-end crashes. Sideswipe crashes can often occur when a vehicle going straight through an intersection makes a last-second lane change to get around a vehicle waiting for a gap to make a left turn from a shared through/left lane, as is the case in this location since this section of M Street does not have separate turning lanes at this intersection. Elevated rear-end collision rates are typical at intersections controlled by a traffic signal. This report does not recommend mitigation measures at this intersection as the PUD is not projected to make significant changes to the commuting patterns, operations, or geometry of this intersection.

- *M Street & 4<sup>th</sup> Street*

This intersection is barely over the threshold of 1.0 crashes per MEV, with a rate of approximately 1.01 crashes per MEV. The majority of crashes at this intersection were side swiped vehicles and rear-end crashes. Sideswipe crashes can often occur when a vehicle going straight through an intersection makes a last-second lane change to get around a vehicle waiting for a gap to make a left turn from a shared through/left lane, as is the case in this location since this section of M Street does not have separate turning lanes at this intersection. Elevated rear-end collision rates are typical at intersections controlled by a traffic signal. This report does not recommend mitigation measures at this intersection as the PUD is not projected to make significant changes to the commuting patterns, operations, or geometry of this intersection.