Greenpoint-Williamsburg Rezoning EIS
CHAPTER 16: TRAFFIC AND PARKING

A. INTRODUCTION

This chapter of the EIS describes the traffic and parking characteristics and potential impacts associated with the proposed action, which affects an approximately 184-block area in Greenpoint and Williamsburg, bounded generally by Newtown Creek to the north, the East River to the west, the Williamsburg Bridge to the south, and McGuinness Boulevard and the Brooklyn-Queens Expressway to the east (see Figure 1-1 in Chapter 1, "Project Description"). As described in detail in earlier chapters of this EIS, the proposed action would allow existing manufacturing zoning and special mixed use district designations to be changed to permit residential use on the waterfront, residential and mixed use on most of the upland area, and to restrict certain areas currently zoned M3 to light industrial uses. Additionally, under Scenario A, the worst case transportation condition, a 27.8 acre waterfront park would be mapped to the west of Kent Avenue from Bushwick Inlet on the north to North 9th Street on the south.

Typically, CEQR assessments of large area-wide zoning proposals not associated with specific development projects assume a 10-year build period. This is the time frame that can be reasonably predicted into the foreseeable future without engaging in highly speculative projections. Thus, the transportation analyses in this EIS address a development program that could reasonably be constructed by 2013 as described in the reasonable worst case development scenario (RWCDS) section of Chapter 1. The traffic and parking analyses consider auto, taxi and truck trips, as well as parking demand and changes in supply related to these "projected" development sites. The locations of these sites and their anticipated uses are shown in Figure 1-6 and listed in Table 1-1 in Chapter 1.

The study area selected for the traffic analysis is shown in Figure 16-1. The study area was selected to encompass the principal roadways most likely to be used by the majority of persons and goods traveling by vehicle to and from the projected development sites. The traffic study area is bounded on the north by Newtown Creek, on the south by Broadway, on the west by the East River, and on the east by McGuinness Boulevard, Meeker Avenue, and Union Avenue. Seventy-four intersections are analyzed for vehicular traffic for the weekday 8:00-9:00 AM, 12:00-1:00 PM (midday) and 5:00-6:00 PM peak hours, the periods when demand from these predominantly residential development sites would be heaviest. Of these intersections, 31 are signalized and 43 are unsignalized.

This chapter describes in detail the existing traffic and parking conditions in the study area. Future conditions in the year 2013 without the proposed action (the No-Action condition) are then determined, including additional transportation-system demand and any changes in the roadways and parking supply expected by the year 2013. The increase in travel demand resulting from the proposed action is then projected and added to the No-Action condition to develop the 2013 future with the proposed action (the With-Action condition). Significant adverse impacts from project generated trips are then identified.

B. EXISTING CONDITIONS

Data Collection

Manual turning movement counts were conducted at 66 locations in the Greepoint and Williamsburg study areas in June, 2002, with the remaining eight counted in September, 2002. Vehicle classification counts and speed surveys were also conducted at that time, as were field surveys of parking regulations, lane configurations and other physical and operational characteristics of the street network. In addition, ATR (Automatic Traffic Recorder) counts were conducted at key locations along major roadway corridors. A one percent background growth rate was applied to data collected in 2002 to reflect base year 2003 conditions for this EIS. Signal timing plans for signalized intersections within the study area were obtained from the New York City Department of Transportation (NYCDOT) where available. Subsequent to publication of the DEIS, an updated signal timing plan for the intersection of Greenpoint Avenue and McGuinness Boulevard was provided by NYCDOT, and the analysis of this intersection has been revised to reflect this updated data. Weekday on-street parking utilization within ¼-mile of the proposed action area was surveyed in June 2002, and supplemented with additional data collected in June 2004.

The New York City Department of Design and Construction (NYCDDC) is proposing to undertake a major capital project (HWK693W) on behalf of NYCDOT to reconstruct Kent Avenue/Franklin Street in Williamsburg and Greenpoint. The project is approximately three miles in length from the Brooklyn-Queens Expressway to the south to Commercial Street at the north end of Franklin Street. In conjunction with that project, this EIS coordinated detailed traffic data collection and balanced transportation networks along the corridor at approximately 54 intersections. The 2003 existing conditions data in this EIS reflects the 2002 network from the NYCDDC project expanded by one percent to reflect background growth for the single year. Further, as will be discussed later in this chapter, the future No-Action conditions reflect NYCDOT traffic improvements that are expected to be implemented by NYCDDC as part of that reconstruction project.

Figures 16-2 through 16-4 show the 2003 base traffic volumes in the AM, midday, and PM peak hours, respectively.

Vehicular Traffic

Study Area Street Network

The project study area encompasses two street networks: that of Greenpoint to the north, and Williamsburg to the south, separated roughly by North 14th Street. The areas within one block to the east and west of Manhattan Avenue are primarily residential, while the area west of Franklin Street contains a mix of industrial and residential buildings, and the area east of McGuinness Boulevard is characterized by light and heavy industrial uses. The street network runs north-south and east-west and primarily carries local traffic; major arterials through Greenpoint are McGuinness Boulevard, which connects northern Brooklyn with Long Island City via the Pulaski Bridge, and Franklin Street/Kent Avenue, which links Greenpoint with Williamsburg to the south. Manhattan Avenue and Greenpoint Avenue are heavily-used local arterials within the study area.

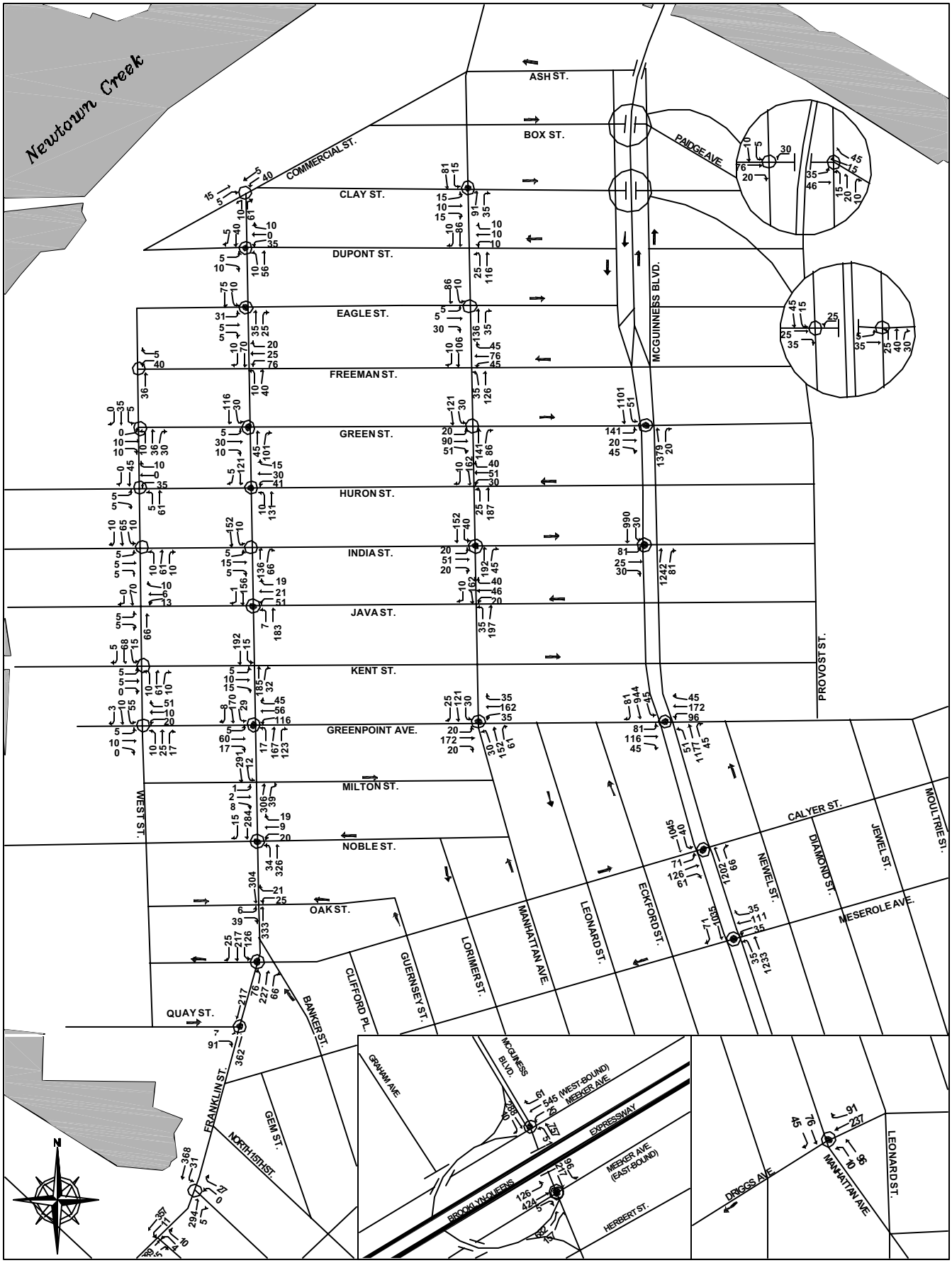
Traffic Study Area

LEGEND:

- ANALYZED INTERSECTIONS (UNSIGNALIZED)
- ANALYZED INTERSECTIONS (SIGNALIZED)
- ATR LOCATION
- PROJECT SITE

N

2003 Existing Greenpoint Traffic Volumes - AM Peak Hour



Legend:

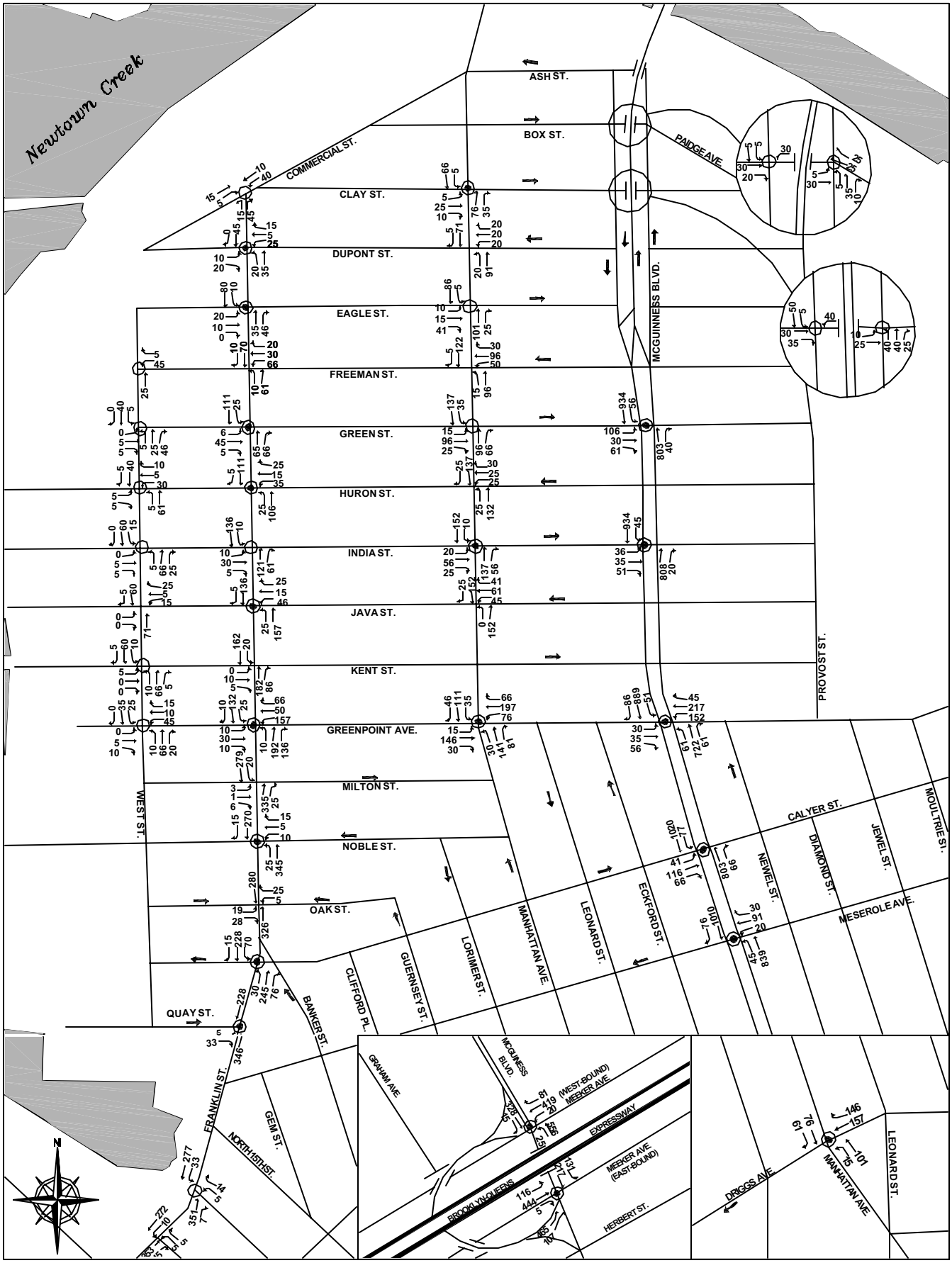
- ◉ **Analyzed Intersection (Signalized)**
- ⬡ **Analyzed Intersection (Unsignalized)**

2003 Existing Williamsburg Traffic Volumes - AM Peak Hour

Legend:

◉ **Analyzed Intersection (Signalized)** ○ **Analyzed Intersection (Unsignalized)**

2003 Existing Greenpoint Traffic Volumes - MD Peak Hour



Legend:

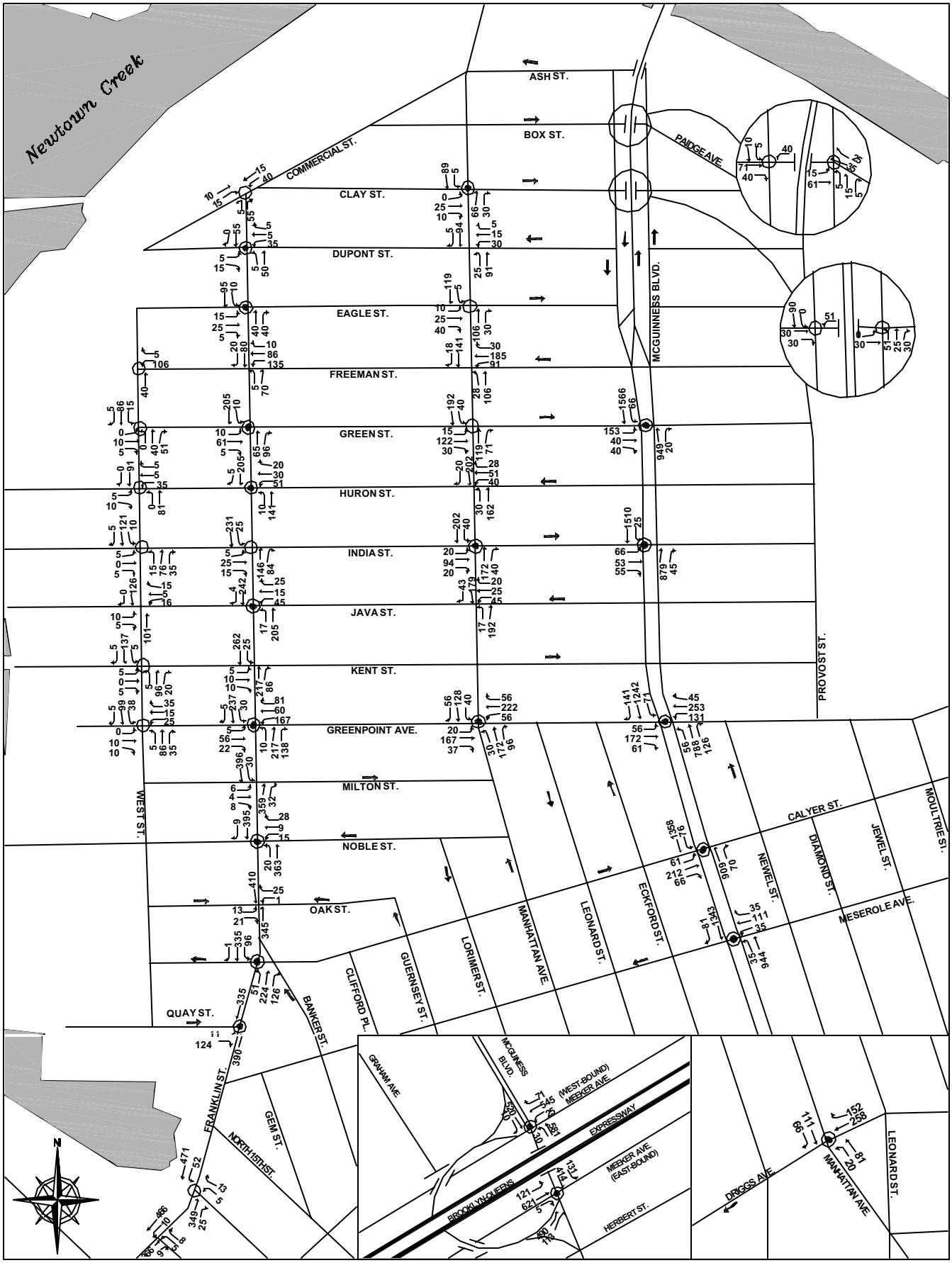
◉ **Analyzed Intersection (Signalized)** ⬡ **Analyzed Intersection (Unsignalized)**

2003 Existing Williamsburg Traffic Volumes - MD Peak Hour

Legend:

◉ **Analyzed Intersection (Signalized)** ○ **Analyzed Intersection (Unsignalized)**

2003 Existing Greenpoint Traffic Volumes - PM Peak Hour



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2003 Existing Williamsburg Traffic Volumes - PM Peak Hour

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◉ **Analyzed Intersection (Signalized)** ○ **Analyzed Intersection (Unsignalized)**

The Williamsburg portion of the study area contains a number of industrial businesses, and the local street network serves truck traffic associated with these uses. The street grid is oriented northeast-southwest (referred to herein as "north-south") and northwest-southeast ("east-west"). In addition to Kent Avenue, major arterials in the Williamsburg study area are Meeker Avenue, which functions as service roads for the Brooklyn-Queens Expressway at the eastern edge of the project study area, Metropolitan Avenue, and Broadway. The Williamsburg Bridge passes through the study area near its southern boundary. Local traffic is distributed throughout the local street network.

The major arterials in Greenpoint and Williamsburg are under computerized signal control by NYCDOT, while the signalized intersections of local streets are fixed-time. Several signalized intersections in the study area are semi-actuated. A discussion of the street network within the study area is provided below.

Greenpoint

The major arterial connecting Greenpoint with Williamsburg is Franklin Street/Kent Avenue, which extends from Commercial Street in Greenpoint to the north to DeKalb Avenue in Clinton Hill to the south. The street is known as Franklin Street north of North 14th Street, and Kent Avenue south of North 14th Street. Within the study area, the roadway is 40 feet wide and carries one northbound and one southbound lane of traffic; it is a designated local truck route along its entire length. Parking is generally permitted on both sides of the street. South of Greenpoint Avenue, Franklin Street carries two-way traffic volumes of approximately 610 vph in the AM peak hour, 640 vph in the midday peak hour, and 790 vph in the PM peak hour.

Another major north-south arterial in Greenpoint is McGuinness Boulevard, which begins at Newtown Creek to the north and extends south to the Brooklyn-Queens Expressway. South of Freeman Street, McGuinness Boulevard is 78 feet wide and carries two northbound and three southbound lanes of traffic, separated by a ten-foot-wide raised median. Left turn pockets are provided at most intersections where a left turn in permitted. North of Freeman Street, the roadway consists of three moving lanes in each direction, separated by a concrete barrier; the two inner lanes connect with the Pulaski Bridge to Long Island City, while the outer lanes continue north to Newtown Creek as two distinct one-way, 30-foot-wide streets alongside the bridge. South of the Pulaski Bridge, parking is permitted on the east (northbound) side of the street only. The entire length of McGuinness Boulevard is a designated local truck route. South of Green Street, McGuinness Boulevard typically carries two-way traffic volumes of 2,545 vph, 1,840 vph, and 2,575 vph in the AM, midday, and PM peak hours, respectively.

Manhattan Avenue is a local arterial extending from Newtown Creek in Greenpoint to Broadway in East Williamsburg. Within the study area, the roadway is 50 feet wide and carries one northbound and one southbound lane of traffic. Metered parking is provided on both sides of the street along much of its length. The IND Crosstown Line ("G") subway runs beneath Manhattan Avenue from Newtown Creek to Driggs Avenue; stations are located at Greenpoint Avenue and Nassau Avenue. North of Greenpoint Avenue, Manhattan Avenue is a designated local truck route. The B43 and B61 bus routes, operated by New York City Transit, run on Manhattan Avenue between Box Street and Engert Avenue and between Freeman Street and Driggs Avenue, respectively. In the vicinity of Greenpoint Avenue, Manhattan Avenue typically carries two-way traffic volumes of 385 vph in the AM peak hour, 415 vph in the midday peak hour, and 475 vph in the PM peak hour.

Greenpoint Avenue is an east-west arterial extending from the East River in Greenpoint to Queens Boulevard in Sunnyside, Queens, via the Greenpoint Avenue Bridge. Within the study area, Greenpoint Avenue carries local traffic and is a designated local truck route. The roadway is 50 feet wide between

West Street and Manhattan Avenue and 30 feet wide between Manhattan Avenue and McGuinness Boulevard, with one moving lane in each direction; parking is generally permitted on both sides of the street. The B24 bus route runs along the length of Greenpoint Avenue within the study area. During the AM, midday, and PM peak hours, Greenpoint Avenue carries two-way traffic volumes of approximately 430 vph, 465 vph, and 530 vph, respectively east of Manhattan Avenue.

Williamsburg

As described above, Kent Avenue is a 40-foot-wide north-south arterial linking Williamsburg with Greenpoint to the north and Clinton Hill and the Brooklyn-Queens Expressway to the south. It is a designated local truck route along its entire length, and as such, it is heavily utilized by truck traffic. During the AM, midday, and PM peak hours, Kent Avenue carries two-way traffic volumes of approximately 590 vph, 575 vph, and 785 vph, respectively in the vicinity of Grand Street.

The project study area is bounded on the east by the Brooklyn-Queens Expressway (I-278), a six-lane, north-south expressway extending from the Triborough Bridge and Grand Central Parkway in Queens to the Verrazano Narrows Bridge and Belt Parkway in Brooklyn. Between Newtown Creek to the north and Metropolitan Avenue to the south, the expressway is flanked by the northbound and southbound lanes of Meeker Avenue. Each service road is 40 feet wide and carries three moving lanes of traffic. Curbside parking is typically prohibited. Parking is permitted in open lots beneath the elevated expressway. The Expressway is a designated through truck route, while Meeker Avenue is a local truck route. During the AM, midday, and PM peak hours, Meeker Avenue carries northbound traffic volumes of 555 vph, 565 vph, and 750 vph, respectively, and southbound traffic volumes of 605 vph, 460 vph, and 585 vph, respectively south of Humboldt Street.

Metropolitan Avenue is a major east-west arterial extending from the East River in Williamsburg to Jamaica Avenue in Jamaica, Queens, passing through the neighborhoods of Ridgewood, Middle Village, Forest Hills, and Kew Gardens. Within the study area, the roadway is 40 feet wide and carries one lane of traffic in each direction; westbound left turn pockets are provided at Marcy Avenue for the entrance to the westbound Brooklyn-Queens Expressway and at Roebling Street for vehicles bound for the Willamsburg Bridge. Curbside parking is typically permitted west of Marcy Avenue. Metropolitan Avenue carries two-way traffic volumes of approximately 500 vph in the AM peak hour, 635 vph in the midday peak hour, and 750 vph in the PM peak hour east of Roebling Street. The Q24 bus route serves Metropolitan Avenue east of Marcy Avenue.

Broadway is a major northwest-southeast arterial in the borough of Brooklyn, extending from the East River in Williamsburg at the southwest corner of the study area to Fulton Street in East New York. Within the study area, Broadway is heavily used by truck traffic originating both from northern Brooklyn via Broadway itself and from Manhattan via the Williamsburg Bridge exit at Broadway and Roebling Street. The roadway is 60 feet wide with two moving lanes in each direction; curbside parking is generally permitted. Broadway carries two-way traffic volumes of approximately 410 vph in the AM peak hour, 550 vph in the midday peak hour, and 725 vph in the PM peak hour west of Roebling Street. The Williamsburg Bridge Plaza bus terminal, located at the northeast corner of Broadway and Roebling Street, is served by the B24, B39, B44, B46, B60, and Q54 bus routes.

Grand Street is a two-way, 40-foot-wide local street located between North 1st Street and South 1st Street. Parking is restricted on some blocks to facilitate curbside loading activity. During the AM, midday, and PM peak hours, Grand Street carries two-way traffic volumes of 125, 115, and 180 vph, respectively east of Driggs Avenue.

Local north-south traffic in the Williamsburg portion of the study area is distributed relatively evenly over the local street grid. Berry Street and Bedford Avenue are one-way northbound, Wythe Avenue and Driggs Avenue are one-way southbound; each is 30 feet wide and carries one moving lane of traffic. Curbside parking is typically permitted along both curbs on local streets within the study area, with the exception of Berry Street between North 5th and North 7th Streets, where parking is prohibited between the hours of 4:00 AM and 4:00 PM to facilitate curbside loading activities. The B61 bus route operates northbound on Bedford Avenue and southbound on Driggs Avenue. Combined, Berry Street and Bedford Avenue carry approximately 500, 495, and 620 vph northbound in the AM, midday, and PM peak hours, respectively, while Wythe and Driggs Avenues carry approximately 485, 465, and 615 vph southbound in the respective AM, midday, and PM periods. Driggs Avenue is a designated local truck route between South 4th Street and Broadway.

Local east-west traffic in the Williamsburg study area is carried on the numbered street grid, from North 12th Street to South 6th Street. Typically, even-numbered streets run west, and odd-numbered streets run east, the exception being North 1st Street, which is one-way westbound. Each street is 30 feet wide and carries one moving lane of traffic, with parking typically permitted on both sides of the street. The BMT Canarsie Line ("L") subway runs beneath North 7th Street and has a stop located at Bedford Avenue. Between Bedford Avenue and Driggs Avenue, eastbound streets typically carry between 65 and 165 vph in the AM peak hour, between 125 and 175 vph in the midday peak hour, and between 95 and 120 vph in the PM peak hour; westbound streets carry traffic volumes in the range of 100 to 200 vph in the AM peak hour, 120 to 175 vph in the midday peak hour, and 115 to 175 vph in the PM peak hour. North 10th and North 11th Streets are designated local truck routes.

Truck Routes

As noted above, the primary through-truck route for trucks traversing the study area is the Brooklyn-Queens Expressway. An extensive system of local streets has also been designated for local truck access. As shown in Figure 16-5, the primary local truck routes serving the study area include Franklin Street/Kent Avenue, Manhattan Avenue (north of Greepoint Avenue), McGuinness Boulevard, Provost Street, Meeker Avenue, Ash and Box Streets, Paidge Avenue, Greenpoint Avenue, North 10th and North 11th Streets, Metropolitan Avenue, and Broadway. Also designated as local truck routes are segments of Freeman, Green, Rodney, Havemeyer, Roebling, South 3rd and South 4th streets, Marcy and Driggs avenues, and Grand Street Extension. As previously discussed, many of these local truck routes are narrow local streets, typically with one moving lane in each direction. The volume of truck traffic dependent on these local streets often leads to congestion, causing trucks to divert from designated truck routes onto residential streets. Additionally, curbside deliveries and trucks backing into loading docks frequently block moving lanes or entire roadways. NYCDOT has recently initiated a citywide study of existing truck routes, that will examine enhancing operation, management, and enforcement.

Bicycle Facilities

Three types of bicycle facilities can be found within the study area. Bike paths, which are shared use (bicycle/pedestrian) paths separated from traffic and delineated by pavement markings; on-street bicycle lanes, which are part of the roadway and delineated by pavement markings and regulatory signage; and signed bicycle routes which involve shared use of the roadway and are typically designated with informational signs. Within the study area, an on-street bike lane is provided along Berry Street from Broadway to North 14th Street, and a pedestrian/bike path is provided on the Pulaski Bridge to Long

Island City. A pedestrian/bike path is also present on the north side of the Williamsburg Bridge providing access to and from Manhattan. This path is reached via a ramp at the intersection of South 4th Street and Driggs Avenue. In addition, the NYCDOT 2003 *NYC Cycling Map* identifies a number of recommended bicycle routes within the study area. As shown in Figure 16-6, these include portions of Calyer, Eagle, Franklin, Freeman, Grand, Leonard, Oak, South 2nd, South 4th, South 5th and West streets; Driggs, Kent and Manhattan avenues, and Broadway. Greenpoint Avenue east of Leonard Street and Broadway east of Driggs Avenue are designated as cautionary bicycle routes, so labeled due to narrow street width and/or heavy vehicular traffic.

Intersection Capacity Analyses

Methodology

The capacity analyses at study area intersections are based on the methodology presented in the *Highway Capacity Manual (HCM) Software 2000 Release 4.1c*. Traffic data required for these analyses include volumes on each approach and various other physical and operational characteristics. As previously discussed, traffic volumes used for these analyses are based on manual turning movement and ATR counts conducted in June 2002, and also reflect the 2002 network developed for NYCDDC's planned reconstruction of Kent Avenue/Franklin Street. Signal timing plans for each signalized intersection were obtained from the New York City Department of Transportation (NYCDOT). Field inventories were conducted to document curbside parking regulations, vehicle classifications, shared lane usage, and other relevant characteristics needed for the analysis.

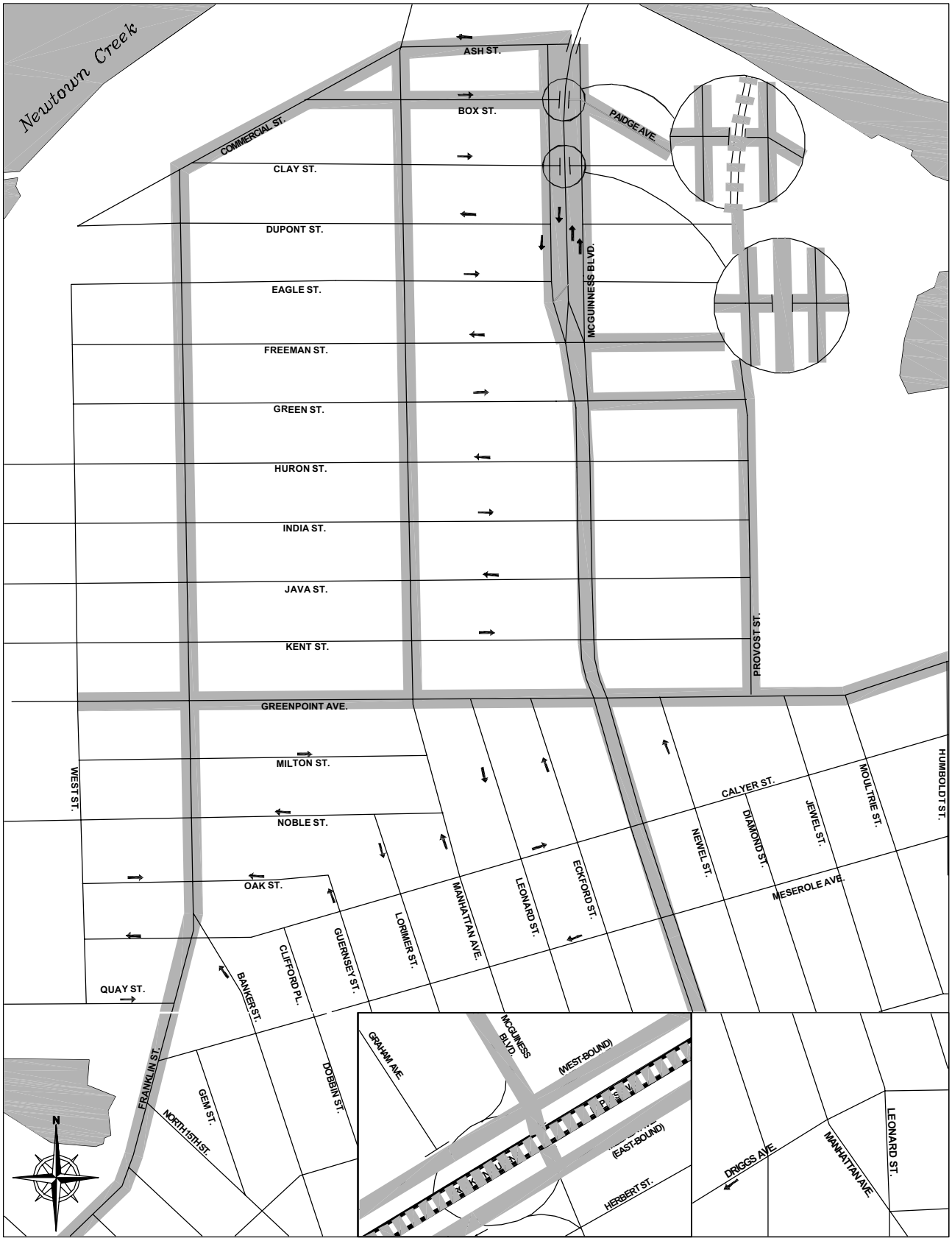
The HCM methodology provides a volume-to-capacity (v/c) ratio for each signalized intersection approach. The v/c ratio represents the ratio of traffic volumes on an approach to the approach's carrying capacity. A ratio of less than 0.90 is generally considered to be non-congested conditions in dense urban areas; when higher than this value, congestion increases. At a v/c ratio of between 0.95 and 1.0, near-capacity conditions are reached and delays can become substantial. Ratios of greater than 1.0 indicate saturated conditions with queuing.

The HCM methodology also expresses quality of flow in terms of level of service (LOS), which is based on the amount of delay that a driver typically experiences at an intersection. Levels of service range from A, with minimal delay (10 seconds or less per vehicle), to F, which represents long delays (greater than 80 seconds per vehicle).

For unsignalized intersections, the HCM methodology generally assumes that major street traffic is not affected by minor street flows. Left turns from the major street are assumed to be affected by the opposing, or oncoming major street flow. Minor street traffic is obviously affected by all conflicting movements. Similar to signalized intersections, the HCM methodology expresses the quality of flow at unsignalized intersections in terms of level of service based on the amount of delay that a driver experiences. This relationship differs somewhat from the criteria used for signalized intersections, primarily because drivers expect different levels of performance from the two different kinds of transportation facilities. For unsignalized intersections, levels of service range from A, with minimal delay (10 seconds or less per vehicle), to F, which represents long delays (over 50 seconds per vehicle).

Table 16-1 shows the LOS/delay relationship for signalized and unsignalized intersections using the HCM methodology. Levels of service A, B and C generally represent highly favorable to fair levels of traffic flow; at LOS D the influence of congestion becomes noticeable; LOS E is considered to be the limit of

Designated Truck Routes



Legend;

Designated Truck Route **Designated Through Truck Route**

Designated Truck Routes

Legend;

Designated Truck Route **Designated Through Truck Route**

Study Area Bicycle Facilities

LEGEND:

BIKE PATH

ON-STREET BIKE LANE

RECOMMENDED BICYCLE ROUTE

TRAFFIC STUDY AREA BOUNDARY

acceptable delay; and LOS F is considered to be unacceptable to most drivers. In this study, a signalized lane grouping operating at LOS E or F or a v/c ratio of 0.90 or above is identified as congested. For unsignalized intersections, a movement with LOS E or worse is also identified as congested.

TABLE 16-1
Roadway Level of Service Criteria

Level of Service (LOS)	Average Delay per Vehicle (seconds)	
	Signalized Intersections	Unsignalized Intersections
A	less than 10.1	less than 10.1
B	10.1 to 20.0	10.1 to 15.0
C	20.1 to 35.0	15.1 to 25.0
D	35.1 to 55.0	25.1 to 35.0
E	55.1 to 80.0	35.1 to 50.0
F	greater than 80.0	greater than 50.0

Source: *2000 Highway Capacity Manual*

Tables 16-2 and 16-3 show the results of the capacity analysis at the 31 signalized and 43 unsignalized intersections, respectively, in the three peak hours analyzed. The tables highlight those intersection movements that operate at LOS E or F and/or have a high v/c ratio (generally above 0.90 and above). The following describes conditions at those intersections experiencing congestion in one or more peak hours.

Signalized Intersections

Table 16-2 shows that nine of the 31 signalized intersections analyzed have at least one congested movement in one or more peak hours. As shown in the table, four analyzed intersections experience congestion during the weekday AM peak hour, three during the midday peak hour, and eight in the PM peak hour.

At the intersection of Franklin Street and Greenpoint Avenue, the westbound approach is congested with LOS E conditions in the AM, midday, and PM peak hours, and v/c ratios of 0.98, 1.02, and 1.03 during these hours, respectively.

Along the McGuinness Boulevard corridor, the southbound left-turn movement on McGuinness Boulevard at Green Street operates at LOS E in the AM peak hour. In the PM peak hour, the eastbound Calyer Street approach to McGuinness Boulevard is also congested with LOS E conditions, as is the westbound approach at McGuinness Boulevard and Meserole Avenue. The southbound through movement on McGuinness Boulevard at Meeker Avenue is congested with LOS E conditions in the PM peak hour, while the southbound approach at the intersection of McGuinness Boulevard/Humboldt Street and Meeker Avenue operates at LOS F conditions and a v/c ratio of 1.03 in the PM.

Along the Metropolitan Avenue corridor, the westbound exclusive left-turn movement at the intersection with Marcy Avenue experiences congestion in the AM and PM peak hours, with LOS D conditions and a v/c ratio of 0.99 in the AM, and LOS E conditions and a v/c ratio of 1.03 in the PM. At Union Avenue, the northbound approach is congested with LOS E conditions in all peak hours.

TABLE 16-2
2003 Existing Conditions at Signalized Intersections

Intersection	Lane Group	AM Peak Hour V/C RATIO	AM Peak Hour DELAY (SEC/VEH)	AM Peak Hour LOS		MD Peak Hour V/C RATIO	MD Peak Hour DELAY (SEC/VEH)	MD Peak Hour LOS		PM Peak Hour V/C RATIO	PM Peak Hour DELAY (SEC/VEH)	PM Peak Hour LOS	
Franklin Street (N-S) @	NB-LT	0.12	7.4	A		0.11	7.4	A		0.07	7.0	A	
Dupont Street (E-W)	SB-TR	0.08	7.2	A		0.09	7.2	A		0.07	7.1	A	
	EB-LR	0.06	14.1	B		0.11	14.8	B		0.04	13.8	B	
	WB-LTR	0.15	15.2	B		0.15	15.0	B		0.10	14.4	B	
Franklin Street (N-S) @	NB-TR	0.11	7.4	A		0.16	7.8	A		0.14	7.6	A	
Eagle Street (EB)	SB-LT	0.16	7.8	A		0.17	7.9	A		0.17	7.8	A	
	EB-LTR	0.14	14.3	B		0.11	14.1	B		0.12	14.2	B	
Franklin Street (N-S) @	NB-TR	0.28	9.0	A		0.26	8.7	A		0.28	8.9	A	
Green Street (EB)	SB-LT	0.29	9.1	A		0.27	8.9	A		0.35	9.6	A	
	EB-LTR	0.14	14.3	B		0.19	14.6	B		0.24	15.0	B	
Franklin Street (N-S) @	NB-LT	0.25	8.5	A		0.25	8.7	A		0.20	7.9	A	
Huron Street (WB)	SB-TR	0.22	8.3	A		0.22	8.3	A		0.27	8.5	A	
	WB-LTR	0.28	16.9	B		0.24	16.3	B		0.24	15.8	B	
Franklin Street (N-S) @	NB-LT	0.33	9.4	A		0.35	9.7	A		0.37	9.8	A	
Java Street (WB)	SB-TR	0.27	8.7	A		0.26	8.7	A		0.40	10.1	B	
	WB-LTR	0.31	17.5	B		0.32	17.7	B		0.29	17.3	B	
Franklin Street (N-S) @	NB-LTR	0.57	13.3	B		0.67	16.3	B		0.62	14.4	B	
Greenpoint Avenue (E-W)	SB-LTR	0.40	10.5	B		0.37	10.2	B		0.47	11.2	B	
	EB-LTR	0.28	15.3	B		0.16	14.4	B		0.26	15.2	B	
	WB-LTR	0.98	72.1	E	*	1.02	77.5	E	*	1.03	76.8	E	*
Franklin Street (N-S) @	NB-LT	0.52	11.7	B		0.59	13.1	B		0.51	11.3	B	
Noble Street (WB)	SB-TR	0.42	10.1	B		0.48	11.2	B		0.52	11.4	B	
	WB-LTR	0.12	14.5	B		0.07	14.0	B		0.11	14.5	B	
Franklin Street (N-S) @	NB-LTR	0.79	22.8	C		0.75	20.3	C		0.83	26.2	C	
Calyer Street (E-W)	SB-LTR	0.87	31.6	C		0.80	25.0	C		0.86	28.2	C	
Franklin Street (N-S) @	NB-T	0.65	15.1	B		0.69	17.0	B		0.70	17.3	B	
Quay Street (EB)	SB-T	0.39	10.2	B		0.49	12.1	B		0.56	12.8	B	
	EB-LR	0.36	18.5	B		0.16	15.4	B		0.47	21.0	C	
Kent Avenue (N-S) @	NB-LTR	0.41	11.3	B		0.51	13.0	B		0.51	12.8	B	
Metropolitan Avenue (E-W)	SB-LTR	0.27	9.0	A		0.21	8.4	A		0.29	9.1	A	
	EB-LTR	0.08	33.8	C		0.02	33.2	C		0.01	33.1	C	
	WB-LTR	0.03	33.2	C		0.42	38.2	D		0.33	36.9	D	
Kent Avenue (N-S) @	NB-TR	0.27	8.2	A		0.43	10.3	B		0.28	8.3	A	
South 3rd Street (EB)	SB-LT	0.32	8.6	A		0.49	11.3	B		0.79	21.0	C	
Manhattan Avenue (N-S) @	NB-TR	0.19	11.0	B		0.19	11.0	B		0.14	10.5	B	
Clay Street (EB)	SB-LT	0.15	10.6	B		0.11	10.2	B		0.13	10.4	B	
	EB-LTR	0.13	21.0	C		0.12	20.8	C		0.11	20.8	C	
Manhattan Avenue (N-S) @	NB-TR	0.36	13.0	B		0.30	12.2	B		0.31	12.3	B	
India Street (EB)	SB-LT	0.27	11.7	B		0.28	12.0	B		0.30	12.1	B	
	EB-LTR	0.27	22.9	C		0.31	23.8	C		0.42	26.2	C	
Manhattan Avenue (N-S) @	NB-LTR	0.42	19.1	B		0.52	21.5	C		0.55	22.1	C	
Greenpoint Avenue (E-W)	SB-LTR	0.34	18.0	B		0.34	17.8	B		0.36	18.0	B	
	EB-LT	0.39	18.9	B		0.29	17.1	B		0.36	18.3	B	
	EB-R	0.05	14.4	B		0.06	14.5	B		0.08	14.8	B	
	WB-LTR	0.43	19.3	B		0.69	26.6	C		0.56	22.0	C	

TABLE 16-2
2003 Existing Conditions at Signalized Intersections (Continued)

Intersection	Lane Group	AM Peak Hour V/C RATIO	AM Peak Hour DELAY (SEC/VEH)	AM Peak Hour LOS		MD Peak Hour V/C RATIO	MD Peak Hour DELAY (SEC/VEH)	MD Peak Hour LOS	PM Peak Hour V/C RATIO	PM Peak Hour DELAY (SEC/VEH)	PM Peak Hour LOS	
Manhattan Avenue (N-S) @	NB-LT	0.16	10.7	B		0.27	22.6	C	0.15	10.6	B	
Driggs Avenue (WB)	SB-TR	0.21	11.3	B		0.34	23.8	C	0.26	11.7	B	
	WB-TR	0.72	33.9	C		0.42	13.7	B	0.84	41.6	D	
McGuinness Boulevard (N-S) @	NB-TR	0.89	27.4	C		0.58	16.3	B	0.62	17.0	B	
Green Street (EB)	SB-L	0.81	79.6	E	*	0.33	16.5	B	0.40	19.0	B	
	SB-T	0.52	14.7	B		0.46	13.9	B	0.67	17.6	B	
	EB-LTR	0.58	41.5	D		0.59	42.2	D	0.65	44.4	D	
McGuinness Boulevard (N-S) @	NB-TR	0.82	22.1	C		0.56	14.7	B	0.58	15.1	B	
India Street (EB)	SB-L	0.39	24.3	C		0.25	13.3	B	0.13	10.9	B	
	SB-T	0.45	12.8	B		0.44	12.7	B	0.63	15.6	B	
	EB-LTR	0.40	37.9	D		0.19	33.1	C	0.25	33.9	C	
McGuinness Boulevard (N-S) @	NB-L	0.36	20.0	B		0.45	23.6	C	0.69	53.3	D	
Greenpoint Avenue (E-W)	NB-TR	0.77	22.8	C		0.56	17.4	B	0.61	18.4	B	
	SB-L	0.60	44.1	D		0.28	16.4	B	0.43	21.7	C	
	SB-TR	0.53	16.5	B		0.49	15.9	B	0.64	18.4	B	
	EB-LTR	0.42	32.4	C		0.23	29.1	C	0.52	34.9	C	
	WB-LTR	0.54	34.9	C		0.67	38.5	D	0.71	40.4	D	
McGuinness Boulevard (N-S) @	NB-TR	0.77	21.0	C		0.65	17.9	B	0.66	18.0	B	
Calyer Street (EB)	SB-L	0.58	43.3	D		0.49	23.2	C	0.47	21.9	C	
	SB-T	0.73	20.0	B		0.71	19.3	B	0.59	15.9	B	
	EB-LTR	0.73	48.4	D		0.58	40.9	D	0.87	59.9	E	*
McGuinness Boulevard (N-S) @	NB-L	0.24	9.6	A		0.28	10.4	B	0.38	17.3	B	
Meserole Avenue (WB)	NB-T	0.75	13.8	B		0.51	9.1	A	0.58	10.0	A	
	SB-TR	0.64	11.0	B		0.61	10.4	B	0.80	15.3	B	
	WB-LTR	0.68	50.0	D		0.65	49.4	D	0.82	65.3	E	*
McGuinness Boulevard (N-S) @	NB-L	0.10	22.8	C		0.05	22.2	C	0.06	22.3	C	
Meeker Avenue (WB)	NB-T	0.45	12.0	B		0.34	10.8	B	0.35	10.9	B	
	SB-T	0.55	46.6	D		0.64	49.3	D	0.95	74.1	E	*
	SB-R	0.04	39.0	D		0.06	39.4	D	0.04	39.0	D	
	WB-LTR	0.58	37.6	D		0.51	36.2	D	0.57	37.4	D	
Humboldt Street (N-S) @	NB-TR	0.81	38.0	D		0.54	29.2	C	0.59	30.4	C	
Meeker Avenue (EB)	SB-LT	0.61	48.3	D		0.65	49.5	D	1.03	93.1	F	*
	EB-LTR	0.52	36.4	D		0.50	36.0	D	0.69	40.3	D	
Bedford Avenue (NB) @	NB-LTR	0.22	23.4	C		0.34	25.1	C	0.34	25.2	C	
Broadway (E-W)	EB-LT	0.08	15.2	B		0.09	15.4	B	0.11	15.5	B	
	WB-T	0.13	15.7	B		0.10	15.4	B	0.18	16.2	B	
Driggs Avenue (SB) @	SB-LT	0.37	9.0	A		0.29	8.1	A	0.37	9.0	A	
North 7th Street (EB)	EB-TR	0.70	44.5	D		0.70	44.9	D	0.50	36.0	D	
Driggs Avenue (SB) @	SB-LTR	0.18	19.5	B		0.16	19.2	B	0.51	26.3	C	
Metropolitan Avenue (E-W)	EB-TR	0.31	21.8	C		0.40	23.6	C	0.55	27.6	C	
	WB-LT	0.28	21.5	C		0.44	25.3	C	0.63	31.8	C	
Driggs Avenue (SB) @	SB-LTR	0.22	20.6	C		0.17	20.0	B	0.31	21.7	C	
Grand Street (E-W)	EB-TR	0.11	19.5	B		0.12	19.6	B	0.13	19.8	B	
	WB-LT	0.10	19.2	B		0.11	19.5	B	0.24	21.5	C	

TABLE 16-2
2003 Existing Conditions at Signalized Intersections (Continued)

Intersection	Lane Group	AM Peak Hour V/C RATIO	AM Peak Hour DELAY (SEC/VEH)	AM Peak Hour LOS		MD Peak Hour V/C RATIO	MD Peak Hour DELAY (SEC/VEH)	MD Peak Hour LOS		PM Peak Hour V/C RATIO	PM Peak Hour DELAY (SEC/VEH)	PM Peak Hour LOS	
Roebling Street (N-S) @	NB-LTR	0.18	26.6	C		0.14	26.1	C		0.24	27.3	C	
Metropolitan Avenue (E-W)	SB-LT	0.26	27.5	C		0.20	26.8	C		0.17	26.5	C	
	SB-R	0.03	25.0	C		0.01	24.8	C		0.06	25.3	C	
	EB-LTR	0.26	14.5	B		0.28	14.7	B		0.37	15.9	B	
	WB-LTR	0.67	25.0	C		0.74	28.9	C		0.85	37.5	D	
Havemeyer Street (NB) @	NB-LR	0.25	27.4	C		0.28	27.8	C		0.37	28.9	C	
Metropolitan Avenue (E-W)	EB-T	0.28	14.7	B		0.29	14.8	B		0.41	16.7	B	
	WB-T	0.27	14.3	B		0.51	18.5	B		0.60	20.6	C	
Marcy Avenue (SB) @	EB-TR	0.47	37.3	D		0.63	41.5	D		0.63	40.5	D	
Metropolitan Avenue (E-W)	WB-L	0.99	52.6	D	*	0.79	24.1	C		1.03	59.2	E	*
	WB-TR	0.32	0.7	A		0.33	0.7	A		0.31	0.5	A	
Union Avenue (N-S) @	NB-LTR	0.90	66.2	E	*	0.90	67.2	E	*	0.87	68.2	E	*
Metropolitan Avenue (E-W)	SB-LTR	0.58	42.2	D		0.66	45.8	D		0.36	34.8	C	
	EB-LTR	0.47	14.0	B		0.56	16.1	B		0.69	19.3	B	
	WB-LTR	0.84	28.6	C		0.60	16.8	B		0.71	19.7	B	
Roebling Street (N-S) @	NB-L	0.02	14.4	B		0.10	15.5	B		0.19	18.3	B	
Broadway (E-W)	NB-R	0.07	14.8	B		0.03	14.4	B		0.04	14.6	B	
	SB-LT	0.42	18.3	B		0.38	17.8	B		0.66	22.7	C	
	EB-TR	0.50	35.0	C		0.87	58.7	E	*	0.93	67.7	E	*
	WB-LT	0.26	28.8	C		0.33	30.0	C		WB-DfL 0.86	90.5	F	*
										WB-T 0.41	32.1	C	

ABBREVIATION:

EB-Eastbound, WB-Westbound, NB-Northbound, SB-Southbound
L-Left, T-Through, R-Right, E-W: East-West Roadway, N-S: North-South Roadway
V/C Ratio - Volume to Capacity Ratio
SEC/VEH - Seconds per Vehicle
LOS - Level of Service
* - Denotes Congested Location (LOS E or F, or v/c ratio > 0.90)

TABLE 16-3
2003 Existing Conditions at Unsignalized Intersections

Intersection	Lane Group	AM Peak Hour V/C RATIO	AM Peak Hour DELAY (SEC/VEH)	AM Peak Hour LOS	MD Peak Hour V/C RATIO	MD Peak Hour DELAY (SEC/VEH)	MD Peak Hour LOS	PM Peak Hour V/C RATIO	PM Peak Hour DELAY (SEC/VEH)	PM Peak Hour LOS
West Street (N-S) @ Freeman Street (WB)	WB-LR	0.05	9.2	A	0.06	9.1	A	0.12	9.2	A
West Street (N-S) @ Green Street (E-W)	NB-LTR	0.01	7.4	A	0.00	7.5	A	0.00	7.4	A
	SB-LTR	0.00	7.6	A	0.00	7.6	A	0.01	7.5	A
	EB-LTR	0.03	9.3	A	0.01	9.7	A	0.02	10.0	A
West Street (N-S) @ Huron Street (E-W)	NB-LT	0.00	7.4	A	0.00	7.5	A	0.00	7.4	A
	EB-LR	0.01	9.0	A	0.01	9.4	A	0.02	9.3	A
	WB-LTR	0.06	9.8	A	0.06	9.5	A	0.07	10.3	B
West Street (N-S) @ India Street (E-W)	NB-LTR	0.01	7.5	A	0.00	7.6	A	0.01	7.5	A
	SB-LTR	0.01	7.4	A	0.01	7.7	A	0.01	7.6	A
	EB-LTR	0.02	9.8	A	0.02	10.0	A	0.01	9.9	A
West Street (N-S) @ Kent Street (E-W)	NB-LTR	0.01	7.4	A	0.01	7.7	A	0.00	7.6	A
	SB-LTR	0.01	7.5	A	0.01	7.6	A	0.00	7.5	A
	EB-LTR	0.02	10.2	B	0.01	9.9	A	0.01	10.0	A
West Street (N-S) @ Greenpoint Avenue (E-W)	NB-LTR	0.01	7.4	A	0.01	7.6	A	0.00	7.5	A
	SB-LTR	0.04	7.4	A	0.02	7.7	A	0.03	7.6	A
	EB-LT	0.02	10.8	B	0.00	10.7	B	0.01	11.6	B
	EB-TR	0.01	10.3	B	0.01	9.1	A	0.02	9.9	A
	WB-LT	0.04	11.0	B	0.08	10.8	B	0.06	11.7	B
	WB-TR	0.07	9.4	A	0.03	9.4	A	0.06	9.6	A
Franklin Street (N-S) @ Commercial Street (E-W)	NB-L	0.01	9.4	A	0.01	7.4	A	0.01	9.3	A
	NB-R	0.07	8.7	A	0.03	9.5	A	0.06	8.6	A
	WB-LT	0.03	7.5	A	0.06	9.4	A	0.03	7.5	A
Franklin Street (N-S) @ India Street (EB)	SB-LT	0.01	7.8	A	0.01	7.8	A	0.02	7.9	A
	EB-LTR	0.05	11.9	B	0.09	12.2	B	0.10	13.3	B
Franklin Street (N-S) @ North 14th Street (E-W)	SB-LT	0.03	8.2	A	0.04	8.7	A	0.05	8.5	A
	WB-LR	0.05	10.7	B	0.04	12.4	B	0.04	13.3	B
Kent Avenue (N-S) @ North 12th Street (E-W)	NB-LT	0.00	8.3	A	0.00	8.2	A	0.00	8.7	A
	WB-LTR	0.08	15.1	C	0.13	12.4	B	0.09	12.7	B
	EB-LR	0.03	16.4	C	0.06	13.6	B	0.07	17.7	C
Kent Avenue (N-S) @ North 11th Street (E-W)	SB-LT	0.01	8.2	A	0.04	8.6	A	0.03	8.2	A
	EB-LTR	0.14	16.1	C	0.06	14.5	B	0.07	17.6	C
Kent Avenue (N-S) @ North 9th Street (EB)	SB-LT	0.03	8.3	A	0.03	8.3	A	0.03	8.3	A
Kent Avenue (N-S) @ North 8th Street (WB)	WB-LR	0.22	14.7	B	WB-L 0.04	13.8	B	WB-L 0.16	19.8	C
					WB-R 0.06	10.5	B	WB-R 0.03	10.9	B
Kent Avenue (N-S) @ North 7th Street (E-W)	NB-LTR	0.00	8.5	A	0.00	8.0	A	0.01	8.7	A
	SB-LTR	0.03	8.2	A	0.04	8.4	A	0.03	8.3	A
	EB-LTR	0.01	15.7	C	0.01	13.4	B	0.01	18.1	C
Kent Avenue (N-S) @ North 6th Street (E-W)	NB-LT	0.00	8.5	A	0.00	8.0	A	0.00	8.6	A
	EB-LR	0.01	15.0	B	0.00	12.3	B	0.01	16.8	C
	WB-LTR	0.11	13.1	B	0.13	14.5	B	0.16	14.2	B

TABLE 16-3
2003 Existing Conditions at Unsignalized Intersections (Continued)

Intersection	Lane Group	AM Peak Hour V/C RATIO	AM Peak Hour DELAY (SEC/VEH)	AM Peak Hour LOS	MD Peak Hour V/C RATIO	MD Peak Hour DELAY (SEC/VEH)	MD Peak Hour LOS	PM Peak Hour V/C RATIO	PM Peak Hour DELAY (SEC/VEH)	PM Peak Hour LOS
Kent Avenue (N-S) @	NB-LTR	0.00	8.4	A	0.00	8.0	A	0.02	8.6	A
North 5th Street (E-W)	SB-LTR	0.03	8.2	A	0.03	8.3	A	0.03	8.2	A
	EB-LTR	0.02	16.6	C	0.02	14.6	B	0.03	16.5	C
Kent Avenue (N-S) @	WB-L	0.12	15.9	C	0.06	15.0	B	0.07	18.0	C
North 4th Street (WB)	WB-R	0.04	10.3	B	0.04	11.1	B	0.03	10.9	B
Kent Avenue (N-S) @	NB-LTR	0.01	8.5	A	0.00	8.1	A	0.01	8.6	A
North 3rd Street (E-W)	SB-LTR	0.02	8.1	A	0.00	8.3	A	0.02	8.2	A
	EB-LTR	0.06	17.5	C	0.04	14.1	B	0.05	14.1	B
Kent Avenue (N-S) @	NB-LTR	0.00	8.4	A	0.00	8.0	A	0.01	8.6	A
Grand Street (E-W)	SB-LTR	0.01	8.0	A	0.02	8.4	A	0.01	8.2	A
	EB-LTR	0.01	14.6	B	0.04	13.8	B	0.05	15.1	C
	WB-LTR	0.09	14.3	B	0.06	15.7	C	0.14	20.4	C
Kent Avenue (N-S) @	WB-L	0.03	15.3	C	0.03	13.8	B	0.02	16.8	C
South 6th Street (WB)	WB-R	0.02	10.5	B	0.02	10.2	B	0.04	10.6	B
Manhattan Avenue (N-S) @	SB-LT	0.01	7.7	A	0.00	7.6	A	0.00	7.6	A
Eagle Street (EB)	EB-LTR	0.05	9.5	A	EB-LT 0.04	10.6	B	EB-LT 0.06	11.1	B
					EB-R 0.05	9.1	A	EB-R 0.05	9.2	A
Manhattan Avenue (N-S) @	SB-LT	0.03	7.9	A	0.03	7.8	A	0.03	7.8	A
Green Street (EB)	EB-LTR	0.32	14.2	B	0.29	14.3	B	0.39	17.4	C
McGuiness Boulevard (NB) @	NB-LTR	(a)	7.5	A	(a)	7.5	A	(a)	7.5	A
Paidge Avenue (E-W)	EB-LT	(a)	7.9	A	(a)	7.5	A	(a)	7.6	A
	WB-TR	(a)	7.3	A	(a)	7.2	A	(a)	7.5	A
McGuiness Boulevard (SB) @	SB-LT	(a)	7.5	A	(a)	7.5	A	(a)	7.6	A
Box Street (E-W)	EB-TR	(a)	7.6	A	(a)	7.2	A	(a)	7.5	A
	WB-L	(a)	7.7	A	(a)	7.6	A	(a)	7.8	A
McGuiness Boulevard (NB) @	NB-LTR	(a)	7.5	A	(a)	7.8	A	(a)	7.7	A
Clay Street (E-W)	EB-LT	(a)	7.7	A	(a)	7.7	A	(a)	7.7	A
McGuinness Boulevard (SB) @	SB-LT	0.01	7.3	A	0.00	7.3	A	0.00	7.3	A
Clay Street (E-W)	EB-TR	0.08	9.4	A	0.08	9.4	A	0.08	9.7	A
	WB-L	0.04	9.9	A	0.06	9.8	A	0.08	10.2	B
Wythe Avenue (SB) @	WB-LT	0.09	10.1	B	0.15	10.5	B	0.11	10.6	B
North 12th Street (WB)										
Wythe Avenue (SB) @	SB-LT	0.01	7.4	A	0.01	7.4	A	0.03	7.4	A
North 9th Street (EB)	EB-TR	0.09	12.0	B	0.09	11.5	B	0.12	12.2	B
Wythe Avenue (SB) @	WB-LT	0.26	13.0	B	0.22	12.1	B	0.19	12.4	B
North 8th Street (WB)										
Wythe Avenue (SB) @	WB-LT	0.10	11.2	B	0.12	10.8	B	0.19	12.2	B
North 6th Street (WB)	WB-T	0.03	11.3	B	0.02	10.9	B	0.05	11.8	B
Wythe Avenue (SB) @	WB-LT	0.10	11.6	B	0.10	11.1	B	0.08	10.2	B
North 4th Street (WB)	WB-T	0.05	11.6	B	0.03	11.2	B	0.02	11.9	B

TABLE 16-3
2003 Existing Conditions at Unsignalized Intersections (Continued)

Intersection	Lane Group	AM Peak Hour V/C RATIO	AM Peak Hour DELAY (SEC/VEH)	AM Peak Hour LOS	MD Peak Hour V/C RATIO	MD Peak Hour DELAY (SEC/VEH)	MD Peak Hour LOS	PM Peak Hour V/C RATIO	PM Peak Hour DELAY (SEC/VEH)	PM Peak Hour LOS
Berry Street (NB) @	NB-LT	0.01	7.2	A	0.01	7.3	A	0.01	7.2	A
North 12th Street (WB)	WB-T	0.09	11.2	B	0.13	10.9	B	0.11	11.2	B
	WB-R	0.17	9.6	A	0.08	8.9	A	0.11	9.3	A
Berry Street (NB) @	NB-T	(a)	7.9	A	(a)	7.6	A	(a)	7.8	A
North 11th Street (EB)	NB-TR	(a)	7.9	A	(a)	7.6	A	(a)	7.9	A
	EB-LT	(a)	8.0	A	(a)	8.0	A	(a)	8.6	A
Berry Street (NB) @	EB-LT	0.16	11.2	B	0.23	10.8	B	0.17	11.2	B
North 7th Street (EB)										
Berry Street (NB) @	EB-LT	0.06	10.3	B	0.11	9.9	A	0.07	10.2	B
North 5th Street (EB)	EB-T	0.04	10.8	B	0.08	10.0	A	0.05	10.6	B
Berry Street (NB) @	EB-LT	0.06	9.8	A	0.09	9.4	A	0.10	10.2	B
North 3rd Street (EB)										
Bedford Avenue (NB) @	NB-LT	0.04	7.3	A	0.04	7.3	A	0.02	7.3	A
North 8th Street (WB)	WB-TR	0.38	15.8	C	0.27	13.8	B	0.29	14.6	B
Bedford Avenue (NB) @	NB-LT	0.02	7.3	A	0.02	7.3	A	0.05	7.3	A
North 6th Street (WB)	WB-TR	0.39	14.1	B	0.34	14.6	B	0.38	16.1	C
Bedford Avenue (NB) @	NB-LT	0.01	7.3	A	0.03	7.3	A	0.02	7.3	A
North 4th Street (WB)	WB-TR	0.17	11.3	B	0.23	12.7	B	0.20	12.0	B
Driggs Avenue (SB) @	SB-TR	(a)	9.3	A	(a)	8.7	A	(a)	9.5	A
North 12th Street (WB)	WB-LT	(a)	8.8	A	(a)	8.7	A	(a)	8.7	A
Driggs Avenue (SB) @	SB-LT	0.01	7.3	A	0.01	7.3	A	0.01	7.2	A
North 9th Street (EB)	EB-TR	0.12	11.4	B	0.19	11.0	B	0.18	12.0	B
Driggs Avenue (SB) @	SB-LT	0.03	7.3	A	0.02	7.3	A	0.01	7.3	A
North 5th Street (EB)	EB-TR	0.21	12.2	B	0.20	11.3	B	0.17	11.8	B
Driggs Avenue (SB) @	SB-TR	0.27	10.7	B	0.26	10.4	B	0.01	11.7	B
South 4th Street (WB)	WB-LT	0.00	7.2	A	0.00	7.2	A	0.17	7.3	A

ABBREVIATION:

EB-Eastbound, WB-Westbound, NB-Northbound, SB-Southbound

L-Left, T-Through, R-Right, E-W: East-West Roadway, N-S: North-South Roadway

V/C Ratio - Volume to Capacity Ratio

SEC/VEH - Seconds per Vehicle

LOS - Level of Service

* - Denotes Congested Location (LOS E or F, or v/c ratio > 0.90)

(a) All-way stop control; no v/c ratio reported

Lastly, at the intersection of Roebling Street and Broadway, the eastbound approach is congested with LOS E conditions in the midday and PM peak hours. The westbound left-turn movement at this intersection also experiences congestion, with LOS F conditions in the PM peak hour.

Unsignalized Intersections

As shown in Table 16-3, of the 43 unsignalized intersections analyzed, none were found to experience congestion in any peak hour under Existing conditions.

Parking

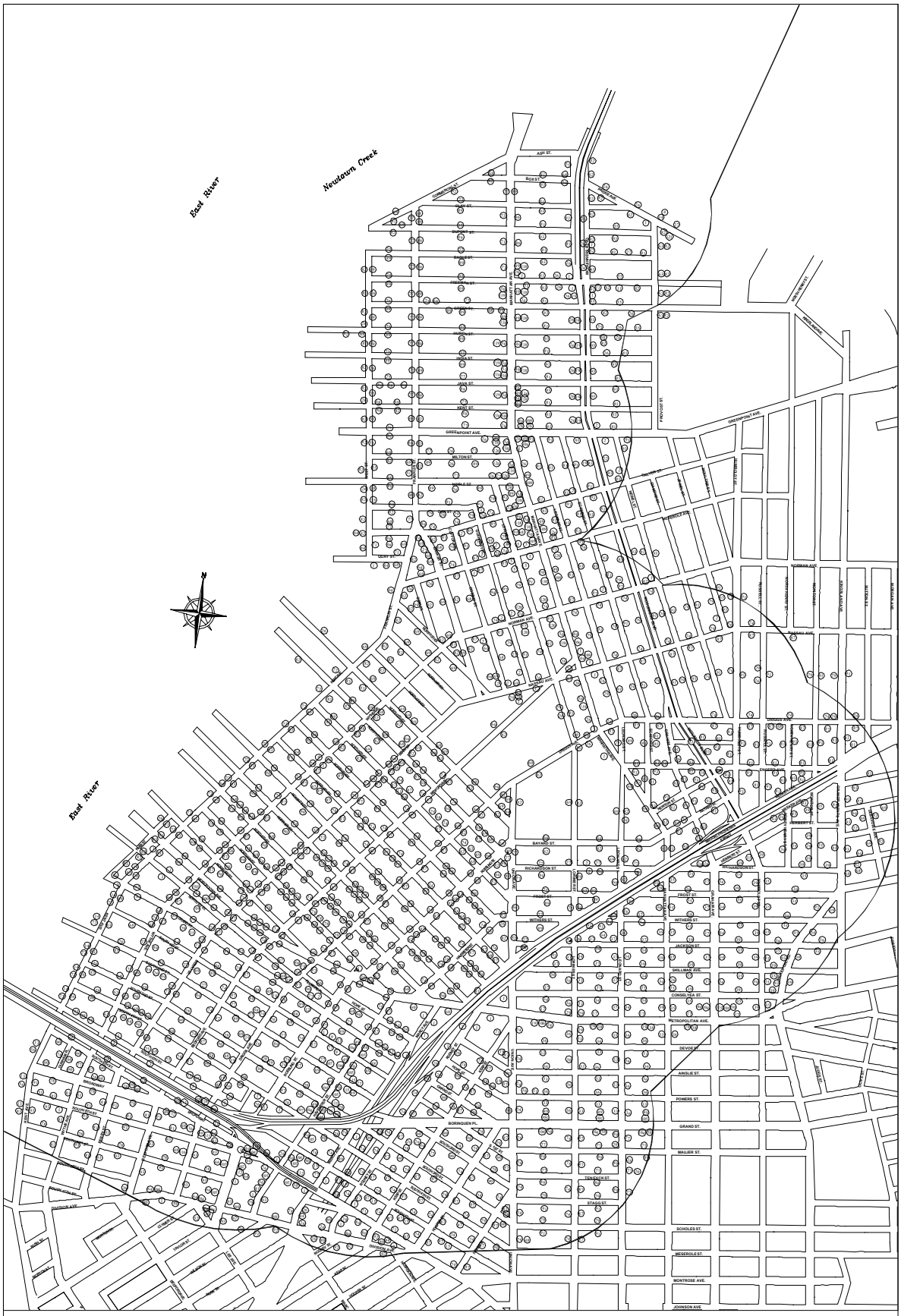
Off-Street Parking

There are no licensed public parking facilities in the study area. While some businesses and housing developments provide on-site accessory parking, most residents and workers in Greenpoint and Williamsburg must rely on available curbside parking.

On-Street Parking

Curbside parking regulations within ¼-mile of the projected development sites were surveyed in June, 2002 and are shown in Figure 16-7. As shown in Figure 16-7, curbside parking is permitted throughout much of the study area, with restrictions in place to facilitate street cleaning. Within the industrial areas in the western portion of the study area, parking restrictions are in effect weekdays to provide for curbside access for pick-up/drop-off activity and truck loading and unloading during certain periods of the day. Metered curbside parking spaces are available on some blocks to accommodate the short-term parking needs of adjacent commercial land uses. Much of the metered parking in the study area is concentrated on Manhattan Avenue between Dupont Street and Greenpoint Avenue, and on Bedford Avenue between North 5th and North 9th Streets, and on the side streets adjoining those blocks.

Field surveys of weekday utilization of on-street parking capacity were conducted in June 2004. The surveys focused on the weekday overnight and midday periods, and included all legal curbside spaces within ¼-mile of the proposed action area. During the weekday overnight period, the number of curbside parking spaces within this area totals approximately 21,350. Utilization during this period was found to be approximately 76 percent, with an average of approximately 5,100 spaces available. During the weekday midday, there are approximately 21,050 spaces available for curbside parking. Utilization in the midday was observed to reach approximately 82 percent, with about 3,800 spaces available within ¼-mile of the proposed action area. (It should be noted that the number of available spaces fluctuates somewhat by time of day and day of week, depending on the prevailing parking regulations. The capacities quoted here are typical for the time periods examined.) Available spaces during both periods were distributed throughout the study area, however, overnight utilization was typically observed to be higher in residential areas than in areas with predominantly commercial uses. This is a common pattern as residential parking demand typically peaks overnight and parking demand from commercial uses peaks in the midday.



Greenpoint-Williamsburg Rezoning EIS

Figure 16-7a
On-Street Parking Regulations

On-Street Parking Regulations

1. No Standing Anytime
2. No Standing Anytime (Fire Zone)
3. No Standing Anytime (Temporary Construction Regulation)
4. No Standing Anytime Except Authorized Vehicles (Fire Dept.)
5. No Standing Anytime Except Authorized Vehicle (NYPD)
6. No Standing Anytime Except Authorized Vehicle (Transit Police)
7. No Standing Anytime Except Authorized Vehicle (NYP)
8. No Standing Anytime Except Authorized Vehicle (Authorized Agency On Other Side)
9. No Standing Anytime Except TLC Licensed FHV's
10. No Standing Except Trucks Loading & Unloading
11. No Standing 7am–6pm Except Trucks Loading & Unloading
12. No Standing 8am–7pm Except Trucks Loading & Unloading
13. No Standing 7am–10am Except Sunday
14. No Standing 7am–7pm Except Sunday
15. No Standing 4pm–7pm Except Sunday
16. No Standing 7am–4pm School Days Except MIU Vehicles
17. No Standing 7am–10am Monday–Friday
18. No Standing 8am–6pm Monday–Friday
19. No Standing 4pm–7pm Monday–Friday
20. No Standing 7am–7pm Monday–Friday Except Authorized Vehicles (NYCDOT)
21. No Standing 7am–4pm Monday–Friday Except Trucks Loading & Unloading
22. No Standing 7am–7pm Monday–Friday Except Trucks Loading & Unloading
23. No Standing 7am–7pm Monday–Friday Except Trucks Loading & Unloading
24. No Standing 7am–7pm Tuesday, Thursday, & Saturday Except Trucks Loading & Unloading
25. No Standing 7am–7pm Monday, Wednesday, & Friday Except Trucks Loading & Unloading
26. No Parking Anytime
27. No Parking Loading Zone
28. No Parking 7am–8am
29. No Parking 7am–4pm School Days
30. No Parking 8am–9:30am Monday
31. No Parking Midnight–3am Tuesday
32. No Parking 8am–9:30am Tuesday
33. No Parking 8:30am–10am Tuesday
34. No Parking 9:30am–11am Tuesday
35. No Parking 11:30am–1pm Tuesday
36. No Parking 8:30am–10am Wednesday
37. No Parking 9:30am–11am Wednesday
38. No Parking 10:30am–11:30am Wednesday
39. No Parking 11:30am–1pm Wednesday
40. No Parking 8am–9am Thursday
41. No Parking Midnight–3am Friday
42. No Parking 8am–9am Friday
43. No Parking 8am–6pm Friday
44. No Parking 11:30am–1pm Friday
45. No Parking 4am–4pm Except Sunday
46. No Parking 7am–9am Except Sunday
47. No Parking 7am–6pm Except Sunday
48. No Parking 7am–7pm Except Sunday
49. No Parking 7:30am–8am Except Sunday
50. No Parking 8am–8:30am Except Sunday
51. No Parking 8am–6pm Except Sunday
52. No Parking 8:30am–9am Except Sunday
53. No Parking 6am–6pm Including Sunday
54. No Parking 8am–7pm Including Sunday
55. No Parking 8am–6pm Monday–Thursday
56. No Parking 8am–6pm Monday–Thursday
57. No Parking 4am–4pm Monday–Friday
58. No Parking 6am–6pm Monday–Friday
59. No Parking 6am–7pm Monday–Friday
60. No Parking 7am–10am Monday–Friday
61. No Parking 7am–5pm Monday–Friday
62. No Parking 7am–6pm Monday–Friday
63. No Parking 7am–7pm Monday–Friday
64. No Parking 7:30am–8am Monday–Friday
65. No Parking 8am–4pm Monday–Friday
66. No Parking 8am–8:30am Monday–Friday
67. No Parking 8am–5pm Monday–Friday
68. No Parking 8am–6pm Monday–Friday
69. No Parking Midnight–3am Monday & Thursday
70. No Parking 2am–5am Monday & Thursday
71. No Parking 3am–6am Monday & Thursday
72. No Parking 2am–5am Monday & Thursday
73. No Parking 8am–8:30am Monday & Thursday
74. No Parking 8am–9:30am Monday & Thursday
75. No Parking 8am–11am Monday & Thursday
76. No Parking 8:30am–9am Monday & Thursday
77. No Parking 8:30am–10am Monday & Thursday
78. No Parking 9am–10:30am Monday & Thursday
79. No Parking 9:30am–11am Monday & Thursday
80. No Parking 11am–12:30pm Monday & Thursday
81. No Parking 11:30am–1pm Monday & Thursday
82. No Parking Midnight–3am Tuesday & Friday
83. No Parking 2am–5am Tuesday & Friday
84. No Parking 3am–6am Tuesday & Friday
85. No Parking 7:30am–8am Tuesday & Friday
86. No Parking 8am–8:30am Tuesday & Friday
87. No Parking 8am–9:30am Tuesday & Friday
88. No Parking 8:30am–9am Tuesday & Friday
89. No Parking 8:30am–10am Tuesday & Friday
90. No Parking 9am–10:30am Tuesday & Friday
91. No Parking 9:30am–11am Tuesday & Friday
92. No Parking 11am–12:30pm Tuesday & Friday
93. No Parking 11:30am–1pm Tuesday & Friday
94. No Parking 8am–6pm Tuesday & Thursday
95. No Parking 8am–11am Thursday & Friday
96. No Parking Midnight–3am Monday, Wednesday & Friday
97. No Parking 8am–6pm Monday Wednesday & Friday

98 No Parking Midnight–3am Tuesday, Thursday & Saturday
99 No Parking 8am–6pm Tuesday, Thursday & Saturday
100 No Parking 7:30am–8am
Monday, Tuesday, Thursday & Friday
101 No Parking 8am–8:30am
Monday, Tuesday, Thursday & Friday
102 No Parking 8:30am–9am
Monday, Tuesday, Thursday & Friday
103 No Parking 7am–6pm Except Sunday
Except Trucks Loading & Unloading
104 1 Hour Parking 8am–7pm Except Sunday
105 1 Hour Parking 8:30am–7pm Except Sunday
106 1 Hour Parking 9am–4pm Except Sunday
107 1 Hour Parking 9am–7pm Except Sunday
108 1 Hour Parking 10am–7pm Except Sunday
109 1 Hour Parking 8am–7pm Including Sunday
110 1 Hour Parking 8:30am–7pm Including Sunday
111 1 Hour Parking 9am–7pm Including Sunday
112 2 Hour Parking 8am–7pm Except Sunday
113 2 Hour Parking 8:30am–6pm Except Sunday
114 2 Hour Parking 8:30am–7pm Except Sunday
115 2 Hour Parking 9am–7pm Except Sunday
116 2 Hour Parking 10am–7pm Except Sunday
117 2 Hour Parking 10am–7pm Including Sunday
118 2 Hour Parking 8am–7pm Including Sunday
119 2 Hour Parking 8:30am–7pm Including Sunday
120 2 Hour Parking 9am–7pm Including Sunday
121 Angle Parking Only
122 Bus Layover Zone

C. THE FUTURE WITHOUT THE PROPOSED ACTION (NO-ACTION)

Between 2003 and 2013, it is expected that traffic and parking demands in the study area would increase due to long-term background growth as well as development that could occur pursuant to existing zoning or approved BSA variances on 30 of the 76 projected development sites. Truck traffic is likely to decrease in keeping with the long-term downward trend in industrial activity in the area. Development on projected development sites is expected to consist of a total of approximately 866 new dwelling units and 68,500 square feet of new commercial/retail space. In order to forecast the future conditions without the proposed action (the No-Action condition), any residential development project with 200 or more new housing units and any development with a retail/commercial component listed in Table 1-1 in Chapter 1, "Project Description," and Table 2-3 and shown in Figure 2-6 in Chapter 2, "Land Use, Zoning and Public Policy," were considered, in addition to an annual background growth rate of one percent per year applied to existing traffic and parking demand for the 2003 through 2013 period. This background growth rate is applied to account for smaller projects and general increases in travel demand not attributable to specific development projects. Individual sites which would introduce fewer than 200 new dwelling units to the study area and have no retail component are assumed to be included in background growth. Although none of the projected development sites would include 200 or more new dwelling units, five sites have a proposed retail/commercial component and are considered separate No-Action sites. These include:

- On Site 3, located on the west side of West Street between Freeman and Green Streets, it is anticipated that a portion of the site would be developed with a 15,000 square-foot catering hall.

- Site 55, an L-shaped parcel in Greenpoint occupying the entire west side of Franklin Street between Kent Street and Greenpoint Avenue and approximately three-quarters of the block frontage on the north side of Greenpoint Avenue from Franklin Street toward West Street. At this location, approximately 12,000 square feet of an existing light manufacturing facility would be converted to retail.

- Site 102, located on the north side of North 11th Street mid-block between Driggs Avenue and Roebling Street in Williamsburg, where a 10,000 square foot warehousing facility would be converted for retail use. An existing 2,500 square foot auto care center on this site would remain in operation.

- Site 130, occupying the entire east side of Union Avenue between Richardson Street and Frost Street in Williamsburg, where an existing 27,500 square foot vacant industrial building would be converted for retail use.

- Site 207, located on the north side of North 6th Street east of Berry Street in Williamsburg, where an existing 4,000 square foot warehousing facility would be converted to retail use.

In addition to development on projected development sites, NYCDCP has identified four No-Action projects that are within the traffic study area or would generate vehicular traffic that would traverse the study area. These projects, described below, would introduce 1,596 new dwelling units and 70,399 square feet of new retail space.

- The Kedem Winery and Schaefer Brewery sites on the waterfront along Kent Avenue between South 8th and South 10th Streets would be redeveloped into mixed-use residential and retail

uses. The development of the Kedem site would consist of 450 new dwelling units and 26,900 square feet of retail/commercial space, while the Schaefer site would consist of 350 dwelling units and 12,400 square feet of retail/commercial space.

- The Domsey clothing warehouse at 431 Kent Avenue between South 8th and South 11th Streets would be redeveloped into 540 dwelling units.

- 184 Kent Avenue, an existing 400,000 square foot partially converted industrial building within the proposed action area at Kent Avenue and North 3rd Street in Williamsburg, would be further converted to 256 dwelling units, approximately 27,124 square feet of retail/commercial space, and an accessory parking garage.

Traffic generated by these four No-Action development sites and by the five projected development sites discussed above was combined with existing traffic volumes and background growth for the 2003 through 2013 period to yield a 2013 No-Action traffic network. Figures 16-8 through 16-10 show the resulting AM, midday and PM peak hour traffic volumes at study area intersections in the 2013 future without the proposed action.

No-Action Changes to the Street Network

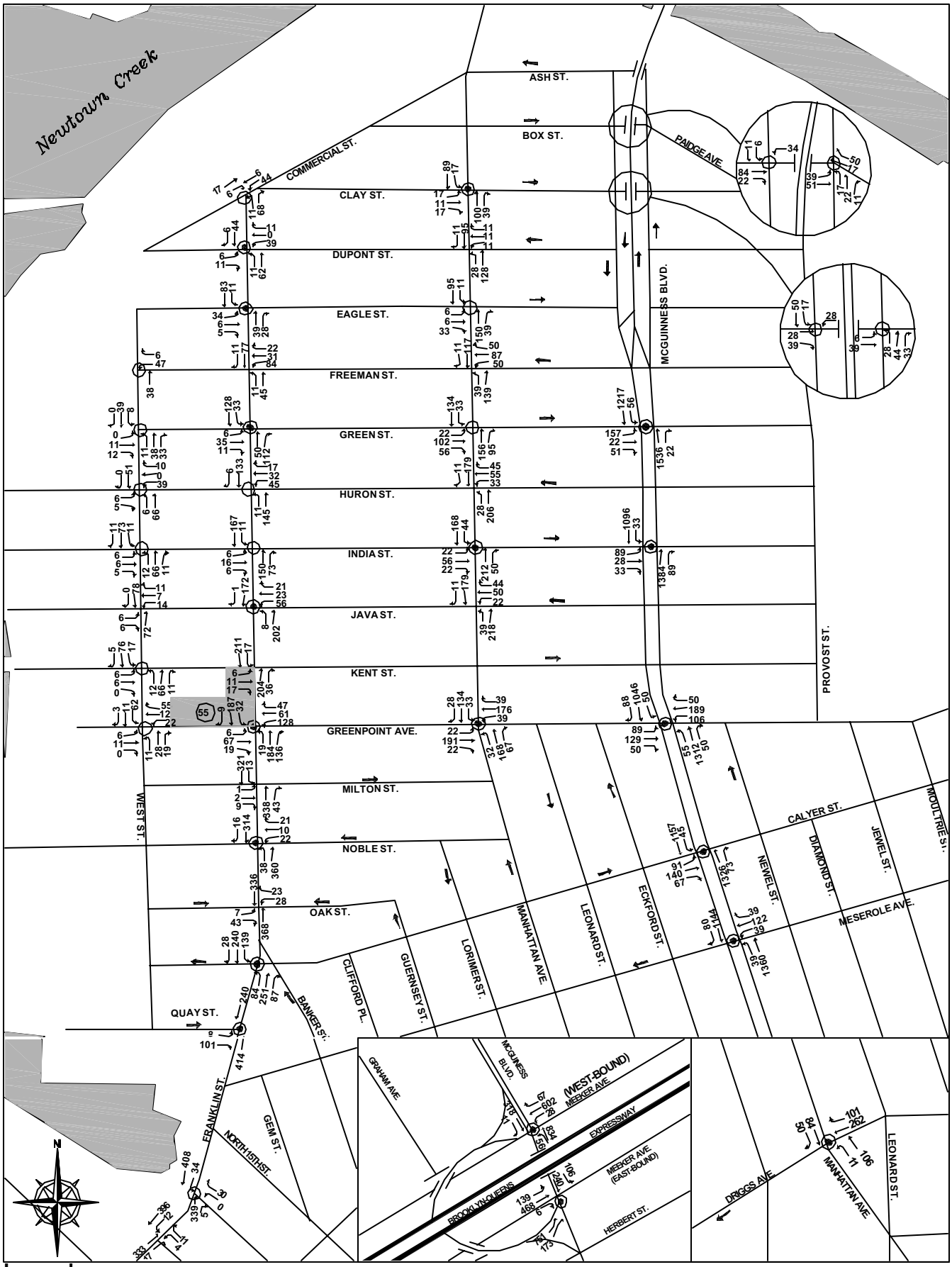
The New York City Department of Transportation has identified the need for the reconstruction of the Franklin Street/Kent Avenue corridor through Greenpoint and Williamsburg. The New York City Department of Design and Construction is the agency responsible for the design and construction of Franklin Street/Kent Avenue, and this project would likely be implemented during the 2003 to 2013 period. Therefore, the physical and operational changes to this corridor that would result from the reconstruction project, as identified in the NYCDDC/USDOT *Kent Avenue/Franklin Street Reconstruction* Design Report, have been incorporated into the 2013 No-Action traffic network. These changes, which affect two analyzed intersections, are described below.

- At the intersection of Franklin Street and Greenpoint Avenue, the existing westbound shared left-turn/through/right-turn lane would be split into an exclusive left-turn lane and a shared through-right turn lane. Parking would be eliminated on the north side of Greenpoint Avenue east and west of Franklin Street to facilitate this improvement.

- At the intersection of Franklin Street and Calyer Street, the southbound approach would be daylighted (i.e., curbside parking would be prohibited) in the AM peak hour, and the northbound approach would be daylighted in the PM peak hour. The following sections describe traffic and parking conditions in the future without the proposed action.

It should be noted that the New York State Department of Transportation (NYSDOT) is planning the reconstruction or replacement of the Kosciuszko Bridge. Several alternatives are currently being evaluated, some of which could result in changes to the street network. However, as the bridge and its approaches are located outside the study area for Greenpoint-Williamsburg, and as a preferred alternative has not yet been selected and the earliest possible start date for construction is in 2009, this project is not included in this analysis.

2013 No-Action Greenpoint Traffic Volumes - AM Peak Hour



Legend:

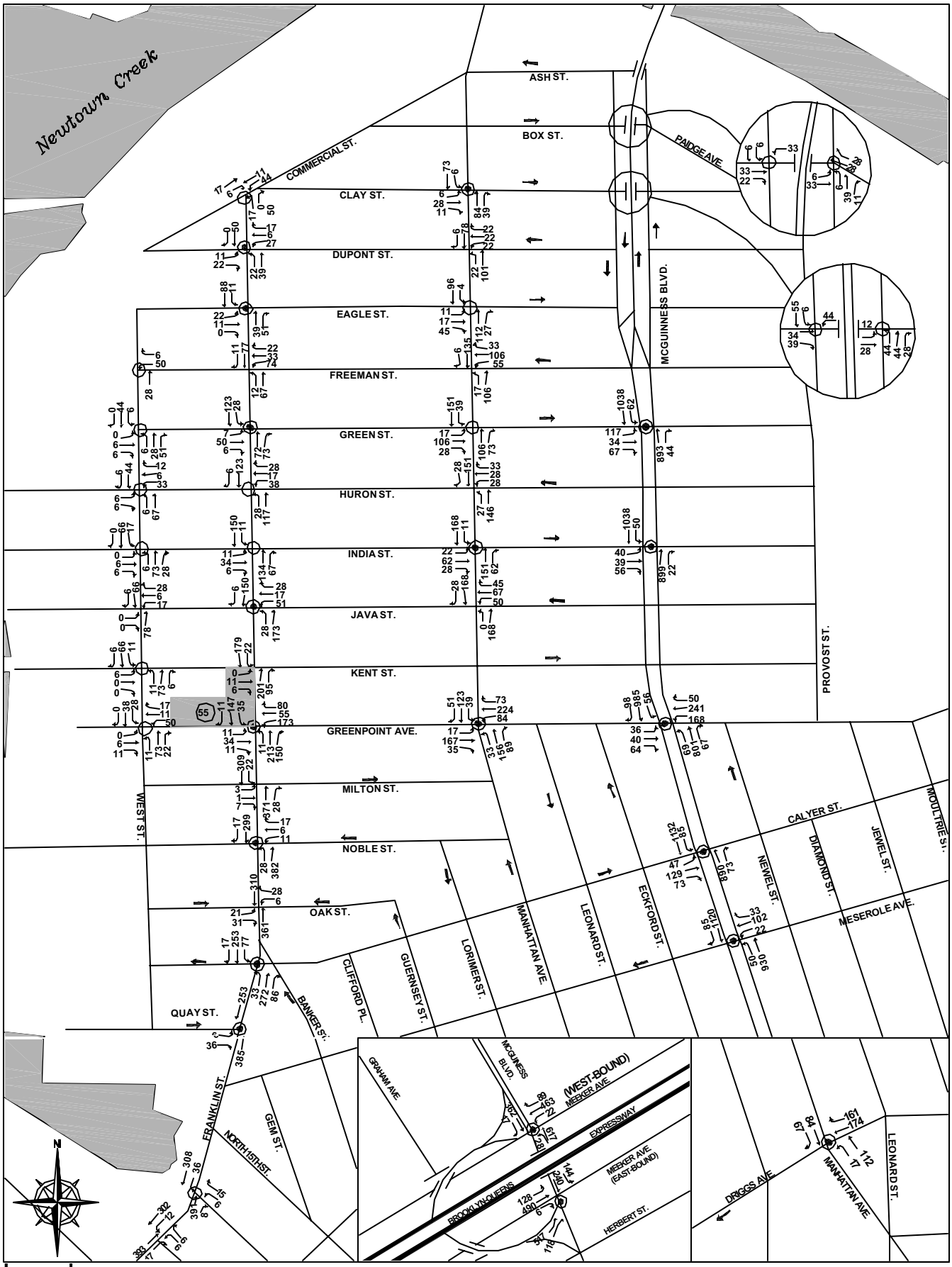
- ◉ **Analyzed Intersection (Signalized)**
- ○ **Analyzed Intersection (Unsignalized)**
- (55) **No-Action Sites**

2013 No-Action Williamsburg Traffic Volumes - AM Peak Hour

Legend:

- ◉ **Analyzed Intersection (Signalized)**
- ○ **Analyzed Intersection (Unsignalized)**
- 207 **No-Action Sites**

2013 No-Action Greenpoint Traffic Volumes - MD Peak Hour



Legend:

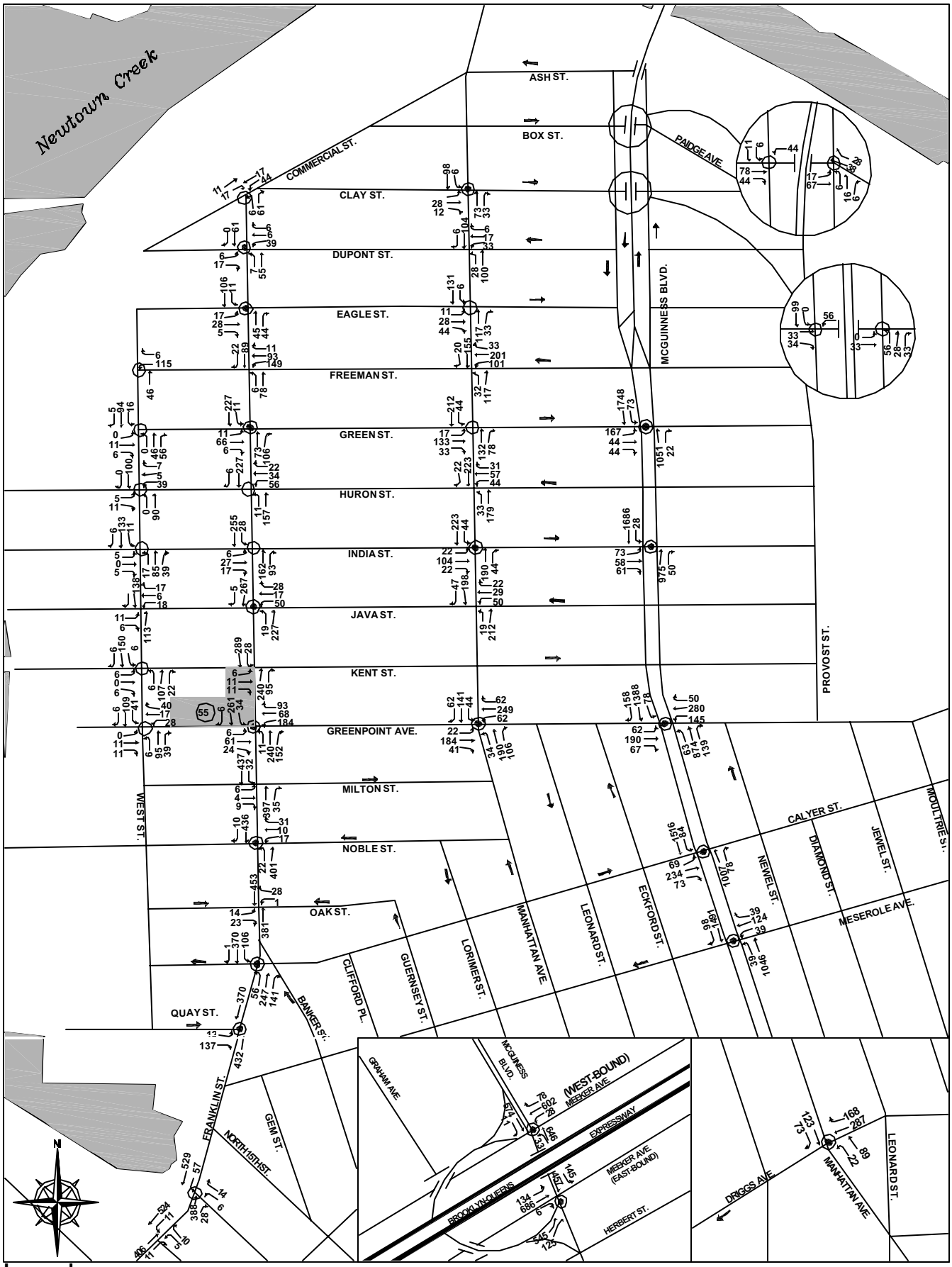
- ◉ **Analyzed Intersection (Signalized)**
- ○ **Analyzed Intersection (Unsignalized)**
- (55) **No-Action Sites**

2013 No-Action Williamsburg Traffic Volumes - MD Peak Hour

Legend:

- ◉ **Analyzed Intersection (Signalized)**
- ○ **Analyzed Intersection (Unsignalized)**
- 207 **No-Action Sites**

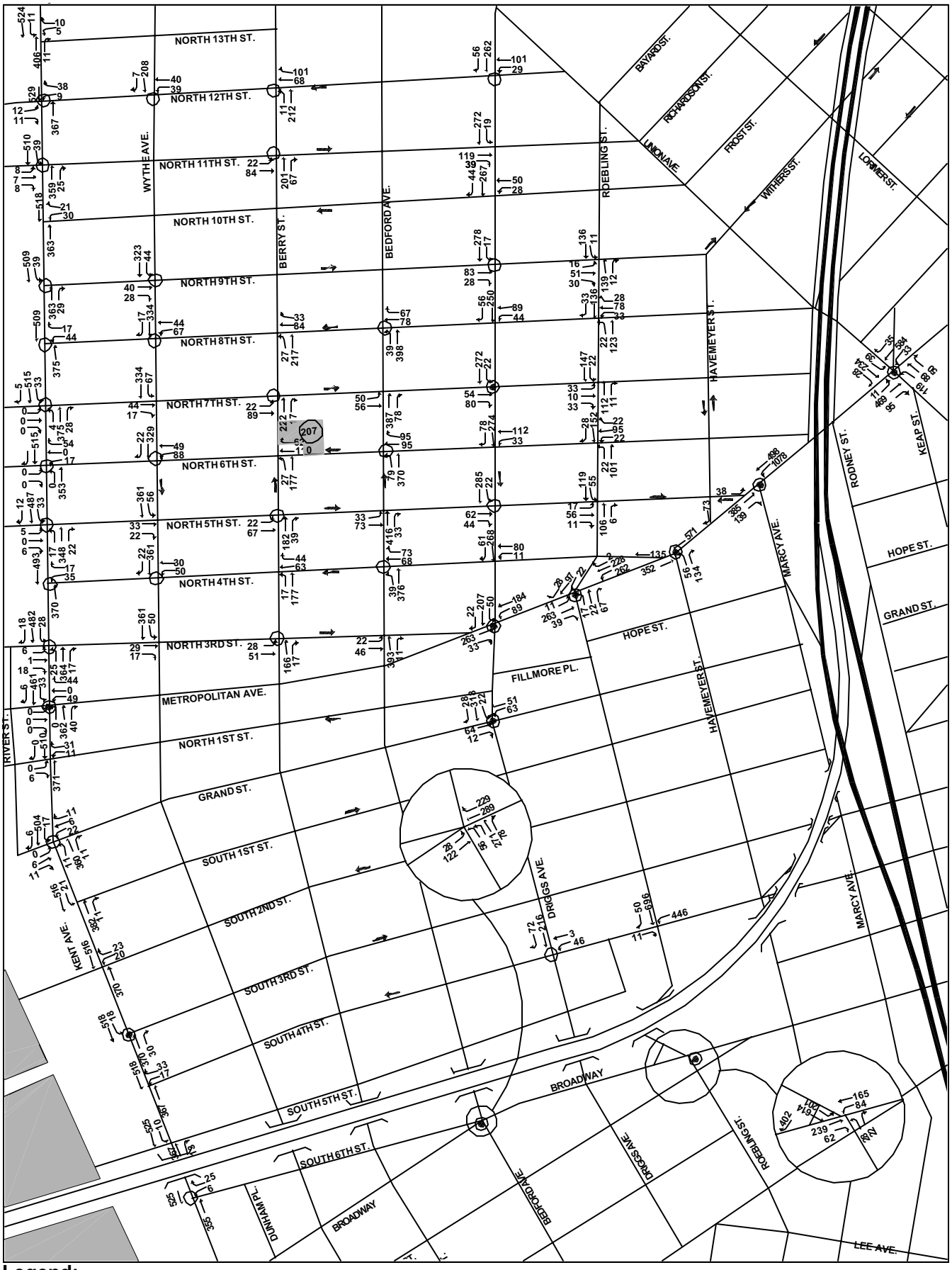
2013 No-Action Greenpoint Traffic Volumes - PM Peak Hour



Legend:

- ◉ **Analyzed Intersection (Signalized)**
- ○ **Analyzed Intersection (Unsignalized)**
- (55) **No-Action Sites**

2013 No-Action Williamsburg Traffic Volumes - PM Peak Hour



Legend:

- ◉ **Analyzed Intersection (Signalized)**
- ○ **Analyzed Intersection (Unsignalized)**
- 207 **No-Action Sites**

Vehicular Traffic

Tables 16-4 and 16-5 show traffic conditions at signalized and unsignalized intersections, respectively, in the future without the proposed action. As shown in Tables 16-4 and 16-5, with continued growth in travel demand, intersections that were congested under existing conditions would worsen, and there would be additional locations that would become congested in one or more peak hours by 2013. However, some locations that exhibit congestion in the Existing condition would not be congested in the No-Action condition due to the corridor improvements identified in the *Kent Avenue/Franklin Street Reconstruction* Design Report, as discussed above.

Signalized Intersections

Table 16-4 shows that in the 2013 future without the proposed action, six signalized intersections would experience congestion on one or more approaches in the AM peak hour, two in the midday, and 11 in the PM peak hour. This compares with four, three and eight congested intersections during these respective periods under existing conditions. In 2013, there would be several signalized intersections with one or more movements with a v/c ratio of 1.00 or greater. In the AM peak hour, there would be one such intersection versus none under existing conditions. There would be no such intersections in the midday peak hour (one existing) and six during the PM (three existing). As shown in Table 16-4, the LOS E conditions on the westbound approach at the intersection of Franklin Street and Greenpoint Avenue would have improved to LOS C or better in the future without the proposed action with the introduction of an exclusive westbound left-turn lane as part of the Kent Avenue/Franklin Street Reconstruction project.

Unsignalized Intersections

As shown in Table 16-5, all analyzed unsignalized intersections within the study area would continue to operate without congestion in all peak hours in the 2013 future without the proposed action.

Parking

Off-Street Parking

In the future without the proposed action, new developments expected to be completed by 2013 would generate new demand for parking spaces in the study area. These projects would conform with parking requirements put forth in the NYC Zoning Resolution, and it is therefore anticipated that this demand would be met by the addition of accessory parking spaces planned as part of these new developments.

On-Street Parking

In the future without the proposed action, it anticipated that demand for on-street parking would increase due to new developments and general background growth. Some existing capacity may be displaced as curbside regulations are adjusted to accommodate new developments and changes in curbside usage; for example, the USDOT *Kent Avenue/Franklin Street Reconstruction Design Report* recommends daylighting at various key intersections to improve traffic flow. In general, it is anticipated that in established commercial areas with high parking turnover, such as the vicinity of Manhattan Avenue and Greenpoint Avenue, or Bedford Avenue and North 7th Street, curbside parking supply would continue to be heavily utilized in the future without the proposed action, while parking supply in other parts of the

TABLE 16-4
2013 No-Action Traffic Conditions at Signalized Intersections

Intersection	Lane Group	AM Peak Hour							MD Peak Hour							PM Peak Hour						
		2003 Existing			2013 No-Action				2003 Existing			2013 No-Action				2003 Existing			2013 No-Action			
		V/C RATIO	DELAY (SEC/VEH)	LOS		V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS		V/C RATIO	DELAY (SEC/VEH)	LOS		V/C RATIO	DELAY (SEC/VEH)	LOS		V/C RATIO	DELAY (SEC/VEH)	LOS	
Franklin Street (N-S) @	NB-LT	0.12	7.4	A		0.13	7.5	A	0.11	7.4	A		0.12	7.5	A		0.07	7.0	A		0.10	7.3	A	
Dupont Street (E-W)	SB-TR	0.08	7.2	A		0.09	7.3	A	0.09	7.2	A		0.09	7.3	A		0.07	7.1	A		0.10	7.3	A	
	EB-LR	0.06	14.1	B		0.07	14.2	B	0.11	14.8	B		0.13	15.0	B		0.04	13.8	B		0.07	14.2	B	
	WB-LTR	0.15	15.2	B		0.17	15.4	B	0.15	15.0	B		0.16	15.2	B		0.10	14.4	B		0.21	16.3	B	
Franklin Street (N-S) @	NB-TR	0.11	7.4	A		0.12	7.5	A	0.16	7.8	A		0.18	8.0	A		0.14	7.6	A		0.15	7.7	A	
Eagle Street (EB)	SB-LT	0.16	7.8	A		0.18	8.0	A	0.17	7.9	A		0.19	8.1	A		0.17	7.8	A		0.19	8.0	A	
	EB-LTR	0.14	14.3	B		0.16	14.4	B	0.11	14.1	B		0.12	14.2	B		0.12	14.2	B		0.14	14.3	B	
Franklin Street (N-S) @	NB-TR	0.28	9.0	A		0.31	9.3	A	0.26	8.7	A		0.28	9.0	A		0.28	8.9	A		0.31	9.2	A	
Green Street (EB)	SB-LT	0.29	9.1	A		0.32	9.5	A	0.27	8.9	A		0.30	9.2	A		0.35	9.6	A		0.39	10.0	A	
	EB-LTR	0.14	14.3	B		0.17	14.5	B	0.19	14.6	B		0.21	14.8	B		0.24	15.0	B		0.27	15.2	B	
Franklin Street (N-S) @	NB-LT	0.25	8.5	A		0.28	8.8	A	0.25	8.7	A		0.28	9.0	A		0.20	7.9	A		0.29	9.0	A	
Huron Street (WB)	SB-TR	0.22	8.3	A		0.24	8.5	A	0.22	8.3	A		0.24	8.5	A		0.27	8.5	A		0.39	10.1	B	
	WB-LTR	0.28	16.9	B		0.31	17.3	B	0.24	16.3	B		0.27	16.7	B		0.24	15.8	B		0.37	18.4	B	
Franklin Street (N-S) @	NB-LT	0.33	9.4	A		0.37	9.8	A	0.35	9.7	A		0.39	10.2	B		0.37	9.8	A		0.41	10.3	B	
Java Street (WB)	SB-TR	0.27	8.7	A		0.30	9.0	A	0.26	8.7	A		0.29	9.0	A		0.40	10.1	B		0.44	10.7	B	
	WB-LTR	0.31	17.5	B		0.34	18.0	B	0.32	17.7	B		0.36	18.4	B		0.29	17.3	B		0.34	18.0	B	
Franklin Street (N-S) @	NB-LTR	0.57	13.3	B		0.63	14.9	B	0.67	16.3	B		0.74	19.3	B		0.62	14.4	B		0.69	16.4	B	
Greenpoint Avenue (E-W)	SB-LTR	0.40	10.5	B		0.45	11.2	B	0.37	10.2	B		0.44	11.4	B		0.47	11.2	B		0.52	12.2	B	
	EB-LTR	0.28	15.3	B		0.31	15.6	B	0.16	14.4	B		0.18	14.6	B		0.26	15.2	B		0.29	15.4	B	
	WB-LTR	0.98	72.1	E *	WB-L	0.54	18.6	B	1.02	77.5	E *	WB-L	0.64	21.3	C		1.03	76.8	E *	WB-L	0.62	20.4	C	
					WB-TR	0.34	15.8	B				WB-TR	0.39	16.1	B					WB-TR	0.42	16.3	B	
Franklin Street (N-S) @	NB-LT	0.52	11.7	B		0.58	12.7	B	0.59	13.1	B		0.65	14.7	B		0.51	11.3	B		0.56	12.2	B	
Noble Street (WB)	SB-TR	0.42	10.1	B		0.46	10.6	B	0.48	11.2	B		0.53	12.1	B		0.52	11.4	B		0.58	12.4	B	
	WB-LTR	0.12	14.5	B		0.13	14.6	B	0.07	14.0	B		0.08	14.1	B		0.11	14.5	B		0.13	14.6	B	
Franklin Street (N-S) @	NB-LTR	0.79	22.8	C		0.61	19.7	B	0.75	20.3	C		0.84	26.9	C		0.83	26.2	C		0.36	7.0	A	
Calyer Street (E-W)	SB-LTR	0.87	31.6	C		0.61	6.3	A	0.80	25.0	C		0.90	37.0	D		0.86	28.2	C		0.88	27.1	C	
Franklin Street (N-S) @	NB-T	0.65	15.1	B		0.74	18.4	B	0.69	17.0	B		0.77	20.5	C		0.70	17.3	B		0.78	20.9	C	
Quay Street (EB)	SB-T	0.39	10.2	B		0.43	10.8	B	0.49	12.1	B		0.54	13.2	B		0.56	12.8	B		0.62	14.1	B	
	EB-LR	0.36	18.5	B		0.40	19.3	B	0.16	15.4	B		0.17	15.5	B		0.47	21.0	C		0.52	22.4	C	
Kent Avenue (N-S) @	NB-LTR	0.41	11.3	B		0.47	10.1	B	0.51	13.0	B		0.57	14.5	B		0.51	12.8	B		0.58	14.5	B	
Metropolitan Avenue (E-W)	SB-LTR	0.27	9.0	A		0.30	7.3	A	0.21	8.4	A		0.24	8.7	A		0.29	9.1	A		0.33	9.5	A	
	EB-LTR	0.08	33.8	C		0.10	37.9	D	0.02	33.2	C		0.03	33.3	C		0.01	33.1	C		0.01	33.1	C	
	WB-LTR	0.03	33.2	C	WB-DfL	0.06	37.4	D	0.42	38.2	D		0.47	39.0	D		0.33	36.9	D		0.45	38.8	D	
					WB-TR	0.04	37.2	D																
Kent Avenue (N-S) @	NB-TR	0.27	8.2	A		0.31	6.1	A	0.43	10.3	B		0.48	11.1	B		0.28	8.3	A		0.32	8.6	A	
South 3rd Street (EB)	SB-LT	0.32	8.6	A		0.32	6.2	A	0.49	11.3	B		0.55	12.4	B		0.79	21.0	C		0.92	33.7	C	*
Manhattan Avenue (N-S) @	NB-TR	0.19	11.0	B		0.21	11.2	B	0.19	11.0	B		0.21	11.2	B		0.14	10.5			0.16	10.7	B	
Clay Street (EB)	SB-LT	0.15	10.6	B		0.17	10.8	B	0.11	10.2	B		0.12	10.3	B		0.13	10.4	B		0.15	10.6	B	
	EB-LTR	0.13	21.0	C		0.15	21.2	C	0.12	20.8	C		0.14	21.0	C		0.11	20.8	C		0.13	21.0	C	
Manhattan Avenue (N-S) @	NB-TR	0.36	13.0	B		0.40	13.5	B	0.30	12.2	B		0.34	12.7	B		0.31	12.3	B		0.34	12.7	B	
India Street (EB)	SB-LT	0.27	11.7	B		0.30	12.1	B	0.28	12.0	B		0.31	12.4	B		0.30	12.1	B		0.34	12.5	B	
	EB-LTR	0.27	22.9	C		0.29	23.4	C	0.31	23.8	C		0.34	24.5	C		0.42	26.2	C		0.46	27.3	C	

TABLE 16-4
2013 No-Action Traffic Conditions at Signalized Intersections (Continued)

Intersection	Lane Group	AM Peak Hour						MD Peak Hour						PM PEAK HOUR					
		2003 Existing			2013 No-Action			2003 Existing			2013 No-Action			2003 Existing			2013 No-Action		
		V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS
Manhattan Avenue (N-S) @	NB-LTR	0.42	19.1	B	0.47	19.9	B	0.52	21.5	C	0.58	23.2	C	0.55	22.1	C	0.62	23.9	C
Greenpoint Avenue (E-W)	SB-LTR	0.34	18.0	B	0.38	18.7	B	0.34	17.8	B	0.38	18.4	B	0.36	18.0	B	0.40	18.6	B
	EB-LT	0.39	18.9	B	0.44	19.7	B	0.29	17.1	B	0.33	17.7	B	0.36	18.3	B	0.40	19.0	B
	EB-R	0.05	14.4	B	0.05	14.4	B	0.06	14.5	B	0.07	14.6	B	0.08	14.8	B	0.09	14.9	B
	WB-LTR	0.43	19.3	B	0.47	20.1	C	0.69	26.6	C	0.79	32.4	C	0.56	22.0	C	0.63	23.9	C
Manhattan Avenue (N-S) @	NB-LT	0.16	10.7	B	0.18	10.9	B	0.27	22.6	C	0.29	23.0	C	0.15	10.6	B	0.17	10.7	B
Driggs Avenue (WB)	SB-TR	0.21	11.3	B	0.23	11.5	B	0.34	23.8	C	0.37	24.5	C	0.26	11.7	B	0.29	12.0	B
	WB-TR	0.72	33.9	C	0.80	38.4	D	0.42	13.7	B	0.46	14.4	B	0.84	41.6	D	0.93	53.4	D *
McGuinness Boulevard (N-S) @	NB-TR	0.89	27.4	C	0.99	41.7	D *	0.58	16.3	B	0.65	17.7	B	0.62	17.0	B	0.69	18.6	B
Green Street (EB)	SB-L	0.81	79.6	E *	0.89	98.6	F *	0.33	16.5	B	0.43	20.8	C	0.40	19.0	B	0.52	26.2	C
	SB-T	0.52	14.7	B	0.57	15.6	B	0.46	13.9	B	0.51	14.6	B	0.67	17.6	B	0.75	19.6	B
	EB-LTR	0.58	41.5	D	0.65	44.2	D	0.59	42.2	D	0.65	44.8	D	0.65	44.4	D	0.71	47.5	D
McGuinness Boulevard (N-S) @	NB-TR	0.82	22.1	C	0.91	28.7	C *	0.56	14.7	B	0.62	15.9	B	0.58	15.1	B	0.64	16.4	B
India Street (EB)	SB-L	0.39	24.3	C	0.63	55.9	E *	0.25	13.3	B	0.32	15.6	B	0.13	10.9	B	0.18	12.1	B
	SB-T	0.45	12.8	B	0.50	13.5	B	0.44	12.7	B	0.49	13.4	B	0.63	15.6	B	0.71	17.2	B
	EB-LTR	0.40	37.9	D	0.45	39.0	D	0.19	33.1	C	0.21	33.4	C	0.25	33.9	C	0.28	34.3	C
McGuinness Boulevard (N-S) @	NB-L	0.36	20.0	B	0.47	26.0	C	0.45	23.6	C	0.60	34.8	C	0.69	53.3	D	1.01	138.8	F *
Greenpoint Avenue (E-W)	NB-TR	0.77	22.8	C	0.86	27.1	C	0.56	17.4	B	0.62	18.6	B	0.61	18.4	B	0.68	20.0	B
	SB-L	0.60	44.1	D	0.95	126.4	F *	0.28	16.4	B	0.36	19.3	B	0.43	21.7	C	0.57	30.4	C
	SB-TR	0.53	16.5	B	0.58	17.5	B	0.49	15.9	B	0.54	16.7	B	0.64	18.4	B	0.71	20.2	C
	EB-LTR	0.42	32.4	C	0.47	33.4	C	0.23	29.1	C	0.28	29.9	C	0.52	34.9	C	0.56	35.7	D
	WB-LTR	0.54	34.9	C	0.60	36.9	D	0.67	38.5	D	0.74	41.9	D	0.71	40.4	D	0.80	45.8	D
McGuinness Boulevard (N-S) @	NB-TR	0.77	21.0	C	0.85	24.7	C	0.65	17.9	B	0.72	19.8	B	0.66	18.0	B	0.73	20.1	C
Calyer Street (EB)	SB-L	0.58	43.3	D	0.85	98.2	F *	0.49	23.2	C	0.66	36.3	D	0.47	21.9	C	0.62	32.9	C
	SB-T	0.73	20.0	B	0.81	23.0	C	0.71	19.3	B	0.79	22.1	C	0.59	15.9	B	0.66	17.3	B
	EB-LTR	0.73	48.4	D	0.84	57.5	E *	0.58	40.9	D	0.64	43.5	D	0.87	59.9	E *	0.96	74.8	E *
McGuinness Boulevard (N-S) @	NB-L	0.24	9.6	A	0.32	12.7	B	0.28	10.4	B	0.38	14.4	B	0.38	17.3	B	0.43	19.9	B
Meserole Avenue (WB)	NB-T	0.75	13.8	B	0.83	16.9	B	0.51	9.1	A	0.57	9.9	A	0.58	10.0	A	0.64	11.1	B
	SB-TR	0.64	11.0	B	0.71	12.5	B	0.61	10.4	B	0.68	11.7	B	0.80	15.3	B	0.89	20.6	C
	WB-LTR	0.68	50.0	D	0.75	54.7	D	0.65	49.4	D	0.72	54.0	D	0.82	65.3	E *	0.92	83.8	F *
McGuinness Boulevard (N-S) @	NB-L	0.10	22.8	C	0.11	22.9	C	0.05	22.2	C	0.06	22.3	C	0.06	22.3	C	0.06	22.4	C
Meeker Avenue (WB)	NB-T	0.45	12.0	B	0.50	12.6	B	0.34	10.8	B	0.38	11.2	B	0.35	10.9	B	0.39	11.4	B
	SB-T	0.55	46.6	D	0.60	48.0	D	0.64	49.3	D	0.70	51.6	D	0.95	74.1	E *	1.05	99.0	F *
	SB-R	0.04	39.0	D	0.05	39.1	D	0.06	39.4	D	0.07	39.5	D	0.04	39.0	D	0.05	39.1	D
	WB-LTR	0.58	37.6	D	0.64	38.9	D	0.51	36.2	D	0.56	37.3	D	0.57	37.4	D	0.63	38.7	D
Humboldt Street (N-S) @	NB-TR	0.81	38.0	D	0.90	44.1	D	0.54	29.2	C	0.59	30.5	C	0.59	30.4	C	0.65	32.0	C
Meeker Avenue (EB)	SB-LT	0.61	48.3	D	0.67	50.3	D	0.65	49.5	D	0.72	52.1	D	1.03	93.1	F *	1.14	129.8	F *
	EB-LTR	0.52	36.4	D	0.57	37.4	D	0.50	36.0	D	0.55	37.0	D	0.69	40.3	D	0.76	42.7	D

TABLE 16-4
2013 No-Action Traffic Conditions at Signalized Intersections (Continued)

Intersection	Lane Group	AM Peak Hour						MD Peak Hour						PM Peak Hour					
		2003 Existing			2013 No-Action			2003 Existing			2013 No-Action			2003 Existing			2013 No-Action		
		V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS
Bedford Avenue (NB) @	NB-LTR	0.22	23.4	C	0.24	23.7	C	0.34	25.1	C	0.37	25.7	C	0.34	25.2	C	0.38	25.7	C
Broadway (E-W)	EB-LT	0.08	15.2	B	0.10	15.4	B	0.09	15.4	B	0.11	15.5	B	0.11	15.5	B	0.13	15.7	B
	WB-T	0.13	15.7	B	0.15	15.9	B	0.10	15.4	B	0.11	15.5	B	0.18	16.2	B	0.23	16.8	B
Driggs Avenue (SB) @	SB-LT	0.37	9.0	A	0.41	9.5	A	0.29	8.1	A	0.32	8.5	A	0.37	9.0	A	0.42	9.6	A
North 7th Street (EB)	EB-TR	0.70	44.5	D	0.77	49.7	D	0.70	44.9	D	0.77	50.3	D	0.50	36.0	D	0.55	37.7	D
Driggs Avenue (SB) @	SB-LTR	0.18	19.5	B	0.20	19.7	B	0.16	19.2	B	0.17	19.4	B	0.51	26.3	C	0.56	27.8	C
Metropolitan Avenue (E-W)	EB-TR	0.31	21.8	C	0.38	23.1	C	0.40	23.6	C	0.45	24.7	C	0.55	27.6	C	0.62	29.7	C
	WB-LT	0.28	21.5	C	0.33	22.4	C	0.44	25.3	C	0.50	27.0	C	0.63	31.8	C	0.78	41.3	D
Driggs Avenue (SB) @	SB-LTR	0.22	20.6	C	0.24	20.9	C	0.17	20.0	B	0.19	20.2	C	0.31	21.7	C	0.34	22.2	C
Grand Street (E-W)	EB-TR	0.11	19.5	B	0.13	19.7	B	0.12	19.6	B	0.13	19.7	B	0.13	19.8	B	0.15	20.0	B
	WB-LT	0.10	19.2	B	0.11	19.4	B	0.11	19.5	B	0.12	19.7	B	0.24	21.5	C	0.27	22.0	C
Roebling Street (N-S) @	NB-LTR	0.18	26.6	C	0.20	26.8	C	0.14	26.1	C	0.15	26.2	C	0.24	27.3	C	0.27	27.6	C
Metropolitan Avenue (E-W)	SB-LT	0.26	27.5	C	0.29	27.9	C	0.20	26.8	C	0.22	27.1	C	0.17	26.5	C	0.19	26.7	C
	SB-R	0.03	25.0	C	0.03	25.0	C	0.01	24.8	C	0.02	24.9	C	0.06	25.3	C	0.07	25.4	C
	EB-LTR	0.26	14.5	B	0.32	15.3	B	0.28	14.7	B	0.31	15.2	B	0.37	15.9	B	0.41	16.6	B
	WB-LTR	0.67	25.0	C	0.78	32.2	C	0.74	28.9	C	0.84	37.7	D	0.85	37.5	D	1.00	65.5	E *
Havemeyer Street (NB) @	NB-LR	0.25	27.4	C	0.28	27.8	C	0.28	27.8	C	0.31	28.2	C	0.37	28.9	C	0.40	29.4	C
Metropolitan Avenue (E-W)	EB-T	0.28	14.7	B	0.34	15.6	B	0.29	14.8	B	0.32	15.2	B	0.41	16.7	B	0.46	17.5	B
	WB-T	0.27	14.3	B	0.31	14.6	B	0.51	18.5	B	0.56	19.8	B	0.60	20.6	C	0.70	23.5	C
Marcy Avenue (SB) @	EB-TR	0.47	37.3	D	0.56	39.4	D	0.63	41.5	D	0.70	44.1	D	0.63	40.5	D	0.70	42.7	D
Metropolitan Avenue (E-W)	WB-L	0.99	52.6	D *	1.09	83.7	F *	0.79	24.1	C	0.88	30.9	C	1.03	59.2	E *	1.14	97.2	F *
	WB-TR	0.32	0.7	A	0.36	0.8	A	0.33	0.7	A	0.37	0.9	A	0.31	0.5	A	0.35	0.6	A
Union Avenue (N-S) @	NB-LTR	0.90	66.2	E *	0.99	85.8	F *	0.90	67.2	E *	0.99	86.8	F *	0.87	68.2	E *	0.97	87.6	F *
Metropolitan Avenue (E-W)	SB-LTR	0.58	42.2	D	0.64	44.7	D	0.66	45.8	D	0.73	49.7	D	0.36	34.8	C	0.40	35.5	D
	EB-LTR	0.47	14.0	B	0.55	15.8	B	0.56	16.1	B	0.63	17.9	B	0.69	19.3	B	0.76	22.6	C
	WB-LTR	0.84	28.6	C	0.94	41.4	D *	0.60	16.8	B	0.67	19.0	B	0.71	19.7	B	0.81	25.1	C
Roebling Street (N-S) @	NB-L	0.02	14.4	B	0.05	14.9	B	0.10	15.5	B	0.18	17.7	B	0.19	18.3	B	0.26	20.9	C
Broadway (E-W)	NB-R	0.07	14.8	B	0.08	14.9	B	0.03	14.4	B	0.04	14.5	B	0.04	14.6	B	0.05	14.6	B
	SB-LT	0.42	18.3	B	0.65	22.5	C	0.38	17.8	B	0.61	21.6	C	0.66	22.7	C	0.72	24.0	C
	EB-TR	0.50	35.0	C	0.61	38.5	D	0.87	58.7	E *	0.97	77.0	E *	0.93	67.7	E *	1.06	100.6	F *
	WB-LT	0.26	28.8	C	0.31	29.5	C	0.33	30.0	C	0.40	31.2	C	0.86	90.5	F *	WB-DfL 1.19	193.9	F *
														0.41	32.1	C	WB-T 0.50	34.2	C

ABBREVIATION:
EB-Eastbound, WB-Westbound, NB-Northbound, SB-Southbound
L-Left, T-Through, R-Right, E-W: East-West Roadway, N-S: North-South Roadway
V/C Ratio - Volume to Capacity Ratio
SEC/VEH - Seconds per Vehicle
LOS - Level of Service
* - Denotes Congested Location (LOS E or F, or v/c ratio > 0.90)

TABLE 16-5
2013 No-Action Traffic Conditions at Unsignalized Intersections

		AM Peak Hour						MD Peak Hour						PM Peak Hour					
		2003 Existing			2013 No-Action			2003 Existing			2013 No-Action			2003 Existing			2013 No-Action		
Intersection	Lane Group	V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS
West Street (N-S) @ Freeman Street (WB)	WB-LR	0.05	9.2	A	0.06	9.2	A	0.06	9.1	A	0.07	9.1	A	0.12	9.2	A	0.14	9.3	A
West Street (N-S) @	NB-LTR	0.01	7.4	A	0.01	7.4	A	0.00	7.5	A	0.00	7.5	A	NB-LT 0.00	7.4	A	NB-LT 0.00	7.4	A
Green Street (E-W)	SB-LTR		7.6	A	0.01	7.7	A	0.00	7.6	A	0.00	7.6	A	0.01	7.5	A	0.01	7.5	A
	EB-LTR	0.03	9.3	A	0.03	9.4	A	0.01	9.7	A	0.02	9.7	A	0.02	10.0	A	0.03	10.2	B
West Street (N-S) @	NB-LT		7.4	A	0.00	7.5	A	0.00	7.5	A	0.00	7.5	A	0.00	7.4	A	0.00	7.4	A
Huron Street (E-W)	EB-LR	0.01	9.0	A	0.01	9.1	A	0.01	9.4	A	0.01	9.5	A	0.02	9.3	A	0.02	9.3	A
	WB-LTR	0.06	9.8	A	0.07	10.0	A	0.06	9.5	A	0.07	9.6	A	0.07	10.3	B	0.08	10.5	B
West Street (N-S) @	NB-LTR	0.01	7.5	A	0.01	7.5	A	0.00	7.6	A	0.00	7.6	A	0.01	7.5	A	0.01	7.6	A
India Street (E-W)	SB-LTR	0.01	7.4	A	0.01	7.4	A	0.01	7.7	A	0.01	7.7	A	0.01	7.6	A	0.01	7.5	A
	EB-LTR	0.02	9.8	A	0.02	10.0	A	0.02	10.0	A	0.02	10.2	B	0.01	9.9	A	0.02	10.1	B
West Street (N-S) @	NB-LTR	0.01	7.4	A	0.01	7.5	A	0.01	7.7	A	0.01	7.7	A	0.00	7.6	A	0.00	7.6	A
Kent Street (E-W)	SB-LTR	0.01	7.5	A	0.01	7.6	A	0.01	7.6	A	0.01	7.6	A	0.00	7.5	A	0.00	7.5	A
	EB-LTR	0.02	10.2	B	0.02	10.4	B	0.01	9.9	A	0.01	10.0	A	0.01	10.0	A	0.02	10.1	B
West Street (N-S) @	NB-LTR	0.01	7.4	A	0.01	7.4	A	0.01	7.6	A	0.01	7.6	A	0.00	7.5	A	0.00	7.5	A
Greenpoint Avenue (E-W)	SB-LTR	0.04	7.4	A	0.05	7.5	A	0.02	7.7	A	0.02	7.7	A	0.03	7.6	A	0.03	7.6	A
	EB-LT	0.02	10.8	B	0.02	11.1	B	0.00	10.7	B	0.01	11.0	B	0.01	11.6	B	0.01	12.0	B
	EB-TR	0.01	10.3	B	0.01	10.6	B	0.01	9.1	A	0.02	9.3	A	0.02	9.9	A	0.02	10.0	A
	WB-LT	0.04	11.0	B	0.05	11.4	B	0.08	10.8	B	0.10	11.1	B	0.06	11.7	B	0.07	12.2	B
	WB-TR	0.07	9.4	A	0.08	9.5	A	0.03	9.4	A	0.03	9.5	A	0.06	9.6	A	0.06	9.8	A
Franklin Street (N-S) @	NB-L	0.01	9.4	A	0.01	9.5	A	0.01	7.4	A	0.01	7.4	A	0.01	9.3	A	0.01	9.4	A
Commercial Street (E-W)	NB-R	0.07	8.7	A	0.07	8.8	A	0.03	9.5	A	0.03	9.6	A	0.06	8.6	A	0.06	8.7	A
	WB-LT	0.03	7.5	A	0.03	7.5	A	0.06	9.4	A	0.07	9.5	A	0.03	7.5	A	0.03	7.5	A
Franklin Street (N-S) @	SB-LT	0.01	7.8	A	0.01	7.9	A	0.01	7.8	A	0.01	7.9	A	0.02	7.9	A	0.02	7.9	A
India Street (EB)	EB-LTR	0.05	11.9	B	0.06	12.2	B	0.09	12.2	B	0.11	12.8	B	0.10	13.3	B	0.12	14.1	B
Franklin Street (N-S) @	SB-LT	0.03	8.2	A	0.03	8.3	A	0.04	8.7	A	0.04	8.9	A	0.05	8.5	A	0.06	8.7	A
North 14th Street (E-W)	WB-LR	0.05	10.7	B	0.06	11.2	B	0.04	12.4	B	0.05	13.2	B	0.04	13.3	B	0.05	14.8	B
Kent Avenue (N-S) @	NB-LT		8.3	A	0.00	8.4	A	0.00	8.2	A	0.00	8.3	A		8.7	A	0.00	8.9	A
North 12th Street (E-W)	WB-LTR	0.08	15.1	C	0.10	16.8	C	0.13	12.4	B	0.15	13.2	B	0.09	12.7	B	0.11	13.7	B
	EB-LR	0.03	16.4	C	0.04	18.3	C	0.06	13.6	B	0.08	14.6	B	0.07	17.7	C	0.09	19.9	C
Kent Avenue (N-S) @	SB-LT	0.01	8.2	A	0.01	8.4	A	0.04	8.6	A	0.05	8.7	A	0.03	8.2	A	0.04	8.4	A
North 11th Street (E-W)	EB-LTR	0.14	16.1	C	0.17	18.1	C	0.06	14.5	B	0.08	15.9	C	0.07	17.6	C	0.09	20.1	C
Kent Avenue (N-S) @ North 9th Street (EB)	SB-LT	0.03	8.3	A	0.03	8.5	A	0.03	8.3	A	0.03	8.5	A	0.03	8.3	A	0.04	8.5	A
Kent Avenue (N-S) @	WB-LR	0.22	14.7	B	0.28	16.7	C	0.04	13.8	B	WB-L 0.05	14.8	B	WB-L 0.16	19.8	C	WB-L 0.20	23.1	C
North 8th Street (WB)								0.06	10.5	B	WB-R 0.07	10.8	B	WB-R 0.03	10.9	B	WB-R 0.03	11.3	B
Kent Avenue (N-S) @	NB-LTR	0.00	8.5	A	0.00	8.7	A	0.00	8.0	A	0.00	8.1	A	0.01	8.7	A	0.01	8.9	A
North 7th Street (E-W)	SB-LTR	0.03	8.2	A	0.03	8.4	A	0.04	8.4	A	0.04	8.5	A	0.03	8.3	A	0.03	8.5	A
	EB-LTR	0.01	15.7	C	0.01	17.3	C	0.01	13.4	B	0.01	14.3	B	0.01	18.1	C	0.01	20.3	C
Kent Avenue (N-S) @	NB-LT	0.00	8.5	A	0.00	8.7	A	0.00	8.0	A	0.00	8.1	A	0.00	8.6	A	0.00	8.8	A
North 6th Street (E-W)	EB-LR	0.01	15.0	B	0.01	16.5	C	0.00	12.3	B	0.01	13.1	B	0.01	16.8	C	0.01	19.0	C
	WB-LTR	0.11	13.1	B	0.13	14.2	B	0.13	14.5	B	0.16	15.8	C	0.16	14.2	B	0.20	15.8	C

TABLE 16-5
2013 No-Action Traffic Conditions at Unsignalized Intersections (Continued)

Intersection	Lane Group	AM Peak Hour						MD Peak Hour						PM Peak Hour					
		2003 Existing			2013 No-Action			2003 Existing			2013 No-Action			2003 Existing			2013 No-Action		
		V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS
Kent Avenue (N-S) @	NB-LTR	0.00	8.4	A	0.00	8.6	A	0.00	8.0	A	0.00	8.1	A	0.02	8.6	A	0.02	8.9	A
North 5th Street (E-W)	SB-LTR	0.03	8.2	A	0.03	8.3	A	0.03	8.3	A	0.03	8.5	A	0.03	8.2	A	0.03	8.4	A
	EB-LTR	0.02	16.6	C	0.03	18.4	C	0.02	14.6	B	0.02	15.7	C	0.03	16.5	C	0.04	17.9	C
Kent Avenue (N-S) @	WB-L	0.12	15.9	C	0.15	17.8	C	0.06	15.0	B	0.08	16.4	C	0.07	18.0	C	0.15	21.5	C
North 4th Street (WB)	WB-R	0.04	10.3	B	0.05	10.6	B	0.04	11.1	B	0.04	11.5	B	0.03	10.9	B	0.03	11.2	B
Kent Avenue (N-S) @	NB-LTR	0.01	8.5	A	0.01	8.7	A	0.00	8.1	A	0.01	8.2	A	0.01	8.6	A	0.03	8.9	A
North 3rd Street (E-W)	SB-LTR	0.02	8.1	A	0.03	8.2	A	0.00	8.3	A	0.01	8.4	A	0.02	8.2	A	0.03	8.4	A
	EB-LTR	0.06	17.5	C	0.15	18.8	C	0.04	14.1	B	0.06	15.1	C	0.05	14.1	B	0.08	15.8	C
Kent Avenue (N-S) @	NB-LTR	0.00	8.4	A	0.00	8.6	A	0.00	8.0	A	0.01	8.1	A	0.01	8.6	A	0.01	8.9	A
Grand Street (E-W)	SB-LTR	0.01	8	A	0.02	8.2	A	0.02	8.4	A	0.02	8.5	A	0.01	8.2	A	0.02	8.3	A
	EB-LTR	0.01	14.6	B	0.01	16.5	C	0.04	13.8	B	0.05	15.0	B	0.05	15.1	C	0.06	17.2	C
	WB-LTR	0.09	14.3	B	0.13	16.4	C	0.06	15.7	C	0.08	17.4	C	0.14	20.4	C	0.20	25.3	D
Kent Avenue (N-S) @	WB-L	0.03	15.3	C	0.04	18.0	C	0.03	13.8	B	0.03	14.9	B	0.02	16.8	C	0.02	19.2	C
South 6th Street (WB)	WB-R	0.02	10.5	B	0.02	11.4	B	0.02	10.2	B	0.02	10.4	B	0.04	10.6	B	0.04	11.0	B
Manhattan Avenue (N-S) @	SB-LT	0.01	7.7	A	0.01	7.8	A	0.00	7.6	A	0.00	7.6	A	0.00	7.6	A	0.00	7.6	A
Eagle Street (EB)	EB-LTR	0.05	9.5	A	0.06	9.7	A	EB-LT 0.04	10.6	B	EB-LT 0.05	10.8	B	EB-LT 0.06	11.1	B	EB-LT 0.07	11.4	B
								EB-R 0.05	9.1	A	EB-R 0.06	9.1	A	EB-R 0.05	9.2	A	EB-R 0.05	9.3	A
Manhattan Avenue (N-S) @	SB-LT	0.03	7.9	A	0.03	8.0	A	0.03	7.8	A	0.03	7.8	A	0.03	7.8	A	0.04	7.9	A
Green Street (EB)	EB-LTR	0.32	14.2	B	0.38	15.7	C	0.29	14.3	B	0.34	15.5	C	0.39	17.4	C	0.46	19.9	C
McGuiness Boulevard (NB) @	NB-LTR	(a)	7.54	A	(a)	7.6	A	(a)	7.5	A	(a)	7.6	A	(a)	7.5	A	(a)	7.5	A
Paidge Avenue (E-W)	EB-LT	(a)	7.91	A	(a)	8.0	A	(a)	7.5	A	(a)	7.6	A	(a)	7.6	A	(a)	7.7	A
	WB-TR	(a)	7.27	A	(a)	7.3	A	(a)	7.2	A	(a)	7.3	A	(a)	7.5	A	(a)	7.6	A
McGuiness Boulevard (SB) @	SB-LT	(a)	7.45	A	(a)	7.5	A	(a)	7.5	A	(a)	7.5	A	(a)	7.6	A	(a)	7.7	A
Box Street (E-W)	EB-TR	(a)	7.62	A	(a)	7.7	A	(a)	7.2	A	(a)	7.2	A	(a)	7.5	A	(a)	7.5	A
	WB-L	(a)	7.73	A	(a)	7.8	A	(a)	7.6	A	(a)	7.6	A	(a)	7.8	A	(a)	7.9	A
McGuiness Boulevard (NB) @	NB-LTR	(a)	7.5	A	(a)	7.6	A	(a)	7.8	A	(a)	7.9	A	(a)	7.7	A	(a)	7.8	A
Clay Street (E-W)	EB-LT	(a)	7.67	A	(a)	7.8	A	(a)	7.7	A	(a)	7.7	A	(a)	7.7	A	(a)	7.8	A
McGuinness Boulevard (SB) @	SB-LT	0.01	7.3	A	0.01	7.3	A	0.00	7.3	A	0.00	7.3	A	0.00	7.3	A	0.00	7.3	A
Clay Street (E-W)	EB-TR	0.08	9.4	A	0.09	9.5	A	0.08	9.4	A	0.09	9.5	A	0.08	9.7	A	0.09	9.9	A
	WB-L	0.04	9.9	A	0.04	10.1	B	0.06	9.8	A	0.07	10.0	A	0.08	10.2	B	0.08	10.5	B
Wythe Avenue (SB) @	WB-LT	0.09	10.1	B	0.11	10.3	B	0.15	10.5	B	0.17	10.7	B	0.11	10.6	B	0.12	10.8	B
North 12th Street (WB)																			
Wythe Avenue (SB) @	SB-LT	0.01	7.4	A	0.01	7.4	A	0.01	7.4	A	0.02	7.4	A	0.03	7.4	A	0.03	7.4	A
North 9th Street (EB)	EB-TR	0.09	12	B	0.11	12.4	B	0.09	11.5	B	0.11	12.0	B	0.12	12.2	B	0.14	12.8	B
Wythe Avenue (SB) @	WB-LT	0.26	13	B	0.30	13.8	B	0.22	12.1	B	0.25	12.7	B	0.19	12.4	B	0.22	13.1	B
North 8th Street (WB)																			
Wythe Avenue (SB) @	WB-LT	0.10	11.2	B	0.11	11.6	B	0.12	10.8	B	0.13	11.1	B	0.19	12.2	B	0.22	12.9	B
North 6th Street (WB)	WB-T	0.03	11.3	B	0.03	11.6	B	0.02	10.9	B	0.02	11.1	B	0.05	11.8	B	0.05	12.2	B
Wythe Avenue (SB) @	WB-LT	0.10	11.6	B	0.12	12.0	B	0.10	11.1	B	0.12	11.4	B	0.08	10.2	B	0.10	10.8	B
North 4th Street (WB)	WB-T	0.05	11.6	B	0.06	12.0	B	0.03	11.2	B	0.03	11.4	B	0.02	11.9	B	0.03	12.4	B

TABLE 16-5
2013 No-Action Traffic Conditions at Unsignalized Intersections (Continued)

Intersection	Lane Group	AM Peak Hour						MD Peak hour						PM Peak Hour					
		2003 Existing			2013 No-Action			2003 Existing			2013 No-Action			2003 Existing			2013 No-Action		
		V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS
Berry Street (NB) @	NB-LT	0.01	7.2	A	0.01	7.2	A	0.01	7.3	A	0.02	7.3	A	0.01	7.2	A	0.01	7.2	A
North 12th Street (WB)	WB-T	0.09	11.2	B	0.10	11.4	B	0.13	10.9	B	0.15	11.2	B	0.11	11.2	B	0.12	11.5	B
	WB-R	0.17	9.6	A	0.19	9.8	A	0.08	8.9	A	0.09	9.0	A	0.11	9.3	A	0.12	9.4	A
Berry Street (NB) @	NB-T	(a)	7.9	A	(a)	8.0	A	(a)	7.6	A	(a)	7.7	A	(a)	7.8	A	(a)	7.9	A
North 11th Street (EB)	NB-TR	(a)	7.9	A	(a)	8.0	A	(a)	7.6	A	(a)	7.7	A	(a)	7.9	A	(a)	8.1	A
	EB-LT	(a)	8.0	A	(a)	8.1	A	(a)	8.0	A	(a)	8.2	A	(a)	8.6	A	(a)	8.8	A
Berry Street (NB) @ North 7th Street (EB)	EB-LT	0.16	11.2	B	0.18	11.6	B	0.23	10.8	B	0.26	11.2	B	0.17	11.2	B	0.19	11.6	B
Berry Street (NB) @	EB-LT	0.06	10.3	B	0.07	10.4	B	0.11	9.9	A	0.13	10.0	A	0.07	10.2	B	0.09	10.4	B
North 5th Street (EB)	EB-T	0.04	10.8	B	0.04	11.1	B	0.08	10.0	A	0.09	10.1	B	0.05	10.6	B	0.06	10.9	B
Berry Street (NB) @ North 3rd Street (EB)	EB-LT	0.06	9.8	A	0.08	10.1	B	0.09	9.4	A	0.10	9.4	A	0.10	10.2	B	0.12	10.4	B
Bedford Avenue (NB) @	NB-LT	0.04	7.3	A	0.04	7.3	A	0.04	7.3	A	0.04	7.3	A	0.02	7.3	A	0.03	7.3	A
North 8th Street (WB)	WB-TR	0.38	15.8	C	0.45	17.8	C	0.27	13.8	B	0.32	15.0	B	0.29	14.6	B	0.34	16.1	C
Bedford Avenue (NB) @	NB-LT	0.02	7.3	A	0.02	7.3	A	0.02	7.3	A	0.03	7.3	A	0.05	7.3	A	0.05	7.3	A
North 6th Street (WB)	WB-TR	0.39	14.1	B	0.44	15.5	C	0.34	14.6	B	0.40	16.1	C	0.38	16.1	C	0.45	18.4	C
Bedford Avenue (NB) @	NB-LT	0.01	7.3	A	0.02	7.3	A	0.03	7.3	A	0.03	7.3	A	0.02	7.3	A	0.03	7.3	A
North 4th Street (WB)	WB-TR	0.17	11.3	B	0.19	11.7	B	0.23	12.7	B	0.27	13.6	B	0.20	12.0	B	0.27	13.4	B
Driggs Avenue (SB) @	SB-TR	(a)	9.3	A	(a)	9.8	A	(a)	8.7	A	(a)	9.0	A	(a)	9.5	A	(a)	10.2	B
North 12th Street (WB)	WB-LT	(a)	8.8	A	(a)	9.0	A	(a)	8.7	A	(a)	8.9	A	(a)	8.7	A	(a)	9.0	A
Driggs Avenue (SB) @	SB-LT	0.01	7.3	A	0.01	7.3	A	0.01	7.3	A	0.01	7.3	A	0.01	7.2	A	0.01	7.2	A
North 9th Street (EB)	EB-TR	0.12	11.4	B	0.14	11.8	B	0.19	11.0	B	0.21	11.4	B	0.18	12.0	B	0.21	12.6	B
Driggs Avenue (SB) @	SB-LT	0.03	7.3	A	0.03	7.3	A	0.02	7.3	A	0.02	7.3	A	0.01	7.3	A	0.02	7.3	A
North 5th Street (EB)	EB-TR	0.21	12.2	B	0.25	12.8	B	0.20	11.3	B	0.23	11.8	B	0.17	11.8	B	0.20	12.4	B
Driggs Avenue (SB) @	SB-TR	0.27	10.7	B	0.31	11.1	B	0.26	10.4	B	0.29	10.7	B	0.01	11.7	B	0.40	12.3	B
South 4th Street (WB)	WB-LT	0.00	7.2	A	0.00	7.2	A	0.00	7.2	A	0.00	7.2	A	0.17	7.3	A	0.30	7.3	A

ABBREVIATION:

EB-Eastbound, WB-Westbound, NB-Northbound, SB-Southbound
L-Left, T-Through, R-Right, E-W: East-West Roadway, N-S: North-South Roadway
V/C Ratio - Volume to Capacity Ratio
SEC/VEH - Seconds per Vehicle
LOS - Level of Service
* - Denotes Congested Location (LOS E or F, or v/c ratio > 0.90)
(a) All-way stop control; no v/c ratio reported

study area, characterized mainly by low-density residential or industrial uses, would continue to amply satisfy the parking demand throughout the day. Overall, it is estimated that weekday overnight demand for on-street parking within ¼-mile of the proposed action area would increase to approximately 83 percent of capacity, primarily due to increased residential development. During the weekday midday period, it is estimated that demand would reach approximately 89 percent of capacity primarily as the result of new commercial/retail development and general background growth. There would be approximately 3,600 on-street parking spaces available overnight, and 2,300 available in the midday in the 2013 future without the proposed action.

D. THE FUTURE WITH THE PROPOSED ACTION (WITH-ACTION)

This section provides an analysis of traffic and parking conditions in the future with the proposed action (the With-Action condition). As discussed in Chapter 1, "Project Description," the proposed action is projected to stimulate approximately 7.8 million square feet of new residential and retail/commercial development under both Scenario A and Scenario B. Additionally, under Scenario A, the worst case transportation condition, a 27.8 acre waterfront park would be mapped to the west of Kent Avenue from Bushwick Inlet on the north to North 9th Street on the south. Scenario B would provide a smaller park (approximately 15.9 acres). As described in Chapter 1, "Project Description," Scenarios A and B are very similar, except that under Scenario B, a 1,100 megawatt power plant is assumed to be an approved No-Action development occupying the Bayside Fuel site, and this power plant would remain in the future with the proposed action. Therefore, the net change in residential and retail/commercial development for Scenario B would be the same as for Scenario A, only the proposed park would be smaller. As Scenario A includes a larger, regional, park, it constitutes the worst-case transportation condition for traffic analysis purposes.

As discussed in Chapter 1, "Project Description," projected new developments are located on 76 sites within the study area. Land uses that would be present on 37 of these development sites in the No-Action condition would be displaced in the future with the proposed action. Accessory parking as required under the New York City Zoning Resolution would be provided at each site. The analyses in this section examine future traffic and parking conditions in the year 2013 with the full build-out of the projected development sites under Scenario A.

Trip Generation

Under Scenario A, the proposed action is expected to result in approximately 7,391 dwelling units, and approximately 253,698 square feet of retail/commercial space on the 76 projected development sites, and result in the mapping of a 27.8-acre waterfront park. The trip generation rates and mode choice factors used to estimate the travel demand that would be generated by this new development were based on accepted CEQR criteria, standard professional references, and studies that have been done for similar uses in Brooklyn. These sources were supplemented by 2000 Census data and recent data from other sources. The trip generation rates and modal split factors used in forecasting the travel demand from projected development sites are presented in Tables 16-6 and 16-7.

As noted above, the developments projected to occur as a result of the proposed action would displace land uses on 37 of the 76 sites. In the No-Action condition, these uses would occupy a total of

TABLE 16-6
Transportation Planning Factors

		Residential (Williamsburg)	Residential (Greenpoint)	Specialty Retail	Light Manufacturing	Warehousing	Auto Care Center	Park
Project Components :		2,649 DU	4,742 DU	253,698 gsf	-25,424 gsf	-593,244 gsf	-24,876 gsf	27.8 acres
Trip Generation :	Weekday	(1) 8.07 person-trips/DU	(1) 8.07 person-trips/DU	(4,14) 85.6 person-trips/1000 gsf	(6,14) 14.67 person-trips/1000 gsf	(8,14) 10.44 person-trips/1000 gsf	(9,14) 19.42 person-trips/1000 gsf	(11) (see Table 16-7)
Temporal Distribution:	AM (8-9)	(1) 9.1%	(1) 9.1%	(4) 2.3%	(6) 13.2%	(8) 13.2%	(9) 13.2%	(11) 7.0%
	MD (12-1)	4.7%	4.7%	7.9%	11.0%	11.0%	11.0%	17.0%
	PM (5-6)	10.7%	10.7%	10.7%	14.2%	14.2%	14.2%	14.0%
Modal Split (%) :	Auto	(2) 17.9%	(2) 23.7%	(5) 5%	(7) 51.0%	(7) 51.0%	(10) 85.0%	(11,12) 9.3%
	Taxi	0.7%	0.2%	1%	2.0%	2.0%	5.0%	0.0%
	Subway	60.3%	55.2%	3%	28.0%	28.0%	1.0%	6.2%
	Bus	7.2%	4.8%	6%	7.0%	7.0%	1.0%	9.0%
	Walk/Other	13.9%	16.1%	85%	12.0%	12.0%	8.0%	75.5%
		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Vehicle Occupancy:	Auto	(2) 1.22	(2) 1.22	(4) 2.00	(6) 1.30	(6) 1.30	(6) 1.30	(11) 2.80
	Taxi	1.22	1.22	2.00	1.30	1.30	1.30	2.80

In/Out Splits (%) :		(1) In	Out	(1) In	Out	(4) In	Out	(6) In	Out	(6) In	Out	(9) In	Out	(11) In	Out
	AM (8-9)	15%	85%	15%	85%	48%	52%	88%	12%	88%	12%	65%	35%	55%	45%
	MD (12-1)	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
	PM (5-6)	70%	30%	70%	30%	43%	57%	12%	88%	12%	88%	50%	50%	45%	55%

		(3) Weekday	(3) Weekday	(3) Weekday	(3) Weekday	(3) Weekday	(3) Weekday	(13) Weekday
Truck Trip Generation : (per 1000 gsf)		0.06	0.06	0.23	0.67	0.67	0.89	n/a
Truck Temporal Distribution:	AM (8-9)	12%	12%	8%	14%	14%	14%	n/a
	MD (12-1)	9%	9%	11%	9%	9%	9%	n/a
	PM (5-6)	1%	1%	2%	1%	1%	1%	n/a

Notes:

(1) Pushkarev & Zupan, "Urban Space for Pedestrians".

(2) 2000 Census.

(3) Curbside Pickup & Delivery Operations & Arterial Traffic Impacts, FHWA , February 1981.

(4) ITE Trip Generation Handbook, 6th Edition, Land Use Code 814 (Specialty Retail Center); Person trip = average vehicle rate x 2.0 /.95. Temporal distribution based on data for ITE Land Use Code 820 (Shopping Center).

(5) Modfied from typical neighborhood retail modal split to reflect local conditions.

(6) ITE Trip Generation Handbook, 6th Edition, Land Use Code 110 (Manufacturing); midday temporal distribution determined from field surveys.

(7) 1990 Census reverse journey-to-work data.

(8) ITE Trip Generation Handbook, 6th Edition, Land Use Code 150 (Warehousing); midday temporal distribution determined from field surveys.

(9) ITE Trip Generation Handbook, 6th Edition, Land Use Code 840 (Automobile Care Center); weekday trip rate data not available, average weekend rate assumed for weekday.

(10) PHA assumptions.

(11) Hudson River Park FEIS, 1998.

(12) PHA surveys conducted at Empire-Fulton Ferry State Park, 2003.

(13) Park would generate negligible truck trips.

(14) Person trip rate = ITE average vehicle trip rate x 2.0 / 0.95.

TABLE 16-7
Transportation Planning Factors for the Proposed Park (Site 211)

Distance from Park:		0-¼ mile	¼-½ mile	½-1 mile	1-1½ miles	1½-2 miles
Residents in Study Area:		(1) 10,100	(1) 31,700	(1) 83,800	(1) 49,100	(1) 41,500
Trip Generation : (Person-trips/1000 residents)	Sunday	(2) 203.64	(2) 92.02	(2) 41.72	(2) 26.34	(2) 19.06
	Weekday	114.04	51.53	23.36	14.75	10.67
Peak Hours Trips :	AM (8-9)	(2) 7.0%	(2) 7.0%	(2) 7.0%	(2) 7.0%	(2) 7.0%
	MD (12-1)	17.0%	17.0%	17.0%	17.0%	17.0%
	PM (5-6)	14.0%	14.0%	14.0%	14.0%	14.0%
Modal Split (%) :	Auto	(2,3) 0.0%	(2,3) 1.0%	(2,3) 5.0%	(2,3) 13.0%	(2,3) 22.0%
	Taxi	0.0%	0.0%	0.0%	0.0%	0.0%
	Subway	0.0%	1.0%	4.0%	8.0%	14.0%
	Bus	0.0%	1.0%	5.0%	12.0%	22.0%
	Walk/Other	100.0%	97.0%	86.0%	67.0%	42.0%
		100.0%	100.0%	100.0%	100.0%	100.0%
Vehicle Occupancy :	Auto	(2) 2.80	(2) 2.80	(2) 2.80	(2) 2.80	(2) 2.80

In/Out Splits (%) :		(2) In	Out	(2) In	Out	(2) In	Out	(2) In	Out	(2) In	Out
	AM (8-9)	55%	45%	55%	45%	55%	45%	55%	45%	55%	45%
	MD (12-1)	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
	PM (5-6)	45%	55%	45%	55%	45%	55%	45%	55%	45%	55%

Person Trips :		Weekday In	Weekday Out		Sunday In	Sunday Out
AM	Auto	12	10	Auto	21	17
	Taxi	0	0	Taxi	0	0
	Subway	8	7	Subway	15	12
	Bus	11	9	Bus	21	17
	Walk/Other	196	160	Walk/Other	350	286
	TOTAL	228	186	TOTAL	406	332
MD	Auto	26	26	Auto	46	46
	Taxi	0	0	Taxi	0	0
	Subway	18	18	Subway	33	33
	Bus	25	25	Bus	45	45
	Walk/Other	433	433	Walk/Other	773	773
	TOTAL	502	502	TOTAL	897	897
PM	Auto	19	24	Auto	34	42
	Taxi	0	0	Taxi	0	0
	Subway	14	17	Subway	24	30
	Bus	19	23	Bus	34	41
	Walk/Other	321	392	Walk/Other	573	700
	TOTAL	372	455	TOTAL	665	813
Vehicle Trips :						
AM	Auto	4	3	Auto	8	6
MD	Auto	9	9	Auto	17	17
PM	Auto	7	8	Auto	12	15

Sources:

(1) 2000 Census data, projected to 2013.

(2) Hudson River Park FEIS, 1998.

(3) PHA surveys conducted at Brooklyn Heights Promenade and Empire-Fulton Ferry State Park, 2003.

approximately 1.8 million square feet of existing built floor area and include approximately 1.14 million square feet of manufacturing and warehousing space, approximately 642,686 square feet of vehicle and open storage, and approximately 24,876 square feet of automobile service uses. The trip generation rates and modal split factors utilized for forecasting travel demand eliminated due to the displacement of No-Action land uses on each site are also shown in Table 16-6. These trip generation rates and modal split factors were based on accepted CEQR criteria and standard professional references with the exception of Sites 3 (Greenpoint Lumber Exchange) and 211 (Bayside Fuel), for which existing demand was determined using field surveys. The change in travel demand resulting from the proposed action is the net difference between the demand that would be generated by land uses on each site in the No-Action condition, and the travel demand that would be generated by the projected development on that site.

The trip generation rates and modal split assumptions for the proposed park on Site 211 (the Bayside Fuel site) are shown in Table 16-7, and are based on surveys conducted at Riverbank State Park and North River State Park for the 1998 *Hudson River Park FEIS*, and more recent studies conducted at Empire-Fulton Ferry State Park and the Brooklyn Heights Promenade. The surveys conducted for the *Hudson River Park FEIS* found that the park trip generation rate for a population (e.g., a census tract) diminishes the farther that population is from the park entrance. The formula developed from these surveys,

$$U_i =, 0.23 + 20.63 \times 1/D_i^{1.15},$$

gives average summer Sunday park usage per 1,000 residents (U_i) as a function of distance, in miles, from the park entrance (D_i); the further one gets from the park, the fewer trips per resident are generated. Average weekday park usage was found to be 56 percent of Sunday usage. Mode choice for park users also varies based on distance from the park, with the proportion of walk trips increasing the closer the point of origin is to the park.

It should be noted that, although the new park would generate its highest use on a summer Sunday, this period is not analyzed as the peak summer Sunday demand generated by residential and local retail uses is relatively low, and the overall local transportation network is much less used on Sundays than on weekdays. It is therefore very unlikely that the project would have a unique Sunday impact location which would not have already been impacted in the more heavily-traveled weekday peak periods.

The total travel demand from projected developments and the estimated travel credit from the displacement of No-Action land uses on each site are shown in Tables 16-8 and 16-9, respectively. Table 16-10 shows the resulting net travel demand in person trips and vehicle trips for the AM, midday and PM peak hours.

As shown in Table 16-8, the projected developments resulting from the proposed action, including the proposed park, would generate a total of 206 inbound and 880 new outbound vehicle trips in the AM peak hour (auto, taxi and truck), 318 new inbound and 318 new outbound vehicle trips in the midday, and 851 new inbound and 409 new outbound vehicle trips in the PM peak hour. The displacement of land uses that would be present on projected development sites in the No-Action condition would eliminate a total of 215 inbound and 137 outbound vehicle trips in the AM peak hour, 110 inbound and 164 outbound in the midday, and 55 inbound and 252 outbound vehicle trips in the PM, as shown in Table 16-9. The resulting net project increment, shown in Table 16-10, would total -9 inbound and 743 outbound vehicle trips in the AM peak hour, 208 inbound and 154 outbound vehicle trips in the midday, and 796 inbound and 157 outbound vehicle trips in the PM peak hour.

TABLE 16-8
Total Weekday Peak Hour Travel Demand
From Projected Development

		Williamsburg				Greenpoint						Total Trips	
		Residential		Retail		Residential		Retail		Park			
Project Component :		2,649 DU		124,198 gsf		4,742 DU		129,500 gsf		27.8 acre		n/a	
Person Trips :		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
	Auto	52	296	6	6	124	701	6	7	12	10	200	1,020
	Taxi	2	12	1	1	1	6	1	1	0	0	5	20
AM	Subway	176	997	4	4	288	1,634	4	4	8	7	480	2,646
	Bus	21	119	7	8	25	142	7	8	11	9	71	286
	Walk/Other	41	230	100	108	84	477	104	113	196	160	525	1,088
	TOTAL	292	1,654	118	127	522	2,960	122	133	228	186	1,282	5,060
	Auto	90	90	21	21	213	213	22	22	26	26	372	372
	Taxi	4	4	4	4	2	2	4	4	0	0	14	14
MD	Subway	303	303	13	13	497	497	13	13	18	18	844	844
	Bus	36	36	25	25	43	43	26	26	25	25	155	155
	Walk/Other	70	70	357	357	145	145	372	372	433	433	1,377	1,377
	TOTAL	503	503	420	420	900	900	437	437	502	502	2,762	2,762
	Auto	287	123	24	32	679	291	25	34	19	24	1,034	504
	Taxi	11	5	5	6	6	2	5	7	0	0	27	20
PM	Subway	965	414	15	19	1,582	678	15	20	14	17	2,591	1,148
	Bus	115	49	29	39	138	59	31	41	19	23	332	211
	Walk/Other	223	95	416	551	462	198	433	575	321	392	1,855	1,811
	TOTAL	1,601	686	489	647	2,867	1,228	509	677	372	455	5,838	3,693
Vehicle Trips :		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
	Auto	43	243	3	3	102	575	3	4	4	3	155	828
AM	Taxi	11	11	2	2	6	6	2	2	0	0	20	21
	Truck	10	10	1	1	19	19	1	1	0	0	31	31
	TOTAL	64	264	6	6	127	600	6	7	4	3	206	880
	Auto	74	74	11	11	175	175	11	11	9	9	280	280
MD	Taxi	5	5	3	3	3	3	3	3	0	0	14	14
	Truck	7	7	2	2	13	13	2	2	0	0	24	24
	TOTAL	86	86	16	16	191	191	16	16	9	9	318	318
	Auto	235	101	12	16	557	239	13	17	7	8	824	381
PM	Taxi	9	9	5	5	5	5	6	6	0	0	24	25
	Truck	1	1	0	0	2	2	0	0	0	0	3	3
	TOTAL	245	111	17	21	564	246	19	23	7	8	851	409

		In+Out	In+Out	In+Out	In+Out	In+Out
Total	AM (8-9)	328	12	727	13	1,086
Vehicle Trips :	MD (12-1)	172	32	382	32	636
	PM (5-6)	356	38	810	42	1,260

TABLE 16-9
Total Weekday Peak Hour Travel Demand From No-Action Land Uses on Projected Development Sites

		Williamsburg						Greenpoint						Total Trips	
		Light Manufacturing		Warehousing (1)		Auto Care Center		Light Manufacturing		Warehousing (2)		Auto Care Center			
Project Components :		14,814 gsf		523,593 gsf		1,876 gsf		10,610 gsf		209,701 gsf		23,000 gsf		n/a	
Person Trips :		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
	Auto	13	2	138	19	3	1	9	1	43	6	33	18	239	47
	Taxi	1	0	5	1	0	0	0	0	2	0	2	1	10	2
AM	Subway	7	1	76	10	0	0	5	1	24	3	0	0	112	15
	Bus	2	0	19	3	0	0	1	0	6	1	0	0	28	4
	Walk/Other	3	0	33	4	0	0	2	0	10	1	3	2	51	7
	TOTAL	26	3	271	37	3	1	17	2	85	11	38	21	440	75
	Auto	6	6	66	66	2	2	4	4	20	20	21	21	119	119
	Taxi	0	0	3	3	0	0	0	0	1	1	1	1	5	5
MD	Subway	3	3	36	36	0	0	2	2	11	11	0	0	52	52
	Bus	1	1	9	9	0	0	1	1	3	3	0	0	14	14
	Walk/Other	1	1	15	15	0	0	1	1	5	5	2	2	24	24
	TOTAL	11	11	129	129	2	2	8	8	40	40	24	24	214	214
	Auto	2	14	20	149	2	2	1	10	6	46	27	27	58	248
	Taxi	0	1	1	6	0	0	0	0	0	2	2	2	3	11
PM	Subway	1	8	11	82	0	0	1	5	3	25	0	0	16	120
	Bus	0	2	3	20	0	0	0	1	1	6	0	0	4	29
	Walk/Other	0	3	5	35	0	0	0	2	1	11	3	3	9	54
	TOTAL	3	28	40	292	2	2	2	18	11	90	32	32	90	462
Vehicle Trips :															
	Auto	10	2	106	15	2	1	7	1	33	5	25	14	183	38
AM	Taxi	1	1	3	3	0	0	0	0	1	1	2	2	7	7
	Truck	1	1	10	67	0	0	0	0	13	23	1	1	25	92
	TOTAL	12	4	119	85	2	1	7	1	47	29	28	17	215	137
	Auto	5	5	51	51	2	2	3	3	15	15	16	16	92	92
MD	Taxi	0	0	2	2	0	0	0	0	1	1	1	1	4	4
	Truck	0	0	6	55	0	0	0	0	7	12	1	1	14	68
	TOTAL	5	5	59	108	2	2	3	3	23	28	18	18	110	164
	Auto	2	11	15	115	2	2	1	8	5	35	21	21	46	192
PM	Taxi	0	0	1	1	0	0	0	0	0	0	2	2	3	3
	Truck	0	0	1	42	0	0	0	0	5	15	0	0	6	57
	TOTAL	2	11	17	158	2	2	1	8	10	50	23	23	55	252

		In+Out	In+Out	In+Out	In+Out	In+Out	In+Out	In+Out
Total	AM (8-9)	16	204	3	8	76	45	352
Vehicle Trips :	MD (12-1)	10	167	4	6	51	36	274
	PM (5-6)	13	175	4	9	60	46	307

Notes:

(1) Truck credit for Site 211 determined from field counts (0 in, -57 out in AM; 0 in, -49 out in MD, 0 in, -41 out in PM).

(2) Truck credit for Site 3 determined from field counts (-10 in, -20 out in AM; -5 in, -10 out in MD, -5 in, -15 out in PM).

TABLE 16-10
Net Trips Generated by the Proposed Action

		Williamsbrug Net Trips (including Park)		Greenpoint Net Trips		Total Net Trips	
Person Trips :		**In**	**Out**	**In**	**Out**	**In**	**Out**
	Auto	-84	290	45	683	-39	973
	Taxi	-3	12	-2	6	-5	18
AM	**Subway**	105	997	263	1,634	368	2,631
	Bus	18	133	25	149	43	282
	Walk/Other	301	494	173	587	474	1,081
	TOTAL	338	1,926	504	3,059	842	4,985
	Auto	63	63	190	190	253	253
	Taxi	5	5	4	4	9	9
MD	**Subway**	295	295	497	497	792	792
	Bus	76	76	65	65	141	141
	Walk/Other	844	844	509	509	1,353	1,353
	TOTAL	1,283	1,283	1,265	1,265	2,548	2,548
	Auto	306	14	670	242	976	256
	Taxi	15	4	9	5	24	9
PM	**Subway**	982	360	1,593	668	2,575	1,028
	Bus	160	89	168	93	328	182
	Walk/Other	955	1,000	891	757	1,846	1,757
	TOTAL	2,417	1,466	3,331	1,765	5,748	3,231
Vehicle Trips :		**In**	**Out**	**In**	**Out**	**In**	**Out**
	Auto	-68	231	40	559	-28	790
AM	**Taxi**	9	9	4	5	13	14
	Truck	0	-57	6	-4	6	-61
	Total	-59	183	50	560	-9	743
	Auto	36	36	152	152	188	188
MD	**Taxi**	6	6	4	4	10	10
	Truck	3	-46	7	2	10	-44
	Total	45	-4	163	158	208	154
	Auto	235	-3	543	192	778	189
PM	**Taxi**	13	13	9	9	21	22
	Truck	0	-41	-3	-13	-3	-54
	Total	248	-31	549	188	796	157

		In+Out	In+Out	In+Out
Total	**AM (8-9)**	124	610	734
Vehicle Trips :	**MD (12-1)**	41	321	362
	PM (5-6)	217	737	953

Net project-generated trips by subway would total 368 inbound and 2,631 outbound in the AM peak hour, 792 inbound and 792 outbound in the midday, and 2,575 inbound and 1,028 outbound in the PM peak hour. Trips by local bus would total 43 inbound and 282 outbound in the AM peak hour, 141 inbound and 141 outbound trips in the midday, and 328 inbound and 182 outbound in the PM. Trips by walking only, bicycle or other non-vehicular modes would total 474 inbound and 1,081 outbound in the AM peak hour, 1,353 inbound and 1,353 outbound trips in the midday, and 1,846 inbound and 1,757 outbound in the PM. The probable impacts of the proposed action on the subway, bus and pedestrian modes are discussed in detail in Chapter 17, "Transit and Pedestrians."

Trip Assignment

Figures 16-11 through 16-13 show the assignment of net project increment traffic (autos, taxis and trucks) to the study area street network during the weekday AM, midday and PM peak hours, respectively. Auto and taxi trips en route to and from projected developments were assigned to study area portals based on census origin/destination survey data. Auto and taxi trips were then assigned via the most direct routes to and from the entrances to each development site. Truck trips were assigned to designated truck routes within the study area, then via the most direct path on the local street network to and from each development site.

As shown in Figures 16-11 through 16-13, the primary corridors for traffic en route to and from the projected developments would be Kent Avenue/Franklin Street, Metropolitan Avenue, and McGuinness Boulevard. To the north, McGuinness Boulevard would provide access for project trips utilizing the Pulaski Bridge and the Brooklyn-Queens Expressway (BQE) from Queens. Kent Avenue would be used by trips to and from points south. Metropolitan Avenue would serve vehicles en route to and from northern Brooklyn and would also serve as a secondary corridor for access to and from the BQE. Trips originating from Manhattan would travel via the Williamsburg Bridge and would access sites in Williamsburg via Broadway, Bedford Avenue, and Kent Avenue; Williamsburg Bridge traffic bound for Greenpoint would likely use McGuinness Boulevard via the BQE. Outbound trips to the Williamsburg Bridge were assigned via the ramp at Roebling Street and South 5th Place for trips originating in Williamsburg, and to the ramp from the westbound BQE via McGuinness Boulevard for trips originating in Greenpoint.

Vehicular Traffic

Figures 16-14 through 16-16 show the AM, midday, and PM peak hour traffic networks in the 2013 future with the proposed action. The volumes shown are the combination of the net incremental traffic generated by the proposed action and the 2013 No-Action traffic network.

Impact Analysis Methodology

According to *CEQR* criteria, if levels of service deteriorate from LOS A, B or C in the No-Action condition to marginally unacceptable mid-LOS D or unacceptable LOS E or F in the With-Action condition, then a significant traffic impact has occurred. *CEQR* criteria further specify that for a No-Action LOS A, B or C which declines to mid-LOS D (45 seconds of delay for signalized intersections and 30 seconds of delay for unsignalized intersections) or worse in the With-Action condition, mitigation to mid-LOS D is required. For No-Action LOS D, an increase of five or more seconds in a lane group in the With-Action condition should be considered significant if the With-Action delay exceeds mid-LOS D.

For No-Action LOS E, an increase in delay of four seconds should be considered significant. For No-Action LOS F, three seconds of delay should be considered significant, however, if the No-Action LOS F condition already has delays in excess of 120 seconds, an increase of one second in delay should be considered significant, unless the proposed action would generate fewer than five vehicles through that intersection in the peak hour (signalized intersections) or fewer than five passenger car equivalents (PCE) in the peak hour along the critical approach (unsignalized intersections). In addition, for unsignalized intersections, for the minor street approach to generate a significant impact, 90 PCEs must be identified in the With-Action condition in any peak hour.

Tables 16-11 and 16-12 show the AM, midday, and PM peak hour volume-to-capacity ratios, delays and levels of service at signalized and unsignalized study area intersections, respectively, in the 2013 future with the proposed action. The tables also identify those locations that would be impacted based on the criteria discussed above. A summary of significantly impacted intersections is provided in Table 16-13.

Signalized Intersections

As shown in Table 16-11, the PM peak hour would have the highest number of impacted intersections with eight, followed by the AM and the midday, with three and four each, respectively. Intersections with one or more movements operating above capacity (i.e., a v/c ratio of 1.0 or greater) would total eleven in the PM (versus six in the future without the proposed action), three in the AM, and two in the midday (versus one and none, respectively, in the No-Action condition). The following provides a discussion of the impacted locations by corridor. Measures to mitigate traffic impacts are presented in Chapter 22, "Mitigation."

Franklin Street/Kent Avenue

At the intersection of Franklin and Calyer Streets, the northbound movement would be impacted by project traffic in the midday peak hour, operating at LOS D (54.7 seconds of delay), versus a No-Action LOS C (26.9 seconds of delay).

The northbound Franklin Street approach would also be impacted at Quay Street, with LOS E conditions in the PM peak hour (61.7 seconds of delay), compared with a No-Action LOS C (20.9 seconds of delay).

At Kent Avenue and South 3rd Street, project traffic would create an impact on the southbound Kent Avenue approach in the PM peak hour, with operation at LOS D (50.6 seconds of delay) in the With-Action condition compared to a No-Action LOS C (33.7 seconds of delay).

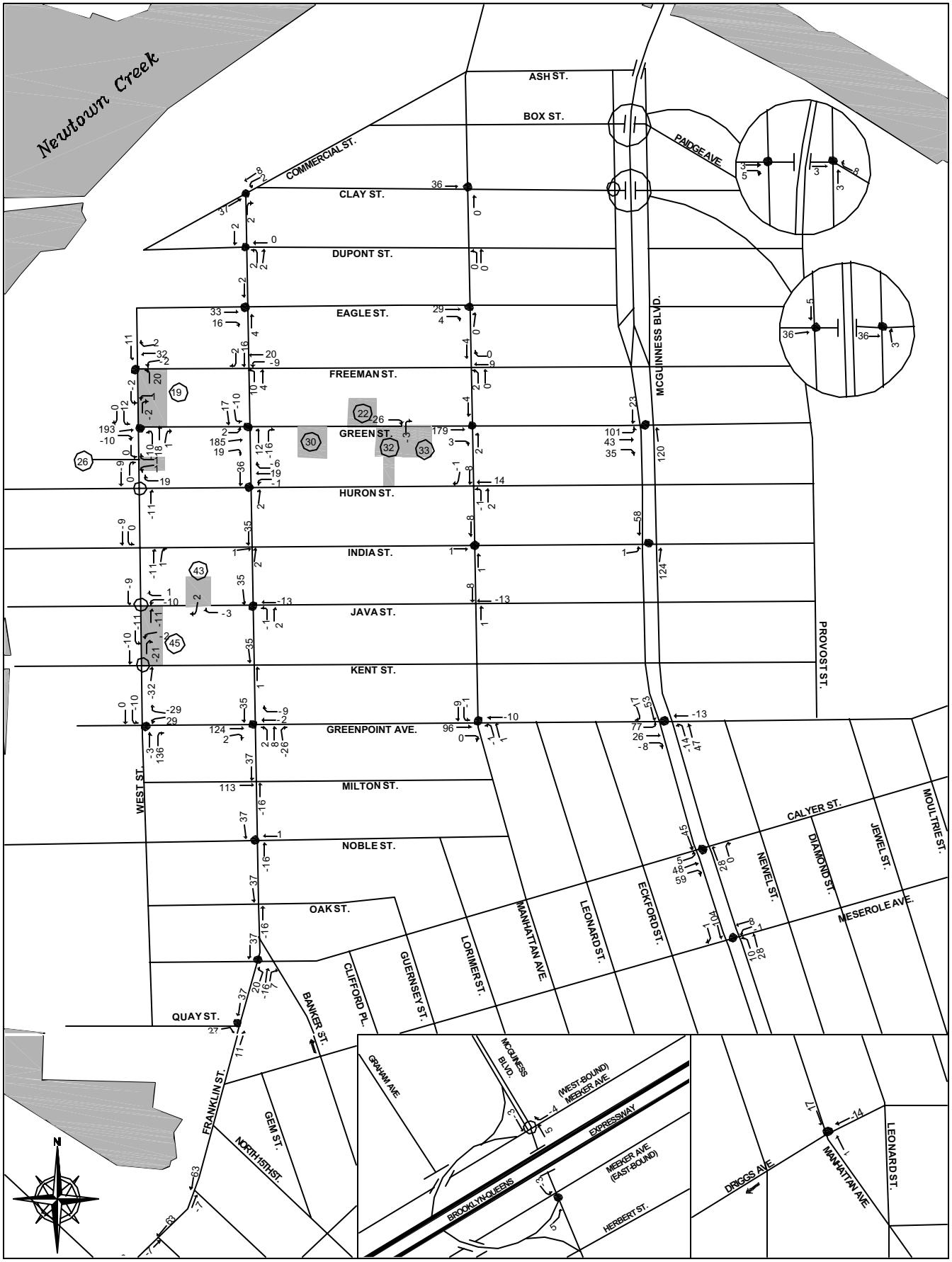
Manhattan Avenue

At the intersection of Manhattan Avenue and Driggs Avenue, the westbound approach would be impacted in the PM peak hour, operating at LOS E (70.3 seconds of delay), versus LOS D (53.4 seconds of delay) in the No-Action.

McGuinness Boulevard

The northbound McGuinness Boulevard approach at Green Street would be impacted in the AM peak hour, operating at LOS E (64.0 seconds of delay), compared with LOS D (41.7 seconds of delay) in the No-Action. The eastbound Green Street approach would be impacted in all three peak hours, deteriorating to LOS F (132.6 seconds of delay) in the AM, LOS D (54.1 seconds of delay) in the midday, and LOS

Greenpoint Net Project Generated Traffic - AM Peak Hour



LEGEND:

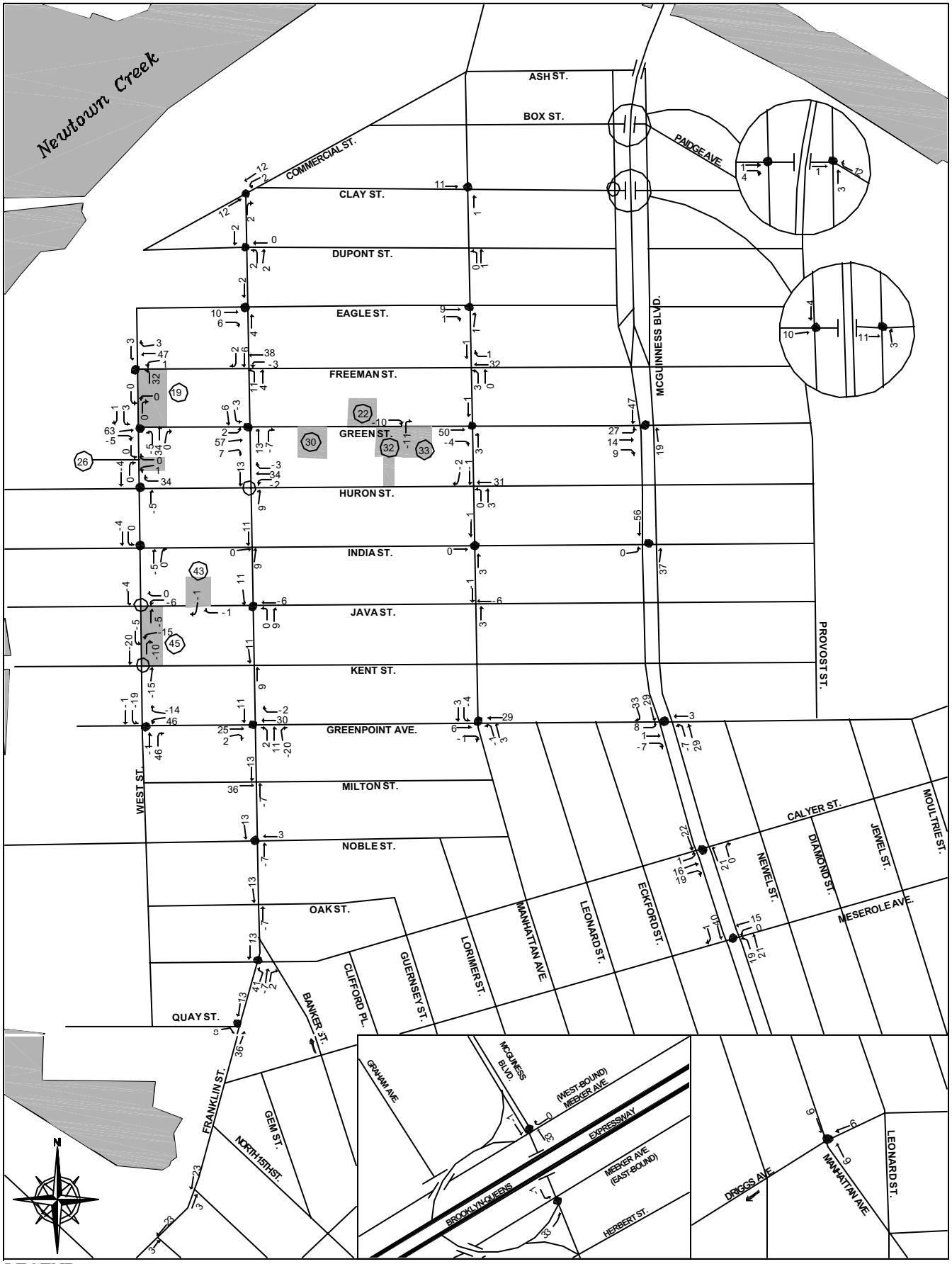
- ● ANALYZED INTERSECTION (POSITIVE INCREMENT)
- ○ ANALYZED INTERSECTION (NEGATIVE INCREMENT)
- (18) PROJECTED DEVELOPMENT SITES

Williamsburg Net Project Generated Traffic - AM Peak Hour

LEGEND:

- ● ANALYZED INTERSECTION (POSITIVE INCREMENT)
- ○ ANALYZED INTERSECTION (NEGATIVE INCREMENT)
- PROJECTED DEVELOPMENT SITES

Greenpoint Net Project Generated Traffic - MD Peak Hour



LEGEND:

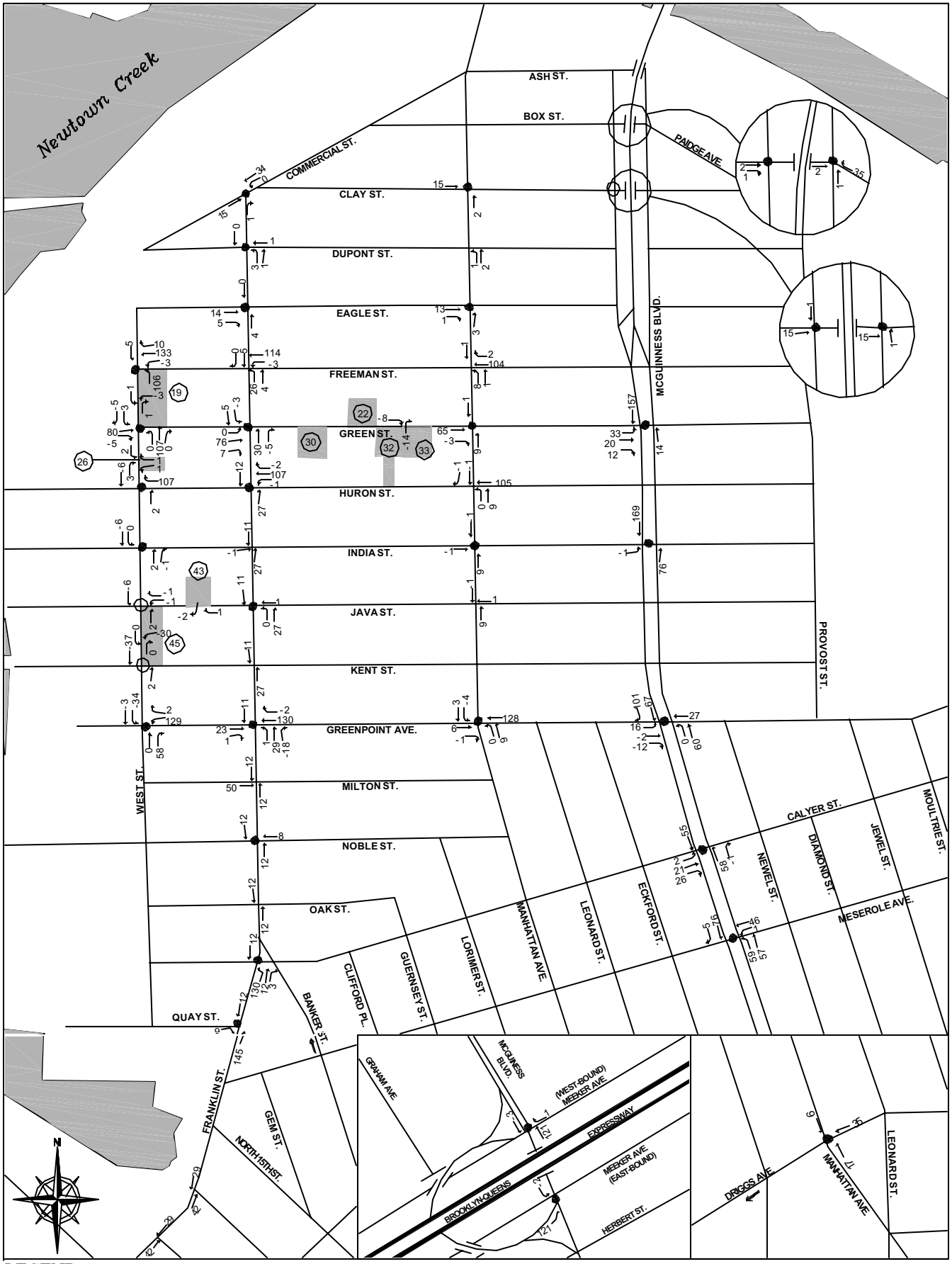
- ● ANALYZED INTERSECTION (POSITIVE INCREMENT)
- ○ ANALYZED INTERSECTION (NEGATIVE INCREMENT)
- (18) PROJECTED DEVELOPMENT SITES

Williamsburg Net Project Generated Traffic - MD Peak Hour

LEGEND:

- ● ANALYZED INTERSECTION (POSITIVE INCREMENT)
- ○ ANALYZED INTERSECTION (NEGATIVE INCREMENT)
- PROJECTED DEVELOPMENT SITES

Greenpoint Net Project Generated Traffic - PM Peak Hour



LEGEND:

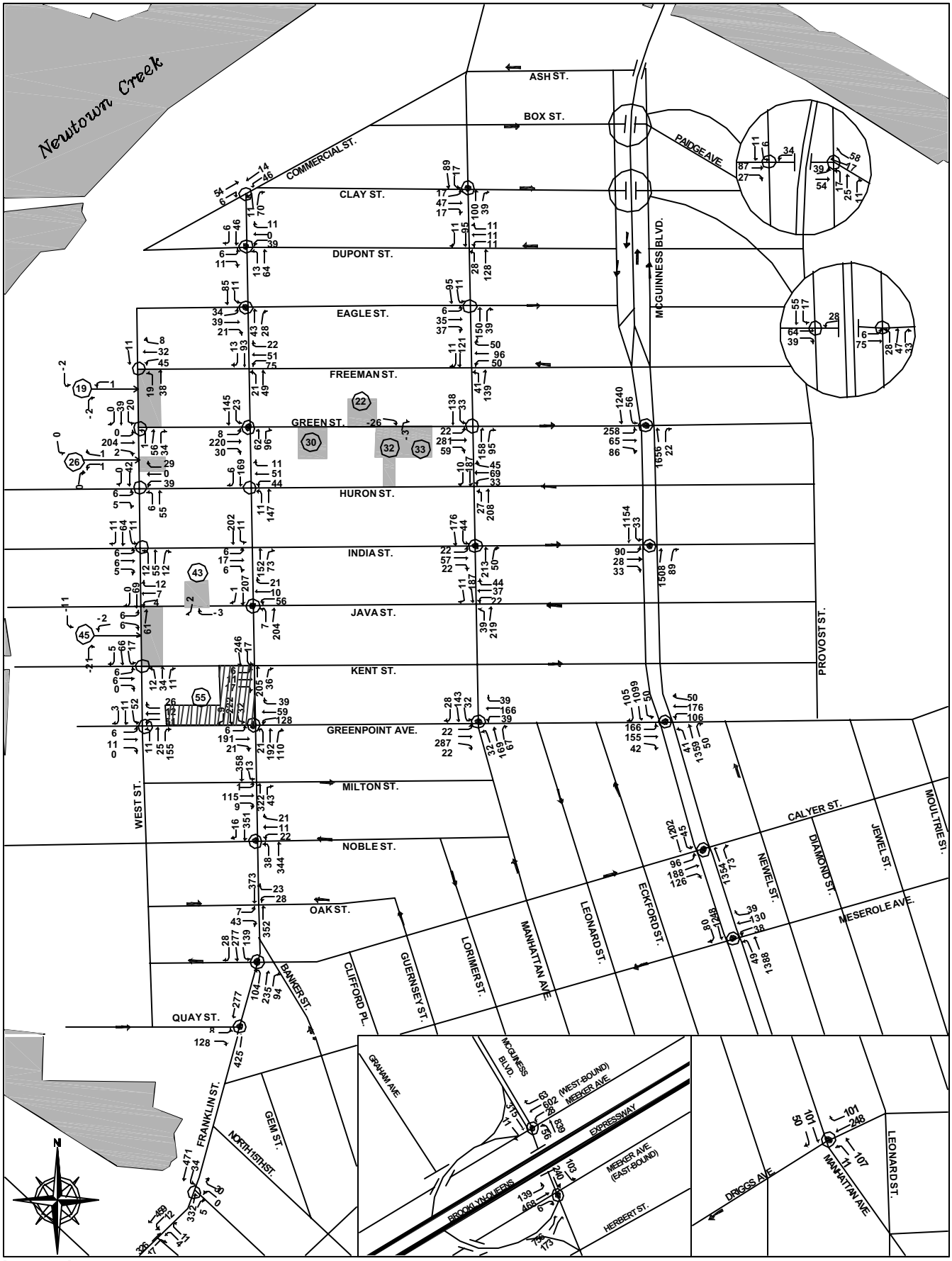
- ● ANALYZED INTERSECTION (POSITIVE INCREMENT)
- ○ ANALYZED INTERSECTION (NEGATIVE INCREMENT)
- (19) PROJECTED DEVELOPMENT SITES

Williamsburg Net Project Generated Traffic - PM Peak Hour

LEGEND:

- ● ANALYZED INTERSECTION (POSITIVE INCREMENT)
- ○ ANALYZED INTERSECTION (NEGATIVE INCREMENT)
- PROJECTED DEVELOPMENT SITES

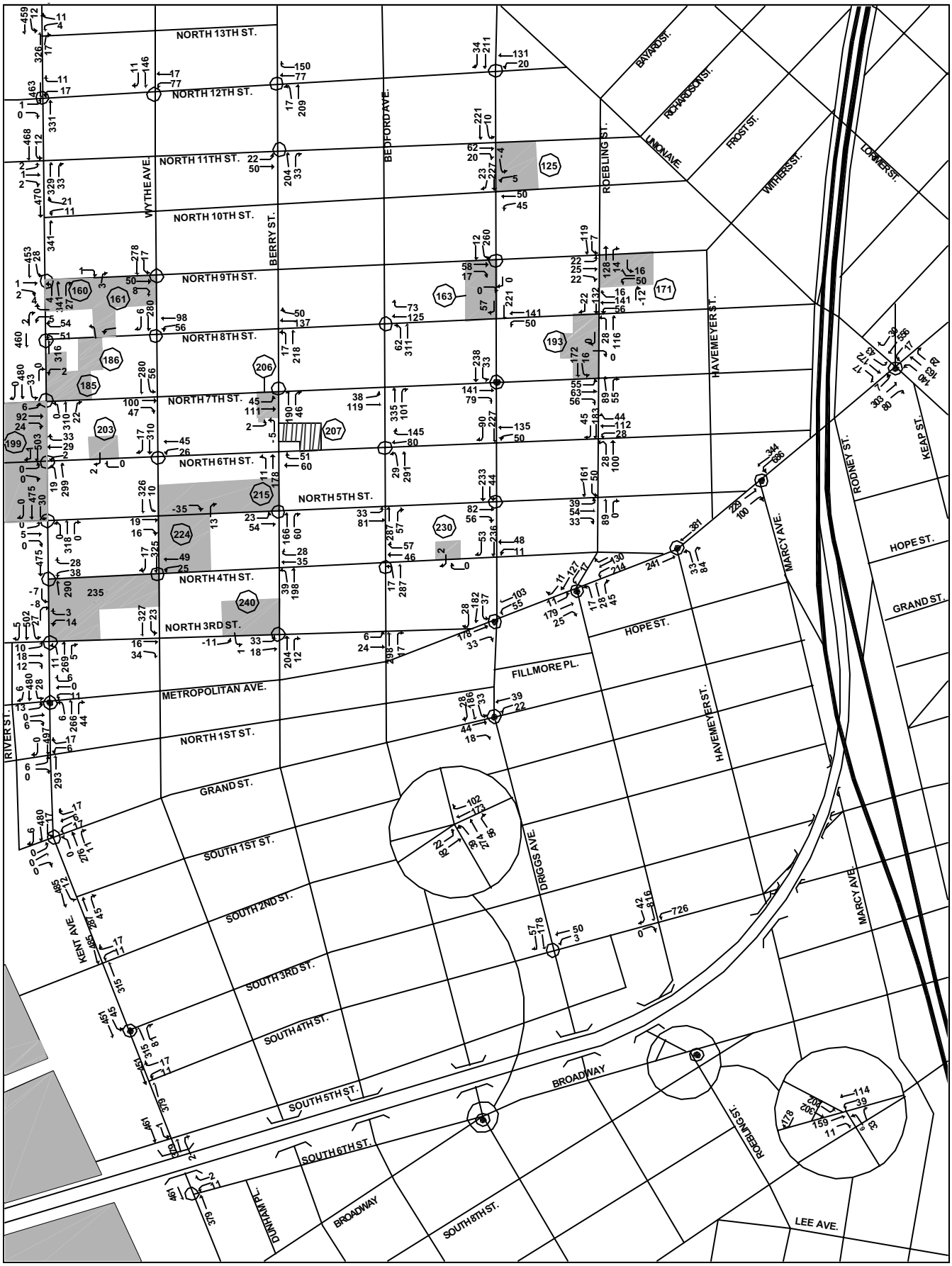
2013 With-Action Greenpoint Traffic Volumes - AM Peak Hour



Legend:

- ◉ Analyzed Intersection (Signalized)
- ○ Analyzed Intersection (Unsignalized)
- (30) With Action Sites
- (55) No- Action Sites

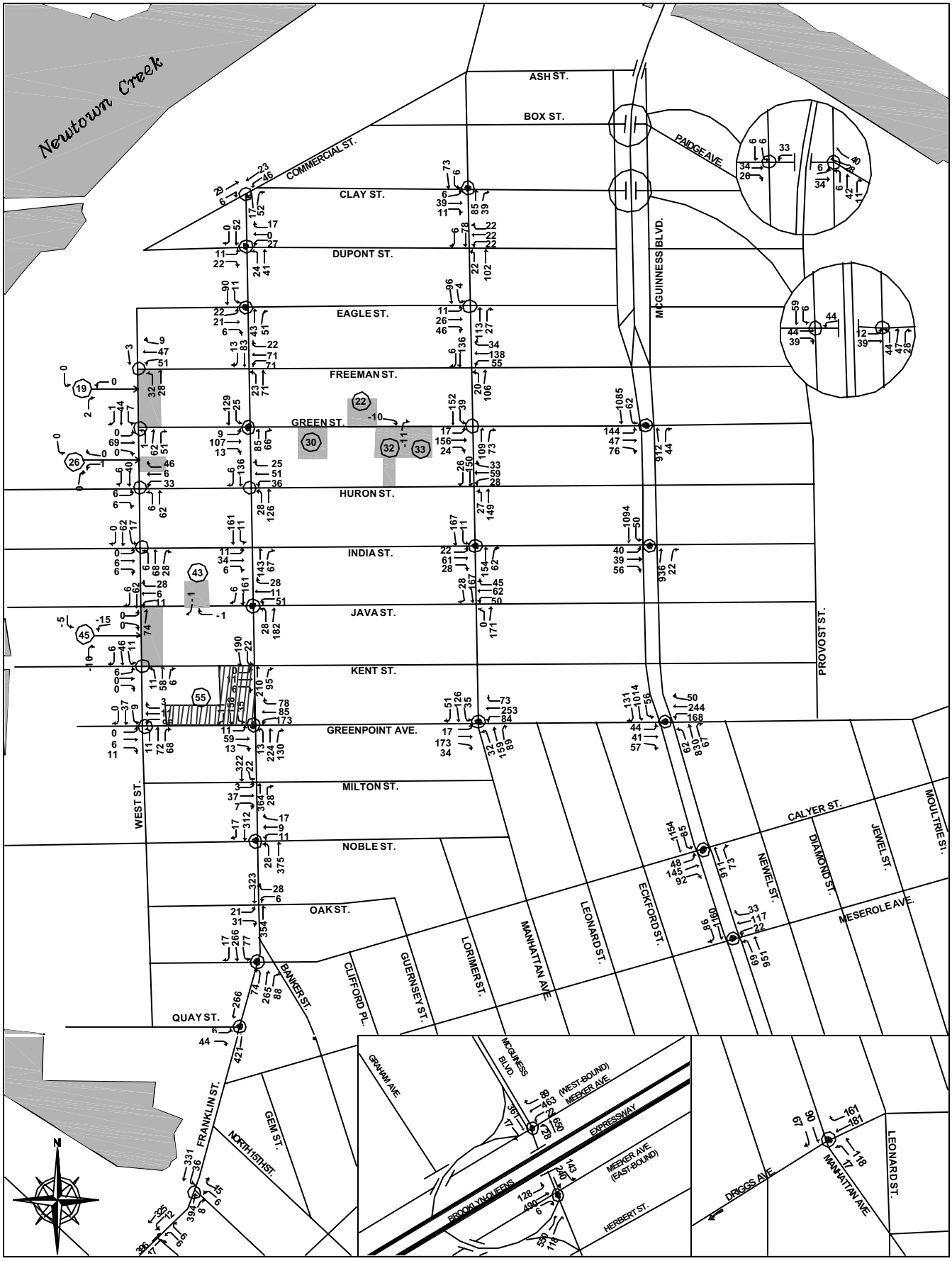
2013 With-Action Williamsburg Traffic Volumes - AM Peak Hour



Legend:

- Analyzed Intersection (Signalized)
- Analyzed Intersection (Unsignalized)
- With Action Sites
- No- Action Sites

2013 With-Action Greenpoint Traffic Volumes - MD Peak Hour



Legend:

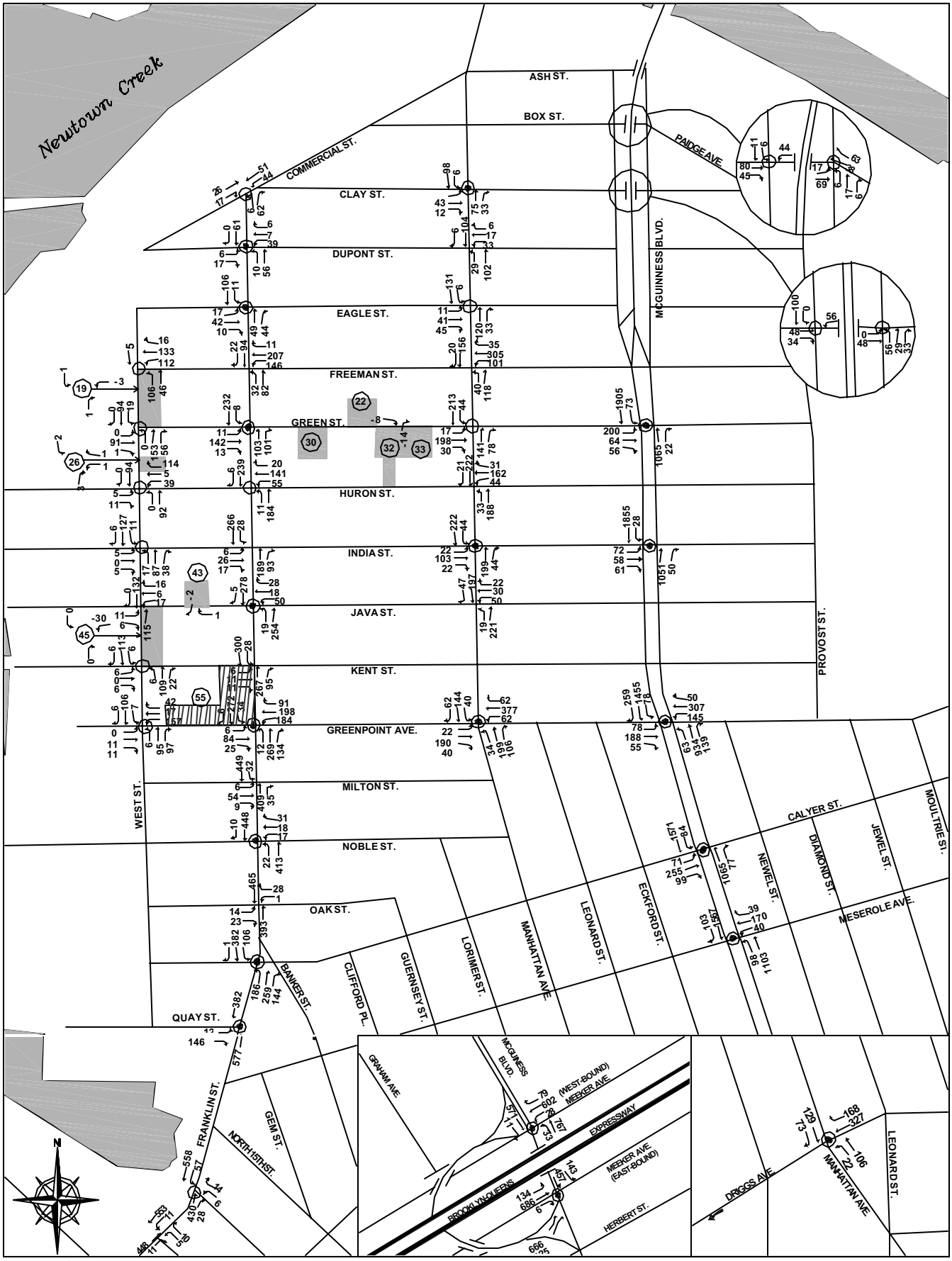
- ◉ **Analyzed Intersection (Signalized)**
- ○ **Analyzed Intersection (Unsignalized)**
- **With Action Sites**
- **No- Action Sites**

2013 With-Action Williamsburg Traffic Volumes - MD Peak Hour

Legend:

- ◉ Analyzed Intersection (Signalized)
- ○ Analyzed Intersection (Unsignalized)
- With Action Sites
- No- Action Sites

2013 With-Action Greenpoint Traffic Volumes - PM Peak Hour



Legend:

- ◉ **Analyzed Intersection (Signalized)**
- ○ **Analyzed Intersection (Unsignalized)**
- (30) **With Action Sites**
- (55) **No- Action Sites**

2013 With-Action Williamsburg Traffic Volumes - PM Peak Hour

Legend:

- ◉ Analyzed Intersection (Signalized)
- ◇ Analyzed Intersection (Unsignalized)
- (30) With Action Sites
- (55) No- Action Sites

TABLE 16-11
2013 With Action Traffic Conditions at Signalized Intersections

Intersection	Lane Group	AM Peak Hour						MD Peak Hour						PM Peak Hour					
		2013 No-Action			2013 With Action			2013 No-Action			2013 With Action			2013 No-Action			2013 With Action		
		V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS
Franklin Street (N-S) @	NB-LT	0.13	7.5	A	0.14	7.6	A	0.12	7.5	A	0.13	7.6	A	0.10	7.3	A	0.11	7.4	A
Dupont Street (E-W)	SB-TR	0.09	7.3	A	0.10	7.3	A	0.09	7.3	A	0.10	7.3	A	0.10	7.3	A	0.10	7.3	A
	EB-LR	0.07	14.2	B	0.07	14.2	B	0.13	15.0	B	0.13	15.0	B	0.07	14.2	B	0.07	14.2	B
	WB-LTR	0.17	15.4	B	0.17	15.4	B	0.16	15.2	B	0.15	15.1	B	0.21	16.3	B	0.22	16.4	B
Franklin Street (N-S) @	NB-TR	0.12	7.5	A	0.13	7.6	A	0.18	8.0	A	0.18	8.0	A	0.15	7.7	A	0.16	7.8	A
Eagle Street (EB)	SB-LT	0.18	8.0	A	0.18	8.0	A	0.19	8.1	A	0.19	8.1	A	0.19	8.0	A	0.19	8.0	A
	EB-LTR	0.16	14.4	B	0.32	15.6	B	0.12	14.2	B	0.17	14.5	B	0.14	14.3	B	0.19	14.6	B
Franklin Street (N-S) @	NB-TR	0.31	9.3	A	0.30	9.2	A	0.28	9.0	A	0.29	9.1	A	0.31	9.2	A	0.35	9.7	A
Green Street (EB)	SB-LT	0.32	9.5	A	0.32	9.4	A	0.30	9.2	A	0.30	9.2	A	0.39	10.0	A	0.39	10.0	B
	EB-LTR	0.17	14.5	B	0.80	29.8	C	0.21	14.8	B	0.44	16.6	B	0.27	15.2	B	0.53	18.0	B
Franklin Street (N-S) @	NB-LT	0.28	8.8	A	0.28	8.8	A	0.28	9.0	A	0.30	9.2	A	0.29	9.0	A	0.33	9.4	A
Huron Street (WB)	SB-TR	0.24	8.5	A	0.30	9.1	A	0.24	8.5	A	0.26	8.8	A	0.39	10.1	B	0.41	10.4	B
	WB-LTR	0.31	17.3	B	0.35	17.9	B	0.27	16.7	B	0.36	18.0	B	0.37	18.4	B	0.69	28.1	C
Franklin Street (N-S) @	NB-LT	0.37	9.8	A	0.37	9.8	A	0.39	10.2	B	0.40	10.4	B	0.41	10.3	B	0.45	10.9	B
Java Street (WB)	SB-TR	0.30	9.0	A	0.36	9.7	A	0.29	9.0	A	0.31	9.3	A	0.44	10.7	B	0.45	10.9	B
	WB-LTR	0.34	18.0	B	0.30	17.4	B	0.36	18.4	B	0.34	18.1	B	0.34	18.0	B	0.34	18.1	B
Franklin Street (N-S) @	NB-LTR	0.63	14.9	B	0.60	14.0	B	0.74	19.3	B	0.72	18.4	B	0.69	16.4	B	0.70	16.9	B
Greenpoint Avenue (E-W)	SB-LTR	0.45	11.2	B	0.51	12.2	B	0.44	11.4	B	0.46	11.7	B	0.52	12.2	B	0.54	12.6	B
	EB-LTR	0.31	15.6	B	0.72	25.0	C	0.18	14.6	B	0.27	15.2	B	0.29	15.4	B	0.36	15.9	B
	WB-L	0.54	18.6	B	0.70	27.3	C	0.64	21.3	C	0.65	21.8	C	0.62	20.4	C	0.62	20.5	C
	WB-TR	0.34	15.8	B	0.31	15.5	B	0.39	16.1	B	0.46	16.7	B	0.42	16.3	B	0.72	23.1	C
Franklin Street (N-S) @	NB-LT	0.58	12.7	B	0.56	12.4	B	0.65	14.7	B	0.64	14.4	B	0.56	12.2	B	0.58	12.5	B
Noble Street (WB)	SB-TR	0.46	10.6	B	0.51	11.3	B	0.53	12.1	B	0.55	12.5	B	0.58	12.4	B	0.59	12.6	B
	WB-LTR	0.13	14.6	B	0.13	14.6	B	0.08	14.1	B	0.08	14.2	B	0.13	14.6	B	0.15	14.8	B
Franklin Street (N-S) @	NB-LTR	0.61	19.7	B	0.91	31.9	C	0.84	26.9	C	1.00	54.7	D *	0.36	7.0	A	0.52	8.7	A
Calyer Street (E-W)	SB-LTR	0.61	6.3	A	0.37	6.5	A	0.90	37.0	D	0.94	43.6	D	0.88	27.1	C	0.95	38.3	D
Franklin Street (N-S) @	NB-T	0.74	18.4	B	0.76	19.3	B	0.77	20.5	C	0.84	25.3	C	0.78	20.9	C	1.04	61.7	E *
Quay Street (EB)	SB-T	0.43	10.8	B	0.50	11.8	B	0.54	13.2	B	0.57	13.9	B	0.62	14.1	B	0.64	14.6	B
	EB-LR	0.40	19.3	B	0.50	21.7	C	0.17	15.5	B	0.20	16.1	B	0.52	22.4	C	0.55	23.3	C
Kent Avenue (N-S) @	NB-LTR	0.47	10.1	B	0.51	13.1	B	0.57	14.5	B	0.64	16.4	B	0.58	14.5	B	0.79	22.8	C
Metropolitan Avenue (E-W)	SB-LTR	0.30	7.3	A	0.39	10.1	B	0.24	8.7	A	0.24	8.7	A	0.33	9.5	A	0.34	9.6	A
	EB-LTR	0.10	37.9	D	0.10	34.0	C	0.03	33.3	C	0.03	33.3	C	0.01	33.1	C	0.01	33.1	C
	WB-L	0.06	37.4	D	0.05	33.5	C	WB-LTR 0.47	39.0	D	WB-LTR 0.48	39.1	D	WB-LTR 0.45	38.8	D	WB-LTR 0.45	38.8	D
	WB-TR	0.04	37.2	D	0.03	33.3	C												
Kent Avenue (N-S) @	NB-TR	0.31	6.1	A	0.31	6.1	A	0.48	11.1	B	0.55	12.2	B	0.32	8.6	A	0.44	9.7	A
South 3rd Street (EB)	SB-LT	0.32	6.2	A	0.41	6.9	A	0.55	12.4	B	0.61	13.6	B	0.92	33.7	C	1.00	50.6	D *
Manhattan Avenue (N-S) @	NB-TR	0.21	11.2	B	0.21	11.2	B	0.21	11.2	B	0.21	11.2	B	0.16	10.7	B	0.16	10.7	B
Clay Street (EB)	SB-LT	0.17	10.8	B	0.17	10.8	B	0.12	10.3	B	0.12	10.3	B	0.15	10.6	B	0.15	10.6	B
	EB-LTR	0.15	21.2	C	0.25	22.8	C	0.14	21.0	C	0.17	21.5	C	0.13	21.0	C	0.17	21.7	C
Manhattan Avenue (N-S) @	NB-TR	0.40	13.5	B	0.40	13.5	B	0.34	12.7	B	0.34	12.7	B	0.34	12.7	B	0.35	12.9	B
India Street (EB)	SB-LT	0.30	12.1	B	0.31	12.2	B	0.31	12.4	B	0.31	12.4	B	0.34	12.5	B	0.34	12.5	B
	EB-LTR	0.29	23.4	C	0.29	23.4	C	0.34	24.4	C	0.34	24.5	C	0.46	27.3	C	0.46	27.2	C

TABLE 16-11
2013 With Action Traffic Conditions at Signalized Intersections (Continued)

Intersection	Lane Group	AM Peak Hour							MD Peak Hour							PM Peak Hour						
		2013 No-Action			2013 With Action				2013 No-Action			2013 With Action				2013 No-Action			2013 With Action			
		V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS		V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS		V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS	
Manhattan Avenue (N-S) @ Greenpoint Avenue (E-W)	NB-LTR	0.47	19.9	B	0.47	20.0	B		0.58	23.2	C	0.59	23.3	C		0.62	23.9	C	0.63	24.3	C	
	SB-LTR	0.38	18.7	B	0.40	18.9	B		0.38	18.4	B	0.38	18.4	B		0.40	18.6	B	0.39	18.5	B	
	EB-LT	0.44	19.7	B	0.62	24.4	C		0.33	17.7	B	0.34	17.9	B		0.40	19.0	B	0.42	19.3	B	
	EB-R	0.05	14.4	B	0.06	14.5	B		0.07	14.6	B	0.07	14.6	B		0.09	14.9	B	0.09	14.8	B	
	WB-LTR	0.47	20.1	C	0.46	20.1	C		0.79	32.4	C	0.85	37.2	D		0.63	23.9	C	0.82	32.9	C	
Manhattan Avenue (N-S) @ Driggs Avenue (WB)	NB-LT	0.18	10.9	B	0.18	10.9	B		0.29	23.0	C	0.31	23.2	C		0.17	10.7	B	0.19	11.0	B	
	SB-TR	0.23	11.5	B	0.26	11.8	B		0.37	24.5	C	0.38	24.7	C		0.29	12.0	B	0.29	12.1	B	
	WB-TR	0.80	38.4	D	0.77	36.6	D		0.46	14.4	B	0.47	14.5	B		0.93	53.4	D	1.01	70.3	E	*
McGuinness Boulevard (N-S) @ Green Street (EB)	NB-TR	0.99	41.7	D	1.06	65.0	E	*	0.65	17.7	B	0.66	18.0	B		0.69	18.6	B	0.70	18.9	B	
	SB-L	0.89	98.6	F	0.89	98.6	F		0.43	20.8	C	0.44	21.8	C		0.52	26.2	C	0.54	27.3	C	
	SB-T	0.57	15.6	B	0.58	15.8	B		0.51	14.6	B	0.53	14.9	B		0.75	19.6	B	0.82	22.0	C	
	EB-LTR	0.65	44.2	D	1.15	132.6	F	*	0.65	44.8	D	0.80	54.1	D	*	0.71	47.5	D	0.89	64.1	E	*
McGuinness Boulevard (N-S) @ India Street (EB)	NB-TR	0.91	28.7	C	0.99	41.5	D		0.62	15.9	B	0.64	16.5	B		0.64	16.4	B	0.69	17.6	B	
	SB-L	0.63	55.9	E	0.63	55.9	E		0.32	15.6	B	0.34	16.6	B		0.18	12.1	B	0.20	13.0	B	
	SB-T	0.50	13.5	B	0.53	13.9	B		0.49	13.4	B	0.52	13.8	B		0.71	17.2	B	0.78	19.2	B	
	EB-LTR	0.45	39.0	D	0.45	39.1	D		0.21	33.4	C	0.21	33.4	C		0.28	34.3	C	0.27	34.3	C	
McGuinness Boulevard (N-S) @ Greenpoint Avenue (E-W)	NB-L	0.47	26.0	C	0.39	23.1	C		0.60	34.8	C	0.59	36.5	D		1.01	138.8	F	1.15	188.3	F	*
	NB-TR	0.86	27.1	C	0.89	29.3	C		0.62	18.6	B	0.64	19.1	B		0.68	20.0	B	0.71	21.1	C	
	SB-L	0.95	126.4	F	0.95	126.4	F		0.36	19.3	B	0.38	20.3	C		0.57	30.4	C	0.63	37.3	D	
	SB-TR	0.58	17.5	B	0.62	18.2	B		0.54	16.7	B	0.58	17.3	B		0.71	20.2	C	0.80	22.9	C	
	EB-LTR	0.47	33.4	C	0.66	44.3	D		0.28	29.9	C	0.30	30.4	C		0.56	35.7	D	0.58	36.3	D	
	WB-LTR	0.60	36.9	D	0.55	35.0	D		0.74	41.9	D	0.75	42.2	D		0.80	45.8	D	0.93	62.1	E	*
McGuinness Boulevard (N-S) @ Calyer Street (EB)	NB-TR	0.85	24.7	C	0.87	25.8	C		0.72	19.8	B	0.74	20.3	C		0.73	20.1	C	0.77	21.4	C	
	SB-L	0.85	98.2	F	0.85	98.2	F		0.66	36.3	D	0.68	39.2	D		0.62	32.9	C	0.69	41.3	D	
	SB-T	0.81	23.0	C	0.84	24.7	C		0.79	22.1	C	0.80	22.7	C		0.66	17.3	B	0.68	17.8	B	
	EB-LTR	0.84	57.5	E	1.16	138.2	F	*	0.64	43.5	D	0.74	48.4	D		0.96	74.8	E	1.09	110.6	F	*
McGuinness Boulevard (N-S) @ Meserole Avenue (WB)	NB-L	0.32	12.7	B	0.49	22.2	C		0.38	14.4	B	0.56	24.0	C		0.43	19.9	B	1.07	127.0	F	*
	NB-T	0.83	16.9	B	0.85	17.9	B		0.57	9.9	A	0.58	10.1	B		0.64	11.1	B	0.67	11.8	B	
	SB-TR	0.71	12.5	B	0.77	14.3	B		0.68	11.7	B	0.70	12.3	B		0.89	20.6	C	0.94	25.4	C	
	WB-LTR	0.75	54.7	D	0.78	56.8	E		0.72	54.0	D	0.78	60.5	E	*	0.92	83.8	F	1.13	147.1	F	*
McGuinness Boulevard (N-S) @ Meeker Avenue (WB)	NB-L	0.11	22.9	C	0.11	22.9	C		0.06	22.3	C	0.06	22.3	C		0.06	22.4	C	0.06	22.4	C	
	NB-T	0.50	12.6	B	0.50	12.7	B		0.38	11.2	B	0.40	11.5	B		0.39	11.4	B	0.47	12.3	B	
	SB-T	0.60	48.0	D	0.60	47.9	D		0.70	51.6	D	0.70	51.5	D		1.05	99.0	F	1.05	97.5	F	
	SB-R	0.05	39.1	D	0.05	39.1	D		0.07	39.5	D	0.07	39.5	D		0.04	39.0	D	0.05	39.1	D	
	WB-LTR	0.64	38.9	D	0.64	38.8	D		0.56	37.3	D	0.56	37.3	D		0.63	38.7	D	0.63	38.7	D	
Humboldt Street (N-S) @ Meeker Avenue (EB)	NB-TR	0.90	44.1	D	0.90	44.5	D		0.62	31.2	C	0.62	31.2	C		0.65	32.0	C	0.77	35.9	D	
	SB-LT	0.67	50.3	D	0.67	50.1	D		0.72	52.1	D	0.72	52.1	D		1.14	129.8	F	1.14	128.6	F	
	EB-LTR	0.57	37.4	D	0.57	37.4	D		0.55	37.0	D	0.55	37.0	D		0.76	42.7	D	0.76	42.7	D	

TABLE 16-11
2013 With Action Traffic Conditions at Signalized Intersections (Continued)

Intersection	Lane Group	AM Peak hour						MD Peak Hour						PM Peak Hour					
		2013 No-Action			2013 With Action			2013 No-Action			2013 With Action			2013 No-Action			2013 With Action		
		V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS
Bedford Avenue (NB) @	NB-LTR	0.24	23.7	C	0.24	23.6	C	0.37	25.7	C	0.37	25.7	C	0.38	25.7	C	0.39	25.9	C
Broadway (E-W)	EB-LT	0.10	15.4	B	0.10	15.4	B	0.11	15.5	B	0.11	15.5	B	0.13	15.7	B	0.13	15.8	B
	WB-T	0.15	15.9	B	0.14	15.8	B	0.11	15.5	B	0.13	15.7	B	0.23	16.8	B	0.28	17.4	B
Driggs Avenue (SB) @	SB-LT	0.41	9.5	A	0.41	9.5	A	0.32	8.5	A	0.33	8.6	A	0.42	9.6	A	0.45	10.0	A
North 7th Street (EB)	EB-TR	0.77	49.7	D	0.91	66.9	E *	0.77	50.3	D	0.81	54.2	D	0.55	37.7	D	0.60	39.7	D
Driggs Avenue (SB) @	SB-LTR	0.20	19.7	B	0.21	19.8	B	0.17	19.4	B	0.16	19.3	B	0.56	27.8	C	0.52	26.6	C
Metropolitan Avenue (E-W)	EB-TR	0.38	23.1	C	0.38	23.1	C	0.45	24.7	C	0.41	23.8	C	0.62	29.7	C	0.56	27.8	C
	WB-LT	0.33	22.4	C	0.33	22.3	C	0.50	27.0	C	0.50	26.8	C	0.78	41.3	D	0.75	38.5	D
Driggs Avenue (SB) @	SB-LTR	0.24	20.9	C	0.26	21.0	C	0.19	20.2	C	0.18	20.1	C	0.34	22.2	C	0.32	21.9	C
Grand Street (E-W)	EB-TR	0.13	19.7	B	0.13	19.7	B	0.13	19.7	B	0.13	19.7	B	0.15	20.0	B	0.15	20.0	B
	WB-LT	0.11	19.4	B	0.11	19.4	B	0.12	19.7	B	0.12	19.7	B	0.27	22.0	C	0.27	22.0	C
Roebling Street (N-S) @	NB-LTR	0.20	26.8	C	0.20	26.8	C	0.15	26.2	C	0.15	26.2	C	0.27	27.6	C	0.27	27.6	C
Metropolitan Avenue (E-W)	SB-LT	0.29	27.9	C	0.30	27.9	C	0.22	27.1	C	0.21	26.9	C	0.19	26.7	C	0.16	26.3	C
	SB-R	0.03	25.0	C	0.03	25.0	C	0.02	24.9	C	0.02	24.9	C	0.07	25.4	C	0.07	25.4	C
	EB-LTR	0.32	15.3	B	0.32	15.2	B	0.31	15.2	B	0.28	14.7	B	0.41	16.6	B	0.38	16.1	B
	WB-LTR	0.78	32.2	C	0.78	32.2	C	0.84	37.7	D	0.83	35.6	D	1.00	65.5	E	0.98	58.2	E
Havemeyer Street (NB) @	NB-LR	0.28	27.8	C	0.28	27.8	C	0.31	28.2	C	0.31	28.2	C	0.40	29.4	C	0.40	29.4	C
Metropolitan Avenue (E-W)	EB-T	0.34	15.6	B	0.35	15.8	B	0.32	15.2	B	0.32	15.1	B	0.46	17.5	B	0.44	17.2	B
	WB-T	0.31	14.6	B	0.30	14.6	B	0.56	19.8	B	0.57	19.8	B	0.70	23.5	C	0.71	23.9	C
Marcy Avenue (SB) @	EB-TR	0.56	39.4	D	0.58	39.8	D	0.70	44.1	D	0.69	43.7	D	0.70	42.7	D	0.67	41.7	D
Metropolitan Avenue (E-W)	WB-L	1.09	83.7	F	1.08	80.8	F	0.88	30.9	C	0.87	30.4	C	1.14	97.2	F	1.13	96.0	F
	WB-TR	0.36	0.8	A	0.34	0.8	A	0.37	0.9	A	0.36	0.9	A	0.35	0.6	A	0.36	0.6	A
Union Avenue (N-S) @	NB-LTR	0.99	85.8	F	0.99	84.5	F	0.99	86.8	F	1.01	90.9	F *	0.97	87.6	F	1.02	99.6	F *
Metropolitan Avenue (E-W)	SB-LTR	0.64	44.7	D	0.68	46.6	D	0.73	49.7	D	0.75	51.0	D	0.40	35.5	D	0.41	35.6	D
	EB-LTR	0.55	15.8	B	0.61	17.4	B	0.63	17.9	B	0.64	18.3	B	0.76	22.6	C	0.76	22.6	C
	WB-LTR	0.94	41.4	D	0.91	36.3	D	0.67	19.0	B	0.68	19.3	B	0.81	25.1	C	0.90	32.4	C
Roebling Street (N-S) @	NB-L	0.05	14.9	B	0.03	14.6	B	0.18	17.7	B	0.13	16.0	B	0.26	20.9	C	0.26	21.0	C
Broadway (E-W)	NB-R	0.08	14.9	B	0.08	14.9	B	0.04	14.5	B	0.04	14.5	B	0.05	14.6	B	0.05	14.6	B
	SB-LT	0.65	22.5	C	0.46	18.9	B	0.61	21.6	C	0.42	18.3	B	0.72	24.0	C	0.72	24.1	C
	EB-TR	0.61	38.5	D	0.61	38.5	D	0.97	77.0	E	0.97	77.0	E	1.06	100.6	F	1.06	100.6	F
	WB-LT	0.31	29.5	C	0.31	29.5	C	0.40	31.2	C	0.40	31.2	C	WB-DfL 1.19	193.9	F	WB-DfL 1.19	193.9	F
														WB-T 0.50	34.2	C	WB-T 0.50	34.2	C

ABBREVIATION:

EB-Eastbound, WB-Westbound, NB-Northbound, SB-Southbound
L-Left, T-Through, R-Right, E-W: East-West Roadway, N-S: North-South Roadway
V/C Ratio - Volume to Capacity Ratio
SEC/VEH - Seconds per Vehicle
LOS - Level of Service
*- Denotes Impacted Location

TABLE 16-12
2013 With Action Traffic Conditions at Unsignalized Intersections

		AM Peak Hour							MD Peak Hour							PM Peak Hour						
		2013 No-Action			2013 With Action				2013 No-Action			2013 With Action				2013 No-Action			2013 With Action			
Intersection	Lane Group	V/C RATIO	DELAY (SEC/VEH)	LOS		V/C RATIO	DELAY (SEC/VEH)	LOS		V/C RATIO	DELAY (SEC/VEH)	LOS		V/C RATIO	DELAY (SEC/VEH)	LOS		V/C RATIO	DELAY (SEC/VEH)	LOS		V/C RATIO	DELAY (SEC/VEH)	LOS	
West Street (N-S) @					NB-LT	0.01	7.4	A					NB-LT	0.02	7.5	A					NB-LT	0.08	7.6	A	
Freeman Street (WB)	WB-LR	0.06	9.2	A		0.12	10.1	B	WB-LR	0.07	9.1	A		0.15	10.4	B	WB-LR	0.14	9.3	A	WB-LTR	0.45	15.7	C	
West Street (N-S) @	NB-LTR	0.01	7.4	A		0.00	7.4	A		0.00	7.5	A		0.00	7.5	A		0.00	7.4	A		0.00	7.4	A	
Green Street (E-W)	SB-LTR	0.01	7.7	A		0.02	7.7	A		0.00	7.6	A		0.01	7.7	A		0.01	7.5	A		0.02	7.8	A	
	EB-LTR	0.03	9.4	A		0.34	12.8	B		0.02	9.7	A		0.13	11.5	B		0.03	10.2	B		0.18	13.0	B	
West Street (N-S) @	NB-LT		7.5	A		0.00	7.4	A		0.00	7.5	A		0.00	7.5	A		0.00	7.4	A		0.00	7.4	A	
Huron Street (E-W)	EB-LR	0.01	9.1	A		0.01	9.1	A		0.01	9.5	A		0.02	9.6	A		0.02	9.3	A		0.02	9.7	A	
	WB-LTR	0.07	10.0	A		0.09	9.7	A		0.07	9.6	A		0.10	9.4	A		0.08	10.5	B		0.21	10.5	B	
West Street (N-S) @	NB-LTR	0.01	7.5	A		0.01	7.5	A		0.00	7.6	A		0.00	7.6	A		0.01	7.6	A		0.01	7.6	A	
India Street (E-W)	SB-LTR	0.01	7.4	A		0.01	7.4	A		0.01	7.7	A		0.01	7.7	A		0.01	7.5	A		0.01	7.5	A	
	EB-LTR	0.02	10.0	A		0.02	9.8	A		0.02	10.2	B		0.02	10.1	B		0.02	10.1	B		0.02	10.0	A	
West Street (N-S) @	NB-LTR	0.01	7.5	A		0.01	7.4	A		0.01	7.7	A		0.01	7.7	A		0.00	7.6	A		0.00	7.5	A	
Kent Street (E-W)	SB-LTR	0.01	7.6	A		0.01	7.5	A		0.01	7.6	A		0.01	7.6	A		0.00	7.5	A		0.00	7.5	A	
	EB-LTR	0.02	10.4	B		0.02	10.1	B		0.01	10.0	A		0.01	9.8	A		0.02	10.1	B		0.02	9.9	A	
West Street (N-S) @	NB-LTR	0.01	7.4	A		0.01	7.4	A		0.01	7.6	A		0.01	7.6	A		0.00	7.5	A		0.00	7.5	A	
Greenpoint Avenue (E-W)	SB-LTR	0.05	7.5	A		0.04	7.8	A		0.02	7.7	A		0.01	7.8	A		0.03	7.6	A		0.01	7.7	A	
	EB-LT	0.02	11.1	B		0.02	11.8	B		0.01	11.0	B		0.01	10.8	B		0.01	12.0	B		0.01	11.6	B	
	EB-TR	0.01	10.6	B		0.01	11.5	B		0.02	9.3	A		0.02	9.2	A		0.02	10.0	A		0.02	9.9	A	
	WB-LT	0.05	11.4	B		0.11	12.3	B		0.10	11.1	B		0.17	11.4	B		0.07	12.2	B		0.30	13.7	B	
	WB-TR	0.08	9.5	A		0.05	10.0	A		0.03	9.5	A		0.01	10.1	B		0.06	9.8	A		0.07	9.8	A	
Franklin Street (N-S) @	NB-L	0.01	9.5	A		0.02	9.8	A		0.01	7.4	A		0.01	7.4	A		0.01	9.4	A		0.01	9.7	A	
Commercial Street (E-W)	NB-R	0.07	8.8	A		0.08	9.0	A		0.03	9.6	A		0.05	9.8	A		0.06	8.7	A		0.07	8.8	A	
	WB-LT	0.03	7.5	A		0.04	7.6	A		0.07	9.5	A		0.09	9.7	A		0.03	7.5	A		0.03	7.6	A	
Franklin Street (N-S) @	SB-LT	0.01	7.9	A		0.01	7.9	A		0.01	7.9	A		0.01	7.9	A		0.02	7.9	A		0.02	8.0	A	
India Street (EB)	EB-LTR	0.06	12.2	B		0.06	12.7	B		0.11	12.8	B		0.11	13.0	B		0.12	14.1	B		0.12	14.5	B	
Franklin Street (N-S) @	SB-LT	0.03	8.3	A		0.03	8.3	A		0.04	8.9	A		0.04	8.9	A		0.06	8.7	A		0.06	8.8	A	
North 14th Street (E-W)	WB-LR	0.06	11.2	B		0.06	11.1	B		0.05	13.2	B		0.05	13.4	B		0.05	14.8	B		0.06	15.7	C	
Kent Avenue (N-S) @	NB-LT	0.00	8.4	A		0.00	8.6	A		0.00	8.3	A		0.00	8.3	A		0.00	8.9	A		0.00	9.0	A	
North 12th Street (E-W)	WB-LTR	0.10	16.8	C		0.10	18.1	C		0.15	13.2	B		0.15	13.4	B		0.11	13.7	B		0.12	14.6	B	
	EB-LR	0.04	18.3	C		0.01	16.5	C		0.08	14.6	B		0.01	14.0	B		0.09	19.9	B		0.01	20.1	C	
Kent Avenue (N-S) @	SB-LT	0.01	8.4	A		0.01	8.4	A		0.05	8.7	A		0.05	8.8	A		0.04	8.4	A		0.04	8.6	A	
North 11th Street (E-W)	EB-LTR	0.17	18.1	C		0.02	16.7	C		0.08	15.9	C		0.01	16.1	C		0.09	20.1	C		0.01	20.8	C	
Kent Avenue (N-S) @	NB-LTR				NB-LTR	0.00	8.5	A					NB-LTR	0.01	8.0	A					NB-LTR	0.01	8.6	A	
North 9th Street (EB)	SB-LT	0.03	8.5	A	SB-LT	0.03	8.6	A		0.03	8.5	A	SB-LT	0.04	8.6	A		0.04	8.5	A	SB-LT	0.04	8.7	A	
					WB-LTR	0.01	14.1	B					WB-LTR	0.02	14.0	B					WB-LTR	0.03	19.0	C	
Kent Avenue (N-S) @	WB-LR	0.28	16.7	C		0.31	18.4	C	WB-L	0.05	14.8	B		0.05	15.5	C	WB-L	0.20	23.1	C	WB-L	0.23	26.9	D	
North 8th Street (WB)									WB-R	0.07	10.8	B		0.08	11.2	B	WB-R	0.03	11.3	B	WB-R	0.05	12.2	B	
Kent Avenue (N-S) @	NB-LTR	0.00	8.7	A		0.00	8.8	A		0.00	8.1	A		0.00	8.2	A		0.01	8.9	A		0.00	8.9	A	
North 7th Street (E-W)	SB-LTR	0.03	8.4	A		0.03	8.4	A		0.04	8.5	A		0.04	8.6	A		0.03	8.5	A		0.04	8.7	A	
	EB-LTR	0.01	17.3	C		0.54	34.2	D	*	0.01	14.3	B		0.17	18.5	C		0.01	20.3	C		0.39	38.4	E	
Kent Avenue (N-S) @	NB-LT	0.00	8.7	A		0.02	9.1	A		0.00	8.1	A		0.03	8.3	A		0.00	8.8	A		0.08	9.3	A	
North 6th Street (E-W)	EB-LR	0.01	16.5	C		0.01	20.5	C		0.01	13.1	B		0.01	14.9	B		0.01	19.0	B		0.02	35.3	E	
	WB-LTR	0.13	14.2	B		0.22	19.0	C		0.16	15.8	C		0.28	21.0	C		0.20	15.8	B		0.69	54.6	F	*

TABLE 16-12
2013 With Action Traffic Conditions at Unsignalized Intersections (Continued)

		AM Peak							MD Peak Hour							PM Peak Hour						
		2013 No-Action			2013 With Action				2013 No-Action			2013 With Action				2013 No-Action			2013 With Action			
Intersection	Lane Group	V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS		V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS		V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS	
Kent Avenue (N-S) @	NB-LTR	0.00	8.6	A	0.00	8.9	A			8.1	A	0.00	8.2	A		0.02	8.9	A	0.02	9.0	A	
North 5th Street (E-W)	SB-LTR	0.03	8.3	A	0.03	8.4	A		0.03	8.5	A	0.03	8.6	A		0.03	8.4	A	0.04	8.9	A	
	EB-LTR	0.03	18.4	C	0.03	21.0	C		0.02	15.7	C	0.02	16.9	C		0.04	17.9	B	0.05	21.1	C	
Kent Avenue (N-S) @	WB-L	0.15	17.8	C	0.16	20.1	C		0.08	16.4	C	0.09	17.8	C		0.15	21.5	C	0.25	29.4	D	
North 4th Street (WB)	WB-R	0.05	10.6	B	0.05	10.8	B		0.04	11.5	B	0.05	12.0	B		0.03	11.2	B	0.04	12.7	B	
Kent Avenue (N-S) @	NB-LTR	0.01	8.7	A	0.01	9.1	A		0.01	8.2	A	0.01	8.3	A		0.03	8.9	A	0.03	8.9	A	
North 3rd Street (E-W)	SB-LTR	0.03	8.2	A	0.03	8.2	A		0.01	8.4	A	0.01	8.6	A		0.03	8.4	A	0.03	8.9	A	
	EB-LTR	0.15	18.8	C	0.18	21.8	C		0.06	15.1	C	0.07	16.2	C		0.08	15.8	B	0.09	17.6	C	
Kent Avenue (N-S) @	NB-LTR	0.00	8.6	A	0.00	8.9	A		0.01	8.1	A	0.01	8.2	A		0.01	8.9	A	0.01	9.0	A	
Grand Street (E-W)	SB-LTR	0.02	8.2	A	0.02	8.2	A		0.02	8.5	A	0.02	8.7	A		0.02	8.3	A	0.02	8.8	A	
	EB-LTR	0.01	16.5	C	0.01	18.7	C		0.05	15.0	B	0.05	16.3	C		0.06	17.2	B	0.08	20.4	C	
	WB-LTR	0.13	16.4	C	0.15	18.7	C		0.08	17.4	C	0.09	19.3	C		0.20	25.3	C	0.27	36.1	E	
Kent Avenue (N-S) @	WB-L	0.04	18.0	C	0.05	20.3	C		0.03	14.9	B	0.03	15.8	C		0.02	19.2	B	0.03	22.1	C	
South 6th Street (WB)	WB-R	0.02	11.4	B	0.00	11.4	B		0.02	10.4	B	0.06	10.9	B		0.04	11.0	B	0.18	13.0	B	
Manhattan Avenue (N-S) @	SB-LT	0.01	7.8	A	0.01	7.8	A			7.6	A	0.00	7.6	A			7.6	A	0.00	7.6	A	
Eagle Street (EB)	EB-LTR	0.06	9.7	A	0.13	10.9	B	EB-LT	0.05	10.8	B	0.06	11.0	B		0.07	11.4	B	EB-LT	0.10	11.7	B
								EB-R	0.06	9.1	A	0.06	9.1	A		0.05	9.3	A	EB-R	0.06	9.3	A
Manhattan Avenue (N-S) @	SB-LT	0.03	8.0	A	0.03	8.0	A		0.03	7.8	A	0.03	7.8	A		0.04	7.9	A	0.04	7.9	A	
Green Street (EB)	EB-LTR	0.38	15.7	C	0.85	42.0	E	*	0.34	15.5	C	0.46	18.4	C		0.46	19.9	B	0.64	27.6	D	
McGuiness Boulevard (NB) @	NB-LTR	(a)	7.6	A	(a)	7.7	A		(a)	7.6	A	(a)	7.7	A		(a)	7.5	A	(a)	7.6	A	
Paidge Avenue (E-W)	EB-LT	(a)	8.0	A	(a)	8.1	A		(a)	7.6	A	(a)	7.6	A		(a)	7.7	A	(a)	7.7	A	
	WB-TR	(a)	7.3	A	(a)	7.4	A		(a)	7.3	A	(a)	7.3	A		(a)	7.6	A	(a)	7.6	A	
McGuiness Boulevard (SB) @	SB-LT	(a)	7.5	A	(a)	7.5	A		(a)	7.5	A	(a)	7.6	A		(a)	7.7	A	(a)	7.7	A	
Box Street (E-W)	EB-TR	(a)	7.7	A	(a)	7.7	A		(a)	7.2	A	(a)	7.3	A		(a)	7.5	A	(a)	7.6	A	
	WB-L	(a)	7.8	A	(a)	7.8	A		(a)	7.6	A	(a)	7.6	A		(a)	7.9	A	(a)	7.9	A	
McGuiness Boulevard (NB) @	NB-LTR	(a)	7.6	A	(a)	7.7	A		(a)	7.9	A	(a)	8.0	A		(a)	7.8	A	(a)	7.8	A	
Clay Street (E-W)	EB-LT	(a)	7.8	A	(a)	8.0	A		(a)	7.7	A	(a)	7.8	A		(a)	7.8	A	(a)	7.9	A	
McGuinness Boulevard (SB) @	SB-LT	0.01	7.3	A	0.01	7.3	A		0.00	7.3	A	0.00	7.3	A		0.00	7.3	A	0.00	7.3	A	
Clay Street (E-W)	EB-TR	0.09	9.5	A	0.14	10.1	B		0.09	9.5	A	0.11	9.7	A		0.09	9.9	A	0.11	10.1	B	
	WB-L	0.04	10.1	B		10.6	B		0.07	10.0	A	0.07	10.1	B		0.08	10.5	B	0.09	10.7	B	
Wythe Avenue (SB) @	WB-LT	0.11	10.3	B	0.14	10.4	B		0.17	10.7	B	0.18	10.8	B		0.12	10.8	B	0.14	10.9	B	
North 12th Street (WB)																						
Wythe Avenue (SB) @	SB-LT	0.01	7.4	A	0.01	7.4	A		0.02	7.4	A	0.02	7.4	A		0.03	7.4	A	0.03	7.4	A	
North 9th Street (EB)	EB-TR	0.11	12.4	B	0.13	12.7	B		0.11	12.0	B	0.12	12.2	B		0.14	12.8	B	0.17	13.2	B	
Wythe Avenue (SB) @	WB-LT	0.30	13.8	B	0.31	14.2	B		0.25	12.7	B	0.27	13.0	B		0.22	13.1	B	0.24	13.5	B	
North 8th Street (WB)							A															
Wythe Avenue (SB) @	WB-LT	0.11	11.6	B	0.10	12.3	B		0.13	11.1	B	0.15	11.6	B		0.22	12.9	B	0.31	14.5	B	
North 6th Street (WB)	WB-T	0.03	11.6	B	0.05	12.3	B		0.02	11.1	B	0.05	11.5	B		0.05	12.2	B	0.12	13.1	B	
Wythe Avenue (SB) @	WB-LT	0.12	12.0	B	0.11	12.5	B		0.12	11.4	B	0.12	11.7	B		0.10	10.8	B	0.12	11.2	B	
North 4th Street (WB)	WB-T	0.06	12.0	B	0.06	12.6	B		0.03	11.4	B	0.03	11.6	B		0.03	12.4	B	0.05	12.9	B	

TABLE 16-12
2013 With Action Traffic Conditions at Unsignalized Intersections (Continued)

Intersection	Lane Group	AM Peak Hour						MD Peak Hour						PM Peak Hour					
		2013 No-Action			2013 With Action			2013 No-Action			2013 With Action			2013 No-Action			2013 With Action		
		V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS
Berry Street (NB) @	NB-LT	0.01	7.2	A	0.01	7.2	A	0.02	7.3	A	0.02	7.3	A	0.01	7.2	A	0.01	7.2	A
North 12th Street (WB)	WB-T	0.10	11.4	B	0.15	12.0	B	0.15	11.2	B	0.16	11.3	B	0.12	11.5	B	0.14	11.6	B
	WB-R	0.19	9.8	A	0.20	10.0	A				0.09	9.0	A	0.12	9.4	A	0.13	9.4	A
Berry Street (NB) @	NB-T	(a)	8.0	A	(a)	8.1	A	(a)	7.7	A	(a)	7.7	A	(a)	7.9	A	(a)	7.9	A
North 11th Street (EB)	NB-TR	(a)	8.0	A	(a)	8.1	A	(a)	7.7	A	(a)	7.7	A	(a)	8.1	A	(a)	8.1	A
	EB-LT	(a)	8.1	A	(a)	8.1	A	(a)	8.2	A	(a)	8.2	A	(a)	8.8	A	(a)	8.8	A
Berry Street (NB) @ North 7th Street (EB)	EB-LT	0.18	11.6	B	0.27	12.4	B	0.26	11.2	B	0.28	11.4	B	0.19	11.6	B	0.23	11.7	B
Berry Street (NB) @	EB-LT	0.07	10.4	B	0.08	10.4	B	0.13	10.0	A	0.11	9.9	A	0.09	10.4	B	0.05	10.2	B
North 5th Street (EB)	EB-T	0.04	11.1	B	0.05	11.1	B	0.09	10.1	B	0.08	10.1	B	0.06	10.9	B	0.03	10.7	B
Berry Street (NB) @ North 3rd Street (EB)	EB-LT	0.08	10.1	B	0.08	10.1	B	0.10	9.4	A	0.10	9.4	A	0.12	10.4	B	0.10	10.3	B
Bedford Avenue (NB) @	NB-LT	0.04	7.3	A	0.04	7.3	A	0.04	7.3	A	0.04	7.3	A	0.03	7.3	A	0.03	7.3	A
North 8th Street (WB)	WB-TR	0.45	17.8	C	0.46	18.0	C	0.32	15.0	B	0.34	15.5	C	0.34	16.1	B	0.37	17.2	C
Bedford Avenue (NB) @	NB-LT	0.02	7.3	A	0.02	7.3	A	0.03	7.3	A	0.03	7.3	A	0.05	7.3	A	0.06	7.4	A
North 6th Street (WB)	WB-TR	0.44	15.5	C	0.43	15.0	B	0.40	16.1	C	0.44	17.1	C	0.45	18.4	B	0.66	27.8	D
Bedford Avenue (NB) @	NB-LT	0.02	7.3	A	0.01	7.3	A	0.03	7.3	A	0.03	7.3	A	0.03	7.3	A	0.03	7.3	A
North 4th Street (WB)	WB-TR	0.19	11.7	B	0.18	11.3	B	0.27	13.6	B	0.27	13.7	B	0.27	13.4	B	0.30	14.1	B
Driggs Avenue (SB) @	SB-TR	(a)	9.8	A	(a)	9.7	A	(a)	9.0	A	(a)	9.2	A	(a)	10.2	B	(a)	10.9	B
North 12th Street (WB)	WB-LT	(a)	9.0	A	(a)	9.0	A	(a)	8.9	A	(a)	9.1	A	(a)	9.0	A	(a)	9.3	A
Driggs Avenue (SB) @	SB-LT	0.01	7.3	A	0.01	7.3	A	0.21	7.3	A	0.01	7.3	A	0.01	7.2	A	0.01	7.2	A
North 9th Street (EB)	EB-TR	0.14	11.8	B	0.14	11.9	B	0.00	11.4	B	0.22	11.5	B	0.21	12.6	B	0.23	13.2	B
Driggs Avenue (SB) @	SB-LT	0.03	7.3	A	0.03	7.3	A	0.23	7.3	A	0.02	7.3	A	0.02	7.3	A	0.02	7.3	A
North 5th Street (EB)	EB-TR	0.25	12.8	B	0.26	13.0	B	0.00	11.8	B	0.21	11.7	B	0.20	12.4	B	0.15	12.1	B
Driggs Avenue (SB) @	SB-TR	0.31	11.1	B	0.32	11.1	B	0.29	10.7	B	0.28	10.7	B	0.40	12.3	B	0.38	12.1	B
South 4th Street (WB)	WB-LT	0.00	7.2	A	0.00	7.2	A	0.00	7.2	A	0.00	7.2	A	0.30	7.3	A	0.03	7.3	A

ABBREVIATION:

EB-Eastbound, WB-Westbound, NB-Northbound, SB-Southbound
L-Left, T-Through, R-Right, E-W: East-West Roadway, N-S: North-South Roadway
V/C Ratio - Volume to Capacity Ratio
SEC/VEH - Seconds per Vehicle
LOS - Level of Service
*- Denotes Impacted Location
(a) All-way stop control; no v/c ratio reported

TABLE 16-13
Summary of Impacted Intersections

Signalized Intersections		**AM**	**MD**	**PM**
Franklin Street @	Calyer Street		**X**	
	Quay Street			**X**
Kent Avenue @	South 3rd Street			**X**
Manhattan Avenue @	Driggs Avenue			**X**
McGuinness Boulevard @	Green Street	**X**	**X**	**X**
	Greenpoint Avenue			**X**
	Calyer Street	**X**		**X**
	Meserole Avenue		**X**	**X**
Driggs Avenue @	North 7th Street	**X**		
Metropolitan Avenue @	Union Avenue		**X**	**X**
Unsignalized Intersections		**AM**	**MD**	**PM**
Kent Avenue @	North 6th Street			**X**
	North 7th Street	**X**		
Manhattan Avenue @	Green Street	**X**		

X impacts to one or more movements in the peak hour.

E (64.1 seconds of delay) in the PM. This compares to LOS D in the AM, midday and PM peak periods in the No-Action with delays of 44.2, 44.8 and 47.5 seconds, respectively.

At the intersection of McGuinness Boulevard with Greenpoint Avenue, the northbound left turn movement would be impacted by project traffic in the PM peak hour, operating at LOS F unchanged from the No-Action condition; delay would increase to 188.3 seconds from 138.8 seconds with the implementation of the proposed action. The westbound approach would be impacted in the PM peak hour with conditions deteriorating to LOS E (62.1 seconds of delay) compared to LOS D (45.8 seconds of delay) in the No-Action.

The eastbound approach at McGuinness Boulevard and Calyer Street would deteriorate to LOS F with the proposed action in both the AM and PM peak hours compared to LOS E during these periods in the No-Action condition. In the AM, delay would increase to 138.2 seconds from 57.5 seconds in the No-Action; in the PM, delay would increase to 110.6 seconds from 74.8 seconds.

The northbound left turn movement from McGuinness Boulevard to Meserole Avenue would be impacted by project traffic in the PM peak hour, deteriorating to LOS F (127 seconds of delay) from a No-Action LOS B (19.9 seconds). The westbound Meserole Avenue approach would be impacted in both the midday and the PM, operating at LOS E and LOS F, respectively, during these periods compared to LOS D and

LOS F, respectively, in the No-Action. Delay would increase from 54 seconds to 60.5 seconds in the midday, and from 83.8 seconds to 147.1 seconds in the PM.

Driggs Avenue

The eastbound North 7th Street approach at Driggs Avenue would be impacted by project traffic in the AM peak hour, operating at LOS E (66.9 seconds) versus a No-Action LOS D (49.7 seconds).

Metropolitan Avenue

The northbound approach at Union and Metropolitan Avenues would be impacted by project traffic in the midday and PM peak hours, operating at LOS F during these periods both with and without the proposed action. In the midday, the approach delay would increase to 90.9 seconds from 86.8 seconds in the No-Action; in the PM peak hour, delay would deteriorate to 99.6 seconds, versus 87.6 seconds in the No-Action.

Unsignalized Intersections

As shown in Table 16-12, three unsignalized intersections analyzed as part of this study would be impacted by project generated traffic, two in the AM peak hour and a third in the PM. As in the No-Action condition, there would be no unsignalized intersections operating at or above capacity (i.e., a v/c ratio of 1.0 or greater) in the future with the proposed action.

Kent Avenue

As shown in Table 16-12, at the unsignalized intersection of Kent Avenue and North 6th Street, the westbound North 6th Street approach would be impacted by project traffic in the PM peak hour. This approach would deteriorate to LOS F compared to LOS B under No-Action conditions. Delay would increase to 54.6 seconds compared to 15.8 seconds in the No-Action. Although the eastbound approach would deteriorate from LOS B to LOS E in the PM peak hour, this approach would not be considered impacted under CEQR criteria as there would be fewer than 90 vehicles on the approach during this peak hour.

At the unsignalized intersection of Kent Avenue and North 7th Street, the eastbound North 7th Street approach would be impacted by project traffic in the AM peak hour. This approach would deteriorate to LOS D compared to LOS C under No-Action conditions. Delay would increase to 34.2 seconds compared to 17.3 seconds in the No-Action.

Manhattan Avenue

The eastbound Green Street would be impacted by project generated traffic in the AM peak hour, deteriorating to LOS E (42.0 seconds of delay) from a No-Action LOS C (15.7 seconds of delay).

Bicycle Facilities

The projected residential and retail/commercial developments are likely to generate some new commuter trips by bicycle in the peak periods, and the proposed park on Site 211 would generate recreational bicycle trips primarily during off-peak periods and on weekends. Some of this new demand would likely

utilize the on-street bike lane along Berry Street, the paths along the Pulaski and Williamsburg Bridges, and the routes recommended for bicyclists in the 2003 *NYC Cycling Map*. In addition to new bicycle demand, the proposed action would generate new vehicular and pedestrian trips on streets shared with bicycles. The proposed action would not otherwise affect existing or proposed bicycle facilities in the study area.

Parking

Off-Street Parking

Based on 2000 Census data, the overall rate of auto ownership in Brooklyn Community District 1, which encompasses the study area, is approximately 0.37 vehicles per household. As the proposed action does not include an affordable housing component and assumes the development of predominantly market-rate housing, the projected auto ownership rate for the new households is expected to be higher than the average for the area. Based on data on auto ownership by income level reported in the 2000 Census, it is estimated that the new market-rate housing that would be developed under the proposed action would have an average auto ownership rate of 0.77 vehicles per household. The 7,391 net dwelling units that would be developed with the proposed action would therefore introduce approximately 5,691 vehicles to the study area. Peak parking demand would occur during the overnight hours as is typical for residential land uses.

Under the proposed zoning, the number of accessory parking spaces required for residential uses would range from 0.4 to 0.7 spaces per dwelling unit, or an average of approximately 0.44 spaces per dwelling unit for all of the projected development sites. This estimate assumes that conversion sites provide some accessory parking (estimated as one-half of that for new construction). In addition, under the proposed zoning, retail/commercial uses would be required to provide approximately one space per 1,000 square feet.

Based on an average requirement of approximately 0.44 spaces per dwelling unit, the estimated number of accessory parking spaces that would be provided for the approximately 7,391 dwelling units developed under the proposed action would therefore total 3,244. A further 254 accessory spaces would be required under zoning for the approximately 253,698 square feet of retail/commercial space generated by the proposed action. As retail/commercial parking demand typically peaks in the midday with little overnight demand, it is anticipated that these 254 spaces would be available to accommodate overnight residential demand. Therefore, of the approximately 5,691 vehicles associated with new residential development, upwards of 3,498 would be accommodated in new accessory parking that would be required under the proposed action. The remaining residential demand – upwards of 2,193 vehicles during the peak overnight period – would utilize on-street curbside spaces along the local street system. The potential effect of this increase in overnight on-street parking demand is evaluated below in the discussion of on-street parking conditions.

As discussed above, under the proposed zoning, retail/commercial uses would be required to provide approximately one space per 1,000 square feet, or a total of approximately 254 spaces. In addition, given the fact that residential parking demand is typically lowest in the midday when retail/commercial demand peaks, it is likely that from ¼ to ⅓ (887 to 1,171) of the accessory residential spaces that would be required under the proposed action would also be available to accommodate midday retail/commercial demand. As the commercial uses that would be developed under the proposed action would be predominantly neighborhood retail and would therefore have a relatively low auto mode share (see Table

16-6), it is expected that the accessory off-street parking capacity provided under the proposed action would be sufficient to accommodate peak retail/commercial demand.

On-Street Parking

As discussed above, it is anticipated that the proposed action would introduce sufficient accessory parking capacity to accommodate peak retail/commercial demand in the weekday midday. All of the projected commercial developments would also incorporate sufficient off-street loading facilities to accommodate delivery and service vehicles. In addition, the proposed action would introduce sufficient new accessory parking to accommodate approximately 61 percent of the peak overnight demand generated by projected residential development (3,498 vehicles). The remaining 39 percent of overnight residential parking demand (upwards of 2,193 vehicles) would therefore need to be accommodated on-street throughout the study area.

It is estimated that in the future without the proposed action, weekday overnight demand for on-street parking within ¼-mile of the proposed action area would total approximately 83 percent of capacity, with approximately 3,600 parking spaces available to accommodate new demand. This would be more than sufficient to accommodate the estimated 2,193 spaces of overnight on-street parking demand that would be generated by the proposed action. Therefore, the proposed action is not expected to adversely affect on-street parking conditions in the study area.

E. SUMMARY

This chapter analyzes the effects of added traffic and parking demand from projected development sites on the Greenpoint and Williamsburg street network during the weekday AM, midday, and PM peak hours. The results of the analyses show that project demand would create significant traffic impacts (see Tables 16-11 and 16-12), with the PM peak hour having the most impacts, with nine impacted intersections (eight signalized, one unsignalized), followed by the AM and the midday, with five (three signalized, two unsignalized) and four (all signalized) impacted intersections, respectively. Chapter 22, "Mitigation," of this EIS provides a description of measures to be developed to mitigate the traffic impacts identified in this chapter.

It is expected that the accessory off-street parking capacity provided under the proposed action would be sufficient to accommodate peak retail/commercial demand in the weekday midday, and that the 2,193 spaces of overnight on-street parking demand that would be generated by the proposed action could be readily accommodated by the available on-street supply. No significant adverse impacts to study area parking conditions would therefore result from the proposed action.