

**A. INTRODUCTION**

This chapter examines the potential traffic and parking impacts of the proposed development of the Fresh Kills Park project. The analysis of the proposed park with respect to mass transit and pedestrians is discussed in Chapter 17, “Transit and Pedestrians.”

The proposed park would provide a range of public spaces and facilities for social, cultural, and physical activities. Once completed, the proposed park would be a major park facility for the City and the region. In addition to the park uses, the park is designed to provide new park road and connections to existing streets and highways, including the West Shore Expressway (Route 440) on the west and Richmond Avenue on the east (see Figure 1-16 in Chapter 1, “Project Description”). These new connections would provide access to the park as well as new public streets across the study area. For these reasons, the proposed park roads are analyzed as both access roads to the park as well as potential new traffic vehicular routes between Richmond Avenue and the West Shore Expressway.

What follows is a comprehensive analysis of the proposed project and its potential traffic impacts. It starts with a description of the analysis framework and methodology. This section is a summary of the “Transportation Planning Factors” memo that was developed as a collaborative effort of the New York City Department of Parks and Recreation (DPR), the New York City Department of City Planning (DCP), the New York City Department of Transportation (NYCDOT), and the New York State Department of Transportation (NYSDOT). The results of that effort are described in detail in the “Transportation Planning Factors” memo provided as Appendix D of this Generic Environmental Impact Statement (GEIS).

The analysis framework and methodology section is followed by a presentation of the existing traffic conditions, the future conditions without the proposed project for the two analysis years (2016 and 2036), and project impacts in the two analysis years (2016 and 2036). Where traffic impacts have been identified, they are summarized at the end of this chapter. Chapter 23, “Impact Avoidance Measures and Mitigation,” presents the mitigation for these traffic impacts.

**PRINCIPAL CONCLUSIONS***TRAVEL DEMAND*

The proposed Fresh Kills Park would add a substantial number of vehicle trips in the study area in the years 2016 and 2036. In the year 2016, a number of the first phases of the 2,163-acre Fresh Kills Park would be completed providing a mix of passive and active recreational facilities in the north and south parks. In 2016, the proposed project would generate approximately 161, 425, 318, 419, and 419 vehicles per hour during the weekday morning, afternoon, evening and weekend afternoon and evening peak hours, respectively. By the year 2036, the entire 2,163-acre Fresh Kills Park would be created resulting in approximately 381, 1408, 1585, 2005 and 1991

## **Fresh Kills Park GEIS**

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vehicles per hour during the weekday morning, midday, evening and weekend midday and evening peak hours, respectively. In addition to the vehicle trips generated by the various park components in 2016 and 2036, there would be significant volumes of diverted traffic resulting from the construction of new park roads providing new east–west connections between Richmond Avenue on the east and the West Shore Expressway on the west.

### *ROADWAY IMPROVEMENTS*

The proposed Fresh Kills Park would create a network of internal park roads consisting of ramp connections with West Shore Expressway (Route 440) and improvement to service roads, the proposed Confluence Loop Park Road, and proposed connections to Richmond Avenue at Forest Hill Road and Richmond Hill Road. The proposed park would also result in improvements to the West Shore Expressway. These improvements would include modifications within the West Shore Expressway corridor between Arthur Kill Road and Victory Boulevard to improve access to and from the park by providing new and extended service roads, additional ramps, and ramp relocations. In addition, new intersections would be created with Arden Avenue and the south leg of new Park Confluence Loop Park Road as part of the proposed improvements.

### *TRAFFIC IMPACTS*

Thirty-five (35) intersections were selected for traffic impact assessment in the study area. These include intersections along local roadways bordering the project site (e.g., Arthur Kill Road and Victory Boulevard and Richmond Avenue) that would provide access to or from the site and would also be potentially affected by project-generated and diverted traffic volumes. At a majority of the locations in the study area, traffic congestion already exists in the future without the Proposed Project conditions—particularly in the year 2036.

The analysis results show that in the 2016 Build Conditions, the weekday PM and weekend midday peak hours would have the highest number of impacted intersections with seventeen (17) and sixteen (16), respectively. The weekend PM and weekday midday would have fourteen (14) and thirteen (13) impacted intersections, respectively. The weekday AM peak hour would have the fewest number of impacted intersections under the 2016 Build conditions with eleven (11).

The analysis results also show that in the 2036 Build conditions, the weekday PM peak hour would have the highest number of impacted intersections with twenty five (25), followed by the weekend midday peak hour with twenty four (24) impacted intersections. The weekend PM peak hour would have twenty one (21) impacted intersections. The weekday AM and weekday midday peak hours would have the fewest number of impacted intersections under the Build 2036 conditions with twenty (20) each.

### *CORSIM ANALYSIS*

Analyses were performed to assess the traffic operating conditions at key northbound and southbound West Shore Expressway segments in the vicinity of existing and proposed off and on-ramps. The analysis results show that in the future 2016 and 2036 Build conditions, some segments of West Shore Expressway corridor would experience congested conditions.

### *PARKING*

In total, the proposed Fresh Kills Park would provide approximately 3,400 parking spaces by the year 2036 (including 1,873 permanent spaces and up to 1,544 overflow parking spaces). The

3,417 spaces would be sufficient to accommodate the peak parking demand from the proposed project in the future Build conditions. Since, sufficient on-site parking capacity would be available to fully accommodate all project demand in all peak periods, no significant adverse impacts to parking conditions would result from implementation of the proposed project. DPR would also continue to monitor its parking needs at Fresh Kills and address demands as individual capital projects move forward.

## **B. METHODOLOGY**

### **INTRODUCTION**

Traffic and parking analyses were conducted to evaluate the potential impacts associated with the reasonable worst-case development scenario (RWCDS). In addition, the analysis relies on the Draft Master Plan (March 2006) for certain specific program elements. These documents encompass the range of park design elements and representative park features and activities that form the proposed project for the traffic and parking analysis. As described in greater detail below, the analysis framework evaluates the potential traffic and parking impacts for specific analysis years, study areas, methodologies, and the anticipated geometric and operational changes on study area roadways, and the incremental trips and diversion resulting from the proposed project. Additional details on the methodologies presented in this traffic and parking chapter are presented in Appendix D, “Transportation Planning Factors Memorandum.”

### **STUDY AREA AND INTERSECTION SELECTION**

To assess the potential traffic impacts associated with the proposed project, a study area was determined that considered the location of the proposed park, the entrances to the park and the park roads, primary access routes to and from the site, and key intersections that are expected to be affected by project-generated trips. In total, thirty-five (35) intersections were selected for the Final GEIS (FGEIS) traffic analysis; twenty-five (25) are primary study area intersections and ten (10) are secondary study area intersections (see Figure 16-1).<sup>1</sup> These include the four (4) additional intersections incorporated for the FGEIS traffic analysis as per the directive from NYCDOT. In addition, since the intersection of Yukon Avenue and Forest Hill Road will be analyzed as part of the Staten Island Borough President (SIBP) Alternative as presented in Chapter 22, “Alternatives,” this intersection was also incorporated for detailed traffic analysis in the secondary study area. Primary study area intersections are those that are expected to be the most directly affected by the proposed project and the secondary study area intersections are not expected to be as greatly affected by project-generated traffic. In addition to these existing intersections, new intersections resulting from the proposed roadway connections were analyzed for the 2016 and 2036 Build conditions (see discussion below).

The primary study area comprises twenty-five (25) intersections and is bounded by the West Shore Expressway to the west, Richmond Avenue to the east, Travis Avenue/Victory Boulevard to the north, and Arthur Kill Road to the south. The secondary study area consists of ten (10) intersections in the broader network.

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<sup>1</sup> Figures 16-2a through 16-26b can be found in Volume III of this GEIS.

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### PRIMARY STUDY AREA

The following highway and street corridors are included in the primary study area:

- West Shore Expressway Corridor and Ramps (northbound and southbound). This includes the existing West Shore Expressway main line service road and the ramp connections to the local roads, including the southbound (west) service road intersections with Victory Boulevard, Muldoon Avenue, Arden Avenue, and Arthur Kill Road. In the northbound direction, this includes the northbound (east) service road connection with Victory Boulevard (on the north) and Arthur Kill Road (on the south).
- Richmond Avenue Corridor. This corridor includes intersections along Richmond Avenue with (from north to south) Signs Road, Draper Place, Richmond Hill Road, Yukon Avenue, Forest Hill Road, Drumgoole Road, and Arthur Kill Road.
- Arthur Kill Road Corridor. This corridor extends along Arthur Kill Road between Richmond Avenue on the east and the West Shore Expressway southbound service road on the west. It includes the intersections of Arthur Kill Road with (from east to west) Richmond Avenue, Drumgoole Road (both these intersections are also affected by traffic connected with terminus of the Korean War Veterans Memorial Parkway), Woodrow Road, Arden Avenue, Huguenot Avenue, the West Shore Expressway northbound service road, and the West Shore Expressway southbound service road. There is also a secondary intersection farther to the south at the intersection of Arthur Kill Road and Bloomingdale Road.
- Victory Boulevard Corridor. This corridor includes Victory Boulevard from the West Shore Expressway southbound service road on the west to Travis Avenue on the east. This includes the intersections of Victory Boulevard with (from west to east) the West Shore Expressway southbound service road, the West Shore Expressway northbound service road, Melvin Avenue, Wild Avenue, and Travis Avenue.
- Travis Avenue Corridor. This corridor extends along Travis Avenue from South Avenue on the west (which connects with the West Shore Expressway northbound service road) to Richmond Avenue on the east. It includes the Travis Avenue intersections (from west to east) with South Avenue, Victory Boulevard, and Richmond Avenue.
- Arden Avenue Corridor. This corridor extends along Arden Avenue from the West Shore Expressway southbound service road on the north to Woodrow Road on the south. It includes the intersections of Arden Avenue (from north to south) with the West Shore Expressway southbound service road, Arthur Kill Road, and Woodrow Road.
- Drumgoole Road (East and West) Corridor. This corridor aligns in a southwesterly direction from Richmond Avenue to Bloomingdale Road. Both of these roads run parallel and provide access to the Korean War Veterans Memorial Parkway. It includes the intersections of Richmond Avenue and Arthur Kill Road.
- Wild Avenue. This local street extends south from Glen Street, intersecting with Victory Boulevard, and turns in a southwesterly direction in the vicinity of Schmul Park to Glen Street / West Shore Expressway northbound service road on the southwest. It includes the intersections of Melvin Avenue, Roswell Avenue, and Glen Street / West Shore Expressway northbound service road.

### SECONDARY STUDY AREA

The following highway and street corridors comprise the secondary study area:

- Richmond Hill Road Corridor. This corridor extends along Richmond Hill Road from Richmond Avenue on the west to the connection with Forest Hill Road on the east.
- Forest Hill Road Corridor. This corridor extends along Forest Hill Road from Travis Avenue on the east to Richmond Avenue on the west. It includes the intersections along Forest Hill Road (from east to west) with Travis Avenue, Richmond Hill Road and Yukon Avenue. It also includes the primary study area intersection with Richmond Avenue (described above).
- Woodrow Road Corridor. This corridor extends along Woodrow Road from Bloomingdale Road on the west to Arthur Kill Road on the east. It includes the intersections along Woodrow Road (from west to east) with Bloomingdale Road, Foster Road, and Huguenot Avenue. It also includes two primary study area intersections, Woodrow Road with Arden Avenue and with Arthur Kill Road (described above).
- Amboy Road Corridor. This corridor extends along Amboy Road from Huguenot Avenue on the west to Richmond Avenue on the east. It includes the intersections along Amboy Road (from west to east) with Huguenot Avenue, Arden Avenue, and Richmond Avenue.
- Bloomingdale Road Corridor. This corridor extends along Bloomingdale Road from Arthur Kill Road on the north to Woodrow Road on the south. The traffic analysis will examine those two intersections along this corridor.

#### **ANALYSIS YEARS**

The proposed Fresh Kills Park is a long-term, phased project with a full build-out over approximately 30 years (through 2036, see Chapter 1 for a description of the project's phases). The traffic and parking analyses presented below examines the following analysis years:

- Baseline (2007) existing conditions;
- Future Without the Proposed Project Conditions (2016 and 2036). These are the baseline conditions that are modified to incorporate background growth and other projects that are expected to occur in the study area independent of the proposed project through these two analysis years. For example, this analysis includes (as described in greater detail below) various roadway improvement projects; and
- Future with the Proposed Project Conditions (2016 and 2036). This analysis examines conditions resulting from the proposed project trip generations as layered onto the No Build conditions described above. This analysis is performed to analyze the incremental impacts of the proposed project in the 2016 and 2036 analysis years on the local traffic network.

#### **BASELINE DATA COLLECTION**

Baseline traffic conditions for the study area were established as per the criteria established in the *City Environmental Quality Review (CEQR) Technical Manual*, and the capacity analysis of the study area intersections was performed using the 2000 *Highway Capacity Manual* (HCM) methodology. The baseline traffic data collection was performed at both the primary and secondary study area intersections in early May 2007 (before the Memorial Day holiday weekend). The traffic data collection for four (4) additional primary study area and one (1) additional secondary study area intersections incorporated in the FGEIS traffic analysis was performed in June and October 2008. Prior to performing these traffic counts, a comprehensive field check of the study area intersections was conducted to identify any construction activities planned for the area roadways and highways. The baseline data collection included the installation of Automatic Traffic Recorders (ATRs) at the selected locations to identify the day

of heaviest traffic activity for the weekend period (see Figure 16-1). The data obtained from the ATR counts is summarized below under “Existing Conditions.” To record the peak activity hours associated with the park usage, the weekday traffic data collection was conducted from 7:00 AM-10:00 AM (for the morning period), 12:00 PM-3:00 PM (for the midday period), and 4:00 PM-7:00 PM (for the evening period). The weekend (Saturday) data collection was conducted from 11:00 AM-3:00 PM (for the midday/afternoon period) and 4:00 PM-7:00 PM (for the evening period). In addition to the traffic counts, the traffic data collection program included conducting physical inventories of both the primary and secondary study area intersections to gather information on the number of lanes, lane widths, parking regulations, signal timing information, bus stop locations, and other general roadway characteristics.

In addition to the count program discussed above, supplemental traffic counts—including manual and ATR counts were conducted at key intersections during the summer season (mid July 2007) to identify any changes in the overall traffic patterns in the study area and to confirm the assumptions as the park and roadway design evolves. The intersections that were surveyed for the July 2007 supplemental summer counts include:

- Victory Boulevard and West Shore Expressway (Route 440) Southbound Ramps;
- Victory Boulevard and West Shore Expressway (Route 440) Northbound Ramps;
- Richmond Avenue and Richmond Hill Road;
- Richmond Avenue and Forest Hill Road;
- Richmond Avenue and Arthur Kill Road; and
- Arden Avenue and Arthur Kill Road.

The above intersections were selected for the July 2007 count program because they are expected to serve a substantial number of trips generated by the proposed Fresh Kills Park project. To identify any changes in the overall traffic levels in the study area, traffic volumes obtained from the July 2007 count program at these six intersections were compared with the baseline traffic volumes established for these intersections based on the May 2007 count program for all the five analysis periods (see Table 16-1). As presented in Table 16-1, the baseline traffic volumes developed as per the May 2007 count program would be consistently higher than the total intersection volumes obtained from the July 2007 count program. Therefore, based on this comparison, no adjustments to the baseline traffic networks were warranted, and the baseline traffic volumes established for the study area intersections as per the May 2007 count program resulted in a representative network to assess the existing traffic conditions.

## **OPERATIONAL ANALYSIS METHODOLOGY**

### *INTERSECTION ANALYSIS*

#### *Methodology*

The operation of signalized intersections within the study area was analyzed in accordance with CEQR guidelines by applying the methodologies presented in the 2000 HCM, using Highway Capacity Software (HCS) 4.1(f). This procedure evaluates signalized intersections for average delay per vehicle and level of service (LOS). LOS for signalized intersections are based on the average stopped delay per vehicle for the various lane group movements within the intersection. This delay is the basis for an LOS determination for individual lane groups (grouping of movements in one or more travel lanes), the approaches, and the overall intersection.

**Table 16-1**

**Comparison of May 2007 vs. July 2007 Traffic Volumes**

Intersection	Total Intersection Traffic Volumes		Volume Difference	
	May 2007	July 2007	May 2007 – July 2007	Percent
<b>Weekday AM Peak Period</b>				
Victory Boulevard and Rt 440 SB Ramps	955	873	82	9%
Victory Boulevard and Rt 440 NB Ramps	1,212	1,152	60	5%
Richmond Avenue and Richmond Hill Road	3,589	3,287	302	9%
Richmond Avenue and Forest Hill Road	4,470	3,217	1,253	39%
Richmond Avenue and Arthur Kill Road	3,317	2,641	676	26%
Arden Avenue and Arthur Kill Road	1,850	1,378	472	34%
<b>Weekday Midday Peak Period</b>				
Victory Boulevard and Rt 440 SB Ramps	999	896	103	11%
Victory Boulevard and Rt 440 NB Ramps	1,268	1,200	68	6%
Richmond Avenue and Richmond Hill Road	4,258	4,168	90	2%
Richmond Avenue and Forest Hill Road	4,595	4,586	9	0%
Richmond Avenue and Arthur Kill Road	3,606	3,468	138	4%
Arden Avenue and Arthur Kill Road	1,849	1,537	312	20%
<b>Weekday PM Peak Period</b>				
Victory Boulevard and Rt 440 SB Ramps	971	877	94	11%
Victory Boulevard and Rt 440 NB Ramps	1,170	1,149	21	2%
Richmond Avenue and Richmond Hill Road	4,993	4,527	466	10%
Richmond Avenue and Forest Hill Road	6,242	4,385	1,857	42%
Richmond Avenue and Arthur Kill Road	4,167	3,658	509	14%
Arden Avenue and Arthur Kill Road	2,086	1,837	249	14%
<b>Saturday Midday Peak Period</b>				
Victory Boulevard and Rt 440 SB Ramps	867	758	109	14%
Victory Boulevard and Rt 440 NB Ramps	1,133	899	234	26%
Richmond Avenue and Richmond Hill Road	5,383	5,162	221	4%
Richmond Avenue and Forest Hill Road	5,899	4,929	970	20%
Richmond Avenue and Arthur Kill Road	4,291	3,770	521	14%
Arden Avenue and Arthur Kill Road	1,875	1,704	171	10%
<b>Saturday PM Peak Period</b>				
Victory Boulevard and Rt 440 SB Ramps	711	607	104	17%
Victory Boulevard and Rt 440 NB Ramps	952	778	174	22%
Richmond Avenue and Richmond Hill Road	4,562	4,541	21	0%
Richmond Avenue and Forest Hill Road	5,597	4,323	1,274	29%
Richmond Avenue and Arthur Kill Road	3,666	3,288	378	11%
Arden Avenue and Arthur Kill Road	1,669	1,474	195	13%

Although the HCM methodology calculates a volume-to-capacity (v/c) ratio, there is no strict relationship between v/c ratios and LOS as defined in the HCM. A high v/c ratio indicates substantial traffic passing through an intersection, but a high v/c ratio combined with low average delay actually represents the most efficient condition in terms of traffic engineering standards, where an approach or the whole intersection processes traffic close to its theoretical maximum with minimal delay. However, very high v/c ratios—especially those approaching or greater than 1.0—are often correlated with a deteriorated LOS. Other important variables affecting delay include cycle length, progression, and green time. LOS A and B indicate good operating conditions with minimal delay. At LOS C, the number of vehicles stopping is higher, but congestion is still fairly light. LOS D describes a condition where congestion levels are more noticeable and individual cycle failures (a condition where motorists may have to wait for more than one green phase to clear the intersection) can occur. The midpoint of this service level (45 seconds of delay) is considered the threshold of acceptable operating conditions. Conditions at LOS E and F reflect poor service levels, and cycle failures are frequent. The HCM methodology provides for a summary of the total intersection operating conditions, by identifying the two critical movements (the worst-case from each roadway) and calculating a summary of critical v/c ratio, delay, and LOS.

For unsignalized intersections, the total delay is defined as the total elapsed time from which a vehicle stops at the end of the queue until the vehicle departs from the stop line. This includes the time required for the vehicle to travel from the last-in-queue to the first-in-queue position. The average total delay for any particular minor movement is a function of the service rate or capacity of the approach and the degree of saturation.

The LOS thresholds for unsignalized intersections are different from those for signalized intersections. The primary reason is that drivers expect different levels of performance from different types of transportation facilities. The expectation is that a signalized intersection is designed to carry higher traffic volumes than an unsignalized intersection. In addition, certain driver behavioral considerations combine to make delays at signalized intersections less onerous than at unsignalized intersections. For example, drivers at signalized intersections are able to relax during the red interval, whereas drivers on minor approaches to unsignalized intersections must remain attentive to identifying acceptable gaps and vehicle conflicts. Also, there is often much more variability in the amount of delay experienced by individual drivers at unsignalized intersections. For these reasons, the total overall scale of delay thresholds for unsignalized intersections is lower than that of signalized intersections.

The LOS/delay thresholds for signalized and unsignalized intersections, based on the HCM methodology, are presented in Table 16-2.

**Table 16-2  
Intersection Level of Service (LOS) Criteria**

LOS	Average Delay per Vehicle (seconds)	
	Signalized Intersections	Unsignalized Intersections
A	less than or equal to 10.0	less than or equal to 10.0
B	> 10.0 to 20.0	> 10.0 to 15.0
C	> 20.0 to 35.0	> 15.0 to 25.0
D	> 35.0 to 55.0	> 25.0 to 35.0
E	> 55.0 to 80.0	> 35.0 to 50.0
F	greater than 80.0	greater than 50.0

**Source:** Transportation Research Board; 2000 *Highway Capacity Manual*.

*Intersection Analysis Significant Impact Criteria*

According to the criteria presented in the *CEQR Technical Manual*, for the intersection analysis, traffic impacts are considered significant and require examination of mitigation if they result in an increase in the Build condition of 5 or more seconds of delay in a lane group over No Build levels beyond mid-LOS D. For No Build LOS E, a 4-second increase in delay is considered significant. For No Build LOS F, a 3-second increase in delay is considered significant. Also, if the No Build LOS F condition already corresponds with a delay in excess of 120 seconds, an increase of 1.0 or more seconds of delay is considered significant. In addition, impacts are considered significant if levels of service deteriorate from acceptable A, B, or C in the No Build condition to marginally unacceptable LOS D (a delay in excess of 45 seconds, the midpoint of LOS D), or unacceptable LOS E or F in the future Build condition. The above sliding scale is applicable only if the proposed project would result in five or more vehicle trips through the analysis intersection in the peak hour.

The same sliding scale of significant delays described for signalized intersections applies for unsignalized intersections. For the minor street to trigger significant impacts, at least 90 passenger car equivalents (PCEs) must be identified in the future Build condition in any peak hour.



HIGHWAY ANALYSIS

Methodology

In addition to intersection analyses, proposed as part of the park development are a number of connections with the West Shore Expressway. A comprehensive analysis of these new connections was performed using CORSIM, which is a traffic simulation model for freeway and signal systems with complex operating characteristics. This analysis incorporates operating characteristics that are beyond the capacity of the HCM and provides informative results on highway operations and new design element assessment, including:

- Roadway design needs for the new interchanges (including the number of lanes and other capacity parameters);
- Design of signal timing and phasing plans for the new intersections of ramp connections with park roadways; and
- Analysis of weaving sections on West Shore Expressway for both the on- and off-ramp connections.

The CORSIM model includes both NETSIM (for street/roadway simulation) and FRESIM (for highway/freeway simulation). In addition to incorporating peak hour traffic volumes and analysis parameters compiled from the traffic data collection, the CORSIM model considers highway segments, types of ramps, link lengths of roadways, total number of lanes for the park roadways and ramp connections, dimensions for the highway weaving sections (including the acceleration and deceleration lanes), design speed, and horizontal and vertical grade transitions. The CORSIM model reports the density in passenger cars per mile per lane (pc/mi/ln) and an average speed for the highway section or element being analyzed. The HCM LOS thresholds for merge and diverge areas are applicable for assessing the results of a CORSIM analysis and are summarized in Table 16-3.

**Table 16-3**  
**CORSIM Analysis Level of Service (LOS) Criteria**

LOS	Density (pc/mi/ln)	Characteristics
A	less than or equal to 10.0	Very low density and high free flow speed
B	> 10.0 to 20.0	Fairly low density and moderate to high free flow speed
C	> 20.0 to 28.0	Moderate density and moderate free flow speed
D	> 28.0 to 35.0	Moderate to high density and moderate to low free flow speed
E	Greater than 35.0	High density and low free flow speed; maximum density at 45.0 pc/mi/ln
F	Demand exceeds capacity	Very high density and very low free flow speed; queuing is common

**Source:** Transportation Research Board; 2000 *Highway Capacity Manual*.

Highway Analysis Significant Impact Criteria

According to *CEQR Technical Manual* criteria, highway elements—including mainline sections, weaving areas, and ramp junctions—should not deteriorate more than one-half of an LOS between No Build and Build conditions when the No Build LOS is in the D, E, or F range. Therefore, an increase in projected density of 4 pc/mi/ln or more within LOS D as a result of the proposed actions would be considered significant and require examination of mitigation. Since the value of mid-LOS D is 31.5 pc/mi/ln and the starting value of LOS E is 35 pc/mi/ln, an increase in the projected density of 2 pc/mi/ln or more from No Build LOS D to Build LOS E would be considered significant. The same criteria apply to No Build LOS E to Build LOS F.

## **NO BUILD PROJECTS AND GROWTH FACTORS**

To determine the future traffic conditions, existing (baseline 2007) volumes were increased to reflect expected growth in overall travel through and within the study area's traffic network for the 2016 and 2036 analysis years. The traffic conditions for both these analysis years were assessed with the background growth and the potential No Build projects in place, but without development of the proposed Fresh Kills Park. The growth factors used to increase the 2007 baseline traffic volumes for the future analysis years were developed in consultation with NYCDOT. The No Build projects and growth factors used in forecasting the 2016 and 2036 No Build traffic levels are discussed in detail later in this chapter under "The Future Without the Proposed Project: 2016 and 2036."

## **PROPOSED PROJECT TRAVEL DEMAND ESTIMATES: TRIP GENERATION**

The proposed park plan includes active and passive recreational uses, cultural facilities, event space and restaurants, educational programming, and ecological enhancement. The proposed uses are defined by the RWCDS (August 2006) and proposed Draft Master Plan (March 2006) and are described in greater detail in Chapter 1, "Project Description."

The proposed park is expected to be a major attraction for residents of the City and the region. The park elements considered for trip generation purposes were organized into six categories: city destination park, regional park, active recreation (including constructed surface/field and indoor sports), commercial restaurants, commercial retail, and cultural facilities. In addition, many acres of the park are natural areas and would not have facilities or be programmed for access. A description of these categories is as follows:

### *CITY DESTINATION PARK*

The proposed park would be a "destination park," and serve primarily local residents and other users in the area and includes local baseball fields, picnic areas, playgrounds, multi-use sports fields, overlooks, bird observation deck, woodlands, trails, marsh boardwalks, footpaths, and open lawns.

### *REGIONAL PARK*

The regional park would attract visitors from a larger geographical area and be more intensively used. Major elements in this use category include mountain bike trails on the South Mound, the multi-use recreational loop trails around each major park area (North, South, East and West parks), the hilltop fields, and the active recreational facilities of the central Confluence area.

### *ACTIVE RECREATION—CONSTRUCTED SURFACE/FIELD SPORTS AND INDOOR SPORTS*

This development category includes the tennis center, soccer fields, indoor gym, and indoor track and field center.

### *COMMERCIAL/RETAIL*

Included in this development category are café, market shade roof, restaurant space, and the banquet facility.

*CULTURAL*

This category includes the nature education center, outdoor classroom, eco-educational center, discovery center, exhibition hall, and the 9/11 Interpretive Center.

*EVENT SPACE*

The proposed plan includes a 2,000-seat amphitheater that would be used for events and 4 acres of event lawn at Creek Landing and 10 acres of event lawn at the Point. The 2,000-seat amphitheater is a facility similar to the Central Park summer stage and would be used for that type of programming. It should be noted that no formal program has been developed for the event lawn space.

*NON TRIP-GENERATING ELEMENTS*

It is expected that large areas of the park would be natural areas and not active trip generators. These park elements, including tidal and freshwater wetlands, the waterways of Fresh Kill, Main and Richmond Creeks, the Isle of Meadows, and the large areas of landscape enhancement on the landfill mounds, are considered natural areas of the park and would not generate trips.

*EXISTING NEW YORK CITY DEPARTMENT OF SANITATION (DSNY) OPERATIONS*

The New York City Department of Sanitation (DSNY) has existing operations on the project site associated with the operations of Fresh Kills Landfill. These operations generate truck trips associated with the current closure operations, the DSNY facilities that would remain in operation (e.g., the borough repair shops and garages at the site), and the trips for monitoring and maintenance associated with landfill closure. These trips are in the current network (2007) and are expected to decline over time as landfill closure operations are completed through 2016 and 2036. However, it is anticipated that in the future conditions, with the proposed park fully developed, DSNY would maintain operations at the site or on lands adjacent to the site. Trips generated by such DSNY operations are already accounted for in the baseline traffic counts and are reflected in the 2007 existing traffic volumes.

Trip generation assumptions (including temporal distribution, modal splits, and vehicle occupancies) pertaining to each of these categories are discussed in detail in Appendix-D, “Transportation Planning Factors Memorandum.”

**PROPOSED PROJECT ROADWAY CONNECTIONS AND TRAFFIC DIVERSIONS**

As described in greater detail in Chapter 1, “Project Description,” the proposed park would create a pattern of park roads, improvements to the Northbound and Southbound Service Roads of the West Shore Expressway, and new ramp connections to the map line of the Expressway, that, in addition to providing park access, would provide a direct connection between Richmond Avenue on the east and the West Shore Expressway (northbound and southbound lanes) on the west. Since there is currently no such direct connection, the new park roads would result in traffic diversions. It is expected that with the new park roads, traffic traveling north- and southbound along Richmond Avenue would use these roadways to access the West Shore Expressway, and the reverse travel pattern is also assumed. It is noted that for the purposes of the GEIS analysis, this diverted traffic would be in addition to the park-destined traffic. The proposed project roadway connections and traffic diversions are discussed in detail later in the chapter under “Probable Impacts of the Proposed Project: 2016 and 2036.”

## **PARKING**

As described in Chapter 1, “Project Description,” the proposed Fresh Kills Park would provide approximately 1,873 permanent and 1,544 overflow parking spaces. These parking spaces would accommodate the parking demand generated by the park patrons during both the weekday and weekend conditions. For the GEIS purposes, it is assumed that no commuter parking would be provided within the park.

## **C. EXISTING CONDITIONS**

### **DATA COLLECTION**

Existing study area traffic volumes for the weekday and weekend conditions were collected in May 2007, supplemented by a summer data collection program in July 2007. As described above, the traffic volumes for four (4) additional primary study area and one (1) additional secondary study area intersections (incorporated for the FGEIS traffic analysis) were collected in June and October 2008. The data collection program included manual turning movement counts (at all the study area intersections and roadways), vehicle classification counts and travel time runs during the weekday AM, midday, and PM, and Saturday midday and PM peak hours. In addition, Automated Traffic Recorder (ATR) counts were conducted at 20 locations for a full week to identify temporal and daily traffic variations.

The weekday AM, midday, and PM peak hours of traffic in the study area take place during approximately 8:00-9:00 AM, 2:00-3:00 PM, and 5:00-6:00 PM, respectively. The Saturday midday and PM peak hours of traffic in the study area take place during approximately 1:00-2:00 PM and 4:00-5:00 PM.

### **STREET NETWORK**

The traffic study area consists of major arterials and local streets, as well as, an approximately 5-mile segment of the West Shore Expressway (Route 440), extending from Woodrow Road to Victory Boulevard.

Inventory of the study area intersections was performed to gather information on traffic signal timing, phasing and cycle lengths, street and curbside signage, bus stop locations, pavement markings, and lane dimensions. Official signal timing data obtained from NYCDOT were incorporated into the capacity analyses. A description of the major roadway corridors that comprise the study area is presented below.

#### *WEST SHORE EXPRESSWAY*

The West Shore Expressway is a state highway under the jurisdiction of NYSDOT. It is an urban north-south limited access highway that serves the northwestern part of Staten Island. It is connected with the regional circumferential highway from Interstate 278 to the north and extends south to the Outerbridge Crossing, which provides access to New Jersey and to the Richmond Parkway providing an alternative route along the South Shore at Staten Island to Richmond Avenue and Arthur Kill Road. Within the study area, there are a number of on- and off-ramps connecting to the West Shore Expressway main line and service road. Within the study area, these ramps are located at Victory Boulevard and Arthur Kill Road. Muldoon Avenue currently has a connection with the southbound service road. It is the service road for the DSNY facility and provides truck access. The service road continues south beyond Muldoon

Avenue and intersects with Arden Avenue. Traffic volumes collected for this GEIS (May 2007) show weekday peak hour traffic volumes on the northbound West Shore Expressway ranging approximately 2,800 to 4,000 vehicles per hour (vph); the corresponding weekend peak hour range is approximately 3,200 to 3,600 vph. The weekday peak hour traffic volumes on the southbound West Shore Expressway range approximately from 2,600 to 4,000 vph, and the corresponding weekend range is approximately 3,150 to 3,600 vph.

#### *RICHMOND AVENUE*

Richmond Avenue is a major north-south City arterial, connecting Hyland Boulevard on the south to Forest Avenue on the north. Within the study area, Richmond Avenue is generally four to five lanes wide in each direction (including turning lanes) and ranges in width from 120 to 130 feet. In addition to the north-south connections, Richmond Avenue provides access to the Staten Island Mall, located due east of the project site. Intersections on Richmond Avenue are primarily signalized with varying signal cycle lengths during different times of the day. There are also a number of bus routes that operate on Richmond Avenue, including local service, limited stop service, and express service to Manhattan. These routes include the S40, S44, S55, S56, S59, S61, S94, S84, S94, X10, X11, X17, X19, and X31. Data collected for this GEIS (May 2007) show that northbound Richmond Avenue handles up to 3,250 vph during the weekday peak hours and up to 3,700 vph during the weekend peak hours; southbound Richmond Avenue handles up to 3,000 vph during the weekday peak hours and up to 2,700 vph during the weekend peak hours.

#### *VICTORY BOULEVARD*

Victory Boulevard is a major east-west City arterial, connecting to the West Shore Expressway on the west with Bay Street at the eastern end of Staten Island on the east, and also provides access to Richmond Avenue. Within the study area, Victory Boulevard is a two-way roadway, ranging in width from approximately 35 to 50 feet. A number of bus routes use Victory Boulevard, providing local service, limited stop service, and express service to Manhattan. These routes include the S61, S62, S66, S67, S91, S92, X10, X11, and X16. Based on traffic data collected for this GEIS (May 2007), Victory Boulevard serves two-way peak hour traffic volumes of up to approximately 1,200 vph on a weekday and up to approximately 1,100 vph on a weekend day.

#### *ARTHUR KILL ROAD*

Arthur Kill Road is a major two-way roadway, connecting to the Korean War Veterans Memorial Parkway on the south and terminating at Richmond Hill Road in the east after traversing a large portion of southwestern Staten Island. Within the study area, Arthur Kill Road ranges in width from 35 to 60 feet. Bus service along Arthur Kill Road includes local service, limited stop service, and express service to Manhattan. These routes include the S55, S56, S74, S84, X17, and X23. Based on traffic data collected for this GEIS (May 2007), Arthur Kill Road serves two-way weekday peak hour traffic volumes of up to approximately 2,500 vph and weekend peak hour traffic volumes of up to approximately 2,400 vph.

#### *TRAVIS AVENUE*

Travis Avenue extends from South Avenue on the west to meet southbound Richmond Avenue on the east, forming a T-intersection, before resuming its course from northbound Richmond Avenue to terminate at Forest Hill Road on the east. Travis Avenue does not provide any east-

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west through traffic access across its intersection with Richmond Avenue. Within the study area, it is a two-way street, ranging in width from 30 to 45 feet. Based on traffic data collected for this GEIS (May 2007), Travis Avenue accommodates two-way weekday and weekend peak hour traffic volumes of up to approximately 1,600 vph.

### *DRAPER PLACE*

Draper Place is a short segment of two-way roadway that aligns in a southwesterly direction, extending between Richmond Avenue and Travis Avenue before turning east to terminate at Richmond Avenue. Within the study area, Draper Place ranges in width from 35 to 45 feet. Based on traffic data collected for this GEIS (May 2007), Draper Place accommodates two-way weekday and weekend volumes of up to approximately 1,000 vph.

### *RICHMOND HILL ROAD*

Richmond Hill Road operates east-west between Richmond Avenue and Richmond Road, and provides access to the Staten Island Mall. Within the study area, Richmond Hill Road is a two-way roadway that ranges in width from approximately 35 to 55 feet. It serves two-way weekday peak hour traffic volumes of up to approximately 1,300 vph and weekend peak hour traffic volumes of up to approximately 1,450 vph.

### *DRUMGOOLE ROAD*

Drumgoole Road East and West aligns in a southwesterly direction from Richmond Avenue to Bloomingdale Road. Both of them run parallel and provide access to the Korean War Veterans Parkway. Within the study area, Drumgoole Road is a two-way roadway and ranges in width from 45 to 50 feet. It serves two-way weekday and weekend volumes of up to approximately 1,600 vph.

### *WOODROW ROAD*

Woodrow Road operates east-west from Bloomingdale Road to Huguenot Avenue, and continues in a northeasterly direction toward Arthur Kill Road. Within the study area, Woodrow Road is a two-way roadway that ranges in width from approximately 45 to 55 feet. It serves two-way weekday and weekend peak hour traffic volumes of up to approximately 500 vph.

### *SOUTH AVENUE*

South Avenue operates north-south between the West Shore Expressway and Richmond Terrace. Within the study area, South Avenue is a two way roadway with two lanes in each direction (including turn lanes) and ranges in width from 30 to 40 feet. South Avenue provides access to the Staten Island Teleport and the Staten Island Corporate Park. It accommodates two-way weekday peak hour traffic volumes of up to approximately 1,700 vph and weekend peak hour traffic volumes of up to approximately 1,300 vph.

### *BLOOMINGDALE ROAD*

Bloomingdale Road operates north-south between Arthur Kill Road and Amboy Road. It is a two-way roadway that ranges in width from 40 to 50 feet. Bloomingdale Road serves two-way weekday and weekend peak hour traffic volumes of up to approximately 1,200 vph.

ARDEN AVENUE

Arden Avenue, which operates northwest from Hylan Avenue to the West Shore Expressway Southbound Service Road, is a two-way roadway that ranges in width from 45 to 55 feet. Arden Avenue serves two-way weekday peak hour traffic volumes of up to 1,500 vph and weekend peak hour traffic volumes of up to 1,200 vph.

Table 16-4 summarizes the ranges of traffic volumes operating on the study area roadways described above.

**Table 16-4  
Corridor Volume Ranges**

Corridors	Weekday (vph)		Weekend (vph)	
	min	max	min	max
Victory Blvd – Eastbound	210	550	170	530
Victory Blvd – Westbound	210	620	110	600
Travis Avenue – Northbound/Westbound	120	520	190	499
Travis Avenue – Southbound/Eastbound	120	1060	90	1127
Arden Avenue – Eastbound/Southbound	370	850	400	620
Arden Avenue – Westbound/Northbound	40	620	80	600
Arthur Kill Road – Eastbound/Northbound	160	1270	120	1250
Arthur Kill Road – Westbound/Southbound	160	1210	130	1140
Richmond Avenue – Northbound	400	3260	490	3670
Richmond Avenue – Southbound	390	2920	500	2690
Forest Hill Road – Eastbound/Northbound	490	890	530	910
Forest Hill Road – Westbound/Southbound	420	1030	550	870
Richmond Hill Road – Eastbound	290	630	450	690
Richmond Hill Road – Westbound	450	660	590	760
Woodrow Road – Eastbound/Northbound	230	540	230	560
Woodrow Road – Westbound/Southbound	100	580	200	530
Bloomington Road – Northbound	240	600	100	620
Bloomington Road – Southbound	270	610	280	590
Huguenot Avenue – Northbound	340	700	320	640
Huguenot Avenue – Southbound	310	610	290	490
Amboy Road – Eastbound	350	810	340	890
Amboy Road – Westbound	370	800	350	870
West Shore Expy – On/Off ramp	240	570	180	480
West Shore Expy – Muldoon Ave exit	590	870	590	640
West Shore Expy – Northbound	2780	3950	3220	3560
West Shore Expy – Southbound	2580	3960	3140	3600
South Avenue – Eastbound	350	550	360	510
South Avenue – Westbound	400	1130	470	820
Drumgoole Road – Eastbound	710	1700	720	1620
Drumgoole Road – Westbound	730	940	890	960
Draper Place – Eastbound	290	350	240	390
Draper Place – Westbound	390	430	430	440

**BASELINE TRAFFIC CONDITIONS**

Tables 16-5 for the primary study area intersections and 16-6 for the secondary study area intersections summarize the HCS capacity analysis results for the study areas, for the five analysis peak hours, three weekdays and two weekends. The analysis results show that the majority of the intersection approaches/lane groups operate at acceptable levels (mid-LOS D or better). However, as also presented in the tables, nineteen (19) of the thirty-five (35) analyzed intersections have one or more congested lane groups (worse than mid-LOS D) in one or more peak hours. The AM peak hour has fifteen (15) intersections with one or more congested lane groups. There are twelve (12) intersections with one or more congested lane groups in the weekday midday peak hour, eighteen

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(18) intersections in the weekday PM peak hour, fifteen (15) intersections in the weekend midday peak hour, and twelve (12) intersections in the weekend PM peak hour. Locations with notable service constraints, i.e., those operating at worse than mid-LOS D (delay in excess of 45.0 seconds for signalized intersections and 30.0 seconds for unsignalized intersections), are described below for the major corridors.

### *WEST SHORE EXPRESSWAY SERVICE ROAD AND RAMPS CORRIDOR*

Along the West Shore Expressway Corridor, at the unsignalized intersection of the southbound service road with Arden Avenue, the westbound left-turn lane group experiences congested conditions during all analyzed peak hours.

### *RICHMOND AVENUE CORRIDOR*

Along the Richmond Avenue corridor, there are a number of intersections that currently handle high traffic volumes. In the AM peak hour, there are six (6) intersections that experience congested conditions in one or more lane groups. These include Richmond Avenue at Signs Road (eastbound right-turn and northbound left-turn movements), Richmond Hill Road (southbound left-turn movement), Arthur Kill Road (westbound through and northbound through and right-turn movements), Draper Place (eastbound approach and northbound left-turn movement), Drumgoole Road (eastbound left-right lane group) and Forest Hill Road (northbound right-turn movement).

In the weekday midday peak hour, there are five (5) intersections that experience congested conditions at one or more lane groups. These include Richmond Avenue at Signs Road (northbound left-turn and eastbound right-turn movements), Richmond Hill Road (southbound left-turn movement), Arthur Kill Road (westbound through and southbound left-turn movements), Amboy Road (eastbound through and westbound left-turn movements), and Draper Place (eastbound approach and northbound left-turn movement).

In the weekday PM peak hour, six (6) intersections experience congested conditions at one or more lane groups. Poor operation occurs at Signs Road (eastbound right-turn movement and southbound approach), Richmond Hill Road (southbound approach), Arthur Kill Road (westbound through movement and northbound and southbound approaches), Amboy Road (southbound left-turn movement), Draper Place (eastbound approach and northbound left-turn movement) and Drumgoole Road (eastbound and southbound approaches).

In the Saturday midday peak hour, six (6) intersections experience congested conditions at one or more lane groups. Poor operation occurs at Signs Road (eastbound right-turn movement and northbound left-turn movement), Richmond Hill Road (southbound left-turn movement), Arthur Kill Road (westbound through movement, northbound through-and-right-turn movement, and southbound left-turn movement), Amboy Road (eastbound and westbound left-turn, and through movements and southbound left-turn movement), Draper Place (eastbound and southbound approaches, and northbound left-turn movement) and Drumgoole Road (eastbound and northbound approaches).

In the Saturday PM peak hour, six (6) intersections experience congested conditions at one or more lane groups. Poor operating conditions occur at Signs Road (eastbound right-turn movement), Richmond Hill Road (southbound left-turn movement), Arthur Kill Road (westbound through movement and southbound left-turn movement), Amboy Road (eastbound





**Table 16-5**  
**2007 Existing Conditions Level of Service Analysis**  
**Primary Study Area Intersections**

Intersection	Weekday Peak Hours												Weekend Peak Hours							
	AM				Midday				PM				Midday				PM			
	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS
Arden Avenue and Arthur Kill Road Eastbound	L	0.40	26.6	C	L	0.44	27.1	C	L	0.51	28.9	C	L	0.46	27.7	C	L	0.51	28.8	C
	T	0.78	37.5	D	T	0.99	64.3	E	T	1.02	71.2	E	T	0.72	33.8	C	T	0.69	32.4	C
	R	0.15	21.8	C	R	0.18	22.1	C	R	0.22	22.6	C	R	0.09	20.9	C	R	0.06	20.6	C
	L	0.53	48.7	D	L	0.86	48.9	D	L	0.79	40.0	D	L	0.78	29.1	C	L	0.57	19.0	B
	TR	0.20	11.0	B	TR	0.11	10.2	B	TR	0.13	10.3	B	TR	0.19	10.9	B	TR	0.15	10.5	B
Northbound	LTR	1.05	83.6	F	LTR	0.50	26.0	C	LTR	0.66	30.1	C	LTR	0.59	28.1	C	LTR	0.53	26.5	C
	L	0.47	32.9	C	L	0.31	25.0	C	L	0.81	57.5	E	L	0.45	29.4	C	L	0.37	26.6	C
Southbound	TR	0.64	30.5	C	TR	0.53	27.1	C	TR	0.63	30.0	C	TR	0.65	30.5	C	TR	0.52	26.9	C
	Intersection	46.6	D	Intersection	40.0	D	Intersection	42.6	D	Intersection	28.3	C	Intersection	28.3	C	Intersection	25.9	C		
Arthur Kill Road and Huguenot Avenue Eastbound	LT	0.18	15.4	B	LT	0.14	9.3	A	LT	0.20	9.7	A	LT	0.20	9.7	A	LT	0.14	9.3	A
	L	0.12	15.2	B	L	0.19	10.2	B	L	0.29	11.5	B	L	0.23	10.8	B	L	0.23	10.7	B
	TR	0.48	18.9	B	TR	0.34	10.7	B	TR	0.32	10.6	B	TR	0.41	11.4	B	TR	0.31	10.5	B
	L	1.03	67.6	E	L	0.62	17.5	B	L	0.71	20.4	C	L	0.97	47.0	D	L	0.72	20.4	C
	R	0.14	15.3	B	R	0.13	12.7	B	R	0.13	12.7	B	R	0.13	12.8	B	R	0.13	12.7	B
	Intersection	37.3	D	Intersection	12.5	B	Intersection	13.4	B	Intersection	23.0	C	Intersection	13.6	B					
Drumgoole Road and Richmond Avenue Eastbound	L	1.05	69.3	E	L	0.84	33.0	C	L	1.05	67.9	E	L	1.05	70.4	E	L	1.05	69.6	E
	LR	1.05	70.7	E	LR	0.80	30.7	C	LR	1.05	69.9	E	LR	1.05	70.0	E	LR	1.05	72.0	E
	T	0.97	41.8	D	T	0.75	24.4	C	T	0.96	38.7	D	T	1.05	59.7	E	T	0.89	31.2	C
	T	0.42	17.9	B	T	0.93	35.8	D	T	1.05	60.8	E	T	0.83	27.1	C	T	0.86	29.0	C
		Intersection	51.6	D	Intersection	31.1	C	Intersection	57.5	E	Intersection	54.9	D	Intersection	46.0	D				
Arthur Kill Road and Drumgoole Road Eastbound	L	1.05	81.0	F	L	0.74	26.1	C	L	1.05	85.4	F	L	0.98	63.5	E	L	0.73	25.6	C
	TR	1.05	86.7	F	TR	0.85	52.3	D	TR	0.99	74.5	E	TR	1.05	87.5	F	TR	0.85	51.3	D
	L	0.52	21.7	C	L	0.51	19.2	B	L	0.61	23.8	C	L	0.60	21.3	C	L	0.68	22.2	C
	TR	0.47	30.8	C	TR	0.37	31.0	C	TR	0.51	33.1	C	TR	0.40	31.4	C	TR	0.36	30.9	C
	L	0.13	16.0	B	L	0.31	27.2	C	L	0.41	32.0	C	L	0.15	20.0	B	L	0.22	23.0	C
Northbound	TR	1.05	84.4	E	TR	0.74	25.5	C	TR	1.03	56.7	E	TR	1.01	52.2	D	TR	1.05	65.3	E
	LTR	0.63	21.6	C	LTR	1.05	66.0	E	LTR	1.05	60.9	E	LTR	1.03	60.4	E	LTR	1.05	63.1	E
	Intersection	53.6	D	Intersection	41.7	D	Intersection	56.8	E	Intersection	53.4	D	Intersection	52.0	D					
Arthur Kill Road and West Shore Expressway (NB) Service Road Eastbound	L	1.05	89.5	F	L	0.89	53.8	D	L	1.05	89.3	F	L	1.05	104.0	F	L	0.78	41.0	D
	T	0.26	7.1	A	T	0.35	10.8	B	T	0.45	11.8	B	T	0.41	11.4	B	T	0.32	10.6	B
	TR	0.62	10.7	B	TR	0.54	12.7	B	TR	0.55	12.8	B	TR	0.75	16.4	B	TR	0.56	12.9	B
	LTR	0.56	37.6	D	LTR	0.27	15.0	B	LTR	0.59	21.9	C	LTR	0.42	17.4	B	LTR	0.42	17.5	B
		Intersection	20.0*	C	Intersection	16.7	B	Intersection	22.9	C	Intersection	21.6	C	Intersection	15.1	B				
Arthur Kill Road and West Shore Expressway (SB) Service Road Eastbound	TR	0.43	15.4	B	TR	0.40	15.1	B	TR	0.41	15.2	B	TR	0.45	15.7	B	TR	0.31	14.3	B
	L	0.76	35.3	D	L	0.60	24.6	C	L	0.67	28.4	C	L	0.88	51.2	D	L	0.68	26.9	C
	T	0.24	13.7	B	T	0.12	12.8	B	T	0.22	13.5	B	T	0.16	13.1	B	T	0.17	13.2	B
	LTR	0.83	25.4	C	LTR	0.91	33.9	C	LTR	1.05	61.1	E	LTR	0.79	22.6	C	LTR	0.71	18.9	B
		Intersection	21.3	C	Intersection	24.2	C	Intersection	38.3	D	Intersection	23.2	C	Intersection	18.1	B				
Unsignalized Intersections																				
Muldoon Avenue and West Shore Expressway (SB) Service Road Eastbound	R	0.18	13.8	B	R	0.50	22.6	C	R	0.05	16.8	C	R	0.28	15.0*	C	R	0.02	13.0	B
Arden Avenue and West Shore Expressway (SB) Service Road Westbound	L	1.05	139.0	F	L	0.67	132.8	F	L	1.04	228.1	F	L	0.83	110.4	F	L	0.75	99.3	F
	L	0.39	8.6	A	L	0.54	10.1	B	L	0.58	10.3	B	L	0.41	8.8	A	L	0.41	8.9	A
Wild Avenue and Glen Street / Northbound Service Road Westbound	R	0.08	9.0	A	R	0.15	9.2	A	R	0.15	9.2	A	R	0.10	8.7	A	R	0.08	8.6	A
	LT	0.00	7.2	A	LT	0.00	7.2	A	LT	0.00	7.2	A	LT	0.00	7.2	A	LT	0.00	7.2	A
Wild Avenue and Roswell Avenue Northbound	LR	0.01	8.5	A	LR	0.01	8.4	A	LR	0.01	8.7	A	LR	0.00	8.2	A	LR	0.00	8.5	A
	LTR	0.08	9.1	A	LTR	0.06	9.1	A	LTR	0.08	9.1	A	LTR	0.07	8.9	A	LTR	0.06	8.9	A
Victory Boulevard and Melvin Avenue Eastbound	LT	0.00	8.4	A	LT	0.00	8.3	A	LT	0.00	8.6	A	LT	0.00	8.4	A	LT	0.00	8.2	A
	LTR	0.28	17.0	C	LTR	0.14	15.6	C	LTR	0.10	15.8	C	LTR	0.11	15.7	C	LTR	0.09	13.4	B
	LR	0.01	13.5	B	LR	0.01	15.0	B	LR	0.03	14.9	B	LR	0.03	17.1	C	LR	0.00	10.6	B
Wild Avenue and Melvin Avenue Eastbound	LTR	0.03	7.4	A	LTR	0.02	7.3	A	LTR	0.01	7.3	A	LTR	0.01	7.3	A	LTR	0.01	7.3	A
	LTR	0.01	7.2	A	LTR	0.00	7.2	A	LTR	0.01	7.3	A	LTR	0.00	7.2	A	LTR	0.00	7.2	A
	LTR	0.04	10.2	B	LTR	0.01	9.4	A	LTR	0.01	8.5	A	LTR	0.01	9.3	A	LTR	0.01	8.4	A

Notes: L = Left Turn, T = Through, R = Right Turn, DefL = Defacto Left Turn; LOS = Level of Service



and westbound left-turn and through movements), Draper Place (eastbound approach and northbound left-turn movement) and Drumgoole Road (eastbound approach).

#### *ARTHUR KILL ROAD CORRIDOR*

Along the western end of the Arthur Kill Road corridor, during the weekday AM peak hour, the westbound left-turn movement and northbound approach at Arden Avenue, the northbound left-turn movement at Huguenot Avenue, the eastbound approach and northbound through/right movement at Drumgoole Road, and the eastbound left-turn movement at the West Shore Expressway northbound service road experience congested conditions.

During the weekday midday peak hour, the eastbound through movement and the westbound left-turn movement at Arden Avenue and the eastbound through/right movement and southbound approach at Drumgoole Road experience congested conditions. In addition, the eastbound left-turn movement at West Shore Expressway northbound service road would experience congestion during the weekday midday peak hour.

During the weekday PM peak hour, the eastbound through and the southbound left-turn movements at Arden Avenue, the westbound approach at Woodrow Road, the eastbound and southbound approaches as well as the northbound through and right-turn at Drumgoole Road would experience congestion. Also, the eastbound left-turn at West Shore Expressway northbound service road and southbound approach at West Shore Expressway southbound service road would experience congestion.

During the weekend midday peak hour, the northbound left-turn movement at Huguenot Avenue as well as the eastbound approach, northbound through-right movement and southbound approach at Drumgoole Road would experience congested conditions. In addition, the eastbound left-turn movement and the westbound left-turn movement at West Shore Expressway northbound and southbound service roads, respectively, would experience congested conditions.

During the weekend PM peak hour, the westbound approach Woodrow Road as well as the eastbound and north bound through/right movements and southbound approach at Drumgoole Road experience congested conditions.

#### *VICTORY BOULEVARD CORRIDOR*

Along the Victory Boulevard corridor, the westbound left-turn movement at the West Shore Expressway southbound ramp experiences congested conditions during four of the five peak hours analyzed, the exception being the weekend PM peak hour.

At the intersection of Travis Avenue and Victory Boulevard, the northbound left-turn movement experiences congested conditions during the weekday PM peak hour.

#### *TRAVIS AVENUE CORRIDOR*

Along the Travis Avenue corridor, the northbound approach at the intersection of Travis Avenue and South Avenue experiences congested conditions during the weekday AM peak hour. In addition, the westbound left-turn movement at the intersection experiences congested conditions during the weekday and weekend PM peak hours.

*ARDEN AVENUE CORRIDOR*

Along this corridor, the intersection of Arden Avenue and Amboy Road experiences congested conditions in its southbound left-turn movement during the weekday PM and the weekend midday peak hours.

*RICHMOND HILL ROAD CORRIDOR*

Richmond Hill Road Corridor begins on the west with the busy intersection of Richmond Hill Road and Richmond Avenue. Currently, this is a T intersection with only a driveway from the local commercial use that provides a limited volume of traffic. The majority of the traffic is along the Richmond Avenue corridor (see the discussion above) with significant volumes of traffic in all peak hours. Traffic volumes in the Richmond Hill Road approach are generally higher than at Forest Hill Road (see the discussion below). Vehicles approaching the intersection from Richmond Hill Road currently turn right (northbound on Richmond Avenue) or left (southbound).

At the intersection of Forest Hill Road and Richmond Hill Road (in the secondary study area), the northbound through- and right-turn and southbound left-turn movements experience congested conditions during all five peak hours. In addition, the westbound approach experiences congestion during the weekday and weekend midday and PM peak hours. Also, the southbound through- and right-turn lane group experiences congestion during the weekday midday and PM, and weekend midday peak hours. The northbound left-turn movement would also operate unacceptably during the weekday PM peak hour.

*WOODROW ROAD CORRIDOR*

There are no major congestion areas along this corridor, with the exception of the above described intersection with Arthur Kill Road in the primary study area.

*BLOOMINGDALE ROAD CORRIDOR*

Along this corridor, intersection of Bloomingdale Road and Woodrow Road experiences congested conditions in its northbound and southbound approaches during all analysis peak hours, both weekend and weekday.

**PARKING CONDITIONS**

Parking around the project site encompasses a mix of regulations. However, the following parking conditions generally apply under the existing conditions:

- No on-street parking is allowed along the West Shore Expressway or its service roads;
- No on-street parking is allowed along Richmond Avenue;
- No on-street parking is allowed along Arthur Kill Road between Arden Avenue and Richmond Avenue (although informally on-street parking may be used);
- On-street parking does occur along Arthur Kill Road between Arden Avenue and the West Shore Expressway southbound service-road, with a particular concentration in the vicinity of the West Shore Expressway overpass where commuter parking is provided on-street;

Off-street parking in the study area is generally private (i.e., there are no public garages or parking lots operated by the City). Some of these parking facilities, however, are large, such as

the parking at the Staten Island Mall. There are also smaller parking facilities associated with nearby adjacent retail strip renters and isolated commercial uses (e.g., the retail uses at the intersection of Arden Avenue and Arthur Kill Road). There is also private off-street parking associated with residential uses.

#### **D. THE FUTURE WITHOUT THE PROPOSED PROJECT: 2016 AND 2036**

As discussed above, the future conditions without the proposed project were analyzed for two analysis years—2016 and 2036. Future conditions without the proposed project are established in order to provide the future baseline conditions onto which the trips generated by the proposed project would be added. The impact of the proposed project on local traffic conditions is assessed based on the changes in local traffic between this future without the proposed project condition and the future with the proposed project.

Future No Build traffic volumes were developed in two ways: 1) by applying a background traffic growth rate; and 2) by adding traffic to be generated by other future potential development projects that are expected to occur in the future without the proposed project. The growth factors used to increase the 2007 existing traffic volumes for the 2016 and 2036 future analysis years were developed in consultation with NYCDOT and are discussed in detail in the following sections.

##### **2016 NO BUILD ANALYSIS**

As per the *CEQR Technical Manual*, an annual background growth of 1.5 percent is recommended for Staten Island. For this analysis, a 2 percent annual background growth rate was used to project the traffic levels for the 2016 analysis year to account for smaller No Build projects in the study areas (e.g., commercial projects less than 10,000 square feet in size). The additional 0.5 percent of growth was used to address growth in the area from small and moderate sized projects. This growth factor resulted in a total of eighteen (18) percent background growth by 2016 over the 2007 existing conditions. In addition, potential No Build projects in the study area which included projects with one hundred (100) dwelling units or more and 10,000 square feet of commercial development or more yielded approximately sixteen (16) No Build projects and include the following:

- **NYCT/MTA Charleston Bus Annex.** The Charleston Bus Annex project is being undertaken by the New York City Transit (NYCT) and the New York Metropolitan Transportation Authority (MTA) at 4700 Arthur Kill Road. The project will consist of a new bus annex to be used for the storage and servicing of NYCT buses.
- **Costco.** The proposed expansion of the existing Costco retail store located across Richmond Avenue from the project site at 2975 Richmond Avenue would increase the size of the existing store to 143,082 gross square feet from approximately 121,216 gross square feet.
- **Holiday Inn Express.** Development of a 90-room Holiday Inn Express in the Travis neighborhood.
- **YMCA, South Shore-Staten Island.** An expansion of the existing facility by 26,000 gross square feet.
- **Victory Estates.** A modest-sized residential development consisting of 100 dwelling units.

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- **The Tides at Charleston.** A residential development currently under construction between Arthur Kill Road and the Arthur Kill, just north of Veterans Road West consisting of 190 residential units.
- **Kreischer Houses.** A residential development consisting of 130 residential units for seniors located at 4502 Arthur Kill Road.
- **Rockland, Beard Monahan Residential Project.** A modest-sized residential project proposed to contain 122 dwelling units.
- **Seaview Housing.** Construction of 515 residential units for seniors, including 144 units of assisted living, 371 units of independent living, 6 units of staff housing, and 234 parking spaces.
- **AME Zion Senior Housing Development.** A residential development consisting of 119 senior dwelling units.
- **The Veterans Road West Retail Center.** A retail development consisting of 136,000 gross square feet of retail and office space, as well as 454 parking spaces.
- **3035 Arthur Kill Road.** A mixed-use office and retail project slated for construction at 3035 Arthur Kill Road.
- **Page Avenue Retail.** A retail development consisting of 28,000 gross square feet of retail located at Page Avenue.
- **Lowe's.** Home improvement retail store planned for construction on a 16-acre site in the Rossville, section of Staten Island.
- **The Hampton Inn.** A new hotel containing 106 rooms currently under construction in the Staten Island Corporate Park at 1120 South Avenue.
- **West Shore Expressway/Arthur Kill Road Park-and-Ride Facility.** The park-and-ride project is being undertaken by NYSDOT. This facility will provide parking for the patrons commuting to New York City via the New York City Transit buses.

The higher background growth rate along with the traffic volumes generated by above No Build projects resulted in a conservative traffic network for the 2016 No Build conditions against which the potential impacts of the proposed project were assessed.

### 2036 NO BUILD ANALYSIS

For the 2036 No Build analysis, in accordance with NYCDOT recommendations, an annual background growth rate of 1 percent from 2017 to 2036 was used to address the general growth in traffic in the study area. Because the 2017 to 2036 time frame is one-to-three decades in the future, there are no known development projects in the study area for this time period. Therefore, no individual development projects beyond 2016 were added to the 2036 No Build analysis. Overall, the 1 percent annual background growth rate resulted in a total of 20 percent growth over the 2016 future traffic levels. (The total cumulative growth between existing and 2036 conditions conservatively resulted in a slightly higher growth rate than 38 percent plus the No Build projects discussed above.)

### ROADWAY IMPROVEMENT AND PARK -AND-RIDE EXPANSION PROJECTS

As discussed in detail in Chapter 2, "Land Use, Zoning and Public Policy," in addition to the development projects discussed above, there are a number of capital improvement projects identified for the study area through 2016. These include NYSDOT and NYCDOT sponsored

capital projects, such as improvements to the West Shore Expressway and Korean War Veterans Memorial Parkway and improvements to Arthur Kill Road, for example. Although the planning and design for these projects is currently underway, the final design funding, and the expected time of completion has not been determined by these agencies. Therefore, these roadway improvement projects were not included in the future No Build analysis. It should be noted that in assuming that these roadway improvement projects do not occur, the future 2016 and 2036 No Build traffic networks present a conservative condition, as no credit is taken for the improved traffic conditions that would result if the proposed roadway improvement projects are in place. However, roadway improvements proposed as part of the Owl Hollow Park development and the Victory Boulevard and Travis Avenue Intersection Improvement Project, Lowe's Home Improvement Store project, and the South Shore YMCA project were included in the 2016 and 2036 No Build analysis. These improvements include:

- Restriping at the eastbound and southbound approaches, and signal timing modifications at the Arthur Kill Road and Arden Avenue intersection proposed as part of the Owl Hollow project;
- Parking prohibitions at the eastbound and northbound approaches at the Arden Avenue and Woodrow Road intersection during the weekday evening peak hour are also proposed as part of the Owl Hollow project;
- Modified lane configurations (including provision of exclusive turn-lanes) and relocation of bus stop at the northbound approach proposed as part of the Victory Boulevard and Travis Avenue Intersection Improvement Project;
- Modified lane configurations at the northbound and westbound approaches, and signal timing modifications at the Bloomingdale Road and Woodrow Road intersection proposed as part of the West Shore Lowe's Home Improvement Store Project; and
- Restriping at the northbound approach at the Richmond Avenue and Amboy Road intersection proposed as part of South Shore YMCA project.

In addition to the roadway improvement projects, expansion to the Huguenot and Eltingville Park-and-Ride Facilities are planned for the study area through 2016. The expansion at the Huguenot Park-and-Ride Facility would result in over 100 additional parking spaces at the existing lot. The expansion at the Eltingville Park-and-Ride Facility would increase the capacity of the existing lot by 117 parking spaces. The planning and design for these projects is currently underway, and the expected time of completion has not been determined. Therefore, these expansion projects were not included in the future No Build analysis.

### **2016 NO BUILD TRAFFIC CONDITIONS**

Tables 16-7 for the primary study area intersections and 16-8 for the secondary study area intersections summarize the HCS capacity analysis results for the five analysis peak hours. As shown in the tables, 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 2016.

As shown in Tables 16-7 and 16-8, under the 2016 No Build conditions, of the 35 intersections, 23 intersections would experience congestion on one or more movements in the AM peak hour (compared with 15 intersections under the Existing conditions), 20 intersections in the midday peak hour (compared with 12 intersections under Existing conditions), 24 intersections in the PM peak hour (compared with 18 intersections under Existing conditions), 23 intersections in



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the Saturday midday peak hour (compared with 15 under Existing conditions), and 19 intersections in the Saturday PM peak hour (compared with 12 intersections under Existing conditions). Newly congested intersections are discussed as follows:

### *WEST SHORE EXPRESSWAY SERVICE ROAD AND RAMPS CORRIDOR*

Along the West Shore Expressway southbound service road there would be an additional congested intersection at Muldoon Avenue during the weekday midday peak hour.

### *RICHMOND AVENUE CORRIDOR*

Along the Richmond Avenue Corridor, there would be additional traffic congestion during the weekday PM and weekend midday peak hours at the intersection with Forest Hill Road. Also, there would be additional traffic congestion in the AM peak hour at the intersection with Amboy Road, and during the weekday midday peak hour at the intersection of Drumgoole Road.

### *ARTHUR KILL ROAD CORRIDOR*

Along the Arthur Kill Road Corridor, there would be additional congestion during the weekday AM, midday and weekend PM peak hours at the West Shore Expressway southbound service road intersection. Also during the AM peak hour, there would be additional congestion at the Bloomingdale Road intersection. In the midday peak hour, there would be one additional congested intersection at West Shore Expressway southbound service road. In the Saturday midday peak hour there would be two additionally congested intersections at Woodrow Road and Arden Avenue. In the Saturday PM peak hour, there would be two additionally congested intersections at West Shore Expressway northbound and southbound service roads.

### *VICTORY BOULEVARD CORRIDOR*

In the Saturday midday peak hour there would be one additional intersection experiencing congestion at Travis Avenue. In the Saturday PM peak hour, there would be two additional congested intersections at West Shore Expressway southbound ramp and Travis Avenue.

### *TRAVIS AVENUE CORRIDOR*

Along the Travis Avenue Corridor, the intersection at South Avenue would be congested during all peak hours.

### *ARDEN AVENUE CORRIDOR*

Along the Arden Avenue Corridor, there would be one additionally congested intersection at Amboy Road during the AM, midday and Saturday PM peak hours.

### *FOREST HILL ROAD CORRIDOR*

Along the Forest Hill Road Corridor, there would be one additionally congested intersection at Travis Avenue during all peak hours except AM peak hour. Also, the intersection at Yukon Avenue would be congested during the weekday PM peak hour.



Table 16-7  
 2007 Existing and 2016 No Build Conditions Level of Service Analysis  
 Primary Study Area Intersections

Intersection	Weekday AM								Weekday Midday								Weekday PM								Weekend Midday								Weekend PM							
	2007 Existing				2016 No Build				2007 Existing				2016 No Build				2007 Existing				2016 No Build				2007 Existing				2016 No Build				2007 Existing				2016 No Build			
	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS
<b>Unsignalized Intersections</b>																																								
Muldoon Avenue and West Shore Expressway (SB) Service Road Eastbound	R	0.18	13.8	B	R	0.24	16.1	C	R	0.50	22.6	C	R	0.71	38.3	E	R	0.05	16.8	C	R	0.08	20.1	C	R	0.28	15.0+	C	R	0.38	18.4	C	R	0.02	13.0	B	R	0.02	14.4	B
Arden Avenue and West Shore Expressway (SB) Service Road Westbound	L	1.05	139.0	F	L	2.78	919.9	F	L	0.67	132.8	F	L	1.49	501.2	F	L	1.04	228.1	F	L	2.44	905.7	F	L	0.83	110.4	F	L	1.55	397.1	F	L	0.75	99.3	F	L	1.38	338.3	F
Wild Avenue and Glen Street / Northbound Service Road Westbound	R	0.08	9.0	A	R	0.18	9.6	A	R	0.15	9.2	A	R	0.25	9.9	A	R	0.15	9.2	A	R	0.27	10.0	A	R	0.10	8.7	A	R	0.28	9.6	A	R	0.08	8.6	A	R	0.21	9.2	A
Wild Avenue and Roswell Avenue Westbound	LT	0.00	7.2	A	LT	0.00	7.2	A	LT	0.00	7.2	A	LT	0.00	7.2	A	LT	0.00	7.2	A	LT	0.00	7.2	A	LT	0.00	7.2	A	LT	0.00	7.2	A	LT	0.00	7.2	A	LT	0.00	7.2	A
Northbound	LR	0.01	8.5	A	LR	0.01	8.6	A	LR	0.01	8.4	A	LR	0.01	8.6	A	LR	0.01	8.7	A	LR	0.01	9.3	A	LR	0.00	8.7	A	LR	0.00	10.1	B	LR	0.00	8.5	A	LR	0.01	8.8	A
Southbound	LTR	0.08	9.1	A	LTR	0.13	9.4	A	LTR	0.08	9.1	A	LTR	0.22	9.9	A	LTR	0.09	9.1	A	LTR	0.07	9.8	A	LTR	0.07	8.9	A	LTR	0.25	10.0+	B	LTR	0.06	8.9	A	LTR	0.20	9.7	A
Victory Boulevard and Melvin Avenue Eastbound	LT	0.00	8.4	A	LT	0.00	8.7	A	LT	0.00	8.3	A	LT	0.00	8.5	A	LT	0.00	8.6	A	LT	0.00	8.9	A	LT	0.00	8.4	A	LT	0.00	8.6	A	LT	0.00	8.2	A	LT	0.00	8.5	A
Northbound	LTR	0.28	17.0	C	LTR	0.42	24.2	C	LTR	0.14	15.6	C	LTR	0.21	19.9	C	LTR	0.10	15.8	C	LTR	0.17	20.8	C	LTR	0.11	15.7	C	LTR	0.18	21.0	C	LTR	0.09	13.4	B	LTR	0.13	16.1	C
Southbound	LR	0.01	13.5	B	LR	0.01	15.2	C	LR	0.01	15.0	B	LR	0.02	17.2	C	LR	0.03	14.9	B	LR	0.05	19.2	C	LR	0.03	17.1	C	LR	0.05	22.1	C	LR	0.00	10.6	B	LR	0.01	11.2	B
Wild Avenue and Melvin Avenue Eastbound	LTR	0.03	7.4	A	LTR	0.04	7.5	A	LTR	0.02	7.3	A	LTR	0.02	7.5	A	LTR	0.01	7.3	A	LTR	0.01	7.4	A	LTR	0.01	7.3	A	LTR	0.01	7.4	A	LTR	0.01	7.3	A	LTR	0.01	7.4	A
Westbound	LTR	0.01	7.2	A	LTR	0.01	7.2	A	LTR	0.00	7.2	A	LTR	0.01	7.3	A	LTR	0.01	7.3	A	LTR	0.01	7.3	A	LTR	0.01	7.2	A	LTR	0.01	7.2	A	LTR	0.01	7.2	A	LTR	0.00	7.2	A
Northbound	LTR	0.04	10.2	B	LTR	0.06	10.6	B	LTR	0.01	9.4	A	LTR	0.01	9.8	A	LTR	0.01	9.5	A	LTR	0.01	9.9	A	LTR	0.01	9.3	A	LTR	0.01	9.8	A	LTR	0.01	9.4	A	LTR	0.01	9.8	A

**Notes:** L = Left Turn, T = Through, R = Right Turn, DefL = Defacto Left Turn; LOS = Level of Service.  
 \* implies that delays are in excess of 1000 seconds



*AMBOY ROAD CORRIDOR*

Along the Amboy Road Corridor, there would be one additionally congested intersection at Huguenot Avenue during the weekday AM and PM, and Saturday midday peak hours.

*WOODROW ROAD CORRIDOR*

Along the Woodrow Road corridor there would be three additionally congested intersections. The first intersection would be at Huguenot Avenue during all five peak hours. The second intersection is at Arden Avenue during the weekday AM and PM peak hours. The last intersection is at Foster Road during weekday AM and midday peak hours.

**2036 NO BUILD TRAFFIC CONDITIONS**

Tables 16-9 for the primary study area intersections and 16-10 for the secondary study area intersections summarize the HCS capacity analysis results for the five analysis peak hours. As shown in the tables, with continued growth in travel demand, levels of service at intersections that were congested under existing conditions would decline, and there would be additional locations that would become congested in one or more peak hours by 2036. As shown in Tables 16-9 and 16-10, under the 2036 No Build conditions, of the 35 intersections, 28 intersections would experience congestion on one or more movements in the AM peak hour (compared with 15 intersections under Existing conditions), 25 intersections in the midday peak hour (compared with 12 intersections under Existing conditions), 27 intersections in the PM peak hour (compared with 18 intersections under Existing conditions), 27 intersections in the Saturday midday peak hour (compared with 15 under Existing conditions), and 25 intersections in the Saturday PM peak hour (compared with 12 intersections under Existing conditions). Newly congested intersections are discussed as follows:

*WEST SHORE EXPRESSWAY SERVICE ROAD AND RAMPS CORRIDOR*

Along the West Shore Expressway southbound service road there would be an additional congested intersection at Muldoon Avenue during the weekday midday peak hour.

*RICHMOND AVENUE CORRIDOR*

Along the Richmond Avenue Corridor, there would be two additionally congested intersections in the AM peak hour at Yukon Avenue, and Amboy Road. During the weekday midday peak hour there would be two additionally congested intersections at Drumgoole Road and Forest Hill Road. During the weekday PM peak hour there would be one additionally congested intersection at Forest Hill Road. In the Saturday midday and PM peak hours, there would be two additionally congested intersections at Yukon Avenue and Forest Hill Road.

*ARTHUR KILL ROAD CORRIDOR*

Along the Arthur Kill Road Corridor, there would be three additionally congested intersections in the AM peak hour at Woodrow Road, West Shore Expressway southbound service road and Bloomingdale Road. In the midday peak hour, there would be two additionally congested intersections at Woodrow Road and West Shore Expressway southbound service road. In the PM peak hour, there would be two additionally congested intersections at Huguenot Avenue and Bloomingdale Road. In the Saturday midday peak hour there would be two additionally congested intersections at Woodrow Road and Arden Avenue. In the Saturday PM peak hour,

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there would be four additionally congested intersections at Huguenot Avenue, Arden Avenue, and West Shore Expressway northbound and southbound service roads.

### *VICTORY BOULEVARD CORRIDOR*

Along the Victory Boulevard Corridor, there would be two additionally congested intersections at Travis Avenue and at Melvin Avenue during weekday AM peak hour. During the weekday midday peak hour there would be one additionally congested intersection at Travis Avenue. During the Saturday midday peak hour there would be one additionally congested intersection at Travis Avenue. During the Saturday PM peak hour, there would be two newly congested intersections at West Shore Expressway southbound service road and Travis Avenue.

### TRAVIS AVENUE CORRIDOR

Along the Travis Avenue Corridor, the intersection at South Avenue would be congested during all peak hours.

### *ARDEN AVENUE CORRIDOR*

Along the Arden Avenue Corridor, there would be one additionally congested intersection at Amboy Road during the weekday AM and midday, and Saturday PM peak hours.

### *FOREST HILL ROAD CORRIDOR*

Along the Forest Hill Road Corridor, there would be two additionally congested intersections at Travis Avenue and at Yukon Avenue. The intersection at Travis Avenue would be congested during all peak hours except the weekday AM peak hour. The intersection at Yukon Avenue would be congested during all peak hours except the weekend PM peak hour.

### *AMBOY ROAD CORRIDOR*

Along the Amboy Road Corridor, there would be one additionally congested intersection at Huguenot Avenue during all peak hours.

### *WOODROW ROAD CORRIDOR*

Along the Woodrow Road Corridor, there would be three additionally congested intersections. The first intersection is at Arden Avenue during all peak hours, except for the weekday midday peak hour. The second intersection is at Huguenot Avenue during all the peak hours. The third intersection is at Foster Road during all peak hours except the weekend PM peak hour.

## **E. THE FUTURE WITH THE PROPOSED PROJECT: 2016 AND 2036**

This section provides an analysis of traffic and parking conditions in the future with the proposed project (the Build condition). As described in detail in Chapter 1, “Project Description,” the project site is an approximately 2,163-acre property located in the southwest portion of Staten Island. The eastern boundary of project site is Richmond Avenue, the southern boundary is Arthur Kill Road, the northern portion of the project site includes a portion of the William T. Davis Wildlife Refuge, whereas the Arthur Kill shoreline forms the site’s western boundary. In addition, the West Shore Expressway (New York State Highway Route 440), which is under the jurisdiction of NYSDOT, bisects the project site. The proposed Fresh Kills Park is a







**Table 16-10**  
**2007 Existing and 2036 No Build Conditions Level of Service Analysis**  
**Secondary Study Area Intersections**

Intersection	Weekday AM				Weekday Midday				Weekday PM				Weekend Midday				Weekend PM																							
	2007 Existing		2036 No Build		2007 Existing		2036 No Build		2007 Existing		2036 No Build		2007 Existing		2036 No Build		2007 Existing		2036 No Build																					
	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS																
<b>Signalized Intersections</b>																																								
Travis Avenue and Forest Hill Road																																								
Eastbound	LR	0.50	24.0	C	LR	0.72	30.2	C	LR	0.24	21.3	C	LR	0.35	22.3	C	LR	0.27	21.6	C	LR	0.42	23.1	C	LR	0.26	21.5	C	LR	0.28	21.6	C	LR	0.41	23.0	C				
Northbound	LT	0.64	17.7	B	LT	0.97	43.2	D	LT	0.71	19.8	B	LT	1.25	143.5	F	LT	0.76	21.9	C	LT	1.46	235.2	F	LT	1.58	288.9	F	LT	0.80	23.9	C	LT	1.61	301.6	F				
Southbound	TR	0.54	15.1	B	TR	0.85	26.2	C	TR	0.86	26.5	C	TR	1.29	159.0	F	TR	0.99	45.0	D	TR	1.49	247.3	F	TR	1.26	145.3	F	TR	0.76	20.8	C	TR	1.15	98.4	F				
	Intersection	17.9	B		Intersection	33.9	C		Intersection	23.5	C		Intersection	142.7	F		Intersection	34.5	C		Intersection	224.0	F		Intersection	198.7	F		Intersection	22.2	C		Intersection	177.5	F					
Richmond Hill Road and Forest Hill Road																																								
Eastbound	L	0.23	14.6	B	L	0.42	20.1	C	L	0.46	17.5	B	L	0.78	33.1	C	L	0.44	17.5	B	L	0.74	30.8	C	L	0.49	18.1	B	L	0.79	30.8	C	L	0.47	17.7	B	L	0.77	30.5	C
Westbound	TR	0.48	14.6	B	TR	0.68	19.2	B	TR	0.50	14.7	B	TR	0.70	19.6	B	TR	0.55	15.7	B	TR	0.78	22.6	C	TR	0.54	15.5	B	TR	0.77	22.1	C	TR	0.55	15.6	B	TR	0.78	22.5	C
Northbound	LTR	0.90	43.8	D	LTR	1.34	192.0	F	LTR	0.91	45.0	D	LTR	1.39	213.2	F	LTR	1.00	61.3	E	LTR	1.58	298.0	F	LTR	1.05	75.7	E	LTR	1.73	362.0	F	LTR	1.03	72.4	E	LTR	1.71	354.8	F
Southbound	L	0.13	21.5	C	L	0.49	43.0	D	L	0.34	32.9	C	L	0.49	43.0	D	L	0.52	46.1	D	L	0.75	73.5	E	L	0.13	23.4	C	L	0.17	25.3	C	L	0.30	27.9	C	L	0.64	57.7	E
	TR	0.91	48.4	D	TR	1.34	195.6	F	TR	0.96	57.5	E	TR	1.43	232.1	F	TR	1.01	69.4	E	TR	1.52	271.7	F	TR	0.95	55.2	E	TR	1.42	229.2	F	TR	0.92	50.8	D	TR	1.39	214.3	F
	L	1.05	120.7	F	L	1.83	435.7	F	L	1.05	116.9	F	L	1.51	289.7	F	L	1.05	126.2	F	L	1.49	288.0	F	L	1.05	136.2	F	L	1.59	340.5	F	L	1.05	133.7	F	L	1.82	440.8	F
	TR	0.64	30.0	C	TR	1.01	68.9	E	TR	1.00	66.5	E	TR	1.51	267.4	F	TR	1.02	71.1	E	TR	1.54	279.5	F	TR	1.04	78.2	E	TR	1.58	299.0	F	TR	0.86	42.7	D	TR	1.32	184.3	F
	Intersection	40.6	D		Intersection	144.5	F		Intersection	49.5	D		Intersection	186.6	F		Intersection	56.7	E		Intersection	216.4	F		Intersection	57.7	E		Intersection	225.0	F		Intersection	47.6	D		Intersection	195.1	F	
Arthur Kill Road and Bloomingdale Road																																								
Eastbound	TR	0.45	16.2	B	TR	0.68	21.1	C	TR	0.49	16.8	B	TR	0.73	22.9	C	TR	0.72	22.3	C	TR	1.07	71.6	E	TR	0.57	18.2	B	TR	0.86	30.1	C	TR	0.38	15.1	B	TR	0.60	18.7	B
Westbound	LT	0.28	14.2	B	LT	0.48	17.5	B	LT	0.31	14.5	B	LT	0.63	21.7	C	LT	0.28	14.1	B	LT	0.64	22.7	C	LT	0.28	14.2	B	LT	0.66	23.6	C	LT	0.20	13.1	B	LT	0.39	15.6	B
Northbound	LR	0.83	39.5	D	LR	1.19	130.1	F	LR	0.57	26.2	C	LR	0.82	38.3	D	LR	0.51	24.6	C	LR	0.73	32.2	C	LR	0.40	22.2	C	LR	0.57	26.1	C	LR	0.21	19.2	B	LR	0.31	20.6	C
	Intersection	25.6	C		Intersection	63.7	E		Intersection	19.2	B		Intersection	27.1	C		Intersection	21.5	C		Intersection	53.8	D		Intersection	18.3	B		Intersection	27.8	C		Intersection	15.4	B		Intersection	18.2	B	
Woodrow Road and Bloomingdale Road																																								
Eastbound	LTR	0.03	32.5	C	LTR	0.11	41.4	D	LTR	0.01	32.2	C	LTR	0.04	40.1	D	LTR	0.02	32.4	C	LTR	0.19	43.4	D	LTR	0.04	32.6	C	LTR	0.26	45.4	D	LTR	0.03	32.4	C	LTR	0.19	43.2	D
Westbound	LTR	0.57	32.3	C	LTR	0.59	37.7	D	LTR	0.57	32.3	C	LTR	0.62	38.8	D	LTR	0.56	31.9	C	LTR	0.83	51.2	D	LTR	0.58	32.3	C	LTR	0.80	48.9	D	LTR	0.50	30.2	C	LTR	0.71	42.5	D
Northbound	LTR	0.96	54.4	D	LTR	1.97	473.3	F	LTR	0.92	47.5	D	LTR	1.04	68.9	E	LTR	1.05	79.0	E	LTR	1.13	102.1	F	LTR	1.05	78.1	E	LTR	1.29	168.9	F	LTR	1.00	62.6	E	LTR	1.23	141.3	F
Southbound	LTR	1.05	83.3	F	LTR	1.89	426.5	F	LTR	1.02	75.8	E	LTR	2.40	659.7	F	LTR	1.05	81.8	F	LTR	2.52	709.3	F	LTR	1.05	83.0	F	LTR	3.04	944.3	F	LTR	0.93	53.3	D	LTR	3.10	972.3	F
	Intersection	60.2	E		Intersection	382.9	F		Intersection	54.2	D		Intersection	296.6	F		Intersection	71.0	E		Intersection	329.7	F		Intersection	70.8	E		Intersection	447.0	F		Intersection	53.2	D		Intersection	452.1	F	
Woodrow Road and Foster Road																																								
Eastbound	TR	0.55	12.1	B	TR	0.85	21.7	C	TR	0.47	10.8	B	TR	0.72	15.8	B	TR	0.51	11.4	B	TR	0.80	18.2	B	TR	0.53	11.6	B	TR	0.84	20.6	C	TR	0.41	10.1	B	TR	0.66	13.9	B
Westbound	LT	0.66	15.9	B	LT	1.52	262.9	F	LT	0.55	12.6	B	LT	1.16	104.6	F	LT	0.62	14.0	B	LT	1.39	201.2	F	LT	0.53	12.2	B	LT	1.18	114.4	F	LT	0.45	10.9	B	LT	0.97	43.1	D
Northbound	LR	0.63	23.9	C	LR	0.91	44.4	D	LR	0.78	30.7	C	LR	1.12	99.5	F	LR	0.72	27.4	C	LR	1.04	73.5	E	LR	0.58	22.4	C	LR	0.86	37.2	D	LR	0.51	20.7	C	LR	0.75	29.2	C
	Intersection	16.1	B		Intersection	104.8	F		Intersection	17.1	B		Intersection	69.0	E		Intersection	16.3	B		Intersection	96.9	F		Intersection	14.1	B		Intersection	56.6	E		Intersection	12.8	B		Intersection	28.2	C	
Woodrow Road and Huguenot Avenue																																								
Eastbound	L	0.30	13.6	B	L	0.52	18.4	B	L	0.31	13.5	B	L	0.50	17.7	B	L	0.21	12.2	B	L	0.37	15.0	B	L	0.23	12.5	B	L	0.41	15.9	B	L	0.22	12.4	B	L	0.37	14.8	B
Westbound	TR	0.53	15.9	B	TR	0.79	24.4	C	TR	0.48	15.2	B	TR	0.73	21.4	C	TR	0.53	16.0	B	TR	0.81	25.5	C	TR	0.51	15.5	B	TR	0.79	24.3	C	TR	0.42	14.2	B	TR	0.67	19.1	B
Northbound	T	0.30	12.8	B	T	0.43	14.3	B	T	0.27	12.3	B	T	0.38	13.6	B	T	0.30	12.7	B	T	0.45	14.5	B	T	0.30	12.7	B	T	0.45	14.5	B	T	0.26	12.3	B	T	0.39	13.7	B
Southbound	R	0.32	13.3	B	R	0.45	15.3	B	R	0.09	10.9	B	R	0.12	11.2	B	R	0.16	11.5	B	R	0.22	12.1	B	R	0.07	10.8	B	R	0.11	11.0	B	R	0.08	10.8	B	R	0.11	11.1	B
	LTR	0.78	24.2	C	LTR	1.45	232.5	F	LTR	0.76	23.7	C	LTR	1.38	202.9	F	LTR	0.87	33.3	C	LTR	1.76	368.4	F	LTR	0.71	21.9	C	LTR	1.38	202.1	F	LTR	0.66	19.6	B	LTR	1.35	187.1	F
	LTR	0.61	17.8	B	LTR	0.92	36.0	D	LTR	0.53	16.0	B	LTR	0.77	23.6	C	LTR	0.66	18.9	B	LTR	1.00	53.6	D	LTR	0.60	17.6	B	LTR	0.89	33.8	C	LTR	0.48	15.2	B	LTR	0.71	20.8	C
	Intersection	17.8	B		Intersection	83.2	F		Intersection	17.1	B		Intersection	72.3	E		Intersection	20.5	C		Intersection	126.4	F		Intersection	16.8	B		Intersection	71.4	E		Intersection	15.4	B		Intersection	68.2	E	
Amboy Road and Huguenot Avenue																																								
Eastbound	L	0.47	19.5	B	L	1.23	162.6	F	L	0.34	16.0	B	L	0.79	41.5	D	L	0.31	15.8	B	L	0.94	76.3	E	L	0.63	26.2	C	L	1.92	460.3	F	L	0.26	14.6	B	L	0.74	36.8	D
Westbound	TR	0.41	15.6	B	TR	0.59	18.8	B	TR	0.32	14.4	B	TR	0.46	16.4	B	TR	0.29	14.0	B	TR	0.42	15.7	B	TR	0.35	14.8	B	TR	0.51	17.2	B	TR	0.30	14.1	B	TR	0.44	15.9	B
Northbound	L	0.30	15.0	B	L	0.60	25.0	C	L	0.08	12.0	B	L	0.14	12.8	B	L	0.08	12.0	B	L	0.14	12.9	B	L	0.06	11.8	B	L	0.11	12.5	B	L	0.11	12.5	B	L	0.11	12.5	B
Southbound																																								

phased project with two analysis years, 2016 and 2036. The near-term projects are analyzed in the 2016 analysis year and full build out is analyzed in the 2036 analysis year.

Once completed, the proposed park is anticipated to become a major park facility for the City and region. In addition to the park uses, the proposed project would provide new park roads and connections to existing streets and highways, including the West Shore Expressway (Route 440) on the west and Richmond Avenue on the east (see Figure 1-16 in Chapter 1, “Project Description”). These new connections would provide access to the park as well as new public streets across the study area. For these reasons, the proposed park roads are analyzed as both access roads to the park as well as potential traffic vehicular routes between Richmond Avenue and the West Shore Expressway.

### **TRIP GENERATION**

Trip Generation estimates are the foundation of a traffic impact analysis. They project the number of trips (by mode) expected to be generated by the proposed development and are the first step in the transportation assessment. In combination with the available roadway and intersection capacities, the trip generation forms the foundation for assessing transportation impacts. The trip generation estimates presented in this section—and discussed in detail in Appendix D “Transportation Planning Factors Memorandum,”—are based on the Draft Master Plan (DMP) and the Reasonable Worst Case Development Scenario (RWCDS) developed for the GEIS. The RWCDS accounts for the various park design element categories and representative park features and activities within those element categories that represent a “worst-case” for GEIS analysis.

As discussed in detail in Appendix D “Transportation Planning Factors Memorandum,” the trip generation rates and mode choice factors used to estimate the travel demand that would be generated by the proposed Fresh Kills Park were developed in consultation with NYCDOT. The trip generation estimates for various park components are primarily based on the information presented in the *CEQR Technical Manual*, and the *Institute of Transportation Engineers (ITE) Trip Generation Manual (7th Edition)*. In addition to these sources, standard professional references and EISs/EASs prepared for similar uses were also consulted.

### **REASONABLE WORST CASE DEVELOPMENT SCENARIO (RWCDS)**

The RWCDS was developed to cover the range of potential uses for impact analysis in this FGEIS including those both currently contemplated, as well as those that may arise as preferred uses over the next several decades as the park develops. In order to determine the travel demand estimates, the elements considered in the RWCDS were grouped into six broader categories including City Destination Park, Regional Park, Active Recreation, Commercial/Retail, Cultural/Educational Facilities, Banquet (Event) Space and Monument. The trip generation estimates for these elements focus on the peak hours when the maximum levels of activity would occur during both the weekday and weekend conditions—conservatively encompassing the times when future activity in terms of vehicular traffic and park use would be at its heaviest along the major roadways and intersections in the study area. The trip generation estimates for each of the park element are discussed in full detail in Appendix D, “Transportation Planning Factors Memorandum.”

**TOTAL TRIPS—2016**

In the year 2016, a number of the first phases of the 2,163-acre Fresh Kills Park would be created. The elements to be completed by 2016 would provide a mix of passive and active recreational facilities in the north and south parks as well as four segments of the park roads and landscape enhancement. As described in greater detail in Chapter 1, “Project Description,” the specific components of the park expected to be complete by 2016 include the Owl Hollow soccer fields, the North and South neighborhood parks, multi-use paths, wetland and North and South mound landscape enhancement, loop trails and overlooks. As presented in Table 16-11, in the year 2016, these elements are expected to generate a total of 83 new inbound and 78 new outbound vehicle trips in the AM peak hour, 200 new inbound and 225 new outbound vehicle trips in the midday, 149 new inbound and 169 new outbound vehicle trips in the PM peak hour, 201 new inbound and 218 new outbound vehicle trips in the Saturday midday peak hour, and 201 new inbound and 218 new outbound vehicle trips in the Saturday PM peak hour.

**TOTAL TRIPS—2036**

In the year 2036, the entire 2,163-acre Fresh Kills Park would be created. As described in greater detail in Chapter 1, “Project Description,” proposed in the long term are recreational fields; landscaped areas and restored ecological landscapes; water access for motorized and non-motorized craft; cultural, entertainment and commercial facilities (e.g., amphitheater, restaurants, event and banquet space); and the supporting park operations and maintenance facilities. In addition, the park roads that would connect the park with Richmond Avenue and the West Short Expressway as well as the necessary service roads and parking facilities would also be completed by the year 2036. As presented in Table 16-12, in the year 2036, the proposed park is expected to generate a total of 234 new inbound and 147 new outbound vehicle trips in the AM peak hour, 691 new inbound and 717 new outbound vehicle trips in the midday, 1,101 new inbound and 484 new outbound vehicle trips in the PM peak hour, 1,374 new inbound and 631 new outbound vehicle trips in the Saturday midday peak hour, and 1,367 new inbound and 624 new outbound vehicle trips in the Saturday PM peak hour.

**PARK ROADS**

As described in greater detail in Chapter 1, “Project Description,” the proposed park would create a pattern of park roads, improvements to the Northbound and Southbound Service Roads of the West Shore Expressway, and new ramp connections to the West Shore Expressway that, in addition to providing park access, would provide a direct connection between Richmond Avenue on the east and the West Shore Expressway (northbound and southbound lanes) on the west. Since there is currently no such direct connection, it is expected that with the new park roads, traffic traveling north- and southbound along Richmond Avenue is assumed to use these roadways to access the West Shore Expressway, and vice-versa. This diverted traffic would be in addition to the park-destined traffic (see the trip generation described above). The park roads will be constructed in segments with Segments I and II (the south park road) assumed to be completed by 2016 and the balance of the park roads to be completed by 2036. These roadways would provide park access and connectivity between Richmond Avenue and West Shore Expressway.

The first park road connection with Richmond Avenue—the Forest Hill Road (FHR) Extension—will be completed in 2016. The FHR Extension would connect the park roadway system with Richmond Avenue at Forest Hill Road by adding the fourth leg to the existing

**Table 16-11  
Total Project-Generated Vehicle Trips - 2016**

Component	Weekday Peak Hours									Saturday Peak Hours					
	AM			Midday			PM			Midday			PM		
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
<b>Active Recreation-Constructed Surface</b> Tennis Center	5	5	10	5	5	10	10	10	20	8	8	16	8	8	16
<b>Active Recreation-Indoor</b> Indoor Gym	20	28	48	45	62	107	31	29	60	32	43	75	32	43	75
<b>Commercial/Restaurant</b> Café/Restaurants	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Commercial/Retail</b> Market Roof	4	4	8	86	93	179	38	41	79	49	46	95	49	46	95
<b>Cultural/Educational</b>	2	0	2	1	2	3	2	2	4	1	2	3	1	2	3
<b>Regional Park</b>	22	17	39	27	27	54	30	38	68	49	52	101	49	52	101
<b>City Destination Park</b>	28	22	50	34	34	68	38	49	87	62	67	129	62	67	129
<b>Delivery Trips</b>	2	2	4	2	2	4	0	0	0	0	0	0	0	0	0
<b>TOTAL</b>	<b>83</b>	<b>78</b>	<b>161</b>	<b>200</b>	<b>225</b>	<b>425</b>	<b>149</b>	<b>169</b>	<b>318</b>	<b>201</b>	<b>218</b>	<b>419</b>	<b>201</b>	<b>218</b>	<b>419</b>

**Table 16-12**  
**Total Project-Generated Vehicle Trips - 2036**

Component	Weekday Peak Hours									Saturday Peak Hours					
	AM			Midday			PM			Midday			PM		
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
<b>Active Recreation-Constructed Surface</b>															
Tennis Center	5	5	10	5	5	10	10	10	20	8	8	16	8	8	16
<b>Active Recreation-Indoor</b>															
Indoor Gym	20	28	48	45	62	107	31	29	60	32	43	75	32	43	75
<b>Commercial/Restaurant</b>															
Café/Restaurants	15	14	29	254	235	489	120	99	219	282	166	448	282	166	448
<b>Commercial/Retail</b>															
Market Roof	10	9	19	206	223	429	92	99	191	119	110	229	119	110	229
<b>Cultural/Educational</b>															
	73	5	78	48	59	107	53	73	126	48	59	107	48	59	107
<b>Regional Park*</b>															
	55	42	97	66	66	132	74	94	168	120	130	250	120	130	250
<b>City Destination Park</b>															
	46	34	80	55	55	110	61	78	139	100	108	208	100	108	208
<b>Banquet Hall</b>															
	No Trips Anticipated During the Weekday AM and Midday Peak Hours						658	0	658	658	0	658	658	0	658
<b>Delivery Trips</b>															
	10	10	20	12	12	24	2	2	4	7	7	14	0	0	0
<b>TOTAL</b>	<u>234</u>	<u>147</u>	<u>381</u>	<u>691</u>	<u>717</u>	<u>1,408</u>	<u>1,101</u>	<u>484</u>	<u>1,585</u>	<u>1,374</u>	<u>631</u>	<u>2,005</u>	<u>1,367</u>	<u>624</u>	<u>1,991</u>

\* Trips generated by the Regional Park component also includes Monument trips.

intersection at the south end of the Staten Island Mall. The modified intersection would become a principal gateway into the park, and would form a direct link between the West Shore Expressway and Richmond Avenue. By the year 2036, the second park road connection with Richmond Avenue will be completed. This connection, the Richmond Hill Road (RHR) Extension, would connect the park roadway system with Richmond Avenue at Richmond Hill Road just north of the Staten Island Mall, and would become the northeast gateway into the park.

The construction of the Forest Hill Road and Richmond Hill Road connections in 2016 and 2036, respectively, would modify the existing lane configurations and signal operations at the intersections of Richmond Avenue at Richmond Hill Road and Forest Hill Road. Specifically, at the intersection of Forest Hill Road and Richmond Avenue, an exclusive left-turn lane, four through lanes and one right-turn lane would be provided at the northbound approach, whereas the curbside lane at the southbound approach would operate as a shared through-and-right-turn lane. The new eastbound approach would be created operating with an exclusive left-turn lane, a through lane, and an exclusive right-turn lane. In addition, the westbound approach would be restriped to provide one exclusive left-turn lane and a shared through and right-turn lane. Also, a new three-phase signal timing plan would be developed to accommodate the traffic entering and exiting the park. At the intersection of Richmond Hill Road and Richmond Avenue, there would be no changes to the existing lane configurations at the southbound approach. The northbound approach is proposed to be restriped to consist of one exclusive left-turn lane, four through lanes and one right-turn lane. The lane configuration at the westbound approach would be modified to provide an exclusive left-turn lane, a through lane and an exclusive right-turn lane. In addition, the eastbound approach would be re-configured with an exclusive left-turn lane, a through lane, and an exclusive right-turn lane. Also, a new three-phase signal timing plan would be developed to accommodate the traffic entering and exiting the park. Table 16-13 presents the existing and proposed signal timings at the intersections of Forest Hill Road and Richmond Hill Road at Richmond Avenue for the 2016 and 2036 Build conditions.

In addition to the above connections, a number of new connections with the West Shore Expressway would be provided as part of proposed project, as follows:

- North Loop Road connection with the West Shore Expressway Northbound Service Road allowing connection to the northbound Expressway main line;
- West Shore Expressway Southbound Service Road connection continuing south from Victory Boulevard and intersecting with West Loop Road;
- South Loop Road connection with the West Shore Expressway Southbound Service Road which will provide access to the mainline via a new entrance ramp proposed south of Arden Avenue; and
- West Shore Expressway Northbound Service Road (service road to be constructed by the proposed project between Arden Avenue and the entrance to the park) connecting with the South Loop Road.

In addition, the New York State Department of Transportation (NYSDOT) is proposing to construct the West Shore Expressway Northbound Service Road from Arthur Kill Road to Arden Avenue. This connection has been accounted for in the build traffic analysis.

**Table 16-13**

**Proposed Signal Timing/Phasing Changes**

**Intersections of Forest Hill Road and Richmond Hill Road at Richmond Avenue**

Intersection	Peak Hour	Signal Timing Plan													
		Existing				2016 Proposed				2036 Proposed					
		Lane Groups	Green	Yellow/Amber	All Red	Lane Groups	Green	Yellow/Amber	All Red	Lane Groups	Green	Yellow/Amber	All Red		
Richmond Hill Road and Richmond Avenue	Weekday AM	EB-WB	22	3	2	N/A	EB-WB	25	3	2	EB-WB	25	3	2	
		NB-SB	39	4	2		NB-SB	35	4	2	NB-SB	35	4	2	
		NBL-SBL	13	3	2		NBL-SBL	14	3	2	NBL-SBL	14	3	2	
			Cycle Length				90			Cycle Length			90		
	Weekday Midday	EB-WB	20	3	2		EB-WB	30	3	2	EB-WB	30	3	2	
		NB-SB	39	4	2		NB-SB	28	4	2	NB-SB	28	4	2	
		NBL-SBL	15	3	2		NBL-SBL	16	3	2	NBL-SBL	16	3	2	
			Cycle Length				90			Cycle Length			90		
	Weekday PM	EB-WB	20	3	2		EB-WB	31	3	2	EB-WB	31	3	2	
		NB-SB	34	4	2		NB-SB	29	4	2	NB-SB	29	4	2	
		NBL-SBL	20	3	2		NBL-SBL	14	3	2	NBL-SBL	14	3	2	
			Cycle Length				90			Cycle Length			90		
Weekend Midday	EB-WB	20	3	2	EB-WB	31	3	2	EB-WB	31	3	2			
	NB-SB	39	4	2	NB-SB	30	4	2	NB-SB	30	4	2			
	NBL-SBL	15	3	2	NBL-SBL	13	3	2	NBL-SBL	13	3	2			
		Cycle Length			90			Cycle Length			90				
Weekend PM	EB-WB	20	3	2	EB-WB	28	3	2	EB-WB	28	3	2			
	NB-SB	39	4	2	NB-SB	30	4	2	NB-SB	30	4	2			
	NBL-SBL	15	3	2	NBL-SBL	16	3	2	NBL-SBL	16	3	2			
		Cycle Length			90			Cycle Length			90				
Forest Hill Road and Richmond Avenue	Weekday AM	WB	27	3	3	EB-WB	31	3	3	EB-WB	29	3	3		
		NB-SB	51	4	2	NB-SB	34	4	2	NB-SB	36	4	2		
						NBL-SBL	8	3	2	NBL-SBL	8	3	2		
			Cycle Length			90			Cycle Length			90			
	Weekday Midday	WB	27	3	3	EB-WB	32	3	3	EB-WB	35	3	3		
		NB-SB	51	4	2	NB-SB	30	4	2	NB-SB	30	4	2		
						NBL-SBL	8	3	5	NBL-SBL	8	3	2		
			Cycle Length			90			Cycle Length			90			
	Weekday PM	WB	27	4	2	EB-WB	35	4	2	EB-WB	33	4	2		
		NB-SB	51	4	2	NB-SB	30	4	2	NB-SB	32	4	2		
						NBL-SBL	8	3	2	NBL-SBL	8	3	2		
			Cycle Length			90			Cycle Length			90			
Weekend Midday	WB	27	4	2	EB-WB	33	4	2	EB-WB	32	4	2			
	NB-SB	51	4	2	NB-SB	32	4	2	NB-SB	33	4	2			
					NBL-SBL	8	3	2	NBL-SBL	8	3	2			
		Cycle Length			90			Cycle Length			90				
Weekend PM	WB	27	4	2	EB-WB	33	4	2	EB-WB	33	4	2			
	NB-SB	51	4	2	NB-SB	32	4	2	NB-SB	32	4	2			
					NBL-SBL	8	3	2	NBL-SBL	8	3	2			
		Cycle Length			90			Cycle Length			90				

**Notes:**  
 EB – eastbound; WB – westbound; NB – northbound; NBL – northbound left; SB – southbound; SBL – southbound left  
 All timings in seconds unless otherwise noted

*INTERNAL PARK ROADS CIRCULATION SYSTEM*

The proposed circulation system for the park would accommodate vehicular, bicycle, and pedestrian movements both to and through the park with approximately seven miles of new park roads and secondary roads and an array of paths. The principal components of the internal park road system are Park Road South, which would extend across East Park and connect with Richmond Avenue at Forest Hill Road; the central Loop Park Road, which would provide a circulation loop through the center of the park, reusing two DSNY bridges (one across Main Creek and the other across Richmond Creek) and completing the loop with a new “Signature Bridge” across Fresh Kills Creek at a location just west of the existing West Shore Expressway bridge; and Park Road North, which would extend across East Park and connect with Richmond Avenue at Richmond Hill Road.

*2016 INTERNAL PARK ROAD INTERSECTIONS*

By 2016, a new park entrance would be created at the intersection of Forest Hill Road/Richmond Avenue which would provide access to the Park Loop Road, Creek Landing and the West Shore Expressway. This new entrance would connect with the Park Loop Road at the center of the site creating a new intersection in form of a modern traffic roundabout. At this roundabout, drivers would turn right to reach Creek Landing and points north. To reach points further north, drivers would continue on the North Park Loop Road to reach northbound West Shore Expressway Service Road. From the West Shore Expressway, northbound drivers would reach the park or Richmond Avenue/Forest Hill Road by exiting the highway via a proposed ramp just north of Arden Avenue. This ramp connects with the proposed West Shore Expressway northbound Service Road. In turn, the service road intersects with the Loop Park Road, providing access to other parts of the park. From the West Shore Expressway, southbound drivers would reach the park and Richmond Avenue/Forest Hill Road by exiting from the highway at the existing ramp just north of Victory Boulevard. Drivers would continue south across Victory Boulevard and onto a segment of road that is currently only open to DSNY and authorized vehicles accessing the Staten Island Waste Transfer Station. With the proposed project in 2016, this service road would allow public access and would connect with the North Park Loop Road. Drivers seeking to reach the Richmond Avenue/Forest Hill Road intersection would traverse the roundabout, turn east, and follow the Park Road South to Forest Hill Road. In addition, drivers seeking to reach West Shore Expressway would bear right at the roundabout to travel across the Richmond Creek Bridge.

*2036 INTERNAL PARK ROAD INTERSECTIONS*

By 2036, a new Park Road North would be developed connecting with Richmond Avenue at the intersection with Richmond Hill Road. This new entrance would continue south to a location at about Yukon Avenue, where it would turn west to connect with the Park Loop Road creating a new intersection in form of a modern traffic roundabout. At this roundabout, drivers could reach multiple park facilities, as well as the northbound and southbound lanes of the West Shore Expressway. In addition, a Signature Bridge would be constructed across Fresh Kills Creek at a location just west of the West Shore Expressway Bridge over the Creek. This would complete the central Loop Park Road circulation program and would facilitate access between the north and south elements of the park west of the West Shore Expressway. It would also provide direct access to the parking facilities of the Confluence by allowing drivers who exit from the southbound West Shore Expressway at the Victory Boulevard exit to cross the bridge and directly access the Confluence and the central recreational area at the Point.



In addition to the major roadways discussed above, the Muldoon Avenue service road would be completed and improved in 2036, as necessary, to allow DPR access to the Point and other park facilities. This service road would also continue to provide secured access to DSNY facilities. Also, in the West Park, a secondary access road would be developed to provide controlled vehicular access to the proposed 9/11 monument and overflow parking areas.

### **TRAFFIC DIVERSIONS**

The quantification of diverted traffic volumes due to the new park roads was determined based on the baseline traffic volumes (including both the manual turning movement counts and ATR counts) collected at the study area intersections. In addition, the December 2001 *Fresh Kills Landfill Traffic Planning Study (FKLTPS)* was consulted to determine the proportion of diverted traffic volumes to-and-from the Richmond Avenue corridor to WSE and vice-versa. It should be noted that the FKLTPS developed and evaluated various roadway segments (links) and analyzed them using regional travel demand models—including TRANPLAN and VIPER.

The methodology used in developing the traffic diversions for the FGEIS traffic analysis is discussed as follows:

- Identifying the critical intersections in the study area which could experience an increase or decrease in the baseline traffic volumes due to the proposed park roads;
- Identifying potential travel routes for the diverted traffic on both WSE and Richmond Avenue;
- Reassigning the traffic volumes to-and-from the critical intersections to the park roads;
- Redistributing traffic volumes at critical intersections by developing positive or negative traffic volume increments for the specific turning movements and/or lane-groups.

### **TRAFFIC ASSIGNMENTS**

Trips generated by various park elements were assigned to the study area intersections based on the existing travel patterns, likely routes to and from the project site, the configuration of the street network, and the location of the site's proposed access and egress points. Within the park, the project generated trips were assigned to various parking areas (depending on their capacities) and the location of various park elements. In terms of trip distribution, the project generated trips would access the site in the following way: approximately 32 percent would use the WSE, 46 percent would use Richmond Avenue, 10 percent would use Arthur Kill Road, 7 percent would use Forest Hill Road, 3 percent would use Victory Boulevard and the remaining 2 percent would use other local roads to access the project site.

### **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 acceptable 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 actions 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 intersection). 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.

### **2016 BUILD TRAFFIC CONDITIONS**

The results of the analysis of 2016 Build conditions at analyzed study area intersections are summarized in Table 16-14, while the v/c ratio, delays and levels of service at all analyzed intersections in the 2016 future with the proposed project are provided in Table 16-15 for the primary study area and 16-16 for the secondary study area. The identification of significant adverse traffic impacts at analyzed intersections is based on criteria presented in the *CEQR Technical Manual* and discussed earlier in this chapter. In the 2016 Build Conditions, the weekday PM and weekend midday peak hours would have the highest number of impacted intersections with seventeen (17) and sixteen (16), respectively. The weekend PM and weekday midday would have fourteen (14) and thirteen (13) impacted intersections, respectively. The weekday AM peak hour would have the fewest number of impacted intersections under the 2016 Build conditions with eleven (11). The following provides a discussion of the impacted locations by corridor.

#### *RICHMOND AVENUE CORRIDOR*

As shown in Table 16-14, a total of seven (7) intersections out of eight (8) analyzed along the Richmond Avenue corridor would be significantly adversely impacted in one or more peak hours in 2016.

The southbound approach at Draper Place would be impacted during all the peak hours except the weekday AM peak hour. The northbound left turn at Draper Place would be impacted during all the peak hours.

The eastbound right-turn at Signs Road would be impacted during the weekday PM and weekend midday peak hours. The southbound approach at Signs Road would be impacted during the weekday PM and the weekend midday and PM peak hours. Also, the northbound left turn movement at Signs Road would be impacted during the Weekday AM peak hour.

At Richmond Hill Road, the southbound left-turn movement would be impacted during all peak hours, and the westbound shared left-and through movement would be impacted during the weekend midday peak hour.

The westbound left-turn movement and the northbound right-turn movements at Forest Hill Road would be impacted during all peak hours. The northbound through movement would be impacted during all peak hours except the weekday midday peak hour. The southbound through and right-turn movement would be impacted during the weekday midday and PM, and weekend PM peak hours. The newly proposed northbound left-turn movement would operate under congested conditions during all peak hours.

The westbound through movement at Arthur Kill Road would be impacted during all peak hours. The northbound through and right-turn movement would be impacted during the weekday PM and weekend midday peak hours. The southbound left-turn movement would be impacted during all peak hours except the weekday AM peak hour.

**Table 16-14**  
**Summary of Impacted Intersections — 2016 Build Conditions**

2016 Intersections		Analyzed Peak Hour				
		Weekday			Weekend	
		AM	Midday	PM	Midday	PM
Richmond Avenue	Draper Place	①	②	②	②	②
	Signs Road	①		①①	①①	①
	Richmond Hill Road	①	①	①	①①	①
	Yukon Avenue					
	Forest Hill Road	②①	②①	③①	②①	③①
	Arthur Kill Road	①	①①	②①	②①	①①
	Drumgoole Road			①	①	①
	Amboy Road			①	①	
Arthur Kill Road	Huguenot Avenue					
	Woodrow Road					①
	Arden Avenue	①	①	②	①	②
	Drumgoole Road	①	①	①②	①	①①
	Route 440 NB Service	①			①	
	Route 440 SB Service		①	①		
	Bloomingdale Road					
Victory Boulevard	West Shore SB Ramp	①	①	①	①	①
	West Shore NB Ramp					
	Wild Avenue					
	Travis Avenue			①	①	①
	<u>Melvin Avenue</u>					
Travis Avenue	South avenue					
Arden Avenue	Woodrow Road					
	Amboy Road				①	
Forest Hill Road	Travis Avenue		①	②	①	①
	Richmond Hill Road	①①	②①	②①	②①	②①
	<u>Yukon Avenue</u>		①	①		
Amboy Road	Huguenot Avenue					
Woodrow Road	Bloomingdale Road			②		
	Foster Road					
	Huguenot Avenue					
Route 440 SB Service Road	Muldoon Avenue		①			
	Arden Avenue	①	①	①	①	①

**Notes:**  
 ① number of movements on the major street approaches with significant adverse impacts in the peak hour  
 ① number of movements on the minor street approaches with significant adverse impacts in the peak hour

The northbound through movement at Drumgoole Road would be impacted during the weekday PM and weekend midday and PM peak hours.

The southbound left-turn movement at Amboy Road would be impacted during the weekday PM and weekend midday peak hours.

*ARTHUR KILL ROAD CORRIDOR*

As shown in Table 16-14, a total of five (5) intersections out of seven (7) analyzed along the Arthur Kill Road corridor would be significantly adversely impacted in one or more peak hours in 2016.







The westbound approach at Woodrow Road would be impacted during the weekend peak hour.

The eastbound left-turn at Arden Avenue would be impacted during the weekday and weekend PM peak hours and eastbound through movement during all peak hours.

The eastbound through-right turn movement at Drumgoole Road would be impacted during all the peak hours. The northbound left-turn movement at Drumgoole Road would be impacted during the weekday PM peak hour. Also, the northbound through and right-turn movement would be impacted during the weekday and weekend PM peak hours.

The eastbound left-turn movement at Route 440 northbound service road would be impacted during the weekday AM, and weekend midday peak hours.

The southbound approach at Route 440 southbound service road would be impacted during the weekday midday and PM peak hours.

#### *VICTORY BOULEVARD CORRIDOR*

At the Route 440 southbound ramp, the westbound left-turn movement would be impacted during all the peak hours.

The northbound left-turn movement at Travis Avenue would be impacted during the weekday PM, and weekend midday and PM peak hours.

#### *ARDEN AVENUE CORRIDOR*

The southbound left-turn at Amboy Road would be impacted during the weekend midday peak hour.

#### *FOREST HILL ROAD CORRIDOR*

The northbound approach at Travis Avenue would be impacted during all peak hours except the weekday AM peak hour. Also the southbound approach at Travis Avenue would be impacted during the weekday PM peak hour.

The westbound approach and the northbound through and right-turn movement at Richmond Hill Road would be impacted during all peak hours. In addition, the southbound through-right movement would be impacted during all peak hours except the weekday AM peak hour.

The northbound approach at Yukon Avenue would be impacted during the weekday midday and PM peak hours.

#### *ROUTE 440 SOUTHBOUND SERVICE ROAD CORRIDOR*

The eastbound right turn movement at Muldoon Avenue (unsignalized) would be impacted during the weekday midday peak hour. The westbound approach at Arden Avenue (unsignalized) would be impacted during all the peak hours.

#### *WOODROW ROAD CORRIDOR*

The northbound and southbound approaches at Bloomingdale Road would be impacted during the weekday PM peak hour.

**2036 BUILD TRAFFIC CONDITIONS**

The results of the analysis of 2036 Build conditions at analyzed study area intersections are summarized in Table 16-17, while the v/c ratio, delays and levels of service at all analyzed intersections in the 2036 future with the proposed project are provided in Table 16-18 for the primary study area and 16-19 for the secondary study area. The identification of significant adverse traffic impacts at analyzed intersections is based on criteria presented in the *CEQR Technical Manual* and discussed earlier in this chapter. In the 2036 Build conditions, the weekday PM peak hour would have the highest number of impacted intersections with twenty five (25), followed by the weekend midday peak hour with twenty four (24) impacted intersections. The weekend PM peak hour would have twenty one (21) impacted intersections. The weekday AM and weekday midday peak hours would have the fewest number of impacted intersections under the Build 2036 conditions with twenty (20) each. The following provides a discussion of the impacted locations by corridor.

**Table 16-17**  
**Summary of Impacted Intersections — 2036 Build Conditions**

2036 Intersections		Analyzed Peak Hour				
		Weekday			Saturday	
		AM	Midday	PM	Midday	PM
Richmond Avenue	Draper Place	1	2	2	2	2
	Signs Road	1①	2①	2①	2①	2①
	Richmond Hill Road		2①	2	3①	2
	Yukon Avenue					
	Forest Hill Road	2①	3①	3①	3①	3①
	Arthur Kill Road	1①	2①	2①	3①	2①
	Drumgoole Road	1	1	1	1	1
	Amboy Road	1	1	3	1	2
Arthur Kill Road	Huguenot Avenue					
	Woodrow Road				①	①
	Arden Avenue	1②	②	1②	1②	②
	Drumgoole Road	1①	1②	1②	1①	1①
	Route 440 NB Service	1			1	
	Route 440 SB Service	①	①	①	①	①
	Bloomington Road			1		
Victory Boulevard	West Shore SB Ramp	1	1	1	1	1
	West Shore NB Ramp			1		
	Wild Avenue			1		
	Travis Avenue	1	①	2①	①	①
	Melvin Avenue					
Travis Avenue	South avenue					
Arden Avenue	Woodrow Road	①		2	1①	1
	Amboy Road	1	1	2	1	1
Forest Hill Road	Travis Avenue	1	2	2	2	2
	Richmond Hill Road	2①	2①	2①	2①	2①
	Yukon Avenue	1	1	1	1	1
Amboy Road	Huguenot Avenue	①		①	①	①
Woodrow Road	Bloomington Road					
	Foster Road	1	1	1	1	
	Huguenot Avenue		①	①	①	①
Route 440 SB Service Road	Muldoon Avenue		①	①	①	
	Arden Avenue	①	①	①	①	①

**Notes:**  
 ① number of movements on the major street approaches with significant adverse impacts in the peak hour  
 ① number of movements on the minor street approaches with significant adverse impacts in the peak hour



Table 16-18

2036 No Build and Build Conditions Level of Service Analysis  
Primary Study Area Intersections

Intersection	Weekday AM								Weekday Midday								Weekday PM								Weekend Midday								Weekend PM																							
	2036 No Build				2036 Build				2036 No Build				2036 Build				2036 No Build				2036 Build				2036 No Build				2036 Build				2036 No Build				2036 Build																			
	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS																				
<b>Signalized Intersections</b>																																																								
Victory Boulevard and West Shore Expressway (SB) Ramps	TR	0.58	22.9	C	TR	0.59	23.2	C	TR	0.72	27.6	C	TR	0.74	28.8	C	TR	0.51	20.7	C	TR	0.53	21.1	C	TR	0.42	19.0	B	TR	0.44	19.3	B	TR	0.38	18.4	B	TR	0.39	18.6	B	TR	0.38	18.4	B	TR	0.39	18.6	B	TR	0.38	18.4	B	TR	0.39	18.6	B
Eastbound	L	1.93	466.2	F	L	1.96	469.1	F	L	2.04	506.0	F	L	2.15	554.0	F	L	1.89	437.0	F	L	2.02	493.9	F	L	1.88	433.0	F	L	2.03	499.1	F	L	1.33	192.9	F	L	1.48	253.2	F	L	1.33	192.9	F	L	1.48	253.2	F	L	1.33	192.9	F	L	1.48	253.2	F
Westbound	T	0.31	17.1	B	T	0.31	17.1	B	T	0.26	16.5	B	T	0.26	16.5	B	T	0.17	15.4	B	T	0.17	15.4	B	T	0.13	15.0	B	T	0.13	15.0	B	T	0.12	15.0	B	T	0.12	15.0	B	T	0.12	15.0	B	T	0.12	15.0	B	T	0.12	15.0	B	T	0.12	15.0	B
Southbound	LTR	0.34	16.5	B	LTR	0.36	16.8	B	LTR	0.37	16.8	B	LTR	0.45	17.6	B	LTR	0.32	16.4	B	LTR	0.45	17.6	B	LTR	0.29	16.1	B	LTR	0.45	17.6	B	LTR	0.24	15.6	B	LTR	0.39	16.9	B	LTR	0.24	15.6	B	LTR	0.39	16.9	B	LTR	0.24	15.6	B	LTR	0.39	16.9	B
	Intersection	181.1	F	Intersection	183.5	F	Intersection	167.6	F	Intersection	177.4	F	Intersection	194.0	F	Intersection	204.9	F	Intersection	204.0	F	Intersection	214.1	F	Intersection	89.6	E	Intersection	105.3	F	Intersection	89.6	E	Intersection	105.3	F	Intersection	89.6	E	Intersection	105.3	F														
Victory Boulevard and West Shore Expressway (NB) Ramps	L	0.69	36.3	D	L	0.71	37.5	D	L	0.57	26.8	C	L	0.60	28.5	C	L	0.72	42.8	D	L	0.82	59.3	E	L	0.61	32.2	C	L	0.70	41.9	D	L	0.40	20.8	C	L	0.44	22.4	C	L	0.40	20.8	C	L	0.44	22.4	C	L	0.40	20.8	C	L	0.44	22.4	C
Eastbound	T	0.40	18.4	B	T	0.26	16.5	B	T	0.53	20.5	C	T	0.28	16.6	B	T	0.33	17.3	B	T	0.17	15.4	B	T	0.36	17.7	B	T	0.17	15.5	B	T	0.32	17.1	B	T	0.15	15.2	B	T	0.32	17.1	B	T	0.15	15.2	B	T	0.32	17.1	B	T	0.15	15.2	B
Westbound	R	0.66	24.5	C	R	0.67	24.7	C	R	0.59	22.5	C	R	0.62	23.3	C	R	0.77	28.3	C	R	0.81	30.9	C	R	0.72	26.4	C	R	0.78	29.0	C	R	0.53	20.8	C	R	0.58	22.0	C	R	0.53	20.8	C	R	0.58	22.0	C	R	0.53	20.8	C	R	0.58	22.0	C
Northbound	T	0.17	15.5	B	T	0.17	15.6	B	T	0.25	16.5	B	T	0.25	16.6	B	T	0.12	15.0	B	T	0.12	15.1	B	T	0.13	15.2	B	T	0.15	15.3	B	T	0.12	15.0	B	T	0.14	15.2	B	T	0.12	15.0	B	T	0.14	15.2	B	T	0.12	15.0	B	T	0.14	15.2	B
	L	0.54	19.2	B	L	0.55	19.3	B	L	0.42	17.4	B	L	0.43	17.6	B	L	0.31	16.4	B	L	0.32	16.5	B	L	0.30	16.3	B	L	0.32	16.4	B	L	0.26	15.9	B	L	0.28	16.0	B	L	0.26	15.9	B	L	0.28	16.0	B								
	T	0.19	15.3	B	T	0.52	18.8	B	T	0.25	15.8	B	T	0.65	21.7	C	T	0.20	15.4	B	T	0.54	19.1	B	T	0.25	15.8	B	T	0.66	21.8	C	T	0.16	15.0	B	T	0.52	18.7	B	T	0.16	15.0	B	T	0.52	18.7	B								
	R	0.84	31.9	C	R	0.86	34.5	C	R	0.72	24.5	C	R	0.79	27.7	C	R	0.77	26.3	C	R	0.82	29.6	C	R	0.82	29.7	C	R	0.89	37.4	D	R	0.67	22.3	C	R	0.74	25.0	C	R	0.67	22.3	C	R	0.74	25.0	C								
	Intersection	24.2	C	Intersection	24.8	C	Intersection	21.1	C	Intersection	22.3	C	Intersection	24.1	C	Intersection	26.7	C	Intersection	29.7	C	Intersection	29.7	C	Intersection	27.5	C	Intersection	19.3	B	Intersection	20.7	C	Intersection	19.3	B	Intersection	20.7	C	Intersection	19.3	B	Intersection	20.7	C											
Victory Boulevard and Wild Avenue	LTR	0.91	33.6	C	LTR	0.79	23.6	C	LTR	0.87	28.9	C	LTR	0.67	18.6	B	LTR	0.79	23.2	C	LTR	0.67	18.5	B	LTR	0.75	21.2	C	LTR	0.61	17.0	B	LTR	0.74	21.0	C	LTR	0.62	17.2	B	LTR	0.74	21.0	C	LTR	0.62	17.2	B								
Eastbound	LTR	0.89	31.5	C	LTR	0.91	34.4	C	LTR	0.81	25.1	C	LTR	0.85	27.5	C	LTR	0.96	40.2	D	LTR	1.02	55.1	E	LTR	0.87	28.6	C	LTR	0.97	43.2	D	LTR	0.70	19.3	B	LTR	0.81	24.3	C	LTR	0.70	19.3	B	LTR	0.81	24.3	C								
Westbound	LTR	0.03	19.5	B	LTR	0.03	19.5	B	LTR	0.06	19.8	B	LTR	0.06	19.8	B	LTR	0.05	19.7	B	LTR	0.05	19.7	B	LTR	0.05	19.7	B	LTR	0.05	19.7	B	LTR	0.05	19.7	B	LTR	0.05	19.7	B	LTR	0.05	19.7	B	LTR	0.05	19.7	B								
Southbound	Intersection	32.5	C	Intersection	29.1	C	Intersection	27.0	C	Intersection	23.4	C	Intersection	32.2	C	Intersection	40.1	D	Intersection	25.0	C	Intersection	32.5	C	Intersection	20.2	C	Intersection	21.1	C	Intersection	20.2	C	Intersection	21.1	C																				
Victory Boulevard and Travis Avenue	L	0.16	16.4	B	L	0.17	16.7	B	L	0.24	18.0	B	L	0.27	19.0	B	L	0.68	47.6	D	L	0.98	118.4	F	L	0.43	26.1	C	L	0.62	44.7	D	L	0.17	16.8	B	L	0.21	18.4	B	L	0.17	16.8	B	L	0.21	18.4	B								
Eastbound	T	1.01	60.9	E	T	1.03	65.4	E	T	0.57	21.6	C	T	0.61	22.8	C	T	0.63	23.0	C	T	0.67	24.3	C	T	0.73	26.6	C	T	0.63	23.0	C	T	0.68	24.7	C	T	0.63	23.0	C	T	0.68	24.7	C												
Westbound	R	0.28	17.0	B	R	0.09	14.7	B	R	0.43	19.3	B	R	0.09	14.7	B	R	0.42	18.9	B	R	0.20	15.9	B	R	0.41	18.8	B	R	0.15	15.4	B	R	0.30	17.2	B	R	0.07	14.5	B	R	0.30	17.2	B	R	0.07	14.5	B								
Northbound	T	0.43	32.8	C	T	0.43	32.8	C	T	0.18	16.5	B	T	0.20	17.0	B	T	0.32	19.7	B	T	0.36	21.1	C	T	0.40	22.2	C	T	0.47	25.8	C	T	0.30	19.2	B	T	0.34	20.9	C	T	0.30	19.2	B	T	0.34	20.9	C								
Southbound	R	0.65	23.9	C	R	0.67	24.7	C	R	0.66	24.2	C	R	0.71	25.7	C	R	0.88	36.7	D	R	0.95	45.9	D	R	0.81	30.4	C	R	0.89	37.4	D	R	0.71	25.8	C	R	0.79	29.6	C	R	0.71	25.8	C	R	0.79	29.6	C								
	T	0.41	19.0	B	T	0.41	19.0	B	T	0.32	17.4	B	T	0.32	17.4	B	T	0.33	17.7	B	T	0.33	17.7	B	T	0.35	17.8	B	T	0.27	16.7	B	T	0.27	16.7	B	T	0.27	16.7	B	T	0.27	16.7	B												
	L	0.65	30.7	C	L	0.66	31.6	C	L	1.17	149.6	F	L	1.20	158.3	F	L	1.50	289.3	F	L	1.54	302.9	F	L	2.75	846.4	F	L	2.86	896.4	F	L	2.59	776.2	F	L	2.69	820.0	F	L	2.59	776.2	F	L	2.69	820.0	F								
	TR	0.92	41.8	D	TR	0.92	41.8	D	TR	0.76	28.1	C	TR	0.76	28.1	C	TR	0.60	22.3	C	TR	0.60	22.3	C	TR	0.72	26.2	C	TR	0.72	26.2	C	TR	0.61	22.6	C	TR	0.61	22.6	C	TR	0.61	22.6	C	TR	0.61	22.6	C								
	L	1.44	270.8	F	L	1.44	270.8	F	L	0.83	53.9	D	L	0.83	53.9	D	L	0.80	42.7	D	L	0.80	42.7	D	L	0.94	73.4	E	L	0.94	73.4	E	L	0.57	27.3	C	L	0.57	27.3	C	L	0.57	27.3	C												
	TR	0.64	23.9	C	TR	0.64	23.9	C	TR	0.80	30.4	C	TR	0.80	30.4	C	TR	1.33	180.7	F	TR	1.33	180.7	F	TR	0.93	43.2	D	TR	0.93	43.2	D	TR	1.03	64.6	E	TR	1.03	64.6	E	TR	1.03	64.6	E												
	Intersection	46.9	D	Intersection	49.2	D	Intersection	34.2	C	Intersection	36.3	D	Intersection	85.9	F	Intersection	91.6	F	Intersection	82.4	F	Intersection	91.1	F	Intersection	82.6	F	Intersection	89.7	F	Intersection	82.6	F	Intersection	89.7	F																				
South Avenue and Travis Avenue	TR	0.33	11.8	B	TR	0.33	11.8	B	TR	0.32	11.8	B	TR	0.32	11.8	B	TR	0.39	12.5	B	TR	0.39	12.5	B	TR	0.36	12.1	B	TR	0.36	12.1	B	TR	0.32	11.8	B	TR	0.32	11.8	B	TR	0.32	11.8	B	TR	0.32	11.8	B								
Eastbound	L	0.94	54.5	D	L	0.94	54.5	D	L	1.32	181.9	F	L	1.32	181.9	F	L	1.50	254.2	F	L	1.50	254.2	F	L	1.91	439.8	F	L	1.91	439.8	F	L	1.97	465.5	F	L	1.97	465.5	F																
Westbound	T	0.20	10.7	B	T	0.20	10.7	B	T	0.28	11.4	B	T	0.28	11.4	B	T	0.50	13.8	B	T	0.50	13.8	B	T	0.34	11.9	B	T	0.34	11.9	B	T	0.32	11.8	B	T	0.32	11.8	B																
Southbound	LR	1.54	282.3	F	LR	1.54	282.3	F	LR	1.23	145.8	F	LR	1.23	145.8	F	LR	1.09	90.2	F	LR	1.09	90.2	F	LR	1.20	132.2	F	LR	1.20	132.2	F	LR	1.00	64.3	F	LR	1.00	64.3	F																

Table 16-18

2036 No Build and Build Conditions Level of Service Analysis

Primary Study Area Intersections

Intersection	Weekday AM								Weekday Midday								Weekday PM								Weekend Midday								Weekend PM							
	2036 No Build				2036 Build				2036 No Build				2036 Build				2036 No Build				2036 Build				2036 No Build				2036 Build				2036 No Build				2036 Build			
	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS				
Arthur Kill Road and Woodrow Road	TR	0.64	17.6	B	TR	0.37	12.8	B	TR	0.57	15.7	B	TR	0.45	13.7	B	TR	0.68	18.1	B	TR	0.47	14.0	B	TR	0.90	29.9	C	TR	0.72	19.4	B	TR	0.87	26.9	C	TR	0.70	18.7	B
Eastbound	LT	0.87	33.0	C	LT	0.73	21.5	C	LT	1.30	169.2	F	LT	1.23	138.1	F	LT	1.56	279.1	F	LT	1.83	402.9	F	LT	1.62	307.9	F	LT	1.54	272.9	F	LT	1.66	324.2	F	LT	1.66	324.2	F
Westbound	L	0.20	21.5	C	L	0.20	21.6	C	L	0.12	20.6	C	L	0.13	20.6	C	L	0.15	20.9	C	L	0.27	22.4	C	L	0.28	22.6	C	L	0.25	22.1	C	L	0.25	22.2	C	L	0.25	22.2	C
Northbound	R	0.92	53.6	D	R	0.92	54.7	D	R	0.66	32.2	C	R	0.69	33.4	C	R	0.73	35.7	D	R	0.84	44.0	D	R	0.90	50.9	D	R	0.65	32.0	C	R	0.71	34.5	C	R	0.71	34.5	C
Intersection	94.2				29.0				82.1				75.5				202.4				150.8				158.9				136.8				120.0				151.0			
Arden Avenue and Woodrow Road	LTR	0.81	19.2	B	LTR	0.82	19.6	B	LTR	0.84	20.5	C	LTR	0.87	22.7	C	LTR	1.00	42.9	D	LTR	1.04	54.8	D	LTR	0.82	19.7	B	LTR	0.88	24.5	C	LTR	0.79	18.0	B	LTR	0.85	21.3	C
Eastbound	LTR	1.23	129.9	F	LTR	1.23	130.6	F	LTR	0.96	40.2	D	LTR	0.98	43.9	D	LTR	1.36	186.9	F	LTR	1.38	187.2	F	LTR	1.11	83.6	F	LTR	1.14	93.5	F	LTR	1.12	87.7	F	LTR	1.15	98.0	F
Westbound	LTR	0.80	26.0	C	LTR	0.81	26.5	C	LTR	0.57	18.8	B	LTR	0.59	19.2	B	LTR	0.65	20.2	C	LTR	0.69	21.3	C	LTR	0.74	22.9	C	LTR	0.74	22.9	C	LTR	0.49	17.8	B	LTR	0.54	18.3	B
Southbound	LTR	1.45	238.8	F	LTR	1.46	247.0	F	LTR	0.79	28.8	C	LTR	0.84	33.7	C	LTR	0.87	36.7	D	LTR	0.92	44.8	D	LTR	0.96	53.9	D	LTR	1.04	74.8	E	LTR	0.57	19.2	B	LTR	0.62	20.3	C
Intersection	94.2				96.0				92.0				29.7				86.4				88.6				46.0				54.2				41.2				45.6			
Arden Avenue and Arthur Kill Road	L	0.61	33.4	C	L	0.86	58.7	E	L	0.65	34.1	C	L	0.88	58.1	E	L	0.77	41.2	D	L	1.04	93.4	F	L	0.71	37.6	D	L	1.01	89.3	F	L	0.77	41.4	D	L	1.05	95.9	F
Eastbound	T	1.11	100.8	F	T	1.21	141.5	F	T	1.40	218.6	F	T	1.51	268.1	F	T	1.44	236.5	F	T	1.54	282.3	F	T	1.02	72.8	E	T	1.13	107.4	F	T	0.98	61.7	E	T	1.08	90.9	F
Westbound	L	0.22	22.7	C	L	0.22	22.7	C	L	0.26	23.2	B	L	0.26	23.2	B	L	0.32	24.0	C	L	0.32	24.0	C	L	0.13	21.4	C	L	0.13	21.4	C	L	0.08	20.9	C	L	0.08	20.9	C
Northbound	TR	0.28	11.8	B	TR	0.55	22.8	B	TR	1.20	142.2	F	TR	1.11	107.5	F	TR	0.42	13.7	B	TR	0.48	14.3	B	TR	0.29	11.9	B	TR	0.62	17.0	B	TR	0.23	73.1	E	TR	0.26	17.2	B
Southbound	LTR	2.47	701.9	F	LTR	1.80	493.4	F	LTR	0.87	43.6	D	LTR	0.82	39.1	C	LTR	1.18	129.1	F	LTR	0.77	37.0	D	LTR	1.11	104.0	F	LTR	0.71	34.4	C	LTR	0.87	42.8	D	LTR	0.59	27.1	C
Intersection	267.0				129.0				104.0				108.5				149.3				120.2				84.7				61.9				47.5				52.5			
Arthur Kill Road and Hugenot Avenue	LT	0.27	16.2	B	LT	0.07	14.4	B	LT	0.21	9.7	A	LT	0.10	9.1	A	LT	0.30	10.4	B	LT	0.14	9.3	A	LT	0.30	10.3	B	LT	0.15	9.3	A	LT	0.21	9.7	A	LT	0.07	8.9	A
Eastbound	L	0.21	16.6	B	L	0.15	15.4	B	L	0.30	11.7	B	L	0.25	10.9	B	L	0.49	15.7	B	L	0.37	12.5	B	L	0.41	13.4	B	L	0.31	11.7	B	L	0.38	12.6	B	L	0.30	11.3	B
Westbound	TR	0.70	23.1	C	TR	0.25	16.1	B	TR	0.48	12.1	B	TR	0.16	9.4	A	TR	0.46	11.9	B	TR	0.10	8.1	A	TR	0.59	13.4	B	TR	0.20	9.7	A	TR	0.45	11.8	B	TR	0.12	9.2	A
Northbound	L	1.49	251.5	F	L	1.49	251.5	F	L	0.87	30.9	C	L	1.02	60.0	E	L	1.02	60.0	E	L	1.37	195.7	F	L	1.37	195.7	F	L	1.37	195.7	F	L	1.02	60.2	E				
Southbound	R	0.21	16.0	B	R	0.21	16.0	B	R	0.19	13.1	B	R	0.19	13.1	B	R	0.19	13.1	B	R	0.19	13.1	B	R	0.20	13.2	B	R	0.20	13.2	B	R	0.20	13.2	B	R	0.20	13.2	B
Intersection	111.0				158.2				17.0				19.4				25.7				34.0				72.8				103.6				26.9				36.1			
Drumgoole Road and Richmond Avenue	L	1.50	257.1	F	L	1.36	191.7	F	L	1.20	128.6	F	L	1.14	101.8	F	L	1.50	253.9	F	L	1.41	217.6	F	L	1.50	257.7	F	L	1.44	231.0	F	L	1.50	256.3	F	L	1.44	230.5	F
Eastbound	LR	1.51	259.4	F	LR	1.36	194.6	F	LR	1.15	109.2	F	LR	1.09	84.8	F	LR	1.50	256.3	F	LR	1.42	219.8	F	LR	1.49	253.8	F	LR	1.43	227.9	F	LR	1.50	258.4	F	LR	1.45	232.9	F
Westbound	T	1.40	209.5	F	T	1.42	219.0	F	T	1.18	81.2	E	T	1.18	81.2	E	T	1.40	209.6	F	T	1.53	267.8	F	T	1.52	261.5	F	T	1.66	324.7	F	T	1.30	184.8	F	T	1.46	236.5	F
Southbound	T	0.82	21.4	C	T	0.55	19.9	B	T	1.34	184.3	F	T	1.27	152.9	F	T	1.51	256.6	F	T	1.46	236.7	F	T	1.20	121.8	F	T	1.15	98.5	F	T	1.24	140.5	F	T	1.20	119.9	F
Intersection	202.6				177.3				131.6				121.1				242.0				240.9				222.5				236.1				193.3				201.8			
Arthur Kill Road and Drumgoole Road	L	1.52	270.9	F	L	1.04	73.4	E	L	1.21	144.6	F	L	0.89	39.8	D	L	1.82	398.7	F	L	1.26	158.8	F	L	1.62	318.3	F	L	1.14	119.1	F	L	1.21	144.1	F	L	0.76	28.1	C
Eastbound	TR	1.49	264.7	F	TR	1.53	283.1	F	TR	1.21	148.9	F	TR	1.30	187.5	F	TR	1.43	242.0	F	TR	1.51	278.2	F	TR	1.50	269.4	F	TR	1.60	315.8	F	TR	1.22	151.6	F	TR	1.33	199.9	F
Westbound	L	0.74	24.1	C	L	0.74	24.1	C	L	0.60	21.3	C	L	0.60	21.3	C	L	0.78	25.5	C	L	0.78	25.5	C	L	0.85	27.4	C	L	0.85	27.4	C	L	0.80	24.8	C	L	0.80	24.8	C
Northbound	L	0.66	34.6	C	L	0.68	35.0	C	L	0.52	33.3	C	L	0.55	33.8	C	L	0.74	38.6	D	L	0.76	39.8	D	L	0.57	34.2	C	L	0.61	34.9	C	L	0.52	33.2	C	L	0.56	33.9	C
Southbound	L	0.41	29.2	C	L	0.39	25.7	C	L	0.44	34.9	C	L	0.59	47.8	D	L	0.59	46.7	D	L	0.73	64.3	E	L	0.21	22.5	C	L	0.40	32.3	C	L	0.32	27.9	C	L	0.50	39.7	D
Intersection	170.6				150.7				157.3				151.8				219.3				188.1				218.9				201.1				192.3				189.9			
Arthur Kill Road and West Shore Expressway (NB) Service Road	L	1.56	289.3	F	L	2.52	712.5	F	L	2.28	615.4	F	L	1.63	319.1	F	L	2.60	757.6	F	L	1.60	300.0	F	L	1.67	344.3	F	L	3.03	945.4	F	L	1.93	465.1	F	L	1.83	406.0	F
Eastbound	T	0.37	8.0	A	T	0.26	7.2	A	T	0.49	12.3	B	T	0.42	11.5	B	T	0.63	14.2	B	T	0.58	13.4	B	T	0.58	13.4	B	T	0.48	12.1	B	T	0.46	11.9	B	T	0.37	11.1	B
Westbound	TR	0.89	19.2	B	TR	0.61	10.6	B	TR	0.77	17.0	B	TR	0.46	11.8	B	TR	0.79	17.5	B	TR	0.44	11.6	B	TR	1.07	61.0	E	TR	0.69	15.0	B	TR	0.80	17.9	B	TR	0.48	12.0	B
Northbound	LTR	0.92	69.4	E	LTR	0.90	64.8	E	LTR	0.44	17.9	B	LTR	0.45	17.8	B	LTR	1.06	79.4	E	LTR	1.01	65.6	E	LTR	0.69	25.3	C	LTR	0.68	24.3	C	LTR	0.69	25.4	C	LTR	0.67	24.2	C
Intersection	49.5				163.2				82.5				75.4				116.3				78.5				67.8				180.2				58.3				93.3			
Arthur Kill Road																																								

**Table 16-19**  
**2036 No Build and Build Conditions Level of Service Analysis**  
**Secondary Study Area Intersections**

Intersection	Weekday AM								Weekday Midday								Weekday PM								Weekend Midday								Weekend PM							
	2036 No Build				2036 Build				2036 No Build				2036 Build				2036 No Build				2036 Build				2036 No Build				2036 Build				2036 No Build				2036 Build			
	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS				
<b>Signalized Intersections</b>																																								
Travis Avenue and Forest Hill Road																																								
Eastbound	LR	0.72	30.2	C	LR	0.72	30.2	C	LR	0.35	22.3	C	LR	0.35	22.3	C	LR	0.42	23.1	C	LR	0.42	23.1	C	LR	0.26	21.5	C	LR	0.26	21.5	C	LR	0.41	23.0	C				
Northbound	LT	0.97	43.2	D	LT	1.06	68.0	E	LT	1.25	143.5	F	LT	1.44	226.0	F	LT	1.46	235.2	F	LT	1.69	337.6	F	LT	1.58	288.9	F	LT	1.83	400.9	F	LT	1.61	301.6	F	LT	1.86	411.2	F
Southbound	TR	0.85	26.2	C	TR	0.87	27.0	C	TR	1.29	159.0	F	TR	1.32	173.0	F	TR	1.49	247.3	F	TR	1.55	271.8	F	TR	1.26	145.3	F	TR	1.33	173.7	F	TR	1.15	98.4	F	TR	1.21	125.5	F
	Intersection	33.9 C			Intersection	45.2 D			Intersection	142.7 F			Intersection	184.1 F			Intersection	224.0 F			Intersection	278.0 F			Intersection	198.7 F			Intersection	265.3 F			Intersection	177.5 F			Intersection	242.2 F		
Richmond Hill Road and Forest Hill Road																																								
Eastbound	L	0.42	20.1	C	L	0.43	20.3	C	L	0.78	33.1	C	L	0.80	34.9	C	L	0.74	30.8	C	L	0.76	32.7	C	L	0.79	30.8	C	L	0.82	33.3	C	L	0.77	30.5	C	L	0.80	33.0	C
Westbound	TR	0.68	19.2	B	TR	0.78	22.8	C	TR	0.70	19.6	B	TR	0.82	25.1	C	TR	0.78	22.6	C	TR	0.91	33.4	C	TR	0.77	22.1	C	TR	0.89	30.6	C	TR	0.78	22.5	C	TR	0.89	30.6	C
Northbound	LTR	1.34	192.0	F	LTR	1.37	206.5	F	LTR	1.39	213.2	F	LTR	1.57	292.6	F	LTR	1.58	298.0	F	LTR	1.83	410.1	F	LTR	1.73	362.0	F	LTR	2.02	493.2	F	LTR	1.71	354.8	F	LTR	1.97	472.1	F
Southbound	TR	1.34	195.6	F	TR	1.48	255.5	F	TR	1.43	232.1	F	TR	1.65	329.9	F	TR	1.52	271.7	F	TR	1.75	374.8	F	TR	1.42	229.2	F	TR	1.64	323.9	F	TR	1.39	214.3	F	TR	1.59	302.5	F
	Intersection	144.5 F			Intersection	163.3 F			Intersection	186.6 F			Intersection	232.0 F			Intersection	275.1 F			Intersection	225.0 F			Intersection	286.8 F			Intersection	195.1 F			Intersection	251.2 F						
Arthur Kill Road and Bloomingdale Road																																								
Eastbound	TR	0.68	21.1	C	TR	0.69	21.5	C	TR	0.73	22.9	C	TR	0.76	24.1	C	TR	1.07	71.6	E	TR	1.11	87.4	F	TR	0.86	30.1	C	TR	0.92	36.0	D	TR	0.60	18.7	B	TR	0.65	20.0	C
Westbound	LT	0.48	17.5	B	LT	0.49	17.7	B	LT	0.63	21.7	C	LT	0.62	24.2	C	LT	0.64	22.7	C	LT	0.70	25.3	C	LT	0.66	23.6	C	LT	0.74	27.6	C	LT	0.39	15.6	B	LT	0.49	17.8	B
Northbound	LR	1.19	130.1	F	LR	1.19	130.1	F	LR	0.82	38.3	D	LR	0.82	38.3	D	LR	0.73	32.2	C	LR	0.73	32.2	C	LR	0.57	26.1	C	LR	0.57	26.1	C	LR	0.31	20.6	C	LR	0.31	20.6	C
	Intersection	63.7 E			Intersection	63.4 E			Intersection	27.1 C			Intersection	28.1 C			Intersection	53.8 D			Intersection	63.8 E			Intersection	27.8 C			Intersection	32.2 C			Intersection	18.2 B			Intersection	19.5 B		
Woodrow Road and Bloomingdale Road																																								
Eastbound	LTR	0.11	41.4	D	LTR	0.14	42.2	D	LTR	0.04	40.1	D	LTR	0.11	41.4	D	LTR	0.19	43.4	D	LTR	0.31	46.9	D	LTR	0.26	45.4	D	LTR	0.38	49.4	D	LTR	0.19	43.2	D	LTR	0.30	46.4	D
Westbound	LT	0.59	37.7	D	LT	0.59	37.7	D	LT	0.62	38.8	D	LT	0.64	39.6	D	LT	0.83	51.2	D	LT	0.84	52.7	D	LT	0.80	48.9	D	LT	0.82	50.2	D	LT	0.71	42.5	D	LT	0.72	43.3	D
Northbound	R	0.57	37.7	D	R	0.57	37.7	D	R	0.53	36.6	D	R	0.53	36.6	D	R	0.33	31.9	C	R	0.33	31.9	C	R	0.43	33.9	C	R	0.43	33.9	C	R	0.48	35.0	C	R	0.48	35.0	C
Southbound	LTR	1.97	473.3	F	LTR	1.97	473.3	F	LTR	1.04	68.9	E	LTR	1.04	68.9	E	LTR	1.13	102.1	F	LTR	1.13	102.1	F	LTR	1.29	168.9	F	LTR	1.29	168.9	F	LTR	1.23	141.3	F	LTR	1.23	141.3	F
	Intersection	382.9 F			Intersection	382.2 F			Intersection	296.6 F			Intersection	295.0 F			Intersection	329.7 F			Intersection	327.8 F			Intersection	447.0 F			Intersection	444.6 F			Intersection	452.1 F			Intersection	449.5 F		
Woodrow Road and Foster Road																																								
Eastbound	TR	0.85	21.7	C	TR	0.86	22.0	C	TR	0.72	15.8	B	TR	0.73	16.0	B	TR	0.80	18.2	B	TR	0.81	18.9	B	TR	0.84	20.6	C	TR	0.85	21.4	C	TR	0.66	13.9	B	TR	0.67	14.2	B
Westbound	LT	1.52	262.9	F	LT	1.53	266.8	F	LT	1.16	104.6	F	LT	1.18	112.7	F	LT	1.39	201.2	F	LT	1.42	214.5	F	LT	1.18	114.4	D	LT	1.21	123.9	F	LT	0.97	43.1	D	LT	0.99	47.8	D
Northbound	LR	0.91	44.4	F	LR	0.91	44.4	F	LR	1.12	99.5	F	LR	1.12	99.5	F	LR	1.04	73.5	E	LR	1.04	73.5	E	LR	0.86	37.2	D	LR	0.86	37.2	D	LR	0.75	29.2	C	LR	0.75	29.2	C
	Intersection	104.8 F			Intersection	106.2 F			Intersection	69.0 E			Intersection	71.8 E			Intersection	96.9 F			Intersection	101.7 F			Intersection	56.6 E			Intersection	60.2 E			Intersection	28.2 C			Intersection	30.0 C		
Woodrow Road and Huguenot Avenue																																								
Eastbound	L	0.52	18.4	B	L	0.52	18.5	B	L	0.50	17.7	B	L	0.51	17.9	B	L	0.37	15.0	B	L	0.37	15.2	B	L	0.41	15.9	B	L	0.42	16.1	B	L	0.37	14.8	B	L	0.37	14.9	B
Westbound	TR	0.79	24.4	C	TR	0.80	24.6	C	TR	0.73	21.4	C	TR	0.74	21.8	C	TR	0.81	25.5	C	TR	0.83	25.2	C	TR	0.79	24.3	C	TR	0.81	25.4	C	TR	0.67	19.1	B	TR	0.69	19.6	B
Northbound	L	0.84	49.9	D	L	0.85	52.5	D	L	0.27	14.4	B	L	0.30	15.2	B	L	0.47	21.8	C	L	0.53	25.3	C	L	0.47	21.5	C	L	0.52	24.6	C	L	0.22	13.3	B	L	0.25	13.8	B
Southbound	T	0.43	14.3	B	T	0.43	14.4	B	T	0.38	13.6	B	T	0.39	13.8	B	T	0.45	14.5	B	T	0.46	14.6	B	T	0.45	14.5	B	T	0.46	14.6	B	T	0.39	13.7	B	T	0.40	13.8	B
	Intersection	83.2 F			Intersection	83.5 F			Intersection	72.3 E			Intersection	73.5 E			Intersection	126.4 F			Intersection	129.1 F			Intersection	56.6 E			Intersection	60.2 E			Intersection	28.2 C			Intersection	30.0 C		
Amboy Road and Huguenot Avenue																																								
Eastbound	L	1.23	162.6	F	L	1.23	162.6	F	L	0.79	41.5	D	L	0.79	41.5	D	L	0.94	76.3	E	L	0.94	76.3	E	L	1.92	460.3	F	L	1.92	460.3	F	L	0.74	36.8	D	L	0.74	36.8	D
Westbound	TR	0.59	18.8	B	TR	0.59	18.8	B	TR	0.46	16.4	B	TR	0.42	15.7	B	TR	0.42	15.7	B	TR	0.51	17.2	B	TR	0.51	17.2	B	TR	0.51	17.2	B	TR	0.44	15.9	B	TR	0.44	15.9	B
Northbound	L	0.60	25.0	C	L	0.60	25.0	C	L	0.14	12.8	B	L	0.14	12.9	B	L	0.14	12.9	B	L	0.14	12.9	B	L	0.11	12.5	B	L	0.11	12.5	B	L	0.11	12.5	B	L	0.11	12.5	B
Southbound	TR	0.81	27.5	C	TR	0.81	27.5	C	TR	0.73	23.2	C	TR	0.73	23.2	C	TR	0.85	30.7	C	TR	0.85	30.7	C	TR	0.88	33.2	C	TR	0.88	33.2	C	TR	0.74	23.8	C	TR	0.74	23.8	C
	Intersection	66.4 E			Intersection	66.8 E			Intersection	33.4 C			Intersection	34.0 C			Intersection	75.5 E			Intersection	80.1 F			Intersection	80.3 F			Intersection	80.9 F			Intersection	28.1 C			Intersection	29.0 C		
Amboy Road and Arden Avenue																																								
Eastbound	L	0.23	17.6	B	L	0.23	17.6	B	L	0.36	21.9	C	L	0.36	21.9	C	L	0.24	19.4	B	L	0.24	19.4	B	L	0.32	20.9	C	L	0.32	20.9	C	L	0.29	19.3	B	L	0.29	19.3	B
Westbound	TR	0.89	37.1	D	TR	0.89	37.1	D	TR	0.69	25.1	C	TR	0.69	25.1	C	TR	0.69	25.2	C	TR	0.78	28.7	C	TR	0.78	28.7	C	TR	0.78	28.7	C	TR	0.72	26.2	C	TR	0.72	26.2	C
Northbound	LTR	0.79	29.4	C	LTR	0.79	29.4	C	LTR	1.04	67.7	E	LTR	1.04	67.7	E	LTR	1.25	148.5	F	LTR	1.25	148.5	F	LTR	1.17	115.5	F	LTR	1.17	115.5	F	LTR	1.19	124.9	F	LTR	1.19	124.9	F
Southbound	TR	0.85	64.9																																					

*RICHMOND AVENUE CORRIDOR*

As shown in Table 16-17, a total of seven (7) intersections out of eight (8) analyzed along the Richmond Avenue corridor would be significantly adversely impacted in one or more peak hours in 2036.

The northbound left-turn movement at Draper Place would be impacted during all peak hours and the southbound approach would be impacted during all peak hours except the weekday AM peak hour.

The northbound left-turn movement and the eastbound right-turn at Signs Road would be impacted during all peak hours. Also, the southbound approach would be impacted during all peak hours except the weekday AM peak hour.

The westbound left-turn movement at Richmond Hill Road would be impacted during the weekday and weekend midday peak hours. The northbound through movement would be impacted during all the peak hours except the weekday AM and PM peak hours. The southbound left-turn movement would be impacted during the weekday PM and weekend midday peak hours. The southbound through and right-turn movement would be impacted during all the peak hours except weekday AM peak hour.

At Forest Hill Road, the westbound left-turn movement and the northbound through and right-turn movements would be impacted during all the peak hours. The southbound through and right-turn movement would be impacted during all peak hours except the weekday AM peak hour. The newly proposed northbound left-turn movement would operate under congested conditions during all peak hours.

At Arthur Kill Road, the westbound through movement and the northbound through-right movement would be impacted during all peak hours. In addition, the northbound left-turn movement during weekend midday and southbound left-turn movement during all peak hours except weekday AM peak hour would be impacted.

The northbound through movement at Drumgoole Road would be impacted during all peak hours.

The northbound through movement at Amboy Road would be impacted during the weekday PM, and weekend midday and PM peak hours. The southbound left-turn movement would be impacted during all peak hours except the weekend midday peak hour. Also, the southbound through and right-turn movement would be impacted during the weekday PM peak hour.

*ARTHUR KILL ROAD CORRIDOR*

As shown in Table 16-17, a total of five (5) intersections out of seven (7) analyzed along the Arthur Kill Road corridor would be significantly adversely impacted in one or more peak hours in 2036.

At Woodrow Road, the westbound approach would be impacted during the Saturday PM peak hour. Also, the northbound right-turn movement would be impacted during the weekend midday peak hour.

At Arden Avenue, the eastbound through and left-turn movements would be impacted during all the peak hours and the southbound through-right turn movement would be impacted during the weekday AM and PM, and weekend midday peak hours.

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At Drumgoole Road, the eastbound and northbound through-right turn movements would be impacted during all peak hours. Also, the northbound left-turn would be impacted during the weekday midday and PM peak hours.

The eastbound left-turn movement at Route 440 northbound service road would be impacted during the weekday AM and weekend midday peak hours.

The southbound approach at Route 440 southbound service road would be impacted during all peak hours.

The eastbound approach at Bloomingdale Road would be impacted during the weekday PM peak hour.

### *VICTORY BOULEVARD CORRIDOR*

The westbound left-turn movement along the Southbound Ramp would be impacted during all peak hours.

Along the Northbound Ramp, the eastbound left-turn movement would be impacted during the weekday PM peak hour.

The westbound approach at Wild Avenue would be impacted during the weekday PM peak hour.

At Travis Avenue, the eastbound left-turn movement would be impacted during the weekday PM peak hour and the eastbound through movement would be impacted during the weekday AM peak hour. Also, the westbound through movement would be impacted during the weekday PM peak hour and the northbound left turn movement would be impacted during all peak hours except the weekday AM peak hour.

### *ARDEN AVENUE CORRIDOR*

The southbound approach at Woodrow Road would be impacted during the weekday AM and weekend midday peak hours. The eastbound approach would be impacted during the weekday PM peak hour. In addition, the westbound approach would be impacted during the weekday PM, and weekend midday and PM peak hours.

The northbound left-turn movement at Amboy Road would be impacted during the weekday PM peak hour; and the southbound left-turn movement at Amboy Road would be impacted during all peak hours.

### *FOREST HILL ROAD CORRIDOR*

The northbound approach at Travis Avenue would be impacted during all the peak hours. The southbound approach would be impacted during all the peak hours except the weekday AM peak hour.

The westbound approach at Richmond Hill Road would be impacted during all peak hours. In addition, the northbound and the southbound through-right turn movements would be impacted during all peak hours.

The northbound approach at Yukon Avenue would be impacted during all the peak hours.

*WOODROW ROAD CORRIDOR*

The westbound approach at Foster Road would be impacted during the all peak hours except the weekend PM peak hour.

The northbound approach at Huguenot Avenue would be impacted during the all peak hours except the weekday AM peak hour.

*ROUTE 440 SOUTHBOUND SERVICE ROAD CORRIDOR*

The eastbound right-turn at Muldoon Avenue would be impacted during the weekday midday and PM and weekend midday peak hours.

The westbound approach at Arden Avenue (unsignalized) would be impacted during all the peak hours.

*AMBOY ROAD CORRIDOR*

The southbound left-turn movement at Huguenot Avenue would be impacted during all peak hours except the weekday midday peak hour.

**PARKING**

*INTRODUCTION*

The proposed Fresh Kills Park would provide a total of 1,873 parking spaces by its full build out in 2036. Out of these 1,873 spaces, 1,199 spaces would be become available in 2016, while the remaining 674 spaces will become available by 2036. The location of various parking areas, and the number of spaces that would become available in both 2016 and 2036 build years are presented in Table 16-20. The parking spaces would be distributed throughout the park in a concept of tree-shaded “bosque parking” facilities. The parking areas would be located near the many park entrances, and sized appropriately for the park uses that would be directly accessed from that parking site.

**Table 16-20  
Proposed Parking: 2016 and 2036**

Parking Location	Total Number of Permanent Parking Spaces	2016	2036	Overflow Parking
North Park (A) (Wild Avenue)	73	73	73	–
North Park (B) (Schmul Park)	129	129	129	–
Creek Landing	325	325	325	–
The Marsh Terrace/Sunken Forest	112	112	112	–
The Point	614	0	614	207
East Park	40	40	40	–
Yukon Entrance/East Park	0	0	0	167
Forest Hill Road Connection Overlook	30	30	30	–
South Park (Arden Neighborhood)	40	40	40	–
South Park (Recreational Center)	450	450	450	540
West Park	60	0	60	457
Arthur Kill Road	0	0	0	173
<b>Total</b>	<b>1,873</b>	<b>1,199</b>	<b>1,873</b>	
<b>Overflow Parking Total</b>				<b>1,544</b>

**Source:** DMP, March 2006, Field Operations, December 2007 (modified November 2008).

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In addition to the proposed formal parking areas, the proposed project would include areas designed and designated for overflow parking. These areas would be used during unusual peak park visitation days or when special events are held, for example. In total, 1,544 overflow parking spaces would be provided throughout the park (see Table 16-20).

### WILLOWBROOK PARK PARKING SURVEY

Subsequent to the publication of the DGEIS in May 2008, parking surveys were conducted at Willowbrook Park—located in western Staten Island, northeast of Fresh Kills—for the purpose of assisting in determining the potential future parking needs at the proposed Fresh Kills Park based on current parking demands at existing Staten Island park facilities. The parking surveys were conducted in July 2008 (during the summer peak park activity period) for both the weekday and weekend conditions from 6:00 AM to 9:00 PM (the hours of park operation).

Willowbrook Park was selected for conducting the parking surveys since it has features that are representative of the proposed Fresh Kills Park including natural areas and active play areas as well as limited transit access at this time. Willowbrook Park contains a total of 164 acres of which about 45 acres are determined to be active acreage (based on aerial surveys). It provides a total of about 441 parking spaces including both formal parking areas and roadside parking areas that were identified within the park, resulting in approximately 2.7 parking space per acre.

Based on the parking survey, the maximum parking utilization in the park was 61 percent (or 269 spaces) and 33 percent (or 147 spaces) during the weekend and weekday conditions, respectively. These parking demands were largely associated with the 45 acres of active open space which includes ballfields, tennis courts, a carousel, and picnic areas. Allocating the surveyed parking inventory and demands to active space only would result in approximately 10 available parking spaces per each active acre and a utilization of 6.0 parking spaces per active acre for the weekend peak and 3.3 parking spaces per active acre for the weekday peak.

The active space at Willowbrook Park is most similar to the “City Destination Park” component of the Fresh Kills Park which was defined to include ballfields, picnic areas and various other active recreational uses found at Willowbrook Park. As contemplated, there are a total of 30.56 acres of City Destination Park proposed at Fresh Kills by 2016 with an additional 18.44 acres proposed by 2036 (for a total of about 49 acres). Based on the parking ratios presented above, the 2016 Fresh Kills Park City Destination Park program could be designed for about 300 available parking spaces for the entire active recreational area. Likewise, the 2036 Fresh Kills Park City Destination Park program could be designed for about 500 available parking spaces for the entire active recreational area. Excluding the parking spaces for the entire active recreational area (City Destination Park component) would result in 899 and 1,373 remaining parking spaces in the future 2016 and 2036 conditions, respectively. These remaining spaces would provide the parking for other park components, including the regional park features, tennis centers, indoor recreational facilities, and the commercial/retail uses.

### *2016 AND 2036 PARKING ACCUMULATION*

A detailed projection of parking accumulation for the proposed Fresh Kills Park was conducted for both the weekday and weekend conditions for the 2016 and 2036 build years (see Tables 16-21 and 16-22). The weekday and weekend parking accumulation estimates for the City Destination Park component were developed based on the information obtained from the Willowbrook Park parking surveys discussed above. The parking accumulation estimates indicate that in 2016, there would be a maximum parking demand of 404 and 745 spaces during the weekday and weekend conditions,







respectively. The parking demand in 2016 would be fully accommodated by the 1,199 permanent parking spaces. For the 2036 conditions, the parking accumulation estimates indicate that there would be a maximum demand of 1,732 and 2,740 spaces during the weekday and weekend conditions, respectively. This parking demand would both be fully accommodated during the weekday by the permanent parking facilities and on the peak weekends by the combination of permanent and overflow parking spaces (total of 3,417 spaces) in the year 2036.

The parking accumulation estimates for the 2036 build year present a conservative scenario by assuming that all of the park components would be at their peak activity levels at one given time. For example, the maximum parking demand of approximately 833 spaces is generated by the banquet use—which assumes a 100 percent auto share for a large-size event—during both the weekday and weekend conditions. However, it should be noted that the banquet facility is not expected to hold large size events on a daily basis, specifically during the weekdays. Therefore, majority of the days, the actual parking demand projected for the 2036 conditions would be less than the 1,732 and 2,740 spaces estimated by assuming that all of the park components would be at their peak activity levels at one given time.

## F. HIGHWAY MAINLINE AND RAMP CONNECTIONS ANALYSIS

### METHODOLOGY

Because of its importance to regional travel and proximity to the project site, analyses were performed to assess the potential impacts of the proposed Fresh Kills Park on the West Shore Expressway. The key northbound and southbound West Shore Expressway segments in the vicinity of existing and proposed off and on-ramps (influence area) were analyzed including the expressway service roads and the segments where they intersect with the proposed park roads. The analysis study area included the West Shore Expressway ramps at Arthur Kill Road in the south to the entry and exit ramps at Victory Boulevard in the north.

It is beyond the scope of the *2000 HCM* to analyze a highway segment that is operating under oversaturated conditions. Therefore, a simulation of the West Shore Expressway corridor using the CORSIM model was used to better replicate the existing and future conditions on the highway. The ability to account for traffic conditions that influence the immediate study area is critical when modeling traffic conditions before and after the construction of the Fresh Kills Park when additional delays are likely to result on the Expressway ramps and service road due to park generated as well as diverted traffic volumes.

The CORSIM model reports the density in passenger cars per mile per lane (pc/mi/ln) and an average speed for the highway section being analyzed, but does not readily report the level of service. Levels of service are necessary to assess potential impacts of the proposed Fresh Kills Park as per *CEQR Technical Manual* guidelines. The *2000 HCM* defines level of service thresholds for merge and diverge areas using density in pc/mi/ln and these thresholds have been applied to the results of the CORSIM model. The level of service thresholds for each density range are as follows:

- LOS A describes operations with very low densities (i.e., 0-10 pc/mi/ln) and high free flow speeds.
- LOS B describes operations with fairly low densities (i.e., 10.1-20 pc/mi/ln) and moderate to high free flow speeds.
- LOS C describes operations with moderate densities (i.e., 20.1-28 pc/mi/ln) and moderate free flow speeds.

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- LOS D describes operations with moderate to high densities (i.e., 28.1-35 pc/mi/ln) and moderate to low free flow speeds. A mid- LOS D density of 30 pc/mi/ln is considered the high range of acceptable density.
- LOS E describes operations with high densities (i.e., 35.1 and higher pc/mi/ln) and low free flow speeds. 45 pc/mi/ln is considered the maximum density for sustained flows at capacity on a typical freeway. Queuing can begin at densities higher than this.
- LOS F describes operations with very high densities and very low free flow speeds. Queuing is common within LOS F, which leads to failure conditions and congestion.

### IMPACT CRITERIA

According to *CEQR Technical Manual*, highway or ramp sections being analyzed, e.g., mainline capacity section, weaving areas, and ramp junctions, should not deteriorate more than one-half of a level of service between No Build and Build conditions when No Build level of service is in the D,E or F range. The following significant impact criteria clarifications have been provided by the New York City Department of City Planning and used in the Build analyses to assess the potential impacts of the proposed Fresh Kills Park on West Shore Expressway:

- For No Build LOS D to Build LOS D: Since the starting value of LOS D is 28 pc/mi/ln and the highest value of LOS D is 35 pc/mi/ln, one half of the difference between these two is 3.5 pc/mi/ln. Hence, an increase in the projected density of 4 pc/mi/ln or more as a result of traffic volume added between the No Build and Build conditions is considered a significant impact.
- For No Build LOS D to Build LOS E: Since the value of mid-LOS D is 31.5 pc/mi/ln and the starting value of LOS E is 35 pc/mi/ln, one-half of the difference between these two is 1.75 pc/mi/ln. Therefore, an increase in the projected density of 2 pc/mi/ln or more between No Build and Build is considered a significant impact.
- For No Build LOS E to Build LOS F: The same criteria as No Build LOS D to Build LOS E applies.

### NORTHBOUND WEST SHORE EXPRESSWAY

#### EXISTING CONDITIONS

Traffic volumes on the northbound West Shore Expressway mainline range from 2950 to 3950 vph during all peak hours immediately to the south of the off-ramp with Victory Boulevard. Existing traffic volumes exiting Northbound West Shore Expressway at Victory Boulevard range approximately from 300 to 420 vph across all peak hours. Existing traffic entering West Shore Expressway at the service road on-ramp north of Victory Boulevard range from 185 to 315 vph across all peak hours. Further south, existing traffic volumes exiting Northbound West Shore Expressway at Arthur Kill Road range approximately from 95 to 215 vph. Existing traffic entering West Shore Expressway at the service road on-ramp south of Arden Avenue range from 635 to 1055 vph across all peak hours.

Table 16-23 shows the existing levels of service, speeds and densities for the northbound West Shore Expressway. As shown in Table 16-23, existing conditions at all the on and off-ramps are acceptable (Level of Service “D”) or better with the off-ramp at Arthur Kill Road and the on-ramp north of Victory Boulevard operating at LOS A during all the peak hours. The freeway segments north and south of Arthur Kill Road ramps, south of the Victory Boulevard off-ramp and south of the Victory Boulevard on-ramp also operate at acceptable (Level of Service “D” or better) operating conditions.

**Table 16-23**  
**Existing Conditions on the Northbound West Shore Expressway**

Location	Existing AM			Existing Midday			Existing PM		
	Speed (mph)	Density (pc/mi/ln)	LOS	Speed (mph)	Density (pc/mi/ln)	LOS	Speed (mph)	Density (pc/mi/ln)	LOS
<b>Weekday Peak Hours</b>									
Off-ramp, south of Arthur Kill Road	60.20	2.8	A	41.48	2.5	A	41.59	4.2	A
Mainline north of Arthur Kill Road off-ramp diverge	63.95	22.3	C	64.55	17.3	B	64.04	18.9	B
Mainline south of Arthur Kill Road on-ramp merge	61.94	23.1	C	63.60	17.6	B	62.82	19.3	B
On-ramp south of Arden Avenue	31.36	32.7	D	32.00	25.1	C	31.90	20.9	C
Mainline south of Victory Boulevard off-ramp diverge	58.39	33.0	D	60.10	25.4	C	59.48	25.8	C
Off-ramp, south of Victory Boulevard	40.16	10.9	B	41.87	10.1	B	42.38	8.4	A
Mainline south of Victory Boulevard on-ramp merge	60.28	28.4	D	61.22	21.5	C	60.60	22.6	C
On-ramp, north of Victory Boulevard	33.88	6.3	A	34.21	9.1	A	34.08	5.5	A
<b>Weekend Peak Hours</b>									
Off-ramp, south of Arthur Kill Road				39.76	3.8	A	40.83	3.5	A
Mainline north of Arthur Kill Road off-ramp diverge				64.21	17.9	B	64.03	20.6	C
Mainline south of Arthur Kill Road on-ramp merge				62.64	18.3	B	62.88	21.0	C
On-ramp south of Arden Avenue				31.50	26.4	C	31.90	19.7	B
Mainline south of Victory Boulevard off-ramp diverge				59.18	26.3	C	59.60	27.3	C
Off-ramp, south of Victory Boulevard				41.77	7.4	A	41.32	8.5	A
Mainline south of Victory Boulevard on-ramp merge				60.36	23.6	C	60.87	24.3	C
On-ramp, north of Victory Boulevard				33.95	4.7	A	33.76	3.7	A

*2016 NO BUILD CONDITIONS*

Traffic volumes on the analyzed sections of the West Shore Expressway mainline are expected to increase at an annual rate of approximately 2 percent between 2007 and 2016, plus there would be traffic generated by other background development projects. In the 2016 No Build condition, traffic volumes would increase by about 530 to 710 vph on the mainline segments south of the off-ramp at Victory Boulevard, 90 to 145 vph at the off-ramp at Victory Boulevard, 65 to 100 vph at the on-ramp north of Victory Boulevard, 40 to 125 vph at the off-ramp at Arthur Kill Road and 145 to 210 vph at the on-ramp south of Arden Avenue.

Table 16-24 shows the 2016 No Build levels of service, speeds and densities for the northbound West Shore Expressway.

**Table 16-24**  
**2016 No Build Conditions on the Northbound West Shore Expressway**

Location	No Build AM			No Build Midday			No Build PM		
	Speed (mph)	Density (pc/mi/ln)	LOS	Speed (mph)	Density (pc/mi/ln)	LOS	Speed (mph)	Density (pc/mi/ln)	LOS
<b>Weekday Peak Hours</b>									
Off-ramp, south of Arthur Kill Road	39.91	5.7	A	39.66	1.9	A	40.79	7.2	A
Mainline north of Arthur Kill Road off-ramp diverge	54.79	30.5	D	63.87	21.0	C	63.66	22.2	C
Mainline south of Arthur Kill Road on-ramp merge	25.85	60.5	F	61.97	21.6	C	61.99	22.8	C
On-ramp south of Arden Avenue	26.00	50.7	F	31.30	28.2	D	31.60	25.0	C
Mainline south of Victory Boulevard off-ramp diverge	45.31	47.4	E	58.80	30.0	D	58.11	31.9	D
Off-ramp, south of Victory Boulevard	37.25	13.9	B	40.82	10.2	B	40.81	10.9	B
Mainline south of Victory Boulevard on-ramp merge	56.82	33.1	D	60.05	26.1	C	60.03	27.0	C
On-ramp, north of Victory Boulevard	33.80	7.3	A	34.37	8.9	A	35.00	6.3	A
<b>Weekend Peak Hours</b>									
Off-ramp, south of Arthur Kill Road				41.27	5.8	A	40.89	4.5	A
Mainline north of Arthur Kill Road off-ramp diverge				63.72	20.8	C	63.48	24.4	C
Mainline south of Arthur Kill Road on-ramp merge				62.38	21.2	C	60.54	25.6	C
On-ramp south of Arden Avenue				31.10	32.7	D	31.80	23.8	C
Mainline south of Victory Boulevard off-ramp diverge				58.61	31.2	D	58.24	33.1	D
Off-ramp, south of Victory Boulevard				40.61	10.7	B	41.18	9.0	A
Mainline south of Victory Boulevard on-ramp merge				60.62	26.4	C	59.45	29.3	D
On-ramp, north of Victory Boulevard				34.26	5.5	A	33.82	5.5	A

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As shown in Table 16-24, the off-ramp south of Arthur Kill Road and the on-ramp north of Victory Boulevard will continue to operate at LOS A during all peak hours. The on-ramp south of Arden Avenue will continue to operate at LOS D or better during all peak periods except for the weekday AM peak hour when it is projected to operate at LOS E. The off-ramp at Victory Boulevard will operate at LOS B or better during all peak periods. The operating conditions for the freeway segment south of the Victory Boulevard off-ramp is projected to deteriorate to LOS F during the AM Peak Hour. The operating conditions for the freeway segments, south of Arthur Kill Road and south of the Victory Boulevard off-ramp are projected to deteriorate to LOS F during the AM Peak Hour respectively. The freeway segment south of Arthur Kill Road will respectively operate at LOS C during all the other peak hours while the freeway segment south of the Victory Boulevard off-ramp will operate at LOS D during all the other peak hours. The freeway segment north of Arthur Kill Road is projected to operate at LOS C during all the peak hours except for the weekday AM peak hour when it is projected to operate at LOS D. The operating conditions for the freeway segment south of the Victory Boulevard on-ramp will remain the same during all the peak periods compared to the existing conditions except for the weekend PM peak hour when it is projected to deteriorate to LOS D.

### *2016 BUILD CONDITIONS*

Compared to the 2016 No Build conditions, the proposed Fresh Kills Park project would be accompanied by major changes in ramp configurations, which will include the reconstruction of the West Shore Expressway northbound service road from Arthur Kill Road to Arden Avenue and extending further to serve as an entrance for the vehicles traveling into the Fresh Kills Park. An additional off-ramp, north of Arden Avenue and an additional on-ramp south of the Fresh Kills Park are also proposed. North of the park, the service road is proposed to serve the exiting vehicles, which will travel further north.

As compared to the 2016 No Build conditions, traffic volumes exiting the West Shore Expressway at the off-ramp south of Victory Boulevard would increase by approximately 5 to 10 vehicles across all the peak hours. At the on-ramp north of Victory Boulevard, traffic volumes would increase by 110 to 205 vehicles across all the peak hours. At the off-ramp south of Arthur Kill Road, traffic volumes would increase by 5 to 15 vehicles. At the on-ramp south of Arden Avenue, there will be a net decrease of 150 to 220 vehicles. At the new off-ramp, north of Arden Avenue, traffic volumes are projected to range approximately from 165 to 290 vph, while at the new on-ramp south of Fresh Kills Park, traffic volumes are projected to range approximately from 315 to 390 vph.

Table 16-25 shows projected 2016 Build levels of service, speeds and densities for the northbound West Shore Expressway.

**Table 16-25**  
**2016 Build Conditions on the Northbound West Shore Expressway**

Location	Build AM			Build Midday			Build PM		
	Speed (mph)	Density (pc/mi/ln)	LOS	Speed (mph)	Density (pc/mi/ln)	LOS	Speed (mph)	Density (pc/mi/ln)	LOS
<b>Weekday Peak Hours</b>									
Off-ramp, south of Arthur Kill Road	<u>40.46</u>	<u>5.6</u>	A	<u>41.13</u>	<u>4.0</u>	A	<u>40.63</u>	<u>8.7</u>	A
Mainline north of Arthur Kill Road off-ramp diverge	<u>62.86</u>	<u>26.7</u>	C	<u>63.74</u>	<u>21.1</u>	C	<u>63.97</u>	<u>22.6</u>	C
Mainline south of Arthur Kill Road on-ramp merge	<u>37.03</u>	<u>44.5</u>	E	<u>62.01</u>	<u>21.7</u>	C	<u>62.27</u>	<u>23.2</u>	C
On-ramp, south of Arden Avenue	<u>33.87</u>	<u>24.5</u>	C	<u>33.31</u>	<u>20.3</u>	C	<u>33.40</u>	<u>20.8</u>	C
Mainline between on-ramp merge at Arthur Kill Road and proposed off-ramp diverge at Northbound WSE Service Road	<u>33.22</u>	<u>50.8</u>	F	<u>52.18</u>	<u>26.9</u>	C	<u>52.53</u>	<u>28.3</u>	D
Off-ramp, north of Arden Avenue	<u>35.44</u>	<u>6.1</u>	A	<u>34.64</u>	<u>7.5</u>	A	<u>34.72</u>	<u>9.1</u>	A
On-ramp, south of Fresh Kills Entrance	<u>32.76</u>	<u>10.3</u>	B	<u>32.65</u>	<u>11.9</u>	B	<u>32.21</u>	<u>9.7</u>	A
Mainline south of proposed on-ramp merge at Northbound WSE Service Road	<u>44.73</u>	<u>42.9</u>	E	<u>57.37</u>	<u>26.9</u>	C	<u>58.88</u>	<u>27.9</u>	C
Mainline south of Victory Boulevard off-ramp diverge	<u>56.27</u>	<u>38.4</u>	E	<u>58.35</u>	<u>29.5</u>	D	<u>58.08</u>	<u>31.2</u>	D
Off-ramp, south of Victory Boulevard	<u>39.65</u>	<u>12.4</u>	B	<u>40.28</u>	<u>10.7</u>	B	<u>41.27</u>	<u>9.7</u>	A
Mainline south of Victory Boulevard on-ramp merge	<u>59.40</u>	<u>32.6</u>	D	<u>60.58</u>	<u>24.7</u>	C	<u>60.10</u>	<u>26.5</u>	C
On-ramp, north of Victory Boulevard	<u>34.40</u>	<u>9.4</u>	A	<u>34.06</u>	<u>14.3</u>	B	<u>34.06</u>	<u>9.8</u>	A
<b>Weekend Peak Hours</b>									
Off-ramp, south of Arthur Kill Road				<u>42.10</u>	<u>4.6</u>	A	<u>40.28</u>	<u>6.3</u>	A
Mainline north of Arthur Kill Road off-ramp diverge				<u>63.94</u>	<u>21.6</u>	C	<u>63.17</u>	<u>24.4</u>	C
Mainline south of Arthur Kill Road on-ramp merge				<u>62.30</u>	<u>22.2</u>	C	<u>61.74</u>	<u>25.0</u>	C
On-ramp, south of Arden Avenue				<u>33.51</u>	<u>20.7</u>	C	<u>33.87</u>	<u>18.4</u>	B
Mainline between on-ramp merge at Arthur Kill Road and proposed off-ramp diverge at Northbound WSE Service Road				<u>53.80</u>	<u>26.6</u>	C	<u>52.41</u>	<u>29.4</u>	D
Off-ramp, north of Arden Avenue				<u>35.00</u>	<u>7.5</u>	A	<u>35.24</u>	<u>7.7</u>	A
On-ramp, south of Fresh Kills Entrance				<u>33.01</u>	<u>9.7</u>	A	<u>33.35</u>	<u>10.6</u>	B
Mainline south of proposed on-ramp merge at Northbound WSE Service Road				<u>60.03</u>	<u>26.4</u>	C	<u>58.20</u>	<u>29.5</u>	D
Mainline south of Victory Boulevard off-ramp diverge				<u>55.58</u>	<u>31.9</u>	D	<u>57.75</u>	<u>32.9</u>	D
Off-ramp, south of Victory Boulevard				<u>39.92</u>	<u>11.9</u>	B	<u>40.06</u>	<u>9.4</u>	A
Mainline south of Victory Boulevard on-ramp merge				<u>60.53</u>	<u>25.0</u>	C	<u>59.62</u>	<u>28.4</u>	D
On-ramp, north of Victory Boulevard				<u>33.81</u>	<u>10.7</u>	B	<u>33.71</u>	<u>9.0</u>	A

As seen in Table 16-25, the new off and on-ramps will operate at LOS B or better during all the peak hours, while operations at the other ramps will effectively improve with all the merge and diverge junctions operating at LOS C or better. The freeway segments are projected to operate at LOS D or better during all the peak hours, with the exceptions of the segment south of Arthur Kill Road, the segment south of the proposed on-ramp south of the Fresh Kills Park entrance, and the segment south of the Victory Boulevard off-ramp which are projected to operate at LOS E during the AM peak hour. The newly created weaving section between the on-ramp at Arthur Kill Road and the proposed off-ramp at the West Shore Expressway Service Road will operate at LOS C during all the peak hours except for the weekday AM peak hour where it is projected to operate at LOS F and the weekday and weekend PM peak hours where it is projected to operate at LOS D, respectively.

**2036 NO BUILD CONDITIONS**

Traffic volumes on the analyzed sections of the West Shore Expressway mainline are expected to increase at an annual rate of approximately 1 percent between 2016 and 2036. In the 2036 No Build conditions, traffic volumes would increase by 590 to 790 vph over the 2016 conditions on the mainline segments south of Victory Boulevard, 70 to 100 vph at the off-ramp south of Victory Boulevard, 40 to

**Fresh Kills Park GEIS**

75 vph at the on-ramp north of Victory Boulevard, 20 to 55 vph at the off-ramp at Arthur Kill Road and 150 to 250 vph at the on-ramp south of Arden Avenue.

Table 16-26 shows the projected 2036 No Build levels of service, speeds and densities for the northbound West Shore Expressway.

As seen in Table 16-26, the ramp junctions will operate at acceptable (LOS D or better) operating conditions across all peak hours except for the on-ramp south of Arden Avenue, where it is projected to operate at LOS F during the weekday AM peak hour, mainly due to the additional traffic in the No-Build condition. Compared to the 2016 No Build Conditions, the operating condition of the on-ramp north of Victory Boulevard during the weekday midday peak hour is projected to deteriorate to LOS B from LOS A. In addition, the freeway segments north and south of Arthur Kill Road are projected to experience congested conditions, particularly during the weekday AM and weekend PM peak hours.

**Table 16-26**  
**2036 No Build Conditions on the Northbound West Shore Expressway**

Location	No Build AM			No Build Midday			No Build PM		
	Speed (mph)	Density (pc/mi/ln)	LOS	Speed (mph)	Density (pc/mi/ln)	LOS	Speed (mph)	Density (pc/mi/ln)	LOS
<b>Weekday Peak Hours</b>									
Off-ramp, south of Arthur Kill Road	<u>34.35</u>	<u>6.4</u>	A	<u>41.01</u>	<u>3.5</u>	A	<u>39.93</u>	<u>8.3</u>	A
Mainline north of Arthur Kill Road off-ramp diverge	<u>15.33</u>	<u>101.4</u>	F	<u>63.59</u>	24.1	C	<u>63.05</u>	<u>26.1</u>	C
Mainline south of Arthur Kill Road on-ramp merge	<u>12.98</u>	<u>114.9</u>	F	<u>62.11</u>	<u>24.7</u>	C	<u>60.39</u>	<u>27.2</u>	C
On-ramp south of Arden Avenue	<u>19.72</u>	<u>82.4</u>	F	<u>30.97</u>	<u>33.8</u>	D	<u>31.62</u>	<u>29.2</u>	D
Mainline south of Victory Boulevard off-ramp diverge	<u>54.41</u>	<u>41.5</u>	E	<u>56.94</u>	<u>35.9</u>	E	<u>56.26</u>	<u>37.3</u>	E
Off-ramp, south of Victory Boulevard	<u>38.47</u>	<u>12.1</u>	B	<u>39.61</u>	<u>14.4</u>	B	<u>39.46</u>	<u>14.6</u>	B
Mainline south of Victory Boulevard on-ramp merge	<u>59.37</u>	<u>33.9</u>	D	<u>60.25</u>	<u>29.0</u>	D	<u>59.90</u>	<u>30.0</u>	D
On-ramp, north of Victory Boulevard	<u>34.62</u>	<u>8.3</u>	A	<u>34.28</u>	<u>12.1</u>	B	<u>34.47</u>	<u>6.3</u>	A
<b>Weekend Peak Hours</b>									
Off-ramp, south of Arthur Kill Road				<u>40.59</u>	<u>7.3</u>	A	<u>38.82</u>	<u>7.3</u>	A
Mainline north of Arthur Kill Road off-ramp diverge				<u>63.39</u>	<u>24.1</u>	C	<u>62.79</u>	<u>28.2</u>	D
Mainline south of Arthur Kill Road on-ramp merge				<u>61.61</u>	<u>24.8</u>	C	<u>20.86</u>	<u>83.9</u>	F
On-ramp south of Arden Avenue				<u>31.69</u>	<u>32.3</u>	D	<u>30.92</u>	<u>28.5</u>	D
Mainline south of Victory Boulevard off-ramp diverge				<u>58.26</u>	<u>35.1</u>	E	<u>57.19</u>	<u>38.0</u>	E
Off-ramp, south of Victory Boulevard				<u>41.06</u>	<u>13.1</u>	B	<u>39.45</u>	<u>12.9</u>	B
Mainline south of Victory Boulevard on-ramp merge				<u>60.28</u>	<u>29.3</u>	D	<u>59.75</u>	<u>32.2</u>	D
On-ramp, north of Victory Boulevard				<u>34.17</u>	<u>8.0</u>	A	<u>34.19</u>	<u>7.6</u>	A

*2036 BUILD CONDITIONS*

As noted in the section regarding 2016 Build conditions, the 2036 Build condition will be accompanied by the same changes in ramp configurations. At the new off-ramp, traffic volumes are projected to range between 225 and 545 vph, while at the new on-ramp south of Fresh Kills Park, traffic volumes are projected to range approximately from 400 to 490 vph.

Table 16-27 shows the projected 2036 Build levels of service, speeds and densities for the northbound West Shore Expressway.

**Table 16-27**

**2036 Build Conditions on the Northbound West Shore Expressway**

Location	Build AM			Build Midday			Build PM		
	Speed (mph)	Density (pc/mi/ln)	LOS	Speed (mph)	Density (pc/mi/ln)	LOS	Speed (mph)	Density (pc/mi/ln)	LOS
<b>Weekday Peak Hours</b>									
Off-ramp, south of Arthur Kill Road	35.73	5.9	A	40.36	3.3	A	40.53	8.6	A
Mainline north of Arthur Kill Road off-ramp diverge	20.12	84.5	F	63.63	25.4	C	63.04	28.1	D
Mainline south of Arthur Kill Road on-ramp merge	17.01	94.7	F	61.11	26.5	C	50.94	34.9	D
On-ramp, south of Arden Avenue	33.53	23.6	C	33.62	24.2	C	33.46	23.6	C
Mainline between on-ramp merge at Arthur Kill Road and proposed off-ramp diverge at Northbound WSE Service Road	24.45	67.9	F	44.87	37.3	E	34.00	52.6	F
Off-ramp, north of Arden Avenue	34.62	6.7	A	34.76	10.9	B	34.78	17.9	B
On-ramp, south of Fresh Kills Entrance	33.08	9.9	A	32.62	12.3	B	33.43	9.9	A
Mainline south of proposed on-ramp merge at Northbound WSE Service Road	38.71	47.8	F	46.60	39.5	E	57.77	31.1	D
Mainline south of Victory Boulevard off-ramp diverge	50.98	40.0	E	53.93	37.5	E	58.47	33.7	D
Off-ramp, south of Victory Boulevard	37.59	10.0	A	39.34	12.1	B	41.06	12.2	B
Mainline south of Victory Boulevard on-ramp merge	58.17	32.1	D	58.07	30.6	D	59.76	28.9	D
On-ramp, north of Victory Boulevard	34.33	10.9	B	33.64	16.3	B	33.81	13.6	B
<b>Weekend Peak Hours</b>									
Off-ramp, south of Arthur Kill Road				40.30	6.7	A	38.26	4.9	A
Mainline north of Arthur Kill Road off-ramp diverge				63.29	26.3	C	28.82	63.4	F
Mainline south of Arthur Kill Road on-ramp merge				34.88	47.6	F	18.19	93.8	F
On-ramp, south of Arden Avenue				33.22	24.0	C	33.52	23.8	C
Mainline between on-ramp merge at Arthur Kill Road and proposed off-ramp diverge at Northbound WSE Service Road				25.82	65.4	F	25.63	67.6	F
Off-ramp, north of Arden Avenue				34.48	14.8	B	34.42	15.8	B
On-ramp, south of Fresh Kills Entrance				31.51	9.4	A	33.11	9.8	A
Mainline south of proposed on-ramp merge at Northbound WSE Service Road				52.80	33.6	D	56.75	32.0	D
Mainline south of Victory Boulevard off-ramp diverge				52.57	37.0	E	55.60	36.5	E
Off-ramp, south of Victory Boulevard				39.08	11.5	B	40.08	11.9	B
Mainline south of Victory Boulevard on-ramp merge				59.67	29.0	D	59.28	29.8	D
On-ramp, north of Victory Boulevard				34.07	11.3	B	33.67	13.2	B

As seen in Table 16-27, most of the analyzed ramp segments will experience a decrease in density and overall improvement in LOS. This is due to the fact that the introduction of the new ramps and the service road lead to a redistribution of traffic activity along the northbound West Shore Expressway which effectively relieves traffic congestion at the existing on and off-ramps. The densities indicate congested conditions at the following freeway segments: north of Arthur Kill Road off-ramp during the weekday AM and weekend PM peak hours; south of Arthur Kill Road on-ramp during the weekday AM and weekend midday and PM peak hours; and south of the proposed on-ramp south of the Fresh Kills Park entrance during the weekday AM peak hour. In addition, the weaving section between the on-ramp at Arthur Kill Road and proposed off-ramp at the West Shore Expressway Service Road would experience congestion during all the peak hours except the weekday midday peak hour.



**SOUTHBOUND WEST SHORE EXPRESSWAY**

*EXISTING CONDITIONS*

Traffic volumes on the southbound West Shore Expressway mainline range from 2859 to 3961 vph during all peak hours immediately to the south of the on-ramp at Victory Boulevard. Existing traffic volumes exiting southbound West Shore Expressway at the off-ramp north of Victory Boulevard range approximately from 175 to 265. Existing traffic volumes entering southbound West Shore Expressway via the on-ramp at Victory Boulevard range approximately from 370 to 560 vph across all peak hours. Further south, existing traffic volumes exiting southbound West Shore Expressway at Muldoon Avenue range approximately from 580 to 870 vph. Existing traffic exiting West Shore Expressway at the service road off-ramp south of Arden Avenue range from 265 to 680 vph, while existing traffic entering southbound West Shore Expressway, via the on-ramp south of Arthur Kill Road range from 390 to 490 vph across all peak hours.

Table 16-28 shows the existing levels of service, speeds and densities for the southbound West Shore Expressway. As shown in Table 16-28, existing conditions at all the on and off-ramps are fair (Level of Service “C” or better). The freeway segments are projected to operate at LOS D or better during all the peak hours except for the freeway segment north of the Muldoon Avenue off-ramp which is projected to operate at LOS E during the weekday PM peak hour.

**Table 16-28**  
**Existing Conditions on the Southbound West Shore Expressway**

Location	Existing AM			Existing Midday			Existing PM		
	Speed (mph)	Density (pc/mi/ln)	LOS	Speed (mph)	Density (pc/mi/ln)	LOS	Speed (mph)	Density (pc/mi/ln)	LOS
<b>Weekday Peak Hours</b>									
On-ramp, south of Arthur Kill Road	<u>32.90</u>	<u>11.3</u>	B	<u>33.20</u>	<u>14.1</u>	B	<u>32.80</u>	<u>16.8</u>	B
Mainline north of Arthur Kill Road on-ramp merge	<u>62.04</u>	15.4	B	<u>60.83</u>	19.5	B	<u>61.21</u>	18.7	<u>B</u>
Off-ramp, south of Arden Avenue	<u>35.74</u>	<u>7.3</u>	A	<u>34.71</u>	<u>10.9</u>	B	<u>33.94</u>	<u>21.2</u>	<u>C</u>
Mainline north of Arthur Kill Road off-ramp diverge	<u>61.08</u>	<u>17.5</u>	B	<u>60.17</u>	<u>23.0</u>	C	<u>57.83</u>	<u>26.0</u>	C
Off-ramp, north of Muldoon Avenue	<u>34.52</u>	<u>19.5</u>	B	<u>34.42</u>	<u>23.3</u>	C	<u>34.35</u>	<u>26.1</u>	C
Mainline north of Muldoon Avenue off-ramp diverge	<u>56.10</u>	<u>24.9</u>	C	<u>53.50</u>	<u>33.4</u>	D	<u>44.88</u>	<u>43.5</u>	E
Mainline south of Victory Boulevard on-ramp merge	<u>59.38</u>	<u>22.2</u>	C	<u>57.31</u>	<u>29.5</u>	D	<u>53.85</u>	<u>34.2</u>	D
On-ramp, south of Victory Boulevard	<u>33.36</u>	<u>12.2</u>	B	<u>33.99</u>	<u>10.7</u>	B	<u>34.05</u>	<u>17.4</u>	B
Mainline south of Victory Boulevard off-ramp diverge	<u>61.91</u>	<u>19.5</u>	B	<u>59.61</u>	<u>27.0</u>	C	<u>57.99</u>	<u>29.0</u>	D
Off-ramp, north of Victory Boulevard	<u>35.12</u>	<u>6.7</u>	A	<u>34.70</u>	<u>7.8</u>	A	<u>33.72</u>	<u>7.6</u>	A
<b>Weekend Peak Hours</b>									
On-ramp, south of Arthur Kill Road				<u>32.60</u>	<u>14.2</u>	B	<u>32.30</u>	<u>15.0</u>	B
Mainline north of Arthur Kill Road on-ramp merge				<u>60.95</u>	<u>20.8</u>	C	<u>60.56</u>	<u>20.7</u>	C
Off-ramp, south of Arden Avenue				<u>35.13</u>	<u>8.0</u>	A	<u>35.02</u>	<u>10.1</u>	<u>B</u>
Mainline north of Arthur Kill Road off-ramp diverge				<u>60.46</u>	<u>23.4</u>	C	<u>59.43</u>	<u>24.3</u>	C
Off-ramp, north of Muldoon Avenue				<u>34.47</u>	<u>15.7</u>	B	<u>34.44</u>	<u>19.5</u>	B
Mainline north of Muldoon Avenue off-ramp diverge				<u>56.06</u>	<u>29.6</u>	D	<u>53.51</u>	<u>33.2</u>	D
Mainline south of Victory Boulevard on-ramp merge				<u>58.98</u>	<u>26.6</u>	C	<u>58.46</u>	<u>28.4</u>	D
On-ramp, south of Victory Boulevard				<u>34.49</u>	<u>13.1</u>	B	<u>34.07</u>	<u>10.7</u>	B
Mainline south of Victory Boulevard off-ramp diverge				<u>60.98</u>	<u>23.8</u>	C	<u>60.84</u>	<u>26.1</u>	C
Off-ramp, north of Victory Boulevard				<u>33.81</u>	<u>6.0</u>	A	<u>34.06</u>	<u>4.8</u>	A

*2016 NO BUILD CONDITIONS*

Traffic volumes on the analyzed sections of the West Shore Expressway mainline are expected to increase at an annual rate of approximately 2 percent between 2007 and 2016, plus there

would be traffic generated by other background development projects. In the 2016 No Build condition, traffic volumes would increase by about 515 to 715 vph on the mainline segments south of the on-ramp at Victory Boulevard, 60 to 115 vph at the off-ramp north of Victory Boulevard, 100 to 150 vph at the on-ramp south of Victory Boulevard, 105 to 160 vph at the off-ramp at Muldoon Avenue, 80 to 150 vph at the off-ramp south of Arden Avenue and 95 to 145 vph at the on-ramp at Arthur Kill Road.

Table 16-29 shows the 2016 No Build levels of service, speeds and densities for the southbound West Shore Expressway.

**Table 16-29**  
**2016 No Build Conditions on the Southbound West Shore Expressway**

Location	No Build AM			No Build Midday			No Build PM		
	Speed (mph)	Density (pc/mi/ln)	LOS	Speed (mph)	Density (pc/mi/ln)	LOS	Speed (mph)	Density (pc/mi/ln)	LOS
<b>Weekday Peak Hours</b>									
On-ramp, south of Arthur Kill Road	33.00	14.5	B	32.50	16.9	B	32.30	20.0	B
Mainline north of Arthur Kill Road on-ramp merge	61.42	17.6	B	60.22	23.4	C	58.87	22.1	C
Off-ramp, south of Arden Avenue	34.45	9.1	A	34.48	13.1	B	34.52	21.5	C
Mainline north of Arthur Kill Road off-ramp diverge	60.83	20.1	C	57.27	28.5	D	57.80	29.0	D
Off-ramp, north of Muldoon Avenue	34.71	20.2	C	33.70	27.5	C	33.65	30.8	D
Mainline north of Muldoon Avenue off-ramp diverge	54.42	29.0	D	40.49	51.3	F	43.86	49.3	F
Mainline south of Victory Boulevard on-ramp merge	58.02	25.8	C	49.12	39.9	E	39.66	51.1	F
On-ramp, south of Victory Boulevard	33.80	13.4	B	34.10	12.7	B	34.09	18.5	B
Mainline south of Victory Boulevard off-ramp diverge	59.70	23.1	C	49.18	38.8	E	42.54	45.5	F
Off-ramp, north of Victory Boulevard	34.78	10.1	B	34.84	9.4	A	34.30	9.6	A
<b>Weekend Peak Hours</b>									
On-ramp, south of Arthur Kill Road				32.00	17.4	B	32.50	16.9	B
Mainline north of Arthur Kill Road on-ramp merge				59.89	23.8	C	59.69	23.5	C
Off-ramp, south of Arden Avenue				34.72	10.7	B	34.88	13.6	B
Mainline north of Arthur Kill Road off-ramp diverge				58.53	27.5	C	58.29	28.5	D
Off-ramp, north of Muldoon Avenue				34.93	20.4	C	34.30	21.0	C
Mainline north of Muldoon Avenue off-ramp diverge				52.30	37.6	E	50.07	40.2	E
Mainline south of Victory Boulevard on-ramp merge				55.93	32.9	D	48.78	38.7	E
On-ramp, south of Victory Boulevard				34.21	17.5	B	33.28	13.3	B
Mainline south of Victory Boulevard off-ramp diverge				56.77	29.6	D	61.20	29.7	D
Off-ramp, north of Victory Boulevard				34.41	9.4	A	57.95	5.2	A

As shown in the Table, the analyzed ramp segments will operate at LOS D or better during all the peak hours. The freeway segment south of the Victory Boulevard on-ramp experiences congested conditions during the weekday PM peak hour. The freeway segment north of Muldoon Avenue off-ramp experiences congested conditions during the weekday midday and PM peak hours. The freeway segment south of the Victory Boulevard off-ramp experiences congestion during the weekday PM peak hour.

*2016 BUILD CONDITIONS*

As noted in earlier sections, the southbound West Shore Expressway will also be subjected to major reconfigurations as far as the positions of ramp junctions are concerned. South of Muldoon Avenue a new off-ramp is proposed to meet the southbound West Shore Expressway service road, while further south of Arden Avenue a new on-ramp is proposed to replace the existing off-ramp.

As compared to the 2016 No Build conditions, traffic volumes exiting the southbound West Shore Expressway at the off-ramp north of Victory Boulevard would increase by approximately

**Fresh Kills Park GEIS**

10 to 20 vph across all the peak hours. At the on-ramp south of Victory Boulevard, there would be an increase of 5 to 10 vph across all peak hours. Also, at the off-ramp north of Muldoon Avenue (south of Fresh Kills Park), there will not be a net change in traffic volumes. At the new off-ramp south of Muldoon Avenue, traffic volumes are expected to range between 350 and 835 vph. At the new on-ramp, south of Arden Avenue, traffic volumes are expected to range between 235 and 410 vph.

Table 16-30 shows projected 2016 Build levels of service, speeds and densities for the southbound West Shore Expressway.

**Table 16-30**  
**2016 Build Conditions on the Southbound West Shore Expressway**

Location	Build AM			Build Midday			Build PM		
	Speed (mph)	Density (pc/mi/ln)	LOS	Speed (mph)	Density (pc/mi/ln)	LOS	Speed (mph)	Density (pc/mi/ln)	LOS
<b>Weekday Peak Hours</b>									
On-ramp, south of Arthur Kill Road	<u>33.36</u>	<u>9.8</u>	A	<u>33.08</u>	<u>11.4</u>	B	<u>32.90</u>	<u>12.6</u>	B
Mainline north of Arthur Kill Road on-ramp merge	<u>60.04</u>	<u>21.4</u>	C	<u>56.37</u>	<u>26.2</u>	C	<u>55.99</u>	<u>27.9</u>	C
Mainline south of proposed on-ramp south of Arden Avenue merge	<u>53.50</u>	<u>20.5</u>	C	<u>49.18</u>	<u>25.6</u>	C	<u>45.35</u>	<u>29.2</u>	D
On-ramp, south of Arden Avenue	<u>33.01</u>	<u>7.8</u>	A	<u>31.93</u>	<u>8.3</u>	A	<u>32.35</u>	<u>12.2</u>	B
Off-ramp, south of Muldoon Avenue	<u>34.33</u>	<u>9.2</u>	A	<u>34.69</u>	<u>13.1</u>	B	<u>34.26</u>	<u>20.2</u>	C
Mainline north of proposed off-ramp south of Muldoon Avenue diverge	<u>57.93</u>	<u>22.9</u>	C	<u>53.61</u>	<u>30.1</u>	D	<u>51.00</u>	<u>33.6</u>	D
Off-ramp, south of Fresh Kills Exit	<u>34.76</u>	<u>19.1</u>	B	<u>34.47</u>	<u>22.2</u>	C	<u>33.75</u>	<u>24.3</u>	C
Mainline north of Muldoon Avenue diverge	<u>55.33</u>	<u>30.0</u>	D	<u>45.46</u>	<u>43.7</u>	E	<u>41.84</u>	<u>51.4</u>	F
Mainline south of Victory Boulevard on-ramp merge	<u>58.34</u>	<u>26.6</u>	C	<u>51.91</u>	<u>36.0</u>	E	<u>41.09</u>	<u>50.2</u>	F
On-ramp, south of Victory Boulevard	<u>33.90</u>	<u>13.5</u>	B	<u>34.16</u>	<u>8.9</u>	A	<u>34.19</u>	<u>18.9</u>	B
Mainline south of Victory Boulevard off-ramp diverge	<u>60.68</u>	<u>23.4</u>	C	<u>52.84</u>	<u>35.5</u>	E	<u>43.93</u>	<u>44.2</u>	E
Off-ramp, north of Victory Boulevard	<u>35.40</u>	<u>7.6</u>	A	<u>33.89</u>	<u>12.4</u>	B	<u>34.43</u>	<u>9.0</u>	A
<b>Weekend Peak Hours</b>									
On-ramp, south of Arthur Kill Road				<u>32.70</u>	<u>15.0</u>	B	<u>33.13</u>	<u>11.0</u>	B
Mainline north of Arthur Kill Road on-ramp merge				<u>57.45</u>	<u>26.6</u>	C	<u>57.00</u>	<u>28.9</u>	D
Mainline south of proposed on-ramp south of Arden Avenue merge				<u>49.76</u>	<u>26.1</u>	C	<u>46.03</u>	<u>30.3</u>	D
On-ramp, south of Arden Avenue				<u>33.20</u>	<u>8.5</u>	A	<u>32.55</u>	<u>10.8</u>	B
Off-ramp, south of Muldoon Avenue				<u>33.74</u>	<u>12.3</u>	B	<u>34.58</u>	<u>12.0</u>	B
Mainline north of proposed off-ramp south of Muldoon Avenue diverge				<u>54.79</u>	<u>29.6</u>	D	<u>53.47</u>	<u>31.7</u>	D
Off-ramp, south of Fresh Kills Exit				<u>34.51</u>	<u>19.3</u>	B	<u>34.53</u>	<u>20.4</u>	C
Mainline north of Muldoon Avenue diverge				<u>43.42</u>	<u>44.7</u>	E	<u>45.20</u>	<u>45.3</u>	F
Mainline south of Victory Boulevard on-ramp merge				<u>54.33</u>	<u>33.7</u>	D	<u>46.22</u>	<u>41.9</u>	E
On-ramp, south of Victory Boulevard				<u>33.75</u>	<u>18.5</u>	B	<u>33.86</u>	<u>15.2</u>	B
Mainline south of Victory Boulevard off-ramp diverge				<u>57.22</u>	<u>29.0</u>	D	<u>55.34</u>	<u>33.1</u>	D
Off-ramp, north of Victory Boulevard				<u>33.97</u>	<u>10.8</u>	B	<u>34.30</u>	<u>8.5</u>	A

As shown in Table 16-30, the ramp junctions, including the proposed on and off-ramps will perform at LOS C or better. The freeway segment south of Victory Boulevard on-ramp is projected to operate at similar operating conditions as the 2016 No Build condition, experiencing congestion during the weekday PM peak hour. The freeway segment north of Muldoon Avenue would also experience congestion during the weekday and weekend PM peak hours, while experiencing improved operating conditions during the weekday midday peak hour. The freeway segment south of the Victory Boulevard off-ramp diverge is projected to operate at improved conditions during the weekday PM peak hour, while operating at similar conditions as the 2016 No Build condition during the other peak hours. All the other freeway segments are projected to operate at LOS D or better for all peak hours.

2036 NO BUILD CONDITIONS

Traffic volumes on the analyzed sections of the West Shore Expressway mainline are expected to increase at an annual rate of approximately 1 percent between 2016 and 2036. In the 2036 No Build conditions, traffic volumes would increase by 570 to 790 vph over the 2016 conditions on the mainline segments south of Victory Boulevard, 40 to 65 vph at the off-ramp north of Victory Boulevard, 90 to 135 vph at the on-ramp south of Victory Boulevard, 140 to 205 vph at the off-ramp at Muldoon Avenue, 60 to 160 vph at the off-ramp south of Arden Avenue and 90 to 120 vph at the on-ramp at Arthur Kill Road.

Table 16-31 shows the projected 2036 No Build levels of service, speeds and densities for the southbound West Shore Expressway.

**Table 16-31**  
**2036 No Build Conditions on the Southbound West Shore Expressway**

Location	No Build AM			No Build Midday			No Build PM		
	Speed (mph)	Density (pc/mi/ln)	LOS	Speed (mph)	Density (pc/mi/ln)	LOS	Speed (mph)	Density (pc/mi/ln)	LOS
<b>Weekday Peak Hours</b>									
On-ramp, south of Arthur Kill Road	<u>32.57</u>	<u>16.9</u>	B	<u>32.62</u>	<u>20.8</u>	C	<u>32.45</u>	<u>19.9</u>	B
Mainline north of Arthur Kill Road on-ramp merge	<u>59.94</u>	<u>22.1</u>	C	<u>59.19</u>	<u>23.1</u>	C	<u>59.71</u>	<u>20.4</u>	C
Off-ramp, south of Arden Avenue	<u>34.85</u>	<u>11.3</u>	B	<u>35.13</u>	<u>15.0</u>	B	<u>33.93</u>	<u>21.0</u>	C
Mainline north of Arthur Kill Road off-ramp diverge	<u>58.70</u>	<u>26.0</u>	C	<u>58.03</u>	<u>28.5</u>	D	<u>57.41</u>	<u>27.3</u>	C
Off-ramp, north of Muldoon Avenue	<u>34.53</u>	<u>23.5</u>	C	<u>34.10</u>	<u>29.0</u>	D	<u>33.81</u>	<u>32.6</u>	D
Mainline north of Muldoon Avenue off-ramp diverge	<u>50.39</u>	<u>38.7</u>	E	<u>38.56</u>	<u>56.7</u>	F	<u>44.06</u>	<u>48.1</u>	F
Mainline south of Victory Boulevard on-ramp merge	<u>54.75</u>	<u>33.2</u>	D	<u>35.06</u>	<u>58.1</u>	F	<u>37.88</u>	<u>52.0</u>	F
On-ramp, south of Victory Boulevard	<u>33.63</u>	<u>17.4</u>	B	<u>33.91</u>	<u>15.7</u>	B	<u>33.41</u>	<u>22.1</u>	C
Mainline south of Victory Boulevard off-ramp diverge	<u>56.01</u>	<u>29.3</u>	D	<u>43.40</u>	<u>44.7</u>	E	<u>26.79</u>	<u>67.7</u>	F
Off-ramp, north of Victory Boulevard	<u>34.21</u>	<u>9.9</u>	A	<u>33.83</u>	<u>13.1</u>	B	<u>33.55</u>	<u>11.8</u>	B
<b>Weekend Peak Hours</b>									
On-ramp, south of Arthur Kill Road				<u>32.29</u>	<u>18.9</u>	B	<u>32.07</u>	<u>18.8</u>	B
Mainline north of Arthur Kill Road on-ramp merge				<u>54.15</u>	<u>29.3</u>	D	<u>59.84</u>	<u>24.6</u>	C
Off-ramp, south of Arden Avenue				<u>35.17</u>	<u>12.3</u>	B	<u>35.10</u>	<u>12.5</u>	B
Mainline north of Arthur Kill Road off-ramp diverge				<u>58.27</u>	<u>30.9</u>	D	<u>57.80</u>	<u>29.3</u>	D
Off-ramp, north of Muldoon Avenue				<u>34.62</u>	<u>26.0</u>	C	<u>33.78</u>	<u>27.0</u>	C
Mainline north of Muldoon Avenue off-ramp diverge				<u>47.33</u>	<u>46.9</u>	F	<u>42.80</u>	<u>50.6</u>	F
Mainline south of Victory Boulevard on-ramp merge				<u>39.68</u>	<u>52.5</u>	F	<u>33.37</u>	<u>61.5</u>	F
On-ramp, south of Victory Boulevard				<u>34.10</u>	<u>20.7</u>	C	<u>33.99</u>	<u>15.8</u>	B
Mainline south of Victory Boulevard off-ramp diverge				<u>45.29</u>	<u>42.9</u>	E	<u>44.13</u>	<u>45.0</u>	E
Off-ramp, north of Victory Boulevard				<u>33.93</u>	<u>9.9</u>	A	<u>33.80</u>	<u>9.3</u>	A

As seen in Table 16-31, the ramp junctions will operate at acceptable (LOS D or better) operating conditions across all peak hours. The freeway segment south of the Victory Boulevard on-ramp will experience congested conditions during all the peak hours except the AM peak hour, so does the freeway segment north of the Muldoon Avenue off-ramp. The freeway segment south of the Victory Boulevard off-ramp diverge will experience congested conditions during the weekend PM peak hour.

2036 BUILD CONDITIONS

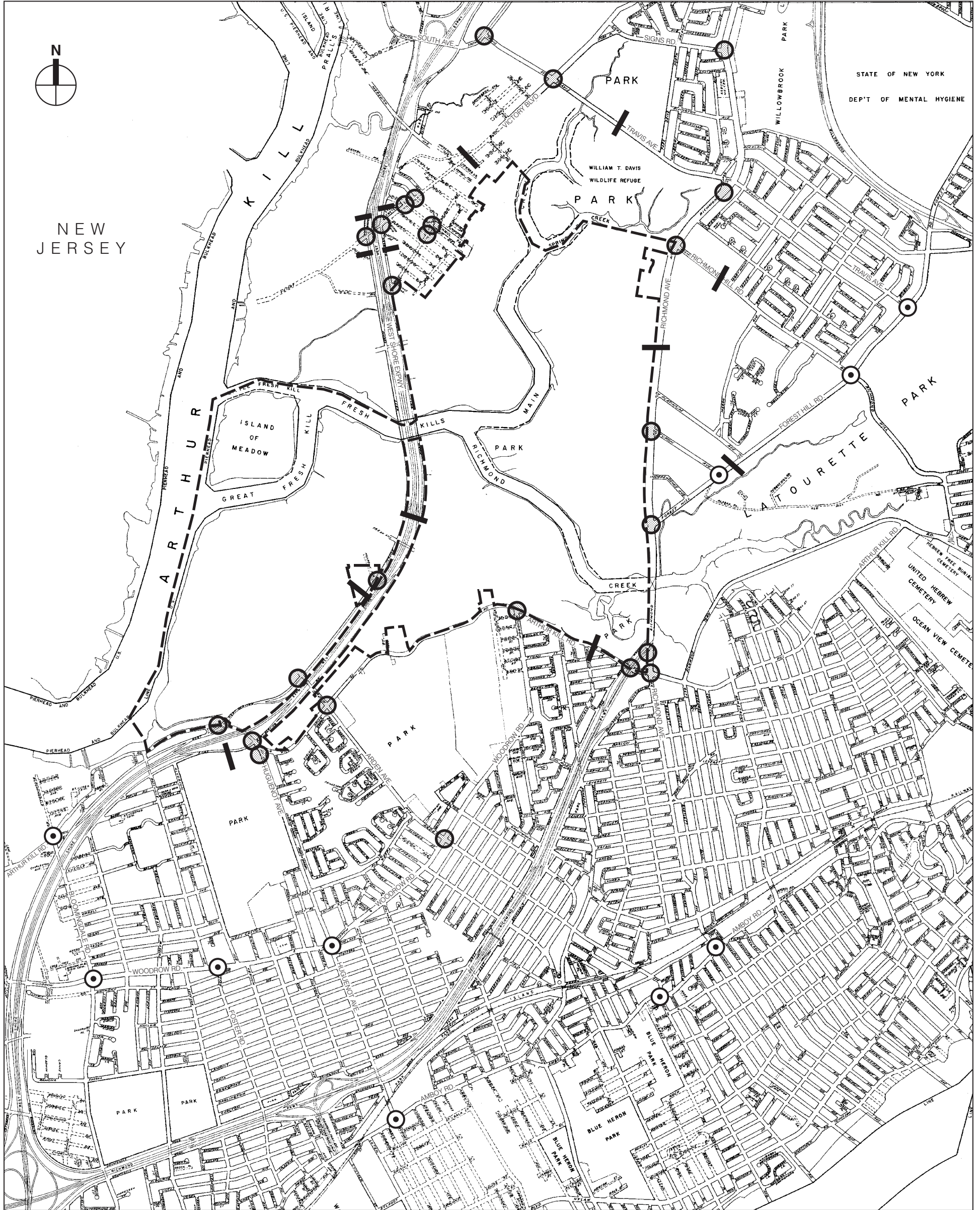
As noted in the section regarding 2016 Build conditions, the 2036 Build condition will be accompanied by the same changes in ramp configurations. At the new off-ramp, south of Muldoon Avenue traffic volumes are projected to range between 420 and 1000 vph, while at the new on-ramp south of Arden Avenue, traffic volumes are projected to range approximately from 300 to 560 vph.

Table 16-32 shows the projected 2036 Build levels of service, speeds and densities for the southbound West Shore Expressway.

**Table 16-32**  
**2036 Build Conditions on the Southbound West Shore Expressway**

Location	Build AM			Build Midday			Build PM		
	Speed (mph)	Density (pc/mi/ln)	LOS	Speed (mph)	Density (pc/mi/ln)	LOS	Speed (mph)	Density (pc/mi/ln)	LOS
<b>Weekday Peak Hours</b>									
On-ramp, south of Arthur Kill Road	33.36	10.3	B	32.90	13.0	B	32.10	13.1	B
Mainline north of Arthur Kill Road on-ramp merge	57.45	24.4	C	55.63	28.7	D	57.22	25.7	C
Mainline south of proposed on-ramp south of Arden Avenue merge	51.63	23.4	C	46.80	28.7	D	49.73	24.9	C
On-ramp, south of Arden Avenue	32.70	8.0	A	32.91	12.4	B	31.74	12.0	B
Off-ramp, south of Muldoon Avenue	34.45	12.2	B	34.28	15.6	B	32.57	23.6	C
Mainline north of proposed off-ramp south of Muldoon Avenue diverge	55.85	26.8	C	54.08	29.9	D	51.80	32.1	D
Off-ramp, south of Fresh Kills Exit	34.01	25.2	C	33.86	28.7	D	33.38	25.8	C
Mainline north of Muldoon Avenue diverge	46.62	41.2	E	42.65	49.5	F	44.95	47.1	F
Mainline south of Victory Boulevard on-ramp merge	53.88	33.4	D	42.12	48.1	F	39.12	50.9	F
On-ramp, south of Victory Boulevard	33.35	19.1	B	33.61	17.5	B	33.59	21.5	C
Mainline south of Victory Boulevard off-ramp diverge	57.87	28.0	C	43.53	43.4	E	46.29	40.7	E
Off-ramp, north of Victory Boulevard	34.61	11.8	B	33.62	16.8	B	34.20	13.0	B
<b>Weekend Peak Hours</b>									
On-ramp, south of Arthur Kill Road				32.31	11.9	B	32.08	13.3	B
Mainline north of Arthur Kill Road on-ramp merge				48.58	35.8	E	51.12	34.1	D
Mainline south of proposed on-ramp south of Arden Avenue merge				35.84	40.7	E	37.91	38.9	E
On-ramp, south of Arden Avenue				31.75	18.4	B	31.22	16.4	B
Off-ramp, south of Muldoon Avenue				34.40	13.5	B	34.69	14.5	B
Mainline north of proposed off-ramp south of Muldoon Avenue diverge				53.64	31.3	D	53.63	32.6	D
Off-ramp, south of Fresh Kills Exit				34.27	22.2	C	34.11	22.4	C
Mainline north of Muldoon Avenue diverge				47.25	43.6	E	48.03	44.6	E
Mainline south of Victory Boulevard on-ramp merge				42.77	46.0	F	41.62	48.1	F
On-ramp, south of Victory Boulevard				33.04	21.3	C	34.15	17.5	B
Mainline south of Victory Boulevard off-ramp diverge				44.85	40.8	E	47.29	40.0	E
Off-ramp, north of Victory Boulevard				34.11	16.0	B	34.66	12.1	B

As seen in Table 16-32, most of the analyzed ramp segments will operate at either same or improved LOS from the 2036 No Build condition and hence will not experience any congestion in 2036. The densities indicate congested conditions at the following freeway segments: south of the Victory Boulevard on-ramp during all peak hours, except the weekday AM peak hour which is projected to operate at LOS D; north of the Muldoon Avenue off-ramp during the weekday midday and PM peak hours. The freeway segment north of the Arthur Kill Road on-ramp is projected to operate at LOS D or better during all the peak hours except the weekend midday peak hour where it is projected to operate at LOS E. The freeway segment south of the proposed on-ramp south of Arden Avenue is projected to operate at LOS D or better during all peak hours except for the weekend midday and PM peak hours where they are project to operate at LOS E, respectively. The freeway segment south of the Victory Boulevard off-ramp is projected to operate at LOS E during all the peak hours except for weekday AM. All the other freeway segments are projected to operate at LOS D or better for all peak hours. \*



STATE OF NEW YORK  
DEP'T OF MENTAL HYGIENE

NEW  
JERSEY

- Project Site Boundary
- Primary Study Area Intersection
- Secondary Study Area Intersection
- ATR Count Locations

