Chapter 17: Construction

A. INTRODUCTION

This chapter presents a description of construction activities and a schedule and an assessment of construction-related impacts. The phasing and construction activities that are anticipated to implement the proposed action at the Hunts Point Water Pollution Control Plant (WPCP) are described, including a description of construction activities related to the Phase II Upgrade that may overlap with construction of the proposed action.

The proposed action involves construction activities for a period of approximately seven years. During the construction period, the WPCP must remain in operation. The level of construction activity varies over the course of the construction period. For example, certain construction activities may generate greater construction traffic levels than others. Because of the extended time frame of construction, this chapter is comprehensive and includes impact analyses in the analysis areas with the greatest potential for adverse impacts during construction, including the following areas:

- Land use, open space, neighborhood character, and visual character both in the immediate area of the plant and for the Hunts Point community as a whole;
- Traffic and parking, particularly along major truck routes and traffic routes serving the project site;
- Air quality from off-site mobile sources, on-site construction equipment and fugitive dust emissions caused by demolition, excavation, and other construction activities;
- Odors, specifically the potential for odor releases prior to the renovation of the egg-shaped digesters during construction;
- Noise from increased vehicular and truck traffic to and from the site, heavy equipment operations on the site (e.g., compressors, pile drivers, and gas- and diesel-powered engines), and vibration from pile driving with the potential to impact nearby structures;
- Solid waste and the disposal of construction debris;
- Water quality;
- Energy consumption;
- Soil, groundwater and hazardous materials issues.

Discussion of other analysis areas (e.g., natural resources) were not included, since no potential significant adverse impacts in these study areas are expected from construction of the proposed action. Measures necessary to address potential impacts during construction are discussed in Chapter 21, “Mitigation.”

As discussed in Chapter 1, “Project Description,” and in appropriate sections of this Environmental Impact Statement (EIS), an additional two egg-shaped digesters could be constructed in the future after construction of the proposed action (the four-digester scenario).

This construction effort may occur as early as between 2015 and 2018 depending on the design life of the rehabilitated digesters. Because the construction of the two additional digesters would require a smaller work force and less trucking activities and because this construction would not overlap with any other construction activities, the potential impact of the construction of the four-digester scenario would not be greater than the two-digester scenario analyzed in detail. Therefore, no additional detailed analyses are necessary to assess the impacts that could potentially result from the four-digester scenario. However, the construction of the additional digesters under the four-digester scenario would add another period of construction and potential effects on the study area. A summary of the potential additional impacts associated with the construction of the additional two digesters under the four-digester scenario is provided at the end of this chapter. The following sections focus on the potential for adverse impacts during construction of the proposed action, as this is the worst-case construction period.

B. CONSTRUCTION PROGRAM AND SCHEDULE

This section provides a description of the proposed construction program, including a timeline showing the proposed activities by each stage of the project through its completion (see Figure 17-1). The proposed activities and their locations during each stage, including storage areas, staging and parking areas, and sequencing are also described. Because construction of the proposed action would overlap with the remediation of Barretto Point and some of the construction activities for the Phase II Upgrade, these activities are also described.

Work on the Phase II Upgrade commenced in June 2003 and is ongoing. The Full Step Feed BNR Facilities and other elements associated with Phase II Upgrade are scheduled to be completed in mid-2008, with some additional non-consent order related construction continuing through the first quarter of 2009. This work will take place on the existing plant site. Staging for these activities will take place on the 1.2-acre construction staging area described in Chapter 1, "Project Description," and on the existing plant site.

Remediation of a portion of the Barretto Point Site (described in more detail in Chapter 1, "Project Description," and Chapter 14, "Hazardous Materials") consisting of 2.75 acres between Barretto Street and Manida Street on the additional parcel is scheduled to commence in the third quarter of 2008 and last for approximately one year. Figure 17-1 has been revised in the Final EIS to reflect the anticipated change in start time for the Barretto Point Remediation project and the proposed action. The remaining 5.25-acre portion of the 8-acre site would be remediated after construction and/or staging is complete.

The construction for the proposed action has been planned to minimize disruption to the wastewater treatment operations. Mobilization of equipment for the proposed action would begin in the third quarter of 2008 and would overlap with some of the Phase II construction. The renovation of the existing digesters and sludge storage tanks is scheduled to occur early in the construction period (between 2008 and 2009) to enable the plant to continue to provide reliable service while the new egg-shaped digesters are under construction. Renovation of the existing digesters and sludge storage tanks would occur on the existing plant site. The polymer addition facilities would be constructed at the same time as the digester renovation. This work would occur within the existing centrate building (the centrate building will be constructed as part of the Phase II Upgrade). The sludge thickeners would be renovated one at a time to allow for maximum continued operation; this element of the construction would occur between 2008 and 2012. The two new egg-shaped digesters would be constructed in parallel with the remaining

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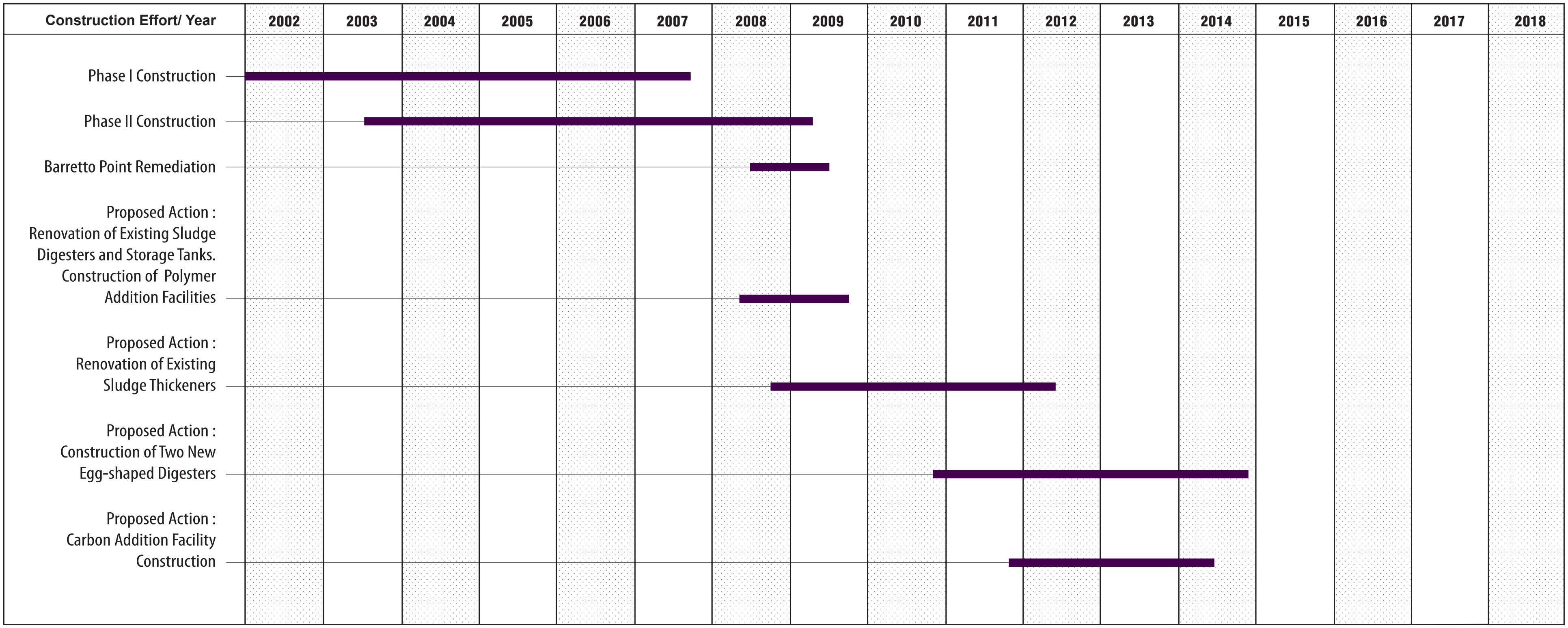


An additional two digesters, analyzed as the "four-digester scenario" in the different chapters of the FEIS, would be constructed at some date after the completion of the Upgrade described in the above schedule, when the rehabilitated digesters reach the end of their useful life.

Hunts Point WPCP

Construction Schedule
Figure 17-1

construction elements between 2010 and 2014; the new digesters would be on line in 2014. The carbon addition facility would be constructed between 2011 and 2014.

Staging for all elements of construction would occur on the 1.2-acre construction staging area, except for those activities associated with the carbon and polymer addition facilities. Staging for the carbon addition facilities would take place on the plant site in the northeast section, and staging for the polymer addition facilities would occur within or adjacent to the centrate building.

Overall, there would be minimal overlap between Phase II and the proposed action. As construction of the Phase II Upgrade nears completion, the mobilization of equipment for the proposed action would begin. Most of the heavy construction for the Phase II Upgrade will be finished prior to commencement of construction of the proposed action.

The additional two digesters proposed under the four-digester scenario would be constructed at some point after 2014, depending on the life of the rehabilitated digesters; the specific time frame for construction of the two additional digesters is not known.

C. LAND USE, OPEN SPACE, NEIGHBORHOOD CHARACTER, AND VISUAL CHARACTER

The plant is currently under construction and will continue to be under construction in the future without the proposed action. However, construction activities would be concentrated in the western portion of the site on the additional parcel, which is adjacent to Barretto Point Park, except for the carbon and polymer addition facilities, which would occur on the northeastern portion of the site (carbon addition) or within the centrate building to be constructed as part of the Phase II Upgrade (polymer addition). Construction would not alter surrounding land uses.

Certain types of construction activities would be noisy and intrusive to the users of the adjacent Barretto Point Park, and construction activities would be visible from the park. As discussed below (see G, “Noise”), pursuant to the New York City Noise Control Code, as amended December 2005 and effective July 1, 2007, the adoption and implementation of noise mitigation plans would be required for the construction of the proposed action. A construction wall at least 8 feet in height would also be built around the area of digester construction that would shield most of the construction from the park. However, the wall would not provide shielding during construction of the digesters at heights greater than 8 feet. Construction work would largely occur between the periods of 7 AM to 4 PM on weekdays, and not weekends when the park would likely be more fully utilized. Overall, no potential significant adverse noise impacts on Barretto Point Park are expected. In terms of air quality and odors (see E, “Air Quality,” and F, “Odors”), no significant odor impacts or air quality impacts are expected from the construction of the proposed action.

In the future without the proposed action, the South Bronx Greenway could be constructed by the year 2011. The Ryawa-Viele Connection would involve the implementation of improvements along a portion of Viele Avenue (between Barretto Point Park and Manida Street), Manida Street (between Viele and Ryawa Avenues), and Ryawa Avenue (from Manida Street to approximately Halleck Street). Noise emanating from the construction of the proposed action would not be disruptive of the types of activities that would occur along the proposed South Bronx Greenway, and no significant adverse odor or air quality impacts related to construction are expected. During construction of the proposed action, no off-site queuing of trucks is expected, and all construction staging for the proposed action would occur on the plant site, the additional parcel, or the 1.2-acre construction staging area. Therefore, there would be no construction activities in areas designated for the Ryawa-Viele Connection.

At other areas off-site, as described in greater detail later in this chapter, there are likely to be temporary and localized construction impacts on noise as a result of construction activity, operation of heavy equipment on-site, and construction workers traveling to and from the site, and trucks delivering materials to and removing construction waste from the site. Generally, the intensity of the off-site impact decreases with the distance from the site.

Worker vehicles would use local roads, while construction trucks would use local truck routes. While there would be a significant adverse traffic impact at the intersection of Bruckner Boulevard and Tiffany Street, the implementation of signal timing adjustments would mitigate this impact (See Chapter 21, "Mitigation"). This construction-period traffic impact is not expected to result in any impacts on land use or neighborhood character.

In sum, combined construction effects at the Hunts Point WPCP are not expected to result in potential significant adverse impacts to land use, open space, and visual or neighborhood character.

D. TRAFFIC AND PARKING

This assessment evaluates whether construction-related traffic from the proposed action would significantly impact traffic conditions, parking availability, pedestrian activities, and public transportation usage, near the Hunts Point WPCP.

The project site is located in the southwest corner of the Hunts Point peninsula in the Bronx. Construction of the proposed action is scheduled to begin in the third quarter of 2008. By that time, the Phase II Upgrade construction would be mainly complete (with some additional non-consent order related construction continuing through the first quarter of 2009). The construction of the plant has and would continue to generate traffic in the study area, including construction workers commuting by car and construction trucks making deliveries to and from the project site.

Table 17-1 presents a summary of the average daily activities projected for construction of Phase II and the proposed action at the Hunts Point WPCP. To address the potential construction transportation impacts, the peak construction activities projected for the third quarter of 2011 were considered for analysis. On average, 177 daily construction workers and 51 daily trucks are projected for the third quarter of 2011. The projected number of vehicle trips in the third quarter of 2011 is greater than the potential combined incremental trip generation from the overlap of Phase II and the proposed action construction in mid 2008, and thus also represent the maximum potential combined traffic impacts from Phase II and the proposed action.

In the time period between the issuance of the Draft EIS (DEIS) and Final EIS (FEIS), the completion of the Phase II Upgrade has been revised to be completed in 2009. In addition, the start of the Barretto Point remediation project has been revised to the third quarter of 2008. Based on the latest timelines, this work would be concurrent with the first elements of the proposed action. While not part of the proposed action, Table 17-1 includes the trips from the Barretto Point remediation in the proposed action worker and truck columns for the period from the third quarter of 2008 through mid-2009. As shown in this table, the cumulative trips of the Barretto Point remediation and the proposed action are still less than the worst-case period analyzed. The Barretto Point remediation project was analyzed in a separate environmental review (Negative Declaration issued October 27, 2006).

Table 17-1
Summary of Daily Construction Workers and Truck Traffic

Year	Quarter	Workers				Trucks			
		Phase I (person days)	Phase II (person days)	Proposed Action (person days)[2]	Total Average Workers per Day[1,2]	Phase I (by quarter)	Phase II (by quarter)	Proposed Action (by quarter)[2]	Total Average Trucks per Day[1,2]
2006	1	641	9,116		163	118	797		15
	2	641	5,064		95	118	399		9
	3	641	3,762		73	118	399		9
	4	641	2,750		57	118	266		6
2007	1	641	2,750		57	118	266		6
	2	641	1,737		40	118	133		4
	3	320	1,737		34	59	133		3
	4		4,391		73		133		2
2008	1		5,125		85		133		2
	2		1,013		17		133		2
	3		675	5134	97		133	1,886	34
	4		675	5868	108		133	2,060	37
2009	1		675	5868	108		133	1,800	32
	2			4,401	73			932	16
	3			4,401	73			173	3
	4			4,401	73			173	3
2010	1			4,401	73			173	3
	2			4,401	73			173	3
	3			5,868	98			173	3
	4			3,667	61			173	3
2011	1			3,667	61			173	3
	2			3,667	61			173	3
	3			10,604	***177***			3,063	***51***
	4			7,936	132			2,521	42
2012	1			6,469	108			990	16
	2			4,802	80			542	9
	3			3,735	62			452	8
	4			3,735	62			361	6
2013	1			3,735	62			361	6
	2			1,601	27			181	3
	3			3,735	62			181	3
	4			3,735	62			90	2
2014	1			3,202	53			90	2
	2			3,202	53			90	2
	3			3,202	53			90	2
	4			3,202	53			452	8

Notes:
[1] Auto trips for workers can be estimated by dividing the number of workers by the estimated average vehicle occupancy of 1.2
[2] Includes Barretto Point remediation.
Each quarter is assumed to average 60 work days.
Double underlined text indicates changes from the DEIS
Sources: URS Corp.

Detailed traffic analyses were performed at seven critical intersections within or bordering the Hunts Point peninsula to evaluate the potential for traffic impacts from the projected construction activities. These intersections were selected based on the expected construction-related worker and truck trips and an understanding of the area's travel routes. Results of the detailed analyses (which are presented below) show that projected construction activities would result in significant adverse traffic impacts at one intersection (Bruckner Boulevard and Tiffany Street) during both the AM and PM peak hours under 2011 proposed action peak construction conditions**.** Although these impacts are not permanent and their effects would be less in other construction years, the length of time during which the impacts could be sustained is expected to span over numerous years. Feasible mitigation measures developed to alleviate these adverse impacts are detailed in Chapter 21, "Mitigation." A discussion of the methodologies and analysis approach used in the impact assessment, along with the associated evaluation criteria and analysis results, are provided below. Appendix 17.D provides additional supportive data.

ANALYSIS APPROACH AND STUDY AREA

Site-generated trips are attributed to construction truck deliveries and construction workers commuting to the job site. The truck activities are expected to be distributed evenly throughout the day, while the construction worker trips would likely be concentrated in two peak time periods—the early morning arrival period between 6:30 and 7:30 AM and the early afternoon departure period between 3:00 and 4:00 PM. During the work day, some discretionary travel may also take place (e.g., lunch), but the number of trips is likely to be substantially lower than the peak hour levels. Hence, the transportation analysis focused only on the morning and afternoon peak construction worker commuting periods. This assessment conservatively assumed that 100 percent of all scheduled workers would arrive and depart within the same hour.

The seven intersections evaluated for this construction traffic study are as follows:

1 Bruckner Boulevard and Hunts Point Avenue;
2 Bruckner Boulevard and Tiffany Street;
3 Garrison Avenue and Hunts Point Avenue;
4 Garrison Avenue and Tiffany Street;
5 Garrison Avenue and Leggett Avenue;
6 Lafayette Avenue and Tiffany Street; and
7 Randall Avenue and Tiffany Street;

Traffic data were collected in April 2006 to establish existing baseline conditions. The future without the proposed action scenario incorporates background growth; future traffic generated by planned major developments in the area; and a "netting-out" (i.e., deduction) of the on-going Phase I and Phase II construction activities that were taking place during the April 2006 monitoring. The netting-out of the traffic that would be attributed to the Phase I and II Upgrades allows for the creation of a hypothetical future without the proposed action condition, under which no construction-related activities would be occurring on site and to which the impact of the proposed action construction could be compared. The peak hour traffic projections for the third quarter of 2011, during which the largest numbers of construction worker and truck trips were projected, were selected for analysis to identify the potential impacts of the proposed action construction.

While vehicular traffic operations were quantitatively analyzed, other transportation-related areas, including parking, transit, and pedestrians, was assessed qualitatively. Field reconnaissance of the project site and its surrounding areas revealed that parking spaces in the vicinity are ample, and a detailed inventory of available off-site parking supply would not be warranted. Instead, visual observations of parking locations currently occupied by existing construction workers were made to determine the area's level of utilization and reserved supply. Because the project site is not conveniently accessible via public transit, all proposed action construction workers were assumed to commute to the site by car, and thus, no detailed transit analyses were conducted. Similarly, with generally low background pedestrian activities in the immediate area of the project site, the limited amount of pedestrian traffic generated by the construction workers walking between the plant and nearby on-street parking locations would not warrant a detailed study of operating conditions at the area's sidewalks, crosswalks, and corner reservoirs. Furthermore, it is expected that the addition of project-related traffic would not adversely impact pedestrian safety in the Hunts Point peninsula, mainly due to the area's vehicular access patterns, such as restricting left-turns from westbound Bruckner Boulevard to southbound Hunts Point Avenue, and the latest truck route changes initiated by the New York City Department of Transportation (NYCDOT) to route trucks away from residential streets.

TRAFFIC ANALYSIS METHODOLOGIES

SIGNALIZED INTERSECTION CAPACITY ANALYSIS

The operation of signalized intersections in the study area was analyzed in accordance with CEQR guidelines by applying the methodologies presented in the 2000 *Highway Capacity Manual (HCM)*. This procedure evaluates signalized intersections for average delay per vehicle and level of service (LOS).

The levels of service of 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, as defined in Table 17-2.

Table 17-2
LOS Criteria for Signalized Intersections

Level-of-Service (LOS)	Average Delay
A	≤ 10.0 seconds
B	> 10.0 and ≤ 20.0 seconds
C	> 20.0 and ≤ 35.0 seconds
D	> 35.0 and ≤ 55.0 seconds
E	> 55.0 and ≤ 80.0 seconds
F	> 80.0 seconds

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

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 mid-point 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.

CEQR Impact Thresholds

According to the criteria presented in the *CEQR Technical Manual*, impacts are considered to have the potential to be significant adverse impacts and require examination of mitigation if they result in an increase of five (5) or more seconds of delay in a lane group over future without the proposed action levels beyond mid-LOS D. For future without the proposed action LOS E, a 4-second increase in delay is considered significant. For future without the proposed action LOS F, a 3-second increase in delay is considered significant. Also, if the future without the proposed action LOS F condition already corresponds with a delay in excess of 120 seconds, an increase of 1 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 future without the proposed action conditions 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 construction conditions. The above sliding scale is applicable only if the proposed action is projected to generate five (5) or more vehicle trips through an analysis intersection in the peak hour. As these impacts are construction-related they are not permanent.

UNSIGNALIZED INTERSECTION CAPACITY ANALYSIS

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 criteria for unsignalized intersections are summarized in Table 17-3.

Table 17-3
LOS Criteria for Unsignalized Intersections

Level-of-Service (LOS)	Average Delay
A	≤ 10.0 seconds
B	> 10.0 and ≤ 15.0 seconds
C	> 15.0 and ≤ 25.0 seconds
D	> 25.0 and ≤ 35.0 seconds
E	> 35.0 and ≤ 50.0 seconds
F	> 50.0 seconds
Source: Transportation Research Board. *Highway Capacity Manual*, 2000.	

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.

CEQR Impact Thresholds

The same sliding scale of evaluating the potential for significant adverse impacts from predicted incremental delays described for signalized intersections apply for unsignalized intersections. For the minor street to trigger significant impacts, 90 passenger car equivalents (PCE) must be identified in the future construction conditions in any peak hour. As these impacts are construction-related they are not permanent.

EXISTING CONDITIONS

ROADWAY NETWORK

The Hunts Point peninsula consists of a grid of local arterials and collectors, separated from the neighboring Longwood section of the Bronx by the Bruckner Expressway viaduct and Bruckner Boulevard. Below is a description of the study area roadways that comprise the selected analysis intersections. Figure 17-2 provides an illustration of the analysis intersections and the NYCDOT designated truck routes.

Bruckner Boulevard

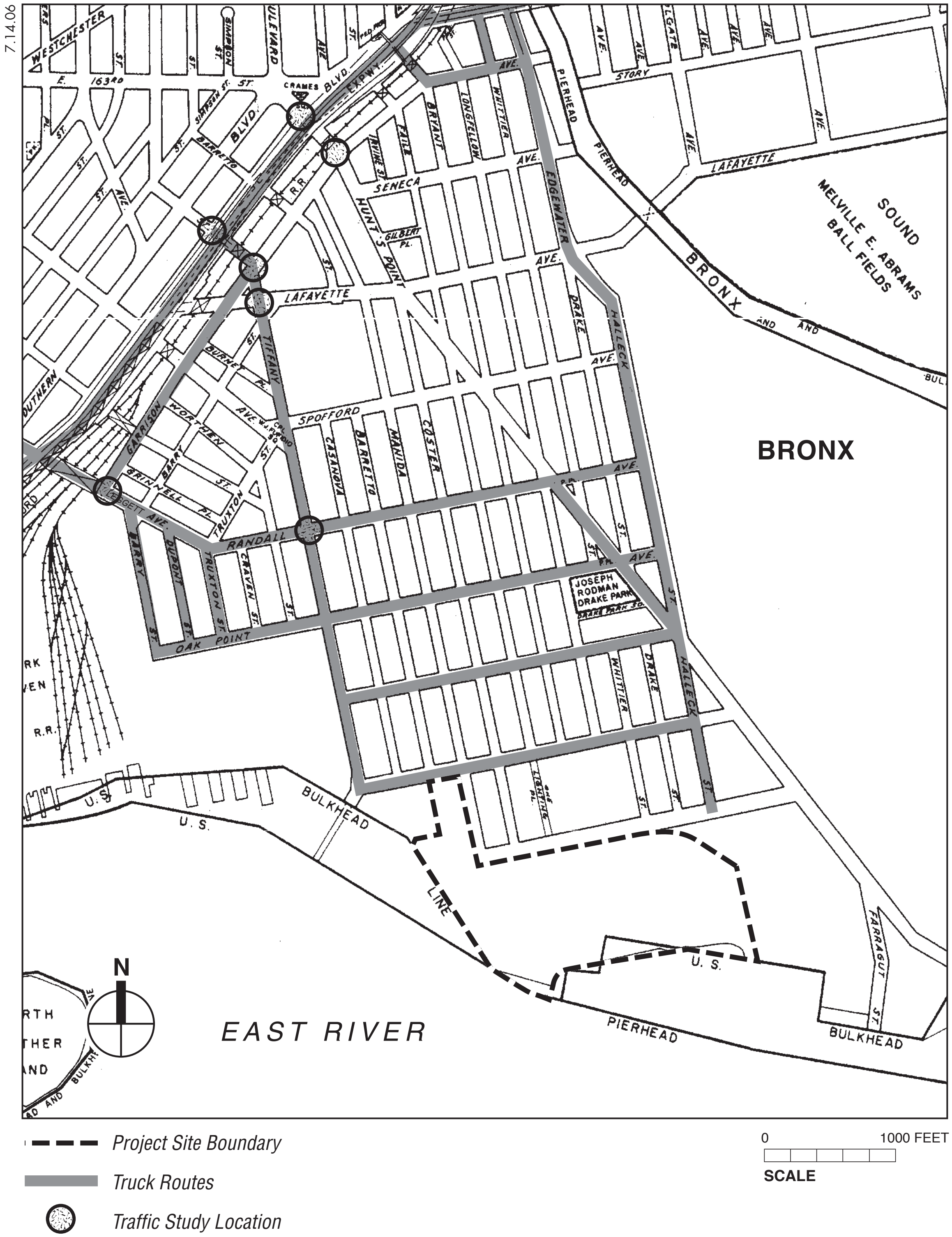
Within the study area, Bruckner Boulevard is composed primarily of two-lane mainlines and service roads with single or double storage lanes for turning vehicles at key intersections and physical separations between the roadways. Aligned in a northeast-southwest direction, Bruckner Boulevard functions as a high-capacity arterial that facilitates connection to the Bruckner Expressway (I-278), Triboro Bridge, Major Deegan (I-87), and Sheridan Expressway (I-895). Bruckner Boulevard is also a local truck route, serving as the main distributor of truck traffic for the Hunts Point peninsula.

Hunts Point Avenue

Aligned primarily in a north-south direction, Hunts Point Avenue serves as the main local arterial through the Hunts Point neighborhood. It operates mostly with two lanes in each direction with parking permitted on both sides of the street and turn pockets available at selected intersections. In an effort to reduce truck traffic through the residential areas of Hunts Point, NYCDOT had removed the Hunts Point Avenue roadway segment between Bruckner Boulevard and Garrison Avenue from its list of designated truck routes, effective July 21, 2004. As noted in the assignment of project-generated traffic, all trucks would travel on the current NYCDOT designated truck routes, while some construction worker vehicles would continue to use this route to access the Hunts Point peninsula.

Tiffany Street

Tiffany Street has one to two moving lanes in each direction and parking permitted on both sides of the street. For its entire length, aligned in the north-south direction, within the Hunts Point peninsula, Tiffany Street functions as a NYCDOT truck route and provides the first point of highway access from the Bruckner and Sheridan Expressways to the east at its intersection with Bruckner Boulevard.



Traffic Study Area and
NYCDOT Designated Truck Routes
Figure 17-2

Garrison Avenue

Garrison Avenue operates parallel to the Bruckner Boulevard in a northeast-southwest direction. Until the latest NYCDOT truck route changes, Garrison Avenue was a designated truck route for its entire length between Leggett Avenue and Edgewater Road. As with Hunts Point Avenue, a section of Garrison Avenue (Tiffany Street to Bryant Avenue) that serves primarily residential community traffic no longer operates as a local truck route as of July 21, 2004. Similarly, trucks would travel on the current NYCDOT designated truck routes, while some construction worker vehicles would continue to use this route to access the Hunts Point peninsula.

Leggett/Randall Avenue

Functioning as a NYCDOT designated truck route for its entire length, this roadway traverses the Hunts Point peninsula in primarily the east-west direction and connects with Bruckner Boulevard to the west. For the most part, the roadway operates with two moving lanes in each direction and parking permitted on both sides of the street.

Lafayette Avenue

This local street has primarily two travel lanes in each direction with parking permitted on both sides. Most intersections along this roadway are controlled via stop signs.

In 2004, the *Hunts Point Vision Plan*, which is a 20 year plan to change the Hunts Point neighborhood into a vibrant and livable community, was developed. As part of this plan, various safety, signage, streetscape, traffic control, and vehicular access improvements are planned for the study area. Specifically, improvements that have already been implemented at traffic analysis locations—the signalization of the intersection of Garrison Avenue and Tiffany Street, signal head modifications at the intersections of Bruckner Boulevard at Hunts Point Avenue and at Tiffany Street to better denote legal turning movements at intersection approaches, and lane marking modifications at the intersection of Bruckner Boulevard and Hunts Point Avenue—were accounted for throughout the analysis.

STUDY AREA INTERSECTIONS

While project-generated traffic would be more concentrated at the southwestern tip of the Hunts Point peninsula (near the project site) the seven intersections selected for analysis are all located more remote from the project site along critical access and egress routes. Roadway facilities in the immediate area of the project site are generally lightly traveled and could accommodate substantial increases in traffic volume. Of the seven selected analysis locations, only the intersection of Lafayette Avenue and Tiffany Street is controlled via stop signs. The two Bruckner Boulevard intersections (Bruckner Boulevard and Hunts Point Avenue and Bruckner Boulevard and Tiffany Street) both operate with service roads, turn lanes, and multiple signal phases that run on 120-second cycles. The Hunts Point Avenue and Garrison Avenue intersection and the Tiffany Street and Garrison Avenue intersection also both operate with 120-second signal cycles, while the remaining two analysis intersections (Garrison Avenue and Leggett Avenue and Randall Avenue and Tiffany Street) operate with 60-second signal cycles.

DATA COLLECTION

To establish baseline conditions, current traffic data were collected in the second week of April 2006. Turning movement counts were conducted at the seven intersections analyzed. To establish vehicle mix on different types of roadways within the study area, vehicle classification counts were conducted at the Hunts Point Avenue intersections with Bruckner Boulevard and with Garrison Avenue, and at the Tiffany Street intersection with Randall Avenue. Continuous automatic traffic recorder counts were also collected for a one-week period along Tiffany Street between Garrison and Lafayette Avenues and between East Bay and Viele Avenues. In addition, traffic volume data were collected at the intersection of Tiffany Street and Viele Avenue to support noise analyses, and continuous counts at the project site driveways along Ryawa Avenue were collected to evaluate site activities.

TRAFFIC VOLUMES

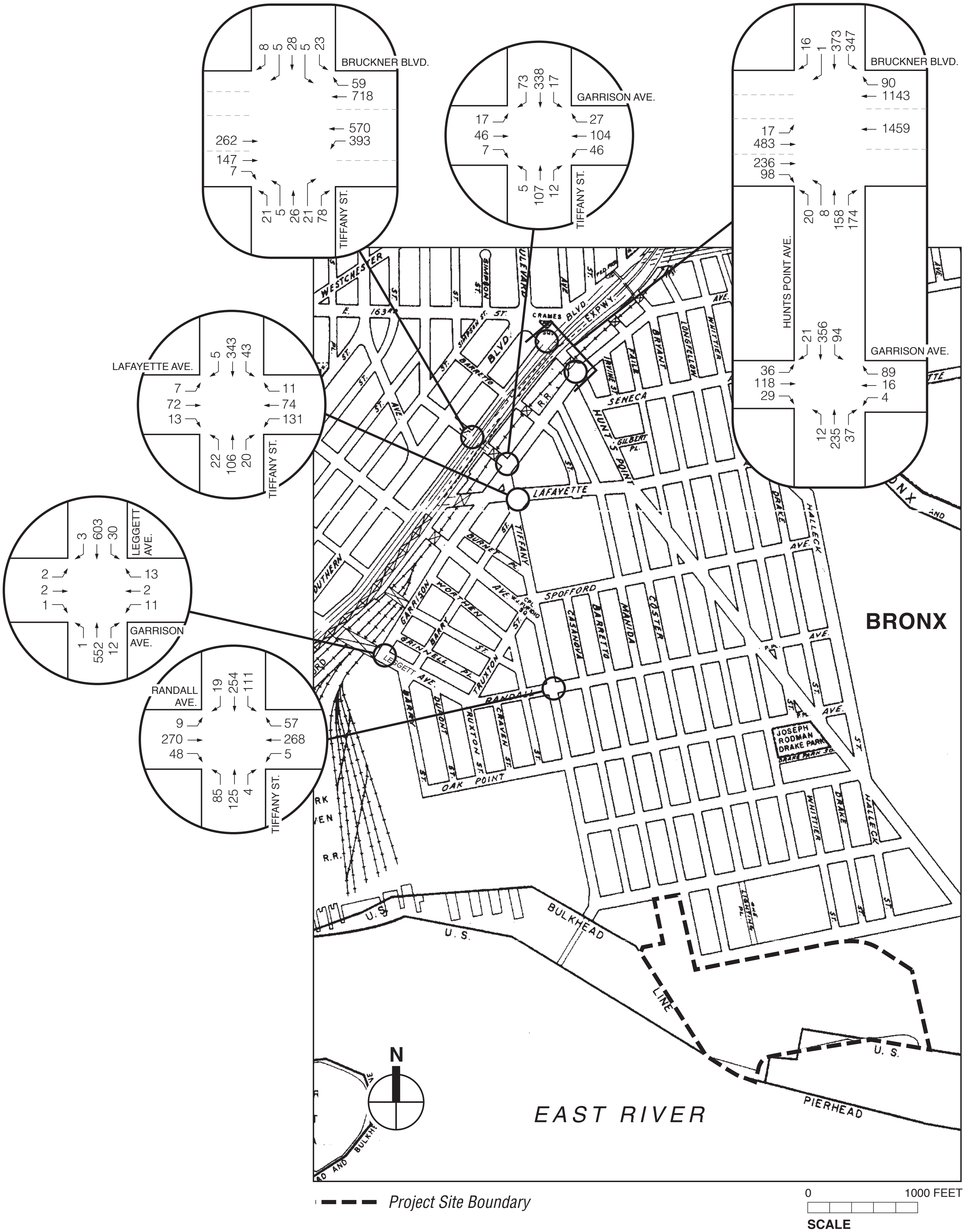
Based on the traffic data collected, traffic volumes were developed for the study area intersections, as presented in Figures 17-3 and 17-4, for the morning 6:30 to 7:30 AM and the afternoon 3:00 to 4:00 PM peak analysis hours. These hours coincide with the time periods during which traffic generated by commuting construction workers would be highest.

Traffic levels along Bruckner Boulevard range from 858 to 2,237 vehicles per hour (vph) along the mainline roadways and from 885 to 2,132 vph along the service roadways during the peak hours analyzed. At the intersection of Bruckner Boulevard and Tiffany Street, surveyed data show high left-turn volumes into the Hunts Point peninsula during numerous hours in the day. During the AM and PM peak hours, this movement accounts for 200 to 300 vehicles. Along Hunts Point Avenue, traffic volumes vary from 655 to 1,024 vph during peak hours. At its intersection with Garrison Avenue, cross-street volumes are in the range of 232 to 414 vehicles during peak hours. With the majority of its traffic turning to and from Bruckner Boulevard, traffic levels along Tiffany Street vary from 148 to 538 vehicles an hour. At its three local street crossings with Garrison Avenue, Lafayette Avenue, and Randall Avenue, peak hour cross-street volumes are 248 to 303 vph on the Garrison Avenue approaches, 193 to 412 vph on the Lafayette Avenue approaches and 551 to 715 vph on the Randall Avenue approaches. At the westernmost study area intersection, peak hour traffic levels range from 984 to 1,155 vph along Leggett Avenue and range from approximately 70 to 151 vph along Garrison Avenue.

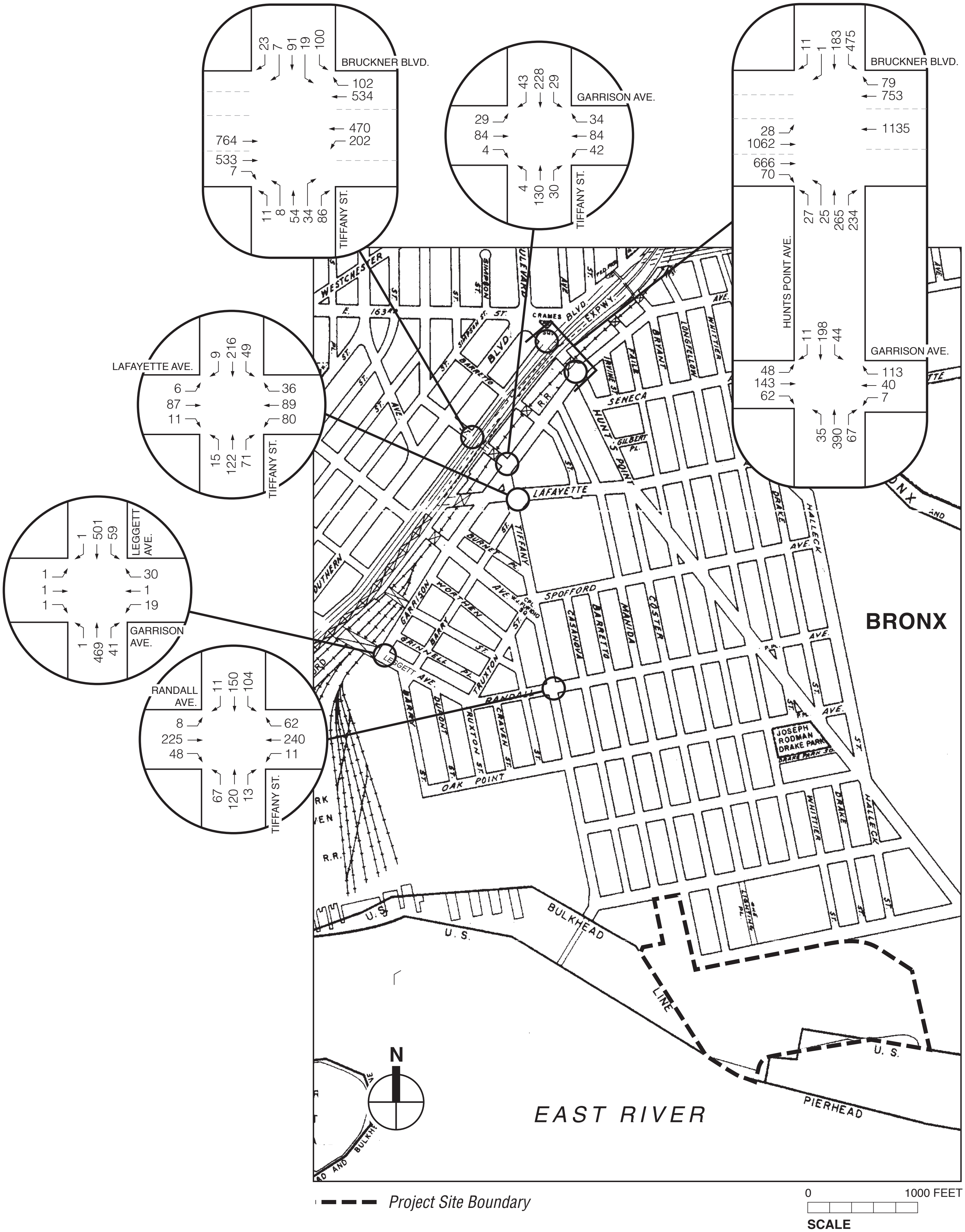
The continuous driveway counts along Ryawa Avenue at Manida and Coster Streets revealed that current traffic activities at these locations are not completely associated with commuting trips to and from the project site. The western end of the low-traffic Ryawa Avenue has effectively been used for the project site’s vehicle circulation and construction staging.

LEVEL OF SERVICE ANALYSIS

The LOS analysis was conducted using the *Highway Capacity Software* version 4.1f for signalized and unsignalized intersections. To appropriately depict the operational characteristics of the Bruckner Boulevard intersection at Hunts Point Avenue, two separate analyses were performed, one for the north half (westbound Bruckner Boulevard) and the other for the south half (eastbound Bruckner Boulevard) of the intersection. As shown in Table 17-4, all study area intersections currently operate at overall acceptable levels of service (mid-LOS D or better with no more than 45 and 30 seconds of average delay for signalized and unsignalized intersections, respectively) during the two peak hours analyzed. However, several individual approaches or movements at four of the seven intersections analyzed were determined to operate at unacceptable levels.



2006 Existing Traffic Volumes
AM Peak Hour (6:30 to 7:30)
Figure 17-3



2006 Existing Traffic Volumes
PM Peak Hour (3:00 to 4:00)
Figure 17-4

Hunts Point WPCP

Table 17-4
2006 Existing Conditions Level of Service Analysis

Intersection / Approach	AM Peak Hour				PM Peak Hour			
	Lane Group	V/C Ratio	Delay (sec)	LOS	Lane Group	V/C Ratio	Delay (sec)	LOS
Bruckner Boulevard Westbound & Hunts Point Avenue								
Westbound (main)	T	0.65	10.9	B	T	0.51	9.3	A
Westbound (service)	TR	0.77	14.0	B	TR	0.49	9.3	A
Northbound	LT	0.43	33.6	C	LT	0.51	35.2	D
Southbound	TR	0.75	45.6	D	TR	0.70	44.2	D
Intersection			20.3	C			20.1	C
Bruckner Boulevard Eastbound & Hunts Point Avenue								
Eastbound (main)	L	0.03	21.2	C	L	0.05	21.4	C
	T	0.44	26.2	C	T	1.02	63.5	E
Eastbound (service)	TR	0.37	25.3	C	TR	0.68	31.1	C
Northbound	TR	0.41	38.6	D	TR	0.47	39.5	D
	R	0.70	51.7	D	R	0.65	48.0	D
Southbound	L	0.90	69.5	E	L	1.05	99.1	F
	T	0.43	33.1	C	T	0.23	30.1	C
Intersection			38.6	D			55.0	E
Bruckner Boulevard & Tiffany Street								
Eastbound (main)	T	0.31	30.1	C	T	0.58	19.3	B
Eastbound (service)	TR	0.22	29.0	C	TR	0.41	16.5	B
Westbound (main)	L	1.05	99.0	F	L	1.05	129.9	F
	T	0.35	4.2	A	T	0.27	3.8	A
Westbound (service)	TR	0.51	5.3	A	TR	0.36	4.3	A
Northbound	LT	0.16	35.2	D	LT	0.19	35.6	D
	R	0.30	37.7	D	R	0.31	37.8	D
Southbound	LTR	0.22	36.3	D	LTR	0.83	61.5	E
Intersection			27.7	C			25.1	C
Garrison Avenue & Hunts Point Avenue								
Eastbound	LTR	0.45	44.5	D	LTR	0.57	47.1	D
Westbound	LTR	0.24	40.7	D	LTR	0.29	41.1	D
Northbound	L	0.04	16.0	B	L	0.08	16.4	B
	TR	0.22	17.7	B	TR	0.35	19.5	B
Southbound	L	0.15	6.4	A	L	0.09	7.8	A
	T	0.36	7.7	A	T	0.23	6.6	A
	R	0.03	5.2	A	R	0.01	5.2	A
Intersection			20.0+	C			25.5	C
Garrison Ave & Tiffany Street								
Eastbound	LTR	0.12	26.1	C	LTR	0.16	26.6	C
Westbound	LTR	0.26	28.1	C	LTR	0.21	27.3	C
Northbound	LTR	0.10	12.5	B	LTR	0.12	12.7	B
Southbound	LTR	0.29	14.4	B	LTR	0.30	14.6	B
Intersection			18.6	B			18.8	B
Garrison Ave & Leggett Avenue								
Eastbound	LTR	0.02	13.6	B	LTR	0.00	13.5	B
Westbound	LTR	0.08	14.1	B	LTR	0.12	14.4	B
Northbound	LTR	0.36	8.8	A	LTR	0.32	8.4	A
Southbound	LTR	0.41	9.2	A	LTR	0.43	9.6	A
Intersection			9.2	A			9.3	A
Randall Avenue & Tiffany Street								
Eastbound	LTR	0.32	8.8	A	LTR	0.24	8.1	A
Westbound	LTR	0.34	9.0	A	LTR	0.26	8.2	A
Northbound	LTR	0.47	19.1	B	LTR	0.41	17.6	B
Southbound	LTR	0.68	23.5	C	LTR	0.55	20.1	C
Intersection			15.0	B			13.3	B
Lafayette Avenue & Tiffany Street (All-Way Stop Control)								
Eastbound	LTR		10.7	B	LTR		9.8	A
Westbound	LTR		14.5	B	LTR		10.8	B
Northbound	LT		10.9	B	LT		10.0	B
	R		9.1	A	R		9.3	A
Southbound	LTR		13.2	B	LTR		11.5	B

Notes: L = Left Turn; T = Through; R = Right Turn; V/C = Volume to Capacity; LOS = Level of Service

Bruckner Boulevard Westbound and Hunts Point Avenue

During the AM peak hour, the southbound approach operates beyond mid-LOS D with a v/c ratio of 0.75 and an average delay of 45.6 seconds per vehicle (spv).

Bruckner Boulevard Eastbound and Hunts Point Avenue

During the AM peak hour, the northbound right-turn movement operates beyond mid-LOS D with a v/c ratio of 0.70 and an average delay of 51.7 spv and the southbound left-turn movement operates at LOS E with a v/c ratio of 0.90 and an average delay of 69.5 spv. During the PM peak hour, the eastbound mainline through movement operates at LOS E with a v/c ratio of 1.02 and an average delay of 63.5 spv. The right-turn movement on the northbound approach operates beyond mid-LOS D, with a v/c ratio of 0.65 and an average delay of 48.0 spv. In the southbound direction, the left-turn movement operates at LOS F, with a v/c ratio of 1.05 and an average delay of 99.1 spv.

Bruckner Boulevard and Tiffany Street

During the AM peak hour, the westbound left turn movement operates at LOS F with a v/c ratio of 1.05 and an average delay of 99.0 spv. During the PM peak hour, the same movement operates at LOS F with a v/c ratio of 1.05 and an average delay of 129.9 spv. In addition, the southbound approach operates at LOS E with a v/c ratio of 0.83 and an average delay of 61.5 spv.

Garrison Avenue and Hunts Point Avenue

During the PM peak hour, the eastbound approach operates at beyond mid-LOS D with a v/c ratio of 0.57 and an average delay of 47.1 spv.

PARKING

The surrounding area contains primarily low-density industrial uses that generate little traffic throughout the day. With curbside regulations permitting parking during regular daytime hours and restricting parking on alternate sides during the 3:00 to 6:00 AM hours for street cleaning purposes, an abundance of curbside parking spaces is available within a short walking distance from the project site. Field observations revealed that on-site spaces are limited and most construction workers relied on the usage of nearby on-street parking. It was estimated that approximately 100 to 110 vehicles belonging to personnel affiliated with working at the Hunts Point WPCP currently park on street. The utilized parking locations were observed to be limited to Manida, Coster and Bryant Streets between Ryawa and Viele Avenues, and along Ryawa Avenue between Manida Street and just east of Bryant Street. Curb space along Faile Street is mostly unavailable due to continuous truck loading curb cuts. Beyond these streets that are currently occupied by site-related vehicles, substantially more parking is available along Viele Avenue for most of its length.

PUBLIC TRANSPORTATION

Rapid transit service is not readily available for travel to the project site. The nearest New York City Transit (NYCT) subway line is the 6 train, which is accessible along Southern Boulevard north of Bruckner Boulevard. At the Hunts Point Avenue station, local bus transfer to the Bx6 route is available. This bus route provides the only transit service within the Hunts Point peninsula, with its nearest stop located approximately 0.35 mile from the site's Manida and Coster Street entrances. As stated earlier, most trips to and from the project site are expected to be made via auto or truck. Hence, no further analyses are required to address the area's transit conditions.

PEDESTRIANS

Pedestrian activities in the area of the plant have been minimal. Additional pedestrian activity is expected in the area near the Barretto Point Park. Other than the park, there are no active uses that require walking as a primary or connecting mode, with the exception of plant employees and construction workers walking between their vehicles that were parked on-street and the plant. As part of park construction, NYCDOT has restriped the portions of Viele Avenue bordering the new park between Tiffany and Barretto Streets, to accommodate perpendicular parking and a widened painted median. Additionally, recent actions taken by NYCDOT to shield truck traffic from Hunts Point's residential neighborhoods are expected to further improve safety of pedestrian flow. Nevertheless, accident data from the most recent three years were requested from NYCDOT and are summarized below.

The January 1, 2004 to December 31, 2006 NYCDOT Summary Accident Reports show that there were no recorded accidents along Viele Avenue in front of the newly constructed Barretto Point Park and only a few vehicle- and pedestrian-related accidents along Ryawa Avenue in front of the Hunts Point WPCP. Seven other intersections within the Hunts Point peninsula where most of the project-generated trips were projected to traverse were selected for analysis. The accident data for these seven traffic study area intersections are summarized in Table 17-5.

Table 17-5
Accident Data

Intersection						Number of Injuries by Year					
East-West Roadway	North-South Roadway	RPT Acc.	NRPT Acc.	Total Fatal.	Total Injuries	Pedestrians			Bicyclists		
						2004	2005	2006	2004	2005	2006
Bruckner Blvd.	Hunts Point Ave.	84	143	0	157	3	8	6	1	2	0
Bruckner Blvd.	Tiffany St.	45	78	0	78	1	1	0	0	1	1
Garrison Ave.	Hunts Point Ave.	6	19	0	13	3	0	1	1	0	0
Garrison Ave.	Tiffany St.	5	12	0	6	1	0	0	0	0	0
Garrison Ave.	Leggett Ave.	3	12	0	14	0	0	0	0	0	0
Lafayette Ave.	Tiffany St.	2	14	0	2	0	0	0	0	0	0
Randall Ave.	Tiffany St.	10	32	0	11	1	0	0	0	0	0

Notes: RPT = Reportable (damage of $1,000 or more and/or injuries); NRPT = Non-Reportable (damage of less than $1,000 and no injuries); Acc. = Accidents; Fatal. = Fatalities.
Sources: NYCDOT

Based on the information summarized above, the Bruckner Boulevard and Hunts Point Avenue intersection experienced a notable number of pedestrian injuries resulting from traffic-related accidents. In 2005 and 2006, 8 and 6 pedestrians were injured, respectively. In 2005, there were also 2 bicyclists injured due to accidents at this location. A review of the detailed reports on these accidents revealed that the pedestrian injuries in these two years were results of 7 and 6 vehicle-pedestrian related accidents, respectively. Although 5 or more pedestrian-related accidents occurred at this location, which constitute the intersection as a high pedestrian accident location, the detailed accident reports did not reveal any prevailing trends associated with these accidents. Nonetheless, NYCDOT has implemented several improvement measures at this location to also address the high number of vehicular accidents, in accordance with recommendations from the Hunts Point Vision Plan. These measures include signal head and lane marking modifications.

THE FUTURE WITHOUT THE PROPOSED ACTION (2011)

In the year 2011 of the future without the proposed action, it is assumed that the existing plant would continue to operate without the on-going construction activities associated with Phases I and II of the plant upgrade. To establish the 2011 future without the proposed action conditions, traffic trips (including construction worker trips and truck trips) related to Phase I and Phase II construction activities were netted out of the existing peak hour analysis networks. During the traffic counts conducted in April 2006, there were 193 construction workers on site, according to a site survey. The 193 construction workers were converted to 161 vehicle trips (all traveling via auto with average vehicle occupancy of 1.2) and subtracted from the AM and PM baseline traffic networks, with arrivals occurring in the morning and departures taking place during the afternoon. Truck activities at the project were anticipated to generate 9 daily truck trips to the site. It was assumed that 15 percent of the daily total or 1 arriving and 1 departing truck trip-ends were subtracted from each of the AM and PM baseline traffic networks.

The resulting background traffic levels were then grown by 0.5 percent a year per *CEQR Technical Manual* guidelines to account for background growth. While several other projects are either nearing completion or could be completed within the next few years, the related trips were not included in the future without the proposed action conditions due to differences in peak travel periods and the reasons discussed below.

Barretto Point Park was completed in October 2006 and additional pedestrian activity is expected. The Barretto Point Park is estimated to generate 500 to 1,000 daily visits between 8:00 AM and 9:00 PM[1]. With many of these visits likely to be made occurring outside of the analysis peak hours, vehicular traffic generation at the study area intersections attributed to Barretto Point Park is expected to be minimal and assumed as part of the background growth at the analysis intersections.

NYSDOT is in the process of planning and designing for new and improved connections between the Bruckner and Sheridan Expressways. This project is still in early stages of planning and its scheduled completion is not yet certain (preliminary schedules include construction commencement as early as 2010 and completion by 2014). Should the scheduled construction of this highway capital improvement project overlap with the proposed action, NYSDOT and NYCDOT would need to consider this in their development of maintenance and protection of traffic (MPT) programs during construction.

At approximately half a mile west of the project site, there are preliminary plans to construct an 849,000-gsf Oak Point Detention Facility, to be operated by approximately 800 employees over three shifts and house over 2,000 inmates. This facility, which is still in early stages of planning, would provide site access primarily via an extension of Oak Point Avenue.

The Croton Residuals Solid Force Main (“Croton Force Main”) project involves the construction of a six-inch pipeline extending from the Croton Water Treatment Plant to the Hunts Point WPCP. Construction for the Croton Force Main would take approximately two years and is projected to be in operation by the end of October 2011. In the study area, the likely route of the Croton Force Main

[1] Based on 5-acre park and trip generation rates in ITE Trip Generation Manual, 7th Edition

south of Bruckner Boulevard would include Longwood Avenue to Tiffany Street to Viele Avenue to Manida Street to the Hunts Point WPCP. Effects of the construction in the vicinity of the plant are expected to be minimal and limited in duration. Construction of the force main should be approximately 100 feet per day. The Croton Force Main would generally be constructed down the center of the streets with 15 to 20 feet taken temporarily for construction. The Croton Force Main Contractor could start construction of the force main at the Hunts Point WPCP plant, the Croton Water Treatment Plant or both directions. Because of the short period of disruption expected due to construction; the restricted scope of the effect in the proposed action's study area; and the project's completion prior to the peak analysis year for the proposed action, the Croton Force Main was not considered in the future without the proposed action analysis.

Construction of the Ryawa-Viele Connection near the project site would not affect the selected intersections for analysis or potential impacts of the proposed action at the analysis sites. If constructed by 2011, the Ryawa-Viele Connection would still need to allow for access to the Hunts Point WPCP, including the construction of the egg-shaped digesters.

Two other projects are currently being planned for available parcels along Food Center Drive east of the project site. Baldor Specialty Foods, which currently operates at 511 Barry Street within a 185,000-gsf refrigerated warehouse and distribution facility in the Hunts Point peninsula, has plans to relocate its operation to 155 Food Center Drive. Baldor makes goods delivery, primarily between 4 and 6 AM, to destinations in the northeastern United States. Although Baldor has plans for increasing its employment over the upcoming years, its relocation to Food Center Drive would actually eliminate traffic at some of the study area intersections. Furthermore, since traffic associated with Baldor would mostly occur outside of the analysis peak hours, they were not included in the future without the proposed action peak hour traffic networks. The other planned project along Food Center Drive is a 167,000-gsf warehouse facility for Anheuser Busch. Similar to Baldor Specialty Foods, this new warehouse facility would generate trips primarily outside of the analysis peak hours and following travel routes that are not comparable to those analyses for the proposed action. Hence, the anticipated traffic associated with the new Anheuser Busch facility was also not included in the future without the proposed action peak hour traffic networks. In addition, with both Baldor and Anheuser Busch committed to maximizing rail freight transport in the future, consistent with the Hunts Point Vision Plan recommendations, truck traffic associated with both of these projects are expected to decrease with time.

In the time period between the issuance of the DEIS and FEIS, NYCDEP contacted NYCDCP and NYCEDC again to determine whether additional projects not identified in the DEIS were now proposed. The only additional project identified is a proposed rezoning within the Hunts Point peninsula. NYCDCP is contemplating a rezoning within the Hunts Point peninsula and the creation of a special district (the Hunts Point Special District). The purpose of the rezoning and special district is to enhance the environment for the expanding food industry sector in Hunts Point, to act as a buffer between the residential area and the heavier manufacturing district, to encourage the growth of retail services available to residents and employees, and to improve the appearance of the industrial area of the Hunts Point peninsula. This action is only in its early stages of development and will undergo its own environmental review. Also, because the areas expected to be affected by this action are geographically remote from the Hunts Point WPCP and do not substantially share common access routes, any effects on future background traffic levels at the study area intersections are likely to be minimal and assumed to be accounted for in the background growth.

Construction needs for the Oak Point Detention Facility, the Croton Force Main, Baldor Specialty Foods, and Anheuser Busch distribution facility are largely expected to require substantially smaller work force, fewer truck deliveries, and shorter durations than the proposed action. Any overlapping of construction-related traffic pertained to the proposed action and these projects would not likely occur because of likely differences in peak traffic hours and construction schedules. In addition, reasonable worst-case conditions for the construction traffic analysis are considered to be conservative estimates for the proposed action. Therefore, no additional trips from the construction of these projects were incorporated into the future without the proposed action peak hour analysis traffic networks.

TRAFFIC VOLUMES

Traffic levels in the area are expected to generally decrease slightly during both the AM and PM peak hours (due to the netting out of construction traffic at the Hunts Point WPCP). The largest decreases during the peak hours would be most noticeable along the Tiffany Street corridor at its intersections with Bruckner Boulevard and Randall Avenue. As discussed, this condition was developed to represent a future baseline to which the impact of construction traffic generated by the proposed action at the Hunts Point WPCP could be compared. The 2011 future without the proposed action peak hour traffic volume networks are presented in Figures 17-5 and 17-6.

LEVEL OF SERVICE ANALYSIS

The future 2011 future without the proposed action LOS analysis was conducted for the same intersections analyzed for the Existing Conditions. This analysis accounted for the projected future without the proposed action volumes and physical and operational changes resulting from other planned major projects in the area. As part of the Hunts Point WPCP Phase II Upgrade, a temporary conversion of the intersection control at Lafayette Avenue and Tiffany Street from a two-way stop to an all-way stop has been implemented and was accounted for throughout the analysis. Detailed summaries of findings and comparisons with existing levels are presented in Table 17-6.

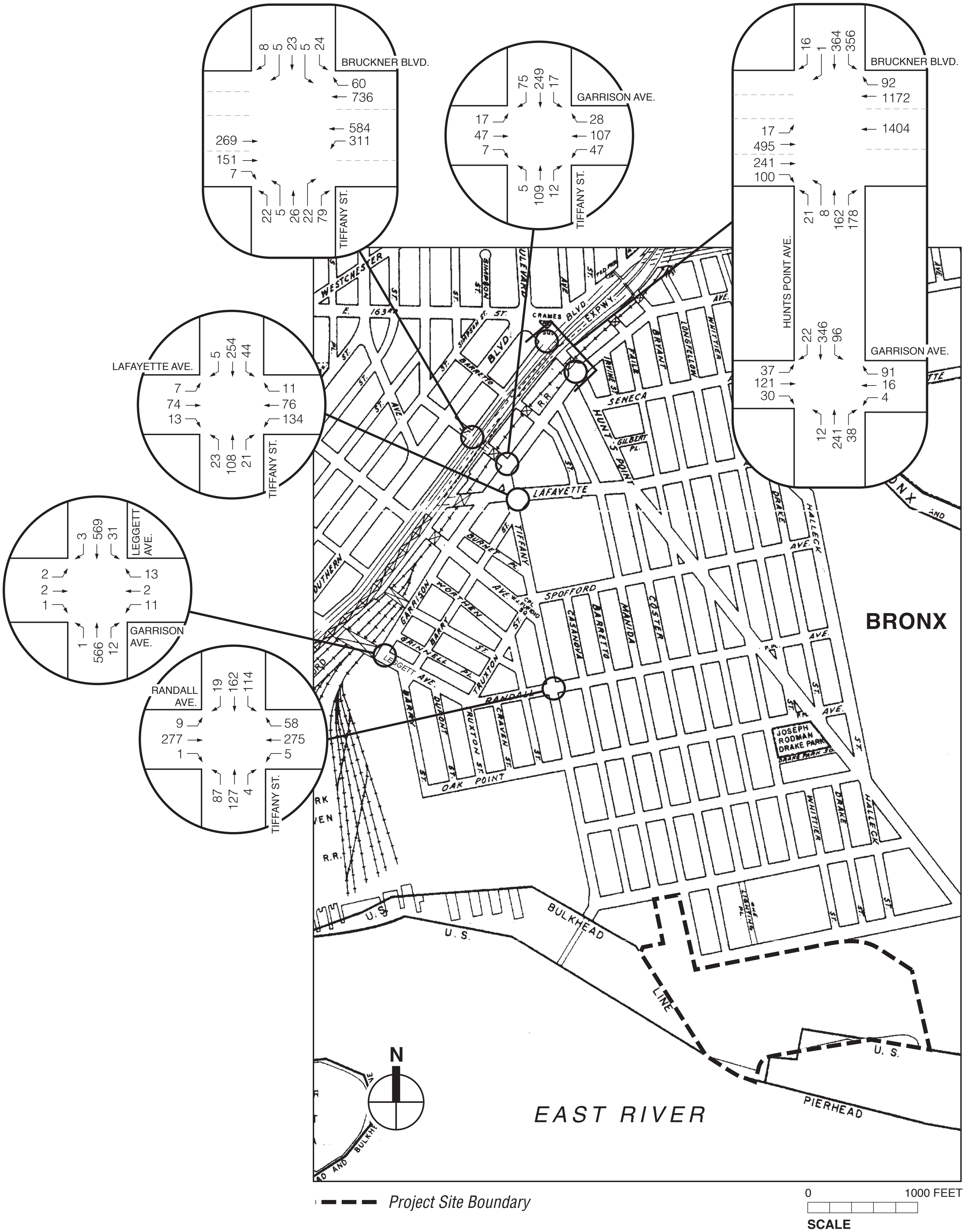
Bruckner Boulevard Westbound and Hunts Point Avenue

During the AM peak hour, the southbound approach would continue to operate beyond mid-LOS D with a v/c ratio of 0.75 and an average delay of 45.6 spv.

Bruckner Boulevard Eastbound and Hunts Point Avenue

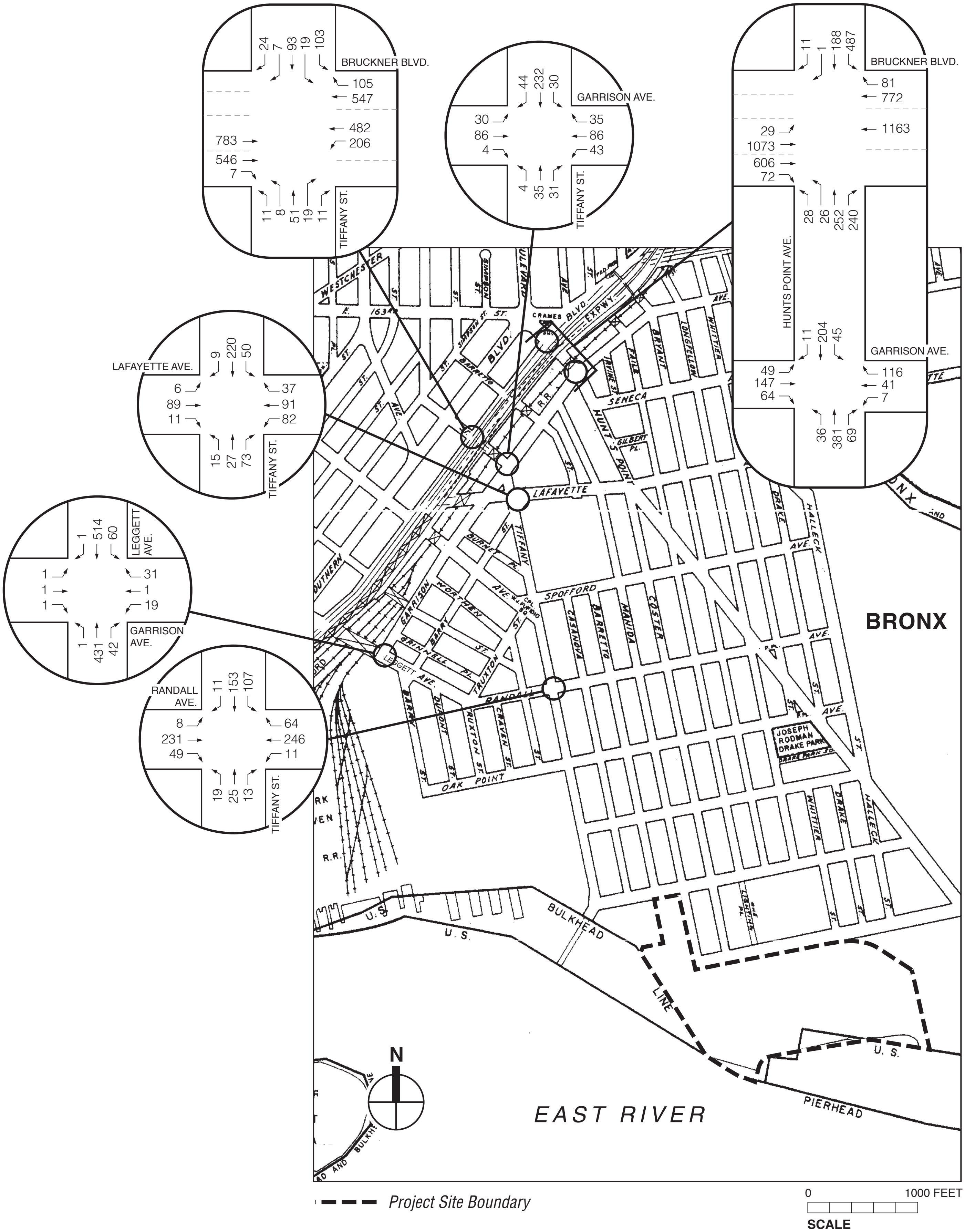
During the AM peak hour, the northbound right-turn movement would continue to operate at LOS D with a v/c ratio of 0.72 and an average delay of 52.6 spv and the southbound left-turn movement would continue to operate at LOS E with a v/c ratio of 0.94 and an average delay of 76.3 spv. During the PM peak hour, the eastbound mainline through movement would continue to operate at LOS E with a v/c ratio of 1.03 and an average delay of 66.5 spv. The right-turn movement on the northbound approach would continue to operate beyond mid-LOS D with a v/c ratio of 0.67 and an average delay of 48.8 spv. In the southbound direction, the left-turn movement would continue to operate at LOS F, with a v/c ratio of 1.07 and an average delay of 107.1 spv.

11.7.06



2011 No Action Traffic Volumes
AM Peak Hour (6:30 to 7:30)
Figure 17-5

11.7.06



2011 No Action Traffic Volumes
PM Peak Hour (3:00 to 4:00)
Figure 17-6

Hunts Point WPCP

Table 17-6
2006 Existing and 2011 Future Without the Proposed Action Level of Service Analysis

Intersection / Approach	AM Peak Hour								PM Peak Hour							
	2006 Existing				2011 Future without Proposed Action				2006 Existing				2011 Future without Proposed Action			
	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
Bruckner Boulevard Westbound & Hunts Point Avenue																
Westbound (main)	T	0.65	10.9	B	T	0.62	10.6	B	T	0.51	9.3	A	T	0.52	9.4	A
Westbound (service)	TR	0.77	14.0	B	TR	0.79	14.6	B	TR	0.49	9.3	A	TR	0.50	9.5	A
Northbound	LT	0.43	33.6	C	LT	0.44	33.9	C	LT	0.51	35.2	D	LT	0.51	35.2	D
Southbound	TR	0.75	45.6	D	TR	0.75	45.6	D	TR	0.70	44.2	D	TR	0.72	44.8	D
Intersection			20.3	C			20.5	C			20.1	C			20.3	C
Bruckner Boulevard Eastbound & Hunts Point Avenue																
Eastbound (main)	L	0.03	21.2	C	L	0.03	21.2	C	L	0.05	21.4	C	L	0.06	21.4	C
	T	0.44	26.2	C	T	0.46	26.4	C	T	1.02	63.5	E	T	1.03	66.5	E
Eastbound (service)	TR	0.37	25.3	C	TR	0.38	25.4	C	TR	0.68	31.1	C	TR	0.63	29.8	C
Northbound	TR	0.41	38.6	D	TR	0.42	38.8	D	TR	0.47	39.5	D	TR	0.46	39.3	D
	R	0.70	51.7	D	R	0.72	52.6	D	R	0.65	48.0	D	R	0.67	48.8	D
Southbound	L	0.90	69.5	E	L	0.94	76.3	E	L	1.05	99.1	F	L	1.07	107.1	F
	T	0.43	33.1	C	T	0.42	33.0	C	T	0.23	30.1	C	T	0.24	30.2	C
Intersection			38.6	D			40.1	D			55.0	E			57.8	E
Bruckner Boulevard & Tiffany Street																
Eastbound (main)	T	0.31	30.1	C	LT	0.32	30.2	C	T	0.58	19.3	B	T	0.60	19.5	B
Eastbound (service)	TR	0.22	29.0	C	TR	0.23	29.1	C	TR	0.41	16.5	B	TR	0.41	16.7	B
Westbound (main)	L	1.05	99.0	F	L	0.83	56.2	E	L	1.05	129.9	F	L	1.07	135.9	F
	T	0.35	4.2	A	T	0.36	4.3	A	T	0.27	3.8	A	T	0.27	3.9	A
Westbound (service)	TR	0.51	5.3	A	TR	0.52	5.4	A	TR	0.36	4.3	A	TR	0.37	4.4	A
Northbound	LT	0.16	35.2	D	LT	0.16	35.3	D	LT	0.19	35.6	D	LT	0.18	35.5	D
	R	0.30	37.7	D	R	0.31	37.8	D	R	0.31	37.8	D	R	0.08	34.0	C
Southbound	LTR	0.22	36.3	D	LTR	0.21	36.1	D	LTR	0.83	61.5	E	LTR	0.85	63.8	E
Intersection			27.7	C			19.3	B			25.1	C			25.3	C
Garrison Avenue & Hunts Point Avenue																
Eastbound	LTR	0.45	44.5	D	LTR	0.46	44.8	D	LTR	0.57	47.1	D	LTR	0.58	47.6	D
Westbound	LTR	0.24	40.7	D	LTR	0.24	40.7	D	LTR	0.29	41.1	D	LTR	0.29	41.2	D
Northbound	L	0.04	16.0	B	L	0.04	16.0	B	L	0.08	16.4	B	L	0.08	16.5	B
	TR	0.22	17.7	B	TR	0.22	17.8	B	TR	0.35	19.5	B	TR	0.35	19.4	B
Southbound	L	0.15	6.4	A	L	0.15	6.5	A	L	0.09	7.8	A	L	0.09	7.7	A
	T	0.36	7.7	A	T	0.35	7.6	A	T	0.23	6.6	A	T	0.24	6.7	A
	R	0.03	5.2	A	R	0.03	5.3	A	R	0.01	5.2	A	R	0.01	5.2	A
Intersection			20.0+	C			20.3	C			25.5	C			25.7	C
Garrison Avenue & Tiffany Street																
Eastbound	LTR	0.12	26.1	C	LTR	0.12	26.1	C	LTR	0.16	26.6	C	LTR	0.16	26.6	C
Westbound	LTR	0.26	28.1	C	LTR	0.27	28.2	C	LTR	0.21	27.3	C	LTR	0.22	27.4	C
Northbound	LTR	0.10	12.5	B	LTR	0.10	12.5	B	LTR	0.12	12.7	B	LTR	0.05	12.1	B
Southbound	LTR	0.29	14.4	C	LTR	0.23	13.8	B	LTR	0.30	14.6	B	LTR	0.30	14.6	B
Intersection			18.6	B			18.9	B			18.8	B			19.6	B
Garrison Avenue & Leggett Avenue																
Eastbound	LTR	0.02	13.6	B	LTR	0.02	13.6	B	LTR	0.00	13.5	B	LTR	0.00	13.5	B
Westbound	LTR	0.08	14.1	B	LTR	0.08	14.1	B	LTR	0.12	14.4	B	LTR	0.12	14.4	B
Northbound	LTR	0.36	8.8	A	LTR	0.37	8.9	A	LTR	0.32	8.4	A	LTR	0.30	8.3	A
Southbound	LTR	0.41	9.2	A	LTR	0.39	9.0	A	LTR	0.43	9.6	A	LTR	0.44	9.7	A
Intersection			9.2	A			9.1	A			9.3	A			9.3	A
Randall Avenue & Tiffany Street																
Eastbound	LTR	0.32	8.8	A	LTR	0.28	8.4	A	LTR	0.24	8.1	A	LTR	0.25	8.1	A
Westbound	LTR	0.34	9.0	A	LTR	0.35	9.1	A	LTR	0.26	8.2	A	LTR	0.27	8.3	A
Northbound	LTR	0.47	19.1	B	L	0.46	19.0	B	LTR	0.41	17.6	B	LTR	0.11	14.3	B
Southbound	LTR	0.68	23.5	C	LTR	0.55	20.2	C	LTR	0.55	20.1	C	LTR	0.51	19.2	B
Intersection			15.0	B			13.6	B			13.3	B			12.0	B
Lafayette Avenue & Tiffany Street (All-Way Stop Control)																
Eastbound	LTR		10.7	B	LTR		10.4	B	LTR		9.8	A	LTR		9.4	A
Westbound	LTR		14.5	B	LTR		14.0	B	LTR		10.8	B	LTR		10.3	B
Northbound	LT		10.9	B	LT		10.7	B	LT		10.0	B	LT		9.3	A
	R		9.1	A	R		9.1	A	R		9.3	A	R		9.3	A
Southbound	LTR		13.2	B	LTR		11.9	B	LTR		11.5	B	LTR		11.2	B

Notes: L = Left Turn; T = Through; R = Right Turn; V/C = Volume to Capacity; LOS = Level of Service

Bruckner Boulevard and Tiffany Street

During the AM peak hour, the westbound left turn movement would improve from LOS F to LOS E with a v/c ratio of 0.83 and an average delay of 56.2 spv. During the PM peak hour, the westbound left turn movement would continue to operate at LOS F with a v/c ratio of 1.07 and an average delay of 135.9 spv. In addition, the southbound approach would continue to operate at LOS E with a v/c ratio of 0.85 and an average delay of 63.8 spv.

Garrison Avenue and Hunts Point Avenue

During the PM peak hour, the eastbound approach would continue to operate beyond mid-LOS D with a v/c ratio of 0.58 and an average delay of 47.6 spv.

PARKING, PUBLIC TRANSPORTATION AND PEDESTRIANS

Under the future without the proposed action conditions, with on-going construction traffic netted out of the study area traffic network to establish a future baseline to which the impact of construction activities at the Hunts Point WPCP could be compared, parking demand in the vicinity of the project site would decrease substantially. Similar to existing conditions, there would be minimal activities associated with public transportation and pedestrians.

Due to the anticipated increase in pedestrian and bicycle activities associated with Barretto Point Park, NYCDOT has conducted a study to determine whether certain safety measures and all-way stop controls are warranted along Viele Avenue and at the intersections of Viele Avenue at Barretto, Casanova, and Tiffany Streets. This study resulted in NYCDOT recently restriping the portion of Viele Avenue bordering the park between Tiffany and Barretto Streets to accommodate perpendicular parking and a widened painted median as part of park construction. Existing and future pedestrian levels in the area, even with the newly opened Barretto Point Park and potential future expansion of the South Bronx Greenway, would remain comparatively low, and increases in vehicular and truck traffic would be moderate. NYCDOT has installed new 4-way stop control only at the intersection of Viele Avenue and Tiffany Street but deemed the proposed intersection controls and related new crosswalks at the Viele Avenue intersections at Casanova and Barretto Streets unwarranted. However, NYCDOT may revisit these findings upon full realization of park activities and determine then whether additional improvement measures are needed. Furthermore, NYCDOT would be informed of the activities associated with the proposed action construction for consideration of its evaluation of traffic conditions surrounding Barretto Point Park.

PROBABLE IMPACTS OF THE PROPOSED ACTION (2011)

As discussed earlier and summarized in Table 17-1, average daily totals of 177 construction workers and 51 trucks were projected for the third quarter of 2011 when construction of the proposed action would be at its peak. Based on conservative assumptions, the 177 construction workers would result in 148 vehicle trips (all traveling via auto with average vehicle occupancy of 1.2) during each of the AM and PM analysis peak hours with arrivals occurring in the morning and departures taking place during the afternoon. Although truck activities at the project site were observed to peak during the middle of the day when all construction workers would have already arrived, 15 percent of the daily total or 8 arriving and 8 departing truck trip-ends were conservatively assumed for each of the AM and PM analysis peak hours.

PROJECTED TRAVEL PATTERNS OF CONSTRUCTION-RELATED TRAFFIC

Site construction workers are expected to access the Hunts Point peninsula primarily from Bruckner Boulevard at its intersections with Leggett Avenue, Tiffany Street, and Hunts Point Avenue. Based on previously identified travel patterns to the Hunts Point WPCP, 55 percent of the workers would approach from westbound Bruckner Boulevard, 25 percent from eastbound Bruckner Boulevard, and the remaining 20 percent from local streets north of the Hunts Point peninsula. Since left-turns onto southbound Hunts Point Boulevard from westbound Bruckner Boulevard are prohibited, most site-related traffic would access the Hunts Point peninsula via Tiffany Street and Leggett Avenue. Overall, 59 percent of the construction worker traffic would approach the site from Tiffany Street, 30 percent from Leggett Avenue, which would combine with the Tiffany Street traffic at Randall Avenue, and 11 percent from Hunts Point Avenue. The departure routing would be similar, with the exception of Coster Street functioning as the one-way pair of Hunts Point Avenue south of Lafayette Avenue. Truck trips would be made along Tiffany Street and Leggett Avenue only, which are NYCDOT designated truck routes.

TRAFFIC VOLUMES

Based on the above travel patterns, the 2011 construction-generated auto trips were assigned to the study area traffic networks, as shown on Figures 17-7 and 17-8 for the AM and PM peak hours, respectively. The 2011 construction-generated truck trips were assigned to the study area traffic networks, as shown on Figure 17-9 for both the AM and PM peak hours. These trips were then combined with the future without the proposed action traffic volumes to create the future construction traffic analysis networks, as shown in Figures 17-10 and 17-11.

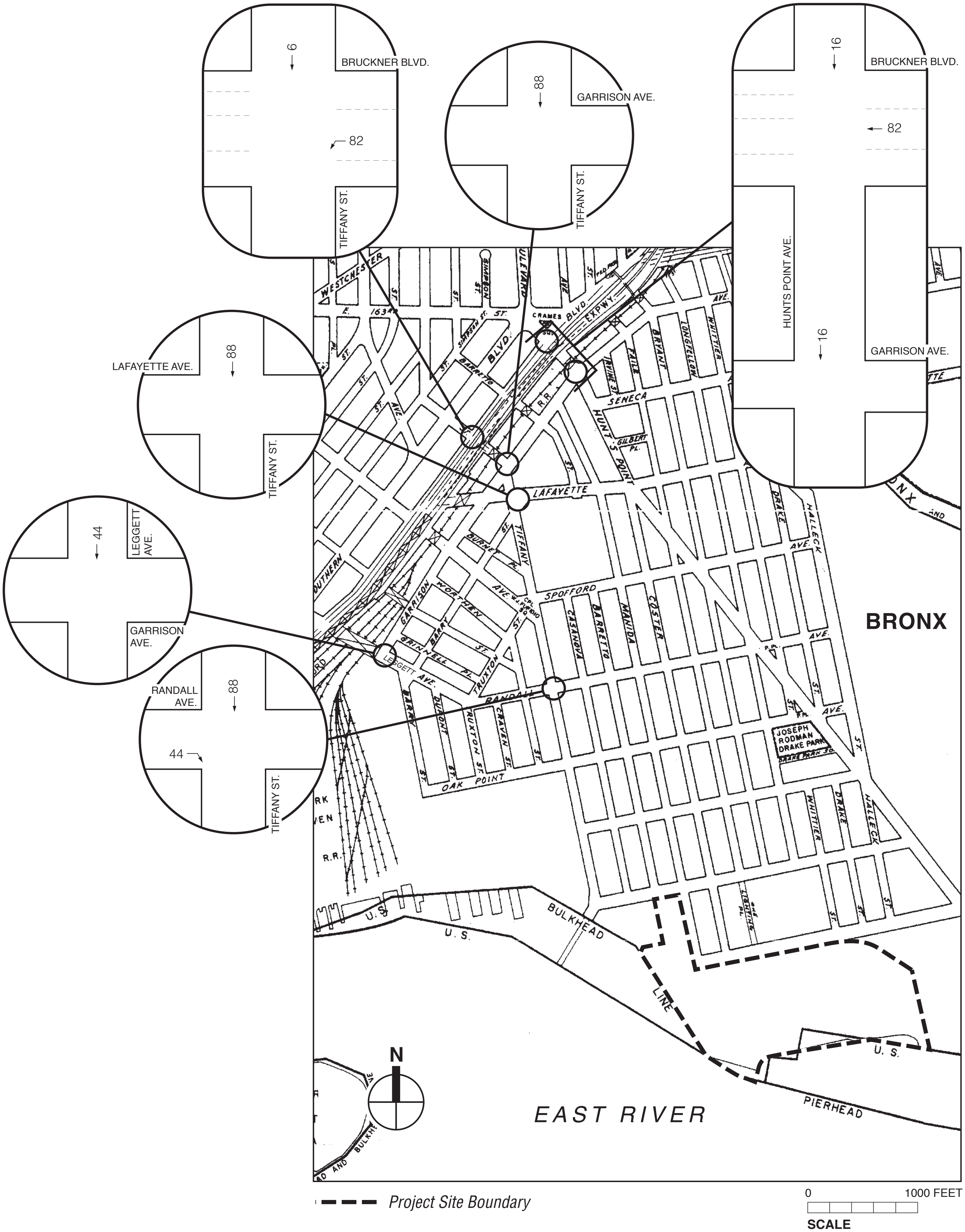
LEVELS OF SERVICE

Intersection capacities and LOS were analyzed to determine whether there could be a potential for significant adverse traffic impacts due to the projected construction-generated traffic. Comparisons of the 2011 future without the proposed action and construction conditions for the study area intersections are presented in Table 17-7 for both the AM and PM analysis peak hours.

Determination of Impacts

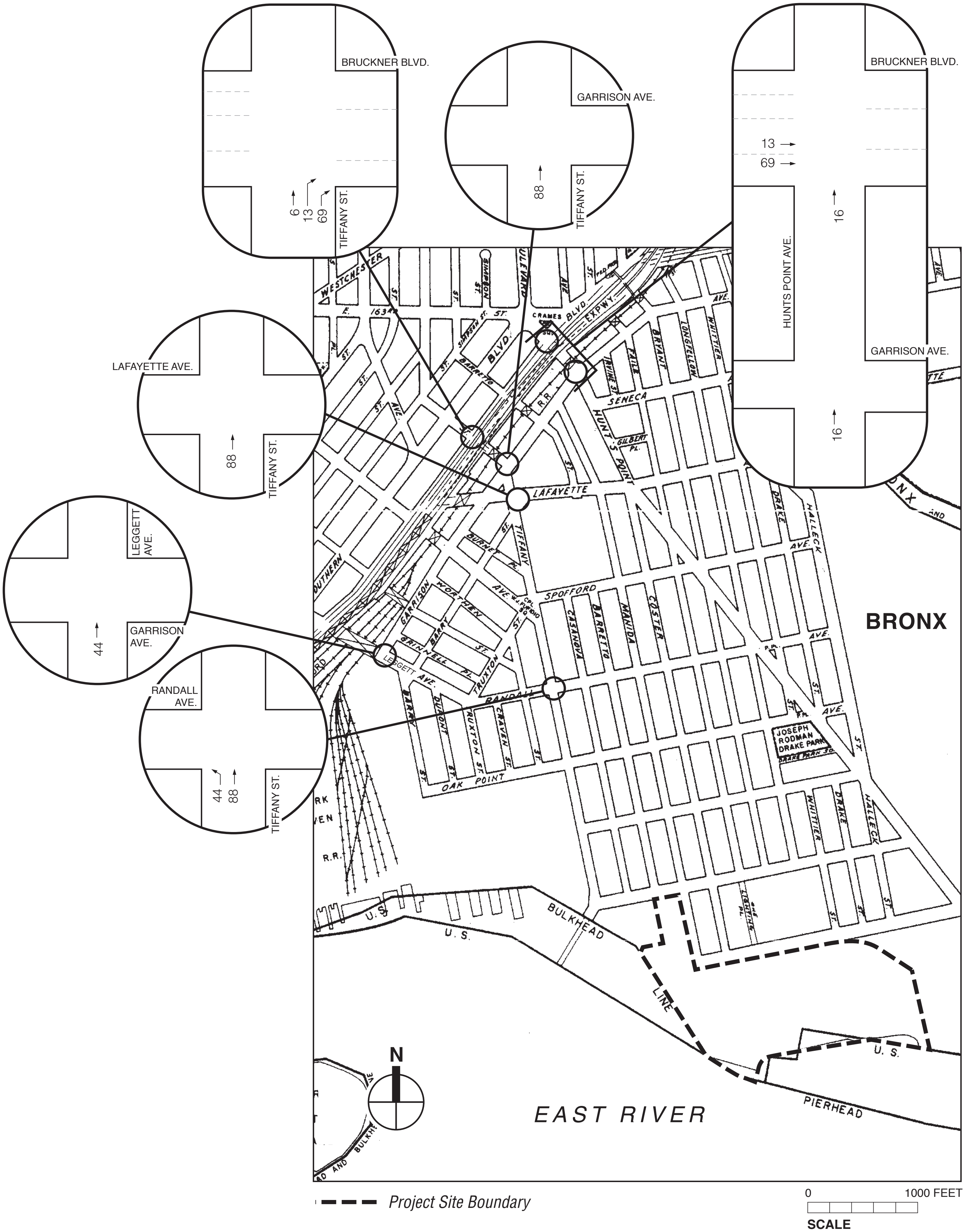
Based on the criteria discussed under "Traffic Analysis Methodologies," predicted potential significant adverse traffic impacts attributed to the construction-generated vehicle trips were determined for movements at one study area intersection (Bruckner Boulevard and Tiffany Street) during both the AM and PM analysis peak hours. The analysis results presented in Table 17-7 are for the estimated worst-quarterly period of vehicular traffic associated with construction of the proposed action (third quarter 2011). At this intersection, the AM hour is the worst-case time period for predicted traffic impacts from construction of the proposed action. During the third quarter of 2011, the estimated number of construction-related vehicles for the proposed action making the westbound left-turn in the AM peak hour was 86 vehicles. For most of the remaining construction period, the estimated traffic on this turn would be considerably less.

11.7.06



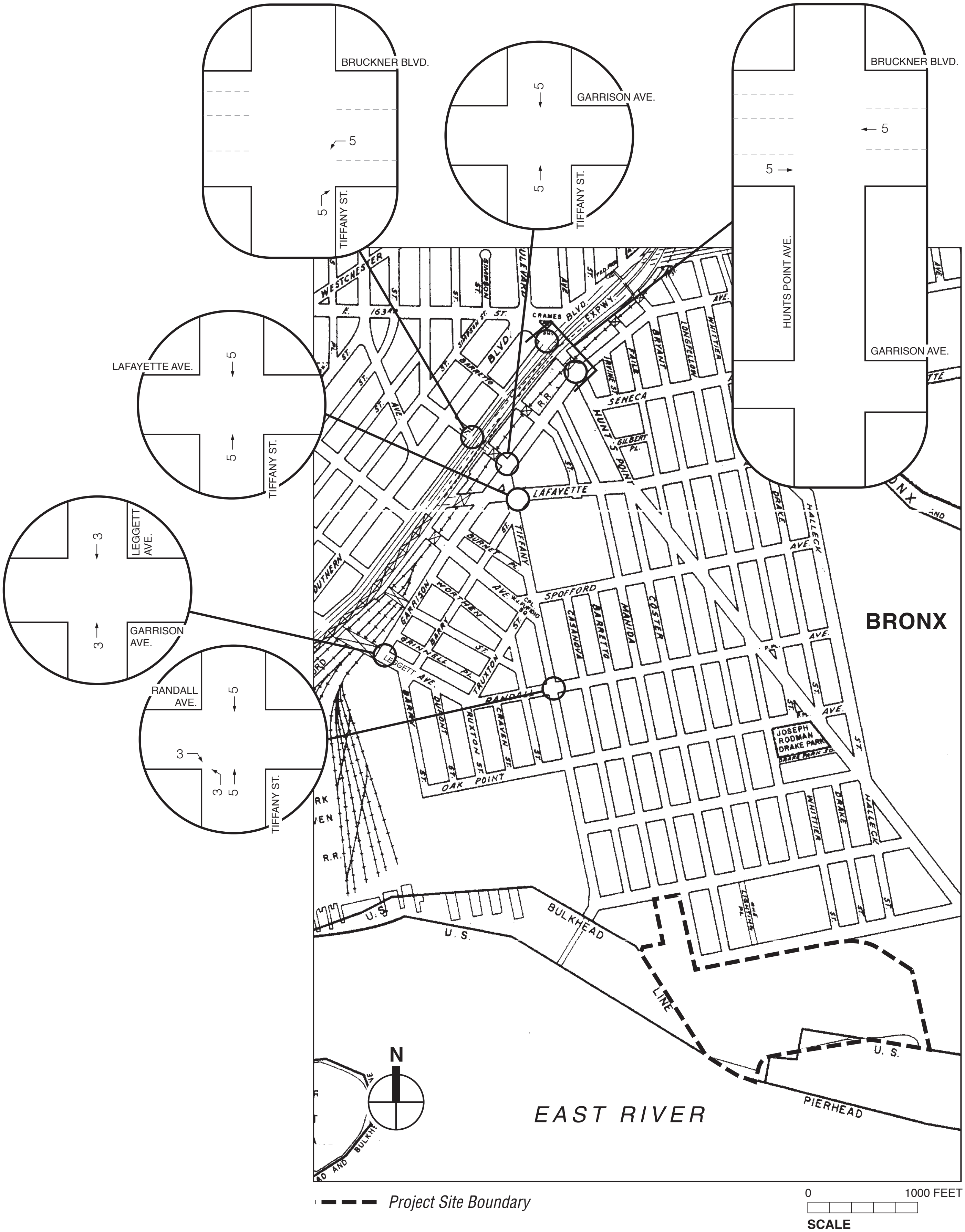
Proposed Action Construction Traffic Volumes
Auto AM Peak Hour (6:30 to 7:30)
Figure 17-7

11.7.06



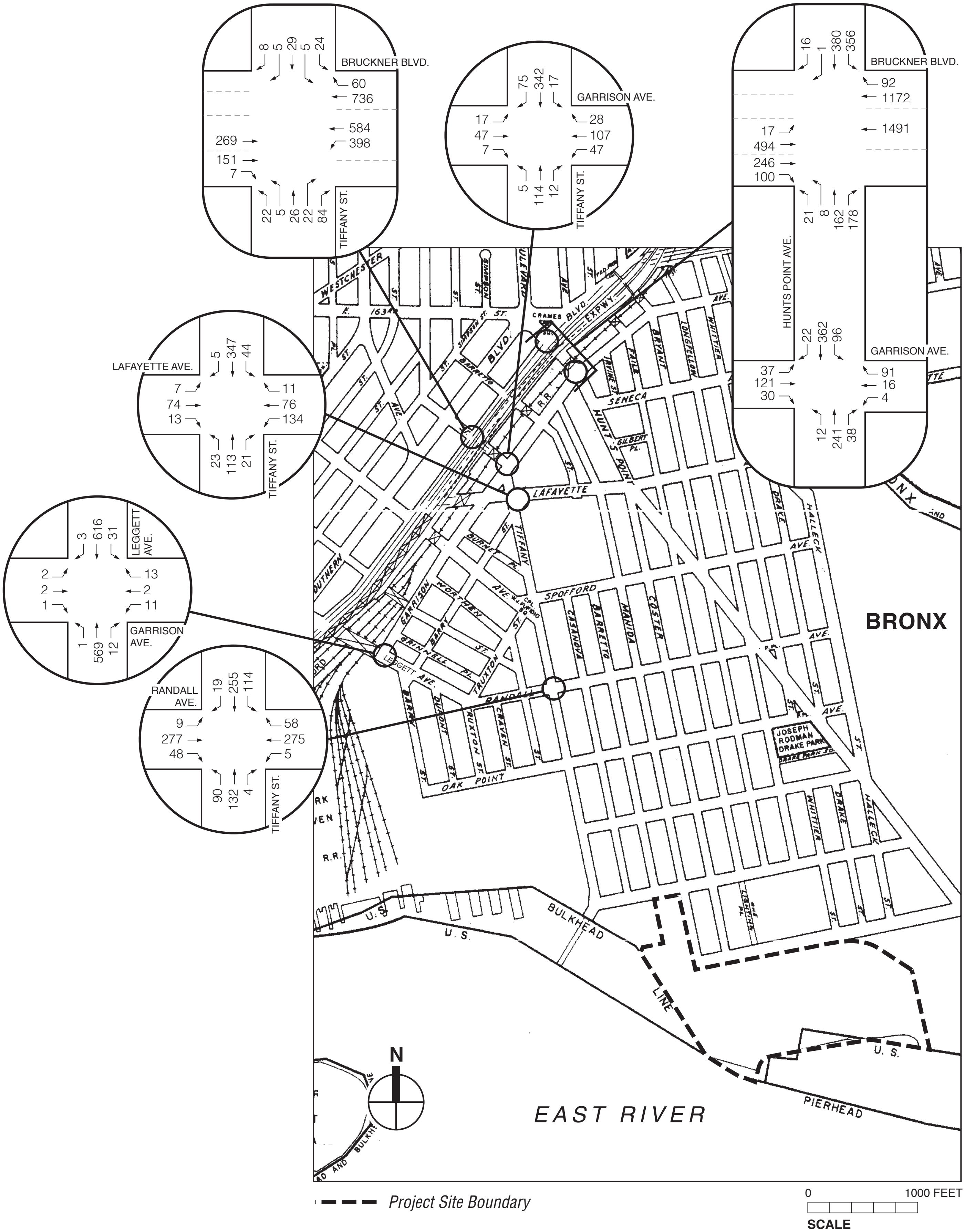
Proposed Action Construction Traffic Volumes
Auto PM Peak Hour (3:00 to 4:00)
Figure 17-8

8.21.06



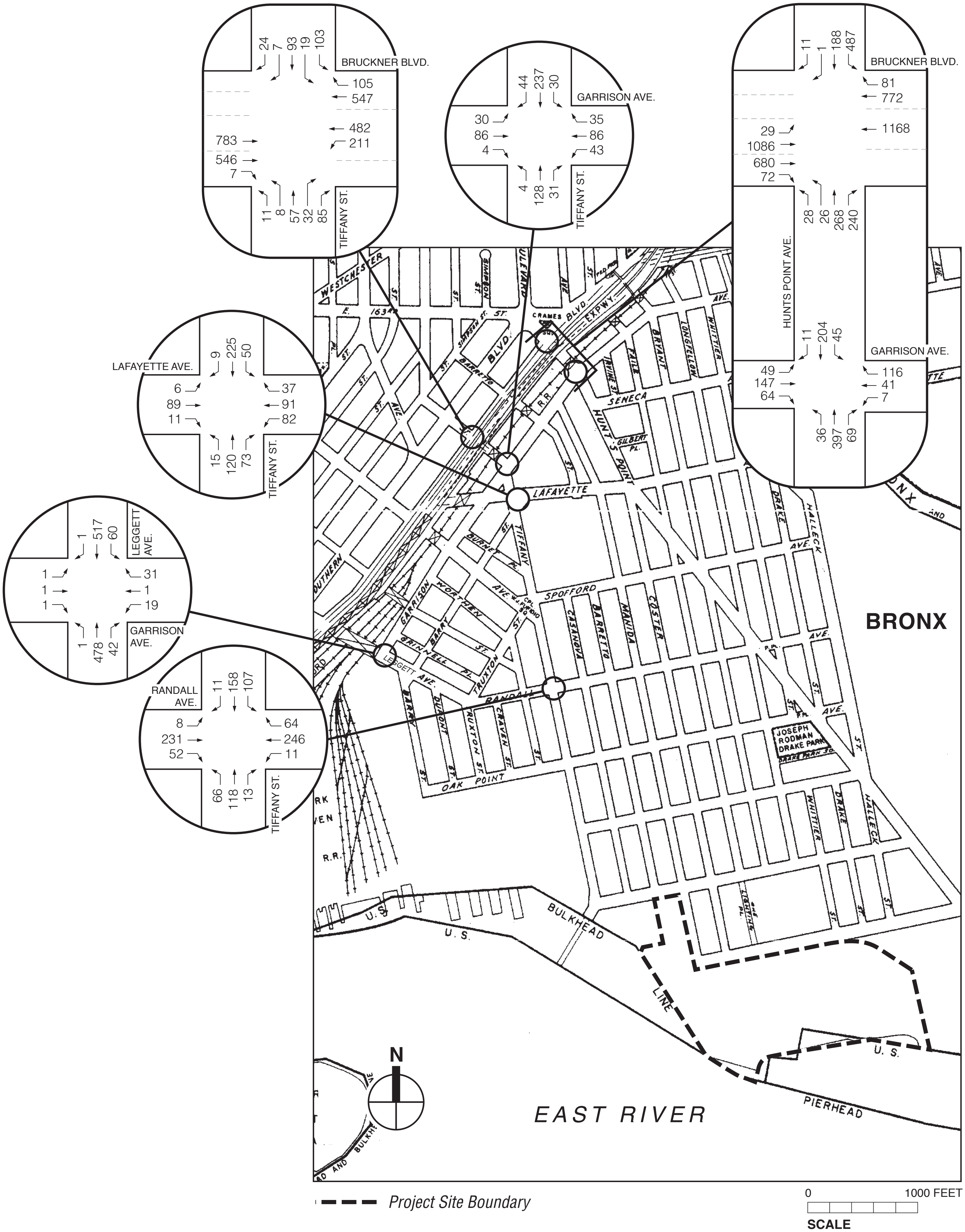
Proposed Action Construction Traffic Volumes
Truck AM/PM Peak Hour
Figure 17-9

11.7.06



2011 Build Traffic Volumes
AM Peak Hour (6:30 to 7:30)
Figure 17-10

Hunts Point WPCP



2011 Build Traffic Volumes
PM Peak Hour (3:00 to 4:00)
Figure 17-11

Table 17-7
2011 No Build (Future Without Proposed Action) and 2011 Construction Conditions Level of Service Analysis

Intersection / Approach	AM Peak Hour								PM Peak Hour							
	2011 Without Proposed Action				2011 Construction				2011 Without Proposed Action				2011 Construction			
	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
Bruckner Boulevard Westbound & Hunts Point Avenue																
Westbound	T	0.62	10.6	B	T	0.66	11.1	B	T	0.52	9.4	A	T	0.52	9.4	A
Westbound	TR	0.79	14.6	B	TR	0.79	14.6	B	TR	0.50	9.5	A	TR	0.50	9.5	A
Northbound	LT	0.44	33.9	C	LT	0.45	34.0	C	LT	0.51	35.2	D	LT	0.53	35.6	D
Southbound	TR	0.75	45.6	D	TR	0.77	46.2	D	TR	0.72	44.8	D	TR	0.72	44.8	D
Intersection			20.5	C			20.7	C			20.3	C			20.4	C
Bruckner Boulevard Eastbound & Hunts Point Avenue																
Eastbound	L	0.03	21.2	C	L	0.03	21.2	C	L	0.06	21.4	C	L	0.06	21.4	C
	T	0.46	26.4	C	T	0.45	26.4	C	T	1.03	66.5	E	T	1.04	70.1	E
Eastbound	TR	0.38	25.4	C	TR	0.39	25.5	C	TR	0.63	29.8	C	TR	0.69	31.5	C
Northbound	TR	0.42	38.8	D	TR	0.42	38.8	D	TR	0.46	39.3	D	TR	0.48	39.7	D
	R	0.72	52.6	D	R	0.72	52.6	D	R	0.67	48.8	D	R	0.67	48.8	D
Southbound	L	0.94	76.3	E	L	0.94	76.3	E	L	1.07	107.1	F	L	1.07	107.3	F
	T	0.42	33.0	C	T	0.44	33.3	C	T	0.24	30.2	C	T	0.24	30.2	C
Intersection			40.1	D			40.0	D			57.8	E			58.8	E
Bruckner Boulevard & Tiffany Street																
Eastbound	T	0.32	30.2	C	T	0.32	30.2	C	T	0.60	19.5	B	T	0.60	19.5	B
Eastbound	TR	0.23	29.1	C	TR	0.23	29.1	C	TR	0.41	16.7	B	TR	0.41	16.7	B
Westbound	**L**	**0.83**	**56.2**	**E**	**L**	**1.07**	**103.6**	**F +**	**L**	**1.07**	**135.9**	**F**	**L**	**1.10**	**143.7**	**F +**
	T	0.36	4.3	A	T	0.36	4.3	A	T	0.27	3.9	A	T	0.27	3.9	A
Westbound	TR	0.52	5.4	A	TR	0.52	5.4	A	TR	0.37	4.4	A	TR	0.37	4.4	A
Northbound	LT	0.16	35.3	D	LT	0.16	35.3	D	LT	0.18	35.5	D	LT	0.20	35.8	D
	R	0.31	37.8	D	R	0.32	38.1	D	R	0.08	34.0	C	R	0.30	37.6	D
Southbound	LTR	0.21	36.1	D	LTR	0.23	36.4	D	LTR	0.85	63.8	E	LTR	0.85	63.8	E
Intersection			19.3	B			28.4	C			25.3	C			26.4	C
Garrison Avenue & Hunts Point Avenue																
Eastbound	LTR	0.46	44.8	D	LTR	0.46	44.8	D	LTR	0.58	47.6	D	LTR	0.58	47.6	D
Westbound	LTR	0.24	40.7	D	LTR	0.24	40.7	D	LTR	0.29	41.2	D	LTR	0.29	41.2	D
Northbound	L	0.04	16.0	B	L	0.04	16.0	B	L	0.08	16.5	B	L	0.08	16.5	B
	TR	0.22	17.8	B	TR	0.22	17.8	B	TR	0.35	19.4	B	TR	0.36	19.6	B
Southbound	L	0.15	6.5	A	L	0.15	6.5	A	L	0.09	7.7	A	L	0.09	7.9	A
	T	0.35	7.6	A	T	0.37	7.8	A	T	0.24	6.7	A	T	0.24	6.7	A
	R	0.03	5.3	A	R	0.03	5.3	A	R	0.01	5.2	A	R	0.01	5.2	A
Intersection			20.3	C			20.2	C			25.7	C			25.6	C
Garrison Avenue & Tiffany Street																
Eastbound	LTR	0.12	26.1	C	LTR	0.12	26.1	C	LTR	0.16	26.6	C	LTR	0.16	26.6	C
Westbound	LTR	0.27	28.2	C	LTR	0.27	28.2	C	LTR	0.22	27.4	C	LTR	0.22	27.4	C
Northbound	LTR	0.10	12.5	B	LTR	0.10	12.5	B	LTR	0.05	12.1	B	LTR	0.12	12.7	B
Southbound	LTR	0.23	13.8	B	LTR	0.29	14.5	B	LTR	0.30	14.6	B	LTR	0.31	14.7	B
Intersection			18.9	B			18.6	B			19.6	B			18.9	B
Garrison Avenue & Leggett Avenue																
Eastbound	LTR	0.02	13.6	B	LTR	0.02	13.6	B	LTR	0.00	13.5	B	LTR	0.00	13.5	B
Westbound	LTR	0.08	14.1	B	LTR	0.08	14.1	B	LTR	0.12	14.4	B	LTR	0.12	14.4	B
Northbound	LTR	0.37	8.9	A	LTR	0.38	8.9	A	LTR	0.30	8.3	A	LTR	0.32	8.5	A
Southbound	LTR	0.39	9.0	A	LTR	0.42	9.2	A	LTR	0.44	9.7	A	LTR	0.45	9.7	A
Intersection			9.1	A			9.3	A			9.3	A			9.4	A
Randall Avenue & Tiffany Street																
Eastbound	LTR	0.28	8.4	A	LTR	0.33	8.8	A	LTR	0.25	8.1	A	LTR	0.25	8.2	A
Westbound	LTR	0.35	9.1	A	LTR	0.35	9.1	A	LTR	0.27	8.3	A	LTR	0.27	8.3	A
Northbound	LTR	0.46	19.0	B	LTR	0.50	19.8	B	LTR	0.11	14.3	B	LTR	0.41	17.5	B
Southbound	LTR	0.55	20.2	C	LTR	0.69	24.0	C	LTR	0.51	19.2	B	LTR	0.57	20.5	C
Intersection			13.6	B			15.3	B			12.0	B			13.4	B
Lafayette Avenue & Tiffany Street (All-Way Stop Control)																
Eastbound	LTR		10.4	B	LTR		10.8	B	LTR		9.4	A	LTR		9.9	A
Westbound	LTR		14.0	B	LTR		14.9	B	LTR		10.3	B	LTR		10.9	B
Northbound	LT		10.7	B	LT		11.0	B	LT		9.3	A	LT		10.1	B
	R		9.1	A	R		9.1	A	R		9.3	A	R		9.3	A
Southbound	LTR		11.9	B	LTR		13.5	B	LTR		11.2	B	LTR		11.7	B
Intersection																

Notes: L = Left Turn; T = Through; R = Right Turn; DefL = Defacto Left Turn; V/C = Volume to Capacity; LOS = Level of Service; + = Significant Adverse Impact

Based on the estimates reported for construction-related employees and trucks in Table 17-1[1], from the start of construction of the proposed action in the middle of 2008 through the middle of 2011, the average estimated vehicles on this left turn in the AM peak hour is 35. After the peak construction quarter until the end of projected construction in 2014, the average estimated vehicles on this left turn in the AM peak hour is 31. Although these impacts are not permanent and their effects would be less in other construction years (compared to the third quarter of 2011), the length of time during which the impacts could be sustained is expected to span over numerous years, and therefore, they were deemed significant adverse impacts.

At Bruckner Boulevard and Tiffany Street during the AM peak hour, the westbound left-turn movement would deteriorate from LOS E to LOS F, and experience increases in v/c ratio from 0.83 to 1.07 and in average delay from 56.2 spv to 103.6 spv. During the PM peak hour, the westbound left-turn movement would continue to operate at LOS F, and will experience increases in v/c ratio from 1.07 to 1.10 and in average delay from 135.9 spv to 143.7 spv. Potential measures to mitigate the predicted significant adverse impacts are discussed in Chapter 21, "Mitigation."

PARKING, PUBLIC TRANSPORTATION AND PEDESTRIANS

During the proposed action construction period, parking demand in the vicinity of the project site would be similar to existing levels. As discussed, there is an abundance of nearby on-street supply and all construction worker vehicles could be fully accommodated. In addition, during construction of the proposed action, no off-site queuing of trucks is expected, and all construction staging for the proposed action would occur on the plant site, the additional parcel, or the 1.2-acre construction staging area. Therefore, no parking impacts are anticipated. Also, similar to existing conditions, the projected construction activities are predominantly vehicular-related and would not have the potential to adversely impact the area's public transportation and pedestrian activities.

Only approximately 10 percent of project-generated construction trips, all of which are associated with construction worker automobiles, would traverse the Hunts Point Avenue and Coster Street corridors. Other construction trips would access the Hunts Point peninsula via Tiffany Street and Leggett Avenue, which are both NYCDOT designated truck routes. This pattern is in part attributed to NYCDOT's on-going effort to improve traffic operations and safety in the Hunts Point peninsula, for example, by banning truck traffic along Hunts Point Avenue just south of Bruckner Boulevard, thereby diverting truck access away from the peninsula's more densely populated residential area and commercial corridor.

As described under existing conditions, a notable number of pedestrian injuries due to traffic-related accidents were identified in the past two years at the intersection of Bruckner Boulevard and Hunts Point Avenue. In accordance with the Hunts Point Vision Plan, NYCDOT has already implemented safety measures, encompassing signal head and lane marking modifications, at the intersection that are expected to enhance safety and reduce vehicular-vehicular and vehicular-pedestrians conflicts. The vehicular traffic during construction would be outside of typical commuter peak periods and along traffic movements with lesser potential conflicts with pedestrian crossings. In addition, as shown in the analysis results shown on Table 17-7, there is

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[1] Table 17-1 provides trip generation data for all intersections. The analysis for the Bruckner and Tiffany intersection was based on trip assignments for the intersection.

expected to be little to no effect on the operation of the intersection of Bruckner Boulevard and Hunts Point Avenue. Therefore, it was determined that the addition of project-generated traffic onto the area roadways would not have an effect on pedestrian safety.

E. AIR QUALITY

Construction activities have the potential to impact air quality as a consequence of emissions from on-site construction engines as well as emissions from on-road construction-related vehicles and their effects on traffic congestion. The analysis of potential impacts on air quality from the construction of the proposed action includes a quantitative analysis of both on-site and on-road sources of air emissions, and the overall combined impact of both sources where applicable, as well as potential combined impacts from construction and operational sources. Appendix 17.E provides additional supportive data.

NYCDEP will require the contractor for the Hunts Point WPCP to reduce particulate matter emissions to the extent practicable by employing relatively new equipment (model years 2003 and newer), installing diesel particulate filters as emissions controls on diesel equipment greater than 50 horsepower (hp). For diesel equipment greater then 50 hp in size that will likely not be able to implement DPFs, diesel oxidation catalysts (DOCs) will be required. The construction activities will be subject to New York City Local Law 77, which will require the use of Best Available Technology (BAT) for equipment at that time.[1] The air quality analyses described in this section and undertaken for this EIS incorporated the benefits of such pollution reduction measures.

In general, most heavy equipment used in construction has diesel powered engines and produces relatively high levels of nitrogen oxides and particulate matter. Construction activities also generate fugitive dust emissions. In addition, increased traffic from construction vehicles traveling to and from the project site could affect mobile source-related emissions. As a result, the air pollutants analyzed for the construction activities include nitrogen dioxide (NO_2), particles with an aerodynamic diameter of less than or equal to 10 micrometers (PM_{10}), particles with an aerodynamic diameter of less than or equal to 2.5 micrometers ($PM_{2.5}$), carbon monoxide (CO), and sulfur dioxide (SO_2).

Between the issuance of the DEIS and FEIS, the $PM_{2.5}$ construction and potential cumulative impacts with operational sources for $PM_{2.5}$ were updated with the AERMOD model and the reduced operational $PM_{2.5}$ emissions associated with the commitment to use ULSD in the plant's generators. In addition, the revised modeling analysis assumes a reduction of the number of generators to be used during the PLM program (five of the six generators, instead of all six generators).

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[1] New York City Administrative Code § 24-163.3, adopted December 22, 2003, also known as Local Law 77, requires that any diesel-powered non-road engine with a power output of 50 hp or greater that is owned by, operated by or on behalf of, or leased by a city agency shall be powered by ultra low sulfur diesel fuel (ULSD), and utilize the best available technology (BAT) for reducing the emission of pollutants, primarily particulate matter and secondarily nitrogen oxides. NYCDEP is charged with defining and periodically updating the definition of BAT.

AIR QUALITY ANALYSIS METHODOLOGIES

The following sections delineate additional details relevant only to the construction air quality analysis methodology. For a review of the pollutants for analysis, applicable regulations, standards and criteria, and benchmarks for stationary and mobile source air quality analyses refer to Chapter 8, "Criteria Air Pollutants."

STATIONARY SOURCES

A stationary source air quality analysis was conducted to evaluate potential construction impacts at the project site. Construction at the site would include a number of activities, such as excavation, grading, materials handling, and concrete pouring. Air emission sources include exhausts on fuel burning equipment, fugitive dust from excavation/transfer activities, and entrained road dust. The analysis was performed following EPA and *CEQR Technical Manual* suggested procedures and analytical tools, as further discussed below, to determine source emission rates. The estimated emission rates were then used as input to an air quality dispersion model to determine the potential impacts.

Construction Activity Assessment

Overall, construction of the proposed action is expected to occur over a period of approximately seven years. To determine which construction periods constitute the worst-case periods for the pollutants of concern, construction-related emissions were calculated throughout the duration of construction on an annual and peak-day basis for $PM_{2.5}$. $PM_{2.5}$ was selected as the worst-case pollutant, because as compared to other pollutants, $PM_{2.5}$ has the highest ratio of emissions to impact criteria. Therefore, $PM_{2.5}$ was used for determining the worst-case periods for analysis of all pollutants. Generally, emission patterns of other pollutants would follow $PM_{2.5}$ emissions, since both NO_2 and $PM_{2.5}$ are proportional to diesel engines by horse power. CO emissions may have a somewhat different pattern, but generally would also be highest during periods when the most activity would occur. Based on the resulting multi-year profiles of annual average and peak day average emissions of $PM_{2.5}$, a worst-case year and a worst-case short-term period were identified for the modeling of annual and short-term (i.e., 24-hour, 8-hour, 3 hour, and 1-hour) averaging periods. The third quarter of 2011[1] (for short term analyses) and the third quarter of 2011 through the second quarter of 2012 (for the annual analyses) were determined to be the worst case periods. Dispersion of the relevant air pollutants from the site during the worst-case periods was quantified using computer models, and the highest resulting concentrations are presented in the sections discussing air quality impacts. Broader conclusions regarding potential concentrations during other construction periods, which were not modeled explicitly, are discussed as well, based on the multi-year emissions profiles and the worst-case period results.

As noted above, in the time period between the issuance of the DEIS and FEIS, the start of the Barretto Point remediation project has been revised to the third quarter of 2008. Based on the latest timelines, this work would almost start concurrently with the first elements of the proposed action. While these two actions may occur concurrently, the cumulative impact from the Barretto Point remediation on ambient air quality would be minimal. This is because the Barretto Point remedial action would be confined under a tent where negative pressure from a blower system

[1] Although the third quarter of 2011 had slightly lower peak emissions than the fourth quarter of 2011 and first quarter of 2012, the third quarter was analyzed as the worst-case scenario, because the area of activity would be more concentrated and closer to Barretto Point Park.

would direct airflow toward a carbon bed control system. The carbon bed, which itself would trap particulate matter, will be preceded by a particulate filter to prevent particulate loading on the carbon (meant to control VOCs). In addition, in the first quarter of Phase III activities, there would be minimal $PM_{2.5}$ generating activities and the $PM_{2.5}$ emissions from construction activities during this quarter would be approximately 50 percent of those modeled in the worst case quarter (see below).

Construction Data

The construction analyses for the proposed action use an emission estimation method and a modeling approach that has been previously used for evaluating air quality impacts of construction projects in New York City. Because the level of construction activities would vary from month to month, the approach includes a determination of worst-case emission periods based on an estimated monthly construction work schedule, the number of each equipment type, and rated horsepower of each unit. As such, the worst-case short term emissions (e.g., maximum daily emissions) were found to occur in the third quarter of 2011, and the maximum annual (based on a 12 month rolling average) emissions were found to occur in the third quarter of 2011 through the second quarter of 2012. A typical operating schedule of 7:00 AM to 3:00 PM. (one 8-hour shift per day) five days per week was also used for the analysis. A list of the equipment operating during the modeled short-term and annual periods is provided below in Table 17-8 with the estimated equipment horsepower (hp). However, some equipment, such as the graders, pavers, rollers, concrete trucks, and concrete pumps, did not operate in the short-term period

Table 17-8
Example of Estimated Construction Equipment Data for Hunts Point Site

Equipment for Peak Stages	Engine Size (hp)
Backhoes	87.17
Excavators	137.6
Loaders	87.17
Dozers	136.1
Cranes	237.7
Compressors	83.9
Pile Driver	237.7
Concrete Pumps	137.7
Water Pumps	8.5
Generators	33.4
Graders	231.2
Pavers	134.6
Rollers	84.7
Heavy Trucks	N/A

In sum, the specific construction information used to calculate emissions generated from the construction process includes, but is not limited to, the following:

- The number of units and fuel-type of construction equipment to be used;
- Rated horsepower for each piece of equipment;
- Hours of operation on-site;

- The maximum excavation and processing rates on a typical peak day;
- Average speed of heavy vehicles; and
- Average vehicle miles traveled by heavy vehicles.

Engine Exhaust Emissions. The sizes, the types, and the number of construction equipment were estimated based on the construction activities schedule. Emission factors for NO_X, CO, PM_{10}, $PM_{2.5}$, and SO_2 from the combustion of ultra-low sulfur diesel (ULSD) fuel for on-site construction equipment were developed using the latest EPA NONROAD Emission Model (Version 2005a). The model is based on source inventory data accumulated for specific categories of off-road equipment. The emission factors for each type of equipment were calculated from the output files for the NONROAD model (i.e., calculated from regional emissions estimates). However, these emission factors were not applied to trucks. Emission rates for NO_X, CO, PM_{10} and $PM_{2.5}$ from combustion of fuel for on-site dump trucks, concrete trucks, and other heavy trucks were developed using the EPA MOBILE6.2 Emission Model. A maximum of three-minute idle time was employed for the dump trucks and other heavy trucks. For analysis purposes, it was assumed that the concrete trucks would operate continuously. Detailed examples of the peak hour engine exhaust emission rate calculations for the analysis are included in Appendix 17.E. Annual emission rates were adjusted from the peak hour emissions by applying an annual usage factor for each equipment unit. Usage factors were determined using the construction equipment schedule.

The air quality analysis also took into account the application of available pollutant control technologies. NYCDEP recently undertook an evaluation of diesel-fueled equipment that would be utilized during NYCDEP construction projects, and has made a determination that all equipment greater than 50 hp would likely be able to implement DPFs. Estimated PM emission rates for off-road equipment were therefore reduced to account for this add-on control technology for the Hunts Point project. The control efficiency assumed for the DPFs is 85 percent.

Fugitive Emission Sources. Road dust emissions from vehicle travel were calculated using equations from EPA's AP-42, Section 13.2 for paved roads. PM_{10} emissions were estimated for concrete trucks, dump trucks and other heavy trucks traveling in and out of the proposed action site. For short-term impacts, a conservative estimate of approximately six trucks per hour for each of 8 hours per day was applied in the analysis. For annual average impacts, a conservative estimate of approximately three trucks per hour for each of 8 hours of operation per day was applied in the analysis. Average vehicle weights used in the analysis were 30 tons for the concrete trucks and dump trucks, and 8 tons for the other heavy trucks. A reasonably conservative round trip distance of 1,150 feet on paved roads and 400 feet on unpaved roads was also used in the analysis. In addition, the contractor will be required to implement a dust control plan that will require water spraying; this control method would provide at least a 50 percent reduction in PM_{10} emission. Also, since on-site travel speeds will be restricted to 5 miles per hour, on-site travel for trucks will not be a significant contributor to $PM_{2.5}$ fugitive emissions.

Particulate matter emissions would also be generated by material handling activities (i.e., loading/drop operations for excavated soil and rock) and site grading. Estimates of air emissions from these activities were developed using EPA's AP-42 Sections 13.2.4, 11.19.2, and 11.9.1. Excavation rates used for the analysis were based on a total excavation volume of 30,450 cubic yards of soil and 12,250 cubic yards of rock. Detailed examples of peak hour fugitive dust emission rate calculations used for the analysis are presented in Appendix 17.E.

Dispersion Modeling

Potential impacts from the construction equipment were evaluated using the Industrial Source Complex Short Term (ISCST3) dispersion model developed by EPA, and described in User's Guide for the Industrial Source Complex (ISC3) Dispersion Models (EPA-454/B-95-003a)[1]. The ISCST3 model calculates pollutant concentrations from one or more points (e.g., exhaust stacks) based on hourly meteorological data, and has the capability of calculating pollutant concentrations where the plume from the exhaust stack is affected by the aerodynamic wakes and eddies (downwash) produced by nearby structures. The ISCST3 analyses of potential impacts from exhaust stacks were made using stack tip downwash, buoyancy-induced dispersion, gradual plume rise, urban dispersion coefficients, and wind profile exponents, no collapsing of stable stability classes, and elimination of calms.

Building downwash was considered but not used in the air dispersion model. Building downwash would not be expected to be a significant factor in determining maximum ground level concentrations, and there would be no on-site buildings. In addition, since the model predicts conservative estimates of direct impacts from the sources to nearby receptors, use of building downwash algorithms would result in lesser impacts than those yielded in this assessment.

Source Simulation. During construction, various types of construction equipment would be used at different locations throughout the site. Some of the equipment is mobile and would operate throughout the site while some would remain stationary on-site at distinct locations. Stationary emission sources include the crane, compressor, concrete pump, water pumps, generator and pile driver. These sources were considered to be point sources and were placed at fixed locations. The input data for point sources included stack heights that were equivalent to the height of engine exhaust points or tailpipes and an exhaust temperature of 250° C (a temperature within the normal operating range of most diesel engines). Based on estimated fuel consumption rates per 100 hp and potential pressure drops with diesel particulate filters on the exhaust, a stack velocity of 17.2 feet per second (or 5.24 meters per second) per 100 hp was used for each exhaust point along with a diameter of six inches (or 0.1524 meters) except for the exhausts on the compressor, generator, and water pumps which used a default exhaust velocity (recommended as a default value in the *CEQR Technical Manual* for horizontal stacks) of 0.001 meters per second.

The excavators, loaders, backhoes, dozers, graders, pavers, rollers, trucks, and heavy trucks would operate throughout the site. These sources were simulated as volume sources for the purpose of the modeling analysis, and their emissions were distributed evenly across the construction site. In the modeled short-term period (third quarter of 2011) construction activities

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[1] Between the issuance of the DEIS and FEIS, additional modeling of the $PM_{2.5}$ 24-hour averaging period was performed using EPA's AERMOD dispersion model (see Chapter 10, "Odors," for more information on AERMOD modeling inputs). AERMOD was designed as a replacement for ISCST3 and as of December 9, 2006 is the EPA's preferred model. Since the short-term $PM_{2.5}$ emissions were updated for the FEIS as a result of NYCDEP's commitment to use ULSD fuel in the plant's emergency generators and five of the six generators during PLM (instead of all six generators), the $PM_{2.5}$ 24-hour construction analyses were also updated with the AERMOD model for the FEIS to address the potential for cumulative impacts from operational and construction sources. Since the emission rates for other criteria pollutants did not substantively change for the FEIS and the predicted impacts for these pollutants where well within thresholds, the results from the ISC modeling are reported in the FEIS.

were limited to the digester area. In the modeled annual period (third quarter of 2011 through the second quarter of 2012) the construction activities took place in all the Phase III Upgrade areas.

Receptor Locations. ISCST3 was used to predict maximum pollutant concentrations at nearby locations of likely public exposure ("receptors"). Discrete receptors were placed along sidewalks and residential buildings and other general public uses such as parks. Sidewalk receptors were placed at the middle of the sidewalk and spaced 25 feet apart. Residential receptors were placed at the nearest windows facing the construction site. Sidewalk receptors were set at 1.8 meters above the terrain.

Meteorological Data. The meteorological data set consisted of the latest five years of data that are available: surface data collected at LaGuardia Airport (2000-2004) and upper air data collected at Brookhaven, New York (2000-2004).

Background Concentrations. Where needed to determine potential air quality impacts from the construction of the project, background ambient air quality data for criteria pollutants were added to the predicted off-site concentrations. The background data was obtained from NYSDEC monitoring stations. The nearest station (I.S. 52, located at 681 Kelly Street in The Bronx), or the most representative monitoring data was used for the analysis. Background concentrations are provided below in Table 17-9. A more in-depth discussion of the background concentrations is also provided in Chapter 8, "Criteria Air Pollutants." For $PM_{2.5}$, background concentrations are not considered, since impacts are determined on an incremental basis only.

Table 17-9
Background Air Quality Data for Analyses

Pollutant	Monitoring Station	Averaging Period	Background Concentration (µg/m^3) *
NO_2	I.S. 52	Annual	60
PM_{10}	I.S. 52	24-hour	46
SO_2	I.S. 52	3-hour	210
		24-hour	134
		Annual	34
CO	Botanical Gardens	1-hour	5,600
		8-hour	3,086

Notes: Background concentrations for short-term standards represent second-highest concentrations except for CO, which is the five-year highest concentration.
Background concentrations for annual standards represent five-year highest concentrations.
Sources: New York State Ambient Air Quality Report, NYSDEC 2001-2005.
NYCDEP Memorandum on Background Data for Modeling NO_2, SO_2 and PM_{10} (April 19, 2006).

MOBILE SOURCES

The prediction of vehicle-generated CO and PM emissions and their dispersion in an urban environment incorporates meteorological phenomena, traffic conditions, and physical configurations (e.g., street widths, sidewalk locations). Air pollutant dispersion models mathematically simulate how traffic, meteorology, and source-receptor geometry combine to affect pollutant concentrations. The mathematical expressions and formulations contained in the various models attempt to describe an extremely complex physical phenomenon as closely as possible. However, because all models contain simplifications and approximations of actual conditions and interactions and it is necessary to predict the reasonable worst-case condition, most of these dispersion models predict conservatively high concentrations of pollutants, particularly under adverse meteorological conditions.

The mobile source analyses for the project employ models approved by EPA that have been widely used for evaluating air quality impacts of projects in New York City, other parts of New York State, and throughout the country. The modeling approach includes a series of conservative assumptions relating to meteorology, traffic, and background concentration levels resulting in a conservatively high estimate of anticipated CO, PM_{10}, and $PM_{2.5}$ concentrations that could ensue from mobile sources associated with the proposed action.

The following sections provide an overview of the analytical tools used to determine mobile source impacts.

Dispersion Model for Microscale Analyses

Maximum CO concentrations adjacent to streets near the project site, resulting from vehicle emissions, were predicted using the CAL3QHC model Version 2.0. The CAL3QHC model employs a Gaussian (normal distribution) dispersion assumption and includes an algorithm for estimating vehicular queue lengths at signalized intersections. CAL3QHC predicts emissions and dispersion of CO from idling and moving vehicles. The queuing algorithm includes site–specific traffic parameters, such as signal timing and delay calculations (from the 2000 Highway Capacity Manual traffic forecasting model), saturation flow rate, vehicle arrival type, and signal actuation (i.e., pre-timed or actuated signal) characteristics to accurately predict the number of idling vehicles. The CAL3QHC model has been updated with an extended module, CAL3QHCR, which allows for the incorporation of hourly meteorological data into the modeling, instead of worst-case assumptions regarding meteorological parameters. This refined version of the model, CAL3QHCR, is employed if maximum predicted future CO concentrations are greater than the applicable ambient air quality standards or when *de minimis* thresholds are exceeded using the first level of CAL3QHC modeling.

To determine motor vehicle generated PM concentrations adjacent to streets near the proposed action area, the CAL3QHCR model was applied. This refined version of the model can utilize hourly traffic and meteorology data, and is therefore more appropriate for calculating 24-hour and annual average concentrations. The meteorological data consists of surface data collected at LaGuardia Airport and upper air data collected at Brookhaven, New York for the period 2000-2004. All hours in the 5-year data set are modeled, and the highest resulting concentration for each averaging period is presented.

Meteorology. In general, the transport and concentration of pollutants from vehicular sources are influenced by three principal meteorological factors: wind direction, wind speed, and atmospheric stability. Wind direction influences the accumulation of pollutants at a particular location (receptor), and atmospheric stability accounts for the effects of vertical mixing in the atmosphere.

Analysis Year. An air quality analysis was performed for 2011, the worst case analysis year. The future analysis was performed for both the future without the proposed action and with the proposed action.

Vehicle Emissions Data

Engine Emissions. Vehicular CO and PM engine emission factors were computed using the EPA mobile source emissions model, MOBILE6.2. This emissions model is capable of calculating engine emission factors for various vehicle types, based on the fuel type (gasoline, diesel, or natural gas), meteorological conditions, vehicle speeds, vehicle age, roadway types, number of starts per day, engine soak time, and various other factors that influence emissions, such as inspection maintenance programs. Idle emission factors were used when vehicles were queuing and free flow emission factors were based on vehicle travel speeds when traffic was moving. The inputs and use of MOBILE6.2 for this project is consistent with the most current guidance available from NYSDEC and NYCDEP.

Vehicle classification data were based on field studies outlined in the traffic section (including project generated traffic). Appropriate credits were used to accurately reflect the inspection and maintenance program. The inspection and maintenance programs require inspections of automobiles and light trucks to determine if pollutant emissions from the vehicles exhaust systems are below emission standards. Vehicles failing the emissions test must undergo maintenance and pass a repeat test to be registered in New York State. All construction-worker generated vehicles were simulated as hot stabilized for arrivals and cold starts for departures. An ambient temperature of 43.0° Fahrenheit was used for the analysis.

Road Dust. The PM_{10} impact estimates include both exhaust and fugitive road dust components. Road dust emission factors were calculated according to procedures delineated by EPA. $PM_{2.5}$ fugitive dust emission rates were determined to be negligible.

Traffic Data

Traffic data for the air quality analysis were derived from existing traffic counts, projected future growth in traffic, and other information developed as part of the traffic analysis for the proposed action (see "Traffic and Parking," above). Traffic data for the future with and without the proposed action were employed in the respective air quality modeling scenarios. Weekday AM (6:30 to 7:30 AM) and PM (3:00 to 4:00 PM) peak hour periods were used for microscale CO analysis. These time periods were selected because they produce the maximum anticipated project-generated traffic and therefore have the greatest potential for significant air quality impacts.

Since PM is regulated on a 24-hour and annual basis, full hourly traffic volume distributions were used for PM analyses and the peak hour project-generated trips were conservatively assumed to occur during each hour of the construction shift.

Background Concentrations

Background concentrations for mobile sources are those pollutant concentrations not accounted for through the modeling analysis, which directly accounts for vehicle-generated emissions on the streets within 1,000 feet and line-of-sight of the receptor location. Background concentrations must be added to mobile source modeling results to obtain total pollutant concentrations at a study location.

The 8-hour average background CO concentration used in this analysis was 2.0 ppm for the 2011 predictions, and the 1-hour background CO concentration employed in the analysis was 6.0 ppm. The PM_{10} 24-hour background concentration of 46 $\mu g/m^3$. These values are representative for the mobile source receptor locations in the future year. For $PM_{2.5}$, background concentrations are not considered, since impacts are determined on an incremental basis only.

Mobile Source Analysis Sites

The intersection of Tiffany Street and Randall Avenue was used in the analysis for the assessment of CO, $PM_{2.5}$, and PM_{10} impacts (see Table 17-10). This intersection was selected because it is where the largest levels of project–generated (incremental) traffic in the project study area are expected, and, therefore, where the greatest air quality impacts and maximum changes in concentrations would be anticipated.

Table 17-10
Mobile Source Analysis Intersection Locations

Analysis Site	Location
1	Tiffany Street and Randall Avenue

Receptor Locations. Multiple receptors (i.e., precise locations at which concentrations are predicted by the model) were modeled along the approach and departure links of the selected intersection at spaced intervals. The receptor locations included sidewalks and roadside locations near intersections with continuous public access.

Receptors in the annual $PM_{2.5}$ neighborhood scale models were placed at a distance of 15 meters, from the nearest moving lane, based on the NYCDEP procedure for neighborhood scale corridor $PM_{2.5}$ modeling. For the local $PM_{2.5}$ analysis, the 24-hour average microscale model was run with the same receptor placements adjacent to roadways that were used in the PM_{10} mobile source modeling analysis.

EXISTING CONDITIONS

A review of the existing monitored air quality conditions can be found in Chapter 8, "Criteria Air Pollutants."

THE FUTURE WITHOUT THE PROPOSED ACTION (2011)

STATIONARY CONSTRUCTION SOURCE IMPACTS

In the future without the proposed action, air quality is anticipated to be similar to that described for existing conditions. Land uses are expected to remain generally the same in this neighborhood, and a South Bronx Greenway is proposed. Since air quality regulations mandated by the Clean Air Act are anticipated to maintain or improve air quality in the region, it can be expected that air quality conditions in the future without the proposed action would be no worse than those that presently exist. The plant would operate under the Phase II Upgrade. See "The Future with the Proposed Action" for results of the modeling of the entire plant as upgraded under the Phase III Upgrade (which includes the Phase II Upgrade).

MOBILE SOURCE IMPACTS

A mobile source air quality analysis was conducted for the future without the proposed action scenario for the peak construction traffic year, 2011. Localized pollutant impacts from the vehicles queuing at the selected intersection were analyzed for CO and PM_{10}. Concentrations were determined for the 1-hour and 8-hour averaging times for CO. Concentrations were determined for the 24-hour and annual averaging times for PM_{10}. The $PM_{2.5}$ assessment is based incremental criteria and does not rely on future without the proposed action background levels.

Carbon Monoxide

As indicated in Table 17-11, the predicted total concentrations of CO (including background) for the future year without the proposed action (2011) are below the corresponding ambient air quality standards. Both the 1-hour and 8-hour averaging periods for the modeled intersection are in compliance with their respective standards.

Table 17-11
Mobile Source Without the Proposed Action
CO Concentrations (ppm)

Intersection	Averaging Period	Ambient AQ Background	Model Results		Total Modeled Conc. *		Standard
			AM	PM	AM	PM	
Peak Traffic Year 2011							
Tiffany Street and Randall Avenue	1-hour	6.0	0.5	0.5	6.5	6.5	35
	8-hour	2.0	0.4	0.4	2.4	2.4	9

Notes: * Ambient AQ Background + Model Results = Total Predicted Concentration.

PM_{10}

As indicated in Table 17-12, the predicted total concentrations of PM_{10} (including background) for the future year without the project (2011) are below the corresponding ambient air quality standards. The maximum predicted total 24-hour concentration of PM_{10} for the modeled intersection is in compliance with their respective standards.

Table 17-12
Mobile Source Future Without the Proposed Action
PM_{10} Concentrations ($\mu g/m^3$)

Intersection	Averaging Period	Ambient AQ Background	Model Results	Total Modeled Conc. *	Standard
Peak Traffic Year 2011					
Tiffany Street and Randall Avenue	24-hour	46	3.9	49.9	150

Notes: * Ambient AQ Background + Model Results = Total Predicted Concentration.

PROBABLE IMPACTS OF THE PROPOSED ACTION (2011)

This section provides a summary of the projected air quality impacts from the construction activities of the proposed action. The most likely effects on local air quality during construction activities would result from:

- Engine emissions generated by on-site construction equipment, and trucks entering/leaving the site during construction;
- Fugitive dust emissions generated by soil excavation and other construction activities; and,
- Mobile source emissions generated by project-related construction trucks and worker vehicles traveling to and from the site on local roads.

An analysis of the potential for air quality impacts from on-site construction sources was performed using the methodology described above under "Stationary Sources." As discussed in the methodology, the peak periods (by stage of construction) from the $PM_{2.5}$ emissions profile were used to determine what time periods would be used for the short-term and annual impacts in the modeling analysis. These periods corresponded to the third quarter of 2011 for short-term analyses and the third quarter of 2011 through the second quarter of 2012 for the annual analyses.

An analysis of the potential for air quality impacts from project induced traffic was also performed using the methodology described above under "Mobile Sources." As with the stationary source analysis, the peak period used in the modeling analysis was for the year 2011.

The results of both stationary and mobile source modeling analyses are summarized below. As indicated, the modeling analyses demonstrated that no significant adverse impacts from construction sources are expected during the peak emission periods. Since the predicted concentrations were modeled for periods that represent the highest site-wide air impacts, the increments and total predicted concentrations during other stages of construction are also not expected to have any significant adverse impacts

STATIONARY SOURCE IMPACTS

A dispersion modeling analysis was performed to estimate the maximum off-site pollutant concentrations associated with emissions produced by on-site construction activities at the project site. The modeling analysis was conducted using the ISCST3 dispersion model[1] and was performed in accordance with EPA and NYCDEP guidance regarding the use of dispersion models for regulatory purposes. The predicted ambient concentrations of criteria pollutants have been used to demonstrate compliance with applicable air quality standards and interim guidance values.

Table 17-13 presents the maximum criteria pollutant incremental impacts due to the proposed action construction activities at the Hunts Point WPCP. The maximum concentrations from on-site construction sources were predicted at receptors near the project site. This was true for all averaging periods, both short-term and annual, and for all pollutants modeled in the analysis. The maximum predicted total concentrations including background are also presented in the table.

Table 17-13
Maximum Predicted Total Concentrations for Construction Activities

Pollutant	Averaging Period	Background Conc. (µg/m^3)	Predicted Impact (µg/m^3)	Total Max Predicted Conc. (µg/m^3)	Ambient Standard (µg/m^3)
NO_2	Annual	60	11.8	71.8	100
SO_2	3-hour	210	1.1	211.1	1,300
	24-hour	134	0.3	134.3	365
	Annual	34	0.01	34.0	80
PM_{10}	24-hour	46	2.4	48.4	150
CO	1-hour	5,600	322	5,922	40,000
	8-hour	3,086	167	3,253	10,000

As indicated in Table 17-13, the maximum predicted total concentrations of NO_2, SO_2, PM_{10}, and CO would not result in any concentrations that exceed the NAAQS. Therefore, no significant adverse air quality impacts are predicted from the on-site construction sources.

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[1] AERMOD for 24-hour $PM_{2.5}$ construction impacts alone and cumulative impacts with operational sources.

$PM_{2.5}$ Impacts

The maximum predicted 24-hour $PM_{2.5}$ incremental concentration from the proposed action's construction activities was modeled. For the worst-case quarter (third quarter 2011), the maximum predicted 24-hour $PM_{2.5}$ incremental concentration at the nearest residential receptor was 0.05 µg/m^3. At the nearest residential neighborhood, the maximum predicted 24-hour $PM_{2.5}$ incremental concentration was less than 0.03 µg/m^3. As these maximum incremental impacts were computed for the worst quarter, for other construction time periods with lesser emissions, the potential 24-hour incremental exposures would be less. For example, the estimated peak daily emissions for the third quarter of 2011 (employed in this analysis) are approximately 3 times the estimated emissions for comparable averaging periods in 2012.

Other nearby receptors include Barretto Point Park and the proposed greenway. The maximum $PM_{2.5}$ incremental 24-hour concentration during the peak construction activities was predicted at the Barretto Point Park fenceline on the west side of the digester construction area (1.17 µg/m^3). At 50 feet into the Barretto Point Park property where there are planted areas and a walking path, the maximum predicted $PM_{2.5}$ incremental 24-hour concentration during the peak construction activities was 0.24 µg/m^3. At the proposed greenway, the maximum $PM_{2.5}$ incremental 24-hour concentration during the peak construction activities was predicted on the Manida Street sidewalk on the east side of the digester construction area (1.04 µg/m^3). Similar to the short-term impacts predicted at the nearest residences, these maximum incremental impacts at Barretto Point Park and the greenway were computed for the worst quarter, and for other construction time periods with lesser emissions, the potential 24-hour incremental exposures would be less.

The maximum predicted annual $PM_{2.5}$ incremental concentration from the proposed action's construction activities was modeled for comparison with the annual average neighborhood-scale interim guidance criterion of 0.1 µg/m^3. The annual average neighborhood-scale concentration increment from the construction activities was predicted to be 0.0024 µg/m^3, which is less than the 0.1 µg/m^3 criterion.

The predicted incremental concentrations of $PM_{2.5}$ for the 24-hour and annual averaging periods would not be expected to result in significant adverse air quality impacts from the on-site construction sources for $PM_{2.5}$.

MOBILE SOURCE IMPACTS

A mobile source air quality analysis was conducted for the project during construction activities at the site for the peak construction traffic year, 2011. Localized pollutant impacts from the vehicles queuing at the selected intersection were analyzed for CO, PM_{10}, and $PM_{2.5}$. Concentrations were determined for the 1-hour and 8-hour averaging times for CO. Concentrations were determined for the 24-hour and annual averaging times for PM_{10} and $PM_{2.5}$. Traffic from potential future without the proposed action projects would not be expected to significantly change the predicted localized concentrations at the analysis site.

Carbon Monoxide

As indicated in Table 17-14, the predicted total concentrations of CO (including background) for the peak year for construction-related traffic (2011) are below the corresponding ambient air quality standards. Both the 1-hour and 8-hour averaging periods for the modeled intersection are in compliance with their respective standards.

Table 17-14
Mobile Source Future With the Proposed Action CO Concentrations (ppm) for Construction Activities

Intersection	Averaging Period	Ambient AQ Background	Model Results		Total Modeled Conc.*		Standard
			AM	PM	AM	PM	
Peak Traffic Year 2011							
Tiffany Street and Randall Avenue	1-hour	6.0	0.6	0.6	6.6	6.6	35
	8-hour	2.0	0.4	0.4	2.4	2.4	9

Notes: * Ambient AQ Background + Model Results = Total Predicted Concentration.

In addition, the CEQR *de minimis* criteria were calculated for the 8-hour averaging period (CEQR *de minimis* values are described in Chapter 8, "Criteria Air Pollutants"). As indicated in Table 17-15, the predicted incremental CO concentrations at the modeled intersection would not exceed the CEQR *de minimis* criteria (incremental value) for the 8-hour period.

Table 17-15
Mobile Source 8-Hour CO Concentrations (ppm) and CEQR *De Minimis* Criteria

Intersection	Averaging Period	Without the Proposed Action Conc.		Future with the Proposed Action Conc.		Proposed Action Increment *		*De Minimis* Criteria **	
		AM	PM	AM	PM	AM	PM	AM	PM
Peak Construction Traffic Year 2011									
Tiffany Street and Randall Avenue	8-hour	2.4	2.4	2.4	2.4	0.0	0.0	3.3	3.3

Notes:
* The proposed action increment is defined as the future with the proposed action minus the without the proposed action value.
** See Chapter 8, "Criteria Air Pollutants" for details on how this value is calculated.

As stated above, the predicted concentrations of CO are below the applicable NAAQS and the *de minimis* criteria for incremental concentrations. Therefore, no significant adverse air quality impacts are predicted from construction-related traffic for CO.

PM_{10}

As indicated in Table 17-16, the predicted total concentrations of PM_{10} (including background) for the peak year for construction-related traffic (2011) is in compliance with the corresponding ambient air quality standard for the 24-hour averaging periods. Therefore, no significant adverse air quality impacts are predicted from construction-related traffic for PM_{10}.

Table 17-16
Mobile Source Future Wsith the Proposed Action PM_{10} Concentrations (µg/m³)
for Construction Activities

Intersection	Averaging Period	Ambient AQ Background	Model Results	Total Modeled Conc. *	Standard
Peak Traffic Year 2011					
Tiffany Street and Randall Avenue	24-hour	46	4.13	50.2	150

Note: * Ambient AQ Background + Model Results = Total Predicted Concentration.

$PM_{2.5}$ Impacts

The maximum predicted 24-hour $PM_{2.5}$ incremental concentration from the proposed action's construction-related traffic was modeled for comparison with the 24-hour average interim guidance criterion at the modeled intersection. As indicated in Table 17-17, the 24-hour average concentration increment was predicted to be 0.026 µg/m³.

Table 17-17
Hunts Point WPCP Proposed Action
Mobile Source $PM_{2.5}$ Incremental Concentrations (ug/m³)
for Construction Activities

Intersection	Averaging Time	Modeled Conc.		Proposed Action Increment *
		Without the Proposed Action	With the Proposed Action	
Peak Traffic Year 2008				
Tiffany Street and Randall Avenue	24-hour	0.468	0.494	0.026

Note: * The proposed action increment is defined as the "with the proposed action" minus the "without the proposed action" value.

The maximum predicted annual $PM_{2.5}$ incremental concentration from the proposed action's construction-related traffic was modeled for comparison with the annual average neighborhood-scale interim guidance criterion at the modeled intersection. For this assessment, no background contributions from other sources of $PM_{2.5}$ are required. The annual average neighborhood-scale concentration increment was predicted to be 0.004 µg/m³, which is less than the 0.1 µg/m³ criterion.

The predicted incremental concentrations of $PM_{2.5}$ for the 24-hour and annual averaging periods would not be expected to result in potential significant adverse air quality impacts from the mobile source construction sources for $PM_{2.5}$.

COMBINED STATIONARY AND MOBILE SOURCE IMPACTS

Total cumulative concentrations of CO and PM_{10} and incremental concentrations of $PM_{2.5}$ would not exceed any applicable standard or interim guidance criteria even if the cumulative concentrations were conservatively estimated by adding the highest results from the mobile source and the stationary source analyses, even though the maximum impacts of the two analyses occur at separate locations. Taking into the account the expected emission rates of $PM_{2.5}$ over the construction period, no significant adverse air quality impacts are expected to occur due to the combined impacts of mobile and construction sources.

COMBINED CONSTRUCTION AND OPERATIONAL SOURCE IMPACTS

Total cumulative concentrations of all criteria pollutants for all averaging periods and incremental concentrations of $PM_{2.5}$ for the annual averaging period would not exceed any applicable standard or interim guidance criteria even if the cumulative concentrations were conservatively estimated by adding the highest results from the operational source and the construction source analyses. Therefore, it can be concluded that no significant impacts would be expected for these pollutants and averaging times from the combined impacts of operational and construction sources.

For the evaluation of maximum cumulative 24-hour $PM_{2.5}$ impacts, the emissions from the worst-case construction period were overlapped with the three operating scenarios reported in Chapter 8, “Criteria Air Pollutants.” Following the methodology described above and in Chapter 8, “Criteria Air Pollutants,” the maximum cumulative 24-hour $PM_{2.5}$ impacts from construction and operational sources were determined. The cumulative impact results were very similar to the maximum impacts reported for the operational scenario.

At the nearest residence, when no emergency generators are operating, the maximum predicted cumulative incremental $PM_{2.5}$ 24-hour concentration would be 0.65 $\mu g/m^3$, and less than 0.65 $\mu g/m^3$ in the nearest residential neighborhoods. During maximum PLM participation (five out of six emergency generators) and emergency generator testing periods, the maximum predicted cumulative incremental $PM_{2.5}$ 24-hour concentration would be 0.70 and 0.82 $\mu g/m^3$, respectively.

Other nearby receptors include Barretto Point Park and the proposed South Bronx Greenway. At the park, under typical, yet conservative conditions, the maximum predicted cumulative incremental $PM_{2.5}$ 24-hour concentration would be 1.17 $\mu g/m^3$. During PLM participation and emergency generator testing periods, the incremental concentration would be 1.86 and 1.90 $\mu g/m^3$, respectively. At the proposed South Bronx Greenway, under typical, yet conservative, conditions, the maximum predicted incremental $PM_{2.5}$ 24 hour concentration would be 1.58 $\mu g/m^3$. During maximum PLM participation and emergency generator testing periods, the incremental concentration would be 1.88 and 1.71 $\mu g/m^3$, respectively.

Taking into the account the expected emission rates of $PM_{2.5}$ over the construction period, it can be concluded that no significant adverse impacts would be expected for $PM_{2.5}$ (24-hour average) from the combined impacts of operational and construction sources.

F. ODORS

Construction of the new facilities would not produce any odors. The greatest potential for the release of odors during the construction period is for a short period prior to the renovation of the existing digesters, specifically, when sludge and grit deposits are removed from the existing digesters and storage tanks. The NYCDEP construction specifications for tank cleaning during construction of the upgrade require that a contractor spray a deodorant into each tank that is cleaned to prevent foul odors that may linger. They also specify that an odor counteractant shall be evenly sprayed on filled containers containing residuals removed from the tanks. Depending on the effectiveness of the odor counteractant, the dilution or dosage of the counteractant may be increased or decreased as approved by the construction manager. As part of the upgrade construction contracts and the subsequent Operations and Maintenance procedures for the plant after the proposed action is completed, a portable carbon odor control system will be required to operate at all times during cleaning and an odor counteractant to be utilized as needed for the dewatered residuals. Mobile misters will also be used around the digesters and sludge storage tanks during cleaning. The residuals from tank cleaning would be transported from the plant site in covered trucks. Overall, tank cleaning would be a relatively short-term operation and would occur within the existing plant boundary. No significant adverse impacts from odors are anticipated. .

G. NOISE

Impacts on community noise levels during construction of the proposed action can result from noise from construction equipment operation and from construction vehicles and delivery vehicles traveling to and from the site. Noise and vibration levels at a given location are dependent on the kind and number of pieces of construction equipment being operated, the acoustical utilization factor of the equipment (i.e., the percentage of time a piece of equipment is operating), the distance from the construction site, and any shielding effects (from structures such as buildings, walls, or barriers). Noise levels caused by construction activities would vary widely, depending on the phase of construction and the location of the construction relative to receptor locations.

Noise from construction activities and some construction equipment is regulated by the New York City Noise Control Code and by the EPA. The New York City Noise Control Code, as amended December 2005 and effective July 1, 2007, requires the adoption and implementation of a noise mitigation plan for each construction site, limits construction (absent special circumstances as described below) to weekdays between the hours of 7 AM and 6 PM, and sets noise limits for certain specific pieces of construction equipment. Construction activities occurring after hours (weekdays between 6 PM and 7 AM and on weekends) may be authorized in the following circumstances: (i) emergency conditions; (ii) public safety; (iii) construction projects by or on behalf of city agencies; (iv) construction activities with minimal noise impacts; and (v) where there is a claim of undue hardship resulting from unique site characteristics, unforeseen conditions, scheduling conflicts and/or financial considerations. It is not anticipated that extended hours (7 AM through 6 PM would be needed for construction of the proposed action). The EPA requirements mandate that certain classifications of construction equipment meet specified noise emissions standards.

Given the scope and duration of construction activities for the proposed action, a quantified construction noise analysis was performed. The purpose of this analysis was to determine if it was likely that significant adverse noise impacts would occur during construction, and if so, to examine the feasibility of implementing mitigation measures to reduce or eliminate such impacts. Appendix 17.G provides additional supportive data.

CONSTRUCTION NOISE IMPACT CRITERIA

The *CEQR Technical Manual* states that significant noise impacts due to construction would occur "only at sensitive receptors that would be subjected to high construction noise levels for an extensive period of time." In addition, the *CEQR Technical Manual* states that impact criteria for vehicular sources, using existing noise levels as the baseline, should be used for assessing construction impacts. See Chapter 11, "Noise," for an explanation of noise measurement and sound levels. The criteria are as follows:

> If the existing noise levels are less than 60 dBA $L_{eq(1)}$ and the analysis period is not a nighttime period, the threshold for a significant impact would be an increase of at least 5 dBA $L_{eq(1)}$. For the 5 dBA threshold to be valid, the resulting noise level with the proposed action would have to be equal to or less than 65 dBA. If the existing noise level is equal to or greater than 62 dBA $L_{eq(1)}$, or if the analysis period is a nighttime period (defined in the CEQR criteria as being between 10 PM and 7 AM), the incremental significant impact threshold would be 3 dBA $L_{eq(1)}$. (If the existing noise level is 61 dBA $L_{eq(1)}$, the maximum incremental increase would be 4 dBA, since an increase higher than this would result in a noise level higher than the 65 dBA $L_{eq(1)}$ threshold.)

The impact criteria contained in the *CEQR Technical Manual* was used for assessing impacts from mobile and on-site construction activities.

NOISE ANALYSIS METHODOLOGY

Construction activities for the proposed action would be expected to result in increased noise levels as a result of: (1) the operation of construction equipment on-site including construction-related trucks; and, (2) the movement of construction-related vehicles (i.e., worker trips, and material and equipment trips) on the surrounding roadways during AM and PM peak hours. The analysis of on-site construction equipment was focused on the Phase III Upgrade component of the proposed action, since the majority of construction is associated with this, plus the nearest sensitive noise receptors are closer to the Phase III Upgrade work compared to the carbon addition facilities. The effect of each of these noise sources was evaluated.

ON-SITE CONSTRUCTION EQUIPMENT

Noise due to the operation of construction equipment on-site at a specific receptor location near a construction site is calculated by computing the sum of the noise produced by all pieces of equipment operating at the construction site. The following equation was used to calculate noise levels due to operation of a single piece of construction equipment.

$$L_{eq(1)} = E.L. + 10 \log (U.F.) - 20 \log (D/50) - Shielding$$

where:

> $L_{eq(1)}$ is the noise level at a peak hour time period;
>
> E.L. is the noise emission level of the equipment at a reference distance of 50 feet;
>
> U.F. is a usage factor that accounts for the fraction of time that the equipment is in use over the specified time period;
>
> D is the distance from the receiver to the piece of equipment; and
>
> Shielding is the noise attenuation by structures.

The combination of noise from all pieces of equipment operating during the same time period is obtained from adding the L_{eq} values for each piece of equipment.

CONSTRUCTION-RELATED VEHICLES

Noise due to the operation of construction-related vehicle at a specific receptor location near a construction site was calculated by a proportional model. The future noise level would consist of the combined effect of future traffic and ambient noise levels. The proportional modeling techniques were used to identify whether there are any roadways with traffic volume increases generated by the construction-related vehicles that could potentially result in a significant noise impact.

Using this technique, typically, future traffic noise levels are estimated using the changes in traffic volumes to predict changes between future without the proposed action and Action levels. Vehicular traffic volumes can be converted into passenger car equivalent (PCE) values, for which one medium-duty truck (having a gross weight between 9,900 and 26,400 pounds) is assumed to generate the noise equivalent of 13 cars, one bus (carrying more than nine passengers) is assumed to generate the noise equivalent of 18 cars, and one heavy-duty truck (having a gross weight of more than 26,400 pounds) is assumed to generate the noise equivalent of 47 cars. The change in future noise levels are calculated using the following equation:

$$F\ NL = E\ NL + 10 * \log_{10} (FPCE / EPCE)$$

where:

F NL = Future noise level

E NL = Existing noise level

F PCE = Future PCEs

E PCE = Existing PCEs

Because sound levels use a logarithmic scale, this model proportions logarithmically with traffic change ratios. For example, assume that traffic is the dominant noise source at a particular location. If the existing traffic volume on a street is 100 PCE and if the future traffic volume were increased by 50 PCE to a total of 150 PCE, the noise level would increase by 1.8 dBA. If the future traffic were increased by 100 PCE, or doubled to a total of 200 PCE, the noise level would increase by 3.0 dBA.

ANALYSIS YEARS

A noise analysis was performed to determine a potential for significant noise impacts by quarter for the proposed action (i.e., during the third quarter of 2008 to the last quarter of 2014). A construction schedule of the estimated the workers, equipment, and construction vehicles anticipated to be operating during each quarter of the construction period was prepared.

NOISE REDUCTION MEASURES

As discussed above, the City has recently revised the Noise Control Code, which will be effective July 1, 2007. Thus, the construction associated with the proposed action would be subject to the conditions of the new Noise Control Code. Outlined below is a list of source controls noise reduction measures required by the Noise Control Code, path controls that would occur with construction, and clarifications where the benefits of such reductions were included in the analyses.

Source Controls

In terms of source controls (e.g., reducing noise levels at the source or during most sensitive time periods), the following types of measures would be required:

- The Noise Control Code mandates noise emissions levels for various types of construction equipment. Table 17-18 shows the noise levels for typical construction equipment and the mandated noise levels under the updated New York City Noise Control Code for the equipment that would be used for construction of the proposed action;
- NYCDEP would require all contractors and subcontractors to properly maintain their equipment.

Table 17-18
Construction Equipment Noise Emission Levels

Equipment	FTA (or FHWA) Typical Noise Level (dBA) at 50 feet	Proposed Action Analysis Noise Level (dBA) at 50 feet
Backhoe	80	80
Compressors	80	75*
Concrete Pumps	82	82
Concrete Trucks	85	85
Dozer	85	85
Crane (Crawler Crane)	83	83
Dump Trucks	88	85*
Pick-up and Service Trucks	55	55
Excavator	85	85
Forklift	85	85
Generators	81	81
Grader	80	80
Heavy Trucks	88	85*
Jack Hammers	85	71*
Loader	85	85
Paving Equipment	85	85
Pile Driver (Sonic)	96	91
Pump	76	76
Roller	74	74
Truck Crane	83	83
Vibrator	80	80
Welding Machine	73	73

Notes: * NYC Noise Control Code, effective on July 1, 2007.
Sources: Transit Noise and Vibration Impact Assessment, FTA, May 2006, and FHWA Roadway Construction Noise Model (FHWA RCNM), 2006.

Path Controls

In terms of path controls (e.g., placement of equipment, implementation of barriers between equipment and sensitive receptors), three types of measures would be included:

- Noisy equipment, such as generators, cranes, concrete pumps, concrete trucks, and dump trucks, would be located away from and shielded from Barretto Point Park which is the only existing sensitive receptor immediately adjacent to the construction site. For example, during the early construction phases of work, delivery and dump trucks, as well as many construction equipment operations, would be located and would take place below grade resulting in shielding benefits. Once structure foundations are completed, delivery trucks would operate behind construction walls;
- Construction walls would be utilized to provide shielding (i.e., the construction sites would have a minimum 8-foot construction wall adjacent to Barretto Point Park, and truck

deliveries would take place behind these walls once structure foundations are completed); Work related to construction of the digesters above the construction wall would not be attenuated by the construction wall, and no feasible path control attenuation is achievable for this construction of the egg-shaped digesters.

- Pursuant to the future requirements of the New York City Noise Control Code, noise curtains and equipment enclosures would be utilized to provide shielding to sensitive receptor locations.[1]

On-site Construction Noise Analysis Results

The noise analysis for the on-site construction noise analysis considers three sensitive receptor sites: Site R1 was located on Manida Street between East Bay Avenue and Viele Avenue (residential receptor), Site R2 was located on Viele Avenue between Tiffany Street and Casanova Street adjacent to Barretto Point Park, and Site R3, which is the closest sensitive receptor, was located in Barretto Point Park at 50 feet away from the plant's west property line. (See Figure 17-12)

Using the methodology described above, and utilizing the noise abatement measures described for source and path controls above, noise analyses were performed to determine maximum one-hour equivalent ($L_{eq(1)}$) noise levels that would be expected to occur during the construction period. Since construction of the proposed action would largely occur during normal working hours, the lowest measured existing noise levels at the receptors utilized in these analyses in some cases were different than those applied in the operational analysis described in Chapter 11, "Noise." Table 17-19 provides a summary of the lowest monitored existing noise levels during normal construction time periods (between 7 AM to 4 PM on weekdays) that were conservatively employed as the future without the proposed action levels in the construction noise impact assessment. Monitoring Site R, as described in Chapter 11, "Noise," is representative of Site R3 in Barretto Point Park.

Table 17-19
Existing Noise Levels for Construction Analysis (in dBA)

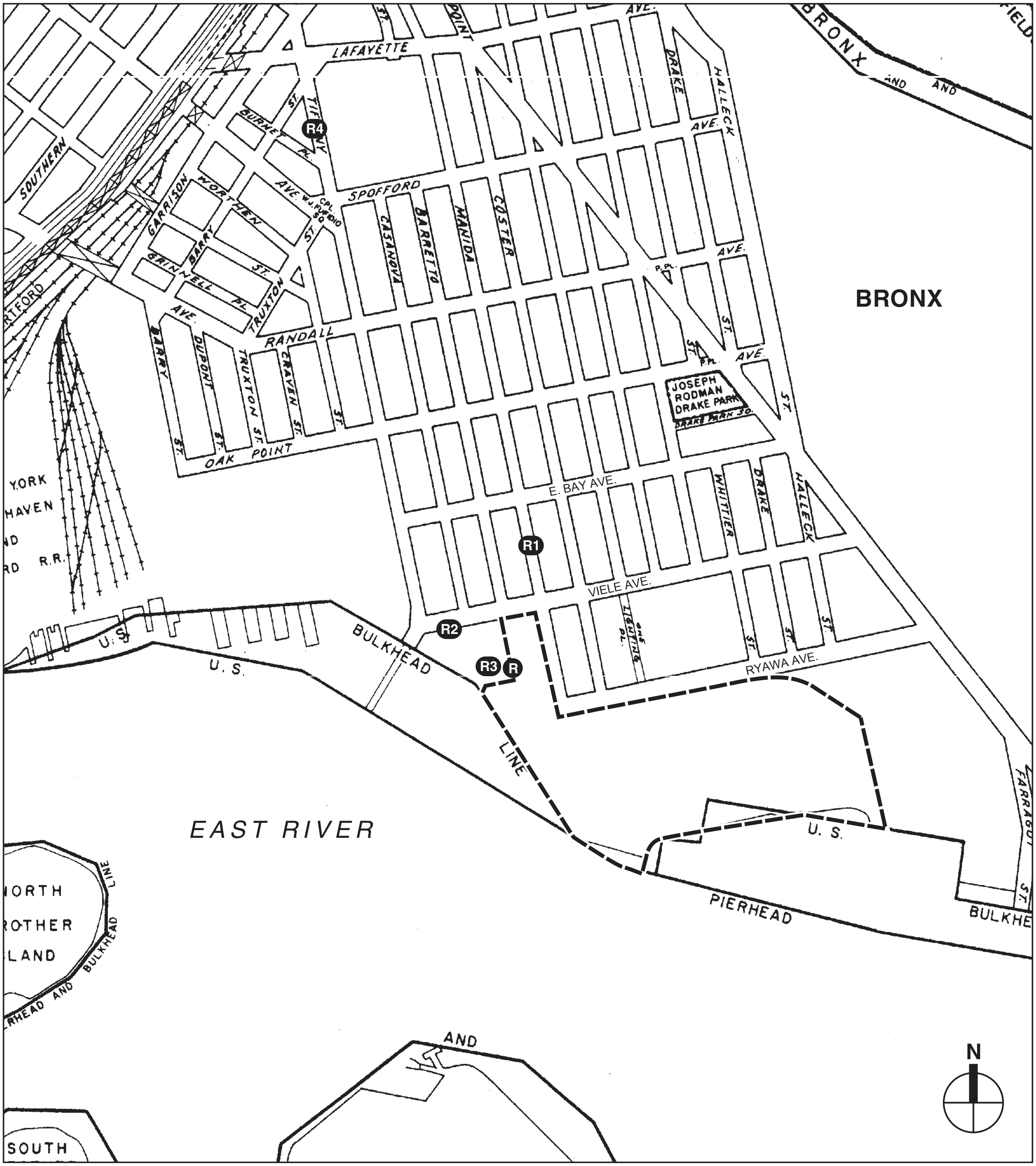
Site	Location	Time	L_{eq}
R1	Manida Street between East Bay Avenue and Viele Avenue (residential receptor)	9:00-10:00 AM	64.5
R2	Viele Avenue between Tiffany and Casanova Street	3:00 to 4:00 PM	65.5
*R(park property line)	Barretto Point Park property line - R3 is located in the park, 50 feet west of Site R (park property line)	11:00 AM-12:00 Noon	58.5

Table 17-20 shows the following for each quarter analysis period, for each receptor site:

- future without the proposed action noise levels;
- maximum predicted noise level due to the construction activities (i.e., noise generated by on-site construction activities including construction vehicles);

[1] Although temporary noise curtains and barriers would be employed where feasible and practical, no credits where taken for the attenuation provided by this measure in terms of the noise analysis.

12.11.06



Project Site Boundary

R1 Construction Noise Receptor Location

Construction Noise Receptor Locations
Figure 17-12

- maximum predicted increases in noise levels based upon comparing the total noise levels with the future without the proposed action noise levels.

In Table 17-20, locations where predicted incremental noise levels exceed the CEQR impact criteria are shown in bold.

During the construction activities, predicted noise levels at Site R3 (located in Barretto Point Park at 50 feet away from the construction site) would exceed the 5 dBA CEQR impact criteria during the third quarter of 2011 through the fourth quarter of 2012 (1.5 years), and the fourth quarter of 2014 (quarter of a year). At Sites R1 and R2, noise levels during the construction analysis year would not exceed the CEQR impact criteria. In the third quarter of 2011, the maximum predicted noise impacts and total noise levels at Site R3 were predicted (total $L_{eq(1)}$ of 71.4 dBA). During the third quarter of 2011, the major contributor to these construction noise levels at Site R3 would be pile driving. Since the pile driving hammer for the required sheeting would be more than 25 feet above grade, there would be no shielding barrier between this noise source and Site R3. It is estimated that 20 days of the third quarter of 2011 would have the pile driving. Without pile driving, maximum predicted noise levels during this quarter would be reduced by about 3 dBA. Within half a year, noise levels at this location are expected to drop to 66.7 dBA. Such levels would be readily noticeable, but would not be expected to disrupt or interfere with park users' activities.

At Site R3, (which is situated 50 feet into the park property distant from on-street background noise sources and where there are planted areas and a walking path) the maximum predicted incremental noise levels in any one quarter was 12.9 dBA, in the third quarter of 2011 when the maximum predicted one-hour equivalent noise levels ($L_{eq(1)}$) was 71.4 dBA. Maximum noise levels at locations further into the Barretto Point Park would be expected to be less than those reported for Site R3, except on the northern side of the park near Viele Avenue such as Site R2, which is located adjacent to Viele Avenue between Tiffany Street and Casanova Street where baseline noise levels are influenced more by the traffic on Viele Avenue. For other quarters shown in Table 17-20 where the maximum predicted incremental noise levels at Site R3 are greater than the impact criteria suggested in the *CEQR Technical Manual*, total $L_{eq(1)}$ levels are predicted in the range of 64 to 68 dBA. Based on the guidelines set forth in the *CEQR Technical Manual*, noise levels for almost all time periods would be marginally acceptable within areas that include a variety of sensitive receptor types (i.e., residential, school, museum, etc.). Construction work would largely occur between the periods of 7 AM to 4 PM on weekdays, and not on weekends when the park would likely be more fully utilized.

Consequently, while the on-site construction activities at Site R3 (Barretto Point Park) would at times produce readily noticeable noise levels, due to the temporary nature of the adverse impacts, the predicted temporary adverse noise impacts from the construction of the proposed action would not be significant. Even though these predicted noise impacts would not be significant, as discussed earlier in this section, pursuant to the New York City Noise Control Code, as amended December 2005 and effective July 1, 2007, the adoption and implementation of noise mitigation plans would be required for the construction of the proposed action.

Table 17-20
Construction From On-Site Noise Sources Results ($L_{eq(1)}$)

Receptor Site	Future Without Proposed Action			2008-3Q[1]		2008-4Q		2009-1Q	
				Proposed Action	Increase	Proposed Action	Increase	Proposed Action	Increase
R1	64.5			64.7	0.2	64.9	0.4	64.9	0.4
R2	65.5			65.8	0.3	65.8	0.3	65.8	0.3
R3	58.5			59.4	0.9	61.2	2.7	61.0	2.5
Receptor Site	Future Without Proposed Action	2009-2Q		2009-3Q		2009-4Q		2010-1Q	
		Proposed Action	Increase	Proposed Action	Increase	Proposed Action	Increase	Proposed Action	Increase
R1	64.5	64.6	0.1	64.6	0.1	64.6	0.1	64.6	0.1
R2	65.5	65.6	0.1	65.6	0.1	65.6	0.1	65.6	0.1
R3	58.5	59.2	0.7	59.2	0.7	59.0	0.5	59.1	0.6
Receptor Site	Future Without Proposed Action	2010-2Q		2010-3Q		2010-4Q		2011-1Q	
		Proposed Action	Increase	Proposed Action	Increase	Proposed Action	Increase	Proposed Action	Increase
R1	64.5	64.6	0.1	64.6	0.1	64.6	0.1	64.6	0.1
R2	65.5	65.6	0.1	65.6	0.1	65.6	0.1	65.6	0.1
R3	58.5	59.1	0.6	59.1	0.6	59.1	0.6	59.4	0.9
Receptor Site	Future Without Proposed Action	2011-2Q		2011-3Q		2011-4Q		2012-1Q	
		Proposed Action	Increase	Proposed Action	Increase	Proposed Action	Increase	Proposed Action	Increase
R1	64.5	64.5	0.0	66.4	1.9	65.9	1.4	65.6	1.1
R2	65.5	65.5	0.0	68.4	2.9	66.9	1.4	66.6	1.1
R3	58.5	58.8	0.3	71.4	**12.9**	67.6	**9.1**	66.7	**8.2**
Receptor Site	Future Without Proposed Action	2012-2Q		2012-3Q		2012-4Q		2013-1Q	
		Proposed Action	Increase	Proposed Action	Increase	Proposed Action	Increase	Proposed Action	Increase
R1	64.5	65.0	0.5	65.1	0.6	65.0	0.5	64.6	0.1
R2	65.5	66.0	0.5	66.2	0.7	66.1	0.6	65.6	0.1
R3	58.5	64.0	**5.5**	64.7	**6.2**	64.2	**5.7**	60.0	1.5
Receptor Site	Future Without Proposed Action	2013-2Q		2013-3Q		2013-4Q		2014-1Q	
		Proposed Action	Increase	Proposed Action	Increase	Proposed Action	Increase	Proposed Action	Increase
R1	64.5	64.7	0.2	64.6	0.1	64.9	0.4	64.9	0.4
R2	65.5	65.7	0.2	65.6	0.1	65.9	0.4	65.9	0.4
R3	58.5	61.4	2.9	60.7	2.2	62.9	4.4	62.9	4.4
Receptor Site	Future Without Proposed Action	2014-2Q		2014-3Q		2014-4Q			
		Proposed Action	Increase	Proposed Action	Increase	Proposed Action	Increase		
R1	64.5	64.9	0.4	64.7	0.2	65.4	0.9		
R2	65.5	65.9	0.4	65.7	0.2	66.3	0.8		
R3	58.5	62.9	4.4	61.7	3.2	65.6	**7.1**		

Notes:
CEQR Impact Criteria (7 AM to 10 PM)
1. If the future without proposed action =< 60 dBA $L_{eq(1)}$, the threshold for a significant impact would be an increase of at least 5 dBA $L_{eq(1)}$
2. If the future without proposed action = 61 dBA $L_{eq(1)}$, the threshold for a significant impact would be an increase of at least 4 dBA $L_{eq(1)}$
3. If the future without proposed action => 62 dBA $L_{eq(1)}$, the threshold for a significant impact would be an increase of at least 3 dBA $L_{eq(1)}$
[1] In the time period between the DEIS and the FEIS, the start date of the proposed action has been revised to the third quarter of 2008.

As noted above, in the time period between the issuance of the DEIS and FEIS, the start of the Barretto Point remediation project has been revised to the third quarter of 2008. Based on the latest timelines, this work, to occur under No Action conditions, would be concurrent with the first elements of the proposed action. The Barretto Point Remediation construction period would last approximately 12 months. However, most of the construction activities that would result in noticeable off-site noise levels would only occur over the first 6 months (or 2 calendar quarters) of construction (2008 3q and 4q in Table 17-20 above). Construction equipment expected on the site during these two quarters would include: heavy trucks (approximately 8 per peak hour); crawler crane (1 on-site); pile driver (1 on-site); backhoe (3 on-site); loader (3 on-site); excavator (1 on-site); dump trucks (approximately 5 per peak hour); pumps (2 on-site); generator (1 on-site); dozer (1 on site). Based on these pieces of equipment, it is estimated that the maximum predicted one-hour equivalent noise levels ($L_{eq(1)}$) would be 72.1 dBA at the fence-line. At a distance of 50 feet within the adjacent Barretto Point Park, the predicted maximum $L_{eq(1)}$ noise levels would be 71.2 dBA. After the first two quarters of remedation activities, incremental $L_{eq(1)}$ noise levels for Barretto Point Park remediation in the first and second quarters of 2009 would be negligible (less than 0.5 dba). After the second quarter of 2009, Barretto Point Remediation is expected to be completed, and no additional noise would occur from the Barretto Point Remediation action. With respect to cumulative effects, the Barretto Point Remediation would occur at times when the incremental noise impacts from the proposed action are relatively small, and well below significant impact threshold levels (see Table 17-20). While these two actions would be concurrent, impacts from the Barretto Point Remediation would be temporary.

In addition, as described in Chapter 2, “Land Use, Zoning, Neighborhood Character, and Open Space,” in the future without the proposed action, the Ryawa-Viele Connection of the South Bronx Greenway could be constructed by the year 2011. Along Viele Avenue, noise levels generated by the proposed action would be comparable to those reported for Site R2 in Table 17-20. Noise levels at other segments of this segment near the plant were estimated utilizing the same methodology for receptor locations adjacent to Site P1 – a receptor analyzed for compliance with performance standards in Chapter 11, “Noise” (for Manida Street) and Site P4 (for the Ryawa segment) with a background level of 58.5 dBA. The maximum predicted incremental $L_{eq(1)}$ noise level on Manida Street adjacent to the digester construction area would be greater than 5 dBA from the period of 2011 through 2014. Along Ryawa Avenue, the predicted incremental $L_{eq(1)}$ would be less than 5 dBA for almost the whole construction period of the proposed action. Further, the use of this section of the greenway would be transient by individuals. Noise emanating from the construction of the proposed action would not be disruptive of the types of activities that would occur along the greenway. Therefore, impacts along the greenway are considered to be temporary and transient.

Construction-related Vehicle Noise Analysis Results

The noise analysis for the construction-related vehicle sources considers two (2) sensitive receptor sites: R2 on Viele Avenue between Tiffany and Casanova Street and R4 on Tiffany Street between Garrison Avenue and Lafayette Avenue (not shown in Figure 11-1, because it is distant from the site and analyzed for off-site construction vehicle related noise impacts). The truck activities are expected to be distributed evenly throughout the day, while the construction worker trips would likely be concentrated in two peak time periods—the early morning arrival period between 6:30 and 7:30 AM and the early afternoon departure period between 3:00 and 4:00 PM. Based upon the traffic analysis, the worst-case scenario for potential construction transportation impacts would occur in the third quarter of 2011. Therefore, the construction-related vehicle noise analysis for the third quarter of 2011 was selected.

The maximum predicted increments for any time period at these sites for construction-related vehicles are shown in Table 17-21. For the mobile source receptor analysis, the future without the proposed action noise levels would decrease compared to the existing levels because the plant would continue to operate without the ongoing construction activities associated with the Phase I and Phase II Upgrades. Trips from other potential future without the proposed action projects would likely occur either outside the analysis peak hours or would not generate substantial trips at sensitive receptors most affected by the on-street construction vehicles from the proposed action. The maximum noise level increase with the proposed action would be 1.9 dBA compared to the future without the proposed action noise levels, well below the 3.0 dBA CEQR noise impact threshold. Increases of this magnitude would be imperceptible and would produce no significant adverse impacts. The Barretto Point Site Remediation construction traffic (which would occur in the third and fourth quarters of 2008) when added to the truck traffic from the proposed action during these periods would not result in a doubling of passenger car equivalents (PCEs) near sensitive receptors, and thus, would not cause an increase in peak hour ambient noise levels that would exceed 3 dBa.

Table 17-21
2011 Construction-related Vehicle Noise Levels
With the Proposed Action ($L_{eq(1)}$ in dBA)

Site	Location	Existing	Future Without the Proposed Action	Future With the Proposed Action	Change
R2	Viele Avenue between Tiffany and Casanova Street (Barretto Point Park)	65.5	63.4	65.3	1.9
R4	Tiffany Street between Garrison Avenue and Lafayette Avenue	74.2	73.4	73.9	0.5

Combined On-Site and On-Road Construction Impacts

Based on the likely traffic routes for construction related traffic, the maximum combined impacts from on-site and on-road construction-related noise impacts would occur at Site R2. Based on the results from Table 17-20 and 17-21, the maximum potential cumulative impacts at Site R2 that would be greater than 3 dBA only occur in the third quarter of 2011. For all other quarters, the combined impacts from on-site and on-road construction related would be less than 3 dBA, and therefore, no significant adverse impacts from combined on- and off-site construction noise sources would be predicted for the proposed action.

CONCLUSIONS

The construction activities for the proposed action would not result in any potential significant adverse noise impacts.

VIBRATION

Construction activities have the potential for resulting in vibration levels that may result in structural or architectural damage, and/or annoyance or interference with vibration sensitive activities. No blasting would be done as part of the proposed action. In general, vibratory levels at a receiver are a function of the source strength (which in turn is dependent upon the construction equipment and construction methods utilized), the distance between the equipment and the receiver, the characteristics of the transmitting medium, and the receiver building construction. Construction equipment operation causes ground vibrations which spread through the ground and decrease in strength with distance. Vehicular traffic, even in locations close to major roadways, typically does not result in perceptible vibration levels, unless there are discontinuities in the roadway surface. With the exception of the case of fragile, typically historically significant structures or buildings, generally construction activities do not reach the levels that can cause architectural or structural damage, but they can achieve levels that may be perceptible and annoying in building very close to a construction site. An assessment has been prepared to quantitatively access potential vibration impacts of construction activities on structures and residences near the project site.

CONSTRUCTION VIBRATION CRITERIA

NYCDEP requires that the impacts of all construction activities be limited by specific vibration restrictions. One of the more frequently used thresholds for vibration, established by the United States Bureau of Mines, is a PPV of 2.0 ips at the closest structure to prevent structural damage. This level is a typical nominal structural damage criterion employed by construction projects. However, where the most stringent protection is required as in blasting, NYCDEP specifies a PPV limit of 0.5 ips, which is 10 times more restrictive than 2.0 ips (on the logarithmic scale). A PPV limit of 0.5 ips is associated with protection of surrounding historic structures that are susceptible to cosmetic cracks in fragile plaster. This limit could be lowered to protect fragile and/or historic structures based on a detailed vibration assessment to be conducted by the construction contractor prior to construction, monitoring during structural conditions in the vicinity of the Shaft Site, and as modified by the New York City Landmarks Preservation Commission (NYCLPC).

For purposes of evaluating potential annoyance or interference with vibration-sensitive activities, vibration levels greater than 72 VdB (for residential buildings where people normally sleep) and 75 VdB (for institutional buildings) would have the potential to result in impacts. While levels exceeding this limit may result in perceptible vibration, such levels would only be considered significant if they were to occur for a prolonged period of time.

ANALYSIS METHODOLOGY

For purposes of assessing potential structural or architectural damage, the following formula was used:

$$PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$$

where:

PPV_{equip} is the peak particle velocity in in/sec of the equipment at the receiver location;

PPV_{ref} is the reference vibration level in in/sec at 25 feet; and

D is the distance from the equipment to the received location in feet.

For purposes of assessing potential annoyance or interference with vibration sensitive activities, the following formula was used:

$$L_v(D) = L_v(ref) - 30\log(D/25)$$

where:

$L_v(D)$ is the vibration level in VdB of the equipment at the receiver location

$L_v(ref)$ is the reference vibration level in VdB at 25 feet; and

D is the distance from the equipment to the receiver location in feet.

Table 17-22 shows vibration source levels for construction equipment.

Table 17-22
Vibration Source Levels for Construction Equipment

Equipment	PPV_{ref} (in/sec)	Approximate L_v (ref) (VdB)
Pile Driver (impact)	0.644	104
Pile Driver (sonic)	0.170	93
Clam Shovel drop (slurry wall)	0.202	94
Hydromill (slurry wall in rock)	0.017	75
Vibratory Roller	0.210	94
Hoe Ram	0.089	87
Large bulldozer	0.089	87
Caisson drilling	0.089	87
Loaded trucks	0.076	86
Jackhammer	0.035	79
Small bulldozer	0.003	58
Source: *Transit Noise and Vibration Impact Assessment*, FTA-VA-90-1003-06, May 2006.		

ANALYSIS RESULTS

At locations adjacent to the project construction site there are no structures considered fragile buildings with regard to the potential for structural or architectural damage due to vibration. The closest sensitive structure to the construction site is a residence located on mid-block of Manida Street between East Bay Avenue and Viele Avenue, at approximately 500 feet away from the construction site. Vibration levels at the residence building would be kept well below the 0.50 inches/second PPV limit.

In terms of potential vibration levels that would be perceptible and annoying, pile driving using hydraulic pile drivers would have the most potential for producing levels which exceed the 72 VdB limit. Pile driving would produce perceptible vibration levels (i.e., vibration levels exceeding 72 VdB) at receptor locations within approximately 5107 feet of a hydraulic pile driver. However, pile driving would only occur for limited periods of time (i.e., during about 20 days of the third quarter of 2011) near the center of the egg digesters. While the vibration levels produced during pile driving may be annoying, due to the limited period of time that this operation would take place, the nearest sensitive receptor would be more than 107 feet from the pile driver, and vibration impacts due to pile driving would not results in significant adverse impacts on any nearby buildings or sensitive receptor.

H. INFRASTRUCTURE AND SOLID WASTE

STORMWATER

During construction activities, the potential for on-site erosion and sedimentation increases without the implementation of a Storm Water Pollution Prevention Plan (SWPPP) with erosion control measures. Stormwater management during construction activities would be performed through implementation of site-specific erosion and sediment control measures that include both structural and non-structural components. The structural components include haybale barriers/silt fencing, inlet protection for existing or newly installed catch basins, and installation of a stabilized construction entrance. The non-structural "best management practices" include routine inspection, cleaning and maintenance programs, instruction on the proper management, storage and handling of potentially hazardous materials, as well as identification of parties responsible for implementation and on-going maintenance programs. All temporary control measures are maintained until disturbed areas of the site are stabilized, and a permanent stormwater management system is complete and operational.

The existing construction SWPPP prepared for construction of the Phase I and II Upgrades would be modified for the proposed action construction activities. The SWPPP would be updated to include construction pollution prevention measures and post-construction stormwater control practices for Phase III, in accordance with NYSDEC regulations. With the modified SWPPP, no significant adverse impacts on stormwater runoff would occur.

SOLID WASTE

The proposed action would result in new construction, with very little demolition required. Therefore, it is not expected that substantial amounts of solid waste would be generated by construction activities. Solid waste would consist primarily of packaging from new construction materials brought onto the site. (For disposal of excavated materials, see "Hazardous Materials" below and Chapter 14, "Hazardous Materials.") All demolition and construction waste from construction activities on the project sites would continue to be handled by private carters who would haul the materials and dispose of the materials outside New York City in full accordance with the applicable regulatory requirements.

I. ENERGY

Relative to the capacity of the city's electric system, the increase in demand for construction would be insignificant and there would be no significant adverse impact to the provision of energy to the site or the surrounding area from construction of the proposed action.

J. HAZARDOUS MATERIALS

As discussed in Chapter 14, "Hazardous Materials," in areas to be excavated or disturbed under the proposed action, there is the potential to encounter contaminated materials. These contaminants are commonly found in historic urban fill material that may include demolition debris, coal or incinerator ash, and other wastes. In addition, during renovation of the existing digesters, thickeners, and interconnecting tunnels, lead paint and asbestos would be encountered. Remediation efforts that would be implemented to avoid any significant adverse impacts are described in Chapter 14, "Hazardous Materials."

K. WATER QUALITY

As discussed above, the plant would operate as upgraded under the Phase I and II Upgrades during construction of the proposed action. Therefore, wastewater quality will be improved. Construction of the proposed action would not have a significant adverse affect water quality.

L. FOUR-DIGESTER SCENARIO

As described in Chapter 1, "Project Description," an additional two egg-shaped digesters (for a total of four) would be constructed once the existing digesters are no longer useful to ensure that the plant is able to treat the projected flow for the year 2045. These two additional digesters would be constructed on Lot 100 to the north of the two digesters proposed as part of the Phase III Upgrade. The additional two digesters proposed under the four-digester scenario would be constructed after 2014.

The construction of the additional digesters under the four-digester scenario would add another period of construction and potential effects on the study area. Similar to the analyses presented above for the two-digester scenario, construction of the proposed action at the Hunts Point WPCP with the two-additional digesters (four-digester scenario) is not expected to result in potential significant adverse impacts to land use, zoning, neighborhood character, open space, visual character, socioeconomic conditions, historic resources, waterfront revitalization programs, odors, volatile organic compounds, infrastructure and solid waste, energy, water quality or natural resources.

The potential adverse construction traffic impact at Bruckner Boulevard and Tiffany Street that was predicted to occur and was determined to be a significant adverse impact for the Phase III Upgrade and carbon addition facility would still be expected to occur with the construction of the two additional digesters. The proposed traffic mitigation in Chapter 21, "Mitigation," would also mitigate the traffic impacts from the four-digester scenario. Potential air quality and noise impacts on nearby residences and residential areas, Barretto Point Park and the proposed greenway would be expected to be the same or less than those determined for the two-digester scenario. As described in Chapter 14, "Hazardous Materials," compliance with the soils management plan would be required, and similar to the requirements for the Phase III Upgrade and carbon addition facilities, Construction Health and Safety Plans (CHASPs) would be developed and approved by NYCDEP. ✷