Chapter 4G: Operational Noise

A. INTRODUCTION

The noise analysis presented in this chapter considers whether the completion of Phase II of the Project by 2035 under the Extended Build-Out Scenario would result in new or different operational noise impacts as compared to the completion of Phase II by 2016 as analyzed in the 2006 Final Environmental Impact Statement (FEIS). Specifically, the analysis focuses on whether changes in background conditions by 2035 (rather than 2016) and the introduction of the Phase II program over an extended period of time would result in: 1) new or different significant adverse noise impacts as a result of traffic generated by Phase II of the Project; 2) different requirements for window/wall attenuation necessary at buildings included in Phase II of the Project in order to achieve acceptable interior noise levels, and/or 3) different ambient noise levels in the publicly accessible open space included in Phase II of the Project. Noise effects during construction of Phase II of the Project are analyzed and discussed in Chapter 3J, "Construction Noise."

PRINCIPAL CONCLUSIONS

The analysis concludes that traffic generated by Phase II of the Project upon completion under the Extended Build-Out Scenario would not be expected to result in any significant increases in noise levels. Furthermore, the analysis prescribes between 28 and 31 A-weighted decibels (dBA) of building attenuation for Phase II buildings, which based on updated *City Environmental Quality Review (CEQR) Technical Manual* requirements, is slightly less than the attenuation specified in the 2006 FEIS. Consistent with the findings of the 2006 FEIS, noise levels in the newly created open spaces would be greater than the 55 dBA $L_{10(1)}$ prescribed by CEQR criteria, but would be comparable to other parks around New York City, and would not constitute a significant impact.

B. SUMMARY OF FINDINGS FROM PREVIOUS ENVIRONMENTAL REVIEWS

The 2006 FEIS determined that traffic generated by the Project would result in significant adverse noise impacts at a number of locations along feeder roadways to and from the project site, including residential locations adjacent to the project site. Specifically, the 2006 FEIS found that noise levels resulting from project-generated traffic upon completion of Phase I of the Project would exceed the *CEQR Technical Manual* impact criteria and result in significant adverse noise impacts on Flatbush Avenue near Dean Street, on Dean Street from approximately Flatbush to Vanderbilt Avenues (including the Dean Playground), and on 6th and Carlton Avenues from approximately Dean Street to Atlantic Avenue. Additionally, the 2006 FEIS found that noise levels would continue to exceed the *CEQR Technical Manual* impact criteria at these same locations and result in significant adverse noise impacts upon the completion of Phase II of the Project.

In addition, the 2006 FEIS found that noise levels within the new open space areas created on-site as part of the Project would be above the 55 dBA $L_{10(1)}$ noise level for outdoor areas requiring serenity and quiet contained in the *CEQR Technical Manual* noise exposure guidelines. While noise levels in these new areas would be above the 55 dBA $L_{10(1)}$ guideline noise level, they would be comparable to noise levels in a number of open space areas and parks in New York City, including Hudson River Park, Riverside Park, Bryant Park, Fort Greene Park, and other urban open space areas, and would thus not constitute a significant adverse impact.

With regard to building attenuation, the 2006 FEIS specified requirements for window/wall attenuation at project buildings ranging from 30 to 35 dBA, along with the requirement of an alternate means of ventilation. This would ensure that noise levels within all project buildings would not exceed the 45 dBA $L_{10(1)}$ CEQR interior noise requirement for residences or community facilities (50 dBA $L_{10(1)}$ for commercial uses).

C. NOISE FUNDAMENTALS

Sound is a fluctuation in air pressure. Sound pressure levels are measured in units called "decibels" ("dB"). The particular character of the sound that we hear (a whistle compared with a French horn, for example) is determined by the speed, or "frequency," at which the air pressure fluctuates, or oscillates. Frequency defines the oscillation of sound pressure in terms of cycles per second. One cycle per second is known as 1 Hertz ("Hz"). People can hear over a relatively limited range of sound frequencies, generally between 20 Hz and 20,000 Hz, and the human ear does not perceive all frequencies equally well. High frequencies (e.g., a whistle) are more easily discernable and therefore more intrusive than many of the lower frequencies (e.g., the lower notes on the French horn).

"A"-WEIGHTED SOUND LEVEL (dBA)

In order to establish a uniform noise measurement that simulates people's perception of loudness and annoyance, the decibel measurement is weighted to account for those frequencies most audible to the human ear. This is known as the A-weighted sound level, or "dBA," and it is the descriptor of noise levels most often used for community noise. As shown in **Table 4G-1**, the threshold of human hearing is defined as 0 dBA; quiet conditions (as in a library, for example) are approximately 40 dBA; levels between 50 dBA and 70 dBA define the range of noise levels generated by normal daily activity; levels above 70 dBA would be considered noisy, and then loud, intrusive, and deafening as the scale approaches 130 dBA.

In considering these values, it is important to note that the dBA scale is logarithmic, meaning that each increase of 10 dBA describes a doubling of perceived loudness. Thus, the background noise in an office, at 50 dBA, is perceived as twice as loud as a library at 40 dBA. For most people to perceive an increase in noise, it must be at least 3 dBA. At 5 dBA, a change in noise level will be readily noticeable.

Table 4G-1
Common Noise Levels

Sound Source	(dBA)
Military jet, air raid siren	130
Amplified rock music	110
Jet takeoff at 500 meters	100
Freight train at 30 meters	95
Train horn at 30 meters	90
Heavy truck at 15 meters	80–90
Busy city street, loud shout	80
Busy traffic intersection	70–80
Highway traffic at 15 meters, train	70
Predominantly industrial area	60
Light car traffic at 15 meters, city or commercial areas, or residential areas close to industry	50–60
Background noise in an office	50
Suburban areas with medium-density transportation	40–50
Public library	40
Soft whisper at 5 meters	30
Threshold of hearing	0

Note: A 10 dBA increase in level appears to double the loudness, and a 10 dBA decrease halves the apparent loudness.
Sources: Cowan, James P. *Handbook of Environmental Acoustics,* Van Nostrand Reinhold, New York, 1994. Egan, M. David, Architectural Acoustics. McGraw-Hill Book Company, 1988.

EFFECTS OF DISTANCE ON SOUND

Sound varies with distance. For example, highway traffic 50 feet away from a receptor (such as a person listening to the noise) typically produces sound levels of approximately 70 dBA. The same highway noise measures 66 dBA at a distance of 100 feet, assuming soft ground conditions. This decrease is known as "drop-off." The outdoor drop-off rate for line sources, such as traffic, is a decrease of approximately 4.5 dBA (for soft ground) for every doubling of distance between the noise source and receiver (for hard ground the outdoor drop-off rate is 3 dBA for line sources). Assuming soft ground, for point sources, such as amplified rock music, the outdoor drop-off rate is a decrease of approximately 7.5 dBA for every doubling of distance between the noise source and receiver (for hard ground the outdoor drop-off rate is 6 dBA for point sources).

SOUND LEVEL DESCRIPTORS

Because the sound pressure level unit of dBA describes a noise level at just one moment and few noises are constant, other ways of describing noise that fluctuates over extended periods have been developed. One way is to describe the fluctuating sound heard over a specific time period as if it had been a steady, unchanging sound. For this condition, a descriptor called the "equivalent sound level," L_{eq}, can be computed. L_{eq} is the constant sound level that, in a given situation and time period (e.g., 1 hour, denoted by $L_{eq(1)}$, or 24 hours, denoted by $L_{eq(24)}$), conveys the same sound energy as the actual time-varying sound. Statistical sound level descriptors such as L_1, L_{10}, L_{50}, L_{90}, and L_x, are used to indicate noise levels that are exceeded 1, 10, 50, 90, and x percent of the time, respectively.

The relationship between L_{eq} and levels of exceedance is worth noting. Because L_{eq} is defined in energy rather than straight numerical terms, it is not simply related to the levels of exceedance. If the noise fluctuates little, L_{eq} will approximate L_{50} or the median level. If the noise fluctuates broadly, the L_{eq} will be approximately equal to the L_{10} value. If extreme fluctuations are present, the L_{eq} will exceed L_{90} or the background level by 10 or more decibels. Thus the relationship between L_{eq} and the levels of exceedance will depend on the character of the noise. In community noise measurements, it has been observed that the L_{eq} is generally between L_{10} and L_{50}.

For purposes of the Phase II operational noise analysis, the maximum 1-hour equivalent sound level ($L_{eq(1)}$) has been selected as the noise descriptor to be used in the noise impact evaluation. The $L_{eq(1)}$ is the noise descriptor recommended for use in the *CEQR Technical Manual* for vehicular traffic and construction noise impact evaluation, and is used to provide an indication of highest expected sound levels. The one-hour L_{10} is the noise descriptor used in the *CEQR Technical Manual* noise exposure guidelines for City environmental impact review classification.

D. NOISE STANDARDS AND CRITERIA

NEW YORK CEQR NOISE STANDARDS

The *CEQR Technical Manual* sets external noise exposure standards; these standards are shown in **Table 4G-2**. Noise exposure is classified into four categories: acceptable, marginally acceptable, marginally unacceptable, and clearly unacceptable.

The *CEQR Technical Manual* defines attenuation requirements for buildings based on exterior noise levels (see **Table 4G-3**). Recommended noise attenuation values for buildings are designed to maintain interior noise levels of 45 dBA or lower for residential uses and 50 dBA or lower for commercial uses, and are determined based on exterior $L_{10(1)}$ noise levels.

IMPACT DEFINITION

The determination of significant adverse noise impacts in this analysis is informed by the use of both absolute noise level limits and relative impact criteria. The 2012 *CEQR Technical Manual* states that "it is reasonable to consider 65 dBA $L_{eq(1)}$ as an absolute noise level that should not be significantly exceeded." Therefore, the determination of impacts first considers whether a projected noise increase would result in noise levels exceeding 65 dBA $L_{eq(1)}$. Where appropriate, this study also consults the following relative impact criteria to define a significant adverse noise impact, as recommended in the *CEQR Technical Manual*:

- If the No Action noise level is less than 60 dBA $L_{eq(1)}$, a 5 dBA $L_{eq(1)}$ or greater increase would be considered significant.
- If the No Action noise level is between 60 dBA $L_{eq(1)}$ and 62 dBA $L_{eq(1)}$, a resultant $L_{eq(1)}$ of 65 dBA or greater would be considered a significant increase.
- If the No Action 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 10:00 PM and 7:00 AM), the incremental significant impact threshold would be 3 dBA $L_{eq(1)}$.

Table 4G-2
Noise Exposure Guidelines For Use in City Environmental Impact Review[1]

Receptor Type	Time Period	Acceptable General External Exposure	Airport[3] Exposure	Marginally Acceptable General External Exposure	Airport[3] Exposure	Marginally Unacceptable General External Exposure	Airport[3] Exposure	Clearly Unacceptable General External Exposure	Airport[3] Exposure
Outdoor area requiring serenity and quiet[2]		$L_{10} \leq 55$ dBA	---- Ldn ≤ 60 dBA ----	NA	---- 60 < Ldn ≤ 65 dBA ----	NA	(I) 65 < Ldn ≤ 70 dBA, (II) 70 ≤ Ldn	NA	---- Ldn ≤ 75 dBA ----
Hospital, nursing home		$L_{10} \leq 55$ dBA		55 < $L_{10} \leq$ 65 dBA		65 < $L_{10} \leq$ 80 dBA		L_{10} > 80 dBA	
Residence, residential hotel, or motel	7 AM to 10 PM	$L_{10} \leq 65$ dBA		65 < $L_{10} \leq$ 70 dBA		70 < $L_{10} \leq$ 80 dBA		L_{10} > 80 dBA	
	10 PM to 7 AM	$L_{10} \leq 55$ dBA		55 < $L_{10} \leq$ 70 dBA		70 < $L_{10} \leq$ 80 dBA		L_{10} > 80 dBA	
School, museum, library, court, house of worship, transient hotel or motel, public meeting room, auditorium, outpatient public health facility		Same as Residential Day (7 AM-11 PM)		Same as Residential Day (7 AM-11 PM)		Same as Residential Day (7 AM-11 PM)		Same as Residential Day (7 AM-11 PM)	
Commercial or office		Same as Residential Day (7 AM-11 PM)		Same as Residential Day (7 AM-11 PM)		Same as Residential Day (7 AM-11 PM)		Same as Residential Day (7 AM-11 PM)	
Industrial, public areas only[4]	Note 4	Note 4		Note 4		Note 4		Note 4	

Notes:

(i) In addition, any new activity shall not increase the ambient noise level by 3 dBA or more;

(II) *CEQR Technical Manual* noise criteria for train noise are similar to the above aircraft noise standards: the noise category for train noise is found by taking the L_{dn} value for such train noise to be an L^{Y}_{dn} (L_{dn} contour) value.

Table Notes:

[1] Measurements and projections of noise exposures are to be made at appropriate heights above site boundaries as given by American National Standards Institute (ANSI) Standards; all values are for the worst hour in the time period.

[2] Tracts of land where serenity and quiet are extraordinarily important and serve an important public need, and where the preservation of these qualities is essential for the area to serve its intended purpose. Such areas could include amphitheaters, particular parks or portions of parks, or open spaces dedicated or recognized by appropriate local officials for activities requiring special qualities of serenity and quiet. Examples are grounds for ambulatory hospital patients and patients and residents of sanitariums and nursing homes.

[3] One may use FAA-approved L_{dn} contours supplied by the Port Authority, or the noise contours may be computed from the federally approved INM Computer Model using flight data supplied by the Port Authority of New York and New Jersey.

[4] External Noise Exposure standards for industrial areas of sounds produced by industrial operations other than operating motor vehicles or other transportation facilities are spelled out in the New York City Zoning Resolution, Sections 42-20 and 42-21. The referenced standards apply to M1, M2, and M3 manufacturing districts and to adjoining residence districts (performance standards are octave band standards).

Source: New York City Department of Environmental Protection (adopted policy 1983).

Table 4G-3
Required Attenuation Values to Achieve Acceptable Interior Noise Levels

	Marginally Unacceptable				Clearly Unacceptable
Noise Level With Proposed Project	70 < $L_{10} \leq$ 73	73 < $L_{10} \leq$ 76	76 < $L_{10} \leq$ 78	78 < $L_{10} \leq$ 80	L_{10} < 80
Attenuation*	(I) 28 dBA	(II) 31 dBA	(III) 33 dBA	(IV) 35 dBA	36 + (L_{10} - 80)[B] dBA

Notes: [A] The above composite window-wall attenuation values are for residential dwellings. Commercial office spaces and meeting rooms would be 5 dB(A) less in each category. All the above categories require a closed window situation and hence an alternate means of ventilation.

[B] Required attenuation values increase by 1 dB(A) increments for L_{10} values greater than 80 dBA.

Source: New York City Department of Environmental Protection

E. NOISE PREDICTION METHODOLOGY

GENERAL METHODOLOGY

At most receptor sites in the study area the dominant operational noise source is traffic on adjacent and nearby streets. Operational noise from project-generated traffic was calculated using the TNM model (the Federal Highway Administration's [FHWA] *Traffic Noise Model* version 2.5). The noise analysis examined four weekday conditions: AM (8–9 AM), midday (12–1 PM), PM (5– 6 PM), and Pre-Game or Evening (7–8 PM) time periods, as well as one Saturday condition: midday (1–2 PM). The selected time periods are when the Proposed Project would be expected to have maximum traffic generation and/or the maximum potential for significant adverse noise impacts based on the traffic studies presented in Chapter 4D, "Operational Transportation."

TRAFFIC NOISE MODEL (TNM)

At all locations the TNM was used to calculate noise levels. The TNM is a computerized model developed for the FHWA that takes into account various factors, including traffic volumes, vehicle mix (i.e., percentage of autos, light duty trucks, heavy duty trucks, buses, etc.), sources/receptor geometry, and shielding (including barriers and terrain, ground attenuation, etc.). It is the model recommended in the *CEQR Technical Manual* for traffic noise analysis.

ANALYSIS PROCEDURE

In general, the following procedure was used in performing the noise analysis:

- Receptor sites were selected based on the receptor sites used in the 2006 FEIS, public comments, the sensitive uses closest to the project site, and the locations where project-generated traffic would be expected to have the greatest potential for significant noise impacts;
- Existing noise levels were determined at each receptor site, for each analysis time period, by performing field measurements;
- The TNM was used to calculate existing noise levels based on existing traffic data. The difference between calculated and measured existing levels was used to determine site and time-specific adjustment factors;
- Based on the results of the traffic study, future noise levels both without and with Phase II of the Project were calculated using the TNM;
- Impacts were determined based upon the CEQR impact criteria;
- Levels of building attenuation necessary to satisfy CEQR requirements were determined for each Phase II building using a combination of the TNM and existing measurements; and
- Noise levels were predicted using TNM for open spaces included in Phase II of the Project and compared to CEQR recommended levels.

F. EXISTING CONDITIONS

SITE DESCRIPTION

The project site (described in detail in Chapter 1, "Project Description") is located in the Atlantic Terminal area of Brooklyn, adjacent to Downtown Brooklyn. The Project would occupy an

approximately 22-acre area site, roughly bounded by Flatbush and 4th Avenues to the west, Vanderbilt Avenue to the east, Atlantic Avenue to the north, and Dean and Pacific Streets to the south. The western portion of the project site (Phase I) includes a new arena for the Nets basketball team, along with planned commercial office and retail, potential hotel, and residential uses. The eastern portion of the project site (Phase II), which is the subject of this Supplemental Environmental Impact Statement (SEIS), would be primarily residential and would provide at least eight acres of publicly accessible open space along with a number of local retail and community services. The Project would also expand, platform over, and substantially improve the Metropolitan Transportation Authority/Long Island Rail Road (MTA/LIRR) Vanderbilt Yard, which occupies approximately eight acres of the project site in an open cut. The area immediately adjacent to the project site includes some major roadways, such as Flatbush and Atlantic Avenues, and a number of fairly quiet streets, such as Dean and Pacific Streets.

SELECTION OF NOISE RECEPTOR LOCATIONS

Fourteen (14) receptor sites in the project area were selected for project impact assessment purposes. **Table 4G-4** lists the locations of each of the noise receptor sites, as well as the surrounding land use. **Figure 4G-1** contains a map of the area showing the location of each of the noise receptor sites. Each of the receptor sites in the project area was selected because it was representative of a noise-sensitive, principally residential use, and because it was a location where maximum project impacts would be expected. Receptor sites 1 through 12 are the same as the twelve receptor sites analyzed in the 2006 FEIS, and receptor sites 13 and 14 were added in response to public comment on the Draft Scope of Work.

Table 4G-4
Noise Receptor Locations

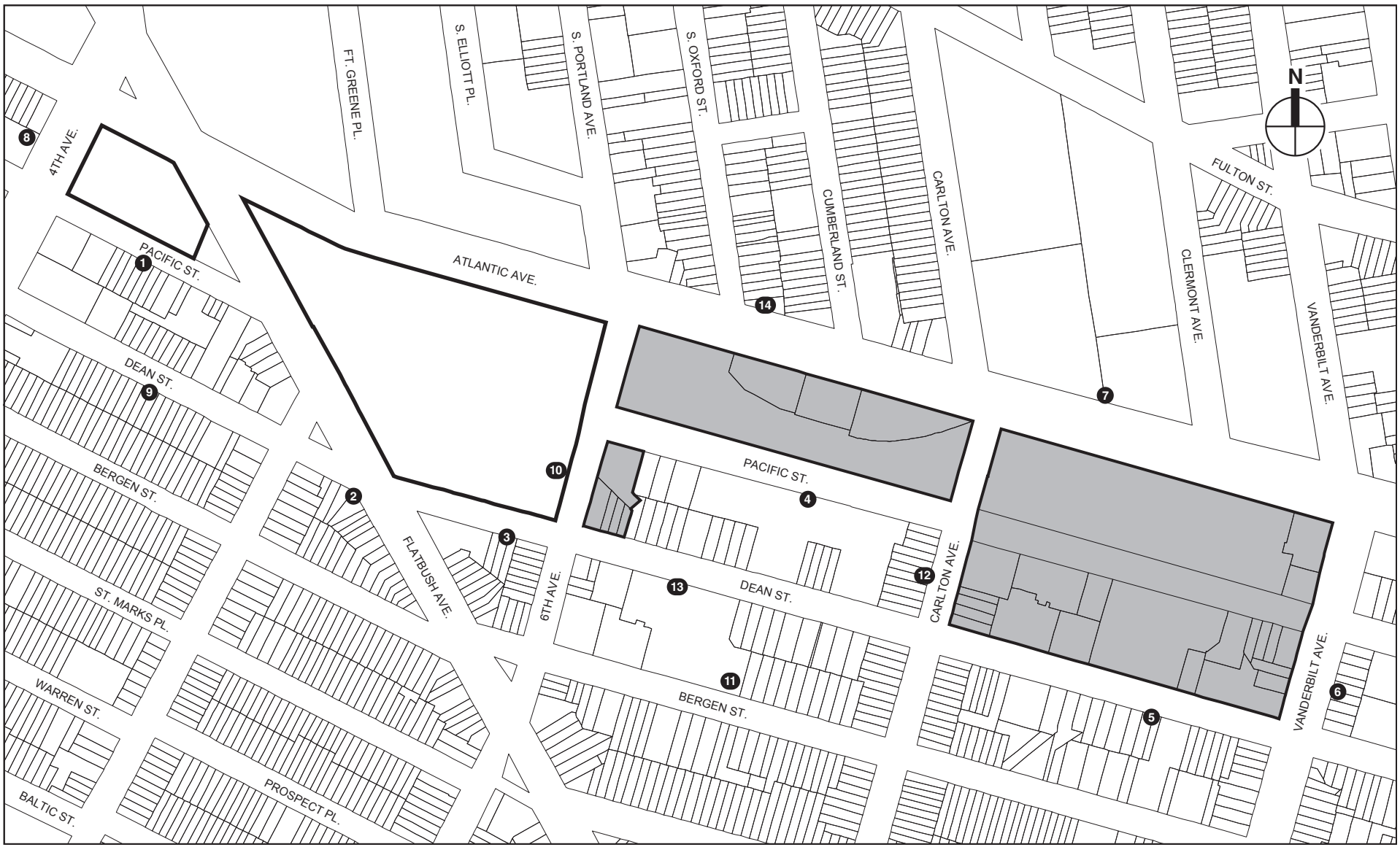
Receptor	Location	Associated Land Use
1	Pacific Street between Flatbush and 4th Avenues	Residential/library
2	Flatbush Avenue at Dean Street	Residential with ground-floor retail
3	Dean Street between Flatbush and 6th Avenues	Residential/playground
4	Pacific Street between Carlton and 6th Avenues	Residential
5	Dean Street between Vanderbilt and Carlton Avenues	Residential
6	Vanderbilt Avenue between Pacific and Dean Streets	Residential
7	Atlantic Avenue between Clermont and Carlton Avenues	School and residential
8	4th Avenue between Atlantic Avenue and Pacific Street	Residential/church
9	Dean Street between 4th and 5th Avenues	Residential
10	6th Avenue between Pacific and Dean Streets	Residential
11	Bergen Street between Carlton and 6th Avenues	Residential/playground
12	Carlton Avenue between Pacific and Dean Streets	Residential
13	Dean Street between 6th and Carlton Avenues	Residential
14	Atlantic Avenue between South Oxford and Cumberland Streets	Residential

At other locations, particularly locations outside the study area, project-generated traffic would be less and/or would constitute a small portion of the existing and/or No Build traffic volume, and consequently would have less potential to cause a significant increase in noise levels.

NOISE MONITORING

At each of the 14 receptor locations 20-minute noise measurements were made during the four weekday time periods and one Saturday time period described above to determine existing noise levels.

2.6.14



Source: AKRF, Inc.

Phase I Project Site Boundary

Phase II Project Site Boundary

1 *Noise Receptor Location*

0 500 FEET

SCALE

SEIS • ATLANTIC YARDS ARENA AND REDEVELOPMENT PROJECT

Noise Receptor Locations
Figure 4G-1

Measurements were taken on April 9 and 30; May 1, 3, 7, 11, 15, 16, 22, and 23; June 1, 4, and 11, 2013.

EQUIPMENT USED DURING NOISE MONITORING

Measurements were performed using Brüel & Kjær Sound Level Meters (SLM) Type 2250, 2260, and 2270, Brüel & Kjær ½-inch microphones Type 4189, and Brüel & Kjær Sound Level Calibrators Type 4231. The Brüel & Kjær SLMs are Type 1 instruments according to ANSI Standard S1.4-1983 (R2006). The SLMs had a laboratory calibration date within one year of the time of use. The microphones were mounted at a height of approximately five feet above the ground surface on a tripod and approximately six feet or more away from any large sound-reflecting surface to avoid major interference with sound propagation. The SLMs were calibrated before and after readings with a Brüel & Kjær Type 4231 Sound Level Calibrator using the appropriate adaptor. The data were digitally recorded by the SLMs and displayed at the end of the measurement period in units of dBA. Measured quantities included the L_{eq}, L_1, L_{10}, L_{50}, and L_{90} values, as well as 1/3 octave band levels. A windscreen was used during all sound measurements except for calibration. All measurement procedures were based on the guidelines outlined in ANSI Standard S1.13-2005.

RESULTS OF BASELINE MEASUREMENTS

Table 4G-5 summarizes the results of the baseline measurements for the Weekday AM, midday, PM, and Pre-Game, as well as the Saturday midday analysis hours. Values are shown for specific monitored Weekday and Saturday time periods. In general, noise levels are moderate to relatively high and reflect the level of vehicular activity on the adjacent streets.

In terms of CEQR noise exposure guidelines (shown in **Table 4G-2**), during the hour with the highest measured noise levels, existing noise levels at receptors 1, 4, 5, 9, 11, 12, and 13 are in the "marginally acceptable" category, and levels at receptors 2, 3, 6, 7, 8, 10, and 14 are in the "marginally unacceptable" category. These categories are based on the measured L_{10} values.

Table 4G-5
Measured Existing Noise Levels (in dBA)

Receptor	Location	Day	Time	L_{eq}	L_1	L_{10}	L_{50}	L_{90}
1	Pacific Street between 4th and Flatbush Avenues	Weekday	AM	64.1	73.2	66.0	61.6	58.9
		Weekday	MD	60.0	67.1	62.2	58.8	56.3
		Weekday	PM	60.7	69.9	62.7	58.7	56.7
		Weekday	PG	61.8	71.9	64.0	59.4	56.2
		Weekend	MD	61.4	69.5	62.9	58.9	56.2
2	Corner of Dean Street and Flatbush Avenue	Weekday	AM	75.3	84.1	78.6	72.7	66.5
		Weekday	MD	75.7	83.5	77.6	72.4	67.0
		Weekday	PM	71.8	81.3	74.4	69.3	64.7
		Weekday	PG	72.1	82.0	74.2	69.0	64.2
		Weekend	MD	73.3	82.4	76.9	70.9	62.2
3	Dean Street between Flatbush and 6th Avenues	Weekday	AM	67.0	75.8	70.3	63.7	60.7
		Weekday	MD	68.8	75.5	71.1	67.9	62.4
		Weekday	PM	65.1	73.3	69.0	61.9	58.8
		Weekday	PG	65.4	75.3	66.4	62.2	59.8
		Weekend	MD	67.4	74.8	69.8	65.9	62.3

Table 4G-5 (cont'd)
Measured Existing Noise Levels (in dBA)

Receptor	Location	Day	Time	L_{eq}	L_1	L_{10}	L_{50}	L_{90}
4	Pacific Street between 6th and Carlton Avenues	Weekday	AM	62.2	71.0	65.2	59.5	57.2
		Weekday	MD	61.6	68.6	63.0	60.6	59.6
		Weekday	PM	56.5	64.0	57.7	54.6	52.8
		Weekday	PG	57.8	65.7	61.1	55.0	50.9
		Weekend	MD	56.7	66.0	59.7	53.3	49.7
5	Dean Street between Carlton and Vanderbilt Avenues	Weekday	AM	65.9	76.3	68.4	60.0	56.7
		Weekday	MD	62.6	73.6	65.7	58.0	53.9
		Weekday	PM	65.5	75.6	65.4	57.7	53.9
		Weekday	PG	62.7	71.9	66.3	59.1	53.2
		Weekend	MD	62.1	73.2	65.6	54.9	50.4
6	Vanderbilt Avenue between Atlantic Avenue and Dean Street	Weekday	AM	67.8	76.8	70.0	65.0	59.4
		Weekday	MD	67.1	75.1	70.9	64.2	58.5
		Weekday	PM	66.0	73.4	69.6	64.0	58.6
		Weekday	PG	67.6	74.7	70.3	64.8	59.9
		Weekend	MD	65.0	73.7	67.8	62.5	57.6
7	Atlantic Avenue between Carlton and Clermont Avenues	Weekday	AM	68.5	76.7	71.8	66.8	58.1
		Weekday	MD	68.8	78.1	71.2	65.6	61.0
		Weekday	PM	70.7	79.2	74.2	67.7	58.1
		Weekday	PG	70.7	81.4	72.7	67.0	60.8
		Weekend	MD	68.9	75.7	70.8	64.5	53.3
8	4th Avenue between Atlantic Avenue and Pacific Street	Weekday	AM	68.7	76.8	71.6	65.8	62.3
		Weekday	MD	69.6	79.1	72.1	67.2	63.3
		Weekday	PM	67.5	76.3	70.4	65.3	61.8
		Weekday	PG	70.1	80.5	72.8	66.4	62.5
		Weekend	MD	68.0	76.7	71.0	65.2	60.7
9	Dean Street between 4th and 5th Avenues	Weekday	AM	62.1	73.3	65.4	56.6	52.6
		Weekday	MD	62.1	73.0	63.8	57.3	52.9
		Weekday	PM	63.4	75.3	65.1	56.8	50.9
		Weekday	PG	59.2	68.6	61.2	55.9	51.7
		Weekend	MD	59.6	68.3	62.5	56.1	52.8
10	6th Avenue between Pacific and Dean Streets	Weekday	AM	68.4	76.0	70.8	67.0	63.9
		Weekday	MD	70.2	77.7	72.7	68.6	65.6
		Weekday	PM	63.7	72.8	65.5	61.3	58.3
		Weekday	PG	65.1	74.7	67.3	62.4	59.1
		Weekend	MD	61.8	69.1	64.7	59.5	56.1
11	Bergen Street between 6th and Carlton Avenues	Weekday	AM	62.7	71.9	65.8	59.1	55.3
		Weekday	MD	62.0	71.7	65.8	57.9	53.8
		Weekday	PM	64.5	76.3	66.1	60.5	56.8
		Weekday	PG	62.3	71.9	65.4	57.9	53.9
		Weekend	MD	61.9	73.4	65.0	55.6	51.6
12	Carlton Avenue between Pacific and Dean Streets	Weekday	AM	63.6	72.3	66.6	60.6	56.8
		Weekday	MD	60.4	68.9	63.8	57.9	64.6
		Weekday	PM	59.8	67.9	62.8	57.4	54.8
		Weekday	PG	61.4	69.2	63.9	58.8	54.2
		Weekend	MD	61.0	69.8	64.2	57.4	52.6
13	Dean Street between 6th and Carlton Avenues	Weekday	AM	61.1	72.4	63.6	55.6	52.0
		Weekday	MD	64.9	75.4	67.9	60.8	57.1
		Weekday	PM	65.1	75.6	67.4	61.6	57.6
		Weekday	PG	63.7	71.7	66.5	61.4	57.9
		Weekend	MD	61.9	69.9	65.0	59.6	55.4
14	Atlantic Avenue between S. Oxford and Cumberland Streets	Weekday	AM	69.3	78.0	72.5	67.3	60.2
		Weekday	MD	70.4	78.4	73.2	64.7	57.9
		Weekday	PM	68.8	78.4	72.1	66.4	57.8
		Weekday	PG	68.7	77.6	69.8	64.5	56.3
		Weekend	MD	69.0	78.3	73.3	63.5	54.1

Notes: Field measurements were performed by AKRF, Inc. on April 9 and 30; May 1, 3, 7, 11, 15, 16, 22, and 23; June 1, 4, and 11, 2013.

G. FUTURE WITHOUT PHASE II

Using the methodology previously described, future noise levels without Phase II of the Project were calculated at each of the 14 noise receptor sites. These No Build values are shown in **Table 4G-6**.

Table 4G-6
Noise Levels in the Future Without Phase II (in dBA)

Receptor	Location	Day	Time Period	Existing $L_{eq(1)}$	No Build $L_{eq(1)}$	Increase	No Build $L_{10(1)}$
1	Pacific Street between 4th and Flatbush Avenues	Weekday	AM	64.1	66.2	2.1	68.1
		Weekday	MD	60.0	61.9	1.9	64.1
		Weekday	PM	60.7	63.5	2.8	65.5
		Weekday	PG	61.8	63.3	1.5	65.5
		Weekend	MD	61.4	64.0	2.6	65.5
2	Corner of Dean Street and Flatbush Avenue	Weekday	AM	75.3	76.5	1.2	79.8
		Weekday	MD	75.7	76.5	0.8	78.4
		Weekday	PM	71.8	72.7	0.9	75.3
		Weekday	PG	72.1	72.9	0.8	75.0
		Weekend	MD	73.3	74.3	1.0	77.9
3	Dean Street between Flatbush and 6th Avenues	Weekday	AM	67.0	67.2	0.2	70.5
		Weekday	MD	68.8	69.0	0.2	71.3
		Weekday	PM	65.1	65.2	0.1	69.1
		Weekday	PG	65.4	65.3	-0.1	66.3
		Weekend	MD	67.4	68.3	0.9	70.7
4	Pacific Street between 6th and Carlton Avenues	Weekday	AM	62.2	63.6	1.4	66.6
		Weekday	MD	61.6	62.7	1.1	64.1
		Weekday	PM	56.5	58.4	1.9	59.6
		Weekday	PG	57.8	59.0	1.2	62.3
		Weekend	MD	56.7	58.2	1.5	61.2
5	Dean Street between Carlton and Vanderbilt Avenues	Weekday	AM	65.9	66.2	0.3	68.7
		Weekday	MD	62.6	63.2	0.6	66.3
		Weekday	PM	65.5	66.0	0.5	65.9
		Weekday	PG	62.7	63.0	0.3	66.6
		Weekend	MD	62.1	62.4	0.3	65.9
6	Vanderbilt Avenue between Atlantic Avenue and Dean Street	Weekday	AM	67.8	68.1	0.3	70.3
		Weekday	MD	67.1	67.3	0.2	71.1
		Weekday	PM	66.0	66.1	0.1	69.7
		Weekday	PG	67.6	67.6	0.0	70.3
		Weekend	MD	65.0	65.0	0.0	67.8
7	Atlantic Avenue between Carlton and Clermont Avenues	Weekday	AM	68.5	69.1	0.6	72.4
		Weekday	MD	68.8	69.7	0.9	72.1
		Weekday	PM	70.7	71.3	0.6	74.8
		Weekday	PG	70.7	71.2	0.5	73.2
		Weekend	MD	68.9	70.0	1.1	71.9
8	4th Avenue between Atlantic Avenue and Pacific Street	Weekday	AM	68.7	69.4	0.7	72.3
		Weekday	MD	69.6	70.2	0.6	72.7
		Weekday	PM	67.5	68.2	0.7	71.1
		Weekday	PG	70.1	70.7	0.6	73.4
		Weekend	MD	68.0	69.1	1.1	72.1
9	Dean Street between 4th and 5th Avenues	Weekday	AM	62.1	62.4	0.3	65.7
		Weekday	MD	62.1	62.3	0.2	64.0
		Weekday	PM	63.4	63.6	0.2	65.3
		Weekday	PG	59.2	59.2	0.0	61.2
		Weekend	MD	59.6	61.3	1.7	64.2

Table 4G-6 (cont'd)
Noise Levels in the Future Without Phase II (in dBA)

Receptor	Location	Day	Time Period	Existing $L_{eq(1)}$	No Build $L_{eq(1)}$	Increase	No Build $L_{10(1)}$
10	6th Avenue between Pacific and Dean Streets	Weekday	AM	68.4	68.4	0.0	70.8
		Weekday	MD	70.2	70.2	0.0	72.7
		Weekday	PM	63.7	63.8	0.1	65.6
		Weekday	PG	65.1	65.1	0.0	67.3
		Weekend	MD	61.8	62.2	0.4	65.1
11	Bergen Street between 6th and Carlton Avenues	Weekday	AM	62.7	63.5	0.8	66.6
		Weekday	MD	62.0	63.1	1.1	66.9
		Weekday	PM	64.5	65.3	0.8	66.9
		Weekday	PG	62.3	62.8	0.5	65.9
		Weekend	MD	61.9	63.2	1.3	66.3
12	Carlton Avenue between Pacific and Dean Streets	Weekday	AM	63.6	64.0	0.4	67.0
		Weekday	MD	60.4	60.8	0.4	64.2
		Weekday	PM	59.8	60.2	0.4	63.2
		Weekday	PG	61.4	61.7	0.3	64.2
		Weekend	MD	61.0	61.6	0.6	64.8
13	Dean Street between 6th and Carlton Avenues	Weekday	AM	61.1	60.9	-0.2	63.4
		Weekday	MD	64.9	64.8	-0.1	67.8
		Weekday	PM	65.1	65.2	0.1	67.5
		Weekday	PG	63.7	63.6	-0.1	66.4
		Weekend	MD	61.9	63.2	1.3	66.3
14	Atlantic Avenue between S. Oxford and Cumberland Streets	Weekday	AM	69.3	69.3	0.0	72.5
		Weekday	MD	70.4	70.8	0.4	73.6
		Weekday	PM	68.8	69.4	0.6	72.7
		Weekday	PG	68.7	69.3	0.6	70.4
		Weekend	MD	69.0	69.7	0.7	74.0

In the Future Without Phase II, at all locations and during all time periods, the increase in $L_{eq(1)}$ noise levels would be less than 2.8 dBA, which would be barely perceptible. At receptors 3 and 13, during some time periods, noise levels in the Future Without Phase II would be slightly less than existing noise levels. This is because construction of buildings associated with Phase I of the Project would provide additional shielding at these locations from Flatbush Avenue and/or Atlantic Avenue, which would offset the increases in traffic on the immediately adjacent streets.

In terms of CEQR noise exposure guidelines, future noise levels without Phase II of the Project would remain in the "marginally acceptable" category for receptor sites 1, 4, 5, 9, 11, 12, and 13, and in the "marginally unacceptable" category for receptor sites 2, 3, 6, 7, 8, 10, and 14. These categories are based on the calculated $L_{10(1)}$ values.

H. FUTURE WITH PHASE II

Using the methodology previously described, future noise levels with Phase II of the Project were calculated at each of the 14 noise receptor sites. These values are shown in **Table 4G-7**.

In the Future With Phase II under the Extended Build-Out Scenario, at all locations and during all time periods, the increase in $L_{eq(1)}$ noise levels would be less than 2.5 dBA, which would be considered barely perceptible and not significant according to CEQR criteria. At receptors 4, 5, 6, 10, and 12, during some time periods, noise levels in the Future With Phase II would be slightly less than existing noise levels. This is because construction of buildings associated with Phase II of the Project would provide additional shielding at these locations from Flatbush Avenue and/or Atlantic Avenue, which would offset the increases in traffic on the immediately adjacent streets.

Table 4G-7
Noise Levels in the Future With Phase II (in dBA)

Receptor	Location	Day	Time Period	No Build $L_{eq(1)}$	Future with Phase II $L_{eq(1)}$	Increase	Future with Phase II $L_{10(1)}$
1	Pacific Street between 4th and Flatbush Avenues	Weekday	AM	66.2	66.2	0.0	68.1
		Weekday	MD	61.9	62.0	0.1	64.2
		Weekday	PM	63.5	63.5	0.0	65.5
		Weekday	PG	63.3	63.3	0.0	65.5
		Weekend	MD	64.0	64.1	0.1	65.6
2	Corner of Dean Street and Flatbush Avenue	Weekday	AM	76.5	76.7	0.2	80.0
		Weekday	MD	76.5	76.8	0.3	78.7
		Weekday	PM	72.7	72.9	0.2	75.5
		Weekday	PG	72.9	72.9	0.0	75.0
		Weekend	MD	74.3	74.3	0.0	77.9
3	Dean Street between Flatbush and 6th Avenues	Weekday	AM	67.2	68.0	0.8	71.3
		Weekday	MD	69.0	69.7	0.7	72.0
		Weekday	PM	65.2	65.5	0.3	69.4
		Weekday	PG	65.3	65.5	0.2	66.5
		Weekend	MD	68.3	68.7	0.4	71.1
4	Pacific Street between 6th and Carlton Avenues	Weekday	AM	63.6	59.4	-4.2	62.4
		Weekday	MD	62.7	59.7	-3.0	61.1
		Weekday	PM	58.4	54.9	-3.5	56.1
		Weekday	PG	59.0	54.5	-4.5	57.8
		Weekend	MD	58.2	53.7	-4.5	56.7
5	Dean Street between Carlton and Vanderbilt Avenues	Weekday	AM	66.2	66.5	0.3	69.0
		Weekday	MD	63.2	63.2	0.0	66.3
		Weekday	PM	66.0	66.7	0.7	66.6
		Weekday	PG	63.0	62.6	-0.4	66.2
		Weekend	MD	62.4	62.1	-0.3	65.6
6	Vanderbilt Avenue between Atlantic Avenue and Dean Street	Weekday	AM	68.1	67.5	-0.6	69.7
		Weekday	MD	67.3	67.5	0.2	71.3
		Weekday	PM	66.1	68.6	2.5	72.2
		Weekday	PG	67.6	67.7	0.1	70.4
		Weekend	MD	65.0	65.3	0.3	68.1
7	Atlantic Avenue between Carlton and Clermont Avenues	Weekday	AM	69.1	69.3	0.2	72.6
		Weekday	MD	69.7	69.9	0.2	72.3
		Weekday	PM	71.3	71.5	0.2	75.0
		Weekday	PG	71.2	71.3	0.1	73.3
		Weekend	MD	70.0	70.2	0.2	72.1
8	4th Avenue between Atlantic Avenue and Pacific Street	Weekday	AM	69.4	69.4	0.0	72.3
		Weekday	MD	70.2	70.3	0.1	72.8
		Weekday	PM	68.2	68.3	0.1	71.2
		Weekday	PG	70.7	70.7	0.0	73.4
		Weekend	MD	69.1	69.2	0.1	72.2
9	Dean Street between 4th and 5th Avenues	Weekday	AM	62.4	62.7	0.3	66.0
		Weekday	MD	62.3	62.6	0.3	64.3
		Weekday	PM	63.6	64.0	0.4	65.7
		Weekday	PG	59.2	59.4	0.2	61.4
		Weekend	MD	61.3	61.6	0.3	64.5
10	6th Avenue between Pacific and Dean Streets	Weekday	AM	68.4	68.4	0.0	70.8
		Weekday	MD	70.2	70.2	0.0	72.7
		Weekday	PM	63.8	63.8	0.0	65.6
		Weekday	PG	65.1	65.0	-0.1	67.2
		Weekend	MD	62.2	62.2	0.0	65.1

Table 4G-7 (cont'd)
Noise Levels in the Future With Phase II (in dBA)

Receptor	Location	Day	Time Period	No Build $L_{eq(1)}$	Future with Phase II $L_{eq(1)}$	Increase	Future with Phase II $L_{10(1)}$
11	Bergen Street between 6th and Carlton Avenues	Weekday	AM	63.5	64.0	0.5	67.1
		Weekday	MD	63.1	63.4	0.3	67.2
		Weekday	PM	65.3	65.5	0.2	67.1
		Weekday	PG	62.8	62.9	0.1	66.0
		Weekend	MD	63.2	63.6	0.4	66.7
12	Carlton Avenue between Pacific and Dean Streets	Weekday	AM	64.0	64.4	0.4	67.4
		Weekday	MD	60.8	60.4	-0.4	63.8
		Weekday	PM	60.2	59.9	-0.3	62.9
		Weekday	PG	61.7	60.9	-0.8	63.4
		Weekend	MD	61.6	61.6	0.0	64.8
13	Dean Street between 6th and Carlton Avenues	Weekday	AM	60.9	61.8	0.9	64.3
		Weekday	MD	64.8	65.5	0.7	68.5
		Weekday	PM	65.2	65.5	0.4	67.8
		Weekday	PG	63.6	63.9	0.3	66.7
		Weekend	MD	63.2	63.7	0.5	66.8
14	Atlantic Avenue between S. Oxford and Cumberland Streets	Weekday	AM	69.3	69.7	0.4	72.9
		Weekday	MD	70.8	70.9	0.1	73.7
		Weekday	PM	69.4	69.7	0.3	73.0
		Weekday	PG	69.3	69.4	0.1	70.5
		Weekend	MD	69.7	69.9	0.2	74.2

In terms of CEQR noise exposure guidelines, future noise levels with Phase II of the Project would remain in the "marginally acceptable" category for receptor sites 1, 4, 5, 9, 11, 12, and 13, and in the "marginally unacceptable" category for receptor sites 2, 3, 6, 7, 8, 10, and 14. These categories are based on the calculated $L_{10(1)}$ values.

I. BUILDING ATTENUATION FOR PHASE II BUILDINGS

As discussed in section D, "Noise Standards and Criteria," the *CEQR Technical Manual* recommends an analysis of the effect of introducing a sensitive use, such as a residential building, into an urban environment. As shown in **Table 4G-3** earlier in this chapter, the *CEQR Technical Manual* has set noise attenuation values for new buildings based on exterior noise levels. Recommended noise attenuation values for residential and community facility (i.e., classroom) buildings are designed to maintain interior noise levels of 45 dBA $L_{10(1)}$ (50 dBA $L_{10(1)}$ for commercial uses) or lower and are determined based on exterior $L_{10(1)}$ noise levels.

Table 4G-8 shows the highest calculated or measured $L_{10(1)}$ noise levels (for the various analysis time periods) at proposed buildings included in Phase II of the Project and the building attenuation that would be required to achieve acceptable interior noise levels at each location. The measured or calculated $L_{10(1)}$ noise levels are based on calculations at receptor sites 4, 5, 6, 7, 10, 12, 13, and 14, which are located adjacent to the Phase II buildings.

Table 4G-8
Minimum Required Building Attenuation

Building	Façade	Governing Noise Receptor Location	Elevation	Maximum $L_{10(1)}$ (dBA)[2]	Required Building Attenuation (dBA)[1,3]
5	North	14	0-100	74.2	31
			101-top	71.2	28
	South, East	4	all	62.4	N/A [2]
	West	10	all	72.7	28
6	North	14	0-100	74.2	31
			101-top	71.2	28
	East, West, South	4	all	62.4	N/A [2]
7	North	14	0-100	74.2	31
			101-top	71.2	28
	South, West	4	all	62.4	N/A [2]
	East	12	all	67.4	N/A [2]
8	North	7	0-100	75.0	31
			101-top	72.0	28
	East, West, South	12	all	67.4	N/A [2]
9	North	7	0-100	75.0	31
			101-top	72.0	28
	East, West, South	12	all	67.4	N/A [2]
10	North	7	0-100	75.0	31
			101-top	72.0	28
	East, West, South	6	all	72.2	28
11	North, East	6	all	72.2	28
	South, West	5	all	69.0	N/A [2]
12	All	5	all	69.0	N/A [2]
13	All	5	all	69.0	N/A [2]
14	North, West	12	all	67.4	N/A [2]
	South, East	5	all	69.0	N/A [2]
15	North, East	4	all	62.4	N/A [2]
	South	13	all	68.5	N/A [2]
	West	10	all	72.7	28

Notes:

[1] The levels of window/wall attenuation shown in this table are the minimum requirements based on predicted noise levels from the Supplemental EIS (SEIS) operational noise analysis and the 2012 *CEQR Technical Manual* guidelines. While the window-wall attenuation requirements shown above are less than those required under the 2006 FEIS, the project sponsors are committed to providing the required attenuation stipulated in the 2006 FEIS.

[2] These façades/floors having incident L_{10} values of 70 dBA or less would not require specific window/wall attenuation measures.

[3] Required attenuation values shown are for residential and school uses. Commercial uses would require 5 dBA less attenuation.

The attenuation of a composite structure is a function of the attenuation provided by each of its component parts and how much of the area is made up of each part. Normally, a building façade is composed of the wall, glazing, and any vents or louvers for HVAC/air conditioning units in various ratios of area. The proposed design for all Project buildings includes the use of well-sealed double-glazed windows and air conditioning units. The proposed buildings' façades, including these elements, would be designed to provide a composite Outdoor-Indoor Transmission Class (OITC) rating greater than or equal to the attenuation requirements listed in **Table 4G-8** and provide an interior $L_{10(1)}$ level not in excess of 45 dBA for residential or community facility (i.e., classroom) uses or 50 dBA for commercial uses. The OITC classification is defined by the American Society of Testing and Materials (ASTM E1332-90 [Reapproved 2003]) and provides a single-number rating that is used for designing a building façade including walls, doors, glazing, and combinations thereof. The OITC rating is designed to evaluate building elements by their ability to reduce the overall loudness of ground and air transportation noise. By adhering to these design requirements, the proposed buildings would provide

sufficient attenuation to achieve the CEQR interior noise level guideline of 45 dBA L_{10} for residential or community facility (i.e., classroom) uses and 50 dBA L_{10} for commercial uses.

Notwithstanding the lower attenuation requirements shown above based on the predicted noise levels and 2012 *CEQR Technical Manual* interior noise level guidelines, the project sponsors are committed to providing the window/wall attenuation requirements stipulated in the 2006 FEIS.

J. NOISE LEVELS AT PHASE II OPEN SPACE AREAS

Based on predicted noise levels at receptors receptor sites 4, 5, 6, 7, 10, 12, 13, and 14, which are located adjacent to the open space included in Phase II of the Project, noise levels within the proposed publicly accessible open space are expected to be above 55 dBA $L_{10(1)}$. This exceeds the recommended noise level for outdoor areas requiring serenity and quiet contained in the *CEQR Technical Manual* noise exposure guidelines (see **Table 4G-3**). In the future with Phase II, $L_{10(1)}$ values at the proposed open space would be in the low 60s to mid-70s dBA. Because the dominant noise source in these areas is traffic noise, primarily on Atlantic Avenue, there are no practical and feasible mitigation measures that could be implemented to reduce noise levels to below the CEQR 55 dBA $L_{10(1)}$ guidelines within the proposed open space areas. Although noise levels in these areas would be above the CEQR guideline noise levels, they would be comparable to noise levels in a number of existing open space areas that are located adjacent to roadways, including Hudson River Park, Brooklyn Bridge Park, Riverside Park, Bryant Park, Fort Greene Park, and other urban open space areas. The guidelines are a worthwhile goal for outdoor areas requiring serenity and quiet, such as passive open spaces. However, due to the level of activity present at most New York City open space areas and parks (except for areas far away from traffic and other typical urban activities) the relatively low noise level specified in the CEQR guidelines is often not achieved. Therefore, the future projected noise levels would not constitute a significant adverse noise impact with regard to the open space areas included in Phase II of the Project.

K. STATIONARY NOISE SOURCES

MECHANICAL EQUIPMENT

The buildings' mechanical systems (i.e., heating, ventilation, and air conditioning systems) would be designed to meet all applicable noise regulations (i.e., Subchapter 5, §24-227 of the New York City Noise Control Code addressing circulation devices and the New York City Department of Buildings and Mechanical Codes) to avoid producing levels that would result in any significant increase in ambient noise levels.

SCHOOL PLAYGROUND NOISE

At the election of the New York City Department of Education (DOE), Phase II of the Project would include a public school, which would have an associated playground for its students. It is not currently known which building will include the school and its associated playground, but it is assumed that the playground will be placed at an elevated location rather than at-grade. This playground will have the potential to generate noise at nearby sensitive receptor locations. School playground noise in New York City is typically evaluated based on available data from measurements that have been made at a series of New York City school playgrounds for the

New York City School Construction Authority (SCA).[1] These previous measurements have indicated a maximum $L_{eq(1)}$ noise level of approximately 71.5 dBA at the boundary of a school playground and noise level decreases by the following values at the specified distances from the playground boundary: 4.8 dBA at 20 feet, 6.8 dBA at 30 feet, 9.1 dBA at 40 feet, and a 4.5-dBA drop-off per doubling of distances from the playground boundary for all distances between 40 and 300 feet.

Based on these values and the distance between each of the Phase II buildings and the adjacent sensitive noise receptor locations, playground-generated noise levels at nearby receptors are expected to be no greater than the low 60s dBA. Given the background noise levels in the study area, the playground is not expected to generate the level of noise that would have the potential to result in a significant adverse noise impact at any of the receptors.

In addition, if the playground is at a lower elevation with clear line of site to the Project's open space, the playground noise could increase the ambient noise levels at the Project's open space in the vicinity of the school to a level that is above that desirable for an open space amenity; however, these levels would be comparable to noise levels found in parks containing playgrounds in the City's urban environment. Buildings included in Phase II of the project that are immediately adjacent to the playground would also experience elevated noise levels during the hours that the playground is in use; however, the project buildings would include both double-glazed windows and central air-conditioning or alternative ventilation, which would provide appropriate attenuation to satisfy applicable interior noise criteria.

L. COMPARISON OF SEIS FINDINGS AND PREVIOUS FINDINGS

The 2006 FEIS found that operation of the Project would result in significant adverse noise impacts at a number of locations along feeder roadways to and from the project site, specifically resulting from vehicular traffic traveling to and from parking facilities for Phase I project elements. The significant adverse impacts were predicted to occur upon the completion of Phase I and continue in the same locations after the completion of Phase II of the Project, but Phase II would not result in any additional significant impacts beyond those identified for Phase I. The 2006 FEIS stated that mitigation for the predicted significant noise impacts in the form of receptor noise control measures, including storm windows and air-conditioning units, would be offered to the buildings predicted to experience impacts. The SEIS analysis finds no potential for significant adverse noise impacts resulting from operation of Phase II of the Project. The absolute noise levels predicted to occur at the analyzed receptor sites upon completion of Phase II of the Project in the SEIS noise analysis are comparable to those predicted in the 2006 FEIS analysis.

In addition, the 2006 FEIS specified requirements for window/wall attenuation at Project buildings ranging from 30 to 35 dBA, along with the requirement of an alternate means of ventilation. The SEIS analysis specifies requirements for window/wall attenuation at Project buildings ranging from 28 to 31 dBA. This is a result of more refined window/wall attenuation requirements in the current *CEQR Technical Manual* that are different from the requirements from the 2001 version of the *CEQR Technical Manual*, which was used in the 2006 FEIS. Notwithstanding the lower attenuation requirements shown above, the project sponsors are committed to providing the window/wall attenuation requirements stipulated in the 2006 FEIS.

[1] SCA Playground Noise Study, AKRF, Inc., October 23, 1992.

As in the 2006 FEIS, the SEIS analysis finds that noise levels in the newly created open spaces would be greater than the 55 dBA $L_{10(1)}$ prescribed by CEQR criteria, but would be comparable to other parks around New York City, and would not constitute a significant impact. ✷