Chapter 19: Noise

A. INTRODUCTION

Noise pollution in an urban area comes from many sources. Some sources are activities essential to the health, safety, and welfare of the city's inhabitants, such as noise from emergency vehicle sirens, garbage collection operations, and construction and maintenance equipment. Other sources, such as traffic, stem from the movement of people and goods, activities that are essential to the viability of the city as a place to live and do business. Although these and other noise-producing activities are necessary to a city, the noise they produce is undesirable. Urban noise detracts from the quality of the living environment and there is increasing evidence that excessive noise represents a threat to public health.

The Proposed Project would change traffic volumes in the general vicinity. Since traffic is a main source of ambient noise, this could lead to changes in the ambient noise level. The Proposed Project would also introduce new sensitive noise receptors within the Project Site. Thus, the noise analysis for the Proposed Project consisted of three parts:

- A screening analysis to determine locations where traffic generated by the Proposed Project would have the potential to cause significant adverse noise impacts;
- A detailed analysis at any location where traffic generated by the Proposed Project would have the potential to result in significant adverse noise impacts, to determine the magnitude of the increase in noise level; and
- An analysis to determine the level of building attenuation necessary to ensure that interior noise levels throughout the Project Site satisfy applicable interior noise criteria.

The analysis concludes that the traffic generated by the Proposed Project would not produce significant increases in noise levels at any location within and/or adjacent to the Project Site. In addition, with the proposed building design measures, noise levels within the proposed buildings would comply with all applicable requirements. Therefore, the Proposed Action would not result in any significant adverse noise impacts.

NOISE FUNDAMENTALS

Quantitative information on the effects of airborne noise on people is well documented. If sufficiently loud, noise may adversely affect people in several ways. For example, noise may interfere with human activities, such as sleep, speech communication, and tasks requiring concentration or coordination. It may also cause annoyance, hearing damage, and other physiological problems. Although it is possible to study these effects on people on an average or statistical basis, it must be remembered that all the stated effects of noise on people vary greatly with the individual. Several noise scales and rating methods are used to quantify the effects of noise on people. These scales and methods consider such factors as loudness, duration, time of occurrence, and changes in noise level with time.

"A"-WEIGHTED SOUND LEVEL (dBA)

Noise is typically measured in units called decibels (dB), which are 10 times the logarithm of the ratio of the sound pressure squared to a standard reference pressure squared. Because loudness is important in the assessment of the effects of noise on people, the dependence of loudness on frequency must be taken into account in the noise scale used in environmental assessments. Frequency is the rate at which sound pressures fluctuate in a cycle over a given quantity of time, and is measured in Hertz (Hz), where 1 Hz equals 1 cycle per second. Frequency defines sound in terms of pitch components. In the measurement system, one of the simplified scales that accounts for the dependence of perceived loudness on frequency is the use of a weighting network—known as A-weighting—that simulate response of the human ear. For most noise assessments the A-weighted sound pressure level in units of dBA is used in view of its widespread recognition and its close correlation with perception. In this analysis, all measured noise levels are reported in dBA or A-weighted decibels. Common noise levels in dBA are shown in Table 19-1.

Table 19-1
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	
Busy city street, loud shout	80
Busy traffic intersection	
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	
Background noise in an office	50
Suburban areas with medium density transportation	
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.
Source: Cowan, James P. Handbook of Environmental Acoustics. Van Nostrand Reinhold, New York, 1994. Egan, M. David, Architectural Acoustics. McGraw-Hill Book Company, 1988.

COMMUNITY RESPONSE TO CHANGES IN NOISE LEVELS

The average ability of an individual to perceive changes in noise levels is well documented (see Table 19-2). Generally, changes in noise levels less than 3 dBA are barely perceptible to most listeners, whereas 10 dBA changes are normally perceived as doublings (or halvings) of noise levels. These guidelines permit direct estimation of an individual's probable perception of changes in noise levels.

Table 19-2
Average Ability to Perceive Changes in Noise Levels

Change (dBA)	Human Perception of Sound
2-3	Barely perceptible
5	Readily noticeable
10	A doubling or halving of the loudness of sound
20	A dramatic change
40	Difference between a faintly audible sound and a very loud sound
Source: Bolt Beranek and Neuman, Inc., *Fundamentals and Abatement of Highway Traffic Noise*, Report No. PB-222-703. Prepared for Federal Highway Administration, June 1973.	

It is also possible to characterize the effects of noise on people by studying the aggregate response of people in communities. The rating method used for this purpose is based on a statistical analysis of the fluctuations in noise levels in a community, and integrates the fluctuating sound energy over a known period of time, most typically during 1 hour or 24 hours. Various government and research institutions have proposed criteria that attempt to relate changes in noise levels to community response. One commonly applied criterion for estimating this response is incorporated into the community response scale proposed by the International Standards Organization (ISO) of the United Nations (see Table 19-3). This scale relates changes in noise level to the degree of community response and permits direct estimation of the probable response of a community to a predicted change in noise level.

Table 19-3
Community Response to Increases in Noise Levels

Change (dBA)	Category	Description
0	None	No observed reaction
5	Little	Sporadic complaints
10	Medium	Widespread complaints
15	Strong	Threats of community action
20	Very strong	Vigorous community action
Source: International Standards Organization, Noise Assessment with Respect to Community Responses, ISO/TC 43 (New York: United Nations, November 1969).		

NOISE DESCRIPTORS USED IN IMPACT ASSESSMENT

Because the sound pressure level unit of dBA describes a noise level at just one moment and very few noises are constant, other ways of describing noise over extended periods have been developed. One way of describing fluctuating sound is to describe the fluctuating noise 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 as $L_{eq(24)}$), 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 sometimes used to indicate noise levels that are exceeded 1, 10, 50, 90 and x percent of the time, respectively. Discrete event peak levels are given as L_1 levels. L_{eq} is used in the prediction of future noise levels, by adding the contributions from new sources of noise (i.e., increases in traffic volumes) to the existing levels and in relating annoyance to increases in noise levels.

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 very 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}. The relationship between L_{eq} and exceedance levels has been used in this analysis to characterize the noise sources and to determine the nature and extent of their impact at all receptor locations.

For the purposes of this 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. $L_{eq(1)}$ is the noise descriptor used in the *New York City Environmental Quality Review (CEQR) Technical Manual* for noise impact evaluation, and is used to provide an indication of highest expected sound levels. $L_{10(1)}$ is the noise descriptor used in the *CEQR Technical Manual* for building attenuation. Hourly statistical noise levels (particularly L_{10} and L_{eq} levels) were used to characterize the relevant noise sources and their relative importance at each receptor location.

B. METHODOLOGY

TRAFFIC NOISE MODEL (TNM)

At all locations the *Traffic Noise Model* Version 2.5 (TNM) was used to calculate noise levels. TNM is a computerized model developed for the Federal Highway Administration (FHWA) that takes into account various factors due to traffic flow, 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 current model for traffic noise analysis.

APPLICABLE NOISE CODES AND IMPACT CRITERIA

NEW YORK CITY NOISE CODE

In December 2005, the New York City Noise Control Code was amended. The amended noise code contains: prohibitions regarding unreasonable noise; requirements for noise due to construction activities (including noise limits from specific pieces of construction equipment, noise limits on total construction noise, limits on hours of construction [weekdays between 7 AM and 6 PM], and requirements for adopting and implementing noise mitigation plans for each construction site prior to the start of construction); and specifies noise standards, including plainly audible criteria, for specific noise sources (i.e., refuse collection vehicles, air compressors, circulation devices, exhausts, paving breakers, commercial music, personal audio devices, sound reproduction devices, animals, motor vehicles including motorcycles and trucks, sound signal devices, burglar alarms, emergency signal devices, lawn care devices, snow blowers, etc.). In addition, the amended code specifies that that no sound source operating in connection with any commercial or business enterprise may exceed the decibel levels in the designated octave bands shown in Table 19-4 at the specified receiving properties.

Table 19-4
New York City Noise Codes

Octave Band Frequency (Hz)	Maximum Sound Pressure Levels (dB) as Measured Within a Receiving Property as Specified Below	
	Residential receiving property for mixed-use buildings and residential buildings (as measured within any room of the residential portion of the building with windows open, if possible)	*Commercial receiving property (as measured within any room containing offices within the building with windows open, if possible)*
31.5	70	74
63	61	64
125	53	56
250	46	50
500	40	45
1000	36	41
2000	34	39
4000	33	38
8000	32	37

Source: Section 24-232 of the Administrative Code of the City of New York, as amended December 2005.

NEW YORK CEQR NOISE STANDARDS

The New York City Department of Environmental Protection (DEP) has set external noise exposure standards. These standards are shown in Table 19-4 and 19-5. Noise Exposure is classified into four categories: acceptable, marginally acceptable, marginally unacceptable, and clearly unacceptable (see Table 19-6). The standards shown are based on maintaining an interior noise level for the worst-case hour L_{10} less than or equal to 45 dBA.

In addition, the *CEQR Technical Manual* uses the following criteria to determine whether proposed and future actions would result in a significant adverse noise impact. The impact assessments compare the projected Build condition $L_{eq(1)}$ noise levels to those calculated for the No Build condition, for receptors potentially affected by the proposed and future actions. If the No Build 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 resultant Build condition noise level would have to be equal to or less than 65 dBA. If the No Build 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 standards as being between 10 PM and 7 AM), the incremental significant impact threshold would be 3 dBA $L_{eq(1)}$. (If the No Build 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.)

Table 19-5
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
1. Outdoor area requiring serenity and quiet[2]		$L_{10} \le 55$ dBA	---------- $Ldn \le 60$ dBA ----------						
2. Hospital, Nursing Home		$L_{10} \le 55$ dBA		$55 < L_{10} \le 65$ dBA	---------- $60 < Ldn \le 65$ dBA ----------	$65 < L_{10} \le 80$ dBA	(I) $65 < Ldn \le 70$ dBA, (II) $70 \le Ldn$	$L_{10} > 80$ dBA	---------- $Ldn \le 75$ dBA ----------
3. Residence, residential hotel or motel	7 AM to 10 PM	$L_{10} \le 65$ dBA		$65 < L_{10} \le 70$ dBA		$70 < L_{10} \le 80$ dBA		$L_{10} > 80$ dBA	
	10 PM to 7 AM	$L_{10} \le 55$ dBA		$55 < L_{10} \le 70$ dBA		$70 < L_{10} \le 80$ dBA		$L_{10} > 80$ dBA	
4. School, museum, library, court, house of worship, transient hotel or motel, public meeting room, auditorium, out-patient public health facility		Same as Residential Day (7 AM-10 PM)		Same as Residential Day (7 AM-10 PM)		Same as Residential Day (7 AM-10 PM)		Same as Residential Day (7 AM-10 PM)	
5. Commercial or office		Same as Residential Day (7 AM-10 PM)		Same as Residential Day (7 AM-10 PM)		Same as Residential Day (7 AM-10 PM)		Same as Residential Day (7 AM-10 PM)	
6. 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;
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 old-age homes.
3 One may use the 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 19-6
Required Attenuation Values to Achieve Acceptable Interior Noise Levels

	Marginally Acceptable	Marginally Unacceptable		Clearly Unacceptable		
Noise Level With Proposed Action	$65 < L_{10} \le 70$	$70 < L_{10} \le 75$	$75 < L_{10} \le 80$	$80 < L_{10} \le 85$	$85 < L_{10} \le 90$	$90 < L_{10} \le 95$
Attenuation*	25 dB(A)	(I) 30 dB(A)	(II) 35 dB(A)	(I) 40 dB(A)	(II) 45 dB(A)	(III) 50 dB(A)

Note: * 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.

Source: New York City Department of Environmental Protection

C. EXISTING CONDITIONS

STUDY AREA

The study area for this analysis is bounded to the east by Fountain Avenue, to the south by the Shore Parkway, to the west by Hendrix Creek, and to the north by Cozine Avenue. These roadways surround the Project Site and are thus the areas with the highest potential for noise impacts.

SELECTION OF NOISE RECEPTOR LOCATIONS

Based upon a screening analysis, four noise receptor locations were chosen for impact analysis within the Project Site. Site 1 is located on Erskine Street between Vandalia Avenue and Gateway Plaza, Site 2 is located on Elton Street between Cozine Avenue and Flatlands Avenue, Site 3 is located on Flatlands Avenue between Hendrix Street and Van Siclen Avenue, and Site 4 is located on the proposed site of Vandalia Avenue between Elton Street and Gateway Drive. These sites are representative of other locations in the immediate area and are generally the locations where maximum impacts would be expected. These sites were used to assess the potential impacts due to traffic noise generated by the Proposed Action.

In order to more precisely identify the necessary building attenuation at each parcel within the Project Site, three more receptors were selected for building attenuation analysis only. Site 5 is located on Vandalia Avenue between Fountain Avenue and Erskine Street. Site 6 is located on Flatlands Avenue between Essex Street and Linwood Street. Site 7 is located on Gateway Drive at Vandalia Avenue (see Figure 19-1).

NOISE MONITORING

At each receptor site, existing noise levels were determined for the four noise analysis periods by field measurements. Noise monitoring was performed at Sites 1-4 between March 31 and May 4, 2007. Noise monitoring was performed at Sites 5-7 between November 14 and 28, 2007. At Sites 1-3 and 5-7, 20-minute spot measurements were taken during the three weekday periods and one Saturday period that reflect peak hours of trip generation: midday weekday (12:30 PM to 2 PM), PM weekday (5 PM to 6:30 PM), late night (LN) weekday (10:30 PM to 12AM) and Saturday midday (1 PM to 3 PM). At Site 4, a continuous 24-hour noise measurement was performed in order to ascertain the temporal distribution of noise levels throughout the day.

EQUIPMENT USED DURING NOISE MONITORING

The instrumentation used for the noise measurements was a Brüel & Kjær Type 4189 ½-inch microphone connected to a Brüel & Kjær Model 2260 Type 1 (according to ANSI Standard S1.4-1983) sound level meter. This assembly was mounted at a height of 5 feet above the ground surface on a tripod and at least 6 feet away from any large sound-reflecting surface to avoid major interference with sound propagation. The meter was calibrated before and after readings with a Brüel & Kjær Type 4231 sound-level calibrator using the appropriate adaptor. Measurements at each location were made on the A-scale (dBA). The data were digitally recorded by the sound level meter and displayed at the end of the measurement period in units of dBA. Measured quantities included L_{eq}, L_1, L_{10}, L_{50}, and L_{90}. A windscreen was used during all sound measurements except for calibration. All measurement procedures conformed to the requirements of ANSI Standard S1.13-1971 (R1976).

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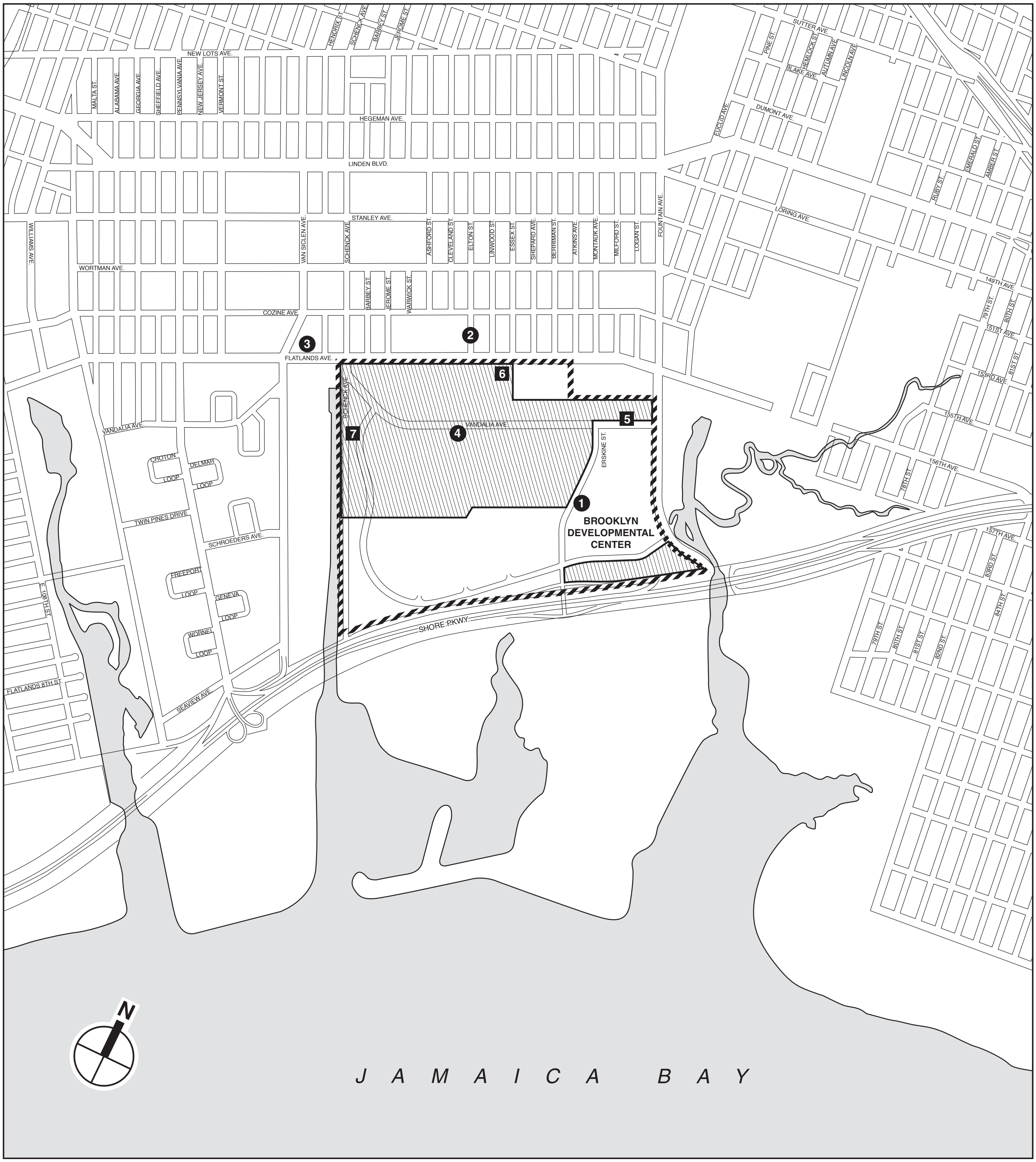

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SCALE

Project Site

Fresh Creek Urban Renewal Area Boundary

1 *Noise Receptor Location*

5 *Noise Receptor Location for Building Attenuation Analysis Only*

Noise Receptor Locations

Figure 19-1

GATEWAY ESTATES II

EXISTING NOISE LEVELS AT NOISE RECEPTOR LOCATIONS

MEASURED NOISE LEVELS

Noise monitoring results for the seven receptor locations are summarized in Table 19-7. Traffic was the dominant noise source at all four sites. Noise levels are generally moderate to relatively high, and reflect the level of activity in the area.

Table 19-7
2007 Existing Noise Levels at Sites 1 through 4 (in dBA)

Site	Measurement Location	Day	Time	L_{eq}	L_1	L_{10}	L_{50}	L_{90}
1	Erskine Street between Vandalia Avenue and Gateway Plaza	Weekday	MD	64.2	71.3	65.4	62.8	61.3
		Weekday	PM	62.4	69.5	65.4	60.7	58.0
		Weekday	LN	65.6	75.0	69.8	60.6	54.2
		Weekend	MD	66.6	76.4	71.1	59.5	42.6
2	Elton Street between Cozine Avenue and Flatlands Avenue	Weekday	MD	65.6	74.0	64.0	57.6	54.1
		Weekday	PM	61.2	71.8	65.0	56.4	52.3
		Weekday	LN	59.3	67.8	62.6	56.8	53.2
		Weekend	MD	58.0	70.1	57.9	51.1	46.4
3	Flatlands Avenue between Hendrix Street and Van Siclen Avenue	Weekday	MD	72.5	81.7	75.4	70.0	63.4
		Weekday	PM	70.6	78.6	74.1	68.6	61.0
		Weekday	LN	66.4	74.5	70.2	63.6	56.3
		Weekend	MD	71.1	79.7	74.7	69.0	59.7
4	Vandalia Avenue between Elton Street and Gateway Drive	Weekday	MD	55.8	61.9	58.4	54.7	52.2
		Weekday	PM	53.6	64	55.9	50.4	48.8
		Weekday	LN	56.5	62.5	59.2	55.3	53.1
		Weekend	MD	55.5	64.8	58.1	52.2	47.7
5	Vandalia Avenue between Erskine Street and Fountain Avenue	Weekday	MD	63.0	73.7	65.7	59.2	51.6
		Weekday	PM	64.2	74.1	67.6	60.1	51.0
		Weekday	LN	62.1	74.7	64.8	57.5	50.1
		Weekend	MD	56.4	65.3	59.3	53.9	49.2
6	Flatlands Avenue between Essex Street and Linwood Street	Weekday	MD	68.5	78.9	71.9	63.2	58.6
		Weekday	PM	67.9	77.3	71.6	64.6	58.4
		Weekday	LN	65.7	75.6	68.6	62.8	57.8
		Weekend	MD	66.7	77.3	70.2	62.3	56.4
7	Gateway Drive at Vandalia Avenue	Weekday	MD	62.3	71.1	65.3	59.7	55.6
		Weekday	PM	62.7	68.8	64.5	61.7	58.7
		Weekday	LN	64.3	75.9	65.8	60.2	54.6
		Weekend	MD	60.3	65.1	62.4	59.9	56.9

Note: Field measurements were performed by AKRF, Inc. at Sites 1-4 between March 31 and May 4, 2007 and at Sites 5-7 between November 14 and 28, 2007.

In terms of CEQR noise criteria, noise levels at Site 4 are in the "clearly acceptable" category, noise levels at Sites 2, 5 and 7 are in the "marginally acceptable" category, and noise levels at Sites 1, 3 and 6 are in the "marginally unacceptable" category.

D. 2011 THE FUTURE WITHOUT THE PROPOSED ACTION

Future noise levels without the Proposed Action (i.e., No Build conditions) were calculated for the four analysis periods in the year 2011 as shown in Table 19-8.

Table 19-8
2011 No Build Noise Levels (in dBA)

Site	Day	Time	Existing $L_{eq(1)}$	2011 No Build $L_{eq(1)}$	Change
1	Weekday	MD	64.2	64.6	0.4
	Weekday	PM	62.4	64.2	1.8
	Weekday	LN	65.6	67.4	1.8
	Weekend	MD	66.6	66.9	0.3
2	Weekday	MD	65.6	66.5	1.0
	Weekday	PM	61.2	62.2	1.0
	Weekday	LN	59.3	60.3	1.0
	Weekend	MD	58.0	59.1	1.1
3	Weekday	MD	72.5	72.6	0.1
	Weekday	PM	70.6	71.5	0.9
	Weekday	LN	66.4	67.4	1.0
	Weekend	MD	71.1	72.1	1.0
4	Weekday	MD	55.8	56.8	1.0
	Weekday	PM	53.6	54.6	1.0
	Weekday	LN	56.5	57.6	1.1
	Weekend	MD	55.5	56.5	1.0

Comparing 2011 No Build conditions with existing conditions, the maximum increase in $L_{eq(1)}$ noise level would be less than 2 dB. Increases of this magnitude would be barely perceptible.

In terms of CEQR noise criteria, noise levels at Site 4 would remain in the “clearly acceptable” category, noise levels at Site 2 would remain in the “marginally acceptable” category, and noise levels at Sites 1 and 3 would remain in the “marginally unacceptable” category.

E. 2011 PROBABLE IMPACTS OF THE PROPOSED ACTION

Future noise levels with the Proposed Project (i.e., Build conditions) were calculated for the four analysis periods in the year 2011 as shown in Table 19-9. Comparing future 2011 Build conditions with 2011 No Build conditions, the maximum increase in $L_{eq(1)}$ noise level would be less than 3 dBA, with the exception of the late-night time period at Site 2. Increases of this magnitude would be barely perceptible, and based upon CEQR impact criteria would not be significant. While the noise-level increase at Site 2 during the late-night period would be greater than 3 dBA, it would not constitute a significant impact under CEQR criteria because the existing levels are so low.

In terms of CEQR noise criteria, noise levels at Site 4 would remain in the “clearly acceptable” category, noise levels at Site 2 would remain in the “marginally acceptable” category, and noise levels at Sites 1 and 3 would remain in the “marginally unacceptable” category.

F. 2013 THE FUTURE WITHOUT THE PROPOSED ACTION

Future No Build noise levels were calculated for the four analysis periods in the year 2013 as shown in Table 19-10. Comparing 2013 No Build conditions with existing conditions, the maximum increase in $L_{eq(1)}$ noise level would be less than 2.5 dB. Increases of this magnitude would be barely perceptible. In terms of CEQR noise criteria, noise levels at Site 4 would remain in the “clearly acceptable” category, noise levels at Site 2 would remain in the "marginally acceptable" category, and noise levels at Sites 1 and 3 would remain in the "marginally unacceptable" category.

Table 19-9
2011 Build Noise Levels (in dBA)

Site	Day	Time	2011 No Build $L_{eq(1)}$	2011 Build $L_{eq(1)}$	Change
1	Weekday	MD	64.6	67.1	2.5
	Weekday	PM	64.2	65.9	1.7
	Weekday	LN	67.4	69.1	1.7
	Weekend	MD	66.9	69.1	2.2
2	Weekday	MD	66.5	67.3	0.8
	Weekday	PM	62.2	63.8	1.6
	Weekday	LN	60.3	63.5	3.2
	Weekend	MD	59.1	60.1	1.0
3	Weekday	MD	72.6	74.5	1.9
	Weekday	PM	71.5	72.2	0.7
	Weekday	LN	67.4	68.3	0.9
	Weekend	MD	72.1	73.4	1.3
4	Weekday	MD	56.8	57.6	0.8
	Weekday	PM	54.6	54.9	0.3
	Weekday	LN	57.6	58.1	0.5
	Weekend	MD	56.5	56.9	0.4

Table 19-10
2013 No Build Noise Levels (in dBA)

Site	Day	Time	Existing $L_{eq(1)}$	2013 No Build $L_{eq(1)}$	Change
1	Weekday	MD	64.2	65.1	0.9
	Weekday	PM	62.4	63.5	1.1
	Weekday	LN	65.6	66.7	1.1
	Weekend	MD	66.6	67.5	0.9
2	Weekday	MD	65.6	67.0	1.6
	Weekday	PM	61.2	62.9	1.7
	Weekday	LN	59.3	61.2	1.9
	Weekend	MD	58.0	59.6	1.6
3	Weekday	MD	72.5	74.0	1.5
	Weekday	PM	70.6	72.4	1.8
	Weekday	LN	66.4	68.7	2.3
	Weekend	MD	71.1	73.0	1.9
4	Weekday	MD	55.8	57.1	1.3
	Weekday	PM	53.6	55.0	1.4
	Weekday	LN	56.5	58.3	1.8
	Weekend	MD	55.5	56.9	1.4

G. 2013 PROBABLE IMPACTS OF THE PROPOSED ACTION

Future noise levels were calculated for the four analysis periods for the 2013 Build condition. Table 19-11 shows the calculated noise levels. Comparing 2013 Build conditions with 2013 No Build conditions, the maximum increase in $L_{eq(1)}$ noise level would be less than 3 dB. Increases of this magnitude would be barely perceptible, and based upon CEQR impact criteria would not be significant. In terms of CEQR noise criteria, noise levels at Site 4 would remain in the "clearly acceptable" category, noise levels at Site 2 would remain in the "marginally acceptable" category, and noise levels at Sites 1 and 3 would remain in the "marginally unacceptable" category.

Table 19-11
2013 Build Noise Levels (in dBA)

Site	Day	Time	2013 No Build $L_{eq(1)}$	2013 Build $L_{eq(1)}$	Change
1	Weekday	MD	65.1	67.1	2.0
	Weekday	PM	63.5	64.9	1.4
	Weekday	LN	66.7	68.2	1.5
	Weekend	MD	67.5	69.0	1.5
2	Weekday	MD	67.0	67.3	0.3
	Weekday	PM	62.9	64.3	1.4
	Weekday	LN	61.2	62.5	1.3
	Weekend	MD	59.6	60.5	0.9
3	Weekday	MD	74.0	75.1	1.1
	Weekday	PM	72.4	73.1	0.7
	Weekday	LN	68.7	69.6	0.9
	Weekend	MD	73.0	74.2	1.2
4	Weekday	MD	57.1	57.9	0.8
	Weekday	PM	55.0	55.4	0.4
	Weekday	LN	58.3	58.8	0.5
	Weekend	MD	56.9	57.3	0.4

MECHANICAL EQUIPMENT

No detailed designs of the buildings' mechanical systems (i.e., heating, ventilation, and air conditioning systems) are available at this time. However, those systems would be designed to meet all applicable noise regulations and requirements, and would be designed to produce noise levels which would not result in any significant increases in ambient noise levels.

ATTENUATION REQUIREMENTS

As shown in Table 19-6, the *CEQR Technical Manual* has set noise attenuation requirements for buildings, based on exterior noise levels. The noise attenuation requirements for buildings, which are based on exterior $L_{10(1)}$ noise levels, are designed to maintain interior noise levels of 45 dBA or lower for residential, day care, schools, and similar noise-sensitive uses.

The Proposed Project would place sensitive land uses (receptors) in areas with relatively high levels of ambient noise, which would result in significant adverse noise impacts. Table 19-12 shows the highest calculated $L_{10(1)}$ noise levels (for the four analysis time periods) at each undeveloped parcels in the Project Site (see Figure 19-2) and the building attenuation required to

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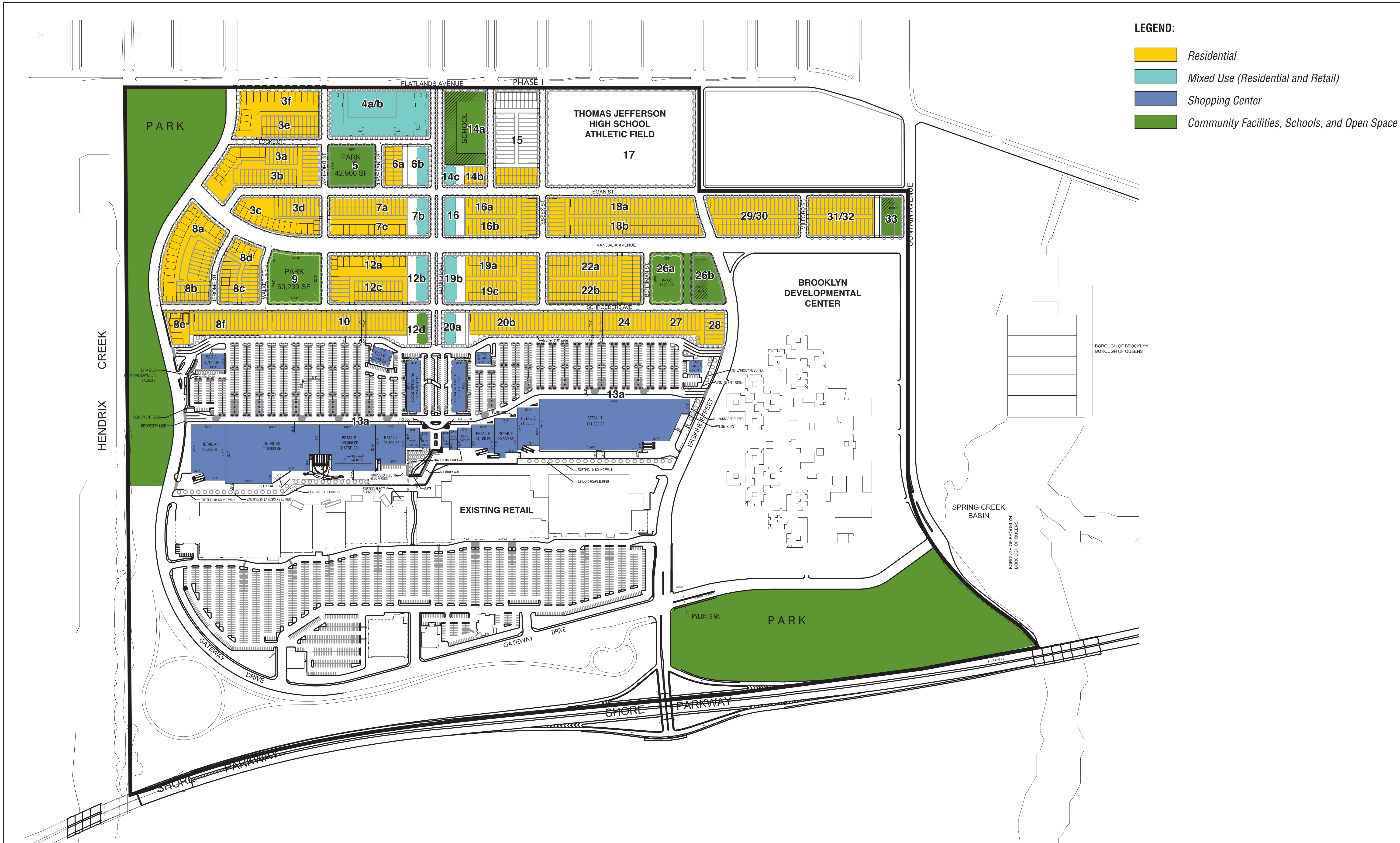

Noise Attenuation Sites

Figure 19-2

GATEWAY ESTATES II

achieve acceptable interior noise levels. The governing noise site is the site that best describes the acoustic condition at each parcel either due to proximity or from having frontage on the street where the noise site is located. Measures to mitigate significant adverse noise impacts are identified in Chapter 22, “Mitigation.”

Table 19-12
Minimum Building Attenuation Required to Comply with CEQR

Parcel	Proposed Land Use	Governing Noise Site	$L_{10(1)}$ (dBA)	Required Building Attenuation (dBA)
3a	Residential	7	65.8	25
3b	Residential	4	61.5	20
3c	Residential	4	61.5	20
3d	Residential	4	61.5	20
3e	Residential	4	61.5	20
3f	Residential	3	78.0	35
4 a/b	Residential	3	78.0	35
6a	Residential	4	61.5	20
6b	Residential/Commercial	2	68.1	25
7a	Residential	4	61.5	20
7b	Residential/Commercial	2	68.1	25
7c	Residential	4	61.5	20
8a	Residential	7	65.8	25
8b	Residential	4	61.5	20
8c	Residential	4	61.5	20
8d	Residential	4	61.5	20
8e	Residential	7	65.8	30*
8f	Residential	4	61.5	30*
10	Residential	4	61.5	30*
12a	Residential	4	61.5	20
12b	Residential/Commercial	2	68.1	25
12c	Residential	4	61.5	20
12d	Residential/Commercial	2	68.1	30*
12e	Residential	4	61.5	20
14a	School	6	71.9	30
14b	Residential/Commercial	4	61.5	20
14c	Residential	2	68.1	25
15	Residential	6	71.9	30
16a	Residential/Commercial	4	61.5	20
16b	Residential	4	61.5	20
16c	Residential	2	68.1	25
18a	Residential	1	73.5	30
18b	Residential	1	73.5	30
19a	Residential	4	61.5	20
19b	Residential/Commercial	2	68.1	25
19c	Residential	4	61.5	20
20a	Residential/Commercial	2	68.1	30*
20b	Residential	4	61.5	30*
21	Residential	4	61.5	20
22a	Residential	4	61.5	20
22b	Residential	4	61.5	20
24	Residential	4	61.5	30*
26a	Day Care	1	73.5	30
27	Residential	4	61.5	30*
28	Residential	1	73.5	30*
29/30	Residential	5	67.6	25
31/32	Residential	5	67.6	25
33	Community/Public Facility	5	67.6	25

Note: *Parcels along the proposed parking lot would be provided with 30 dBA attenuation to account for parking lot operational noise.

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