A. INTRODUCTION

This chapter assesses the potential for the Proposed Action to result in significant adverse noise impacts. As described in Chapter 1, "Project Description," the development facilitated by the Proposed Action (the "proposed project") involves the construction of a new mixed-use development on an 8.7-acre site in the Astoria neighborhood of Queens with residential, local retail and supermarket, and community facility uses as well as publicly accessible open space and parking.

The proposed project is expected to change traffic volumes in the general vicinity of the project site due to additional trips traveling to and from the proposed project as well as the improvement of an existing street (26th Avenue), the extension of 4th Street, and the development of a public access easement along the waterfront. Combined, these changes to the area traffic network could lead to changes in the ambient noise level.

The noise analysis presented in this chapter focuses on the operational noise effects of the Proposed Action and consists of three parts:

- A detailed analysis at locations where traffic generated by the proposed project would have the potential to result in significant adverse noise impacts to determine the magnitude of the increases in noise levels;
- An analysis to determine the level of building attenuation necessary to ensure that interior noise levels throughout the study area satisfy City Environmental Quality Review (CEQR) requirements; and
- An analysis to examine whether the newly created publicly accessible open space and waterfront esplanade would meet CEQR noise level guidelines for open space;

Noise effects during construction of the proposed project are analyzed and discussed separately in Chapter 19, "Construction."

B. PRINCIPAL CONCLUSIONS

The analysis concludes that, with implementation of the recommended building attenuation measures, the Proposed Action would result in significant adverse noise impacts on project site buildings. The building attenuation analysis concludes that in order to meet *CEQR Technical Manual* interior noise level requirements, up to 35 dBA of building attenuation would be required for all of the proposed project's buildings. With the incorporation of the attenuation levels specified below under "Noise Attenuation Measures for the Proposed Project," noise levels within the proposed buildings would comply with all applicable requirements. As discussed below, the attenuation specifications for Buildings 1 through 5 would be mandated by placing (E) designations on the project site. However, the predicted future noise levels do not account for a reduction in background noise from nearby industrial sources, and the aforementioned requirements conservatively apply the attenuation required for the highest predicted noise levels on the project site, irrespective of potential reductions resulting from orientation or intervening buildings. Further refinement of the analyses will occur between the DEIS and the FEIS to further

determine applicable noise attenuating measures of the Proposed Action prior to the issuance of the FEIS. The noise (E) designation (E-343) to be placed on the project site would be updated, as necessary, based on the refined analysis to ensure that interior noise levels at all project site buildings meet the interior noise levels requirements outlined in the *CEQR Technical Manual* (45 dBA for residential and community facility uses, and 50 dBA for commercial uses). In addition, while the projected noise levels at the proposed project's open space areas could be greater than the 55 dBA L_{10} CEQR guideline, it would be comparable to other parks around New York City and would not constitute a significant adverse noise impact.

The Proposed Action would result in noticeable increase in noise levels in exceedance of the CEQR noise impact criteria during the weekday AM and midday peak hours at the intersection of 26th Avenue and 4th Street as a result of the proposed road network changes and incremental traffic generated by the proposed project, and therefore could result in a significant adverse mobile source noise impact at two existing sensitive receptors located in close proximity to this location, pursuant to CEQR. However, the resultant noise levels at this location would remain "marginally unacceptable" as under existing conditions and do not account for any reductions in background noise levels associated with the removal of existing industrial uses from the project site. In addition, noise levels during the affected With-Action peak hours would be less than the maximum existing noise levels at this location, and, therefore, these nearby existing sensitive receptors would not be exposed to noise levels greater than those currently experienced. Further refined analysis will be conducted between the Draft and Final EIS to determine the extent of the noise level increases that would be experienced at these nearby sensitive receptors, in consideration of their distance from the impacted receptor and/or their existing window/wall attenuation.

C. ACOUSTICAL 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 only 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 discernible 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 16-1, the threshold of human hearing is defined as 0 dBA; very 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, the change will be readily noticeable. Generally, changes in noise levels less than 3 dBA are barely perceptible to most listeners.

Sound Level Descriptors

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., one 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 used to indicate noise levels that are exceeded 1, 10, 50, 90 and x percent of the time, respectively.

Table 16-1: 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.

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 day-night sound level (L_{dn}) refers to a 24-hour average noise level with a 10 dB penalty applied to the noise levels during the hours between 10 PM and 7 AM, due to increased sensitivity to noise levels during these hours. For purposes of the Proposed Action, the one-hour L_{10} descriptor ($L_{10(1)}$) has been selected as the noise descriptor to be used in this noise impact evaluation. 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, which are shown in Table 16-2. Noise exposure is classified into four categories: acceptable, marginally acceptable, marginally unacceptable, and clearly unacceptable.

Table 16-2: Noise Exposure Guidelines for Use in City Environmental Impact Review

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]		$L_{10} \leq 55$ dBA	---------- Ldn ≤ 60 dBA ----------						
2. Hospital, Nursing Home		$L_{10} \leq 55$ dBA		$55 < L_{10} \leq 65$ dBA	---------- 60 < Ldn ≤ 65 dBA ----------	$65 < L_{10} \leq 80$ dBA	(1) 65 < Ldn ≤ 70 dBA, (II) 70 ≤ Ldn	$L_{10} > 80$ dBA	---------- Ldn ≤ 75 dBA ----------
3. 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	
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-10PM)	
6. Industrial, public areas only[4]	Note 4	Note 4		Note 4		Note 4		Note 4	

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

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).

The *CEQR Technical Manual* defines attenuation requirements for buildings based on exterior noise levels (see Table 16-3). 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.

Table 16-3: Required Attenuation Values to Achieve Acceptable Interior Noise Level

	Marginally Unacceptable				Clearly Unacceptable
Noise level with proposed development	$70<L_{10}\leq73$	$73<L_{10}\leq76$	$76<L_{10}\leq78$	$78<L_{10}\leq80$	$80<L_{10}$
Attenuation[A]	(I) 28 dB(A)	(II) 31 dB(A)	(III) 33 dB(A)	(IV) 35 dB(A)	$36 + (L_{10} - 80)^{B}$ dB(A)

Source: New York City Department of Environmental Protection; 2012 *CEQR Technical Manual*, Table 19-3
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.

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 *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*:

- An increase of 5 dBA or more in With-Action $L_{eq(1)}$ noise levels at sensitive receptors (including residences, play areas, parks, schools, libraries, and houses of worship) over those calculated for the No-Action condition if the No-Action levels are less than 60 dBA $L_{eq(1)}$ and the analysis period is not a nighttime period.
- An increase of 4 dBA or more in With-Action $L_{eq(1)}$ noise levels at sensitive receptors over those calculated for the No-Action condition if the No-Action levels are 61 dBA $L_{eq(1)}$ and the analysis period is not a nighttime period.
- An increase of 3 dBA or more in With-Action $L_{eq(1)}$ noise levels at sensitive receptors over those calculated for the No-Action condition if the No-Action levels are greater than 62 dBA $L_{eq(1)}$ and the analysis period is not a nighttime period.
- An increase of 3 dBA or more in With-Action $L_{eq(1)}$ noise levels at sensitive receptors over those calculated for the No-Action condition if the analysis period is a nighttime period.

E. EXISTING CONDITIONS

Project Site

The project site comprises a total of approximately 377,726 square feet (sf) of lot area in the Astoria neighborhood of Queens, including approximately 292,155 sf along the waterfront (Block 907, Lots 1 and 8, and Block 906, Lots 1 and 5) and approximately 85,571 sf of upland area (Block 908, Lot 12 and Block 909, Lot 35) and is located along 26th Avenue between 4th and 9th Streets (see Figure 1-1 in Chapter 1, "Project Description"). The lots comprising the northern portion of the project site along the waterfront contain a total of seven warehousing and industrial buildings (with a combined total floor area of approximately 194,700 sf) as well as bus/vehicle storage and an estimated 100 accessory parking spaces. The project site currently encompasses two mapped but unbuilt segments of 8th Street (to the north and south of 26th Avenue), as well as an unimproved portion of 26th Avenue west of 9th Street. Portions of

these street segments would be built and improved under future No-Action and With-Action conditions (see below for additional details). The two upland portions of the site are currently vacant lots utilized for vehicle storage. There are fourteen businesses currently located on the project site with a total of approximately 80 employees. These businesses include industrial/warehouse uses, school bus storage, contracting, and carpentry uses.

Surrounding Area

The predominant land use to the east of the project site is residential. The residential building types include a mix of one- and two-family residential detached and semi-detached homes, multi-family walkups, and multi-family elevator buildings. Shore Towers, a 23-story condominium building, is located immediately to the east of the project site along the East River and 9th Street. Land uses to the southeast of the project site include a mix of walk-up residential buildings, ground floor local retail uses, institutional uses, and a few industrial uses. The southwestern portion of the study area is predominantly residential and includes the Astoria Houses, a New York City Housing Authority (NYCHA) development. The Astoria Houses consist of 22 six- to seven-story residential buildings on a 32-acre campus and contain a total of 1,103 dwelling units. To the west of the project site are primarily industrial uses with some residential uses interspersed throughout the area.

Sensitive Receptors

Sensitive receptors that could potentially be affected by the Proposed Action are located on blocks to the west, east, and south of the project site. The residential and community facility buildings on these blocks are shown in Table 16-4 and on Figure 16-1. Most are one- and two-family buildings and were constructed between the 1890s and the early 1970s. Thus, many of these buildings may not have double-glazed windows or alternative means of ventilation. Typical construction techniques used in the past (including typical single-glazed windows) provide a minimum of approximately 20 dBA of noise attenuation from outdoor to indoor areas.

F. EXISTING NOISE LEVELS

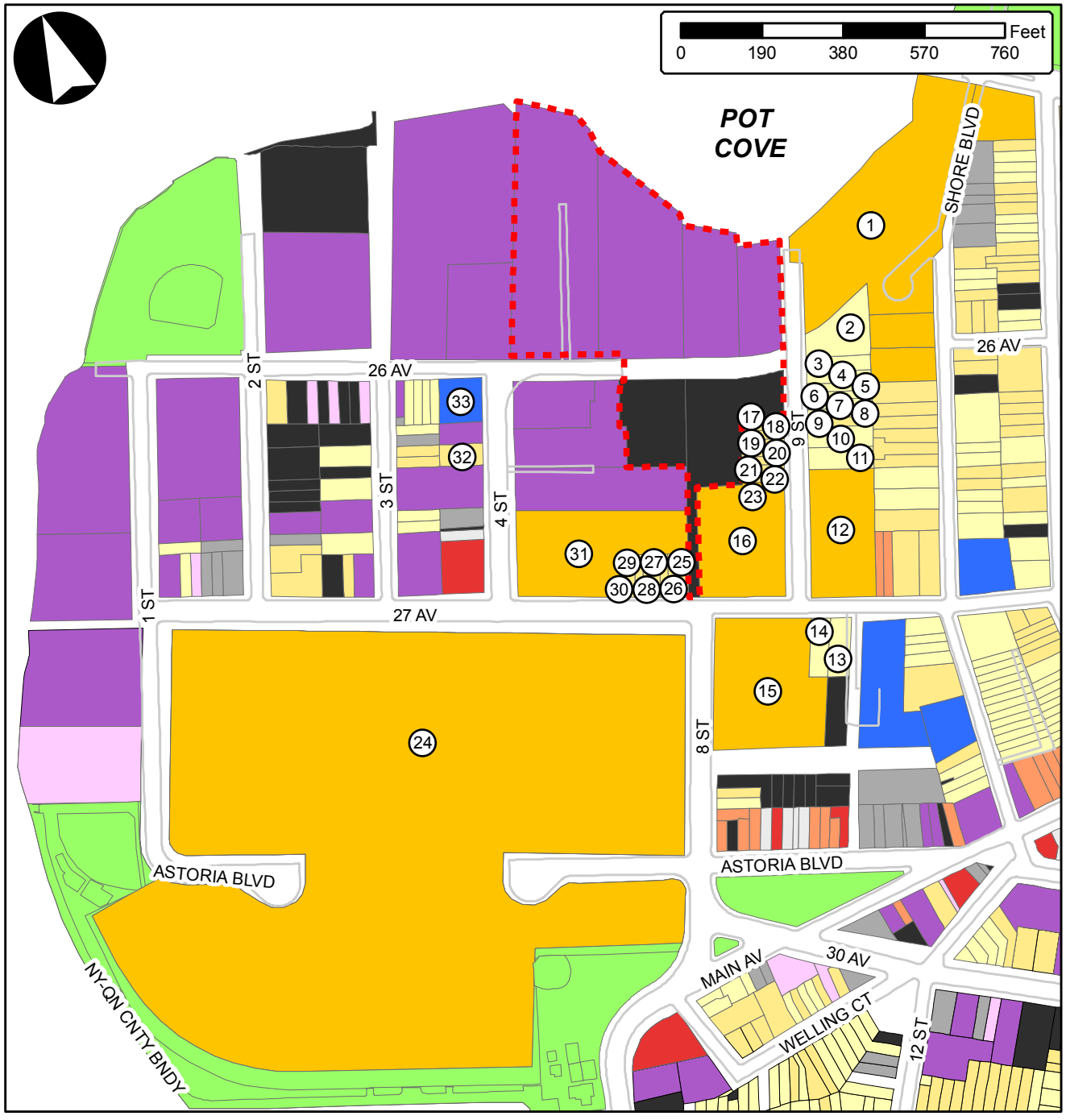
Selection of Noise Receptor Locations

A total of six receptor locations within the project area were selected for impact assessment and were also used for evaluation of noise attenuation requirements. These locations are detailed below and shown in Figure 16-2**.**

Noise receptor locations were selected based on the following criteria: (1) locations near the project site; and (2) to provide comprehensive geographic coverage throughout the study area to get an accurate picture of the ambient noise environment.

- Receptor Location 1 is located at 9th Street and 26th Avenue;
- Receptor Location 2 is located at 4th Street and 26th Avenue;
- Receptor Location 3 is located at 4th Street and 27th Avenue;
- Receptor Location 4 is located at 9th Street and 27th Avenue;
- Receptor Location 5 is located adjacent to Shore Towers building (close to the end of 9th Street); and

Sensitive Receptors Near Project Site



Legend

- Primary Study Area (Project Site)
- (1) Map ID Number (refer to Table 16-4)
- One & Two Family Buildings
- Multi-Family Walkup Buildings
- Multi-Family Elevator Buildings
- Mixed Commercial/Residential Buildings
- Commercial/Office Buildings
- Industrial/Manufacturing
- Transportation/Utility
- Public Facilities & Institutions
- Open Space
- Parking Facilities
- Vacant Land
- All Others or No Data



* Only included in the No-Action and With-Action condition analyses.

Astoria Cove

Figure 16-2

Noise Monitoring Locations

- Receptor Location 6 is located at 8th Street and 26th Avenue.

Table 16-4: Nearby Sensitive Receptors

ID #[1]	Address	Block	Lot	Floors	# of DUs	Year Built
1	Shore Towers	905	7501	23	404	1989
2	26-03 9th Street	904	5	3	1	1890
3	26-05 9th Street	904	4	2.5	2	1890
4	26-07 9th Street	904	2	2.5	2	1890
5	26-09 9th Street	904	1	2.5	2	1890
6	26-11 9th Street	903	27	2.5	2	1890
7	26-13 9th Street	903	26	2.5	2	1890
8	26-15 19th Street	903	25	2.5	2	1890
9	26-17 9th Street	903	24	2.5	2	1890
10	26-19 9th Street	903	22	2.5	2	1890
11	26-19 9th Street	903	20	2.5	2	1890
12	26-45 9th Street	903	7	8	108	1972
13	9-06 27th Avenue	510	46	3	2	1901
14	9-02 27th Avenue	510	4	3	1	1910
15	810 12th Avenue	510	20	8	171	1972
16	8-15 27th Avenue	908	1	6	128	1969
17	26-14 9th Street	908	33	3	3	1965
18	26-16 9th Street	908	34	3	3	1965
19	26-18 9th Street	908	35	3	4	1965
20	26-20 9th Street	908	36	3	3	1965
21	26-22 9th Street	908	38	3	4	1965
22	26-24 9th Street	908	138	3	5	1965
23	26-26 9th Street	908	139	3	3	1965
24	NYCHA Astoria Houses (4 1st Street)	490	101	7	1,104	1950
25	4-37 27th Avenue	909	55	3	6	1931
26	4-35 27th Avenue	909	56	3	6	1931
27	4-33 27th Avenue	909	57	3	6	1931
28	4-31 27th Avenue	909	58	3	6	1931
29	4-29 27th Avenue	909	59	3	6	1931
30	4-27 27th Avenue	909	60	3	6	1931
31	Goodwill Apt (4021 27th Avenue)	909	1	15	208	1969
32	26-18 4th Street	910	29	3	4	1931
33	26-02 4th Street	910	23	3	N/A	1931[2]

Notes:
[1] Refer to Figure 16-1.
[2] Although this building was constructed in 1931, it was converted to a community facility use in 1995. Field observations indicate that this building appears to have double-glazed windows.
Source: New York City Open Accessible Space Information System (OASIS).

In the following analysis, all six Receptor Locations are used to project future noise levels at various frontages of the proposed buildings. As the intersection of 8th Street and 26th Avenue (Receptor Location 6) is not developed and is inaccessible under existing conditions, a discussion of noise levels as this location was only included for future No-Action and future With-Action conditions.

Noise Monitoring

At Receptor Locations 1 through 5, existing noise levels were determined by field measurements. Representative noise monitoring locations were chosen based upon the following criteria: (1) locations where the highest noise levels are likely to occur based upon the consideration of existing land patterns (e.g., locations near rail lines, near major commercial roadways); (2) proximity to the project site; and (3) to provide a comprehensive geographic coverage throughout the area to get an accurate depiction of the

overall ambient noise environment. Noise monitoring was performed on April 17, 2013, April 18, 2013, and May 2, 2013. At sites 1 through 5, 20-minute spot measurements were taken. All measurements were performed during the weekday peak periods—AM (8 to 9AM), midday (12 to 1PM), and PM (5 to 6PM).

Equipment Used During Noise Monitoring

Measurements were performed using Brüel & Kjær Sound Level Meters (SLM) Type 2250 and 2260, 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. 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.

Existing Noise Levels At Noise Receptor Locations

Measured Noise Levels

The results of the measurements of existing noise levels are summarized in Table 16-5. At Receptor Locations 2 and 4 (along 27th Avenue), traffic noise from the immediately adjacent streets was generally the dominant noise source. No automobile traffic passed by the esplanade at receptor location 5 and thus, area traffic was the dominant noise source. Existing industrial noise sources along 26th Avenue contributed to observed noise levels at Receptor Locations 1 and 2. Measured noise levels are low to moderate and reflect the level of activity on the adjacent streets, with the highest monitored noise levels generally occurring in the AM and PM peak hours when area vehicle volumes are at their peak. However, at Receptor Location 1, the highest monitored noise level occurred during the weekday midday peak hour, and was generally attributed to noise generated by industrial activities occurring on the adjacent Block 906; background non-traffic noise levels at Receptor Location 1 during the weekday midday peak hour were approximately 63.0 dBA.[1] The highest monitored noise levels occur at Receptor Location 2, with a peak L_{10} of 72.2 dBA (marginally unacceptable) in the weekday PM peak hour.

In terms of *CEQR Technical Manual* criteria, existing noise levels at Receptor Locations 1 and 5 would be in the "acceptable" category; Receptor Location 4 would be in the "marginally acceptable" category; and existing noise levels at Receptor Locations 2 and 3 would be in the "marginally unacceptable" category.

G. NOISE PREDICTION METHODOLOGY

Future No-Action and With-Action noise levels were calculated using either a proportional modeling technique or the Federal Highway Administration (FHWA) Traffic Noise Model (TNM) Version 2.5 for the five aforementioned receptor sites. One additional receptor site (Receptor Location 6, at the intersection of 26th Avenue and 8th Street), which is currently inaccessible to vehicular traffic, was included in future analyses due to anticipated No-Action and With-Action roadway improvements, as

[1] Determined by logarithmically subtracting the TNM predicted existing noise levels from the monitored existing noise levels.

well as the proposed school that would be constructed at this location. The proportional modeling technique was used at Receptor Locations 3 and 4, where existing and future noise levels are primarily a result of the level of traffic on the immediately adjacent roadway segments. However, TNM modeling was used at Receptor Locaations 1, 2, 5, and 6 to account for noise associated with the additional traffic on the proposed new street segments. Both the proportional modeling technique and TNM are methodologies recommended for analysis purposes in the *CEQR Technical Manual.* TNM modeling is particularly useful in situations where traffic is one of the components of the total ambient noise, and can be used to compute the traffic component of the noise to determine the non-traffic components of the total ambient noise levels. The noise impact analysis examined the weekday AM, midday, and PM peak hours at the six receptor sites, the time periods when the proposed project would be expected to produce the maximum traffic generation (based on the traffic studies in Chapter 13, "Transportation") and therefore result in the maximum potential for significant noise impacts.

The proportional modeling and TNM procedures used for the noise analysis are described below.

Table 16-5: Existing Noise Levels (in dBA)

Receptor #	Measurement Location	Time	L_{eq}	L_1	L_{10}[1]	L_{50}	L_{90}	CEQR Noise Exposure Category[2]
1	9th Street and 26th Avenue	AM	59.0	67.5	60.9	57.1	55.3	Acceptable
		MD	63.1	73.6	**64.3**	56.8	54.4	
		PM	54.7	62.4	56.8	53.0	51.6	
2	4th Street and 26th Avenue	AM	59.5	70.3	60.5	54.8	52.1	Marginally Unacceptable (I)
		MD	59.5	72.2	60.0	51.1	47.9	
		PM	74.5	87.6	**72.2**	59.4	53.3	
3	4th Street and 27th Avenue	AM	66.9	78.1	**70.3**	62.7	58.4	Marginally Unacceptable (I)
		MD	65.1	75.2	68.1	61.3	56.9	
		PM	66.4	78.3	67.8	61.4	58.1	
4	9th Street and 27th Avenue	AM	67.5	78.8	**69.9**	61.8	56.7	Marginally Acceptable
		MD	65.5	76.9	67.8	58.7	54.2	
		PM	62.9	73.1	66.1	58.5	53.8	
5	Adjacent to Shore Towers (close to the end of 9th Street)	AM	60.7	68.8	**60.4**	59.0	57.7	Acceptable
		MD	58.0	60.8	59.2	57.9	56.6	
		PM	58.2	60.2	59.3	58.1	56.9	

Notes:
[1] The highest measured noise level at each receptor is indicated in **bold.**
[2] For consistency purposes, the CEQR noise exposure categories for existing, No-Action, and With-Action conditions are based on the residential noise exposure guidelines; reflects the worst-case peak hour noise levels.

Proportional Modeling

Proportional modeling was used to determine locations with the potential for having significant noise impacts. Proportional modeling is one of the techniques recommended in the *CEQR Technical Manual* for mobile source analysis. Using this technique, the prediction of future noise levels where traffic is the dominant noise source is based on a calculation using measured existing noise levels and predicted changes in traffic volumes to determine noise levels in the future without the Proposed Action (the No-Action condition) and with the Proposed Action (the With-Action condition). Vehicular traffic volumes are converted into noise 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, 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, and one bus (vehicles designed to carry more than nine passengers) is assumed to generate the noise equivalent of 18 cars. Future noise levels are calculated using the following equation:

$$F\ NL - E\ NL = 10 * \log_{10}(F\ PCE / E\ PCE)$$

where:

F NL = Future Noise Level

E NL = Existing Noise Level

F PCE = Future PCEs

E PCE = Existing PCEs

Sound levels are measured in decibels and therefore increase logarithmically with sound source strength. In this case, the sound source is traffic volumes measured in PCEs. For example, assume that traffic is the dominant noise source at a particular location. If the existing traffic volume on a street is 100 PCEs and if the future traffic volume were increased by 50 PCEs to a total of 150 PCEs, the noise level would increase by 1.8 dBA. Similarly, if the future traffic were increased by 100 PCEs, or doubled to a total of 200 PCEs, the noise level would increase by 3.0 dBA.

Traffic Noise Model (TNM)

At the receptor sites located adjacent to proposed new street connections (Receptor Locations 1, 2, 5, and 6), because of the low existing traffic volumes at these locations, preliminary assessment using the proportional modeling technique indicated that the future traffic may have the potential to cause noticeable increases in noise levels. Therefore, to more accurately forecast noise at these locations, a refined analysis was performed using TNM.

TNM is a computerized model developed for the FHWA that calculates the noise contribution of each roadway segment to a given noise receptor. The noise from each vehicle type is determined as a function of the reference energy-mean emission level, corrected for vehicle volume, speed, roadway grade, roadway segment length, and source-receptor distance. Further considerations in modeling the propagation path include identifying the shielding provided by rows of buildings, analyzing the effects of different ground types, identifying source and receptor elevations, and analyzing the effects of any intervening noise barriers. TNM provided more accurate results than proportional modeling for Receptor Locations 1, 2, 5, and 6 as they would establish new street connections. The less refined proportional modeling technique could not account for the noise contributions from adjacent roadways, and thus, over-predicts the project-generated traffic noise levels by attributing all of the noise due to traffic and traffic changes to the immediately adjacent street.

The existing TNM noise levels were logarithmically subtracted from the measured existing noise levels and logarithmically added to the predicted TNM No-Action and With-Action noise levels to account for background noise not attributable to vehicular traffic. As existing noise levels were not monitored at Receptor Locations 6 (at the future intersection of 26th Avenue and 8th Street), for conservative analysis purposes the highest existing background volumes from a nearby monitoring location (monitoring location 2) were logarithmically added to the predicted Receptor Locations 6 TNM No-Action and With-Action noise levels.

H. FUTURE WITHOUT THE PROPOSED ACTION (NO-ACTION CONDITION)

As described in Chapter 1, "Project Description," in the 2023 No-Action condition, the project site would not be rezoned. For analysis purposes, it is expected that the existing 194,700 sf of industrial/storage uses on the waterfront parcel would remain. It is assumed that the upland parcels would be redeveloped as-of-right with 166 residential units and 83 accessory parking spaces. In order to satisfy New York City Department of Buildings (DOB) requirements regarding street frontage, it is further assumed that portions of the adjacent unbuilt street segments (8th Street to the south of 26th Avenue and 26th Avenue west of 9th Street) would be built-out in conjunction with the as-of-right development on the upland parcels.

Using the methodology previously described, noise levels in the No-Action condition were calculated at six Receptor Locations for the 2023 analysis year. These No-Action values are shown in Table 16-6 below.

Table 16-6: 2023 No-Action Condition Noise Levels (in DBA)

Receptor #	Measurement Location	Time	Existing L_{eq}	No-Action L_{eq}	L_{eq} Change	No-Action L_{10}[2]	CEQR Noise Exposure Category[3]
1	9th Street and 26th Avenue	AM	59.0	59.2	0.2	62.2	Marginally Acceptable
		MD	63.1	63.1	0.0	**66.1**	
		PM	54.7	55.4	0.7	58.4	
2	4th Street and 26th Avenue	AM	59.5	61.6	2.1	64.6	Marginally Unacceptable (III)
		MD	59.5	62.7	3.2	65.7	
		PM	74.5	74.6	0.1	**77.6**	
3	4th Street and 27th Avenue	AM	66.9	68.6	1.7	71.6	Marginally Unacceptable (I)
		MD	65.1	66.1	1.0	69.1	
		PM	66.4	68.5	2.1	71.5	
4	9th Street and 27th Avenue	AM	67.5	70.0	2.5	**73.0**	Marginally Unacceptable (I)
		MD	65.5	67.9	2.4	70.9	
		PM	62.9	65.8	2.9	68.8	
5	Adjacent to Shore Towers (close to the end of 9th Street)	AM	60.7	60.9	0.2	**63.9**	Acceptable
		MD	58.0	58.0	0.0	61.0	
		PM	58.2	58.5	0.3	61.5	
6	8th Street and 26th Avenue[1]	AM	N/A	58.2	N/A	61.2	Marginally Unacceptable (III)
		MD	N/A	57.7	N/A	60.7	
		PM	N/A	74.5	N/A	**77.5**	

Notes:
Future noise levels at Receptor Locations 3 and 4 were calculated using proportional modeling; future noise levels at Receptor Locations 1, 2, 5, and 6 were calculated using TNM.

[1] Receptor Location 6 was not included in the existing conditions assessment as the intersection of 8th Street and 26th Avenue is currently inaccessible to vehicular traffic.

[2] $L_{10(1)}$ noise levels were calculated at all sites by conservatively adding 3 dBA to the No-Action $L_{eq(1)}$ noise levels (the maximum observed difference in the existing $L_{10(1)}$ and $L_{eq(1)}$ noise levels).

[3] For consistency purposes, the CEQR noise exposure categories for existing, No-Action, and With-Action conditions are based on the residential noise exposure guidelines; reflects the worst-case peak hour noise levels.

As indicated in Table 16-6, the maximum increase in L_{eq} noise levels from existing to No-Action conditions would be imperceptible due to relatively low incremental vehicle volumes generated by No-Action development on the project site, with the highest increase (3.2 dBA) occurring at Receptor Location 2 during the weekday PM peak hour. This increase in No-Action noise levels is due to the rerouting of vehicle traffic to 26th Avenue (between 4th and 9th Street), as well as the additional traffic generated by the No-Action upland parcel as-of-right residential development. However, as indicated in

Table 16-6, the anticipated increase in No-Action noise levels, as compared to existing conditions, would not exceed the CEQR impact criteria.

In terms of CEQR noise exposure guidelines, noise levels at Receptor Locations 2 and 3 would remain "marginally unacceptable", as under existing conditions, and noise levels at Receptor Location 5 would remain "acceptable," as under existing conditions. Noise levels at Receptor Location 1 would change from "acceptable" to "marginally acceptable," and noise levels at Receptor Location 4 would fall within the "marginally acceptable" and "marginally unacceptable" categories. Noise levels at Receptor Location 6 would be in the "marginally unacceptable" category.

I. FUTURE WITH THE PROPOSED ACTION (WITH-ACTION CONDITION)

Using the methodology previously described, With-Action condition noise levels were calculated at the six Receptor Locations for the 2023 analysis year. These With-Action condition values are shown in Table 16-7 below.

Table 16-7: 2023 With-Action Condition Noise Levels (dBA)

Receptor #	Measurement Location	Time	No-Action L_{eq}	With-Action L_{eq}	L_{eq} Change[1]	With-Action L_{10}[2]	CEQR Noise Exposure Category[3]
1	9th Street and 26th Avenue	AM	59.2	60.8	1.6	63.8	Marginally AcceptableMarginally Acceptable
		MD	63.1	63.2	0.1	**66.2**	
		PM	55.4	58.0	2.6	61.0	
2	4th Street and 26th Avenue	AM	61.6	66.2	**4.6**	69.2	Marginally Unacceptable (IV)
		MD	62.7	66.3	**3.5**	69.3	
		PM	74.6	75.2	0.6	**78.2**	
3	4th Street and 27th Avenue	AM	68.6	67.7	0.8	70.7	Marginally Unacceptable (I)
		MD	66.1	65.6	0.5	68.6	
		PM	68.5	67.7	1.3	**70.7**	
4	9th Street and 27th Avenue	AM	70.0	69.4	1.9	**72.4**	Marginally Unacceptable (I)
		MD	67.9	66.8	1.3	69.8	
		PM	65.8	64.9	2.0	67.9	
5	Adjacent to Shore Towers building (close to the end of 9th Street)	AM	60.9	61.4	0.5	**64.4**	Marginally Acceptable
		MD	58.0	58.1	0.1	61.1	
		PM	58.5	59.3	0.8	62.3	
6	8th Street and 26th Avenue	AM	58.2	58.8	0.6	61.8	Marginally Unacceptable (III)
		MD	57.7	58.0	0.3	61.0	
		PM	74.5	74.5	0.0	**77.5**	

Notes:
Future noise levels at Receptor Locations 3 and 4 were calculated using proportional modeling; future noise levels at Receptor Locations 1, 2, 5, and 6 were calculated using TNM.
[1] *CEQR Technical Manual* noise level exceedances of relative impact criteria are marked in **bold**.
[2] $L_{10(1)}$ noise levels were calculated at all sites by conservatively adding 3 dBA to the No-Action $L_{eq(1)}$ noise levels (the maximum observed difference in the existing $L_{10(1)}$ and $L_{eq(1)}$ noise levels).
[3] For consistency purposes, the CEQR noise exposure categories for existing, No-Action, and With-Action conditions are based on the residential noise exposure guidelines; reflects the worst-case peak hour noise levels.

The Proposed Action, besides generating increases in traffic, would have a revised street network, which would change traffic flow patterns on a number of streets. In particular, the proposed extension of 4th Street and construction of the waterfront public access easement would result in traffic diversions in the study area. Furthermore, due to the replacement of the waterfront industrial buildings and bus storage

uses with residential and retail uses, a smaller percentage of the traffic generated on the project site under With-Action conditions would be comprised of heavy vehicles, as compared to existing and No-Action conditions. Due to these changes, increases in noise levels at the analyzed receptor sites would generally be imperceptible.

As indicated in Table 16-7, increases in noise levels at Receptor Locations 1, 3, 4, 5, and 6 would be less than 3 dBA, and therefore would be imperceptible and would not represent a significant adverse noise impact pursuant to CEQR impact criteria. In terms of noise exposure categories, noise levels at Receptor Locations 1, 3, 4, and 6 would remain the same as under No-Action conditions, and noise levels at Receptor Location 5 would change from "acceptable" to "marginally acceptable," due to the rerouting of traffic to the proposed public access easement along the waterfront.

Due to the increased With-Action traffic volumes at Receptor Location 2 (located at the intersection of 26th Avenue at 4th Street), the Proposed Action would result in noise level increases of 4.6 dBA in the weekday AM peak hour and 3.5 dBA in the weekday midday peak hour, which would exceed the CEQR impact criteria of a 3 dBA increase. Based on these changes, according to the *CEQR Technical Manual* guidelines, the Proposed Action would result in a significant noise impacts at Receptor Location 2 during the AM and midday peak hours. In the weekday PM peak hour, the incremental increase in L_{eq} noise levels at Location 2 would be 0.6 dBA, and therefore would be imperceptible. However, it should be noted that the estimated With-Action noise levels conservatively reflect existing background noise levels, which include noise-generating industrial uses on the project site. It is therefore likely that actual future With-Action noise levels would be less than the levels projected in Table 16-7.

While it is conservatively projected that the increases in noise levels at Receptor Location 2 in both the AM and midday peak hours would exceed 4 dBA and 3 dBA, respectively, the resultant L_{eq} levels would remain below the worst-case maximum existing and No-Action L_{eq} conditions at this location, during both peak hours. In addition, while increasing in marginal unacceptability level (from marginally unacceptable III to marginally unacceptable IV, as per Tabled 16-6 and 16-7, above), worst-case noise levels at Receptor Location 2 would remain in the "marginally unacceptable" category, as under existing conditions.

Other Noise Concerns

Play Area Noise

While people are not usually thought of as stationary noise, children in playgrounds or spectators at outdoor sporting events or concerts can introduce additional sources of noise within communities. According to the *CEQR Technical Manual*, noise generated by children in playgrounds or people using parks is considered stationary source of noise.

There is the potential for the inclusion of a new outdoor play area in conjunction with the proposed project, which includes an elementary school (closest to Receptor Location 1 and adjacent to proposed Building 5). At this time, the specific location, configuration and layout for the playground has yet to be determined. According to the *CEQR Technical Manual*, absent data for comparable facilities, based upon noise measurements made at ten school playground sites in 1987, it may be assumed that L_{eq} noise levels at the boundary of the play area would be 75 dBA. At 15 feet from the boundary of the potential playground, noise levels would be 73 dBA, and 30 feet from the boundary, noise levels would be 70 dBA. , Noise level would continue to decrease by 4.5 dBA per doubling of distance beyond 30 feet (i.e., 65.5 dBA at 60 feet). In certain situations, these values may overstate playground noise levels.

It should also be noted that any potential noise levels that would result from the potential play area would occur only when the playground is in use, which would be limited to intermittent times of the day and year and only during the school day. Heavy usage of the school playground, and the associated noise increases, would occur less frequently or not at all during weekends, after school hours, and during the summer. In addition, noise generated at the potential playground would replace existing noise emitting industrial sources, as described above. For the reasons stated above, no significant adverse impacts from playground noise are anticipated.

A refined analysis of noise levels from the potential playground will be conducted between the Draft and Final EIS. If potential playground elevated noise levels are identified during refinement of analyses, additional testing would be performed, as necessary, to determine the applicable attenuation levels required with the development of a potential playground. Appropriate measures would be determined at this time and incorporated into the playground's location, configuration, and layout, as necessary, to ensure that no significant adverse noise impacts would occur due to the potential playground area.

Mechanical Equipment

No detailed designs of the proposed buildings' mechanical systems (i.e., heating, ventilation, and air conditioning [HVAC] systems) are available at this time. However, those systems would be designed to meet all applicable noise regulations and requirements (i.e., Subchapter 5 §24-227 of the New York City Noise Control Code) and would be designed to produce noise levels which would not result in any significant increases in ambient noise levels.

Aircraft Noise

An initial aircraft noise impact screening analysis would be warranted if the new receptor would be located within one mile of an existing flight path or cause aircraft to fly through existing or new flight paths over or within one mile of a receptor. Since the project site is not within one mile of an existing flight path, no initial aircraft noise impact screening analysis is warranted.

Train Noise

According to the *CEQR Technical Manual*, if a proposed development would be within 1,500 feet of existing rail activity and have a direct line of sight to that activity, a more detailed analysis would be appropriate. The project site is not within 1,500 feet of an existing rail line nor does the site have a direct line of sight to a rail facility. Therefore, a detailed train noise analysis related to rail operations is not warranted.

Noise Attenuation Measures for the Proposed Project

The *CEQR Technical Manual* has set noise attenuation requirements for buildings based on exterior noise levels. 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. Based on measured exterior noise levels and CEQR criteria, the necessary attenuation level for each façade of the proposed buildings have been calculated and are shown in Table 16-8. As shown in the table, based on the conservative noise assessment presented above, attenuation would be required at all project site buildings to achieve interior noise levels of 45 dBA or lower for residential uses and 50 dBA or lower for commercial uses, and would be required by placing (E) designations on all project site lots (Block 906, Lots 1 and 5; Block 907, Lots 1 and 8; Block 908, Lot 12; and Block 909, Lot 35).

However, the predicted future noise levels do not account for a reduction in background noise from nearby industrial sources, and the aforementioned requirements conservatively apply the attenuation required for the highest predicted noise levels on the project site, irrespective of potential reductions resulting from orientation or intervening buildings. Further refinement of the analyses will occur between the DEIS and the FEIS to further determine applicable noise attenuating measures of the Proposed Action prior to the issuance of the FEIS. The noise (E) designation (E-343) to be placed on the project site would be updated, as necessary, based on the refined analysis to ensure that interior noise levels at all project site buildings meet the interior noise levels outlined above.

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 systems in various ratios of area. The proposed project's buildings would be designed to provide a composite Outdoor-Indoor Transmission Class (OITC) rating greater than or equal to the attenuation requirements listed in Table 16-8. The OITC classification is defined by ASTM International (ASTM E1332-10a) 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. The required attenuation outlined in Table 16-8 could be achieved through installing double-glazed windows on a heavy frame in masonry structures or windows consisting of laminated glass. In addition, an alternate means of ventilation will be required for the project site buildings. Alternate means of ventilation may include, but are not limited to, the use of central air conditioning or through-the-wall sleeve-fitted air conditioning units in all habitable rooms (living rooms, dining rooms, bedrooms).

Table 16-8: Required Attenuation at the Building Sites under CEQR Criteria

Building Number	Representative Receptor Site	Height (in feet)[1]	Maximum Predicted L_{10} (in dBA)	CEQR Minimum Required Attenuation (in dBA)[2]
1	2	0-100	78.2	35
		100-top	75.2	31
2	2	0-100	78.2	35
		100-top	75.2	31
3	6	0-100	77.5	33
		100-top	74.5	31
4	6	All	77.5	33
5	6	All	74.5	31

Notes:
[1] The maximum L_{10} values at elevations above 100 feet were conservatively assumed to be 3 dBA less than the levels at grade due to increased distance from the at-grade roadways, which are the dominant noise source at this location.
[2] Attenuation values are shown for residential uses; commercial uses would be 5 dBA less.
[3] Attenuation requirements would be mandated by an (E) designation to be assigned to the project site.

There are three levels of required noise attenuation shown in Table 16-8. Depending on the ambient noise levels at each location, attenuation of 31, 33 or 35 dBA would be required.

For building facades requiring 31 dBA of attenuation, the text of the (E) designation is as follows:

> "To ensure an acceptable interior noise environment, the building façade(s) of future residential uses must provide a minimum of 31 dBA composite building façade attenuation with windows closed, in order to maintain an interior noise level of 45 dBA. The minimum required composite building façade attenuation for future commercial uses would be 5 dBA less than that for

residential uses. To maintain a closed-window condition, an alternate means of ventilation must also be provided."

For building facades requiring 33 dBA of attenuation, the text of the (E) designation is as follows:

"To ensure an acceptable interior noise environment, the building façade(s) of future residential uses must provide a minimum of 33 dBA composite building façade attenuation with windows closed, in order to maintain an interior noise level of 45 dBA. The minimum required composite building façade attenuation for future commercial uses would be 5 dBA less than that for residential uses. To maintain a closed-window condition, an alternate means of ventilation must also be provided."

For building facades requiring 35 dBA of attenuation, the text of the (E) designation is as follows:

"To ensure an acceptable interior noise environment, the building façade(s) of future residential uses must provide a minimum of 35 dBA composite building façade attenuation with windows closed, in order to maintain an interior noise level of 45 dBA. The minimum required composite building façade attenuation for future commercial uses would be 5 dBA less than that for residential uses. To maintain a closed-window condition, an alternate means of ventilation must also be provided."

With implementation of the attenuation levels outlined above in Table 16-8, the proposed project would provide sufficient attenuation to achieve the *CEQR Technical Manual* interior noise level guidelines of 45 dBA L_{10} for residential uses and 50 dBA L_{10} for commercial uses. Therefore, the Proposed Action would not result in any significant adverse impacts related to building attenuation requirements.

Noise Levels at the Proposed Project's Open Space Areas

Based on the predicted noise levels at Receptor Location 5, the proposed project's waterfront open space is expected to experience noise levels above 55 dBA $L_{10(1)}$, and therefore would exceed the recommended noise levels for outdoor areas requiring serenity and quiet pursuant to CEQR noise exposure guidelines (see Table 16-2). As the dominant noise at the project site would result from traffic noise, there are no practical and feasible measures that could be implemented to reduce noise levels within the proposed open space to below CEQR guidelines. However, while noise levels along the waterfront open space would be above the guideline noise level, they would be comparable to noise levels in a number of existing open space areas that are located adjacent to roadways, including Bryant Park, Hudson River Park, and Bryant Park, in Manhattan, and Fort Greene Park in Brooklyn, due to the level of activity present at most New York City open space areas and parks. Furthermore, these noise guidelines are goals for outdoor areas requiring serenity and quiet, such as passive open spaces, and the proposed project's open space is anticipated to provide both active and passive recreation opportunities. Therefore, the future projected noise levels would not constitute a significant adverse noise impact to the proposed project's open space areas.

Noise Levels at Existing Sensitive Receptors

As described above, existing sensitive receptors are located adjacent to the project site along 27th Avenue and 4th and 9th Streets. Along 27th Avenue and 9th Street, noise level increases from No-Action to With-Action conditions would be less than 3 dBA. Changes of this magnitude would be imperceptible and would fall below the CEQR threshold for a significant adverse noise impact. In addition, the resultant noise levels along 27th Avenue would remain in the "marginally unacceptable" category, as under No-Action conditions, and noise levels along 9th Street would be in the "marginally acceptable" category. As

such, no significant adverse noise impacts would occur at the existing sensitive receptors located along 27th Avenue or 9th Street.

Two existing sensitive receptors are located in close proximity to Receptor Location 2 (at the intersection of 26th Avenue and 4th Street), and therefore could experience significant adverse noise impacts. As described above, noise level at this nearby receptor site are conservatively projected to increase 4.6 dBA in the weekday AM peak hour and 3.5 dBA in the weekday midday peak hour, which would therefore constitute a significant adverse noise impact, pursuant to CEQR.

In addition, as the estimated With-Action noise levels conservatively reflect existing background noise levels, which include noise-generating industrial uses on and adjacent to the project site, it is likely that actual future With-Action noise levels would be less than the levels projected. Worst-case noise levels at Receptor Location 2 would remain in the "marginally unacceptable" category, as under both existing and No-Action conditions, and the resultant L_{eq} levels would remain below the worst-case maximum existing and No-Action L_{eq} conditions at this location during both peak hours. As such, these existing nearby sensitive receptors would not be exposed to noise levels greater than those currently experienced at this location. Further refined analysis will be conducted between the Draft and Final EIS to determine the extent of the interior noise level increases identified that would be experienced at these nearby sensitive receptors, in consideration of their distance from the impacted receptor and/or their existing window/wall attenuation.

A visual survey will be performed between the DEIS and the FEIS to confirm whether the nearby sensitive receptor buildings have double-glazed windows and window air conditions, interior noise levels would be approximately 20 to 25 dBA less than exterior noise levels, and for buildings with double-glazed windows and well-sealed through-the-wall/sleeve/PTAC air conditioners, interior noise levels would be approximately 25 to 30 dBA less than exterior noise levels. The typical attenuation provided by double-glazed windows and the alternate ventilation outlined above would be expected to result in interior noise levels during most of the time that are below the CEQR acceptable interior noise level criteria of 45 dBA $L_{10(1)}$ during the peak hours where significant adverse noise impacts were identified.

Potential measures to address the significant adverse mobile source noise impact at the 27th Avenue/4th Street intersection are presented in Chapter 20, "Mitigation."