ACME FISH EXPANSION
Chapter 13: Noise

A. INTRODUCTION

The Applicant is seeking four discretionary actions in order to facilitate the development of an approximately 637,250 gross square foot (gsf) mixed-use commercial/manufacturing building (the "Proposed Development") on the block bounded by Banker Street to the east, Wythe Avenue to the south, Gem and North 15th streets to the west, and Meserole Avenue to the north (the "Development Site"), in the Greenpoint neighborhood of Brooklyn Community District (CD) 1. The Development Site is comprised of Brooklyn Block 2615, Lots 1, 6, 19, 21, 25, 50, and 125 (a.k.a. the "proposed rezoning area").

As discussed in Chapter 1, "Project Description," the Proposed Development would consist of a new and improved four-story, approximately 109,300 gsf Acme Smoked Fish processing facility and a nine-story, approximately 530,600 gsf commercial office and retail building. The Proposed Development would also include up to 150 off-street accessory parking spaces on the ground level with curb-cut access via Gem Street, five loading berths (two for Acme Smoked Fish, with access from Meserole Avenue, and three for the commercial building, with access from Banker Street), and approximately 21,403 sf of partially covered open space areas at the southern portion of the Development Site. Construction of the Proposed Development is expected to be completed and building occupancy is anticipated by late 2024.

As discussed in Chapter 10, "Transportation," the Proposed Actions would change traffic patterns and volumes in the general vicinity of the Development Site. As local vehicular traffic is a major source of ambient noise in the area, this could lead to changes in the ambient noise levels. According to the 2014 *CEQR Technical Manual*, if existing passenger car equivalent (PCE) values are increased by 100 percent or more due to a proposed action (which is equivalent to an increase of 3.0 dBA or more) a detailed analysis is generally warranted. Conversely, if existing noise PCE values are not increased by 100 percent or more it is likely that the proposed action(s) would not cause a significant adverse vehicular noise impact, and therefore no further vehicular noise analysis is needed.

The noise analysis for the Proposed Actions was carried out in compliance with 2014 *CEQR Technical Manual* guidance and consists of two parts:

1. A screening analysis to determine whether traffic generated by the Proposed Actions would have the potential to result in significant adverse noise impacts on existing sensitive receptors;
2. An analysis to determine the level of building attenuation necessary to ensure that interior noise levels for the Proposed Development satisfy applicable interior noise criteria.

This chapter does not include an analysis of mechanical equipment because such mechanical equipment would be designed to meet all applicable noise regulations and, therefore, would not result in adverse noise impacts.

B. PRINCIPAL CONCLUSIONS

An analysis was conducted to determine whether traffic generated by the Proposed Development would have the potential to result in significant adverse noise impacts on existing sensitive receptors, and to determine the level of building attenuation necessary to ensure that interior noise levels for the Proposed Development satisfy applicable interior noise criteria. Analysis of mechanical equipment is not warranted because such mechanical equipment would be designed to meet all applicable noise regulations and, therefore, would not result in adverse noise impacts.

Noise from the increased traffic volumes generated by the Proposed Actions would not cause significant adverse noise impacts as the relative increases in noise levels would fall below the applicable 2014 *CEQR Technical Manual* significant adverse impact threshold (3.0 dBA).

Based on the calculated With-Action L_{10} noise levels, it was determined that special attenuation measures beyond standard construction practices would be required for all future building facades on the Development Site facing Gem Street or Wythe Avenue/North 15th Street in order to maintain an interior noise level not greater than 45 dBA for community facility uses or not greater than 50 dBA for commercial uses. To ensure an acceptable interior noise environment, future community facility/commercial uses must provide a closed-window condition with a minimum of 31 dBA window/wall attenuation on the facades facing Wythe Avenue/North 15th Street and the facades facing Gem Street to maintain acceptable interior noise levels. No special attenuation measures beyond standard construction practices would be required for commercial or community facility uses on any other frontage within the Development Site.

The composite window/wall noise attenuation described above would be required through the assignment of an (E)-Designation (E-585) for noise at the Development Site (Block 2615, Lots 1, 6, 19, 21, 25, 50, and 125) in conjunction with the Proposed Actions. With implementation of the attenuation levels outlined above and presented in Table 13-8, the Proposed Actions and resultant Proposed Development would provide sufficient attenuation to achieve the *CEQR Technical Manual* interior noise level guidance. Therefore, the Proposed Actions would not result in any significant adverse impacts related to noise attenuation.

C. 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 factors such 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 ten 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 one 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 simulates the response of the human ear. For most noise assessments, the A-weighted sound pressure level in units of dBA is used due to its widespread recognition and its close correlation to perception. In this analysis, all measured noise levels are reported in dBA or A-weighted decibels.

As shown in Table 13-1, 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 120 dBA. In considering these values, it is important to note that the dBA scale is logarithmic, meaning that each increase of ten 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 three dBA. At five dBA, the change will be readily noticeable.

TABLE 13-1
Common Noise Levels

Sound Source	(dBA)
Air Raid Siren at 50 feet	120
Maximum Levels at Rock Concerts (Rear Seats)	110
On Platform by Passing Subway Train	100
On Sidewalk by Passing Heavy Truck or Bus	90
On Sidewalk by Typical Highway	80
On Sidewalk by Passing Automobiles with Mufflers	70
Typical Urban Area	60-70
Typical Suburban Area	50-60
Quiet Suburban Area at Night	40-50
Typical Rural Area at Night	30-40
Public Library	40
Soft Whisper at 5 meters	30
Isolated Broadcast Studio	20
Audiometric (Hearing Testing) Booth	10
Threshold of Hearing	0

Source: *2014 CEQR Technical Manual* / Cowan, James P. Handbook of Environmental Acoustics. Van Nostrand Reinhold, New York, 1994. Egan, M. David, Architectural Acoustics. McGraw-Hill Book Company, 1988.
Note: A 10 dBA increase appears to double the loudness, and a 10 dBA decrease appears to halve the apparent loudness.

Community Response to Changes in Noise Levels

Table 13-2 shows the average ability of an individual to perceive changes in noise. Generally, changes in noise levels less than 3 dBA are barely perceptible to most listeners. However, as illustrated in Table 13-2, 5 dBA changes are readily noticeable. 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 13-2
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.

Noise Descriptors Used In Impact Assessment

Because the sound pressure level unit, 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, and 90 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.

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 2014 *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 2014 *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.

Applicable Noise Codes and Impact Criteria

New York 2014 CEQR Technical Manual Noise Standards

The New York City Department of Environmental Protection (DEP) has set external noise exposure standards. These standards are shown below in Table 13-3. Noise Exposure is classified into four categories: acceptable, marginally acceptable, marginally unacceptable, and clearly unacceptable. The standards are based on maintaining an interior noise level for the worst-case hour L_{10} of less than or equal to 45 dBA. Attenuation requirements are shown below in Table 13-4.

TABLE 13-3
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 ----------		---------- 60 < Ldn ≤ 65 dBA ----------		(1) 65 < Ldn ≤ 70 dBA, (II) 70 ≤ Ldn		---------- Ldn ≤ 75 dBA ----------
2. Hospital, Nursing Home		$L_{10} \leq 55$ dBA		55 < $L_{10} \leq 65$ dBA		65 < $L_{10} \leq 80$ dBA		$L_{10} > 80$ 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-10 PM)	
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 would 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.

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).

TABLE 13-4
Required Attenuation Values to Achieve Acceptable Interior Noise Levels

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

Note: [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 / 2014 *CEQR Technical Manual*

D. NOISE PREDICTION METHODOLOGY

Future No-Action and With-Action noise levels were calculated using either the proportional modeling technique or the Federal Highway Administration (FHWA) Traffic Noise Model (TNM) version 2.5. As stated in the *CEQR Technical Manual*, the proportional modeling technique may be employed for most projects. However, TNM modeling should be used when: (a) conditions result in new or significant changes in roadway or street geometry; (b) roadways currently carry no or very low traffic volumes; (c) ambient noise is the result of multiple sources including traffic; or (d) a detailed analysis of changes due to the traffic component of the total ambient noise levels is necessary. The proportional modeling technique was used at Receptor Locations 1 and 4 where existing and future noise levels are primarily a result of the level of traffic on the immediately adjacent roadway segments (Banker Street, Wythe Avenue, and North 15th Street). As Meserole Avenue and Gem Street each carry very low traffic volumes under existing conditions, TNM modeling was used at Receptor Locations 2 and 3 to account for noise associated with the additional project-generated traffic along Meserole Avenue between Banker and Gem streets, and Gem Street between North 15th Street and Meserole Avenue.

Analyses for the Proposed Actions were conducted for three typical time periods: the weekday AM peak hour (7:30 AM to 8:30 AM), the weekday midday peak hour (12 PM to 1 PM), and the weekday PM peak hour (5 PM to 6 PM). These time periods are the hours when the maximum traffic generation is expected (based on the traffic studies presented in Chapter 10, "Transportation") and, therefore, the hours when future conditions with the Proposed Actions are most likely to result in maximum noise impacts for the receptor locations.

For this analysis, during the noise recording, vehicles were counted and classified. To calculate the 2024 No-Action PCE values at the Development Site, an annual background growth rate of 0.50 percent for years 1 through 5, and 0.25 for year 6, plus the estimated incremental travel demand from new development within the vicinity of the proposed rezoning area, was applied to the PCE noise values based on the existing vehicle volumes presented in Chapter 10, "Transportation."[1] In order to obtain the necessary With-Action PCE values to calculate the With-Action noise levels, the 2024 With-Action traffic increment assignments presented in Chapter 10, "Transportation," were converted into PCE values and added to the calculated No-Action PCE values.

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

Proportional Modeling

Proportional modeling was used to determine No-Action and With-Action noise levels at two of the receptor locations, which are discussed in more detail below. Proportional modeling is one of the techniques recommended in the 2014 *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 No-Action and With-Action noise levels. Vehicular traffic volumes, which are counted during the noise recording, are converted into 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

[1] Background growth rate calculations based on information provided in Table 16-4 of the *CEQR Technical Manual.*

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:

FNA NL =10 log (NA PCE/E PCE) + E NL

where:

FNA NL = Future No-Action Noise Level

NA PCE = No-Action PCEs

E PCE = Existing PCEs

E NL = Existing Noise Level

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 PCE and if the future traffic volume were increased by 50 PCE to a total of 150 PCE, the noise level would increase by 1.8 dBA. Similarly, if the future traffic were to increase by 100 PCE, or doubled to a total of 200 PCE, the noise level would increase by 3.0 dBA.

Traffic Noise Modeling (TNM)

As the existing traffic volumes along Meserole Avenue (Receptor Location 2) and Gem Street (Receptor Location 3) at the Development Site's northern and western frontages, respectively, are very low, a preliminary assessment using the proportional modeling technique indicated that the future traffic along these roads 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. 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 noise due to traffic and traffic changes to the immediately adjacent street. As such, TNM provided more accurate results than proportional modeling for Receptor Locations 2 and 3.

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.

E. EXISTING CONDITIONS

As presented in Chapter 1, "Project Description," the approximately 116,756-sf proposed Development Site is comprised of seven tax lots (Lots 1, 6, 19, 21, 25, 50, and 125) on Block 2615 in the Greenpoint neighborhood of Brooklyn. The Development Site is located approximately two blocks east of the East River and is bounded by Banker Street, Meserole Avenue, Gem Street, North 15th Street, and Wythe Avenue (see Figure 13-1).

The Acme Smoked Fish facility currently occupies tax lots 1, 21, 25, and 50 (64,151 sf of total lot area), comprising four interconnected one- to two-story buildings with a total of approximately 72,885 gsf of built floor area. The Development Site also includes Lot 6, which contains ABC Stone, a stone supplier occupying a two-story building (approximately 21,500 gsf), which is currently in the process of moving out and is expected to relocate within the area. The Development Site also includes a single-story vacant building with approximately 3,800 gsf on Lot 19, and the field office and open storage for Corzo Contracting Company, a utility construction company that occupies the southern portion of the block (Lot 125).

Selection of Noise Receptor Locations

As discussed above, traffic along Banker Street, Meserole Avenue, Gem Street, North 15th Street, and Wythe Avenue is the dominant source of noise in the vicinity of the Development Site.[2] The noise receptor locations selected for analysis are shown in Figure 13-1 and described below:

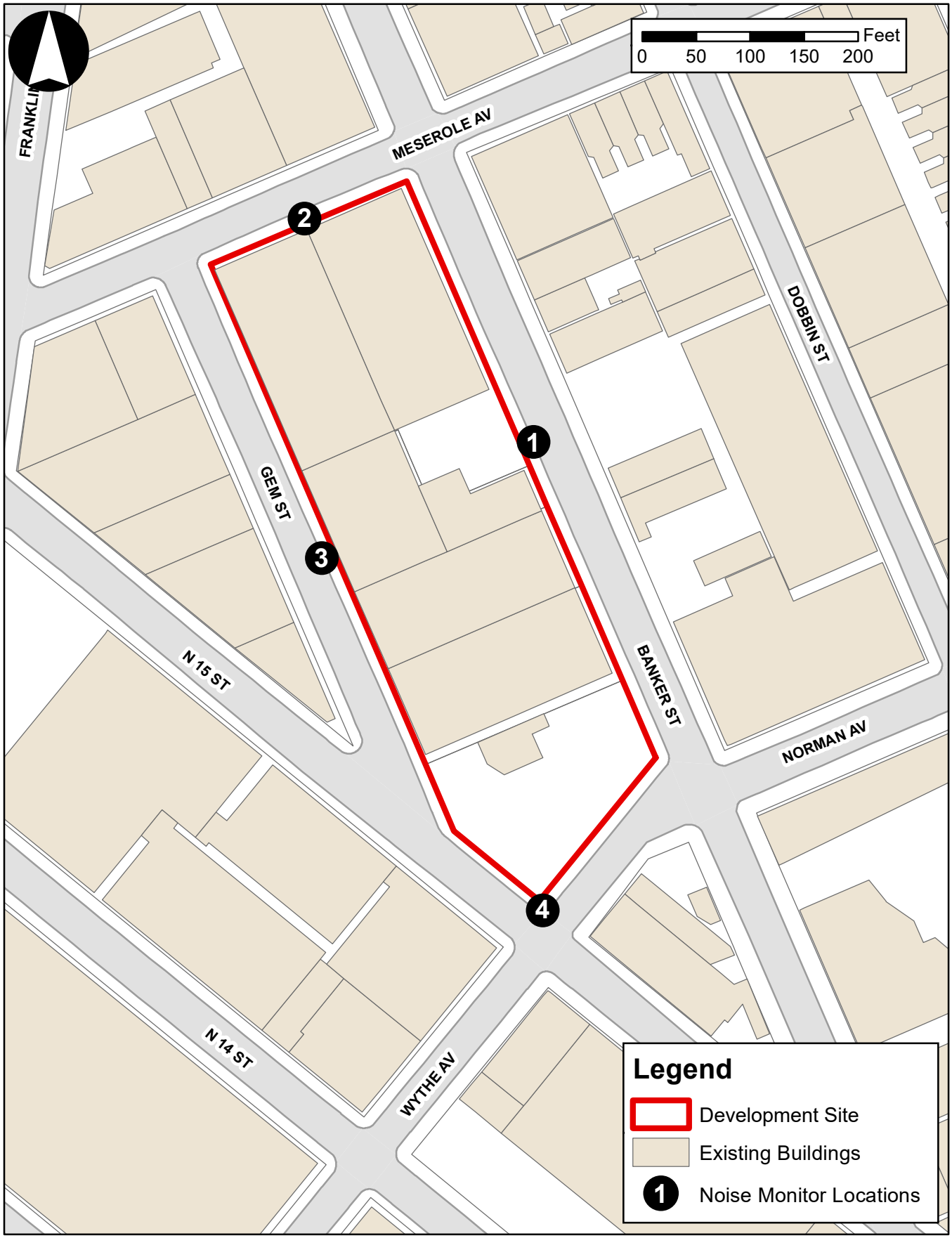
- Receptor Location 1 – Future eastern frontage of Applicant-owned Development Site (Banker Street); approximate midpoint of frontage (approximately 290 feet south of Meserole Avenue).
- Receptor Location 2 – Future northern frontage of Applicant-owned Development Site (Meserole Avenue); approximate midpoint of frontage (approximately 95 feet east of Gem Street).
- Receptor Location 3 – Future western frontage of Applicant-owned Development Site (Gem Street); approximate midpoint of frontage (approximately 280 feet south of Meserole Avenue).
- Receptor Location 4 – Future southern frontage of Applicant-owned Development Site (Wythe Avenue/North 15th Street); intersection of Wythe Avenue and North 15th Street (northwest corner, adjacent Development Site).

Noise Monitoring

At all four receptor locations, 30-minute spot measurements of existing noise levels were performed for each of the three noise analysis time periods - weekday AM peak hour (7:30 AM to 8:30 AM), weekday midday peak hour (12:00 PM to 1:00 PM), and weekday PM peak hour (5:00 PM to 6:00 PM). Noise monitoring was performed on Wednesday, June 6, 2018 and Tuesday, June 12, 2018. The weather on June 6, 2018 was overcast and in the low- to mid-60s °F with an average wind speed of 10 mph, and the weather on June 12, 2018 was partly cloudy and in the mid-60s °F with an average wind speed of 11 mph.

[2] It should be noted that while traffic along the roadways directly adjacent the Development site are considered to be the dominant source of noise in the vicinity of the Development Site, existing background noise measurements also include noise from the existing Acme facility's operations and mechanical equipment.

Noise Monitor Locations



Equipment Used During Noise Monitoring

The instrumentation used for the measurements was a Brüel & Kjær Type 4189 ½-inch microphone connected to a Brüel & Kjær Model 2250 Type 1 (as defined by the American National Standards Institute) 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 sound-reflecting surfaces to avoid major interference with source sound level that is being measured. 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. Only traffic-related noise and noise from the existing Acme facility's operations were measured; noise from other sources (e.g., emergency sirens, aircraft flyovers, etc.) was excluded from the measured noise levels. Weather conditions were noted to ensure a true reading as follows: wind speed under 12 mph; relative humidity under 90 percent; and temperature above 14°F and below 122°F (pursuant to ANSI Standard S1.13-2005).

Existing Noise Levels at Noise Receptor Locations

Measured Noise Levels

Noise monitoring results for Receptor Locations 1, 2, 3, and 4 are shown in Table 13-5. Traffic was the dominant noise source and the values shown reflect the level of vehicular activity on the respective thoroughfares adjacent to the Development Site.[3] Vehicular traffic volumes were counted during the noise recording for each peak period and converted into hourly PCE values. Existing noise levels at Receptor Locations 1 and 2 are each within the "Marginally Acceptable" CEQR Noise Exposure category, while the existing noise levels at Receptor Locations 3 and 4 are within the "Marginally Unacceptable (II)" and "Marginally Unacceptable (I)" CEQR Noise Exposure categories, respectively.[4] The highest noise levels were observed during the PM peak period at Receptor Location 3 (Gem Street), exhibiting an L_{10} of 73.22 dBA.

[3] It should be noted that although Gem Street typically experiences relatively low traffic volumes, recorded noise levels in the PM peak period were somewhat higher at Receptor Location 3 than at the other monitored locations. This was due to the presence of several idling trucks along Gem Street associated with distribution activity at the existing Acme Smoke Fish facility.

[4] It should be noted that since the highest existing L_{eq} noise level at Receptor Location 4 (72.65 dBA) during the weekday PM peak period exceeds that of the highest existing L_{10} noise level (67.43 dBA) at the same receptor location, the higher L_{eq} noise level was used in place of the highest L_{10} noise level at Receptor Location 4 to determine the appropriate CEQR Noise Exposure category, and thus, any relevant noise attenuation requirements.

TABLE 13-5
Existing Noise Levels (in dBA) at Receptor Locations

#[1]	Noise Receptor Location	Time	L_{max}[2]	L_{min}	L_{eq}	L_1	L_{10}[3]	L_{50}	L_{90}	CEQR Noise Exposure Category
1	Banker Street	AM	80.86	55.24	62.02	71.05	64.63	58.71	56.94	Marginally Acceptable
		MD	89.77	57.29	64.78	73.98	**67.03**	61.43	59.14	
		PM	88.23	56.20	64.30	73.12	67.02	61.15	58.89	
2	Meserole Avenue	AM	81.26	52.68	61.54	74.45	62.46	56.61	54.56	Marginally Acceptable
		MD	89.31	54.12	66.08	75.37	**68.05**	60.56	57.21	
		PM	97.48	55.25	68.32	75.07	67.90	61.64	58.23	
3	Gem Street	AM	82.33	52.66	58.08	66.29	59.86	55.83	54.45	Marginally Unacceptable (II)
		MD	82.20	56.78	62.29	71.98	64.22	59.48	58.03	
		PM	85.55	63.73	70.31	73.96	**73.22**	69.72	66.30	
4	Wythe Avenue/North 15th Street	AM	87.88	51.27	62.21	72.25	64.35	56.83	53.64	Marginally Unacceptable (I)[4]
		MD	89.12	54.31	66.27	74.44	**67.43**	65.15	56.56	
		PM	106.19	53.45	72.65	75.23	65.59	59.46	56.01	

Notes: Field measurements were performed by Philip Habib & Associates on Wednesday, June 6, 2018 and Tuesday, June 12, 2018.

[1] Refer to Figure 13-1 for noise monitoring receptor locations.

[2] AM = weekday AM peak period; MD = weekday midday peak period; PM = weekday PM peak period.

[3] Highest L_{10} value at each receptor location indicated in **bold**.

[4] As the highest existing L_{eq} noise level at Receptor Location 4 (72.65 dBA) during the weekday PM peak period exceeds that of the highest existing L_{10} noise level (67.43 dBA), the higher L_{eq} noise level was used in place of the highest L_{10} noise level to determine the appropriate CEQR Noise Exposure category, and thus, any relevant noise attenuation requirements.

F. THE FUTURE WITHOUT THE PROPOSED ACTIONS (NO-ACTION CONDITION)

In the 2024 future without the Proposed Actions (the No-Action condition), it is anticipated that the existing M3-1 zoning would remain and the Proposed Development would not be constructed. It is anticipated that, without a new state-of-the-art purpose-built facility for its operations, Acme Smoked Fish would strongly consider relocating outside of New York State. As such, for analysis purposes, it is assumed that in absence of the Proposed Actions Acme Smoked Fish would vacate its buildings on the site (Lots 1, 21, 25, and 50). Lot 6, which is currently occupied by ABC Stone, is also expected to be vacated in the No-Action, as the business is currently in the process of moving out. Based on existing and anticipated real estate market trends, existing structures and site conditions, and uses allowed by existing zoning, it is expected that those vacated buildings would be re-occupied. As such, the No-Action scenario assumes that Acme Smoked Fish's and ABC Stone's vacated buildings would be re-occupied by a mix of eating/drinking/entertainment establishments, creative office and warehouse uses. The vacant building on Lot 19, which is the smallest lot on the block, is assumed to be re-occupied by restaurant use in the No-Action. Finally, the No-Action scenario assumes that Lot 125, which currently accommodates parking and open storage, would be redeveloped with a new 3-story commercial building with distillery, office, dance studio and restaurant uses.[5]Overall, the No-Action condition for the Development Site is assumed to consist of a total of 169,485 gsf, comprised of approximately 35,225 gsf of restaurant/entertainment uses, 66,750 gsf of creative office space, 28,610 gsf of warehousing spaces, and 17,500 gsf of industrial space (distillery), as well as an estimated 21,400 gsf of accessory parking (107 spaces).

[5] Based on a prior permit application that was filed with the Department of Buildings in 2015 (https://newyorkyimby.com/2015/10/permits-filed-14-wythe-avenue-greenpoint-distillery.html)

Using the noise prediction methodology and TNM previously described in Section D above, future noise levels in the No-Action condition were calculated for the three analysis periods for the 2024 Analysis Year. Table 13-6 shows the measured Existing noise levels and calculated future No-Action condition noise levels at the receptor locations.

Comparing future No-Action noise levels with Existing noise levels, the increases in L_{eq} noise levels would range from 0.0 dBA to 4.47 dBA for all analysis periods. According to 2014 *CEQR Technical Manual* guidance, increases between 3.0 dBA and 5.0 dBA would be perceptible. As such, the increases in L_{eq} noise levels between Existing and No-Action conditions at Receptor Location 4 during the weekday AM peak period (4.47 dBA) would be somewhat noticeable. The projected L_{10} noise levels at Receptor Location 1 would range from 64.97 to 67.46 dBA, projected L_{10} noise levels at Receptor Location 2 would range from 64.25 to 68.13 dBA, projected L_{10} noise levels at Receptor Location 3 would range from 60.46 to 73.26 dBA, and projected L_{10} noise levels at Receptor Location 4 would range from 67.55 to 68.82 dBA. As under Existing conditions under all analysis periods, No-Action L_{10} noise levels at Receptor Locations 1 and 2 would remain in the "Marginally Acceptable" CEQR Noise Exposure category and No-Action L_{10} noise levels at Receptor Location 3 would remain in the "Marginally Unacceptable (II)" CEQR Noise Exposure category; however, No-Action noise levels at Receptor Location 4 would now fall within the "Marginally Unacceptable (II)" CEQR Noise Exposure category.

TABLE 13-6
Future No-Action Noise Levels (in dBA)

Noise Receptor Location[1]	Time[2]	Existing L_{eq}	2021 No-Action L_{eq}	Change[3]	2021 No-Action L_{10}[4]	CEQR Noise Exposure Category
1	AM	62.02	62.36	0.34	64.97	**Marginally Acceptable**
	MD[5]	64.78	64.90	0.12	67.15	
	PM	64.30	64.74	0.44	**67.46**	
2	AM	61.54	63.33	1.79	64.25	**Marginally Acceptable**
	MD[5]	66.08	66.08	0.00	68.05	
	PM	68.32	68.55	0.23	**68.13**	
3	AM	58.08	58.68	0.60	60.46	**Marginally Unacceptable (II)**
	MD[5]	62.29	62.29	0.00	64.22	
	PM	70.31	70.35	0.04	**73.26**	
4	AM	62.21	66.68	4.47	**68.82**	**Marginally Unacceptable (II)[6]**
	MD[5]	66.27	66.39	0.12	67.55	
	PM	72.65	74.91	2.26	67.85	

Notes: Future No-Action noise levels at Receptor Location 1 and 4 were calculated using proportional modeling;future No-Action noise levels at Receptor Locations 2 and 3 were calculated using TNM.

[1] Refer to Figure 13-1 for noise monitoring receptor locations.

[2] AM = weekday AM peak period; MD = weekday midday peak period; PM = weekday PM peak period.

[3] Change in L_{eq} = No-Action L_{eq} – Existing L_{eq}.

[4] Highest L_{10} value at each receptor location indicated in **bold**.

[5] While only an annual background traffic growth rate was added when calculating future No-Action noise levels for the midday peak hour, based on the conservative traffic increment assumed in the future With-Action noise level calculation and high noise levels predicted at other peak hour periods, no new significant adverse noise impact is anticipated to occur on existing and future receptors in the midday peak hour apart from already identified.

[6] As the highest No-Action L_{eq} noise level at Receptor Location 4 (75.27 dBA) during the weekday PM peak period exceeds that of the highest No-ActionL_{10} noise level (68.43 dBA), the higher L_{eq} noise level was used in place of the highest L_{10} noise level to determine the appropriate CEQR Noise Exposure category, and thus, any relevant noise attenuation requirements.

G. THE FUTURE WITH THE PROPOSED ACTIONS (WITH-ACTION CONDITION)

In the 2024 future with the Proposed Actions, the Proposed Development would be constructed on the Development Site, comprised on (i) a new and improved Acme Smoked Fish processing facility (approximately 109,300 gsf), and (ii) approximately 530,600 gsf of commercial office and retail space. The Proposed Development would also include up to 150 off-street accessory parking spaces on the ground level with access via Gem Street, five loading berths (two for Acme Smoked Fish, with access from Meserole Avenue, and three for the commercial building, with access from Banker Street, and partially covered open space areas at the southern portion of the Development Site (approximately 21,403 sf). It should also be noted that warehousing and distribution functions that currently take place at the existing Acme Smoked Fish processing facility would be relocated to a facility in New Jersey in the With-Action condition.[6]

TABLE 13-7
Future With-Action Noise Levels (in dBA)

Noise Receptor Location[1]	Time[2]	No-Action L_{eq}	2021 With-Action L_{eq}	Change[3]	2021 With-Action L_{10}[4]	CEQR Noise Exposure Category
1	AM	62.36	62.76	0.40	65.37	**Marginally Acceptable**
	MD[5]	64.90	66.98	2.08	**69.23**	
	PM	64.74	64.74	0.00	67.46	
2	AM	63.33	63.63	0.30	64.55	**Marginally Acceptable**
	MD[5]	66.08	66.34	0.26	**68.31**	
	PM	68.55	68.57	0.02	68.15	
3	AM	58.68	59.58	0.90	61.36	**Marginally Unacceptable (II)**
	MD[5]	62.29	62.29	0.00	64.22	
	PM	70.35	70.43	0.07	**73.34**	
4	AM	66.68	67.18	0.50	**69.32**	**Marginally Unacceptable (II)**
	MD[5]	66.39	66.39	0.00	67.55	
	PM	74.91	74.95	0.03	67.89	

Notes: Future With-Action noise levels at Receptor Location 1 and 4 were calculated using proportional modeling; future With-Action noise levels at Receptor Locations 2 and 3 were calculated using TNM.

[1] Refer to Figure 13-1 for noise monitoring receptor locations.

[2] AM = weekday AM peak period; MD = weekday midday peak period; PM = weekday PM peak period.

[3] Change in L_{eq} = With-Action L_{eq} – No-Action L_{eq}.

[4] Highest L_{10} value at each receptor location indicated in **bold**.

[5] While only an annual background traffic growth rate was added when calculating future No-Action noise levels for the midday peak hour, based on the conservative traffic increment assumed in the future With-Action noise level calculation and high noise levels predicted at other peak hour periods, no new significant adverse noise impact is anticipated to occur on existing and future receptors in the midday peak hour apart from already identified.

[6] As the highest With-Action L_{eq} noise level at Receptor Location 4 (75.27 dBA) during the weekday PM peak period exceeds that of the highest With-ActionL_{10} noise level (69.13 dBA), the higher L_{eq} noise level was used in place of the highest L_{10} noise level to determine the appropriate CEQR Noise Exposure category, and thus, any relevant noise attenuation requirements.

[6] As the presence of idling trucks along Gem Street associated with distribution activity would no longer occur at the new Acme Smoked Fish facility, it is anticipated that noise levels along Gem Street would significantly decrease under future With-Action conditions. However, for conservative analysis purposes, the quantitative noise analysis does not reflect the anticipated reduction in idling trucks, and thus represents a worst-case noise condition for the weekday PM peak period under future 2024 With-Action conditions.

Using the noise prediction methodology and TNM previously described in Section D, the noise levels in the future with the Proposed Actions were calculated for the three peak analysis periods in the 2024 Analysis Year. Table 13-7 presents noise levels in the future with the Proposed Actions at Receptor Locations 1, 2, 3 and 4 in 2024.

Comparing the future With-Action noise levels with No-Action noise levels, increases in L_{eq} noise levels would range from 0.00 dBA to 2.08 dBA for all peak hours. Increases of this magnitude during the AM, midday and PM peak hours would not be perceptible as they are less than 3.0 dBA. Based upon *CEQR* impact criteria, as the With-Action noise levels would experience changes of less than 3.0 dBA during all peak hours, the Proposed Actions would not result in a significant adverse noise impact. As shown in Table 13-7, the maximum projected With-Action L_{10} noise level along the Development Site's eastern boundary (Receptor Location 1, Banker Street) would be 69.23 dBA and would remain in the "Marginally Acceptable" CEQR Noise Exposure category, as under No-Action conditions. The maximum projected With-Action L_{10} noise level along the Development Site's northern boundary (Receptor Location 2, Meserole Avenue) would be 68.31 dBA and would remain in the "Marginally Acceptable" CEQR Noise Exposure category, as under No-Action conditions. The maximum projected With-Action L_{10} noise level along the Development Site's western boundary (Receptor Location 3, Gem Street) would be 73.34 dBA and would remain in the "Marginally Unacceptable (II)" CEQR Noise Exposure category, as under No-Action conditions. The maximum projected With-Action L_{eq} noise level along the Development Site's southern boundary (Receptor Location 4, Wythe Avenue/North 15th Street) would be 74.95 dBA and would remain in the "Marginally Unacceptable (II)" CEQR Noise Exposure category, as under No-Action conditions.

H. ATTENUATION REQUIREMENTS

As shown in Table 13-4, the 2014 *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 a maximum interior noise level of 45 dBA or lower for residential and community facility uses and 50 dBA or lower for commercial uses, and are determined based on exterior L_{10} noise levels. It is generally assumed that without specific information on a building's window and wall construction, the outdoor-to-indoor noise reduction of the building is 25 dBA. Therefore, exterior ambient sound levels exceeding 70 dBA at commercial or community facility receptors (which would equate to an interior noise level of 45 dBA) are considered to be "Marginally Unacceptable" (refer to Table 13-4), and the need to provide sufficient window/wall noise attenuation must be considered. Results of the building attenuation analysis are summarized in Table 13-8, and illustrated in Figure 13-2.

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. Typically, a building façade is composed of the wall, windows, and any vents or louvers for HVAC systems in various ratios of area. Since the Proposed Development would most likely be of masonry construction, which typically provides a high level of sound attenuation, the attenuation requirements for *CEQR* purposes apply primarily to the windows, but may also represent a composite window/wall attenuation value. Window/Wall attenuation can be described in terms of sound transmission class (STC), transmission loss (TL), and outdoor-indoor transmission class (OITC). Although these terms are sometimes used interchangeably, they are unique from each other. Transmission loss refers to how many decibels of sound a façade (wall) or façade accessory (window or door) can stop at a given frequency. The TL for a given construction material varies with the individual frequencies of the noise.

TABLE 13-8
Required Attenuation Values for the Proposed Development

Site	Frontage	Associated Receptor Location	Maximum With-Action L_{10}	CEQR Noise Exposure Category	Required Attenuation for Commercial Uses (OITC)[1]	Required Attenuation for Comm. Fac. Uses (OITC)[1]
Proposed Development Site (Block 2615, Lots 1, 6, 19, 21, 25, 50, and 125)	Northern (Meserole Avenue)	2	68.31	Marginally Acceptable	N/A	N/A
	Southern (Wythe Avenue/North 15th Street)	4	74.95[2]	Marginally Unacceptable (II)	26	31
	Western (Gem Street)	3	73.34	Marginally Unacceptable (II)	26	31
	Eastern (Banker Street)	1	69.23	Marginally Acceptable	N/A	N/A

Notes:
[1] The above attenuation values would be required to maintain interior noise levels 50 dBA or lower for commercial uses and 45 dBA or lower for community facility uses.
[2] As the predicted L_{eq} noise levels at Receptor Location 4 during the weekday PM peak period are higher than the corresponding predicted L_{10} noise levels (refer to Table 13-7), the more conservative L_{eq} noise level was used to determine the most conservative and appropriate attenuation requirements for that receptor location.
N/A = Not Applicable; no additional noise attenuation measures are required beyond standard construction practices. All the above categories require a closed window condition and hence an alternate means of ventilation.

To simplify the noise attenuation properties of a wall, the STC rating was developed. It is a single number that describes the sound isolation performance of a given material for the range of test frequencies between 125 and 4,000 Hz. These frequencies sufficiently cover the range of human speech. Higher STC values reflect greater efficiencies to block airborne sound. HUD uses the STC when identifying the required sound attenuation for a façade.

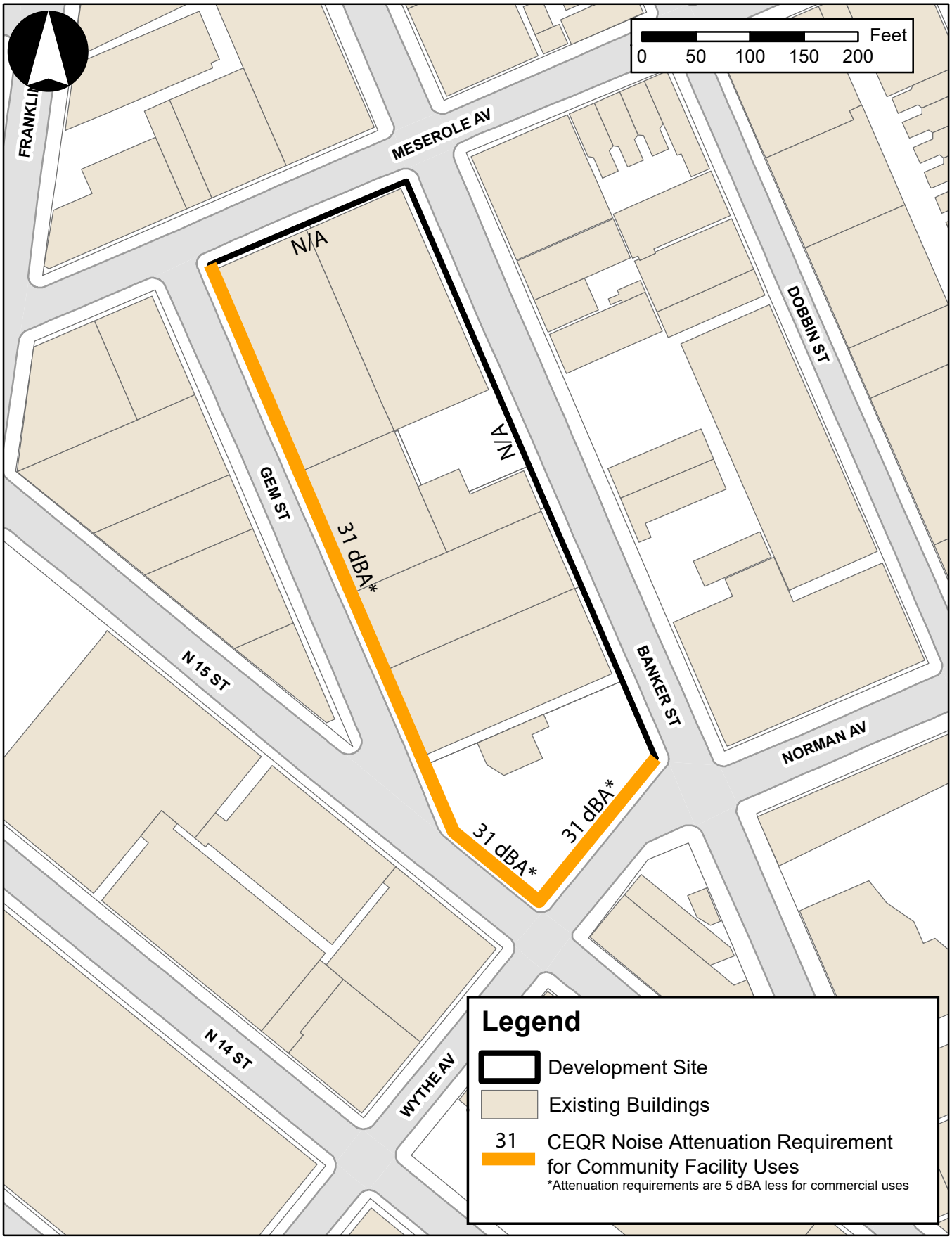
The OITC is similar to the STC, except that it is weighted more towards the lower frequencies associated with aircraft, rail, and truck traffic. The OITC classification is defined by the American Society of Testing and Materials (ASTM E1332-90 (Reapproved 2003)) and provides a single-number rating that 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. NYCDEP uses the OITC when identifying the required sound attenuation for a façade.

Proposed Development Site (Block 2615, Lots 1, 6, 19, 21, 25, 50, and 125)

As maximum With-Action L_{10} noise levels at Receptor Locations 3 and 4 would be 73.34 dBA and 74.95 dBA, respectively, special attenuation measures beyond standard construction practices would be required for the proposed commercial uses on the western (Gem Street) and southern (Wythe Avenue/North 15th Street) frontages of the Development Site in order to achieve the required interior noise level of 50 dBA or lower for commercial uses or 45 dBA or lower for community facility uses.

As maximum With-Action L_{10} noise levels at Receptor Locations 1 and 2 would be less than 70 dBA, no special noise attenuation measures beyond standard construction practices would be required for any of the Development Site's northern (Meserole Avenue) and eastern (Banker Street) frontages in order to achieve the required interior noise level of 50 dBA or lower for commercial uses or 45 dBA or lower for community facility uses.

Noise Attenuation Requirements



(E)-Designation

An (E)-Designation for noise provides a notice of the presence of an environmental requirement pertaining to high ambient noise levels on a particular tax lot. If an environmental analysis indicates that a development on a property may be adversely affected by noise, then an (E)-Designation for window/wall attenuation and alternate means of ventilation may be placed on the property by the lead agency in order to address such issues in conjunction with any new development or new use of the property. For new developments, enlargements of existing buildings, or changes in use, the NYC Department of Buildings will not issue a building permit until the environmental requirements of the (E)-Designation are satisfied. The Office of Environmental Remediation (OER) administers the (E)-Designation Environmental Review Program.

The composite window/wall noise attenuations described above would be required through the assignment of an (E)-Designation for noise to the applicant-owned Development Site (Block 2615, Lots 1, 6, 19, 21, 25, 50, and 125) in conjunction with the Proposed Actions. With the implementation of this composite window/wall noise attenuation, no significant adverse noise impacts would occur as a result of the Proposed Actions. The text for the (E)-Designation (E-585) is as follows:

> **Block: 2615; Lots: 1, 6, 19, 21, 25, 50, and 125**
>
> **To ensure an acceptable interior noise environment, future community facility/commercial uses must provide a closed-window condition with a minimum of 31 dBA window/wall attenuation on the façades facing Wythe Avenue/North 15th Street and the facades facing Gem Street to maintain an interior noise level not greater than 45 dBA for community facility uses or not greater than 50 dBA for commercial uses. To maintain a closed-window condition, an alternate means of ventilation must also be provided. Alternate means of ventilation includes, but is not limited to, air conditioning.**

I. OTHER NOISE CONCERNS

Mechanical Equipment

The Proposed Actions would not include any unenclosed mechanical equipment for building ventilation purposes, and would not include any active outdoor recreational space that could result in stationary source noise impacts to the surrounding area. All mechanical equipment would be located either inside the building or would be enclosed on the roof of the structures, and would be designed to meet all applicable noise regulations and requirements. Therefore, the Proposed Actions would not result in any significant increase in ambient noise levels in the vicinity of the Development Site or the surrounding study area.

Train Noise

An initial train noise impact screening analysis would be warranted if a new receptor would be located within 1,500 feet of existing rail activity and have a direct line of sight to that activity. As the Development 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 activity, no initial train noise impact screening analysis is warranted.

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 Development Site is not within one mile of an existing flight path, no initial aircraft noise impact screening analysis is warranted.