Chapter 11: Noise

A. INTRODUCTION

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

The proposed action would not result in any additional plant workers. Approximately 2 additional trucks per day for the removal of sludge cake (biosolids), which under New York City Department of Environmental Protection’s (NYCDEP’s) current sludge management plan is transferred out of the region for land application, and an additional 6 trucks per day for delivery of chemicals for plant operations would be expected with the proposed action. Based on the detailed noise impact analysis for an even greater number of truck trip estimates during the peak period of construction for the proposed action, the lesser number of truck trips associated with the operation of the proposed action would not result in significant adverse impacts, and no further analysis of noise impacts from mobile sources during operations is warranted.

With the proposed action, the additional treatment processes would result in increased ambient noise levels near the Hunts Point Water Pollution Control Plant (WPCP) from the operation of new mechanical equipment. This analysis examines the impacts of these stationary noise sources and the change in noise levels at sensitive receptor locations where maximum increases in noise levels would be expected to occur as a result of mechanical equipment operation. The egg-shaped digesters and associated equipment would not generate significant noise levels, The noise analysis provided in this chapter addresses the potential operational noise impacts from all four digesters (the two that would be constructed as part of the proposed action and the additional two that could be constructed under the four-digester scenario). The potential adverse noise impacts under the two-digester scenario for the proposed action would essentially be the same as those determined for the four-digester scenario.

Noise impacts associated with construction activities are discussed in Chapter 17, “Construction.”

NOISE FUNDAMENTALS

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

NOISE MEASUREMENT

A number of factors affect sound, as it is perceived by the human ear. These include the actual level of the sound (or noise), the frequencies involved, the period of exposure to the noise, and changes or fluctuations in the noise levels during exposure. Levels of noise are measured in units called decibels (dB). Since the human ear cannot perceive all pitches or frequencies equally well, these measures are adjusted or weighted to correspond to human hearing. A measurement system that simulates the response of the human ear, the "A-weighted sound level" or "dBA," is used in view of its widespread recognition and its close correlation with human judgment of loudness and annoyance. In the current study, all measured levels are reported in dBA or A-weighted decibels. Sound levels for typical daily activities are shown in Table 11-1.

Table 11-1
Common Noise Levels

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

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

Although sound levels from a sound level meter are generally given in dBA, measurements are sometimes made in octave band format. An octave band is one of a series of bands that cover the normal range of frequencies included in sound measurements. Such octave bands serve to define the sound in term of its pitch components. Octave band levels are "unweighted" levels corresponding to the overall acoustical energy in the corresponding octave band.

RESPONSE TO CHANGES IN NOISE LEVELS

The average ability of an individual to perceive changes in noise levels is well documented (see Table 11-2). Generally, changes in noise levels less than 3 dBA are barely perceptible to most listeners, whereas 10 dBA changes are normally perceived as doublings (or halvings) of noise levels. These guidelines permit direct estimation of an individual's probable perception of changes in noise levels.

Table 11-2
Average Ability to Perceive Changes in Noise Levels

Change (dBA)	Human Perception of Sound
2-3	Barely perceptible
5	Readily noticeable
10	A doubling or halving of the loudness of sound
20	A dramatic change
40	Difference between a faintly audible sound and a very loud sound

Source: Bolt Beranek and Neuman, Inc., *Fundamentals and Abatement of Highway Traffic Noise*, Report No. PB-222-703. Prepared for Federal Highway Administration, June 1973.

It is also possible to characterize the effects of noise on people by studying the aggregate response of people in communities. The rating method used for this purpose is based on a statistical analysis of the fluctuations in noise levels in a community, and integrates the fluctuating sound energy over a known period of time, most typically during 1 hour or 24 hours. Various government and research institutions have proposed criteria that attempt to relate changes in noise levels to community response. One commonly applied criterion for estimating this response is incorporated into the community response scale proposed by the International Standards Organization (ISO) of the United Nations (see Table 11-3). This scale relates changes in noise level to the degree of community response and permits direct estimation of the probable response of a community to a predicted change in noise level.

Table 11-3
Community Response to Increases in Noise Levels

Change (dBA)	Category	Description
0	None	No observed reaction
5	Little	Sporadic complaints
10	Medium	Widespread complaints
15	Strong	Threats of community action

Source: International Standards Organization, Noise Assessment with Respect to Community Responses, ISO/TC 43 (New York: United Nations, November 1969).

STATISTICAL NOISE LEVELS

Since dBA describes a noise level at just one moment and very few noises are constant, other ways of describing noise over extended periods are needed. 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, $L_{eq(1)}$, or 24 hours, $L_{eq(24)}$, conveys the same sound energy as the actual time-varying sound. Statistical sound level descriptors such as L_1, L_{10}, L_{50}, L_{90}, and L_x are sometimes used to indicate noise levels that are exceeded 1, 10, 50, 90 and x percent of the time, respectively. Discrete event peak levels are given as L_1 levels. L_{eq} is used in the prediction of future noise levels, by adding the contributions from new sources of noise (i.e., increases in traffic volumes) to the existing levels and in relating annoyance to increases in noise levels.

The relationship between L_{eq} and levels of exceedance is worth noting. Because L_{eq} is defined in energy rather than straight numerical terms, it is simply related to the levels of exceedance. If the noise fluctuates very little, L_{eq} will approximate L_{50} or the median level. If the noise fluctuates broadly, the L_{eq} will be approximately equal to the L_{10} value. If extreme fluctuations are present, the L_{eq} will exceed L_{90} or the background level by 10 or more decibels. Thus the relationship between L_{eq} and the levels of exceedance will depend on the character of the noise. In community noise measurements, it has been observed that the L_{eq} is generally between L_{10} and L_{50}. The relationship between L_{eq} and exceedance levels has been used in the current studies to characterize the noise sources and to determine the nature and extent of their impact at all receptor locations.

NOISE DESCRIPTORS USED IN IMPACT ASSESSMENT

For the purposes of this project, 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 City Environmental Quality Review (CEQR) standards. Hourly statistical noise levels were used to characterize the relevant noise sources and their relative importance at each receptor location.

NOISE STANDARDS AND CRITERIA

NEW YORK CITY NOISE CODE

The revised New York City Noise Control Code becomes effective July 1, 2007. It contains octave band standards that must be met at residences and commercial uses, sound-level standards for motor vehicles, circulation equipment, air compressors, and paving breakers (e.g., jackhammers), requires that all exhausts be muffled, and prohibits all unnecessary noise adjacent to schools, hospitals, or courts. When effective, the revised Noise Control Code will require noise mitigation plans for construction work (consistent with the guidance set by NYCDEP), and additional noise mitigation measures will be required when work does not occur on weekdays between 7 AM and 6 PM.

In addition, the Noise Control Code states that in residential buildings and commercial buildings interior sound pressure levels at a receiving property due to commercial and business enterprises shall not exceed the maximum permitted sound level for the designated octave band indicated in Table 11-4. While this section of the Noise Control Code is not applicable to the Hunts Point WPCP (since it is not a commercial or business enterprise) and the Hunts Point WPCP is not located in a commercial or residential district, as discussed later in this chapter, comparisons were made to the Noise Control Code maximum sound pressure levels for the nearest residential building.

Table 11-4
City of New York Maximum Sound Pressure Levels (dB)

Octave Bands (Hz)	Residential Building*	Commercial Building**
31.5	70	74
63	61	64
125	53	56
250	46	50
500	40	45
1000	36	41
2000	34	39
4000	33	38
8000	32	37

Note:
***** Residential receiving property for mixed use buildings and residential buildings (as measured within any room of the building with windows open, if possible).
** Commercial receiving property (as measured within any room containing offices within the building with windows open, if possible).
Source: City of New York Noise Control Code Subchapter 5, effective July 1, 2007.

NEW YORK CEQR NOISE CRITERIA

NYCDEP has set external noise exposure standards. These standards are shown in Table 11-5. Noise Exposure is classified into four categories: acceptable, marginally acceptable, marginally unacceptable, and clearly unacceptable. The standards shown are based on maintaining an interior noise level for the worst-case hour L_{10} less than or equal to 45 dBA.

In addition, the *CEQR Technical Manual* uses the following criteria to determine whether a proposed action would result in a significant adverse noise impact. The impact assessments compare the proposed action condition $L_{eq(1)}$ noise levels to those calculated for the future without the proposed action condition, for receptors potentially affected by the project. If the future without the proposed action levels are less than 60 dBA $L_{eq(1)}$and the analysis period is not a nighttime period, the threshold for a significant impact would be an increase of at least 5 dBA $L_{eq(1)}$. For the 5 dBA threshold to be valid, the resultant Action condition noise level would have to be equal to or less than 65 dBA. If the future without the proposed action noise level is equal to or greater than 62 dBA $L_{eq(1)}$, or if the analysis period is a nighttime period (defined in the CEQR standards as being between 10 PM and 7 AM), the incremental significant impact threshold would be 3 dBA $L_{eq(1)}$. If the future without the proposed action noise level is 61 dBA $L_{eq(1)}$, the maximum incremental increase would be 4 dBA, since an increase higher than this would result in a noise level higher than the 65 dBA $L_{eq(1)}$ threshold.

PERFORMANCE STANDARDS FOR MANUFACTURING DISTRICTS

The City of New York's Zoning Resolution Section 42-213 states that in all manufacturing districts, the sound pressure level resulting from any activity, whether open or enclosed, shall not exceed, at any point on or beyond any lot line, the maximum permitted sound level for the designated octave band indicated in Table 11-6 for M3 zone.

Table 11-5
Noise Exposure Guidelines
for Use in City Environmental Impact Review[1]

Receptor Type	Time Period	Acceptable General External Exposure	Airport[3] Exposure	Marginally Acceptable General External Exposure	Airport[3] Exposure	Marginally Unacceptable General External Exposure	Airport[3] Exposure	Clearly Unacceptable General External Exposure	Airport[3] Exposure
1. Outdoor area requiring serenity and quiet[2]		$L_{10} \le 55$ dBA	---------- Ldn ≤ 60 dBA ----------						
2. Hospital, Nursing Home		$L_{10} \le 55$ dBA		$55 < L_{10} \le 65$ dBA	---------- 60 < Ldn ≤ 65 dBA ----------	$65 < L_{10} \le 80$ 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	$L_{10} \le 65$ dBA		$65 < L_{10} \le 70$ dBA		$70 < L_{10} \le 80$ dBA		$L_{10} > 80$ dBA	
	10 PM to 7 AM	$L_{10} \le 55$ dBA		$55 < L_{10} \le 70$ dBA		$70 < L_{10} \le 80$ dBA		$L_{10} > 80$ dBA	
4. School, museum, library, court, house of worship, transient hotel or motel, public meeting room, auditorium, out-patient public health facility		Same as Residential Day (7 AM-10 PM)		Same as Residential Day (7 AM-10 PM)		Same as Residential Day (7 AM-10 PM)		Same as Residential Day (7 AM-10 PM)	
5. Commercial or office		Same as Residential Day (7 AM-10 PM)		Same as Residential Day (7 AM-10 PM)		Same as Residential Day (7 AM-10 PM)		Same as Residential Day (7 AM-10 PM)	
6. Industrial, public areas only[4]	Note 4	Note 4		Note 4		Note 4		Note 4	

Notes:

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

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

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

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

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

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

Table 11-6
City of New York Noise Performance Standards
for M3 Manufacturing District

Old Octave Bands		**Current Octave Bands**	
Octave Band (Hz)	M3 District (dB)	Octave Band (Hz)	M3 District (dB)
20 to 75	80	63	79
75 to 150	75	125	74
150 to 300	70	250	69
300 to 600	64	500	63
600 to 1200	58	1000	57
1200 to 2400	53	2000	52
2400 to 4800	49	4000	48
Above 4800	46	8000	45

Source: City of New York Performance Standards for Manufacturing Districts

The Performance Standards are specified in "old" octave bands. These bands have not been used in almost 40 years, and instrumentation is no longer available to measure per these specifications. ANSI (American National Standards Institute) has promulgated a standard on the conversion of old octave bands to the current preferred values (and vice versa), to allow measurement and assessment. This conversion was done and the converted criteria are provided in Table 11-6

ANALYSIS YEAR

The future analysis year for purposes of determining operational noise is 2014, the year construction would be completed at the site and the plant would be fully upgraded.

IMPACT DEFINITION

For purposes of impact assessment, the proposed action will have a potential significant adverse noise impact if the *CEQR Technical Manual* relative noise criteria are exceeded or if noise levels due to plant operation (i.e., the total noise generated by all mechanical equipment at the entire plant including the planned Phase I and II Upgrades and the proposed action) exceed the octave band noise levels specified in the performance standards for manufacturing districts contained in both the New York City Zoning Resolution and the City of New York Noise Control Code.

NOISE PREDICTION METHODOLOGY

STATIONARY NOISE SOURCES

To determine potential noise impacts from stationary sources with the proposed action, the analysis followed the procedure listed below:

- Determine receptor locations on the property line and at the closest sensitive land uses in the future without the proposed action within the adjacent study area where the maximum project noise levels would be likely to occur;
- Measure the existing ambient noise levels at the closest sensitive receptors within the adjacent study area;
- Determine individual equipment sound power noise levels based on available data and published material;
- Determine the location of individual equipment on the project sites;
- Estimate noise attenuation due to building structures and enclosures, and other factors;
- Calculate noise levels at the property lines and other sensitive receptor locations using attenuation correction terms under the proposed action and future without the proposed action; and
- Compare calculated noise levels with standards.

Plant equipment lists were prepared for the proposed action for the Hunts Point WPCP. These lists included the number of operating units and the sound power levels generated by each piece of equipment. Equipment considered capable of producing significant noise levels included emergency generators, emergency generator stacks, process air blowers, channel air blowers, and rooftop HVAC fans. This equipment was then located in the plant coordinate system.

Octave band sound pressure levels, L_p, at receptor sites were calculated based on sound power levels using the following formula:

$L_p = L_w - A_{div} - A_{atm} - A_{ground} - A_{screen} - A_{TL} - A_D - 0.6$

where:

L_w is the point source sound power level, in dB re1 picowatt;

A_{div} is the attenuation due to geometrical divergence;

A_{atm} is the attenuation due to atmospheric absorption;

A_{ground} is the attenuation due to the ground effects;

A_{screen} is the attenuation due to screening;

A_{TL} is the attenuation due to sound transmission loss due to building partition (for equipment located inside a structure only); and

A_D is the attenuation due to acoustical design features.

Sound power levels were determined based on data from manufacturers, published material, and professional experience with similar equipment. Where sufficient information was available regarding potential equipment, manufacturers were contacted and information on expected sound pressure levels was requested. In many cases the data were available. In cases where either the manufacturer could not provide specific information, or sufficient detailed information regarding the equipment were not available, data from the literature[1,2] and other sources for similar equipment were used.

The analysis included the following: attenuation due to geometrical divergence, attenuation due to absorption in the air, attenuation due to ground effects (i.e., for hard ground absorption), attenuation due to shielding or obstructions, attenuation due to sound transmission loss due to building partitions, and attenuation due to acoustical design features, such as enclosures or silencers for emergency generators.

To account for the loss in sound power for equipment located within enclosed structures, a noise attenuation factor of 35 dBA was utilized. This factor was considered to be reasonable since structures at the Hunts Point WPCP would have exterior walls constructed of 4-inch brick units at total eight inches thick. Based on a review of U.S. Environmental Protection Agency (EPA) documents discussing the transmission of noise through walls and floors, a reasonable attenuation factor for a block/plaster unit four inches thick (as compared to the minimum eight inches at the plant) is 45 dBA. Further, EPA has published field measured transmission loss values for common building materials. Of these common building materials, the material most closely matching that to be employed at the Hunts Point WPCP is a 7-inch wall (4-inch brick, 1-inch cavity, and 2-inch rigid insulation). Field measured transmission loss values ranged from 44 dBA through 70 dBA based upon a corresponding range of frequencies in hertz. Based upon these evaluations, it was determined that 35 dBA was a reasonable attenuation factor for equipment completely located within a structure. For any other equipment, either in the open or within a structure but with an opening to the outside (e.g., vents) a factor of zero was employed.

[1] Electric Power Plant Environmental Noise Guide, Edison Electric Institute, 1984

[2] Noise and Vibration Control for Mechanical and Electrical Sources in Buildings, Laymon Miller, 1974

Reductions in sound power due to the "loss of line of sight" within the plant (i.e., noise reductions from intervening structures in the plant) were not included in the analysis. By not including this attenuation in the analysis, the analysis becomes more conservative and might overestimate the noise to the receptor.

The noise levels at receptor locations were calculated using distance correction terms and attenuation. The EPA-recommended method of adding sound levels from separate sources which is described in *Direct Environmental Factors at Municipal Wastewater Treatment Works, Evaluation and Control of Site Aesthetics, Air Pollutants, Noise and Other Operation and Construction Factors*, was used to determine the total noise level at the receptor locations.

Total stationary source noise levels at each receptor site were determined by adding the contribution from each piece of equipment and comparing the total calculated noise levels to the applicable impact criteria.

B. EXISTING CONDITIONS

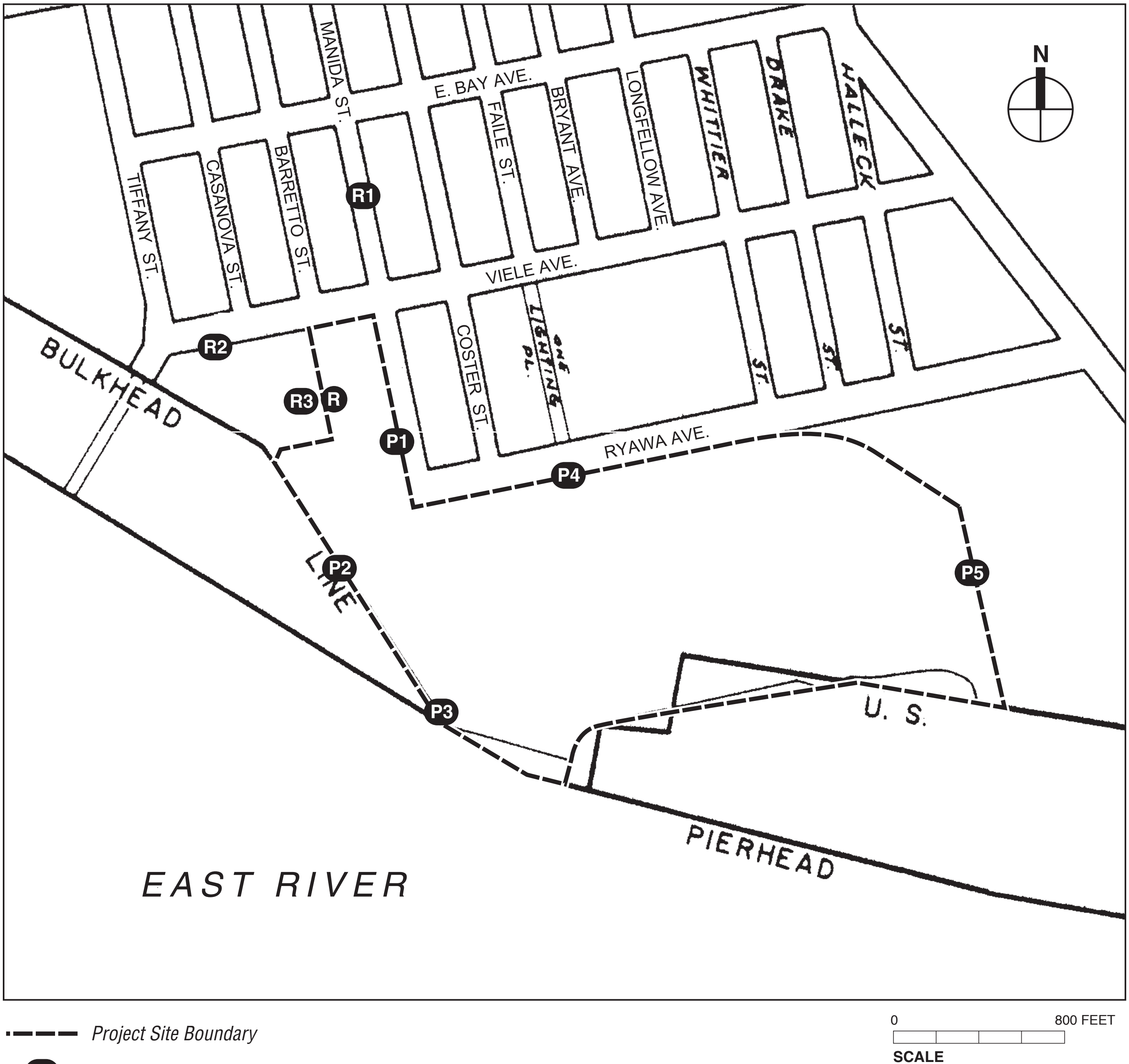
SITE DESCRIPTION

The Hunts Point WPCP project site is located in the Bronx in an area bordered by Viele Avenue and Ryawa Avenue to the north, East River to the south, Halleck Street to the east, and Barretto Street to the west. The Vernon C. Bain Center, a Department of Corrections facility, lies to the east, and the Barretto Point Park borders the site on the northwest boundary. The site is zoned M3-1. Traffic is the dominant noise source.

SELECTION OF NOISE RECEPTOR LOCATIONS

Three (3) sensitive receptor sites were selected as representative existing ambient conditions adjacent to the Hunts Point WPCP project site for the noise impact analysis. Site R1 was located on Manida Street between East Bay Avenue and Viele Avenue (closest residential receptor), Site R2 was located on Viele Avenue between Tiffany Street and Casanova Street adjacent to Barretto Point Park, and Site R3, which is the closest sensitive receptor, was located in Barretto Point Park at 50 feet away from the plant west property line. These receptor sites are representative of other sensitive receptors in the immediate area, and are generally the locations where maximum project impacts would be expected. The Vernon C. Bain Center was not selected as a receptor site, because of the distance from both the plant's property line and additional equipment being proposed under the Phase III Upgrade, which is located on the opposite end of the plant. The only equipment proposed on the east side of the plant is the carbon addition facility, which would not affect the Center because the equipment consists of underground storage tanks with submersible pumps.

In addition, five (5) receptor sites located on the plant property line were selected to determine compliance with the Performance Standards contained in the New York City Zoning Resolution. Site P1 was located on the project property line on Manida Street, sites P2 and P3 were located on the west project property line, Site P4 was located on the north property line on Ryawa Avenue, and Site P5 was located on the east property line. These sites are the worst-case receptor locations with regard to noise from the plant's equipment (see Figure 11-1).



Project Site Boundary

R1 Operational Noise Sensitive Receptor Location

P1 Operational Noise Property Line Receptor Location

Operational Noise Receptor Locations

Figure 11-1

NOISE MONITORING

Spot noise measurements were performed for 20-minute periods at Sites R1 and R2 on November 11th and 17th, December 15th and 16th, 2004, and continuous (24-hour) noise monitoring was performed at Site R (situated on the property line with Barretto Point Park at a location setback from Viele Avenue), which is representative of Site R3, on November 15th, 16th, and 17th, 2004. Appendix 11 contains the measured noise levels at these four sites. No noise monitoring was done at Sites P1 through P5 because the performance standards analysis is not based on existing ambient conditions.

EQUIPMENT USED

The instrumentation used for the noise measurements was a Brüel & Kjær Type 4176 ½-inch microphone connected to a Brüel & Kjær Model 2260 Type 1 (according to ANSI Standard S1.4-1983) sound level meter. This assembly was mounted at a height of five feet above the ground surface on a tripod and at least six feet away from any large sound-reflecting surface to avoid major interference with sound propagation. The meter was calibrated before and after readings with a Brüel & Kjær Type 4231 sound-level calibrator using the appropriate adaptor. Measurements at each location were made on the A-scale (dBA). The data were digitally recorded by the sound level meter and displayed at the end of the measurement period in units of dBA. Measured quantities included L_{eq}, $L_{eq(1)}$, L_{10}, L_{50}, and L_{90}. A windscreen was used during all sound measurements except for calibration. Only traffic related noise was measured; noise from other sources (e.g. emergency sirens, aircraft flyovers, etc.) was excluded from the measured noise levels. This procedure was used in all noise monitoring, and valid acoustical data were obtained under acceptable weather and street surface conditions.

Weather conditions were noted to ensure a true reading as followed: wind speed under 12 mph; relative humidity under 90 percent; and temperature above 14°F and below 122°F. All measurement procedures conformed to the requirements of ANSI Standard S1.13-1971 (R1976).

RESULTS OF MEASUREMENTS

The measured noise levels are shown in Table 11-7. The noise levels at each site are considered to be representative of the quietest ambient noise levels near the project site. The quietest noise levels were selected to provide a conservative assessment and identify the largest incremental change. At Site R, which is representative of Site R3 in Barretto Point Park, the lowest measured value during time periods when users could be expected to be in the park was selected (i.e., between 7 AM and 9 PM). In terms of New York City CEQR guideline levels, the noise levels at Sites R1 and R3 are considered to be in the “acceptable” range, and the noise levels at Site R2 are considered to be in the “marginally acceptable” range.

Table 11-7
Existing Noise Levels (in dBA)

Site	Location	Time	L_{eq}	L_{10}
R1	Manida Street between East Bay Avenue and Viele Avenue (residential receptor)	7:00-8:00 PM	55.3	58.0
R2	Viele Avenue between Tiffany and Casanova Street	1:00-2:00 AM	64.7	66.4
*R (park property line)	Barretto Point Park property line - R3 is located in the park, 50 feet west of Site R (park property line)	11:00 AM-12:00 NOON	58.5	60.4

Note: Field measurements were performed by AKRF, Inc. on November 11, 15, 16 and 17, December 15 and 16, 2004.
***** The measured noise levels at Site R are representative for noise levels at Site R3.

C. THE FUTURE WITHOUT THE PROPOSED ACTION

In the future without the proposed action, or the No Action condition, the existing plant would operate as upgraded under the Phase I and Phase II conditions. Noise levels due to stationary sources as part of the Phase I and Phase II Upgrades were determined using the methodology described previously.

Table 11-8 shows noise levels in the Future without the Proposed Action at receptor Sites R1, R2, and R3. At all three Sites, the Phase I and Phase II Upgrades would increase the maximum noise level by 0.4 dBA compared to the existing ambient noise levels. In terms of New York City CEQR guideline levels, the noise levels at Site R1 would remain in the "acceptable" range, the noise levels at Site R2 would remain in the "marginally acceptable" range, and the noise levels at Site R3 would remain in the "acceptable" range.

Table 11-8
2014 Noise Levels Without the Proposed Action (in dBA)

Site	Location	Quietest Existing Noise Levels $L_{eq(1)}$	Plant Generated Future without the Proposed Action Noise Levels $L_{eq(1)}$	Total Future without the Proposed Action Levels $L_{eq(1)}$	Change
R1	Manida Street between East Bay Avenue and Viele Avenue (Residential receptor)	55.3	42.1	55.5	0.2
R2	Viele Avenue between Tiffany and Casanova Street (Barretto Point Park)	64.7	46.1	64.8	0.1
R3	In Barretto Point Park, 50 feet west of plant property line	58.5	48.5	58.9	0.4

As discussed in Chapter 2, "Land Use, Zoning, Neighborhood Character, and Open Space," in the future without the proposed action, the South Bronx Greenway could be constructed by the year 2011. The Ryawa-Viele Connection would involve the implementation of improvements along a portion of Viele Avenue (between Barretto Point Park and Manida Street), Manida Street (between Viele and Ryawa Avenues), and Ryawa Avenue (from Manida Street to approximately Halleck Street). The conceptual plan shown in the master plan for this element of the greenway includes improvements consisting of a 24-foot planted buffer between the plant site and the sidewalk along Ryawa Avenue, the introduction of a bikeway along all three streets, and extensive street plantings. The use of this section of the South Bronx Greenway would be transient by individuals. Noise emanating from the plant under future conditions without the proposed action would not be disruptive of the types of activities that would occur along the greenway.

D. PROBABLE IMPACTS OF THE PROPOSED ACTION

STATIONARY NOISE SOURCES

An assessment of potential noise impacts from stationary sources for the proposed action was performed using the methodology described previously. The Hunts Point WPCP with the proposed action would utilize noise control measures, such as enclosures or silencers for emergency generators. Appendix 11 provides additional information on the location of sources.

Table 11-9 shows noise levels with the proposed action at receptor Sites R1, R2, and R3. The maximum predicted incremental $L_{eq(1)}$ noise level from the proposed action, 1.1 dBA, would occur at Site R3 (Baretto Point Park). These maximum predicted $L_{eq(1)}$ incremental changes would be less than 3 dBA, and therefore, would not result in predicted significant adverse impacts. Reviewing the results of Tables 11-8 and 11-9, the combined impacts of the maximum predicted $L_{eq(1)}$ operational noise increases from the entire plant as upgraded under the Phases I and II Upgrades and the proposed action would result in incremental noise impacts less than 3 dBA. As discussed above, noise sources from the carbon addition facility are not significant. The carbon addition facility is not located near the Phase III upgrade noise sources, and thus, would not contribute to the incremental noise levels reported in Table 11-9. In terms of New York City CEQR guideline levels, the noise levels at Site R1 would remain in the “acceptable” range, the noise levels at Site R2 would remain in the “marginally acceptable” range, and the noise levels at Site R3 would remain in the “acceptable” range.

Table 11-9
2014 Noise Levels With the Proposed Action (in dBA)

Site	Location	Total Future without the Proposed Action Levels $L_{eq(1)}$	Proposed Action Generated Noise Levels $L_{eq(1)}$	Total Future with the Proposed Action Noise Levels $L_{eq(1)}$	Change
R1	Manida Street between East Bay Avenue and Viele Avenue (Residential receptor)	55.5	35.2	55.5	0.0
R2	Viele Avenue between Tiffany and Casanova Street (Barretto Point Park)	64.8	47.3	64.8	0.0
R3	In Barretto Point Park, 50 feet west of plant property line	58.9	53.6	60.0	1.1

Table 11-10 shows octave band noise levels from the entire plant as upgraded under the proposed action at the closest residential receptor location near the project site, and compares them to the maximum permitted Octave Band Sound Pressure Levels in the New York City Noise Control Code. The entire plant including the operation of all the plant equipment with the proposed action results in sound pressure levels at the nearest residential receptor site that would not exceed the maximum permitted decibel limits under the octave band noise level standards contained in the New York City Noise Code.

Table 11-11 shows octave band noise levels at the five worst-case receptor locations on the property lines of the project site. With the proposed action, the sound pressure levels at all five receptor sites (and thus at the property line of the plant) would not exceed the maximum permitted decibel limits under the performance standards contained in the New York City Zoning Resolution.

In addition, as described above, in the future without the proposed action, the South Bronx Greenway could be constructed by the year 2011. Along Viele Avenue, noise levels generated by the proposed action would be low as indicated in Table 11-9 (see Site R2). The maximum predicted incremental $L_{eq(1)}$ noise level along Ryawa Avenue is predicted to be 0.1 dBA with the proposed action. This is based on predicted noise levels near Site P4 of 58.6 dBA with a background level of 58.5 dBA. Further, the use of this section of the South Bronx Greenway would be transient by individuals. Noise emanating from the plant under future conditions with the proposed action would not be disruptive of the types of activities that would occur along the greenway.

Table 11-10
Octave Band Sound Pressure Levels at Nearby Residential Receptor Locations (in dB)

Octave Bands (Hz)	Maximum Sound Pressure Level for Residential Buildings (dB)	Receptor R1- Manida Street between East Bay Avenue and Viele Avenue (dB)
31.5	70	52*
63	61	49
125	53	47
250	46	42
500	40	35
1000	36	28
2000	34	24
4000	33	19
8000	32	17

* Estimated noise level
Source: City of New York Noise Control Code Subchapter 5, effective July 1, 2007.

Table 11-11
Octave Band Sound Pressure Levels at Property Line (in dB)

Octave Band (Hz)	Manufacturing District Regulation (M3)	P1 (Manida Street Property Line)	P2 (West Property Line)	P3 (West Property Line)	P4 (Ryawa Property Line)	P5 (East Property Line)
63	79	71	66	73	76	60
125	74	68	64	72	73	60
250	69	62	61	68	68	57
500	63	55	56	62	62	53
1000	57	52	50	55	55	48
2000	52	51	47	52	50	43
4000	48	47	42	48	46	37
8000	45	41	36	45	44	32

Source: City of New York's Zoning Resolution Section 42-213.

CONCLUSIONS

Based on the analyses presented above, the proposed action (for both the two-digester and four-digester scenarios) would not result in any predicted exceedances of the suggested incremental thresholds in the City's *CEQR Technical Manual* at nearby sensitive receptors, and would not create exceedances of the octave band limits contained in the New York City Noise Code or the performance standards of the New York Zoning Resolution. Therefore, there would be no predicted significant adverse noise impacts from the proposed action. ✷