Chapter 19: Noise

A. INTRODUCTION

Noise pollution in an urban area comes from many sources. Some sources are activities essential to the health, safety, and welfare of a city's inhabitants, such as noise from emergency vehicle sirens, garbage collection operations, and construction and maintenance equipment. Other sources, such as traffic, are essential to the viability of a 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 noise analysis presented in this chapter focuses on traffic-related noise that would result from the proposed East Park roads.

B. NOISE FUNDAMENTALS

Quantitative information on the effects of airborne noise on people is well-documented. If sufficiently loud, 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. Several noise scales and rating methods are used to quantify the effects of noise on people, taking into consideration such factors as loudness, duration, time of occurrence, and changes in noise level with time. However, it must be noted that all the stated effects of noise on people vary greatly with each individual.

"A"-WEIGHTED SOUND LEVEL (dBA)

Noise is typically measured in units called decibels (dB), which are 10 times the logarithm of the ratio of the sound pressure squared to a standard reference presence 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. 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, in the measurement system to simulate the response of the human ear. For most noise assessments, the A-weighted sound pressure level in units of dBA is used in view of its widespread recognition and its close correlation with perception. In the current study, all measured noise levels are reported in A-weighted decibels (dBA). Common noise levels in dBA are shown in Table 19-1.

ABILITY TO PERCEIVE CHANGES IN NOISE LEVELS

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

Table 19-1
Common Noise Levels

Sound Source	(dBA)
Military jet, air raid siren	130
Amplified rock music	110
Jet takeoff at 500 meters	100
Freight train at 30 meters	95
Train horn at 30 meters	90
Heavy truck at 15 meters	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.

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

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

Source: Bolt, Beranek and Newman, 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 of dBA describes a noise level at just one moment, and because very few noises are constant, other ways of describing noise over more extended periods have been developed. One way is to describe the fluctuating noise heard over a specific 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 period (e.g., 1 hour, denoted by $L_{eq(1)}$, or 24 hours, denoted by $L_{eq(24)}$), conveys the same sound energy as the actual time-varying sound. Statistical sound level descriptors, such as L_1, L_{10}, L_{50}, L_{90}, and L_x, are 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_{01} levels.

For purposes of the proposed project, the maximum 1-hour equivalent sound level ($L_{eq(1)}$) has been selected as the noise descriptor to be used in this noise impact evaluation. $L_{eq(1)}$ is the noise

descriptor recommended for use in the *City Environmental Quality Review (CEQR) Technical Manual* for vehicular traffic and construction noise impact evaluation, and is used to provide an indication of highest expected sound levels. The 1-hour L_{10} is the noise descriptor used in the *CEQR Technical Manual* noise exposure guidelines for City environmental impact review classification.

C. NOISE STANDARDS AND CRITERIA

Noise levels associated with the construction and operation of the proposed project would be subject to the emission source provisions of the New York City Noise Control Code and to noise criteria set forth in the CEQR process. Other standards and guidelines promulgated by federal agencies do not apply to project noise control, but are useful to review in that they establish measures of impacts. Construction equipment is regulated by the Noise Control Act of 1972.

NEW YORK CEQR NOISE CRITERIA

The *CEQR Technical Manual* contains noise exposure guidelines for use in City environmental impact review, and required attenuation values to achieve acceptable interior noise levels. These values are shown in Tables 19-3 and 19-4. Noise exposure is classified into four categories: "acceptable," "marginally acceptable," "marginally unacceptable," and "clearly unacceptable." The *CEQR Technical Manual* criteria are based on maintaining an interior noise level for the worst-case hour L_{10} or less than or equal to 45 A-weighted decibels (dBA).

NEW YORK STATE DEPARTMENT OF TRANSPORTATION ENVIRONMENTAL PROCEDURES MANUAL

The guidelines of the *CEQR Technical Manual* will be used to determine appropriate intersection locations for the proposed noise receptors. In addition to being a destination for new vehicle trips to and from the park, the proposed project would also provide connections to and from the West Shore Expressway, a state highway (Route 440). Although environmental analysis of state roadways under the jurisdiction of the New York State Department of Transportation (NYSDOT) normally follows the procedures contained in the NYSDOT *Environmental Procedures Manual (EPM)*, the *CEQR Technical Manual* procedures and guidance are generally more stringent and are considered more appropriate for this analysis.

D. IMPACT DEFINITION

As recommended in the *CEQR Technical Manual*, this study uses the following criteria to define a significant adverse noise impact:

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

Table 19-3
Noise Exposure Guidelines For Use in City Environmental Impact Review[1]

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

Notes:
(i) In addition, any new activity shall not increase the ambient noise level by 3 dBA or more; (ii) *CEQR Technical Manual* noise criteria for train noise are similar to the above aircraft noise standards: the noise category for train noise is found by taking the L_{dn} value for such train noise to be an L^{y}_{dn} (L_{dn} contour) value.

Table Notes:
1 Measurements and projections of noise exposures are to be made at appropriate heights above site boundaries as given by American National Standards Institute (ANSI) Standards; all values are for the worst hour in the time period.
2 Tracts of land where serenity and quiet are extraordinarily important and serve an important public need, and where the preservation of these qualities is essential for the area to serve its intended purpose. Such areas could include amphitheaters, particular parks or portions of parks, or open spaces dedicated or recognized by appropriate local officials for activities requiring special qualities of serenity and quiet. Examples are grounds for ambulatory hospital patients and patients and residents of sanitariums and nursing homes.
3 One may use FAA-approved L_{dn} contours supplied by the Port Authority, or the noise contours may be computed from the federally approved INM Computer Model using flight data supplied by the Port Authority of New York and New Jersey.
4 External Noise Exposure standards for industrial areas of sounds produced by industrial operations other than operating motor vehicles or other transportation facilities are spelled out in the New York City Zoning Resolution, Sections 42-20 and 42-21. The referenced standards apply to M1, M2, and M3 manufacturing districts and to adjoining residence districts (performance standards are octave band standards).

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

Table 19-4
Required Attenuation Values to Achieve Acceptable Interior Noise Levels

	Marginally Acceptable	Marginally Unacceptable		Clearly Unacceptable		
Noise level with proposed action	65<L_{10}≤70	70<L_{10}≤75	75<L_{10}≤80	80<L_{10}≤85	85<L_{10}≤90	90<L_{10}≤95
Attenuation[1]	25 dB(A)	30dB(A)	35 dB(A)	40 dB(A)	45 dB(A)	50 dB(A)

Note: [1] The above composite window-wall attenuation values are for residential dwellings. Commercial office spaces and meeting rooms would be 5 dB(A) less in each category. All the above categories require a closed window situation and hence an alternate means of ventilation.

Source: New York City Department of Environmental Protection (DEP)

- An increase of 3 dBA, or more, in Build $L_{eq(1)}$ noise levels at sensitive receptors over those calculated for the No Build condition, if the analysis period is a nighttime period (defined by the *CEQR Technical Manual* criteria as being between 10 PM and 7 AM).

E. NOISE PREDICTION METHODOLOGY

INTRODUCTION

The noise impact assessment examined the effects of noise from increased traffic at noise sensitive locations located along routes that project-generated traffic would use to access/egress the Fresh Kills Park and at locations in the Fresh Kills Park. While noise levels in Fresh Kills park would be a function of vehicular traffic and stationary noise sources (i.e., playgrounds, amphitheatre, etc.), this assessment analyzed noise due to vehicular traffic only. The methodology used to determine the vehicular traffic noise effects are discussed below.

MOBILE NOISE SOURCES

At all of the receptor sites in the study area, the dominant operational noise sources are vehicular traffic on adjacent and nearby streets and roadways. Noise from other sources, such as local or nearby industrial or institutional uses, are limited and do not contribute significantly to local ambient noise levels. To screen area roadways for the potential for a significant project impact, a proportional modeling technique was used to determine approximate increases in noise levels. To calculate noise from traffic on adjacent and nearby streets and roadways, the Federal Highway Administration [FHWA] *Traffic Noise Model* (TNM, version 2.5) was used. The noise analysis examined three weekday conditions: AM, midday, and PM time periods, and two Saturday conditions: midday and PM time periods. The selected time periods are when the proposed project would have maximum traffic generation and/or the maximum potential for significant adverse noise impacts based on the traffic studies presented in Chapter 16, "Traffic and Parking." The proportional modeling and TNM procedures used for analysis are described below.

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 No Build and Build levels. Using this methodology, vehicular traffic volumes were converted into 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; 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

With this methodology, assuming 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 increased by 100 PCE, or doubled to a total of 200 PCE, the noise level would increase by 3.0 dBA.

TRAFFIC NOISE MODEL

The 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 included 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.

ANALYSIS PROCEDURE

To determine potential noise impacts from project-generated traffic, the following procedure was used in performing the noise analysis:

- A noise monitoring location (i.e. Receptor Site S4) was selected at a noise-sensitive land use (i.e., residential) located on a predicted traffic route that project-generated traffic would use to access and egress the project site;
- Noise monitoring locations were selected to predict noise levels in the Fresh Kills Park (i.e., Receptor Sites S1, S2, and S3);
- Existing noise levels were determined at the receptor sites listed above, for each analysis time period, by performing field measurements;
- Future noise levels for the No Build and Build conditions, for each receptor site and for each analysis time period, were determined using the TNM results based on projected traffic conditions; and
- Using the TNM, future noise levels were determined in the Fresh Kills Park.

F. EXISTING CONDITIONS

SITE DESCRIPTION

The project site (described in detail in Chapter 1, "Project Description") is all City-owned land (the majority of which is managed by DSNY) and consists of landfill and open space or parkland/natural areas. The project site fronts the Arthur Kill waterfront to the west and Richmond Avenue to the east. The project site is bisected by the West Shore Expressway. To the north is the William T. Davis Wildlife Refuge. The southern boundary is generally defined by Arthur Kill Road. The project study area consists primarily of open space (City parks and wildlife preserves), and commercial, residential, and industrial uses.

SELECTION OF NOISE RECEPTOR LOCATIONS

MOBILE SOURCE ANALYSIS

As mentioned above, one receptor site, Site S4, was selected for project impact assessment purposes due to the project-generated traffic. Receptor Site S4 represents residences on Yukon Avenue between Richmond Avenue and Forest Hill Road. The Yukon Avenue Connection would result in project-generated traffic using this section of Yukon Avenue to access/egress the Fresh Kills Park. Consequently, this location is where maximum project impacts would be

expected. At all other locations, particularly locations outside the study area, project-generated traffic would be less and/or would constitute a small portion to total noise levels, and consequently would not have the potential for causing a significant increase in noise levels.

ASSESSMENT OF NOISE LEVELS IN FRESH KILLS PARK

Since existing noise levels in the project site's eastern portion are primarily a function of vehicular traffic on Richmond Avenue, three noise receptor sites (S1, S2, S3) were selected along Richmond Avenue. Sites S1, S2 and S3 were used to calibrate the TNM so that future vehicular noise levels in the Fresh Kills Park could be predicted with confidence. To determine vehicular noise levels throughout the eastern portion of the Fresh Kills Park, a grid of receptor points was crated. This grid shows the spatial extent of the noise levels in the Fresh Kills Park due to the Yukon Avenue option. The grid results were used to identify areas in Fresh Kills Park that would exceed CEQR's recommended exterior noise levels for open space (i.e., 55 dBA $L_{(10)}$).

NOISE MONITORING

Monitoring was performed at four locations within the study area. Three locations (S1, S2, and S3) were located along the eastern boundary of the proposed park adjacent to Richmond Avenue and were used to verify and calibrate the TNM. The fourth location (S4) was located at a cluster of residences on Yukon Avenue between Richmond Avenue and Forest Hill Road for impact analysis and TNM calibration purposes.

Table 19-5 lists the locations of each receptor and their associated land uses. Figure 19-1 shows the monitoring locations and existing land uses.

At each monitoring location, 20-minute noise measurements were made for five time periods to determine existing noise levels. Noise measurements were performed by AKRF on April 25, May 6, May 26, May 27, May 28, and May 30, 2009.

Table 19-5
Noise Receptor Locations

Receptor	Location	Associated Existing Land Use	Associated Future Land Use
S1	Richmond Avenue between Richmond Hill Road and Platinum Avenue	DSNY Property*	Open Space
S2	Richmond Avenue between Platinum Avenue and Yukon Avenue	DSNY Property*	Open Space
S3	Richmond Avenue South of Forest Hill Road	DSNY Property*	Open Space
S4	Yukon Avenue between Richmond Avenue and Forest Hill Road	Residential	Residential

Notes: *Former Fresh Kills Landfill

EQUIPMENT USED DURING NOISE MONITORING

Measurements were performed using a Brüel & Kjær sound level meter Type 2260, a Brüel & Kjær Sound Level Calibrator Type 4231, and a Brüel & Kjær ½-inch microphone Type 4189. The Brüel & Kjær 2260 is a Type 1 sound level meter. The instrument was mounted on a tripod at a height of 5 feet above the ground. The meter was calibrated before and after readings using a Brüel & Kjær Type 4231 sound level calibrator with the appropriate adaptors. The data were digitally recorded by the sound level meter and displayed at the end of the measurement period in units of dBA. Measured quantities included L_{eq}, L_1, L_{10}, L_{50}, and L_{90}. A windscreen was used

during all sound measurements except for calibration. All measurement procedures followed the guidance listed ANSI Standard S1.13-2005.

RESULTS OF BASELINE MEASUREMENTS

Table 19-6 summarizes the results of the baseline measurements for the Weekday AM, midday, and PM and the Saturday midday and PM analysis hours. In general, noise levels are moderate to relatively high and reflect the level of vehicular activity on the adjacent streets.

Table 19-6
Measured Existing Noise Levels (in dBA)

Receptor	Location		Time	$L_{eq(1)}$	L_1	L_{10}	L_{50}	L_{90}
S1	Richmond Avenue between Richmond Hill Road and Platinum Avenue	Weekday	AM	75.1	83.1	79.1	72.3	66.9
			MD	74.6	80.5	77.8	73.5	67.9
			PM	78.4	83.0	79.2	75.0	67.5
		Saturday	MD	77.9	87.9	79.2	73.9	67.5
			PM	74.9	82.1	77.9	72.5	64.9
S2	Richmond Avenue between Platinum Avenue and Yukon Avenue	Weekday	AM	72.7	78.9	76.1	71.7	64.3
			MD	73.7	80.8	78.2	70.2	59.7
			PM	73.8	79.7	77.7	71.5	63.0
		Saturday	MD	70.6	78.0	74.6	67.0	56.4
			PM	70.9	78.0	75.2	68.3	57.7
S3	Richmond Avenue South of Forest Hill Road	Weekday	AM	74.2	82.1	78.1	72.3	60.1
			MD	74.0	80.5	77.4	72.0	62.3
			PM	73.6	79.7	77.9	68.7	58.6
		Saturday	MD	74.1	79.8	76.7	71.3	60.4
			PM	73.8	81.4	77.4	71.7	60.3
S4	Yukon Avenue between Richmond Avenue and Forest Hill Road	Weekday	AM	65.1	76.8	68.2	59.0	51.3
			MD	67.4	77.9	71.1	63.3	56.8
			PM	65.1	77.3	66.8	58.6	51.1
		Saturday	MD	62.1	72.8	64.7	58.7	54.9
			PM	62.1	71.3	66.0	58.6	55.7

Notes: Field measurements were performed by AKRF, Inc. on April 25, May 6, May 26, May 27, May 28, and May 30, 2009

In terms of CEQR noise exposure guidelines, during the hour with the highest measured noise levels, based on the measured L_{10} values, existing noise levels at sites S1 through S3 (representing the DSNY property west of Richmond Avenue—the site of the proposed park—commercial properties easy of Richmond Avenue) and at site S4 are in the "marginally unacceptable" category.

TRAFFIC NOISE MODEL VALIDATION

Although the TNM has been shown to be an accurate predictor of vehicular noise levels for most situations, the model was validated for use at all receptor sites by comparing measured and modeled predicted noise levels. Using the inputs for the traffic volumes, speeds, roadway alignments, ground reflections, and existing buildings, the TNM was run to predict existing noise levels at each receptor site for the five analysis time periods. A difference of 3 dBA or less between the modeled noise levels and measured noise levels indicates that the TNM can be used with confidence. Based upon the TNM predicted results, all of the modeled noise levels are within 3 dBA of the measured values.

G. THE FUTURE WITHOUT THE PROPOSED PROJECT

The future conditions without the proposed project were analyzed for two analysis years—2016 and 2036. Noise impacts were assessed based on increased traffic.

2016 ANALYSIS YEAR

Using the methodology previously described, future noise levels without the proposed action were calculated for all receptors for the 2016 analysis year. These No Build values are shown in Table 19-7.

Table 19-7
2016 Future Noise Levels Without the Proposed Project (in dBA)

Receptor	Location		Time	Existing $L_{eq(1)}$	No Build $L_{eq(1)}$	$L_{eq(1)}$ Change	No Build $L_{10(1)}$
S1	Richmond Avenue between Richmond Hill Road and Platinum Avenue	Weekday	AM	75.1	76.0	0.9	80.0
			MD	74.6	75.4	0.8	78.6
			PM	78.4	79.2	0.8	80.0
		Saturday	MD	77.9	78.7	0.8	80.0
			PM	74.9	75.6	0.7	78.6
S2	Richmond Avenue between Platinum Avenue and Yukon Avenue	Weekday	AM	72.7	73.5	0.8	76.9
			MD	73.7	74.5	0.8	79.0
			PM	73.8	74.5	0.7	78.4
		Saturday	MD	70.6	71.4	0.8	75.4
			PM	70.9	71.7	0.8	76.0
S3	Richmond Avenue South of Forest Hill Road	Weekday	AM	74.2	74.9	0.7	78.8
			MD	74.0	74.8	0.8	78.2
			PM	73.6	74.3	0.7	78.6
		Saturday	MD	74.1	74.9	0.8	77.5
			PM	73.8	74.6	0.8	78.2
S4	Yukon Avenue between Richmond Hill Road and Forest Hill Road	Weekday	AM	65.1	65.8	0.7	68.9
			MD	67.4	68.2	0.8	71.9
			PM	65.1	65.9	0.8	67.6
		Saturday	MD	62.1	62.8	0.7	65.4
			PM	62.1	62.8	0.7	66.7

In 2016, the increase in $L_{eq(1)}$ noise levels would be less than 1 dBA at all receptor sites. Changes of this magnitude would be barely perceptible and would be below the CEQR threshold for a significant impact. In terms of CEQR noise exposure guidelines, during the hour with the highest measured noise levels, based on the predicted L_{10} values, No Build noise levels at sites S1 through S3 (representing the DSNY property west of Richmond Avenue—the site of the proposed park--commercial properties easy of Richmond Avenue) and at site S4 would remain in the "marginally unacceptable" category.

2036 ANALYSIS YEAR

Using the methodology previously described, future noise levels without the proposed action were calculated for all receptors for the 2036 analysis year. These No Build values are shown in Table 19-8.

Table 19-8
2036 Future Noise Levels Without the Proposed Project (in dBA)

Receptor	Location		Time	Existing $L_{eq(1)}$	No Build $L_{eq(1)}$	$L_{eq(1)}$ Change	No Build $L_{10(1)}$
S1	Richmond Avenue between Richmond Hill Road and Platinum Avenue	Weekday	AM	75.1	76.7	1.6	80.7
			MD	74.6	76.1	1.5	79.3
			PM	78.4	79.9	1.5	80.7
		Saturday	MD	77.9	79.4	1.5	80.7
			PM	74.9	76.4	1.5	79.4
S2	Richmond Avenue between Platinum Avenue and Yukon Avenue	Weekday	AM	72.7	74.2	1.5	77.6
			MD	73.7	75.3	1.6	79.8
			PM	73.8	75.3	1.5	79.2
		Saturday	MD	70.6	72.2	1.6	76.2
			PM	70.9	72.5	1.6	76.8
S3	Richmond Avenue South of Forest Hill Road	Weekday	AM	74.2	75.8	1.6	79.7
			MD	74.0	75.5	1.5	78.9
			PM	73.6	75.1	1.5	79.4
		Saturday	MD	74.1	75.6	1.5	78.2
			PM	73.8	75.2	1.4	78.8
S4	Yukon Avenue between Richmond Hill Road and Forest Hill Road	Weekday	AM	65.1	66.6	1.5	69.7
			MD	67.4	69.0	1.6	72.7
			PM	65.1	66.6	1.5	68.3
		Saturday	MD	62.1	63.6	1.5	66.2
			PM	62.1	63.6	1.5	67.5

In 2036, the increase in $L_{eq(1)}$ noise levels would be less than 2 dBA at all receptor sites. Changes of this magnitude would be barely perceptible and would be below the CEQR threshold for a significant adverse impact. In terms of CEQR noise exposure guidelines, during the hour with the highest measured noise levels, based on the predicted L_{10} values, No Build noise levels at sites S2 and S3 (representing the DSNY property west of Richmond Avenue—the site of the proposed park—commercial properties easy of Richmond Avenue below Platinum Avenue) and at site S4 would remain in the "marginally unacceptable" category, while No Build noise levels at site S1 (representing the DSNY property west of Richmond Avenue—the site of the proposed park--commercial properties easy of Richmond Avenue above Platinum Avenue) would change from the "marginally acceptable" category to the "clearly unacceptable" category.

H. THE FUTURE WITH THE PROPOSED PROJECT

2016 ANALYSIS YEAR

Using the methodology previously described, future noise levels with the proposed action were calculated for the 2016 analysis year. These values are shown in Table 19-9.

In 2016, when comparing the future with and the future without the proposed project, the noise levels would actually decrease at receptors S1 through S3. This results from a decrease in traffic volumes on Richmond Avenue. Traffic is expected to use the proposed roads within the park to traverse it, rather than using Richmond Avenue to go around the park. At site S4, the noise levels in the future with the proposed project would increase by less than 2 dBA, when compared to the No Build, due to project-generated traffic using Yukon Avenue to enter/exit the Fresh Kills Park via the Yukon Avenue Connection option. Changes of this magnitude would be considered barely perceptible and would be below the CEQR threshold for a significant impact. In terms of CEQR Noise Exposure Guidelines, noise levels at sites S2 through S4 would remain in the

"marginally unacceptable" category, and noise levels at site S1 would change from the "marginally unacceptable" category to the "clearly unacceptable" category.

Table 19-9
2016 Future Noise Levels With the Proposed Project (in dBA)

Receptor	Location		Time	No Build $L_{eq(1)}$	Build $L_{eq(1)}$	$L_{eq(1)}$ Change	Build $L_{10(1)}$
S1	Richmond Avenue between Richmond Hill Road and Platinum Avenue	Weekday	AM	76.0	75.6	-0.4*	79.6
			MD	75.4	74.9	-0.5*	78.1
			PM	79.2	78.8	-0.4*	79.6
		Saturday	MD	78.7	78.3	-0.4*	79.6
			PM	75.6	75.3	-0.3*	78.3
S2	Richmond Avenue between Platinum Avenue and Yukon Avenue	Weekday	AM	73.5	73.3	-0.2*	76.7
			MD	74.5	74.4	-0.1*	78.9
			PM	74.5	74.4	-0.1*	78.3
		Saturday	MD	71.4	71.3	-0.1*	75.3
			PM	71.7	71.6	-0.1*	75.9
S3	Richmond Avenue South of Forest Hill Road	Weekday	AM	74.9	74.8	-0.1*	78.7
			MD	74.8	74.6	-0.2*	78.0
			PM	74.3	74.2	-0.1*	78.5
		Saturday	MD	74.9	74.8	-0.1*	77.4
			PM	74.6	74.4	-0.2*	78.0
S4	Yukon Avenue between Richmond Hill Road and Forest Hill Road	Weekday	AM	65.8	67.6	1.8	70.7
			MD	68.2	69.6	1.4	73.3
			PM	65.9	67.4	1.5	69.1
		Saturday	MD	62.8	63.9	1.1	66.5
			PM	62.8	64.3	1.5	68.2

Notes: *Decrease in noise levels due to traffic diverted from Richmond Avenue to proposed in-park roads.

2036 ANALYSIS YEAR

Using the methodology previously described, future noise levels with the proposed action were calculated for the 2036 analysis year. These values are shown in Table 19-10.

In 2036, when comparing the future with and without the proposed project, the noise levels would actually decrease at receptors S1 through S3 during certain time periods. This results from a decrease in traffic volumes on Richmond Avenue. Similarly to what was described in the 2016 analysis, traffic is expected to be travel on the proposed park roads in order to traverse it, rather than going around the park on Richmond Avenue. At site S4 and Sites S2 and S3 during certain time periods, the noise levels in the future with the proposed project would increase relative to those in the future without the proposed project due to an increase in traffic on Yukon Avenue accessing the Yukon Avenue Connection, but the increases would be less than 2.5 dBA. These changes would be barely perceptible and would be below the CEQR threshold for a significant adverse impact. In terms of CEQR Noise Exposure Guidelines, noise levels at sites S1 through S4 would remain in the "marginally unacceptable" category. In terms of CEQR Noise Exposure Guidelines, noise levels at sites S1 through S4 would remain in the "marginally unacceptable" category.

Table 19-10
2036 Future Noise Levels With the Proposed Project (in dBA)

Receptor	Location		Time	No Build $L_{eq(1)}$	Build $L_{eq(1)}$	$L_{eq(1)}$ Change	Build $L_{10(1)}$
S1	Richmond Avenue between Richmond Hill Road and Platinum Avenue	Weekday	AM	76.7	76.3	-0.4	80.3
			MD	76.1	75.8	-0.3	79.0
			PM	79.9	79.7	-0.2	80.5
		Saturday	MD	79.4	79.2	-0.2	80.5
			PM	76.4	76.2	-0.2	79.2
S2	Richmond Avenue between Platinum Avenue and Yukon Avenue	Weekday	AM	74.2	74.1	-0.1	77.5
			MD	75.3	75.3	0.0	79.8
			PM	75.3	75.4	0.1	79.3
		Saturday	MD	72.2	72.3	0.1	76.3
			PM	72.5	72.6	0.1	76.9
S3	Richmond Avenue South of Forest Hill Road	Weekday	AM	75.8	75.6	-0.2	79.5
			MD	75.5	75.5	0.0	78.9
			PM	75.1	75.2	0.1	79.5
		Saturday	MD	75.6	75.7	0.1	78.3
			PM	75.2	75.5	0.3	79.1
S4	Yukon Avenue between Richmond Hill Road and Forest Hill Road	Weekday	AM	66.6	68.8	2.2	71.9
			MD	69.0	70.5	1.5	74.2
			PM	66.6	68.3	1.7	70.0
		Saturday	MD	63.6	64.9	1.3	67.5
			PM	63.6	65.4	1.8	69.3

Notes: *Decrease in noise levels due to traffic diverted from Richmond Avenue to proposed in-park roads.

NOISE LEVELS IN FRESH KILLS PARK

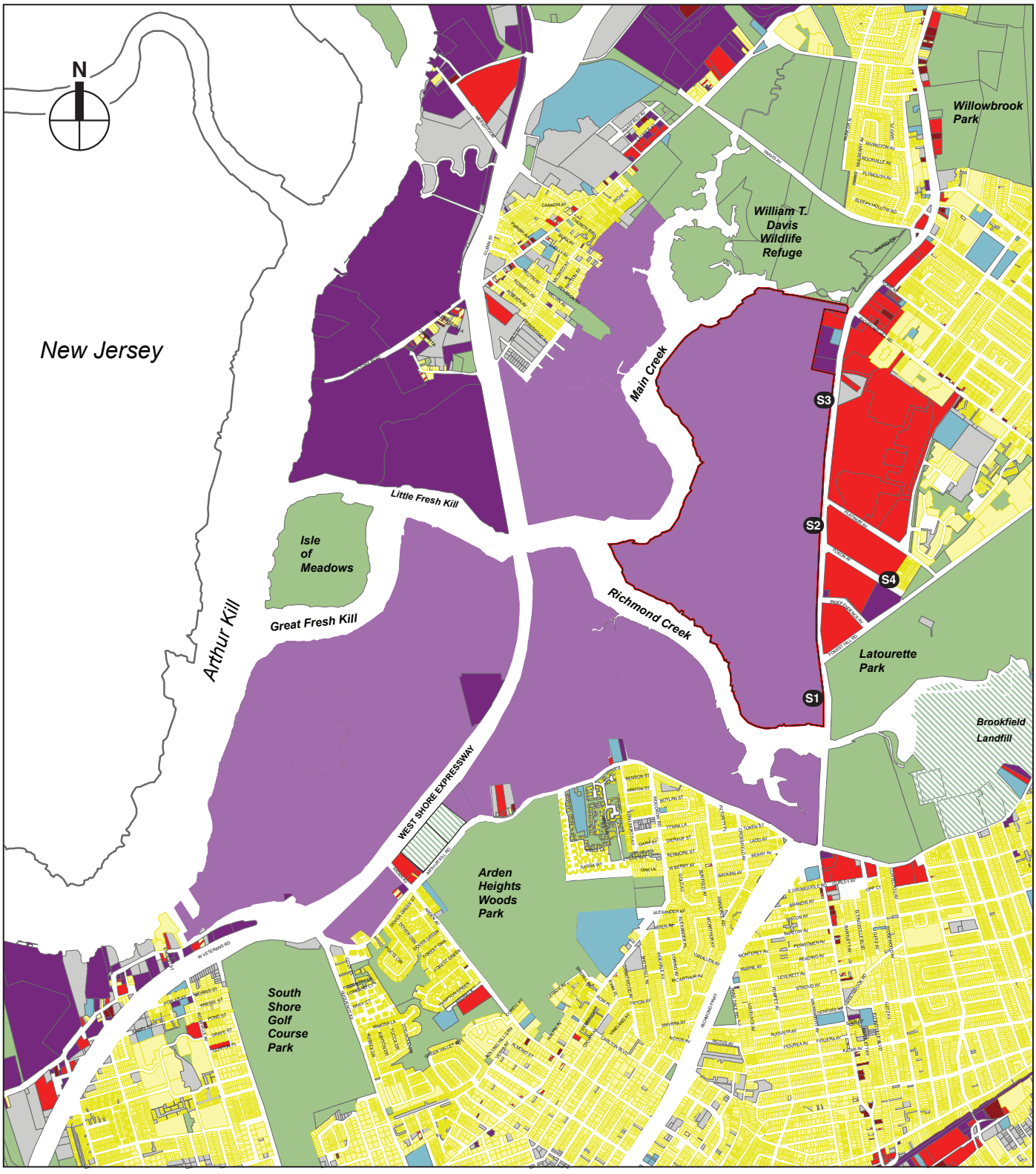
The noise level for outdoor areas requiring serenity and quiet recommended by the *CEQR Technical Manual* noise exposure guidelines (see Table 19-5) is 55 dBA $L_{10(1)}$. Within the proposed park, noise levels would be a combination of vehicular traffic noise and stationary sources. At locations in proximity to vehicular roadways, the main source of noise would be vehicular traffic in the park. Under the Yukon Avenue Connection option, vehicular noise levels in the eastern portion of Fresh Kills Park would be due to vehicular traffic on Richmond Avenue and on the section of the proposed Yukon Avenue Connection within Fresh Kills Park. As described earlier, the vehicular noise effects of these roadways on areas within the park was examined using the TNM. A grid was created in the TNM to determine how noise levels varied with distance from each of these roadways. The analysis was performed for the loudest time period, which was determined by the noise measurements to be the weekday AM time period. With the Yukon Avenue Connection option, it was determined that Fresh Kills Park areas within 250 feet of Richmond Avenue or within 50 feet of Yukon Avenue would have $L_{10(1)}$ values that exceed 55dBA. It can be conservatively assumed that the 250 foot guideline would apply to all external roadways running adjacent to the proposed park and the 50 foot guideline can be applied to any roadways running within the park. While these noise levels in the eastern portion of Fresh Kills Park exceed the CEQR guideline for open spaces, the exceedences are limited in their spatial extent and a large portion of the Fresh Kills Park (i.e., locations further from vehicular roadways) would have noise levels less than 55 dBA $L_{10.}$

To achieve 55 dBA $L_{10(1)}$ mitigation measures, such as landscaping options, could be explored to determine what is practicable and feasible. However, even absent the implementation of mitigation measures, noise levels would be comparable to noise levels in areas of other parks that are also located adjacent to trafficked roadways, including South Shore Golf Course Park, Arden Heights Woods Park, LaTourette Park, and Willowbrook Park. Although the 55 dBA $L_{10(1)}$ guideline is a worthwhile goal for outdoor areas requiring serenity and quiet, this relatively low noise level is typically not achieved in parks and open space areas in New York City. Consequently, noise levels in the Fresh Kills Park, while exceeding the 55 dBA $L_{10(1)}$ CEQR guideline value, would not result in a significant adverse noise impact.

CONCLUSIONS

The proposed project would not result in significant noise impacts from increased traffic or stationary noise sources. Although noise levels at certain areas within Fresh Kills Park that are immediately adjacent to the proposed park roads would be above the *CEQR Technical Manual* noise exposure guideline of 55 dBA $L_{10(1)}$ for outdoor areas requiring serenity and quiet, they would be comparable to noise levels in several other New York City parks, including South Shore Golf Course Park, Arden Heights Woods Park, LaTourette Park, and Willowbrook Park. Therefore, the proposed park roads would not result in a significant adverse noise impact. ✷

6.4.09



Fresh Kills East Park Boundary
S1 Noise Monitoring Location
Industrial/DSNY Facilities
Fresh Kills Project Area

Residential
Residential (with Ground-Floor Retail)
Commercial
Office
Institutional

Institutional
Open Space
Vacant Parcels
Vacant Building
Under Construction
Open Space Under Construction

0 2000 4000 FEET
SCALE

Noise Receptor Locations

Figure 19-1