A. INTRODUCTION

The noise analysis considers the noise levels that would be produced by operation of the Proposed Project, and whether that noise could result in significant adverse impacts on the surrounding area. The noise impact assessment examines noise generated by: traffic traveling to and from the Project Sites and other directly affected areas[1]; automobiles moving within the Proposed Project's parking facilities (including on Sites A and B, as well as the North, South, and East Lots); trucks and buses moving on the Project Sites and other directly affected areas; events at the proposed arena; and the proposed electrical substation. A separate analysis of noise levels during construction of the Proposed Project is provided in Chapter 15, "Construction."

PRINCIPAL CONCLUSIONS

In the future with the Proposed Actions, maximum predicted noise level increases would not exceed thresholds established for determining significant adverse impacts according to applicable noise evaluation guidance. Additionally, the Proposed Project would not result in total future noise levels at any surrounding residential properties that would exceed the threshold recommended by New York State Department of Environmental Conservation (NYSDEC) for residential use. Consequently, operation of the Proposed Project would not result in a significant adverse noise impact at any of these receptors.

Future noise exposure levels at the proposed hotel would slightly exceed the threshold recommended by NYSDEC for residential use. However, the hotel would be constructed to provide a sufficient façade noise attenuation to ensure interior noise levels are below 45 dBA, which is generally regarded as acceptable for areas where people would sleep.[2] Consequently, the predicted noise levels at the proposed hotel would not constitute a significant adverse noise impact.

B. NOISE FUNDAMENTALS

GENERAL EFFECTS

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. Several noise scales and rating methods are used to quantify the effects of noise on people. These scales and methods consider

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[1] The "other directly affected areas" include the North, South, and East Lots and the locations of the proposed electrical substation and transmission lines, where parking and other improvements are proposed to serve the Proposed Project.

[2] https://www.hudexchange.info/onecpd/assets/File/Noise-Guidebook-Chapter-2.pdf

such factors as loudness, duration, time of occurrence, and changes in noise level with time. However, all the stated effects of noise on people are subjective.

Sound pressure levels are measured in units called "decibels" (dB). The particular character of the noise that we hear is determined by the rate, or "frequency," at which the air pressure fluctuates, or "oscillates." Frequency defines the oscillation of sound pressure in terms of cycles per second. One cycle per second is known as 1 Hertz (Hz). People can hear over a relatively limited range of sound frequencies, generally between 20 Hz and 20,000 Hz, and the human ear does not perceive all frequencies equally well. High frequencies are more easily discerned and therefore more intrusive than many of the lower frequencies

"A"-WEIGHTED SOUND LEVEL (DBA)

To bring a uniform noise measurement that simulates people's perception of loudness and annoyance, the decibel measurement is weighted to account for those frequencies most audible to the human ear. This is known as the A-weighted sound level, or dBA, and because of the weighting based on human perception, it is the most often used descriptor of noise levels where community noise is the issue. As shown in **Table 13-1**, the threshold of human hearing is defined as 0 dBA; very quiet conditions (e.g., a library) are approximately 40 dBA; levels between 50 dBA and 70 dBA define the range of normal daily activity; levels above 70 dBA are considered noisy, and then loud, intrusive, and deafening as the scale approaches 130 dBA. For most people to perceive an increase in noise, it must be at least 3 dBA. At 5 dBA, the change will be readily noticeable.[3] An increase of 10 dBA is generally perceived as a doubling of loudness.

Table 13-1
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.

[3] Bolt, Beranek and Newman, *Fundamentals and Abatement of Highway Traffic Noise*, U.S. Department of Transportation, Federal Highway Administration, National Highway Institute, 1973.

Combinations of different sources are not additive in an arithmetic manner, due to the decibel scale's logarithmic nature. For example, two noise sources—a vacuum cleaner operating at approximately 72 dBA and a telephone ringing at approximately 58 dBA—do not combine to create a noise level of 130 dBA, the equivalent of a jet airplane or air raid siren (see **Table 13-1**). In fact, the noise produced by the telephone ringing may be masked by the noise of the vacuum cleaner and not be heard. The logarithmic combination of these two noise sources would yield a noise level of 72.2 dBA.

EFFECTS OF DISTANCE ON NOISE

Noise varies with distance. For example, highway traffic 50 feet away from a receptor (such as a person listening to the noise) typically produces sound levels of approximately 70 dBA. The same highway noise measures 66 dBA at a distance of 100 feet, assuming soft ground conditions (such as grass). This decrease is known as "drop-off." For a point source, such as a stationary piece of construction equipment (e.g., a drill rig), the outdoor drop-off rate is a decrease of approximately 6 dBA for every doubling of distance between the noise source and receptor.

COMMUNITY RESPONSE TO CHANGES IN NOISE LEVELS

The average ability of an individual to perceive changes in noise levels is well documented (see **Table 13-2**). 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 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 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

The sound-pressure level unit of dBA describes a noise level at just one moment, but since very few noises are constant, other ways of describing noise over more extended periods have been developed. One way of describing fluctuating sound is to describe the fluctuating noise heard over a specific period as if it were a steady, unchanging sound (i.e., as if it were averaged over that time period). 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 as $L_{eq(24)}$), conveys the same sound energy as the actual time-varying sound.

For purposes of the Proposed Project's operational noise 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.

C. NOISE STANDARDS AND CRITERIA

Potential noise impacts were evaluated using various applicable state and local noise regulations. The receptors surrounding the project site are located in the Town of Hempstead, New York, which has a noise ordinance. Some receptors are also located within the Village of Floral Park, located just east of the North Lot, which also has its own local noise ordinance. The applicable state and local noise regulations, and how they have been applied to evaluate potential noise impacts are discussed below.

TOWN OF HEMPSTEAD, NEW YORK

The Code of the Town of Hempstead includes noise limits in Chapter 144, Unreasonable Noise. The maximum sound pressure levels for steady state noises, or noises with a duration in excess of one minute are provided in **Table 13-3**.

Table 13-3
Town of Hempstead Limits for Steady Noise

	Limiting Sound Pressure Level
Steady Noise	56 dBA

Note: The octave band sound pressure level limits shown in the Code are summarized here as an overall A-weighted level.
Source: https://ecode360.com/15516320?highlight=noise,noises#15516320, Code of the Town of Hempstead, Chapter 144

Measured existing noise levels at all receptors within the Town of Hempstead exceed the limiting sound pressure level of 56 dBA in some or all of the time periods considered in this analysis. For this reason, the Code of the Town of Hempstead noise limits were not used to evaluate noise impacts from the Proposed Project.

VILLAGE OF FLORAL PARK, NEW YORK

The Code of the Village of Floral Park, includes provisions regarding noise in Chapter 55. Maximum permitted sound pressure levels for continuous sound and impulsive sound are presented in Section 55-4 for various receiving land use categories. The limits applicable on or within the property lines of receptors in the vicinity of Belmont Park are shown in **Table 13-4**.

Table 13-4
Village of Floral Park Maximum Sound Levels for Continuous Sound

Receiving Land Use Category	Daytime (7 AM—9 PM)	Nighttime (9 PM—7 AM)
All Residential Districts	50 dBA	40 dBA
All Business and Commercial Districts	65 dBA	55 dBA
All Industrial Districts	70 dBA	60 dBA

Note: Maximum Sound Levels are given in dB(A) and require a sound level meter set to slow measuring response
Sound limits measured on or within the property lines of any particular receiving category
Source: https://ecode360.com/9460634, Code of the Village of Floral Park, Chapter 55-4

Additionally, Section 55-4.C states that if the ambient sound levels measured at a particular location exceed the applicable maximum sound levels given in **Table 13-4**, then the following maximum sound levels shall apply in lieu of the levels presented in **Table 13-4**:

- Continuous sound which exceeds the ambient sound level by ten (10) dB or more during the daytime (7AM–9PM)
- Continuous sound which exceeds the ambient sound level by five (5) dB or more during the nighttime (9PM–7AM)

Measured existing noise levels were found to exceed the daytime and nighttime residential maximum sound levels during all time periods analyzed. Therefore, for the purposes of this analysis, the incremental change in noise levels due to the operation of the Proposed Project was compared to the provisions in Section 55-4.C of the Code of the Village of Floral Park.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

NYSDEC has published a policy and guidance document, *Assessing and Mitigating Noise Impacts* (DEP-00-1, February 2, 2001), which presents noise impact assessment methods, identifies thresholds for significant impacts, and discusses potential avoidance and mitigative measures to reduce or eliminate noise impacts.[4]

NYSDEC's guidance document sets forth thresholds that can be used in determining whether a noise increase due to a project may constitute a significant adverse impact, noting that these thresholds should be viewed as guidelines subject to adjustment as appropriate for the specific circumstances. According to DEP-00-1:

- Increases in noise ranging from 0 to 3 dBA should have no appreciable effect on receptors;
- Increases of 3 to 6 dBA may have the potential for adverse impacts only in cases where the most sensitive of receptors (e.g., hospital or school) are present;
- Increases of more than 6 dBA may require a closer analysis of impact potential depending on existing noise levels and the character of surrounding land use and receptors; and
- Increases of 10 dBA or greater deserve consideration of avoidance and mitigation measures in most cases.

The guidance document also sets forth noise thresholds that can be used in identifying whether a noise level due to a project should be considered a significant adverse impact. According to the guidance, the addition of any noise source in a non-industrial setting should not raise the ambient noise level above a maximum of 65 dBA, and ambient noise levels in industrial or commercial areas may exceed 65 dBA with a high end of approximately 79 dBA. As set forth in the guidance, projects that exceed these levels should explore the feasibility of implementing mitigation.

PROJECT IMPACT CRITERIA

For purposes of this impact assessment, consistent with NYSDEC guidance and the Code of the Village of Floral Park, operations that would result in an increase in ambient $L_{eq(1)}$ noise levels of more than 6 dBA during daytime (7AM–9PM) or more than 5 dBA during nighttime (9PM–7AM) at receptor sites and produce ambient noise levels of more than 65 dBA at residences or 79 dBA at an industrial or commercial area will be considered to be a significant adverse noise impact resulting from the operation of the Proposed Project. It is assumed that the Proposed Project's mechanical equipment will be designed to comply with the restrictions in the applicable local noise codes.

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[4] http://www.dec.ny.gov/docs/permits_ej_operations_pdf/noise2000.pdf.

D. NOISE PREDICTION METHODOLOGY

GENERAL METHODOLOGY

This noise impact assessment examines Proposed Project operational noise, including noise generated by: traffic traveling to and from the Project Sites and other directly affected areas; automobiles moving within the Proposed Project's parking facilities (including on Sites A and B, as well as the North, South, and East Lots); trucks and buses moving on the Project Sites and other directly affected areas; events at the proposed arena; and the proposed electrical substation. The noise assessment considers each source of noise individually and cumulatively. The following methodology was used in the noise impact assessment.

- Select noise receptor sites based on sensitive land uses that would have greatest potential to experience noise level increases from each of the noise-generating components of the Proposed Project;
- Measure existing noise levels at each of the receptor sites during the identified peak Project traffic time periods:
  - Weekday AM (7:30AM–8:30AM)
  - Weekday PM (6:30PM–7:30PM)
  - Saturday Midday (12:45PM–1:45PM)
  - Saturday PM (6:00PM–7:00PM)
  - Saturday Nighttime (9:30PM–10:30PM)
- Calculate No Action noise levels without the Proposed Project due to increased automobile traffic and increased activity in parking facilities;
- Calculate noise levels generated by each of the individual noise producing components of the Proposed Project:
  - Automobile traffic on adjacent roadways
  - Parking lots and garages
  - Delivery trucks, charter buses, shuttle buses and autos traveling on Proposed Project roadways
  - Arena events
  - Electrical substation
- Combine the noise from each individual component to calculate the total With Action noise levels during each of the analysis time periods
- Using the existing noise levels, calculate the total future noise level with and without the operation of the Proposed Project
- Calculate the incremental change in noise levels due to the operation of the Proposed Project
- Compare total noise levels and incremental changes in noise to applicable guidelines and regulations.

MOBILE SOURCE NOISE METHODOLOGY

Mobile sources constitute vehicles arriving at and departing from the Project Sites and traveling on roadways adjacent to the Project Sites. Proportional modeling was used to determine future noise levels at locations where traffic is the dominant noise source. This technique is based on a calculation using measured existing noise levels and predicted changes in traffic volumes to determine future without the Proposed Actions (No Build) and future with the Proposed Actions (Build) levels. Vehicular traffic volumes are 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, and one heavy-duty truck (having a gross weight of more than 26,400 pounds) is assumed to generate the noise equivalent of 47 cars, and one bus (vehicles designed to carry more than nine passengers) is assumed to generate the noise equivalent of 18 cars. Future noise levels are calculated using the following equation:

$$\text{FB NL} - \text{EX NL} = 10 * \log_{10} (\text{FB PCE} / \text{EX PCE})$$

where:

FB NL = Future Build Noise Level
EX NL = Existing Noise Level
FB PCE = Future Build PCEs
EX PCE = Existing PCEs

Sound levels are measured in decibels. They 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 the future traffic volume 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.

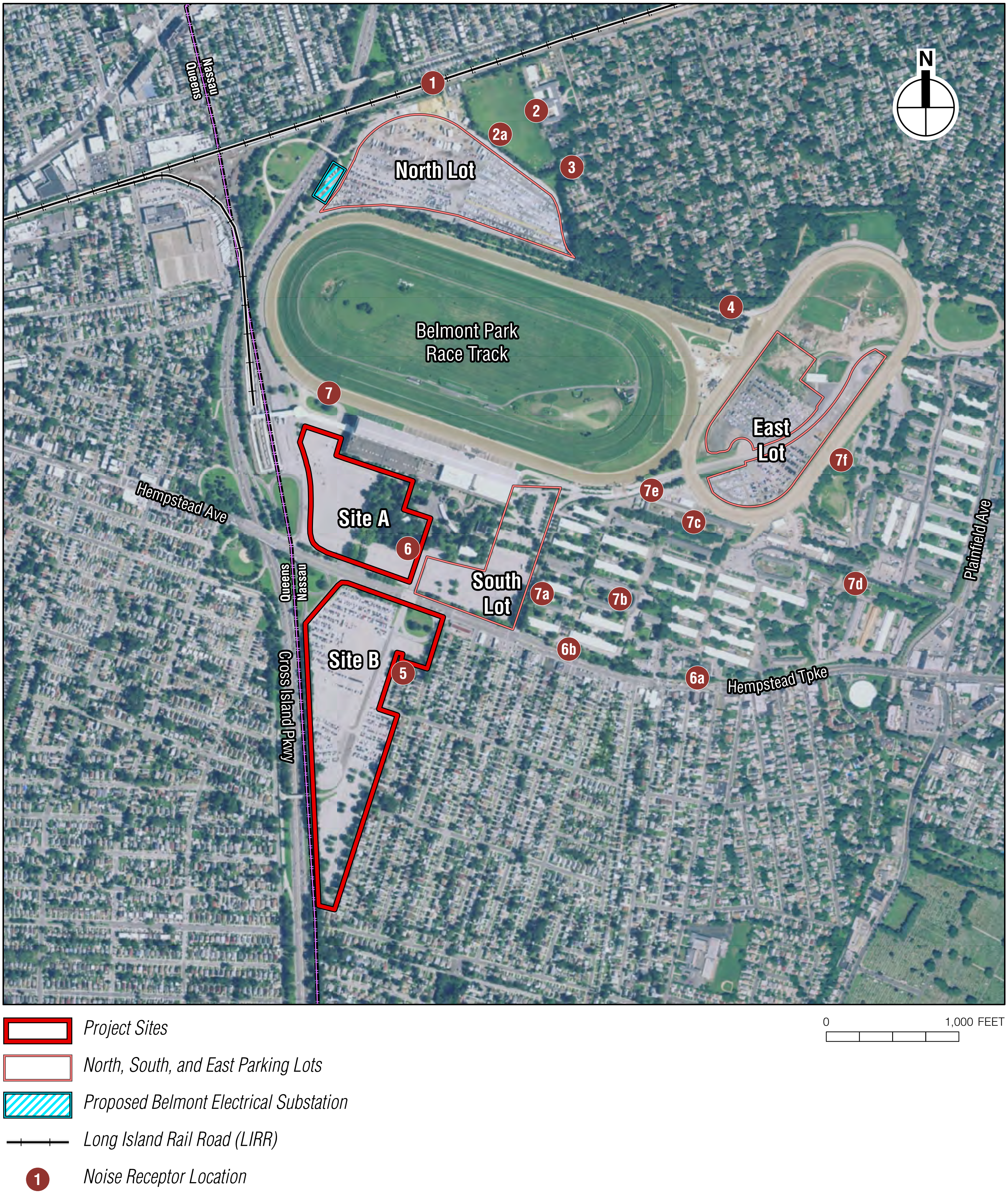
In the With-Action condition, mobile source noise is one of several Project-related noise components, so the No-Action noise level from mobile sources is logarithmically subtracted from the With-Action noise level from mobile sources to determine the Project-generated traffic noise level. This component can then be added to the other Project-generated noise level components (e.g., substation noise, parking lot noise, arena noise) to determine the total With-Action noise level.

Vehicle traffic volumes for existing, no build, and build conditions for all five of the peak traffic analysis periods are provided in **Appendix G**.

FTA PARKING LOT AND PARKING GARAGE METHODOLOGY

The Proposed Project includes increased use in the North, South, and East parking lots as well as the addition of the Site B retail village and Site A hotel parking garages, shown in **Figure 13-1**. Noise levels generated by vehicles accessing and traversing the North Lot, East Lot, South Lot, Hotel parking garage, and retail village parking garage were calculated using methodologies set forth in the Federal Transit Administration September 2018 version of the *Transit Noise and Vibration Impact Assessment* guidance manual. Specifically, the parking lots and parking garages were modeled using the techniques described for general noise assessment of park and ride lots and parking garages, respectively. The general noise assessment methodology for both sources consists of the following steps:

- Adjust the parking facility reference sound exposure level based on the number of automobiles and buses expected to enter and exit the Project Site during each of the one hour analysis time periods to determine the Project noise exposure level at 50 feet from the center of the parking facility; and
- Adjust the noise exposure level at 50 feet to account for the distance of each receptor relative to the center of the nearest parking facility to determine the Project-generated parking facility L_{eq} noise levels at each of the sensitive receptor locations.



Noise Receptor Locations

Figure 13-1

Parking facility traffic counts are provided in **Appendix G**.

MOBILE SOURCE NOISE METHODOLOGY – ROADWAYS WITHIN BELMONT PARK

At locations where project-generated traffic would pass by sensitive receptors on roadways that are very lightly used in the existing condition, such as roadways located within Belmont Park, noise was calculated using the Traffic Noise Model (TNM). The following truck, shuttle bus, charter bus, and automobile routes were included in the TNM analysis:

- The retail village would be serviced by delivery trucks traveling along a road at the eastern boundary of Site B;
- Charter buses would transport shoppers to and from the retail village and electric shuttle buses would transport shoppers between the LIRR Belmont Park station and the retail village; and
- Automobiles would traverse a roadway located on Site A to access the East Lot.

The TNM is a computerized model developed for the Federal Highway Administration that takes into account various factors, including traffic volumes, vehicle mix (i.e., percentage of autos, light duty trucks, heavy duty trucks, buses, etc.), sources/receptor geometry, and shielding (including barriers and terrain, ground attenuation, etc.).

In general, the following procedure was used in performing the TNM analysis of delivery trucks, shuttle buses, and charter buses:

- Delivery truck, charter bus, shuttle bus, and auto volumes were estimated during each one hour analysis time period based on projected schedules, delivery demands, and parking lot in/out counts; and
- A project-specific Traffic Noise Model was developed and used to calculate project generated noise levels from trucks, buses, and autos at selected receptors during each time period.

The noise level projections of shuttle bus operations are conservative, as the TNM does not account for the lower noise levels that would be emitted from the electric buses to be used.

Truck, bus, and auto volume estimates are included in **Appendix G**.

ARENA NOISE METHODOLOGY

Noise levels from the operation of the proposed arena during an athletic event, concert, or other performance would include a combination of noise from patrons accessing and dispersing from the arena as well as noise emanating from the arena. The arena would be constructed so as to prevent noise escaping from within the arena at a level that would exceed local noise code limits.

Noise levels generated by the Proposed Project arena were predicted based on noise levels measured at the Nassau Veterans Memorial Coliseum in East Garden City, New York during a concert event on August 29, 2018 (see **Appendix G**). The Nassau Veterans Memorial Coliseum was selected because noise measurements were less likely to be influenced by extraneous noise as compared to other existing arenas in more urban settings, and it is a comparable domed arena.

Noise levels at the Nassau Veterans Memorial Coliseum were measured at two locations, the first being in the arena parking lot approximately 290 feet from the arena building and the second being approximately 800 feet from the arena building. Observations during the noise measurement indicated that noise from the operation of the arena was dominated by patrons shouting and laughing, parking attendants communicating with drivers in the parking lot, and honking horns.

Low frequency bass music from the arena was observed at times during the measurement. The maximum measured L_{eq} for the project generated arena noise used in this analysis was 59 dBA at a distance of 290 feet from the arena.

The far field measurement, at a distance of approximately 800 feet from the arena, was used to determine the drop-off rate due to distance from the arena. The drop-off rate was determined to be slightly greater than that of a point source, (i.e., 6 dB for doubling of distance), so typical point source drop-off rate was used as a conservative method of projecting noise over distance. Using this drop-off rate, the measured arena noise level was projected to each receptor to calculate the noise level due to the Proposed Project's arena.

ELECTRICAL SUBSTATION METHODOLOGY

An electrical substation is proposed to be located to the east of the Cross Island Parkway exit 26D just north of the Belmont Park main track, as shown in **Figure 13-1**. Noise levels generated by the electrical substation were determined by combining the noise contribution from each piece of equipment to calculate an overall sound power level for the electrical substation. The drop off due to distance to the receptors was calculated and applied to the total sound power level to determine the noise level due to the electrical substation at each of the receptors.

Equipment noise data was provided in a PSEG Sound Impact Evaluation/Assessment document for a similar facility on Long Island and are summarized in **Table 13-5**. The site plan equipment layout for the proposed Belmont Park electrical substation and the PSEG reference document are provided in **Appendix G**.

Table 13-5
Electrical Substation Equipment Noise Data

Equipment	Quantity	Sound Power Level
Transformer Bank #1	1	81.7 dBA
Transformer Bank #2	1	81.7 dBA
Wall Mounted HVAC Unit (5 tons)	2	81.7 dBA
Exhaust Fan	1	78.5 dBA
PTAC	1	61.2 dBA
Total Electrical Substation Sound Power Level		88.2 dBA

Source: Equipment information provided in PSEG Long Island Proposed Navy Road Substation Sound Impact Evaluation/Assessment document dated May 2017

E. EXISTING CONDITIONS

SITE DESCRIPTION

As described in Chapter 1, "Project Description," the Project Sites include the approximately 15-acre Site A that is currently used for surface parking and includes a portion of Belmont Park's picnic area (the "Backyard") adjacent to the Belmont Park Paddock. Site A is bordered on the south by Hempstead Turnpike, a four- to six-lane local road that is a major commercial corridor. Site A is also adjacent to the Cross Island Parkway, a six-lane limited access highway that extends north from the intersection of the Southern State and Belt Parkways near Valley Stream to its intersection with the Whitestone Expressway near College Point, Queens. West of Site A, the Cross Island Parkway runs along the Nassau-Queens border. Immediately west of Site A is the Belmont Park Station of the Long Island Rail Road (LIRR), located on a spur of the Main Line. Belmont Park Station is a seasonal-use LIRR facility;

the station is open and train service is operated only during the Belmont Park racing seasons. The ticket office is open at Belmont Park station on Belmont Stakes day only.

Site B, located south of Hempstead Turnpike, is an approximately 28-acre parcel currently used for vehicle storage, and as surface parking for Belmont Park visitors on large-volume event days (e.g., the Belmont Stakes).

SELECTION OF NOISE RECEPTOR LOCATIONS

Noise from operation of the Proposed Project was analyzed at 16 receptors located near Belmont Park. These receptors were selected to represent noise-sensitive locations that would have the greatest potential to experience noise level increases resulting from the operation of the Proposed Project, or locations where noise-sensitive land uses would be introduced by the Proposed Project into areas with potentially high levels of noise. The locations of the 16 receptor sites are listed in **Table 13-6** and shown in **Figure 13-1.**

Table 13-6
Noise Receptor Locations

Receptor Site[1]		Land Use Represented
1	Superior Road, Floral Park, New York 11001	Residential
2	Poppy Place, Floral Park, New York 11001	School
2a	Poppy Place, Floral Park, New York 11001	Open Space
3	Crocus Avenue, Floral Park, New York 11001	Residential
4	Spruce Avenue, Floral Park, New York 11001	Residential
5	Huntley Road, Elmont, New York 11003	Residential
6	Future Hotel (to be developed as part of the Proposed Project)	Residential
6a	Anna House, Hempstead Turnpike, Elmont, New York 11003	Child Care
6b	Belmont Park Dormitories, along Hempstead Turnpike	Residential
7	Belmont Park Horse Area	Horse
7a	Belmont Park Dormitories, western edge of stable area	Residential
7b	Belmont Park Dormitories, center of stable area	Residential
7c	Belmont Park Dormitories, northern edge of stable area	Residential
7d	Belmont Park Dormitories, along Man O War Avenue	Residential
7e	Belmont Park Dormitories, immediately adjacent to Gate 5 Road	Residential
7f	Belmont Park Dormitories, northwestern edge of stable area	Residential
Note: [1]See **Figure 13-1** for locations.		

At other locations, including locations to the west of the Cross Island Parkway, existing noise levels would be higher or Project-generated noise levels would be lower than the selected receptors. Therefore, the selected receptors represent the worst case and all other receptors would have less potential for a significant increase in noise levels.

MEASURED NOISE LEVELS

Existing noise levels at the 16 noise receptors selected for analysis were determined by conducting noise measurements at seven of the receptors. The other nine receptors, i.e., receptors 2a, 6a, 6b, 7a, 7b, 7c, 7d, 7e and 7f were sufficiently close to other receptors that their existing noise levels were represented by noise measurement results at the nearest locations (i.e., receptors 2, 6, and 7 respectively). At each receptor, one-hour spot noise measurements were conducted during the weekday AM, weekday PM, Saturday midday, Saturday PM, and Saturday nighttime analysis periods. Noise level measurements were conducted on June 30 and July 2, 2018 and October 1 and 6, 2018.

Existing noise levels at receptors include noise from vehicular traffic on adjacent roadways, aircraft overflights, train pass-bys, nearby mechanical equipment, and Belmont Park operations. **Table 13-7** shows the existing measured noise levels at each receptor site.

Table 13-7
Measured Existing Noise Levels (in dBA)

Receptor	Location	Day	Time	L_{eq}
1	Superior Road, Floral Park, New York 11001	Weekday	AM	56.1
		Weekday	PM	57.7
		Saturday	MD	56.5
		Saturday	PM	56.5
		Saturday	NT	55.3
2	Poppy Place, Floral Park, New York 11001	Weekday	AM	56.1
		Weekday	PM	56.1
		Saturday	MD	50.5
		Saturday	PM	50.6
		Saturday	NT	50.7
3	Crocus Avenue, Floral Park, New York 11001	Weekday	AM	51.6
		Weekday	PM	56.3
		Saturday	MD	54.1
		Saturday	PM	50.9
		Saturday	NT	51.3
4	Spruce Avenue, Floral Park, New York 11001	Weekday	AM	55.9
		Weekday	PM	50.4
		Saturday	MD	55.8
		Saturday	PM	56.2
		Saturday	NT	54.7
5	Huntley Road, Elmont, New York 11003	Weekday	AM	55.7
		Weekday	PM	59.1
		Saturday	MD	55.4
		Saturday	PM	55.2
		Saturday	NT	56.0
6	Future Hotel (to be developed as part of the Proposed Project)	Weekday	AM	62.8
		Weekday	PM	64.7
		Saturday	MD	63.7
		Saturday	PM	64.8
		Saturday	NT	64.3
7	Belmont Park Horse Area	Weekday	AM	54.0
		Weekday	PM	58.4
		Saturday	MD	52.5
		Saturday	PM	52.6
		Saturday	NT	50.3

Note: Field measurements were performed by AKRF, Inc. on June 30 and July 2, 2018 and October 1 and 6, 2018.

METHODOLOGY FOR NOISE MONITORING

Noise measurements were taken using Brüel & Kjær Noise Level Meters Type 2250 and 2270, Brüel & Kjær Sound Level Calibrators Type 4231, and Brüel & Kjær ½-inch microphones Type 4189. Instruments were mounted at a height of approximately 5 feet above the ground. The meters were calibrated before and after readings using Brüel & Kjær Type 4231 sound level calibrators using the appropriate adaptors. The sound meters digitally recorded the data and displayed the data 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}. Windscreens were used during all sound measurements except for calibration. All measurement procedures conformed to the requirements of ANSI Standard S1.13-2005.

F. FUTURE WITHOUT THE PROPOSED ACTIONS

Using the methodology previously described, future noise levels without the Proposed Actions were calculated at the 14 existing noise receptor sites (Receptor 6 represents the Project hotel which would be developed as part of the Proposed Actions and therefore is not included as a receptor in the Future Without the Proposed Actions).

In the future condition without the Proposed Actions, there is no increase in traffic anticipated for the North and East Lots, but there would be increases in traffic on adjacent roadways. The No Action noise levels are shown in **Table 13-8**. In the Future without the Proposed Actions, at all noise receptors analyzed there would be no perceptible increase in $L_{eq(1)}$ noise levels.

Table 13-8
Noise Levels in the Future Without the Proposed Project (in dBA)

Receptor	Location	Day	Time Period	Existing $L_{eq(1)}$	No Build Traffic $L_{eq(1)}$	No Build Parking Lot $L_{eq(1)}$	No Build Total $L_{eq(1)}$	Increase
1	Superior Road, Floral Park, New York 11001	Weekday	AM	56.1	0.0	0.0	56.1	0.0
		Weekday	PM	57.7	0.0	0.0	57.7	0.0
		Saturday	MD	56.5	0.0	0.0	56.5	0.0
		Saturday	PM	56.5	0.0	0.0	56.5	0.0
		Saturday	NT	55.3	0.0	0.0	55.3	0.0
2	Poppy Place, Floral Park, New York 11001 (School)	Weekday	AM	56.1	0.0	0.0	56.1	0.0
		Weekday	PM	56.1	0.0	0.0	56.1	0.0
		Saturday	MD	50.5	0.0	0.0	50.5	0.0
		Saturday	PM	50.6	0.0	0.0	50.6	0.0
		Saturday	NT	50.7	0.0	0.0	50.7	0.0
2a	Poppy Place, Floral Park, New York 11001 (Open Space)	Weekday	AM	56.1	0.0	0.0	56.1	0.0
		Weekday	PM	56.1	0.0	0.0	56.1	0.0
		Saturday	MD	50.5	0.0	0.0	50.5	0.0
		Saturday	PM	50.6	0.0	0.0	50.6	0.0
		Saturday	NT	50.7	0.0	0.0	50.7	0.0
3	Crocus Avenue, Floral Park, New York 11001	Weekday	AM	51.6	0.0	0.0	51.6	0.0
		Weekday	PM	56.3	0.0	0.0	56.3	0.0
		Saturday	MD	54.1	0.0	0.0	54.1	0.0
		Saturday	PM	50.9	0.0	0.0	50.9	0.0
		Saturday	NT	51.3	0.0	0.0	51.3	0.0
4	Spruce Avenue, Floral Park, New York 11001	Weekday	AM	55.9	0.0	0.0	55.9	0.0
		Weekday	PM	50.4	0.0	0.0	50.4	0.0
		Saturday	MD	55.8	0.0	0.0	55.8	0.0
		Saturday	PM	56.2	0.0	0.0	56.2	0.0
		Saturday	NT	54.7	0.0	0.0	54.7	0.0

Table 13-8 (cont'd)
Noise Levels in the Future Without the Proposed Project (in dBA)

Receptor	Location	Day	Time Period	Existing $L_{eq(1)}$	No Build Traffic $L_{eq(1)}$	No Build Parking Lot $L_{eq(1)}$	No Build Total $L_{eq(1)}$	Increase
5	Huntley Road, Elmont, New York 11003	Weekday	AM	55.7	39.4	0.0	55.8	0.1
		Weekday	PM	59.1	42.8	23.1	59.2	0.1
		Saturday	MD	55.4	39.1	31.9	55.5	0.1
		Saturday	PM	55.2	38.9	33.2	55.3	0.1
		Saturday	NT	56.0	39.7	11.4	56.1	0.1
6a[1,2]	Anna House, Hempstead Turnpike, Elmont, New York 11003	Weekday	AM	62.8	48.2	0.0	62.9	0.2
		Weekday	PM	N/A				
		Saturday	MD	63.7	46.9	20.3	63.8	0.1
		Saturday	PM	N/A				
		Saturday	NT	N/A				
6b	Belmont Park Dormitories, along Hempstead Turnpike	Weekday	AM	62.8	48.2	0.0	62.9	0.2
		Weekday	PM	64.7	46.2	19.9	64.8	0.1
		Saturday	MD	63.7	46.9	28.8	63.8	0.1
		Saturday	PM	64.8	49.3	30.1	64.9	0.1
		Saturday	NT	64.3	49.1	8.2	64.4	0.1
7a	Belmont Park Dormitories, western edge of stable area	Weekday	AM	54.0	0.0	0.0	54.0	0.0
		Weekday	PM	58.4	0.0	25.8	58.4	0.0
		Saturday	MD	52.5	0.0	34.7	52.6	0.1
		Saturday	PM	52.6	0.0	36.0	52.7	0.1
		Saturday	NT	50.3	0.0	14.1	50.3	0.0
7b	Belmont Park Dormitories, center of stable area	Weekday	AM	54.0	0.0	0.0	54.0	0.0
		Weekday	PM	58.4	0.0	17.1	58.4	0.0
		Saturday	MD	52.5	0.0	26.0	52.5	0.0
		Saturday	PM	52.6	0.0	27.3	52.6	0.0
		Saturday	NT	50.3	0.0	5.4	50.3	0.0
7c	Belmont Park Dormitories, northern edge of stable area	Weekday	AM	54.0	0.0	0.0	54.0	0.0
		Weekday	PM	58.4	0.0	11.6	58.4	0.0
		Saturday	MD	52.5	0.0	20.5	52.5	0.0
		Saturday	PM	52.6	0.0	21.7	52.6	0.0
		Saturday	NT	50.3	0.0	0.0	50.3	0.0
7d	Belmont Park Dormitories, along Man O War Avenue	Weekday	AM	54.0	0.0	0.0	54.0	0.0
		Weekday	PM	58.4	0.0	5.8	58.4	0.0
		Saturday	MD	52.5	0.0	14.6	52.5	0.0
		Saturday	PM	52.6	0.0	15.9	52.6	0.0
		Saturday	NT	50.3	0.0	0.0	50.3	0.0
7e	Belmont Park Dormitories, immediately adjacent to Gate 5 Road	Weekday	AM	54.0	0.0	0.0	54.0	0.0
		Weekday	PM	58.4	0.0	5.8	58.4	0.0
		Saturday	MD	52.5	0.0	14.6	52.5	0.0
		Saturday	PM	52.6	0.0	15.9	52.6	0.0
		Saturday	NT	50.3	0.0	0.0	50.3	0.0
7f	Belmont Park Dormitories, northwestern edge of stable area	Weekday	AM	54.0	0.0	0.0	54.0	0.0
		Weekday	PM	58.4	0.0	5.5	58.4	0.0
		Saturday	MD	52.5	0.0	14.3	52.5	0.0
		Saturday	PM	52.6	0.0	15.6	52.6	0.0
		Saturday	NT	50.3	0.0	0.0	50.3	0.0

Notes:
[1] Receptor 6 would be developed as part of the Proposed Project and is not included in the Future Without the Proposed Actions analysis.
[2] Receptor 6a is a child care facility that is operational daily between the hours of 5AM-1PM and is therefore not included in the PM or nighttime analysis periods.

G. POTENTIAL IMPACTS OF THE PROPOSED ACTIONS

Using the methodology previously described, future noise levels with the Proposed Project were calculated at the 15 future noise receptor sites (Receptor 7 is excluded because its use for horse activities is not considered sensitive to operational noise). The With Action noise levels are shown in **Table 13-9**.

Table 13-9
Noise Levels in the Future With the Proposed Project (in dBA)

Receptor	Day	Time Period	Existing $L_{eq(1)}$	Project Generated Traffic on Existing Public Roadways $L_{eq(1)}$	Project Generated Parking Lot $L_{eq(1)}$	Project Generated Traffic on Belmont Park Roadways $L_{eq(1)}$	Project Generated Arena $L_{eq(1)}$	Project Generated Substation $L_{eq(1)}$	Build Total $L_{eq(1)}$	Increase
1	Weekday	AM	56.1	0.0	0.0	0.0	0.0	32.7	56.1	0.0
	Weekday	PM	57.7	0.0	41.3	0.0	0.0	32.7	57.8	0.1
	Saturday	MD	56.5	0.0	41.3	0.0	0.0	32.7	56.7	0.1
	Saturday	PM	56.5	0.0	41.1	0.0	0.0	32.7	56.6	0.1
	Saturday	NT	55.3	0.0	41.3	0.0	0.0	32.7	55.5	0.2
2	Weekday	AM	56.1	0.0	0.0	0.0	0.0	30.0	56.1	0.0
	Weekday	PM	56.1	0.0	39.5	0.0	0.0	30.0	56.2	0.1
	Saturday	MD	50.5	0.0	39.5	0.0	0.0	30.0	50.9	0.4
	Saturday	PM	50.6	0.0	39.3	0.0	0.0	30.0	50.9	0.3
	Saturday	NT	50.7	0.0	39.5	0.0	0.0	30.0	51.1	0.4
2a	Weekday	AM	56.1	0.0	0.0	0.0	0.0	26.8	56.1	0.0
	Weekday	PM	56.1	0.0	49.6	0.0	0.0	26.8	57.0	0.9
	Saturday	MD	50.5	0.0	49.6	0.0	0.0	26.8	53.1	2.6
	Saturday	PM	50.6	0.0	49.5	0.0	0.0	26.8	53.1	2.5
	Saturday	NT	50.7	0.0	49.7	0.0	0.0	26.8	53.3	2.6
3	Weekday	AM	51.6	0.0	0.0	0.0	0.0	26.2	51.6	0.0
	Weekday	PM	56.3	0.0	39.2	0.0	0.0	26.2	56.4	0.1
	Saturday	MD	54.1	0.0	39.1	0.0	0.0	26.2	54.2	0.1
	Saturday	PM	50.9	0.0	39.0	0.0	0.0	26.2	51.2	0.3
	Saturday	NT	51.3	0.0	39.2	0.0	0.0	26.2	51.6	0.3
4	Weekday	AM	55.9	0.0	0.0	0.0	39.0	21.2	56.0	0.1
	Weekday	PM	50.4	0.0	26.0	0.0	39.0	21.2	50.7	0.3
	Saturday	MD	55.8	0.0	25.9	0.0	39.0	21.2	55.9	0.1
	Saturday	PM	56.2	0.0	27.2	0.0	39.0	21.2	56.3	0.1
	Saturday	NT	54.7	0.0	27.8	0.0	39.0	21.2	54.8	0.1
5	Weekday	AM	55.7	44.3	32.3	55.4	48.9	0.0	59.2	3.5
	Weekday	PM	59.1	54.6	35.5	50.7	48.9	0.0	61.2	2.1
	Saturday	MD	55.4	44.0	35.7	50.7	48.9	0.0	57.6	2.2
	Saturday	PM	55.2	50.3	36.0	51.2	48.9	0.0	58.2	3.0
	Saturday	NT	56.0	39.8	34.7	50.7	48.9	0.0	57.9	1.9
6	Weekday	AM	62.8	51.4	0.0	0.0	64.6	0.0	67.0	N/A[1]
	Weekday	PM	64.7	59.5	43.1	0.0	64.6	0.0	68.4	
	Saturday	MD	63.7	59.6	42.3	0.0	64.6	0.0	67.9	
	Saturday	PM	64.8	59.9	43.3	0.0	64.6	0.0	68.5	
	Saturday	NT	64.3	63.3	43.9	0.0	64.6	0.0	68.9	
6a[2]	Weekday	AM	62.8	46.6	0.0	0.0	39.5	0.0	63.0	0.3
	Weekday	PM	N/A							
	Saturday	MD	63.7	52.3	24.0	0.0	39.5	0.0	64.1	0.4
	Saturday	PM	N/A							
	Saturday	NT	N/A							

Table 13-9 (cont'd)
Noise Levels in the Future With the Proposed Project (in dBA)

Receptor	Day	Time Period	Existing $L_{eq(1)}$	Project Generated Traffic on Existing Public Roadways $L_{eq(1)}$	Project Generated Parking Lot $L_{eq(1)}$	Project Generated Traffic on Belmont Park Roadways $L_{eq(1)}$	Project Generated Arena $L_{eq(1)}$	Project Generated Substation $L_{eq(1)}$	Build Total $L_{eq(1)}$	Increase
6b	Weekday	AM	62.8	46.6	0.0	0.0	42.9	21.2	63.0	0.3
	Weekday	PM	64.7	53.3	31.6	34.8	42.9	21.2	65.1	0.4
	Saturday	MD	63.7	52.3	30.9	34.7	42.9	21.2	64.1	0.4
	Saturday	PM	64.8	53.4	31.9	36.0	42.9	21.2	65.2	0.5
	Saturday	NT	64.3	55.3	32.5	36.6	42.9	21.2	64.9	0.7
7a	Weekday	AM	54.0	0.0	0.0	0.0	44.1	21.2	54.4	0.4
	Weekday	PM	58.4	0.0	37.4	45.6	44.1	21.2	58.8	0.4
	Saturday	MD	52.5	0.0	36.6	45.5	44.1	21.2	53.9	1.4
	Saturday	PM	52.6	0.0	37.6	46.7	44.1	21.2	54.2	1.6
	Saturday	NT	50.3	0.0	38.3	47.4	44.1	21.2	52.9	2.6
7b	Weekday	AM	54.0	0.0	0.0	0.0	41.8	21.2	54.3	0.3
	Weekday	PM	58.4	0.0	29.3	31.1	41.8	21.2	58.5	0.1
	Saturday	MD	52.5	0.0	28.6	31.0	41.8	21.2	52.9	0.4
	Saturday	PM	52.6	0.0	29.7	32.3	41.8	21.2	53.0	0.4
	Saturday	NT	50.3	0.0	30.3	32.9	41.8	21.2	51.0	0.7
7c	Weekday	AM	54.0	0.0	0.0	0.0	40.0	21.2	54.2	0.2
	Weekday	PM	58.4	0.0	29.6	35.8	40.0	21.2	58.5	0.1
	Saturday	MD	52.5	0.0	29.4	35.7	40.0	21.2	52.8	0.3
	Saturday	PM	52.6	0.0	30.6	37.0	40.0	21.2	53.0	0.4
	Saturday	NT	50.3	0.0	31.2	37.6	40.0	21.2	50.9	0.6
7d	Weekday	AM	54.0	0.0	0.0	0.0	36.3	21.2	54.1	0.1
	Weekday	PM	58.4	0.0	24.3	24.0	36.3	21.2	58.4	0.0
	Saturday	MD	52.5	0.0	24.1	23.9	36.3	21.2	52.6	0.1
	Saturday	PM	52.6	0.0	25.3	25.1	36.3	21.2	52.7	0.1
	Saturday	NT	50.3	0.0	25.9	25.8	36.3	21.2	50.5	0.2
7e	Weekday	AM	54.0	0.0	0.0	0.0	0.0	21.2	54.0	0.0
	Weekday	PM	58.4	0.0	29.6	53.4	40.0	21.2	59.6	1.2
	Saturday	MD	52.5	0.0	29.4	53.3	40.0	21.2	56.0	3.5
	Saturday	PM	52.6	0.0	30.6	54.6	40.0	21.2	56.8	4.2
	Saturday	NT	50.3	0.0	31.2	55.2	40.0	21.2	56.5	6.2
7f	Weekday	AM	54.0	0.0	0.0	0.0	36.9	21.2	54.1	0.1
	Weekday	PM	58.4	0.0	32.4	0.0	36.9	21.2	58.4	0.0
	Saturday	MD	52.5	0.0	32.2	0.0	36.9	21.2	52.7	0.2
	Saturday	PM	52.6	0.0	33.5	0.0	36.9	21.2	52.8	0.2
	Saturday	NT	50.3	0.0	34.1	0.0	36.9	21.2	50.6	0.3

Notes:
[1] Receptor 6 will be developed as part of the Proposed Project therefore the incremental change in noise levels is not provided
[2] Receptor 6a is a child care facility that is operational daily between the hours of 5AM-1PM and is therefore not included in the PM or nighttime analysis periods

In the future with the Proposed Actions, at receptor 7e, which represents three dormitory buildings for backstretch workers located on the Belmont Park campus immediately adjacent to the roadway connecting to the East Lot, the predicted noise level increase during the Saturday night-time period would slightly exceed the NYSDEC 6 dBA noise level increase threshold. However, the total noise level would still be well below the 65 dBA criteria recommended by NYSDEC for residential use and would also be below the existing noise level at this location during some time periods. Because the maximum predicted noise level increase would only slightly exceed the acceptable threshold and the exceedance would occur in only one peak hour, the total noise levels would be acceptable and the predicted noise at this receptor would not rise to the level of a significant adverse impact.

At all other existing receptors analyzed (i.e., receptors 1, 2, 2a, 3, 4, 5, 6a, 6b, 7a, 7b, 7c, 7d, and 7f), maximum predicted incremental change in noise levels is 3.5 dBA, which represents a barely perceptible change and is less than the Village of Floral Park and NYSDEC thresholds for significant noise increases. Consequently, operation of the Proposed Project would not result in a significant adverse noise impact at any of these receptors.

Future noise exposure levels at the proposed hotel, represented by receptor 6, would exceed the 65 dBA criteria recommended by NYSDEC for residential use by up to approximately 4 dBA. However, the hotel would be constructed to provide a sufficient façade noise attenuation to ensure interior noise levels are below 45 dBA, which is generally regarded as acceptable for areas where people would sleep[5]. Consequently, the predicted noise levels at the proposed hotel would not constitute a significant adverse noise impact. ✷

[5] https://www.hudexchange.info/onecpd/assets/File/Noise-Guidebook-Chapter-2.pdf