

13. Noise

The noise assessment (Appendix G) consisted of ambient noise level monitoring in the vicinity of the four main project areas (A, B, C and D) in order to characterize existing noise levels, and an evaluation of the potential noise impact of the various proposed uses. The background ambient noise monitoring program was conducted on October 19th to 21st 2010. Expected noise levels from the various uses were analyzed and compared to the noise level ordinance of the Town of Brookhaven and New York State Department of Environmental Conservation guidelines. Specifically, the noise assessment addresses:

- Traffic noise based on estimates of existing and future traffic counts
- Noise transmission from mechanical equipment associated with the various usages
- Noise transmission from the recreational usage
- Noise transmission from the LIRR to the residential portions of the land parcels
- Conceptual recommendations for noise mitigation measures to minimize intrusive noise

13.1. *Applicable Standards and Guidelines*

The Town of Brookhaven Code and the impact criteria of the New York State Department of Environmental Conservation (NYSDEC) apply to the proposed land use.

The Code of the Town of Brookhaven, Chapter 50 Noise Control, outlines maximum permissible sound levels by receiving property category, including residential, commercial, and industrial. These limits are outlined below in Table 13-1.

Table 13-1: Town of Brookhaven Maximum Permissible A-Weighted Sound Pressure Levels by Receiving Property Category, in dBA

Sound Source Property Category	Receiving Property Category			
	Residential		Commercial	Industrial
	7:00 a.m. to 10:00 p.m.	10:00 p.m. to 7:00 a.m.	All Times	All Times
Residential	55	50	65	75
Commercial or public lands or rights-of-way	65	50	65	75
Industrial	65	50	65	75

Noise from construction activity is exempt from the above requirements but is limited to the hours of 7 am to 6 pm on weekdays.

The NYS DEC document titled *Assessing and Mitigating Noise Impacts* (Issued 10/6/00, Revised 2/2/01) provides guidelines for the evaluation of sound from proposed facilities and provides methods for identifying when noise levels may cause environmental impact. The NYS DEC guidelines state that increases from 0 to 3 dBA should have no appreciable effect on receptors. Increases of 3 to 6 dBA may have the potential for adverse impact only in cases where the most sensitive of receptors 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 an increase of 10 dBA or more deserves consideration of avoidance and mitigation measures in most cases.

The NYS DEC guidelines also state that the addition of any noise source in a non-industrial setting should not raise the ambient noise level above a maximum of 65 dBA, while ambient noise levels in industrial or commercial areas may exceed 65 dBA with an upper limit approximating 79 dBA. Projects which exceed these guidance levels should explore the feasibility of implementing mitigation. These guidelines are above the allowable limits set forth by the Town of Brookhaven Noise Code, which would prevail for stationary noise sources such as mechanical equipment, music systems, etc.

In summary, the New York State DEC criteria and the Town of Brookhaven Code limits present a reasonable criterion for proposed action noise evaluation:

- A reasonable basis is provided for determining what constitutes a significant increase in noise levels (i.e., more than 6 dBA).
- If there may be a significant increase in noise levels but the magnitude of the resulting noise level is low (i.e. for construction and traffic noise sources, 65 dBA or less at residential uses and 79 dBA or less at non-residential uses; for stationary sources, such as mechanical equipment, music systems, etc., within Town of Brookhaven Code limits) then the total noise level would not result in a significant impact.

13.2. Existing Conditions

Eight noise receptor locations were selected adjacent to Areas A, B, C, and D, and along major feeder streets to and from Areas A, B, C, and D. The locations of each noise receptor site are described in Table 13-2 and shown in Figure 13-1. The selected receptor sites include representative noise sensitive locations and areas where maximum impacts would be expected.

The noise monitoring program consisted of two types of measurements—continuous 24-hour measurements and short-term measurements. At Sites 1, 2, 3, 4 and 5, continuous 24-hour measurements were conducted during a typical weekday. Short-term measurements were performed at Sites 6, 7 and 8 during the weekday morning (9:30 to 11:30 a.m.) and evening (4:30 to 7:00 p.m.) time periods. Measurements were made on Tuesday, October 19th, Wednesday, October 20th, and Thursday October 21st, 2010.

The purpose of the continuous 24-hour measurement was to provide indication of the temporal variation of noise levels throughout a typical day and night. At the continuous long-term measurement locations, measurements were made on the A-scale (dBA), and one-hour values of Leq, L10 and L90 were recorded. The short-term measurements consisted of 20-minute spot measurements on the A-scale (dBA), and values of Leq, L10 and L90 were recorded.

The 24-hour continuous measurements were made using RION Model NL-21 sound level meters. The short measurements were made with a Brüel & Kjær Model 2250 sound level meter. The sound level meters were calibrated before and after readings using a Brüel & Kjær Model 4231 sound level calibrator. A windscreen was used during all sound measurements.

Table 13-2: Noise Monitoring Locations

Location	Description	Measurement Type
1	Eastern boundary of Area A near existing cemetery	Continuous 24-hour
2	Western boundary of Area B approximately 500 ft from the railroad tracks	Continuous 24-hour
3	Southwest corner of area B / northwest corner of Area C	Continuous 24-hour
4	On Horseblock Road / Southern boundary of Area D	Continuous 24-hour
5	Intersection of Yaphank Avenue and Glover Drive	Continuous 24-hour
6	South east corner of Area B at Glover Drive	20 minute short term
7	South boundary of Area A	20 minute short term
8	Northwest corner of Area D along south boundary of Area C	20 minute short term

The results of the 24 hour continuous measurements at Locations 1 through 5 are presented in Figure 13-2 through Figure 13-6.

At Location 1, existing noise sources include traffic activity on the nearby Long Island Expressway (LIE). The measured noise levels were as high as 63.4 dBA (Leq) during the morning rush hour, approximated 56 to 59 dBA (Leq) during the daytime and dropped as low as 52.6 dBA (Leq) overnight.

The area surrounding Locations 2 and 3 is wooded and the measured noise level predominantly reflects traffic activity in the distance on the LIE. While the Long Island Railroad is nearby, the number of trains operated on the Yaphank branch is limited and these trains are spread throughout the day, and the measured hourly noise level is not significantly affected by single train events. At Location 2, the measured noise levels were as high as 59.2 dBA (Leq) during the morning rush hour, approximated 46 to 50 dBA (Leq) during the daytime and dropped as low as 43.6 dBA (Leq) overnight. At Location 3, the measured noise levels were as high as 56.3 dBA (Leq) during the morning rush hour, approximated 45 dBA (Leq) during the daytime and were as low as 42.5 dBA (Leq) overnight.

At Location 4, traffic activity on Horseblock Road was the predominant noise source. The measured noise levels were fairly consistent during daytime hours approximating 74 dBA (Leq), dropping to a low of 61.8 dBA (Leq) overnight.

At Location 5, traffic activity on Yaphank Avenue was the predominant noise source. The measured noise levels were fairly consistent during daytime hours approximating 70 dBA (Leq), dropping to a low of 53.3 dBA (Leq) overnight.

The results of the short term measurements are outlined in Table 13-3.

At Location 6, during the morning hours, there was little activity in the area with infrequent traffic on Glover Drive. During the evening, there was an increase in traffic on Glover Drive for attendance at a soccer game at the adjacent playing fields along with some noise from people and children at the playing fields.

At Location 7, the existing noise level was predominantly due to traffic in the distance from the LIE with some noise from birds and insects. There was little traffic on the county property access road and only one train passed during the morning hours.

The area surrounding Location 8 is wooded, and the measured noise level predominantly reflects traffic activity in the distance. During the morning hours, there was some construction activity noise from the neighboring property to the southwest.

Table 13-3: Results of Short Term Noise Measurements

Location	Time	Leq	L10	L90
6	Morning	52.3	53.0	45.4
	Evening	56.8	59.9	51.6
7	Morning	54.5	56.6	47.4
	Evening	55.6	55.4	50.9
8	Morning	44.7	45.6	43.6
	Evening	41.5	43.3	38.0

13.3. Potential Impacts of Proposed Project

13.3.1. Area A

Area A is bordered by the LIE service road to the north, Yaphank Avenue to the west, the Suffolk County Department of Public Works Complex to the south, and a buffer wooded area along the Carmans River to the east. The site is currently occupied by highway yards, public works buildings, and parking space. The proposed usage would be commercial and family-oriented entertainment uses including sports and wellness facilities, offices, restaurants, hotel, retail, apartments, an arena and outdoor stadium.

An analysis was performed using the proportional modeling technique described above and traffic volumes provided for the intersection of Yaphank Avenue and the LIE South Service Road to assess the potential increase in noise levels at Location 1 near Area A.

The increase in Leq noise levels due to traffic near Location 1 when comparing the No Build levels in 2025 to the existing levels are outlined in Table 13-4.

Table 13-4: Location 1 near Area A Traffic Noise Level Increase between Existing and No Build 2025

	AM	MID	PM	SAT
Location 1 Noise Level Increase between Existing and No Build in 2025 (Leq, dBA)	2.6	1.9	2.3	2.2

The increase in Leq noise levels due to traffic near Location 1 when comparing the Build levels in 2025 to the No Build levels in 2025 are outlined in Table 13-5.

Table 13-5: Location 1 near Area A Traffic Noise Level Increase between No Build 2025 and Build 2025

	AM	MID	PM	SAT
Location 1 Noise Level Increase between No Build in 2025 and Build in 2025 (Leq, dBA)	1.6	3.9	2.8	4.7

As shown above, the maximum increase in Leq noise levels at Location 1, when comparing the 2025 Build noise levels to the 2025 No Build noise levels, would be 4.7 dBA on Saturday. This is below the 6.0 dBA threshold for a significant increase in noise levels.

13.3.2. Area B

Area B is bordered by the LIRR to the north, a wooded area to the west and south and Suffolk County Police Headquarters to the east. The site is currently a wooded area and the proposed usage includes mixed income rental and ownership housing.

An analysis was performed using the proportional modeling technique described above and traffic volumes provided for the intersection of Yaphank Avenue and Glover Drive to assess the potential increase in noise levels at Location 5 near access to Area B.

The increase in Leq noise levels due to traffic near Location 5 when comparing the No Build levels in 2025 to the existing levels are outlined in Table 13-6.

Table 13-6: Location 5 near Access to Area B Traffic Noise Level Increase between Existing and No Build 2025

	AM	MID	PM	SAT
Location 5 Noise Level Increase between Existing and No Build in 2025 (Leq, dBA)	2.8	2.0	2.6	2.2

The increase in Leq noise levels due to traffic near Location 5 when comparing the Build levels in 2025 to the No Build levels in 2025 are outlined in Table 13-8.

Table 13-7: Location 5 near Access to Area B Traffic Noise Level Increase between No Build 2025 and Build 2025

	AM	MID	PM	SAT
Location 5 Noise Level Increase between No Build in 2025 and Build in 2025 (Leq, dBA)	1.9	3.7	3.0	4.3

As shown above, the maximum increase in Leq noise levels at Location 5, when comparing the 2025 Build noise levels to the 2025 No Build noise levels, would be 4.3 dBA on Saturday. This is below the 6.0 dBA threshold for a significant increase in noise levels.

13.3.3. Area C

Area C is bordered by the proposed Area B residential development to the north, wooded areas to the east and west, and an existing construction material facility and the proposed Area D industrial development to the south. The site is currently a wooded area and the proposed usage includes commercial and public recreation use.

An analysis was performed using the proportional modeling technique described above and traffic volumes provided for the intersection of Yaphank Avenue and Glover Drive to assess the potential increase in noise levels at Location 5 near access to Area C.

The increase in Leq noise levels due to traffic near Location 5 when comparing the No Build noise levels in 2025 to the existing levels outlined in Table 13-8.

Table 13-8: Location 5 near Access to Area C Traffic Noise Level Increase between Existing and No Build 2025

	AM	MID	PM	SAT
Location 5 Noise Level Increase between Existing and No Build in 2025 (Leq, dBA)	2.8	2.0	2.6	2.2

The increase in Leq noise levels due to traffic near Location 5 when comparing the Build noise levels in 2025 to the No Build levels in 2025 are outlined in Table 13-9.

Table 13-9: Location 5 near Access to Area C Traffic Noise Level Increase between No Build 2025 and Build 2025

	AM	MID	PM	SAT
Location 5 Noise Level Increase between No Build in 2025 and Build in 2025 (Leq, dBA)	1.9	3.7	3.0	4.3

As shown above, the maximum increase in Leq noise levels at Location 5, when comparing the 2025 Build noise levels to the 2025 Build noise levels, would be 4.3 dBA on Saturday. This is below the 6.0 dBA threshold for a significant increase in noise levels.

13.3.4. Area D

Area D is bordered by the proposed Area C recreational use to the north, wooded areas to the east, Horseblock Road on the south, and an existing construction material facility and wooded area to the west. The site is currently a wooded area and the proposed usage includes light industrial use.

An analysis was performed using the proportional modeling technique described above and traffic volumes provided for the intersection of Horseblock Road (CR 16) and Brookhaven Town Landfill to assess the potential increase in noise levels at Location 4 near access to Area D.

The increase in Leq noise levels due to traffic near Location 4 when comparing the No Build noise levels in 2025 to the existing levels are outlined in Table 13-10.

Table 13-10: Location 4 near Area D Traffic Noise Level Increase between Existing and No Build 2025

	AM	MID	PM	SAT
Location 4 Noise Level Increase between Existing and No Build in 2025 (Leq, dBA)	3.3	2.0	3.0	1.9

The increase in Leq noise levels due to traffic near Location 4 when comparing the Build levels in 2025 to the No Build levels in 2025 are outlined in Table 13-11.

As shown, the maximum increase in Leq noise levels at Location 4, when comparing the 2025 Build levels to the 2025 No Build levels, would be 2.4 dBA during the Weekday PM. This is below the 6.0 dBA threshold for a significant increase in noise levels.

Table 13-11: Location 4 near Area D Traffic Noise Level Increase between No Build 2025 and Build 2025

	AM	MID	PM	SAT
Location 4 Noise Level Increase between No Build in 2025 and Build in 2025 (Leq, dBA)	2.1	1.0	2.4	0.9

13.3.5. Area E

Area E is bordered by Suffolk County municipal use to the north and east, a sewage treatment plant to the south, and wooded area to the west. The site itself is currently a wooded area and the proposed usage includes the relocation of the current Area A uses, including ten County highway yards, public works buildings, a road salt storage building, parking spaces for the County Board of Elections, a new doctor's cottage, and a shed. Noise levels from this usage are expected to be similar to those currently experienced near Area A.

If any new mechanical systems are to be included, the equipment should be provided with an adequate buffer (e.g. located on a building rooftop) to neighboring noise sensitive locations, be selected as low noise generating, and be designed to incorporate sufficient noise reduction devices to comply with applicable noise regulations and standards, and to ensure that this equipment does not result in any significant increases in noise levels by itself or cumulatively with other project noise sources.

13.3.6. Area F

Area F is bordered by the proposed Area E municipal uses to the north, an existing sewage treatment plant to the west, and wooded area to the east and south. The site itself is currently a wooded area and the proposed usage includes the expansion of the existing sewage treatment plant. Noise levels from this usage are expected to be similar to those currently experienced at the existing sewage treatment plant. With twice the number of potential noise sources, the total noise level could increase by up to 3 dBA, which is below the 6 dBA threshold for a significant increase in noise levels.

Design and specifications for mechanical equipment are not yet determined. However, this equipment should be provided with an adequate buffer (e.g. located on a building rooftop) to neighboring noise sensitive locations, be selected as low noise generating, and be designed to incorporate sufficient noise reduction devices to comply with applicable noise regulations and standards, and to ensure that this equipment does not result in any significant increases in noise levels by itself or cumulatively with other project noise sources.

13.4. Proposed Mitigation

13.4.1. Area A

Noise transmission from traffic to the residential and hotel portions of Area A is a potential concern. For residential and hotel uses, an interior noise level of 45 dBA Leq (1-hour) is recommended. The existing exterior traffic noise levels measured at Location 1 near Area A were as loud as 63.4 dBA. Combined with the above potential increase in noise levels, this could be as loud as 69.0 dBA. Therefore, the residential and hotel building design should achieve at least 25 dBA window/wall attenuation measures to achieve an interior noise level of 45 dBA.

Design and specifications for mechanical equipment, such as heating, ventilation, and air conditioning (HVAC), and elevator motors, are not yet determined. However, this equipment should be provided with an adequate buffer (e.g. located on a building rooftop) to noise sensitive locations, be selected as low noise generating, and be designed to incorporate sufficient noise reduction devices to comply with applicable noise regulations and standards, and to ensure that this

equipment does not result in any significant increases in noise levels by itself or cumulatively with other project noise sources.

An Arena and Outdoor Stadium have been proposed at Area A. The Arena will be fully enclosed, and therefore noise transmission from events in the Arena must be contained by the structure. Depending on the type of events anticipated for the Arena, noise transmission from events may potentially impact neighboring properties. The building envelope of the Arena including the façade, roof, doors, and ventilation systems, should be designed to incorporate sufficient noise reduction to comply with applicable noise regulations and standards, and to ensure that it does not result in any significant increases in noise levels by itself or cumulatively with other project noise sources.

There will be a higher potential for event noise transmission from the Outdoor Stadium. This will depend on the type of events planned for this space. It is likely that amplified music, concerts, etc. would transmit audibly to neighboring properties. Public address systems may have less potential for transmission but should still be evaluated for noise transmission potential during design. Potential methods of reducing noise impact would likely include limiting the type and/or hours of activities in the Outdoor Stadium, selecting and positioning loudspeakers in a manner which minimizes sound transmission out of the Stadium, or limiting the output of speech/music amplification systems to an appropriate level that will not transmit to neighboring properties.

13.4.2. Area B

Noise transmission from the LIRR to the residential portions of Area B is a potential concern. For residential uses, an interior noise level of 45 dBA Leq(1-hour) is recommended. The existing exterior noise levels measured at Locations 2 and 3 near Area B, which include noise from the Long Island Railroad, are less than 65 dBA. Therefore, the building design should achieve at least 20 dBA window/wall attenuation measures to achieve acceptable interior noise levels at residential buildings.

Design and specifications for mechanical equipment, such as heating, ventilation, and air conditioning (HVAC), and elevator motors, are not yet determined.

However, this equipment should be provided with an adequate buffer (e.g. located on a building rooftop) to neighboring noise sensitive locations, be selected as low noise generating, and be designed to incorporate sufficient noise reduction devices to comply with applicable noise regulations and standards, and to ensure that this equipment does not result in any significant increases in noise levels by itself or cumulatively with other project noise sources.

13.4.3. Area C

The outdoor recreational usage has the potential for noise impact to neighboring properties, particularly the Area B residential development, depending on the activity type and location on the property. Noise levels at Location 6 adjacent to existing playing fields were measured to be 60 dBA (L10) without any amplified sound systems. In order to stay within the requirements of the Town of Brookhaven requirements for sound transmission from commercial or public lands to residential properties, outdoor activity without amplified sound systems would need to be limited to between the hours of 7 am and 10 pm. If any amplified sound systems are provided, the system should be designed to meet the requirements of the local ordinance. Potential attenuation measures include proper selection of equipment, location and orientation to minimize sound transmission to neighboring properties.

13.4.4. Area D

Design and specifications for mechanical equipment, such as heating, ventilation, and air conditioning (HVAC), and elevator motors, are not yet determined. However, this equipment should be provided with an adequate buffer (e.g. located on a building rooftop) to neighboring noise sensitive locations, be selected as low noise generating, and be designed to incorporate sufficient noise reduction devices to comply with applicable noise regulations and standards, and to ensure that this equipment does not result in any significant increases in noise levels by itself or cumulatively with other project noise sources.

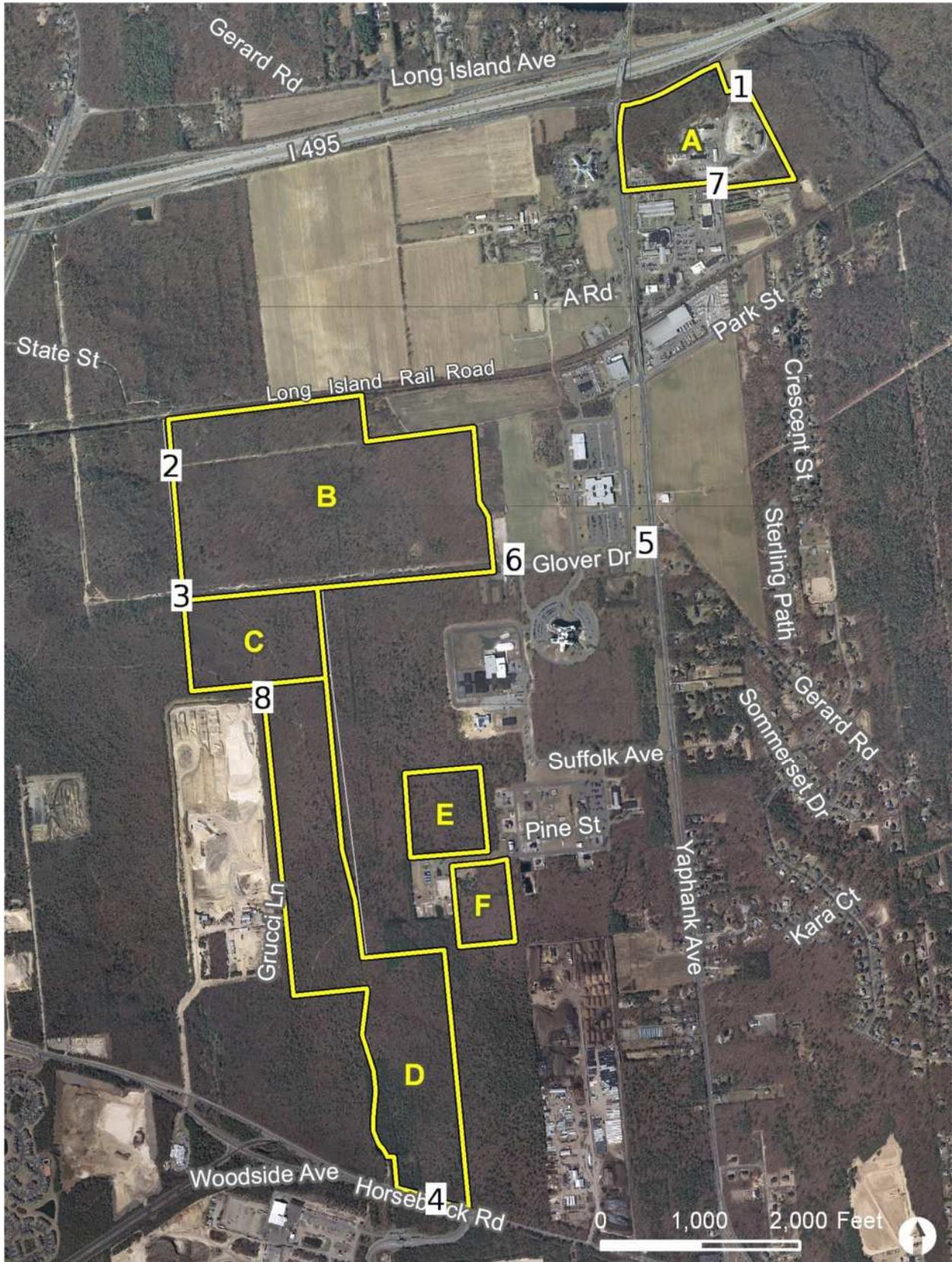
13.4.5. Area E

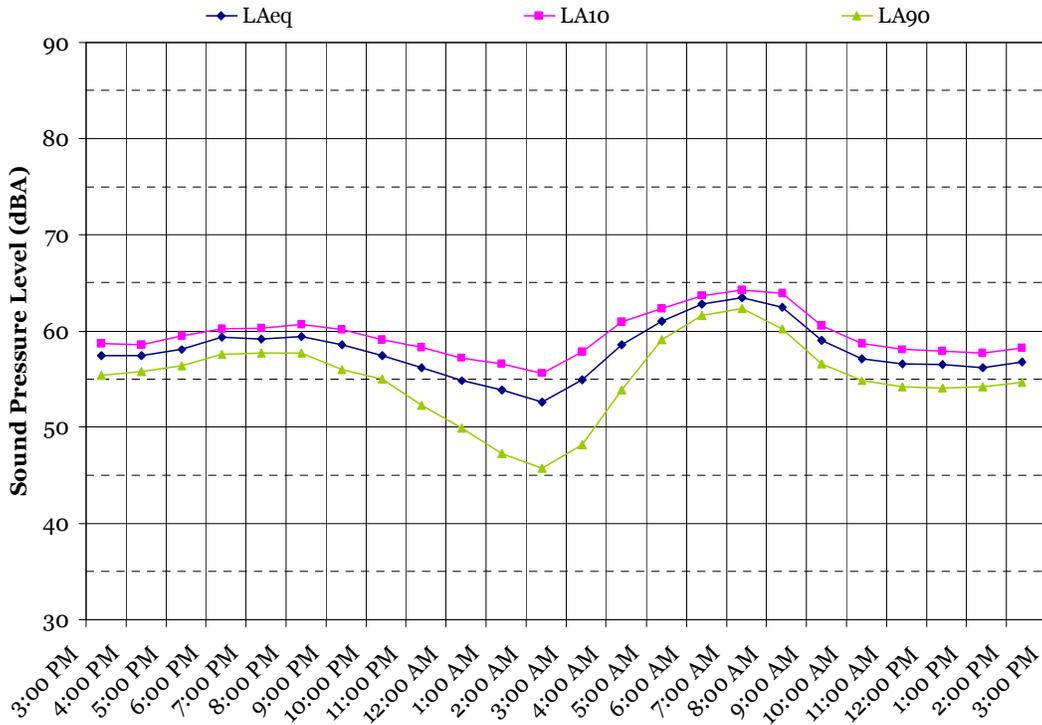
If any new mechanical systems are to be included, the equipment should be provided with an adequate buffer (e.g. located on a building rooftop) to neighboring noise sensitive locations, be selected as low noise generating, and be

designed to incorporate sufficient noise reduction devices to comply with applicable noise regulations and standards, and to ensure that this equipment does not result in any significant increases in noise levels by itself or cumulatively with other project noise sources.

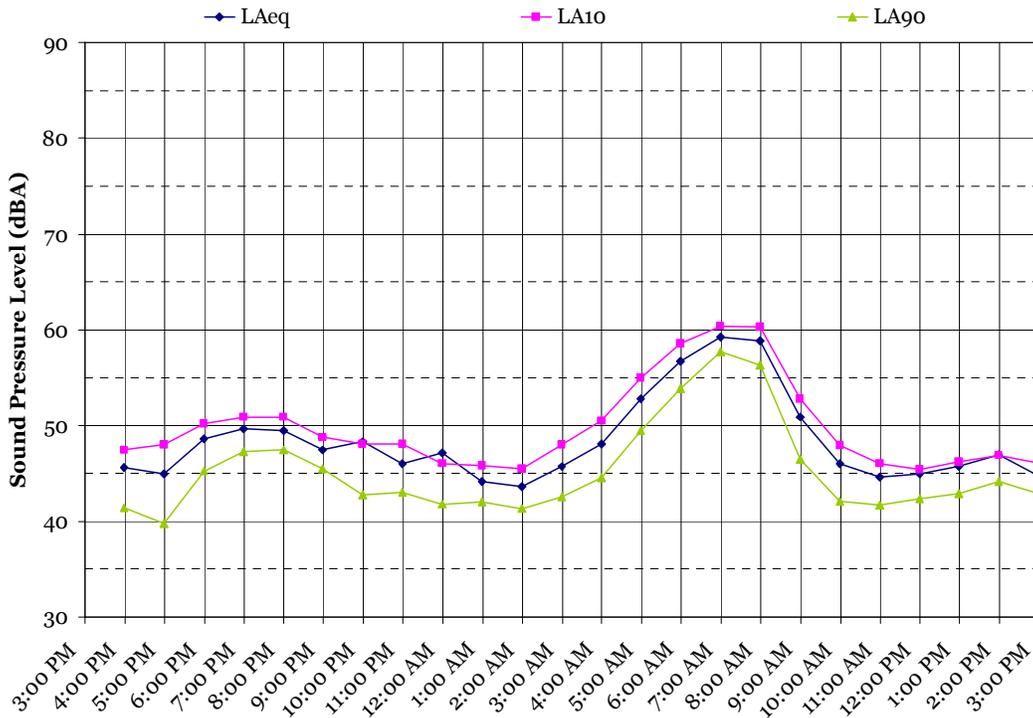
13.4.6. Area F

Design and specifications for mechanical equipment are not yet determined. However, this equipment should be provided with an adequate buffer (e.g. located on a building rooftop) to neighboring noise sensitive locations, be selected as low noise generating, and be designed to incorporate sufficient noise reduction devices to comply with applicable noise regulations and standards, and to ensure that this equipment does not result in any significant increases in noise levels by itself or cumulatively with other project noise sources.



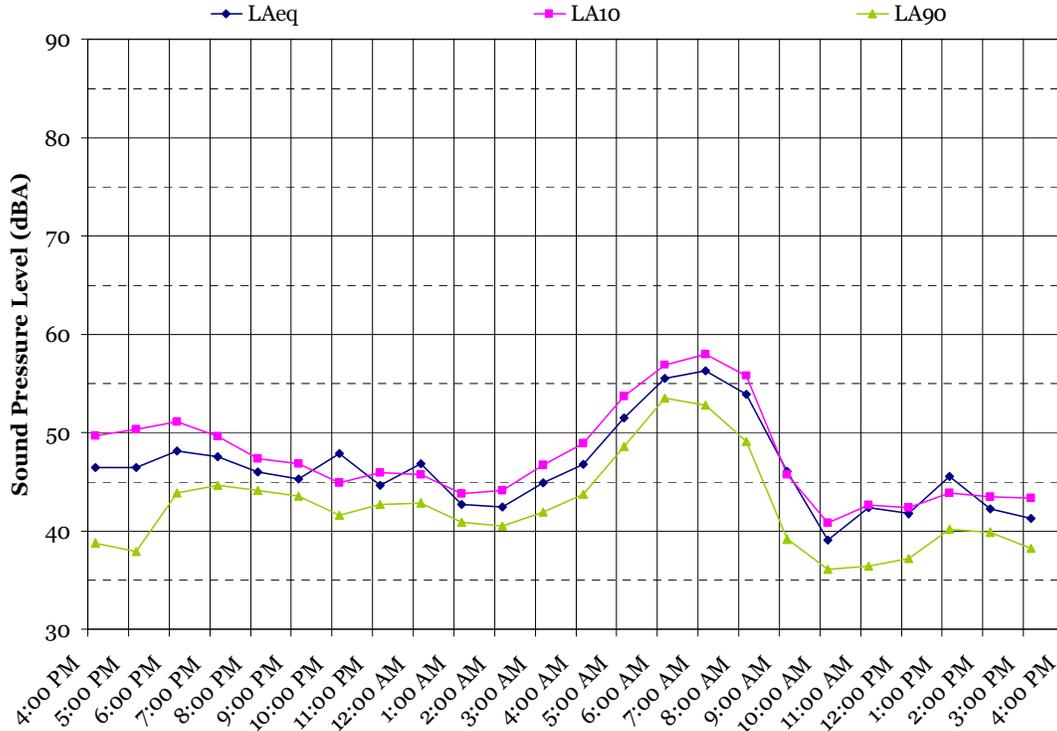


Location 1 - Measured Sound Levels,
 October 19-20, 2010
 Figure 13-2

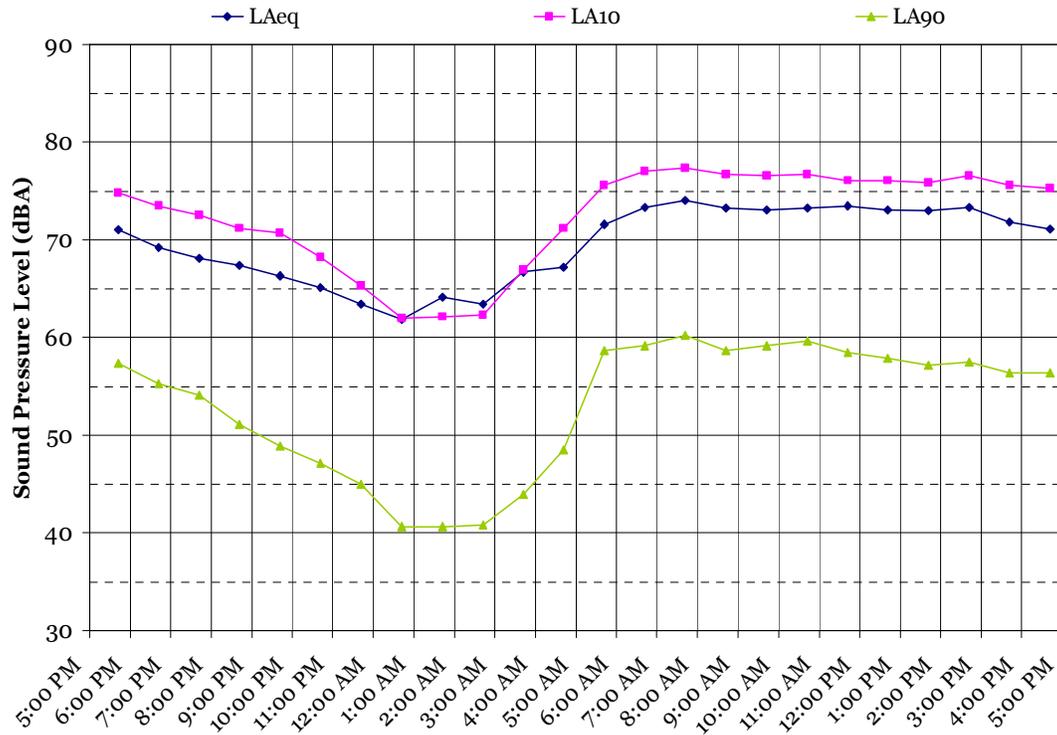


Location 2 - Measured Sound Levels,
 October 19-20, 2010
 Figure 13-3





Location 3 - Measured Sound Levels,
 October 19-20, 2010
 Figure 13-4



Location 4 - Measured Sound Levels,
 October 20-21, 2010
 Figure 13-5



