DOH 06376

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May 19, 2014
Project No.: 5745

SUBJECT: Review and Response to the Draft Environmental Impact Statement for Jewish Home Lifecare, Manhattan

PROJECT: Public School 163 Manhattan, Alfred E. Smith School
163 West 97th Street, New York, NY

ATTN: Friends of P.S. 163, Inc., Rene A. Kathawala

FROM: Robert Lee

Per your request, we have reviewed the Draft Environmental Impact Statement for Jewish Home Lifecare Replacement Nursing Facility Project Borough of Manhattan, New York County, New York (North Side of West 97th Street Midblock between Columbus Avenue and Amsterdam Avenue), dated March 21, 2014, with respect to construction noise impacts upon Public School 163 located at 163 West 97th Street, New York, NY.

In connection with our review of the DEIS, I personally conducted acoustical testing of the noise levels at P.S. 163 on April 3 and April 16, 2014 to test the accuracy of several of the assumptions made in the DEIS. The recognized acoustical standards that were followed were: ANSI S12.60 - Acoustical Performance Criteria, Design Requirements, and Guidelines for Schools and ASTM E 966 - Standard Guide for Field Measurements of Airborne Sound Insulation of Building Facades and Facade Elements.

As background, I am President of Robert A. Hansen Associates, which provides professional consulting services in acoustics and audio/video design. Since the company's founding in 1966, we have served thousands of clients including architects, building owners, management groups, broadcasting companies, corporations, performance organizations, educational institutions, religious institutions and public agencies. Consulting services, which have been provided for projects ranging from 1500 square feet to over 2 million square feet, include architectural acoustics, mechanical noise control, vibration analysis and control, environmental noise control,

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and audio/video and sound system design. I hold a Bachelor of Science degree in Electrical Engineering from the Massachusetts Institute of Technology in Cambridge, Massachusetts. Since 2006, Robert A. Hansen Associates has analyzed over 20 environmental impact statements in connection with NYC Noise "E" designated development projects.

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A. SUMMARY

According to the DEIS Executive Summary:

"The east and south façades of the immediately adjacent P.S. 163 would experience noise levels that exceed *CEQR Technical Manual* noise level impact criteria during some construction activities. Construction noise levels would exceed the *CEQR Technical Manual* noise level impact criteria (as defined in the Construction Noise Impact Criteria section of Chapter 13, "Construction") ..."

"While there would be periods of the construction when P.S. 163 experiences elevated noise level increments exceeding the *CEQR Technical Manual* impact criteria, these exceedances would occur intermittently for no more than 9 consecutive months and no more than 14 total months. ... Currently, the school's east and south façades include single-paned windows and window air conditioners, which would be expected to provide approximately 15-20 dBA of attenuation of exterior noise sources. However with this level of attenuation, it is not expected that interior noise levels would be below 45 dBA L10(1) (the *CEQR Technical Manual* acceptable interior noise level criteria for classroom uses) during the existing condition or during the construction period."

"The approach and procedures for constructing the Proposed Project would be typical of the methods utilized in other construction projects throughout New York City. Since the Project Site is located close to an existing residential community and school, the Proposed Project is committed to taking a proactive approach during construction, which employs a wide variety of measures that exceed standard construction practices, to minimize construction noise and reduce potential off-site noise impacts. The additional noise control measures are designed to reduce the amount of noise experienced at nearby receptors (including residences, schools, and open spaces) by decreasing the amount of noise produced by on-site equipment and by shielding the receptors from the noise-producing activities and equipment. These additional measures would include alternate construction equipment and/or practices as well as additional or improved construction noise barriers."

"However, even with the implementation of a wide variety of measures that exceed code requirements and standard construction practices to minimize noise disruption to the community during construction, construction of the

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Proposed Project would result in significant adverse impacts with respect to noise."

Chapter 13 – Construction goes on to further conclude:

"The noise analysis results in Appendix D show that predicted noise levels due to construction-related activities would result in increases in noise levels that would exceed the *CEQR Technical Manual* impact criteria during one or more months at 28 of the 30 receptor sites (i.e., A1-A5, B1-B7, C1-C4, C6, D1-D6, E1-E3, and F1-F2)."

Receptor sites A1-A5 are P.S. 163.

Similarly, Chapter 14 – Mitigation Measures states:

"The results of detailed construction analyses indicate that predicted noise levels due to construction-related activities would result in increases in noise levels that would exceed the *CEQR Technical Manual* impact criteria during 1 or more months at 28 of the 30 receptor sites (i.e., A1-A5, B1-B7, C1-C4, C6, D1-D6, E1-E3, and F1-F2 as shown in Figure 13-7)."

Summary Response

Although numerous statements are made and often repeated in the DEIS that "P.S. 163 would experience noise levels that exceed *CEQR Technical Manual* noise level impact criteria," that "it is not expected that interior noise levels would be below 45 dBA L10(1) (the *CEQR Technical Manual* acceptable interior noise level criteria for classroom uses) … during the construction period," that "even with the implementation of a wide variety of measures that exceed code requirements and standard construction practices to minimize noise disruption to the community during construction, construction of the Proposed Project would result in significant adverse impacts with respect to noise.," that "predicted noise levels due to construction-related activities would result in increases in noise levels that would exceed the *CEQR Technical Manual* impact criteria during one or more months at [P.S. 163]," the DEIS fails to state what the required additional construction noise mitigation measures would need to be in order to comply with the *CEQR Technical Manual* impact criteria.

We have determined that the additional construction noise mitigation measures must include the installation of new soundproofed windows on classroom and office windows on the east façade, and installation of a central air conditioning HVAC system to provide alternate means of ventilation to these affected rooms

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on the east façade, so that fresh air can be provided to the rooms, to enable the windows to be fully closed during the JHL construction period.

B. REVIEW OF DEIS

1. Using the DEIS Appendix D CadnaA construction noise analysis, we have determined that the existing windows which only attenuate exterior noise by 15-20 dBA, according to the DEIS, are inadequate, and need to be upgraded to windows that attenuate exterior noise by 35 dBA, according to the CEQR Technical Manual.

2. The existing window AC units must be removed, because according to the DEIS these only attenuate exterior noise by 15-20 dBA like the windows. To replace the window AC units, alternate means of ventilation (e.g. central AC) need to be provided.

3. Our own acoustical testing of the windows confirmed the DEIS statement that the existing windows only attenuate exterior noise by 15-20 dBA. According to an engineer at the NYC School Construction Authority when asked about the existing windows at P.S. 163, he replied that "the design of the window replacement project was completed in 1997 and substantial completion in 1999. Looking at the drawings and specifications, the windows are aluminum double hung windows with single glazing of 1/4" polycarbonate, which was [SCA] standard at the time. [The SCA] used polycarbonate to reduce the potential for breakage." Polycarbonate is also known as plexiglass, which is much lighter in weight than equivalent thickness glass. This lightweight single layer polycarbonate glazing composition explains the poor sound attenuation rating and performance of the existing classroom windows.

4. Subsequent to the replacement of the P.S. 163 original windows with polycarbonate glazed windows in 1999, the NYC SCA upgraded acoustical (and thermal) performance quality to windows having two layers of 1/4-inch laminated glass separated by a minimum 3/8-inch airspace, rated 28 dBA attenuation minimum. The SCA also required that where L10 statistically averaged noise level exceeds 75 dB(A) during school hours, the acoustic consultant shall identify the recommended glazing configuration to yield classroom noise levels of 45 dBA for the L10 condition. This requirement results in a window attenuation rating 35 dBA, same as per the CEQR TM.

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5. Although we concede with the CEQR TM's and NYC SCA's 45 dBA classroom noise levels, we want to bring to attention that ANSI S12.60 requires that core learning spaces ambient noise levels not exceed 40 dBA due to exterior noise sources (like transportation). This is 5 dBA more stringent than the CEQR TM and NYC SCA requirement of 45 dBA. The implication is that 40 dBA window attenuation is required, which is 5 dBA more soundproof than required by the CEQR TM and NYC SCA. According to CEQR, "To achieve 40 dBA of building attenuation, special design features that go beyond the normal double-glazed windows are necessary and may include using specially design windows (i.e., windows with small sizes, windows with air gaps, windows with thicker glazing, etc.), and additional building attenuation."

6. During our site survey, we observed that a number of classrooms lacked window AC units, necessitating the windows be opened to provide fresh air ventilation, which would result in a further degradation of the attenuation of exterior construction noise to at most 5-10 dBA. These rooms would suffer with excessive construction noise even if new soundproofed windows are installed, because the windows would need to be opened to provide fresh air ventilation.

7. The DEIS mentioned several times that "with single-paned windows and window air conditioners, which would be expected to provide approximately 15-20 dBA of attenuation of exterior noise sources", "it is not expected that interior noise levels would be below 45 dBA L 10(1) (the CEQR Technical Manual acceptable interior noise level criteria for classroom uses) *in the existing condition* or during the construction period." To the contrary, actual sound readings performed by us in several classrooms revealed the interior noise levels to be in the 36-42 dBA range *in the existing condition.*

8. The DEIS on page 14-9 states that construction noise at P.S. 163 is not considered a significant adverse noise impact because construction would not result in 2 or more years of sustained elevated noise levels according to CEQR Technical Manual construction noise impact criteria. While we do not necessarily agree with this analysis based on a reading of the CEQR TM, the DEIS glosses over an important exception for schools, as stated in Chapter 22 of the CEQR TM in Section 200 - Determining Whether A Construction Impact Assessment is Appropriate, "... further analysis should be performed if the proposed project would cause construction equipment to be operating within 1,500 feet of a receptor for a period of time exceeding two years. In some circumstances, however,

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even a shorter term construction phase may affect highly sensitive locations (schools, hospitals, etc.) ...". So despite P.S. 163's not meeting the "2 or more years of sustained elevated noise levels" guideline according to the DEIS, P.S. 163 should be considered a significant adverse noise impact because of this exception, that it is a school.

9. Although we accept the CEQR use of the dBA L10 units of noise level measurement, a flaw with this noise level rating methodology must be pointed out which also makes the analysis incomplete, particularly as it relates to a public elementary school that is seeking to educate very young children.

According to the CEQR TM: "Lx is the percentile level, where x is any number from 0 to 100. Here x is percentage of the measurement time that the stated sound level has been exceeded. For example, L10 = 80 dB(A) means that SPL measurements exceeded 80 dB(A) 10 percent of the time during the measurement period."

This means that if the SPL measured 85 dBA, as an example, for 10 percent of the time, and 80 dBA or lower for the other 90 percent of the time, the L10 level is 80 dBA. But it could also mean that if the SPL measured 100 dBA, as another example, for 10 percent of the time, and 80 dBA or lower for the other 90 percent of the time, the L10 level is also 80 dBA! These two L10 ratings are extremely different noise exposure conditions, yet the latter example represents a significantly worse noise condition that is typical of impulsive/impact construction machinery proposed to be used in this project.

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June 24, 2014
Project No.: 5745

SUBJECT: Supplemental Response to the Draft Environmental Impact Statement for Jewish Home Lifecare, Manhattan

PROJECT: Public School 163 Manhattan, Alfred E. Smith School
163 West 97th Street, New York, NY

ATTN: Friends of P.S. 163, Inc., Rene A. Kathawala

FROM: Robert Lee

This serves as a follow-up to our May 19, 2014 report relating to the Draft Environmental Impact Statement for Jewish Home Lifecare Replacement Nursing Facility Project Borough of Manhattan, New York County, New York (North Side of West 97th Street Midblock between Columbus Avenue and Amsterdam Avenue), dated March 21, 2014, with respect to construction noise impacts upon Public School 163 located at 163 West 97th Street, New York, NY.

I have been advised that as part of mitigation measures that the New York State Department of Health may include as part of the final environmental impact statement, new windows will be installed on the eastern side of the P.S. 163 school building (or possibly throughout the building). It is my opinion that if this is the primary or only mitigation measure that DOH will require as part of the EIS relating to noise mitigation, it will not address the tremendous noise impacts of the construction at P.S. 163 in any meaningful manner.

As previously submitted, we have determined that the additional construction noise mitigation measures must include the installation of new soundproofed windows on classroom and office windows on the east façade, and installation of a central air conditioning HVAC system to provide alternate means of ventilation to these affected rooms on the east façade, so that fresh air can be provided to the rooms per building code requirements, and to enable the windows to be fully closed during the JHL construction period. This is so because certain classrooms have no air conditioner units, and in my discussions with the Parent Teacher Association, I understand that windows must be left open virtually every day of the academic year because in winter the heat in

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the more than fifty year old school building is unregulated , and in the summer, the air conditioners presently in the school do not offer sufficient cooling. Furthermore, the existing air conditioner units leak as much sound as the existing windows, and therefore must also be removed and replaced with a central air conditioning HVAC system to provide alternate means of ventilation.

The noise attenuation that would be offered solely by installing windows that attenuate exterior noise by 35 dBA will not have any significant impact, since the potential use of the windows would render them wholly ineffective, given that the windows in the building must be left opened virtually year round due to the absence of central air conditioning and the unregulated heat emitted during the winter, in order to provide fresh air ventilation in accordance with building code regulations and the CEQR technical manual. Indeed, the technical manual requires DOH to coordinate with, among others, the New York City Department of Education "for the installation of double-glazed windows and alternate means of ventilation at a school." CEQR Technical Manual at 19-28 (emphasis added). The technical manual also requires mitigation to "require a closed window situation and hence an alternate means of ventilation." *Id.* at 19-23 (emphasis added).

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November 24, 2014
Project No.: 5745

SUBJECT: Response to the Final Environmental Impact Statement for Jewish Home Lifecare, Manhattan

PROJECT: Public School 163 Manhattan, Alfred E. Smith School
163 West 97th Street, New York, NY

ATTN: Friends of P.S. 163, Inc., Rene A. Kathawala

FROM: Robert Lee

The FEIS makes numerous mentions of secondary "acoustical interior windows" and "window air conditioning units" to provide adequate noise mitigation and to ensure an alternate means of ventilation on the eastern façade of P.S. 163. Here is one such mention, excerpted from the Executive Summary, page S-29:

> "Nevertheless, the project sponsor would provide acoustical interior windows for classrooms on the eastern façade of P.S. 163 facing the Project Site to reduce construction noise impacts. The classrooms on the eastern façade of P.S. 163 currently have window air conditioning units, with the exception of 6 rooms, according to information provided by NYCSCA. The project sponsor would make window air conditioning units available for any classrooms that do not have functioning units in order to ensure an alternate means of ventilation for classrooms where acoustical interior windows are installed. With these acoustical interior windows and with window air conditioning units, the school's façade is expected to provide approximately 25 to 30 dBA composite window/wall attenuation, compared to the 15 to 20 dBA attenuation of exterior noise sources that would occur absent installation of these windows. Based on the predicted L10(1) noise levels at P.S. 163 for each construction phase shown in Appendix E, the school's interior noise levels would be below 45 dBA (i.e., the threshold considered acceptable according to *CEQR Technical Manual* criteria) throughout the construction period, with the exception of the loudest portions of excavation and foundation work, which would occur at certain discrete times during the approximately 3 months that this work would take place, and the loudest portions of superstructure work, which would occur at certain discrete times during the approximately 6 months that this work would take place. During those times within that 9-month window of the most intense construction activity, interior noise levels at P.S. 163 would reach the low-50s dBA."

This FEIS noise mitigation proposal is totally unsatisfactory for the following reasons:

1. The FEIS has ignored my Review and Response to the DEIS, dated May 19, 2014, and my Supplemental Response to the DEIS, dated June 19, 2014, where I had

concluded that the existing windows must be upgraded to windows that attenuate exterior noise by a minimum of 35 dBA to meet the requirements of the CEQR Technical Manual and NYC SAC, and a required attenuation of 40 dBA to meet more stringent criterion of ANSI S12.60. The FEIS proposal is to provide only 25 to 30 dBA of attenuation, which is deficient by a significant 10 to 15 dBA.

2. The FEIS has also ignored my conclusion that a central air conditioning HVAC system be installed to provide an alternate means of ventilation, which is necessary because the windows must remain completely shut in order to fully attenuate the construction noise. The FEIS proposal is to re-utilize existing window air conditioning units, and to install new units where there presently are none in the classrooms on the eastern façade. Window AC units, unfortunately, are not acceptable as alternate means of ventilation because window AC units do not provide sufficient amounts of outside air to meet the minimum ventilation requirements of the NYC building code. According to Section MC 403 of the NYC Mechanical Code, the required outdoor air ventilation for classroom and auditorium educational facilities is 15 CFM (cubic feet per minute) minimum per person. Assuming the window air conditioner is rated for 50 CFM of outdoor air ventilation when the fresh air vent is opened, it would only meet Code for 3 persons. In order to meet Code for 30 persons, which I understand is the average class size at P.S. 163, 450 CFM of fresh air ventilation must be provided, which window AC units are incapable of providing. The total CFM rating for a high capacity window AC unit is approximately 400-500 CFM, which includes both re-circulated and outdoor fresh air, of which the outdoor air portion is only approximately 10%. A central air conditioning HVAC system would be able to provide the necessary outdoor air ventilation to comply with NYC building code requirements.

3. The FEIS fails to include noise remediation measures for the Auditorium, which is considered to be the largest classroom space at P.S. 163. Both OITC 35/40 dBA rated windows and central air conditioning HVAC system are required for the Auditorium, given its size and purpose.

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Date: April 29, 2014

Re: Comments on the Draft Environmental Impact Statement (EIS) for the Jewish Home Lifecare (JHL) Construction Project

To Whom It May Concern:

We are pediatric environmental health specialists at the Mount Sinai Children's Environmental Health Center (CEHC). Our mission is to educate health care providers and others about the scientific and medical aspects of environmental health problems impacting children and to provide clinical consultation to families, health care professionals, public health officials, and community organizations with concerns regarding children's exposure to environmental health hazards, including those hazards in or around schools.

In March of 2014, the draft EIS for the proposed nursing home construction project for Jewish Home Lifecare (JHL) was released. Due to concerns about the possible impacts of this project, the Parent Teacher Association (PTA) of P.S. 163, an elementary school located adjacent to the proposed construction site, requested that we provide an official response to this EIS, specifically about the potential effects of the construction noise on the schoolchildren. This letter is the product of an unpaid consultation with our environmental pediatricians.

We appreciate the opportunity to comment on the EIS. The following letter provides the response of the Mount Sinai CEHC to the information provided in this EIS. It is important to note that our analysis is limited to our expertise in the fields of pediatrics and pediatric environmental health. The technical details, especially with regard to the methods used to predict noise levels, lie outside our scope as pediatricians, and we do not comment specifically on these methods. In our comments below, we comment on the potential impacts of noise on children's health from a clinical perspective.

Background on the Effects of Noise on Children

As pediatricians, we are concerned about children's exposure to increased level of noise because noise can affect hearing and can also result in physical and psychological health effects. The construction project is predicted to increase the level of background noise at P.S. 163 for at least 14 months. Noise can interfere with children's ability to learn and communicate, and with their concentration, motivation, and memory. Noise can be stressful, especially if loud or persistent, and can result in elevated blood pressure. Students with sensory impairment, auditory processing disorders, Attentional Deficit Hyperactivity Disorder (ADHD), and Autism

Spectrum Disorders (ASD), may be particularly sensitive to noise. Prolonged exposure to sound louder than 85 dBA can potentially cause damage to the inner ear (for context, a garbage disposal emits ~80 dBA and a busy urban street is ~90dBA). However, prolonged exposure to noise at lower intensity can also have deleterious health effects including stress, cardiovascular effects, and learning issues. (1)

Studies have demonstrated that schoolchildren's chronic exposure to increased background noise results in impaired reading comprehension. For example, one study examined how increased noise from aircraft and traffic (within the 30 to 70 dBA range) affected reading comprehension in children. The study found that for every 5 dBA increase in ambient noise measured during daytime hours on the exterior surfaces of school buildings, grade-school aged children experienced a one to two month delay in reading comprehension. (2) To put this finding in context of P.S. 163, their study would predict that if noise outside of a school building increased from a background level of 60 dBA to a construction level of 75 dBA, one could expect children there to read at a level three to six months behind their average peers. Additionally, it is important to note that these findings apply to average children. Children with ADHS or ASD may have increased vulnerability to noise, which is less well characterized, but important to consider.

General guidelines for classroom noise have been proposed because ambient noise may negatively affect the understanding of speech in a classroom. (3) We recommend that ambient noise in a classroom remain below these levels to optimize the learning environment (1,3):

For children with normal speech processing, maximum classroom ambient noise:

- **40 dBA** for children older than 12 years
- **39 dBA** for children 10 to 11 years
- **34.5 dBA** for children 8 to 9 years
- **28.5 dBA** for children 6 to 7 years old

For vulnerable groups- children suspected of delayed speech processing in noise:

- **21.5 dBA** for 6 to 7 years old

It is important that any large construction project consider the full range of child activities and also children's unique susceptibilities to noise, especially in the learning environment. An additional factor to consider is the increased exposure to noise children may experience while outdoors near P.S. 163. The Centers for Disease Control recommend one hour of outside activity per day for children. (4) In this case of children attending P.S. 163, it can be assumed children get this time in whole or in part by using the outdoor playground as the weather allows. Noise levels at this playground would likely exceed those found inside the school since the walls and windows of the school provide some buffering of the noise from outdoors. And, children entering/exiting the school building and walking nearby would likely experience higher levels of noise than in the classroom.

Predicted Noise Levels and Proposed Mitigation Measures at P.S. 163

As outlined by the draft EIS, the noise levels generated by the proposed construction project will be expected to significantly vary during different phases of construction. The proposed construction includes six phases planned to take place over 30 months. (EIS, Figure 13-1) These

are: excavation and foundation, superstructure, exterior façade, interior fit-outs, site work and commissioning. The loudest noise levels are predicted to last for a total of 14 months (for 9 consecutive months of the first two of these phases and then for an additional 5 months when two of the phases overlap). These 14 months will inevitably have some overlap with months that school is in session, putting the school children at risk for increased noise levels while attending school.

The EIS noise analysis made predictions as to what levels of noise would be expected during each construction phase. This analysis relied upon noise modeling using the Computer Aided Noise Abatement (CadnaA) Model, and noise receptors erected in the area surrounding the proposed construction site. (EIS, Chapter 13, pgs. 25-36) As stated in the EIS, five noise receptors were placed around the current site of P.S. 163. These receptors allowed the measurement of ambient noise currently present at the school site, and the prediction of what noise would be expected during the various phases of construction (excavation and foundation, superstructure, exterior façade phases). These analyses predicted two parameters of noise that would be expected during construction: $L_{eq(1)}$ and L_{10}. $L_{eq(1)}$ is defined as the equivalent noise level (in dBA) over one hour, or the average noise level that could be expected over one hour. L_{10} refers to the noise that could be expected during the noisiest 10% of time.

The EIS analysis demonstrated that current ambient noise around the exterior of P.S. 163 ranges between 55 and 65 dBA. (EIS, Appendix D) As stated in the EIS, these noise levels are equivalent to "light car traffic at 15 meters," "commercial areas" and "predominantly industrial areas." (EIS, Chapter 10, pg. 2) According to the CadnaA model, noise levels at the exterior of P.S. 163 would rise to predicted $L_{eq(1)}$ of 67 to 81 dBA during the noisiest three phases of construction, with L_{10} of 84 dBA at the P.S. 163 receptor site predicted to experience that most intense noise. (EIS, Appendix D) These levels would be similar to those heard at a "busy traffic intersection" or a "heavy truck" 15 meters away, and are clearly higher than recommended levels of ambient noise for classrooms, and are also associated with health impacts (as discussed in previous section on impacts of noise).

As projected by the EIS, noise levels at P.S. 163 during the proposed construction would reach an L_{10} level of 84 dBA, just short of the 85 dBA threshold—the level at which physical injuries to the inner ear may occur with prolonged exposure. The average noise levels over an hour ($L_{eq(1)}$) are predicted to reach levels associated with physiologic and psychological effects (as described in health section above) . As mentioned in the EIS, the New York City Environmental Quality Review (CEQR) technical manual provide guidelines for what levels of noises are acceptable for the areas around schools during construction projects in New York City (Chapter 19: Noise and Chapter 22: Construction). (5) The CEQR technical manual defines noise by four levels: acceptable, marginally acceptable, marginally unacceptable and clearly unacceptable. CEQR levels for a school are "marginally unacceptable" with an L_{10} greater than 70 dBA, and are "clearly unacceptable" with an L_{10} greater than 80 dBA. As defined by these levels, noise levels at P.S. 163 would be "marginally unacceptable" at all P.S. 163 receptor sites measured during all of the first three construction phases, scheduled to last 14 months. And, noise would reach the "clearly unacceptable" range during the "super structure" construction phase as measured at one of the five P.S. 163 receptor sites (site A1 at the southern end of the eastern façade of the school).

The CEQR technical manual states that projects that will last less than two years within NYC are permitted to reach levels this loud. While this standard may be a practiced norm, we feel it important to note that it does not exclude the possibility of negative impacts on children's learning, based on the available scientific data. As mentioned previously, noise levels such as those predicted to occur at P.S. 163 can be expected to delay reading comprehension of typical children by several months. Of note, the cited research on the impact of increased noise on reading comprehension studied exterior noise ranging from 30 to 70 dBA (2), and the proposed construction is predicted to exceed these levels. Insufficient data currently exist to assess the impacts that such noise levels may have on particularly vulnerable children, such as those with ADHD or ASD. Additionally, the predicted noise levels at P.S. 163 may approach levels at which physical harm to the inner ear may result with prolonged exposure.

The EIS outlines the steps that would be taken at the proposed construction site to mitigate noise. (EIS, Chapter 14, pgs. 4-9) These measures include the use of equipment compliant with the NYC Noise Control Code, the use of electrical rather than fossil fuel-powered equipment where possible, avoiding idling truck engines for longer than three minutes, appropriate maintenance of vehicles, equipment and mufflers, as well as the erection of a "12-foot sidewalk bridge" on the western border of the proposed construction site. This plywood-constructed structure is predicted to provide a 10 dBA reduction in noise. The EIS also points out that the building façade, single-paned windows and air conditioning units along the eastern and southern faces of P.S. 163 would be expected to provide an additional 15-20 dBA reduction in noise levels experienced inside the school.

As pediatricians, it is outside our purview to comment on these mitigation measures in detail. However, taking the noise mitigation analysis results from the EIS at face value, they may not be sufficient to provide enough noise reduction (in dBA) during the noisiest phases of the proposed construction to avoid impacts on children's learning. Therefore, all feasible strategies to reduce noise should be considered when planning for this project.

Predicted Public Health Impacts from Noise

In Chapter 11 of the EIS, the report concludes that "there would be no significant adverse noise impacts due to operation of the Proposed Project." (EIS, Chapter 11, pg. 2) While the noise analysis of the EIS determined that the proposed construction would be consistent with CEQR technical manual standards, and NYC and State law, we cannot confidently support the conclusion of "no significant adverse noise impacts." As previously mentioned, expert guidelines state that noise levels within classrooms should not exceed the age dependent limits as listed on page 2 of this letter. (1,3) Per the EIS analysis, current pre-construction ambient noise levels at the exterior of P.S. 163 are in the 55-65 dBA $L_{eq(1)}$ range. The proposed construction represents a significant increase beyond ambient levels, which we would likely lead to a deleterious effect on the education and well-being of students there. At the time of this letter, we do not have any data on the indoor (baseline) levels of noise at the school.

Conclusions

As environmental pediatricians, our primary goals are to reduce children's exposure to potentially harmful pollutants such as noise and to optimize learning environments. With these goals in mind, we have the following conclusions about the draft EIS:

1) We cannot confidently support the conclusion of the EIS that "there would be no significant adverse noise impacts due to operation of the Proposed Project." Based on the best available evidence, we conclude that the project may produce adverse noise impacts on the students at P.S. 163.
2) The predicted noise levels during the noisiest 14 months of construction (for 9 consecutive months of the first two of these phases and then for an additional 5 months when two of the phases overlap) are predicted to be loud enough to potentially interfere with the wellness and the ability to learn of the schoolchildren at P.S. 163.
3) The mitigation measures as outlined in the EIS may not be sufficient to fully prevent negative impacts on P.S. 163 students, especially during the noisiest phases of construction.

If the project moves forward, we offer the follow recommendations:

1) We encourage the builders to fully implement the proactive noise mitigation measures outlined in the EIS. In addition, we encourage them to take additional measures, when feasible, to further reduce noise exposures of children in P.S. 163 during school hours. Options for additional noise mitigation should be discussed with a certified expert in the field to maximize noise reduction near the school (especially during the initial three phases, which are expected to be the loudest).
2) When feasible, we encourage the noisiest activities during the first three phases of construction be scheduled for times when the children are not present in the school (i.e during summer vacation).
3) We encourage continued monitoring of noise levels at the school during all phases of construction to continually evaluate noise levels and the effectiveness of the noise mitigation plan.
4) We encourage regular communication with school representatives in order to discuss progress, concerns, and unanticipated impacts as the construction moves through its various phases.

We appreciate the opportunity to comment on the EIS.

Sincerely,

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