2.S CONSTRUCTION IMPACTS

INTRODUCTION

Construction activities, although temporary in nature, can sometimes result in significant adverse impacts. A project's construction activities may affect a number of technical areas analyzed for the operational period of a proposed action, such as air quality, noise, and traffic; therefore, a construction assessment relies to a significant extent on the methodologies and resulting information gathered in the analysis of these technical analyses areas.

Construction duration is often broken down into short-term (less than two years) and long-term (two or more years). Where duration of construction is expected to be short-term, any impacts resulting from such short-term construction generally do not require detailed assessment. However, there are instances where a potential impact may be of short duration, but nonetheless significant, because it raises specific issues of concern. In addition, there are technical areas, such as air quality, where the duration of construction alone is not a sufficient indicator of the need for a detailed assessment, and other factors should be considered. In such instances, a targeted assessment of the relevant technical area may be appropriate. The factors to consider in determining whether a construction impact assessment is warranted for a particular technical area, such as transportation or air quality, are discussed in more detail below.

Construction equipment is defined as machinery used, at a specified site, for the fabrication, erection, modification, demolition, or removal of any structure or facility, including all related activities such as land clearing, site preparation, excavation, cleanup, and landscaping.

As is described in detail in Chapter 1, Project Description, the Proposed Action is the approval of a package of zoning changes and special permits, including the rezoning of all or part of 11 blocks in the south central Bronx from manufacturing to residential districts and, to a lesser extent, from residential to higher density residential districts. Under the reasonable worst case development scenario presented in Chapter 1, 49 tax lots would be redeveloped by the 2022 analysis year (as opposed to 2 tax lots in the future without the Proposed Action), with a projected 2,775 housing units and 131,869 square feet of commercial space, an increment of 2,635 housing units and 92,941 square feet of commercial space over the future no-action scenario. As analyzed in this chapter, this new construction would be expected to take place over a 10 year period. Slightly less than half of the development would be under the control of the project applicant. The remaining sites would be developed by others over the course of the 10 years. For that reason, it was necessary to develop a reasonable worst case development scenario, which is described below under the methodology section.

Between the Draft and Final EIS, a number of additional studies were undertaken, particularly related to construction and traffic and noise potential impacts. These were as follows:

Traffic

1. Detailed level of service analyses for the four potential traffic impact locations identified in the Draft EIS were undertaken for the construction peak hours. This analysis included detailed trip generation analyses and trip assignments of both vehicular trips eliminated by the Proposed Action as well as additional vehicular trips that would be generated by completed buildings during the construction process.

2. The seven potential impact locations identified during the operational phase analyses discussed under Chapter 2.M were also tested using the same methodology described above. The purpose was to determine if the mitigation measures described in Chapter 3, Mitigation should be implemented before 2022.

Noise

An enhanced analysis of the significant construction noise impacts for the lots fronting on Longfellow Avenue (whose rear yards would abut an area of the Proposed Action between East 173rd and East 174th Streets along Boone Avenue) was undertaken for the Final EIS using the FHWA Roadway Construction Noise Model (RCNM).

PRINCIPAL CONCLUSIONS

Traffic – Construction Peak Period Analysis

A preliminary construction traffic analysis was conducted for the Proposed Action. That analysis indicated that four intersections would potentially experience a significant construction traffic impact. These intersections are as follows:

1. Intersection 18 West Farms Road/Home Street
2. Intersection 21 Bronx Park Avenue/East 177th Street
3. Intersection 9 West Farms Road/East 173rd Street
4. Intersection 10 Boone Avenue/East 173rd Street

Further detailed analysis has been performed at these locations between the Draft and Final EIS to specifically quantify the construction traffic impacts and to determine what mitigation measures, such as signal timing modification, daylighting and/or lane re-striping would mitigate the impacts. In addition, seven other intersections were also studied between the Draft and Final EIS:

5. Intersection 1 East Tremont Avenue at East 177th Street and Devoe Avenue
6. Intersection 2 East Tremont Avenue, Boston Road at West Farms Road
7. Intersection 4 East 177th Street at Sheridan Expressway
8. Intersection 6 Bronx River Avenue at East 174th Street
9. Intersection 7 Boone Avenue at East 174th Street
10. Intersection 8 Longfellow Avenue at East 174th Street
11. Intersection 12 West Farms Road at East 172nd Street

The analysis indicates that significant adverse construction period traffic impacts would occur at two intersections (#'s 8 and 18) during the AM construction peak hour and at four intersections (#'s 1, 2, 4, and 6) during the PM construction peak hour. These impacts would occur during the construction phase in which the greatest number of daily employee trips would occur, a phase that would begin at about week 240 of the construction schedule, which is expected to be sometime during the year 2018. Measures approved by the New York City Department of Transportation (NYCDOT) that would fully mitigate the impacts at Intersections 1, 6, 8 and 18 are presented in Chapter 3,Mitigation. The significant adverse construction traffic impact at Intersection 2, East Tremont Avenue and Boston

Road at West Farms Road, and at Intersection 4, East 177th Street at the Sheridan Expressway, would remain unmitigated, as is discussed in Chapter 4, Unavoidable Significant Adverse Impacts.

Parking

The parking supply and demand analysis for the peak construction period indicated there would be 701 and 504 available spaces in the 6-7 AM and mid-day periods, respectively, after accounting for the parking demand expected from construction employees. No parking impacts during construction are expected.

Transit and Pedestrians Analysis

The analysis showed that the construction bus, subway and pedestrians trips would be substantially less than that for the Proposed Action, and because the Proposed Action analyses indicated no impacts on these facilities, no construction impacts would be expected for these facilities.

Air Quality and Noise

Air Quality

Based on the preliminary construction analysis, construction activities are not likely to cause mobile source air quality impacts. Although the construction-related trucks may exceed the increment projected for the Future with Action Conditions during some hours of the day and/or short-term periods, no significant long-term adverse impacts are anticipated.

Any potential impacts to adjacent residences would be temporary impacts lasting less than one year. Due to its long construction period when diesel equipment would be on Site 2N (70 weeks), the applicant has agreed to the implementation of a diesel particulate matter (DPM) reduction program. Accordingly, for this site, a more rigorous approach to reducing diesel particulate matter emissions would be carried out, as ensured through the restrictive declaration for this site. The proposed DPM measures would be sufficient to prevent significant adverse air quality impacts because they were incorporated as part of a detailed construction analysis for the Fordham University Lincoln Center Master Plan EIS, and the Proposed Action for the Crotona Rezoning would have a lower emissions intensity than the Fordham University Lincoln Center Master Plan. The Fordham analysis concluded that no significant adverse air quality impacts would occur. Therefore, the construction best management practices adopted for Fordham would be sufficient to prevent potential construction air quality impacts for the Crotona Rezoning.

Noise

Based on the preliminary construction analysis, construction activities are not likely to cause long-term impacts due to mobile noise sources, impulse noise, or noise within a narrow range of frequencies.

Even though no long-term construction noise impacts are expected to occur as a result of the Proposed Action, there are shorter periods during which very high increases in construction-noise would occur, particularly for sensitive receptors along Longfellow Avenue between East 173rd and East 174th Streets. Accordingly, the Proposed Action would potentially result in a significant adverse impact related to construction noise.

Between the Draft and Final EIS, further analysis of construction noise affecting the receptors along Longfellow Avenue, and consideration of potential mitigation measures to reduce the severity and

duration of the noise from on-site equipment was carried out. The further analysis did indicate that a significant adverse construction noise impact would occur at Lot 4 on Block 3010. This lot fronts Longfellow Avenue between East 173rd and East 174th Streets, but has a rear yard which abuts the proposed rezoning area along Boone Avenue. The significant adverse construction noise impact would occur because of the repeated nature of the high noise levels at this location.

Other Technical Areas

Land Use and Neighborhood Character

The proposed rezoning area is already an industrial area, and generally incompatible with the residential uses to the west. The industrial nature of the construction activities would be a substitution for the industrial uses already extant. While construction of the new buildings would cause temporary impacts, particularly related to noise, it is expected that such impacts in any given area would be relatively short term (e.g., less than two years), even under the reasonable worst case construction sequencing (see the construction air and noise assessment above). While the area would experience construction disruptions to neighborhood character, their duration would not be of sufficient time as to be considered as significant. Therefore, no significant adverse construction impacts to land use and neighborhood character are expected.

Socioeconomic Conditions

During the construction period, construction activities would be dispersed throughout the proposed rezoning area and would not affect access to particular businesses over an extended duration. No other businesses are near enough to the proposed rezoning area to be affected by construction activities. In addition, a central goal of the proposed rezoning is to make the area more compatible with the more residential nature of the upland areas. The businesses now extant on the proposed rezoning area are not unique nor do they form a special economic segment in the City's economy. These businesses would be expected to relocate as development pressures made their operations less viable (see Chapter 2.B, Socioeconomic Conditions). Therefore, no significant adverse construction impacts to socioeconomic conditions are expected.

Community Facilities

There are three community facility uses (schools) that abut or are within the project area (two at the south end – Fannie Lou Hamer Freedom High School and PS 66 – and one at the north end – PS 214 - of the proposed rezoning area). No other community facilities are located within or adjacent to the proposed rezoning area. It will not be necessary to alter the entrances to the schools, nor would it be necessary to close them at any time during the construction period. There would be no direct nor indirect construction effects to any community facilities other than those considered separately under the air, noise and traffic preliminary analyses. Hence, no construction impacts would be expected to community facilities in the area.

Open Space

No open space resources would be disrupted during the construction of the project, nor would access to any publically accessible open space be impeded during construction within the proposed rezoning area. Therefore, no significant adverse impacts to open space are expected to occur.

Historic and Cultural Resources

The Proposed Action would result in potentially significant impacts to archaeological resources on projected development sites not under the control of the applicant and not subject to a restrictive

declaration that would ensure the identification of any archaeological resources prior to development. The archaeological resources are a pre- and post-civil war cemetery generally in the vicinity of Boone Avenue and East 172nd Street and former privies (shafts) on sites located north of the Cross Bronx Expressway. These potential impacts are fully discussed under Chapter 2.F., Historical and Cultural Resources, and a preliminary construction assessment is not needed to disclose these potential impacts (see Chapter 2.F.).

Natural Resources

The Bronx River is a natural resource within the vicinity of the proposed rezoning area. However, it is separated by separated by a distance of 300 to 500 feet, and within that separation is the Sheridan Expressway and the West Farms Road right-of-ways. The primary concern during construction would be the possibility of sediments flowing from the construction sites into the river through sheetflow run-off, increasing turbidity and possibly biochemical oxygen demand. However, both of these roadways have their own drainage systems, so sheetflow run-off from the project sites to the river would not occur.

Finally, Section 3309.1 of the New York City Building code requires that provisions be made to control water run-off and erosion during construction and demolition activities, and NYSDEC has published a manual (New York Standards and Specifications for Erosion and Sediment Controls) which is the standard to be followed to comply with the Building Code.

Given the separation of the building sites from the Bronx River, the two intervening stormwater collections systems and the requirement for erosion and sediment control within the building code, no natural resources would be directly impacted by development which could occur as a result of the Proposed Action. (Also see Chapter 2.H. Natural Resources.) Therefore, no significant adverse construction impacts to natural resources are expected.

Hazardous Materials

The Proposed Action would avoid any a potential significant hazardous materials impact in connection with construction activities by the inclusion of "E" designations for development sites not under the control of the applicant, and by a restrictive declaration for the sites under the control of the applicant. These institutional controls would require soil testing to identify any hazardous materials and, based on the results of such testing, the development of a Construction Health and Safety Plan. The hazardous materials analysis is discussed in Chapter 2.I.

METHODOLOGY

Regulatory Framework:

The governmental oversight of construction in New York City is extensive and involves a number of city, state, and federal agencies. Table S-1 shows the main agencies involved in construction oversight and the agency's areas of responsibilities. The primary responsibilities lie with New York City agencies. The New York City Department of Buildings (DOB) has the primary responsibility for ensuring that the construction meets the requirements of the Building Code and that buildings are structurally, electrically, and mechanically safe. In addition, DOB enforces safety regulations to protect both construction workers and the public. The areas of responsibility include installation and operation of construction equipment, such as cranes and lifts, sidewalk shed, and safety netting and scaffolding. The New York City Department of Environmental Protection (DEP) enforces the Noise Code, approves remedial action plans (RAPs) and Construction Health and Safety Plans (CHASPs),

and regulates water disposal into the sewer system. The Fire Department of New York (FDNY) has primary oversight for compliance with the Fire Code and for the installation of tanks containing flammable materials. The New York City Department of Transportation (NYCDOT) reviews and approves any traffic lane and sidewalk closures. New York City Transit (NYCT) is in charge of bus stop relocations, and any subsurface construction within 200 feet of a subway. The Landmarks Preservation Commission (LPC) approves studies and testing to prevent loss of archaeological materials and to prevent damage to fragile historic structures.

The New York State Department of Environmental Conservation (NYSDEC) regulates discharge of water into rivers and streams, disposal of hazardous materials, and construction, operation, and removal of bulk petroleum and chemical storage tanks. The New York State Department of Labor (DOL) licenses asbestos workers. On the federal level, the US Environmental Protection Agency (EPA) has wide ranging authority over environmental matters, including air emissions, noise, hazardous materials, and the use of poisons. Much of the responsibility is delegated to the state level. The US Occupational Safety and Health Administration (OSHA) sets standards for work site safety and the construction equipment.

Table S-1: Regulatory Framework in New York City

Agency	Area(s) of Responsibility
New York City	
Department of Buildings	Primary oversight for Building Code and site safety
Department of Environmental Protection	Noise, hazardous materials, dewatering
Fire Department	Compliance with Fire Code, tank operation
Department of Transportation	Lane and sidewalk closures
New York City Transit	Bus stop relocation; any subsurface construction w/in 200 feet of a subway
Landmarks Preservation Commission	Archaeological and historic architectural protection
New York State	
Department of Labor	Asbestos workers
Department of Environmental Conservation	Dewatering, hazardous materials, tanks Stormwater Pollution Prevention Plan, Industrial SPDES, if any discharge into the Hudson River
United States	
Environmental Protection Agency	Air emissions, noise, hazardous materials, toxic substances
Occupational Safety and Health Administration	Worker safety

To the extent that these agencies have mandatory regulations controlling construction practices in New York City, and unless otherwise stated, such regulations have been assumed in the preliminary assessment described below.

Reasonable Worst Case Construction Sequencing

Because so many development sites within the area to be rezoned are not under the control of the applicant, it cannot be known what the timing will be for the development of those sites. It was therefore necessary to construct a reasonable worst case for the construction sequencing.

A multi-step process was followed to establish a reasonable worst case construction sequencing scenario. As described in the methodology section above, a temporal clustering of the non-applicant development sites around those of the applicant was determined to represent the reasonable worst case construction sequencing. As described further below, certain data generated by this process were also used for the air and noise preliminary assessments.

1. First, the applicant's intended phasing plan was used as a starting point.

2. A construction management firm (Triton Construction) was used for Steps 2 - 5. Because the buildings to be constructed on projected development sites controlled both by the applicant and by others have not been fully designed, estimates for construction related data were developed based on the size of the projected developments under the reasonable worst case scenario. Seven size categories (A - G) of projected buildings were established as shown below. The size categories for the various projected development sites are also shown in Figure S-1, below.

A. 25-75K SF	E. 225-275K SF
B. 75-125K SF	F. 275-325K SF
C. 125-175K SF	G. 325-375K SF
D. 175-225 K SF	

3. Next, the general phases of construction (a - g) were identified as shown below. Each phase is characterized by specific types of equipment and/or other activities that potentially would generate construction related traffic, noise or fugitive dust. Demolition and Excavation, for instance, could generate both equipment noise and fugitive dust, whereas the Building Interior Phase would have very little impact to surrounding residents.

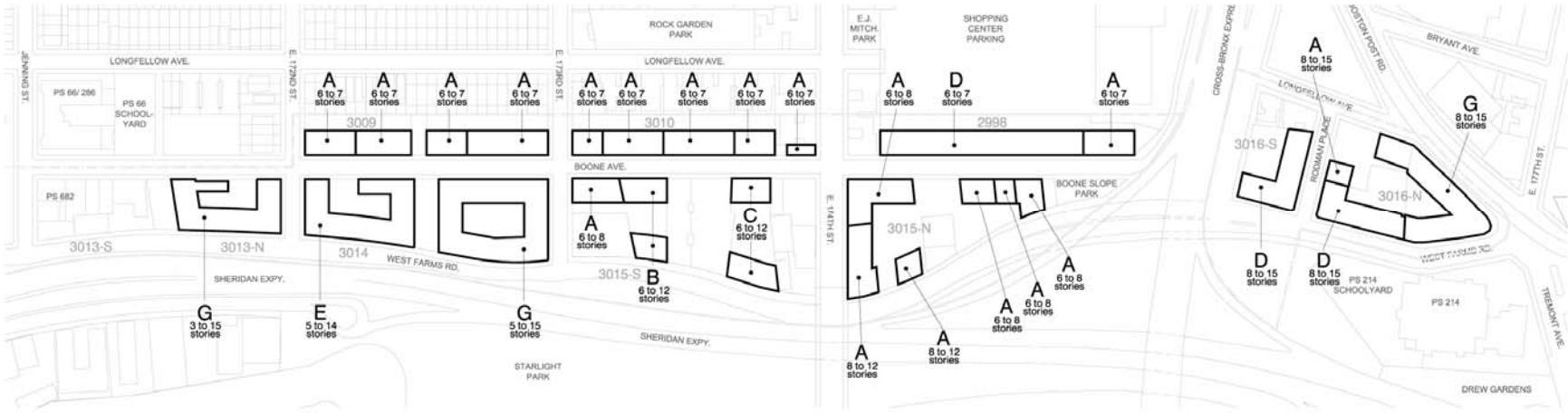
a. Demolition	e. Building Superstructure
b. Excavation	f. Building Exterior
c. Foundations	g. Building Interior
d. Utility/Sewer connections	

4. A generalized time line for the phasing of construction for each of the construction phases was then established by building type, including construction phase overlaps; as an example, larger buildings are projected to take longer to construct than the smaller buildings.

5. Estimates were then made of the various construction characteristics that would be applicable to each phase of construction, by building size category (also referenced herein as "building type"). These included number of construction workers, hours of work, truck trips per day (hauling out and delivery in), on site construction equipment (including number and type, typical horsepower, typical weight, and typical year of manufacture).

6. A detailed construction scenario was created using the data generated in Steps 2 - 5 for all projected development sites. Care was taken, in order to produce a reasonable worst case construction scenario, to spatially cluster development sites not under control of the applicant as near as possible to those under the applicant's control, so that construction activity would be concentrated in geographic areas as close to the known sequenced applicant-related construction activities. This construction sequencing was then graphically displayed on a time line. See Appendix 7, Construction.

Figure S-1: Projected Development by Building Type



BUILDING TYPES

- Building Type A: 25,000 – 75,000 SF
- Building Type B: 75,000 – 125,000 SF
- Building Type C: 125,000 – 175,000 SF
- Building Type D: 175,000 – 225,000 SF
- Building Type E: 225,000 – 275,000 SF
- Building Type F: 275,000 – 325,000 SF
- Building Type G: 325,000 – 375,000 SF

CONSTRUCTION IMPACT DIAGRAM

N.T.S.

June 3, 2010

North

7. For transportation assessment purposes, cordon lines were drawn through the time line to isolate the highest construction-related vehicular trip generation periods over the entire construction period. The cordon lines were drawn to maximize construction-related traffic trip generation. For air quality, the trips identified on the cordon lines were used to compare the construction traffic with the threshold volumes in the *CEQR Technical Manual* that would mandate a mobile source analysis for either autos or trucks. For noise, the construction traffic, by vehicle class (autos, medium trucks, or heavy trucks) was used to calculate PCEs to be used in estimating relative increases in noise levels. Net new vehicular trip generation was then calculated, which included the following:

    a. Construction employee trips,

    b. Construction truck trips,

    c. Elimination of existing land use vehicular trips, and

    d. As the construction was completed, new additional vehicular trips created by the completed buildings and their occupancy.

8. The cordon line calculations were then arranged chronologically and summarized in tabular form, again for construction impact assessment.

9. For traffic, air quality and noise considerations, net new construction vehicular traffic was compared to the future with the Proposed Action net new vehicular trip generation. All of this information was then summarized in a table for purposes of construction impact assessment.

A vehicular construction analyses were undertaken following this basic methodology for employees traveling during off-peak hour analysis (conforming with the arrivals and departures of the construction employees [6:00 to 7:00 AM, and 3:30-4:30 PM]).

For the specific intersection assessment, ATR counts were used to establish intersection volumes.

Transportation-Related Analysis Assumptions

In order to complete the preliminary transportation-related analyses, the following assumptions were made.

Vehicular Trip Generation:

1. Construction Workers
    a. Daily Person Trips: According to construction phase, as described in Step 3 above, and presented in detail below under the preliminary assessments section.
    b. Temporal Distribution: According to work hours.
    c. In/Out Directional Split: All in, in the AM, all out in the PM, mid-day negligible.
    d. Mode Split for Construction Workers: Mode split for construction workers in the proposed rezoning area was assumed to be the same as those used for the action condition estimates of eliminated trips due to construction for warehouse land use, which is presented in Chapter 2.M, Table M-2).

e. Vehicle Occupancy: 1.04 (same as those used for the action condition estimates of eliminated trips due to construction warehouse land use, which is presented in Chapter 2.M, Table M-2).

2. Truck Trips: Each truck was counted as 2 PCE's; each truck delivery or haul was counted as two truck trips (one in and one out). Temporal distribution was assumed to be compressed over a 6 hour period for the work day to account for mini-surges and potential deliveries from other sites with on-going construction as "typical," and to be conservative in the estimate. Note that each building site would attempt to schedule deliveries so they did not conflict with other deliveries at that site due to off-loading constraints.

3. Eliminated Vehicular Trips from Existing Land Uses: Was the same as that used for the future with the Proposed Action condition estimates of eliminated trips from the pertinent land uses due to construction, which are presented in Chapter 2.M.

4. Added Vehicular Trips due to Completed Construction: Was the same as that used for the future with the Proposed Action condition estimates of generated vehicular trips at construction completion, which are presented in Chapter 2.M.

Air Quality-Related Analysis Assumptions

In order to complete the preliminary air quality-related analysis, the following assumptions were made.

1. Employee trips for construction would not contribute to vehicular trip generation during the peak periods analyzed for the AM and PM Peak Hour Build Condition. The construction period personnel trips would occur before 7 AM in the morning peak, and between 3:30 and 4:30 during the PM peak period.

2. Truck trips would only occur AFTER the employees arrive, or BEFORE they depart in the afternoons. Hence, they would not contribute to the employee peak trip generation figures.

3. For mobile sources, the pertinent sensitive receptors would be at mid-sidewalk along the local roadways that would experience truck traffic.

Noise-Related Analysis Assumptions

In order to complete the preliminary noise-related analysis, the following assumptions were made.

1. Based on the *CEQR Technical Manual*, monitored noise levels can be assumed to be representative of vehicular traffic passing the development sites, provided that vehicular noise levels are at least 10 dBA above levels associated with all other noise sources.

2. Noise levels associated with autos and trucks, shown below, were calculated with the following PCE values from the *CEQR Technical Manual*.

    a. Autos and SUVs: Each counts as 1 PCE.

    b. Truck Trips: Medium trucks (2 axles, 6 tires) counts as 13 PCEs, heavy trucks (3+ axles) count as 47 PCEs, and buses count as 18 PCEs.

c. The PCE values are based on the FHWA's Traffic Noise Model (TNM) assuming a speed of 25 mph and a distance of 30 feet from the roadway.

3. Equipment: Noise levels from equipment were obtained from Table 22-1 in the Construction chapter of the *CEQR Technical Manual*. As a worst case assumption, the noisiest items of equipment were used in the analysis, and they were assumed to have an Lmax at 50 feet of either 85 dBA or 90 dBA. Based on information from the construction management firm, the maximum number of diesel-powered items of equipment on-site would range from one to four, depending on the construction phase.

4. As a worst-case assumption, no mitigation measures, such as temporary noise barriers, were included in the calculations. However, a 10 decibel insertion loss was used to account for shielding of noise levels from intervening structures during some stages of construction.

ASSESSMENT OF THE NEED FOR A PRELIMINARY OR DETAILED ASSESSMENT

Transportation

According to the 2010 *CEQR Technical Manual*, the following factors should be considered before determining whether a preliminary assessment of the effect on construction should be considered:

- Whether the project's construction would be located in a Central Business District (CBD) or along an arterial or major thoroughfare;
    - If so, a preliminary assessment of the effect of construction activities on transportation should be conducted.
- Whether the project's construction activities, regardless of whether they are located in a CBD or along an arterial or major thoroughfare, would require closing, narrowing, or otherwise impeding moving lanes, roadways, key pedestrian elements (*e.g.*, sidewalks, crosswalks, corners), parking lanes and/or parking spaces in on-site or nearby parking lots and garages, bicycle routes and facilities, bus lanes or routes, or access points to transit.
- If so, would the location be particularly sensitive to such a closure, such as in an area with high pedestrian activity or near sensitive land uses such as a school or hospital, or would any sidewalks, roadways, or walkways be closed during construction that are considered to be near capacity under the future No-Action conditions identified in Chapter 16, "Transportation?
    - If 'yes', a preliminary assessment should be conducted unless this closure can be considered the type of routine closure typically fully addressed by a permit (and pedestrian access plan) required by New York City Department of Transportation (DOT) Office of Construction Mitigation and Coordination (OCMC) at the time of closure so that impacts are not expected to occur.

The Proposed Action would not be located within a CBD. However, there is one major thoroughfare (Boston Road) which is adjacent to one development site (Parcel 9C) within the Proposed Action area. This site also abuts West Farms Road, a roadway which is relatively wide but which carries relatively little traffic.

The Proposed Action would not require the closing of travel lanes or key pedestrian facilities in the area since sidewalks in the area are wide (i.e., 15 feet on both sides of Boone Avenue and along West Farms Road). If off-site staging areas would be required, they could be within the sidewalk areas. On-street parking adjacent to these areas could be temporarily suspended to allow for protected pedestrian right-of way around the staging areas. These types of closures are routine but must be approved by NYCDOT. The most critical development site in this regard and within the proposed rezoning area would be Parcel 9C. This site has access from both Boston Road and West Farms Road. It is unlikely that DOT would approve closure of even parking lanes along Boston Road when there is the alternative of using West Farms Road for construction staging activities. Hence, pedestrian access along Boston Road, which serves the West Farms subway station, would not need to be affected by construction on this site. Likewise, no travel lanes would be affected on either Boston or West Farms Roads.

The larger development sites along Boone Avenue have access from Boone Avenue and West Farms Road (i.e., Parcels 1, 2A, 2B, 4C, 4D, 6B, 6C, and 6D). For these sites, it would be sensible to place the staging areas along West Farms Road, which is a wider street with little pedestrian activity. At these locations (as well as all others), it would not be necessary to close a travel lane. Boone Avenue also now has relatively little pedestrian activity. For those sites which have access only from Boone Avenue (Parcels 3A-3E, 5A-5E, 7A-7B, 4A, and 6A), the above described sidewalk and parking lane closing and their use for staging and pedestrian passage would be possible without the need to affect any travel lanes.

No sidewalk or street closings would be necessary adjacent to any schools or transit facilities in the area.

Although the Proposed Action would not satisfy any of the criteria above under which a preliminary assessment would be required, the *CEQR Technical Manual* goes further, stating

"If all of the following conditions are present, the project can be assumed to have no significant traffic impacts, and no detailed traffic analysis would be needed:

- The construction traffic peak would generate fewer PCEs than the operational project peak, and the construction lane geometry, signal timing, and parking regulations are consistent with those of the project peak hours;

- The construction would occur during off-peak hours or during hours comparable to the project peak hours;

- The project has been determined not to produce the potential for significant adverse traffic impacts during the operational period; and

- The preliminary assessment indicates that changes to the capacity of the roadway network related to construction activities are not likely to cause a significant deterioration in local or regional traffic flow.

The Proposed Action would not meet the third condition cited above. It would result in significant adverse traffic impacts in its operational phase. Therefore, further analysis is needed.

Air Quality or Noise

The 2010 *CEQR Technical Manual* states:

An assessment of air quality and noise for construction activities is likely not warranted if the project's construction activities:

- Are considered short-term;
- Are not located near sensitive receptors;
- Do not involve construction of multiple buildings where there is a potential for on-site receptors on buildings to be completed before the final build out; and
- The pieces of diesel equipment that would operate in a single location at peak construction are limited in number.

The *CEQR Technical Manual* does not define "short-term" but it has generally been accepted that the term refers to a period of two years or less. The construction period for Type A buildings would be about 86 weeks. Construction periods for Type B through G buildings would range from 2- to 2½-years. Multiple buildings within the rezoning area could be under construction at the same time. Therefore, local residences, some of which are adjacent to the development sites, would be subjected to construction noise and air pollutant emissions for two or more years. Some of the projected development sites would be completed and ready for residency while nearby buildings are still under construction. With regard to diesel equipment, one of the construction phases could have four pieces of diesel equipment on-site at one time, and the duration could last for 6 months or more. Therefore a preliminary construction analysis is warranted.

EVALUATION CRITERIA

The 2010 *CEQR Technical Manual* states that the following information should be considered in preliminary assessments for transportation, air quality, or noise effects of construction activities.

- The construction stages and activities, including numbers and types of equipment, and the anticipated duration of each stage or activity;
- The number of daily construction vehicles (construction worker vehicles and construction trucks) and deliveries and their temporal distribution for each stage and activity, presented in PCEs; and
- The number of daily construction workers and their temporal distribution for each stage and activity.

The cumulative Leq is used in evaluating construction noise. This is because the Leq can be manipulated mathematically whereas the L10 cannot. Furthermore, maximum noise levels from the construction equipment are presumed to be steady, in which case the Leq and L10 for the equipment would be the same. If construction noise of (e.g.) 80 dBA is added to a site with an Leq of 62 dBA and an L10 of 65 dBA, the Leq would be 80.1dBA. The L10 also would be around 80 dBA, not 83 dBA, because the greater noise source dominates the lower noise source. Furthermore, the purpose of the noise analysis is to identify noise increments and noise level exposures, not determine window/wall attenuation as is the case when evaluating noise for operational periods.

The assessment should be targeted only to those issues where potential impacts may result from the Proposed Action's construction activities. Since the air quality and noise assessments rely heavily on transportation information, the transportation criteria also are included.

Transportation

Key elements of the preliminary assessment for construction impacts from transportation include:

- Vehicular volume generated during construction years during peak commuter traffic periods,
- Vehicular volume generated during construction years during off-peak traffic periods,
- Effects of street closures on traffic or pedestrian patterns, and
- Reduction in on-street or off-street parking capacity.

Air Quality

The primary concern for construction air quality is emissions of PM2.5 due to exhaust emissions or fugitive dust. Because a distance of 400 feet is typically used in the *CEQR Technical Manual* to identify the area of potential impact from stationary emissions sources, sensitive receptors within 400 feet of the center of the construction site will be considered in the preliminary assessment. For mobile source traffic, the sidewalks along affected roadways and intersections are the locations of interest.

Key elements of the preliminary assessment for construction impacts to air quality include:

- CO from employee vehicles,
- Disruption to normal traffic patterns caused by road closings,
- Increased truck traffic on local roads,
- Fugitive PM10 and PM2.5 from on-site vehicular movement and other activities,
- PM10, PM2.5, NOx, and SO2 from equipment exhaust.

A qualitative analysis can be prepared if the following conditions are present:

- The proposed action would not result in significant mobile source impacts,
- The vehicular trip generation from construction would be less than that of the proposed action, and
- No significant PM10/PM2.5 air quality impacts from stationary sources are anticipated under the Future with the Proposed Action.

Noise

Noise impacts may occur due to increased traffic and activities on-site. For stationary sources, construction noise is generally analyzed in detail when it would affect a sensitive receptor over a long period of time, such as two years or more.

Key elements of the preliminary analysis for construction noise would include:

- Pile driving, blasting, or demolition that would generate high levels of impulse noise,
- Noise within a narrow range of frequencies (e.g., a back-up beep or engine whine),
- Engine noise from on-site diesel-powered equipment,
- Engine noise from on-site trucks,
- Disruption to normal traffic patterns caused by road closings,
- Increased truck traffic on local roads resulting in a doubling of PCEs.

If a more detailed analysis of potential noise level impacts is warranted, the criteria for identifying a noise impact would be:

- An increase of 3 dBA where ambient noise levels are 65 dBA or greater,
- An increase of 1 to 5 dBA where ambient noise levels are 60 to 65 dBA, providing that the increase does not result in a noise level that reaches 65 dBA, and
- An increase of 3 dBA during the nighttime period from 10 pm to 7 am.

CONSTRUCTION IMPACTS ASSESSMENT

As noted above, less than half of the projected development expected within the proposed rezoning area is under control of the applicant. While the development phases of the applicant's sites can be projected, the development of the sites not controlled by the applicant cannot be predicted. Therefore, a reasonable worst case construction scheduling plan was identified by conservatively assuming that the non-applicant sites would be developed during the same period as adjacent sites owned by the applicant. Based on the above-described methodology, the following preliminary assessment was conducted.

Preliminary Traffic Assessment

As noted in the methodology section above, a construction analysis of employee trips was conducted. Based on the above described methodology, the general phasing was established first. The future development phasing of the non-applicant sites is unknown. To create a reasonable worst case analysis, these sites were assumed to undergo development within a similar time frame as nearby sites owned by the applicant. This assumption resulted in a worst case from an air quality and noise perspective, since the construction activities are assumed to be clustered. This phasing of applicant and non-applicant sites is summarized in Table S-2, Detailed Phasing Study.

Table S-2: Detailed Phasing Study

Phasing of the Proposed Action Development							
North of Cross Bronx Expressway							
Year	**Applicant Parcels**	**Building Type**	**New Applicant SF Under Construction**	**Non Applicant Parcels**		**SF**	
1	Parcel 8 (3016 N)	D	200,000	Parcel 9C	G	280,000	
2	Parcel 8 (3016 N)		0	Parcel 9C			
3	Parcel 9D (3016 N)	D	194,000	Parcel 9E	A	39,000	
4	Parcel 9D (3016 N)		0	Built Out			
5	Built Out			Built Out			
6	Built Out			Built Out			
7	Built Out			Built Out			
8	Built Out			Built Out			
South of Cross Bronx Expressway							
Year	**Applicant Parcels**	**Building Type**	**New Applicant SF Under Construction**	**Non Applicant Parcels**	**Building Type**	**SF**	**Non App SF Needed**
1	Parcel 1	E	200,000				
3	2S	E	255,000	3A	A	72,000	124,000
		E		3D	A	49,500	74,500
		E		4A	A	50,168	24,332
		E		5E	A	27,000	-2,668
4	2S	E	0	7A	A	36,522	159,146
		E		4B	B	91,915	67,231
		E		5C	A	63,080	4,151
5	2N	G	360,000	3E	A	45,000	152,151
		G		5D	A	53,910	98,241
		G		6A	A	61,573	36,668
		G		5B	A	36,000	668
6	2N	G	0	4C	C	140,116	53,552
		G		6B	A	56,770	-3,221
7	3B	A	36,000	7B	D	180,572	9,207

Table S-2: Detailed Phasing Study (cont'd)

Year	Applicant Parcels	Building Type	New Applicant SF Under Construction	Non Applicant Parcels		SF	
		A		5A	A	5,000	4,207
8	3B	A	0	6D	A	56,773	140,434
		A		6C	A	51,138	89,296
		A		6E	A	56,060	33,236
		A		6G	A	59,546	-26,310
9	Built Out		0	No New Parcels		0	0
10	Built Out			Built Out			

Source: Stantec Consulting

Table S-3, Construction Activities by Building Type, summarizes pertinent information used to develop the analysis of construction-related and project related vehicular trips in Table S-4 below. Table S-3 shows, by building type and by construction phase, the number of employees, the number of delivery and haul trucks, the maximum noise PCEs per hour, and the number pieces of on-site construction equipment.

Table S-3: Construction Activities by Building Type

Building Type	Item*	Demo-lition	Excava-tion & Foundation	Utility & Sewer	Building Super-structure	Building Exterior	Interior Finishes
A	Daily employees	10	25	8	40	25	50
	Daily delivery trucks	10	15	1	1	1	1
	Daily haul Trucks	1	8	1	5	2	3
	Maximum trucks/hour	2	4	1	1	1	1
	Maximum Noise PCEs/hour	188	376	94	94	94	94
	On-site equipment (#)	1	2	1	1	1	1
B	Daily employees	10	25	8	40	25	50
	Daily delivery trucks	10	15	1	1	1	1
	Daily haul Trucks	1	8	1	5	2	3
	Maximum trucks/hour	2	3	1	1	1	1
	Maximum Noise PCEs/hour	188	282	94	94	94	94
	On-site equipment (#)	1	2	1	1	1	1
C	Daily employees	10	29	8	40	30	55
	Daily delivery trucks	10	18	1	1	1	2
	Daily haul Trucks	1	8	1	5	2	3
	Maximum trucks/hour	2	4	1	1	1	1
	Maximum Noise PCEs/hour	188	376	94	94	94	94
	On-site equipment (#)	1	2	1	1	1	1

Building Type	Item*	Demo-lition	Excava-tion & Foundation	Utility & Sewer	Building Super-structure	Building Exterior	Interior Finishes
D	Daily employees	10	34	8	40	35	65
	Daily delivery trucks	10	20	1	1	1	2
	Daily haul Trucks	1	11	1	5	3	3
	Maximum trucks/hour	2	5	1	1	1	1
	Maximum Noise PCEs/hour	188	470	94	94	94	67
	On-site equipment (#)	1	2	1	1	1	1
E	Daily employees	10	34	10	40	40	65
	Daily delivery trucks	10	20	1	1	1	2
	Daily haul Trucks	1	11	1	5	4	4
	Maximum trucks/hour	2	5	1	1	1	1
	Maximum Noise PCEs/hour	188	470	94	94	94	94
	On-site equipment (#)	1	2	1	1	1	1
F	Daily employees	10	34	10	40	40	70
	Daily delivery trucks	10	20	1	1	1	2
	Daily haul Trucks	1	11	1	5	4	4
	Maximum trucks/hour	2	5	1	1	1	1
	Maximum Noise PCEs/hour	188	470	94	94	94	94
	On-site equipment (#)	1	2	1	1	1	1
G	Daily employees	10	38	10	40	45	70
	Daily delivery trucks	10	25	1	1	1	3
	Daily haul Trucks	1	14	1	5	4	4
	Maximum trucks/hour	2	6	1	1	1	1
	Maximum Noise PCEs/hour	188	564	94	94	94	94
	On-site equipment (#)	1	2	1	1	1	1

**Trucks represent one-way trips. Calculation of PCEs counts each truck as two trips – one arrival and one departure. PCE's in table are for noise analyses. Source: Stantec Consulting*

To assist in developing the construction trip generation, an analysis was done which identified the reasonable worst case construction activities according to the assumed schedule reflected in Table S-2, and according to the worst case cordon lines (see Table S-4). The activities shown in that table include eliminated trips (due to the demolition of the properties), construction related trips to be added, and new development trips that would result from completed buildings (see Table S-4, Construction Activity Analysis, by Cordon Line).

The numerical characteristics of the activities shown in Table S-4, which reflect construction activities at each of the cordon lines, were then calculated in Table S-5 for the peak hour construction traffic analysis.

Table S-4: Construction Activity Analysis, By Cordon Line

End Dates (Week #)	89	121	121	216	173	180	188	204	183	197	224	239	248	336	275	282	289	289	338	336	428	460	452	480	488	496
	8(D)	9C(G)	1 (G)	2S (E)	3A (A)	3D (A)	4A (A)	9D (E)	9E (A)	5E (A)	7A (A)	4B (B)	5C (A)	2N(G)	3E (A)	5D (A)	6A (A)	5B (A)	4C (A)	6B (A)	3B (A)	7B (D)	5A (A)	6B (A)	6C (A)	6E (A)
Cordon 5 (Wk 10)																										
Delete Exist Trips	y	y	y																							
Add Construction Trips	E,F	E,F	E,F																							
Add Development Trips	n	n	n																							
Cordon 6 (WK 38)																										
Delete Exist Trips	y	y	y																							
Add Construction Trips	BS,BE,BI	BS,BE,BI	BS,BE,BI																							
Add Development Trips	n	n	n																							
Cordon 7 (WK 132)																										
Delete Exist Trips	y	y	y	y	y	y	y	y	y																	
Add Construction Trips	n	n	n	BS,BE,BI	BE	BI	F	BS,BE,BI	BS,BE,BI																	
Add Development Trips	y	y	y	n	n	n	n	n	n																	
Cordon 1 (Week 146)																										
Delete Exist Trips	y	y	y	y	y	y	y	y	y	Y																
Add Construction Trips	n	n	n	BS,BE,BI	BI	BI	BI,BE	BS,BE,BI	BI	BS,BI,BE																
Add Development Trips	Y	Y	Y	N	N	N	N	N	N	N																
Cordon 2 (Week 178)																										
Delete Exist Trips	y	y	y	y	y	y	y	y	y	y	y	y														
Add Construction Trips	n	n	n	BI	n	BI	BI	BI	BI	BI	BE,BI	EX,F														
Add Development Trips	y	y	y	n	y	n	n	n	n	n	n	n														
Cordon 3(Week 240)																										
Delete Exist Trips	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y								
Add Construction Trips	n	n	n	n	n	n	n	n	n	n	n	n	BI	BS,BI, U	BI	BE,BI	BS,BE,BI	BS,BE,BI								
Add Development Trips	y	y	y	y	y	y	y	y	y	y	y	y	n	n	n	n	n	n								
Cordon 4(Week 281)																										
Delete Exist Trips	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y								
Add Construction Trips	n	n	n	n	n	n	n	n	n	n	n	n	n	BS,BE,BI	n	BI	BI	BI	BS,BE,BI	BS						
Add Development Trips	y	y	y	y	y	y	y	y	y	y	y	y	y	N	y	N	N	N	N	N						
Cordon 8 (Week 416)																										
Delete Exist Trips	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y			
Add Construction Trips	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	B1	BS,BE, BI	BS,BE,BI			
Add Development Trips	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	n	n	n			
Cordon 9 (Week 440)																										
Delete Exist Trips	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y
Add Construction Trips	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	BI	BI	BE,BI	BS,BE,BI	BS,BE,BI
Add Development Trips	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	n	n	n	n	n

Source: Stantec Consulting

Construction Traffic Peak Hours Analysis (6:00-7:00 AM and 3:30-4:30 PM)

As noted above, this analysis is focused on the peak hours when construction employees would be arriving at and departing from the Proposed Action area (e.g., 6-7 AM and 3:30-4:30 PM). This analysis is patterned after the peak hour analysis described above. The analysis includes, by the previously described Cordon Lines, estimates of construction employee vehicular trips, vehicular trips which would be eliminated due to the displacement of existing uses on the construction sites, and, as construction moves forward in time, the addition of vehicular trips associated with new construction (operational). As noted in the methodology section, eliminated vehicular trips and new development vehicular trips were estimated based on temporal distribution for different uses for the hours of 6:00-7:00 AM and 3:30-4:30 PM. Total volumes for the 6-7 AM period were compared to total volumes for the 7:30-8:30 PM peak period by an examination of the ATR counts which were taken in the study area, and a percentage was developed (off-peak as a percentage of peak). (This percentage or ratio was seen as indicative of the traffic level in the study area [or activity levels] over the early morning hours.) These percentages were then used to estimate the vehicular trips associated with these two categories of vehicular trips. The percentages (off-peak expressed as a percentage of peak) were 37.5 percent of the AM peak period, and 75 percent of the PM peak period.

Table S-5 below presents the results of this analysis.

Table S-5: Analysis of Construction-Related and Project-Related Off-Peak Vehicular Trips Compared to Peak Hour Volumes for Build Conditions

Cordon 5 Summary (Week 10)						
		Off Peak Vehicle Trips				
Site (Building Type)	Employees	6 - 7 AM	3:30-4:30 PM			
8 (D) Applicant	33	15	15			
9C (G)	38	17	17			
1 (G)	38	17	17			
Total Cordon Trips	109	49	49			
Construction Peak Hours:						
Cumulative Eliminated Trips**, Year 1		31	69			
Project Development Trips**		0	0			
Net New Construction-related Vehicular Trips		**18**	**-20**			
Net Build Condition Vehicular Trips Analyzed:		**242**	**326**			
**Project Generated and Eliminated trips adjusted to occur in during						
construction employee peak hours which are project Off Peak Hours						
Cordon 6 Summary (Week 38)						
		Off Peak Vehicle Trips				
Site (Building Type)	Employees	6 - 7 AM	3:30-4:30 PM			
8 (D) Applicant	140	63	63			
9C (G)	155	70	70			
1 (G)	155	70	70			
Total Cordon Trips	450	203	203			
Construction Peak Hours:						
Cumulative Eliminated Trips**, Year 1		31	69			
Project Development Trips**		0	0			
Net New Construction-related Vehicular Trips		**172**	**134**			
Net Build Condition Vehicular Trips Analyzed:		**242**	**326**			
**Project Generated and Eliminated trips adjusted to occur in during						
construction employee peak hours which are project Off Peak Hours						
Cordon 7 Summary (Week 132)						
		Off Peak Vehicle Trips				
Site (Building Type)	Employees	6 - 7 AM	3:30-4:30 PM			
2S (E)	40	18	18			
3A (A)	25	11	11			
3D (A)	50	23	23			
4A (A)	15	7	7			
9D (D) Applicant	140	63	63			
9E (A)	123	55	55			
Total Cordon Trips	393	177	177			
Construction Peak Hours:						
Cumulative Eliminated Trips**, Year 2****		53	115	Cordon 6 + all of Cordon 7		
Project Development Trips**		41	101	(Add 1,8,9C)		
Net New Construction-related Vehicular Trips		**166**	**163**			
Net Build Condition Vehicular Trips Analyzed:		**242**	**326**			
**Project Generated and Eliminated trips adjusted to occur in during						
construction employee peak hours which are project Off Peak Hours						
**** No Eliminated trips in Year 2						

Table S-5 (Continued)

Analysis of Construction-Related and Project-Related Off-Peak Vehicular Trips Compared to Peak Hour Volumes for Build Conditions

Cordon 1 Summary (Week 146)						
		Off Peak Vehicle Trips				
Site (Building Type)	Employees	6 - 7 AM	3:30-4:30 PM			
2S (E)	145	65	65			
3A (A)	50	23	23			
3D (A)	50	23	23			
4A (A)	75	34	34			
5E (A)	115	52	52			
Total Cordon Trips	435	196	196			
Construction Peak Hours:						
Cumulative Eliminated Trips**, Year 3		62	135	Add 5E to Cordon 7		
Project Development Trips**		41	101	From Cordon 7 (no new)		
Net New Construction-related Vehicular Trips		**175**	**161**			
Net Build Condition Vehicular Trips Analyzed:		**242**	**326**			
**Project Generated and Eliminated trips adjusted to occur in during						
construction employee peak hours which are project Off Peak Hours						
Cordon 2 Summary (Week 178)						
		Off Peak Vehicle Trips				
Site (Building Type)	Employees	6 - 7 AM	3:30-4:30 PM			
2S (E)	65	29	29			
3D (A)	50	23	23			
4A (A)	50	23	23			
5E (A)	50	23	23			
7A (A)	75	34	34			
4B (B)	25	11	11			
Total Cordon Trips	315	142	142			
Construction Peak Hours:						
Cumulative Eliminated Trips**, Year 4		68	149	Cordon 1 +7A,4B		
Project Development Trips**		45	110	Add 3A only to Cordon 1		
Net New Construction-related Vehicular Trips		**119**	**103**			
Net Build Condition Vehicular Trips Analyzed:		**242**	**326**			
**Project Generated and Eliminated trips adjusted to occur in during						
construction employee peak hours which are project Off Peak Hours						
Cordon 3 Summary (Week 240)						
		Off Peak Vehicle Trips				
Site (Building Type)	Employees	6 - 7 AM	3:30-4:30 PM			
5C (A) (Year 4)	50	23	23			
2N (G) (Start Year 5)	120	54	54			
3E (A) Yr 5	50	23	23			
5D (A) Yr 5	75	34	34			
6A (A) Yr 5	115	52	52			
5B (A) Yr 5	115	52	52			
Total Cordon Trips	525	237	237			
Construction Peak Hours:						
Cumulative Eliminated Trips**, Year 5		83	179	Cordon 2 +5C,2S,3E,5D,6A,5B		
Project Development Trips**		93	226	Cordon 2 + 2N,3D,2A,9D,9E,5E,7A,4B		
Net New Construction-related Vehicular Trips		**247**	**284**			
Net Build Condition Vehicular Trips Analyzed:		**242**	**326**			
**Project Generated and Eliminated trips adjusted to occur in during						
construction employee peak hours which are project Off Peak Hours						

Table S-5 (Continued)

Analysis of Construction-Related and Project-Related Off-Peak Vehicular Trips Compared to Peak Hour Volumes for Build Conditions

Cordon 4 Summary (Week 281)						
		Off Peak Vehicle Trips				
Site (Building Type)	Employees	6 - 7 AM	3:30-4:30 PM			
2S (E) (Start Year 5)	155	70	70			
5D (A) Yr 5	50	23	23			
6A (A) Yr 5	50	23	23			
5B (A) Yr 5	50	23	23			
4C (C) Yr 6	125	56	56			
6B (A) Yr 6	40	18	18			
Total Cordon Trips	470	212	212			
Construction Peak Hours:						
Cumulative Eliminated Trips**, Year 5		83	179	Cordon 3+4C,6B		
Project Development Trips**		109	263	Cordon 3 + 5C,2S,3E,5D,6A,5B		
Net New Construction-related Vehicular Trips		**238**	**295**			
Net Build Condition Vehicular Trips Analyzed:		**242**	**326**			
**Project Generated and Eliminated trips adjusted to occur in during construction employee peak hours which are project Off Peak Hours						
Cordon 8 Summary (Week 416)						
		Off Peak Vehicle Trips				
Site (Building Type)	Employees	6 - 7 AM	3:30-4:30 PM			
3B (A) (Start Year 7)	50	23	23			
7B (D)	115	52	52			
5A (A)	115	52	52			
Total Cordon Trips	280	126	126			
Construction Peak Hours:						
Cumulative Eliminated Trips**, Year 5		91	195	Cordon 4 +	3B,7B,5A	
Project Development Trips**		129	312	Cordon 4 +	2S,5D,6A,5B,4C,6B	
Net New Construction-related Vehicular Trips		**165**	**243**			
Net Build Condition Vehicular Trips Analyzed:		**242**	**326**			
**Project Generated and Eliminated trips adjusted to occur in during construction employee peak hours which are project Off Peak Hours						
Cordon 9 Summary (Week 440)						
		Off Peak Vehicle Trips				
Site (Building Type)	Employees	6 - 7 AM	3:30-4:30 PM			
7B (D)	65	29	29			
5A (A)	50	23	23			
6B (A)	75	34	34			
6C (A)	115	52	52			
6E (A)	115	52	52			
Total Cordon Trips	420	189	189			
Construction Peak Hours:						
Cumulative Eliminated Trips**, Year 5		94	204	Cordon 8 + 6B,6C,6E		
Project Development Trips**		132	317	Cordon 8 + 3B		
Net New Construction-related Vehicular Trips		**227**	**303**			
Net Build Condition Vehicular Trips Analyzed:		**242**	**326**			
**Project Generated and Eliminated trips adjusted to occur in during construction employee peak hours which are project Off Peak Hours						

From the above assessment, it was possible to isolate the peak construction employee trips. The analysis showed that the employee trips would peak during Cordon 3. At that cordon, 525 employee person trips would be expected to arrive in the 6-7 AM period, and the same number to depart during the 3:30-4:30 PM period. Employee vehicular trips would be 287 in the 6-7 AM period, and the same number departing the area in the 3:30 to 4:30 PM period. Based on the estimated vehicular trips eliminated due to previous buildings undergoing construction and displacing the uses generating those trips, estimated trips added by new construction that was already completed before the Cordon 3 time line, and underlying

network volumes in the 6-7 AM and 3:30 to 4:30 PM periods (based on ATR data taken in the area) an assessment was undertaken based on Table 6 below, which was derived from this method.

Note, the following section which discusses the detailed traffic analysis undertaken between the Draft and Final EIS is new to this chapter. As described below, the analysis indicates that significant adverse traffic impacts would occur at intersections 8 and 18 in the AM construction peak hour (6-7AM) and at intersections 1, 2, 4 and 6 during the PM construction peak hour (3:30 to 4:30 PM). All but intersections 2 (East Tremont/Boston/West Farms Road) and 4 (East 177th Street/Sheridan Expressway) would be fully mitigated by applying the mitigation developed for these intersections during the operational phase of the Proposed Action. There would be significant, unmitigated traffic impacts at intersections 2 and 4.

Detailed Traffic Analysis

Construction Peak Hour Traffic Volumes

Existing Volumes

To develop the traffic volumes to be analyzed for the 2018 construction peak hour network, 2009 existing traffic networks were developed for the construction peak hours. ATR counts recorded in 2009 in the study area were examined by direction, northbound, southbound, eastbound and westbound. Ratios comparing the traffic levels from 6:00-7:00 AM to 7:30-8:30 AM and to 3:30-4:30 PM from 4:30-5:30 PM were derived by this ATR data by direction. These ratios were applied to the 2009 existing peak hour traffic, and construction peak hour traffic levels were developed.

No Action Volumes

Existing 2009 traffic volumes were grown out to 2018 using the background growth rates presented in Chapter 2.M, Transportation. A No Action project traffic layer was developed using the same trip generation assumptions used for those projects in Chapter 2.M to determine total daily trips for each project. Then temporal distributions for the construction peak hours were applied to these trips to develop the construction peak hour No Action traffic layer. This traffic layer was added the existing 2009 network expanded for background growth to create the 2018 No Action traffic networks for the construction peak hours.

Action Volumes

Action condition trip generation includes construction related trips, project generated trips from development completed by 2018, and project eliminated trips from existing land uses removed by 2018.

The construction related trips include both worker trips derived based on construction occurring in 2018 as described previously in this chapter and construction truck trips. Although truck trips are anticipated to only occur during the construction work hours, 7:00 AM – 3:30 PM, for a conservative approach it was assumed that some trucks may arrive on site before 7:00 AM and leave after 3:30 PM. It was assumed that 5 trucks would arrive on site in the AM construction peak hour and that 5 trucks would leave the construction sites during the PM construction peak hour.

The same trip generation assumptions as in Chapter 2.M were used to develop total daily trips for the new uses at the sites that would have been redeveloped by 2018 and for the existing uses that would have been displaced from those sites. Temporal distributions were used to determine what percentage of these trips will occur during the construction peak hours, 6:00-7:00 AM and 3:30-4:30 PM.

These trips were combined to form a total construction peak hour action traffic layer and this was applied to the 2018 No Action construction peak hour traffic network to develop to 2018 Action construction peak hour traffic network.

Changes in the Transportation Environment

Between the 2009 existing conditions and the future 2022 No Action year a few changes to the transportation environment are scheduled to take place. These changes are from the street reconstruction taking place due to the Bronx River Greenway Project, two separate NYCDOT intersection improvements, several NYCDOT updates to their signal timing program and a Neighborhood Slow Zone Pilot Project.

Bronx River Greenway Project

The Bronx River Greenway project, which is expected to begin construction in the summer of 2012, involves creating a pedestrian and bicycle trail along to the Bronx River. In order to construct this pedestrian trail and bike path, reconstruction of the roadways at 3 intersections in the study area is planned. These intersections include:

- East 177th Street at the Sheridan Expressway
- East 177th Street, Devoe Avenue at East Tremont Avenue
- West Farms Road, Boston Road at East Tremont Avenue

These improvements are designed for pedestrian enhancements and will significantly worsen traffic situations at the three intersections. Changes to intersection geometry are described below.

East 177th Street at the Sheridan Expressway

At this intersection, a pedestrian crossing and bike path are added to the eastbound approach on the Sheridan Expressway On/Off Ramp. Currently there is no crosswalk on this approach.

To make room for the pedestrians and bicycles north of the intersection, a sidewalk/pedestrian path to the west of East 177th Street will be constructed. This will cause East 177th street to narrow. Currently the northbound direction of East 177th Street just north of the intersection is 35 feet wide (consisting of 2 travel lanes and a parking lane). This width will reduce to approximately 30 feet, but will still contain 2 travel lanes and a parking lane.

East of this intersection, eastbound travel lanes on East 177th Street, will be striped as one 11 foot lane and one 15 foot lane. These travel lanes are 10 feet and 20 feet wide in existing conditions. The westbound approach on East 177th Street will increase lane width to three 11 foot wide lanes from the existing two 10 feet wide lanes and one 11 feet wide lane.

The signal timings will also be altered between the 2009 existing and 2022 No Action conditions. For this intersection there are three phases. Phase A consists of all eastbound movements and southbound right turns. Phase B consists of all eastbound and westbound movements. Phase C consists of all northbound and southbound movements. There are different signal timing plans for the AM, MD, and PM peak periods.

Table S-6: East 177th Street at the Sheridan Expressway Signal Timing Changes - AM

Phase	Movement	2009 Existing			2022 No Action			Change (No Action - Ex.)		
		Green	Yellow	Red	Green	Yellow	Red	Green	Yellow	Red
A	EB Sheridan Expr Off-Ramp SB East 177th Street Rights Only	18	3	3	22	3	3	4	0	0
B	EB Sheridan Expr Off-Ramp WB East 177th Street	64	3	3	59	3	3	-5	0	0
C	NB Bus Depot Exit, SB East 177th Street	21	3	2	22	3	2	1	0	0

In the 2009 existing condition for the AM peak period, phase A has a green time of 18 seconds, a yellow time of 3 seconds, and an all red time of 3 seconds. Phase B has a green time of 64 seconds, a yellow time of 3 seconds and an all red time of 3 seconds. Phase C has a green time of 21 seconds, a yellow time of 3 seconds and an all red time of 2 seconds.

In the 2022 No Action condition for the AM peak period, phase A has a green time of 22 seconds, a yellow time of 3 seconds, and an all red time of 3 seconds. Phase B has a green time of 59 seconds, a yellow time of 3 seconds and an all red time of 3 seconds. Phase C has a green time of 22 seconds, a yellow time of 3 seconds and an all red time of 2 seconds.

Table S-7: East 177th Street at the Sheridan Expressway Signal Timing Changes - PM

Phase	Movement	2009 Existing			2022 No Action			Change (No Action - Ex.)		
		Green	Yellow	Red	Green	Yellow	Red	Green	Yellow	Red
A	EB Sheridan Expr Off-Ramp SB East 177th Street Rights Only	30	3	3	30	3	3	0	0	0
B	EB Sheridan Expr Off-Ramp WB East 177th Street	52	3	3	51	3	3	-1	0	0
C	NB Bus Depot Exit, SB East 177th Street	21	3	2	22	3	2	1	0	0

In the 2009 existing condition for the PM peak period, phase A has a green time of 30 seconds, a yellow time of 3 seconds, and an all red time of 3 seconds. Phase B has a green time of 52 seconds, a yellow time of 3 seconds and an all red time of 3 seconds. Phase C has a green time of 21 seconds, a yellow time of 3 seconds and an all red time of 2 seconds.

In the 2022 No Action condition for the PM peak period, phase A has a green time of 30 seconds, a yellow time of 3 seconds, and an all red time of 3 seconds. Phase B has a green time of 51 seconds, a yellow time of 3 seconds and an all red time of 3 seconds. Phase C has a green time of 22 seconds, a yellow time of 3 seconds and an all red time of 2 seconds.

West Farms Road, Boston Road at East Tremont Avenue

No changes will made to the northbound West Farms Road approach, northeast bound Boston Road approach, southbound Boston Road approach, or the eastbound East Tremont Avenue approach. However, numerous changes occur east of the intersection, along East Tremont Avenue.

The westbound approach on East Tremont Avenue is 43.5 feet wide in existing conditions. It has no lane markings and observations have yielded that three effective 14.5 foot wide lanes are utilized. In the

future No Action condition, a 10 foot wide westbound bus lane and a 5 foot wide westbound bike lane will be created. Two travel lanes will be available to general traffic and they will each be 11 feet wide. The reduction in number of lanes in this intersection greatly contributes to drastically increased delays on this approach between the 2009 existing and 2022 No Action scenarios. The westbound delay increases from 75.9 seconds to 387.4 seconds, 52.4 seconds to 262.6 seconds and 58.9 seconds to 310.3 seconds in the AM, MD, and PM peak periods, respectively.

The eastbound travel direction on the east side of East Tremont Avenue (between West Farms Road and East 177th Street) is currently 32 feet wide. It also has no markings and operates with two 16 foot receiving lanes of traffic. In the future No Action condition, a 10 foot wide eastbound bus lane and a 5 foot wide eastbound bike lane will be created. Two travel lanes will be available to general traffic and they will each be 11 feet wide.

East 177th Street, Devoe Avenue at East Tremont Avenue

East 177th Street at East Tremont Avenue will have the most significant changes of the three intersections being redone. Currently, there are three approaches to the intersection; eastbound on East Tremont Avenue, westbound on East Tremont Avenue, and northbound on East 177th Street. The existing southbound movements are simply an exit from a car wash, and not a street approach. In the future, reconstruction of this intersection will incorporate the intersection of Devoe Avenue at East Tremont Avenue which lies directly to the east of East 177th Street. In the future No Action condition, there will be four approaches to the intersection; eastbound on East Tremont Avenue, westbound on East Tremont Avenue, northbound on East 177th Street, and southbound on Devoe Avenue.

In order to account for this combination of two intersections, existing movements were studied and reassigned to the network under the assumption of one intersection.

Northbound East 177th Street currently has two 12 foot lanes of travel and Devoe Avenue has one lane in the northbound direction. These two approaches will be combined to make one northbound approach with two lanes, one 12 foot wide left turn only lane and one 11 foot wide lane allowing through movements and right turns. The southbound approach on Devoe Avenue will have one 11 foot lane with will allow through movements and left turns and one 11 foot lane that will allow through movements and left turns. This differs from the existing turn regulations where southbound trips have no movement prohibitions.

The eastbound approach on East Tremont Avenue currently is 57 feet wide with three effective 16 foot wide through lanes and one channelized right turn lane. Under the proposed intersection reconstruction, the channelized right turn lane will remain and there will be two 11-foot through lanes with left turns permitted.

In existing conditions the westbound approach has 3 lanes that are each 11 feet wide. The intersection reconstruction proposes to drop this approach to two 11 foot wide lanes and an 8 foot wide bus stop.

The signal phases and timings will also change for this intersection. In the existing 2009 conditions, at all times, there are two signal phases. One phase allows all movements for eastbound and westbound traffic and has a green time of 74 seconds, a yellow time of 3 seconds and an all red time of 2.5 seconds. The other phase allows movements for northbound and southbound traffic and has a green time of 35 seconds, a yellow time of 3 seconds and an all red time of 2.5 seconds. In the 2022 No Action condition, there are one phasing and timing plan used for the AM peak hour and one phasing and timing plan used for the MD and PM peak hours.

In the AM peak hour there are 3 phases. Phase A will allow all northbound and southbound movements and has a green time of 38 seconds, a yellow time of 3 seconds, and an all red time of 2 seconds. Phase B will allow only westbound movements and has a green time of 27 seconds, a yellow time of 3 seconds,

and an all red time of 2 seconds. Phase C will allow all eastbound and westbound movements and will have a green time of 40 seconds, a yellow time of 3 seconds, and an all red time of 2 seconds.

In the MD and PM peak hours there are 3 phases. Phase A will allow all northbound and southbound movements and has a green time of 39 seconds, a yellow time of 3 seconds, and an all red time of 2 seconds. Phase B will allow only westbound movements and has a green time of 26 seconds, a yellow time of 3 seconds, and an all red time of 2 seconds. Phase C will allow all eastbound and westbound movements and will have a green time of 40 seconds, a yellow time of 3 seconds, and an all red time of 2 seconds.

Updated NYC Signal Timings

Westchester Avenue at Sheridan Expressway Service Road and Whitlock Avenue

In an effort to continually improve signal timings, NYCDOT has updated the signal timing at Westchester Avenue at Sheridan Expressway Service Road and Whitlock Avenue. This change simplifies the signal timing at this intersection by making the fractional seconds in the existing signal timings whole seconds. This change was implemented March 1, 2010.

This intersection consists of three phases. Phase A allows all eastbound and westbound movements along Westchester Avenue. Phase B allows all southbound movements on the Sheridan Expressway Service Road. Phase C allows all westbound movements on Westchester Avenue.

Table S-8: Westchester Avenue at Sheridan Expressway Service Road and Whitlock Avenue Signal Timing Changes

		2009 Existing			2022 No Action			Change (No Action - Ex.)		
Phase	Movement	Green	Yellow	Red	Green	Yellow	Red	Green	Yellow	Red
A	EB + WB Westchester Avenue	30.6	3.6	1.8	31	3	2	0.4	-0.6	0.2
B	SB Sheridan Express. Serv. Road	32.4	3.6	1.8	33	3	2	0.6	-0.6	0.2
C	WB Westchester Avenue	10.8	3.6	1.8	11	3	2	0.2	-0.6	0.2

In the existing 2009 condition at all times, phase A has 30.6 seconds of green time, 3.6 seconds of yellow time, and 1.8 seconds of all red time. Phase B has 32.4 seconds of green time, 3.6 seconds of yellow time, and 1.8 seconds of all red time. Phase C has 10.8 seconds of green time, 3.6 seconds of yellow time and 1.8 seconds of red time.

In the No Action 2022 condition at all times, phase A has 31 seconds of green time, 3 seconds of yellow time, and 2 seconds of all red time. Phase B has 33 seconds of green time, 3 seconds of yellow time, and 2 seconds of all red time. Phase C has 11 seconds of green time, 3 seconds of yellow time and 2 seconds of red time.

Westchester Avenue at Sheridan Expressway Service Road and Northbound Off-Ramp

In an effort to continually improve signal timings, NYCDOT has updated the signal timing at Westchester Avenue at Sheridan Expressway Service Road and Northbound Off-Ramp. This change simplifies the signal timing at this intersection by making the fractional seconds in the existing signal timings whole seconds. This change was implemented April 29, 2010.

This intersection consists of three phases. Phase A allows all eastbound and westbound movements along Westchester Avenue. Phase B allows all eastbound movements on Westchester Avenue. Phase C allows all northbound movements on the Sheridan Expressway Northbound Off-ramp and all southbound movements on the Sheridan Expressway Service Road.

Table S-9: Westchester Avenue at Sheridan Expressway Service Road and Sheridan Off-Ramp Signal Timing Changes

Phase	Movement	2009 Existing			2022 No Action			Change (No Action - Ex.)		
		Green	Yellow	Red	Green	Yellow	Red	Green	Yellow	Red
A	EB + WB Westchester Avenue	30.6	3.6	1.8	30	3	2	-0.6	-0.6	0.2
B	EB Westchester Avenue	12.6	3.6	1.8	13	3	2	0.4	-0.6	0.2
C	NB Sheridan Express. Off-Ramp SB Sheridan Express. Serv. Road	30.6	3.6	1.8	32	3	2	1.4	-0.6	0.2

In the existing 2009 condition at all times, phase A has 30.6 seconds of green time, 3.6 seconds of yellow time, and 1.8 seconds of all red time. Phase B has 12.6 seconds of green time, 3.6 seconds of yellow time, and 1.8 seconds of all red time. Phase C has 30.6 seconds of green time, 3.6 seconds of yellow time and 1.8 seconds of red time.

In the No Action 2022 condition at all times, phase A has 30 seconds of green time, 3 seconds of yellow time, and 2 seconds of all red time. Phase B has 13 seconds of green time, 3 seconds of yellow time, and 2 seconds of all red time. Phase C has 32 seconds of green time, 3 seconds of yellow time and 2 seconds of red time.

West Farms Road at Home Street and Longfellow Avenue

In an effort to continually improve signal timings, NYCDOT has updated the signal timing at West Farms Road at Home Street and Longfellow Avenue. This change slightly increased the signal timing along Home Street which in existing conditions had the worst level of service out of any of the approaches. This change was received on December 7, 2010.

This intersection consists of three phases. Phase A allows all northeast-bound and southwest-bound movements along West Farms Road. Phase B allows all northbound movements on Longfellow Avenue. Phase C allows all northwest-bound movements on Home Street.

Table S-10: West Farms Road at Longfellow Avenue and Home Street Signal Timing Changes

Phase	Movement	2009 Existing			2022 No Action			Change (No Action - Ex.)		
		Green	Yellow	Red	Green	Yellow	Red	Green	Yellow	Red
A	NE-Bound West Farms Road SW-Bound West Farms Road	45	3.6	1.8	44.6	3.6	1.8	-0.4	0	0
B	NB Longfellow Avenue	19.8	3.6	1.8	19.6	3.6	1.8	-0.2	0	0
C	NW-Bound Home Street	9	3.6	1.8	9.6	3.6	1.8	0.6	0	0

In the existing 2009 condition at all times, phase A has 45 seconds of green time, 3.6 seconds of yellow time, and 1.8 seconds of all red time. Phase B has 19.8 seconds of green time, 3.6 seconds of yellow time, and 1.8 seconds of all red time. Phase C has 9.0 seconds of green time, 3.6 seconds of yellow time and 1.8 seconds of red time.

In the No Action 2022 condition at all times, phase A has 44.6 seconds of green time, 3.6 seconds of yellow time, and 1.8 seconds of all red time. Phase B has 19.6 seconds of green time, 3.6 seconds of yellow time, and 1.8 seconds of all red time. Phase C has 9.6 seconds of green time, 3.6 seconds of yellow time and 1.8 seconds of red time.

West Farms Road at Freeman Street

In an effort to continually improve signal timings, NYCDOT has updated the signal timing at West Farms Road at Freeman Street and Longfellow Avenue. This change slightly increased the signal timing along Freeman Street which in existing conditions had the worst level of service out of any of the approaches. This change was received on December 7, 2010.

Table S-11: West Farms Road at Freeman Street Signal Timing Changes

		2009 Existing			2022 No Action			Change (No Action - Ex.)		
Phase	Movement	Green	Yellow	Red	Green	Yellow	Red	Green	Yellow	Red
A	NB West Farms Road SB West Farms Road	54	2.7	1.8	53.5	2.7	1.8	-0.5	0	0
B	EB Freeman Street	27	2.7	1.8	27.5	2.7	1.8	0.5	0	0

This intersection consists of two phases. Phase A allows all northbound and southbound movements along West Farms Road. Phase B allows all eastbound movements on Freeman Street

In the existing 2009 condition at all times, phase A has 54 seconds of green time, 2.7 seconds of yellow time, and 1.8 seconds of all red time. Phase B has 27 seconds of green time, 2.7 seconds of yellow time, and 1.8 seconds of all red time.

In the No Action 2022 condition at all times, phase A has 53.5 seconds of green time, 2.7 seconds of yellow time, and 1.8 seconds of all red time. Phase B has 27.5 seconds of green time, 2.7 seconds of yellow time, and 1.8 seconds of all red time.

NYCDOT Intersection Improvements

NYCDOT has conducted studies on two unsignalized intersections in the study area and determined that they warrant improvements. These intersections include:

- East 173rd Street at West Farms Road
- East 173rd Street at Boone Avenue

East 173rd Street at West Farms Road

East 173rd Street at West Farms Road is currently an unsignalized "T" intersection with West Farms Road acting as the two-way major street. East 173rd Street is also two-way but only has a westbound approach to the intersection which is stop controlled. After the Crotona Park Rezoning DEIS was issued, NYCDOT conducted a study on this intersection and has recommended the installation of a traffic signal independent of this project. In consultation with NYCDOT, this analysis assumes a signal installation at

this intersection even though a final decision by NYCDOT's Bronx Borough Commissioner to install the signal is still pending (as of July 26th, 2011).

No signal timings were received from NYCDOT for this intersection. As a result, signal timings were created from similar intersections around the study area. For this intersection a 60 second cycle (a 60 second cycle was also used on East 173rd Street and Hoe Avenue) and two phases were used. Phase A allows all eastbound movements on East 173rd Street and all northbound and southbound movements on West Farms Road.

Phase A will have 18 seconds of green time, 3 seconds of yellow time, and 2 seconds of all red time. Phase B will have 32 seconds of green time, 3 seconds of yellow time, and 2 seconds of all red time.

East 173rd Street at Boone Avenue

In the existing conditions, Boone Avenue acted as the one-way major street running southbound while East 173rd Street was stopped controlled in its eastbound and westbound approaches. In August 2010, a study recommending this intersection become an all-way stop controlled intersection was approved. Although this all-way stop already exists, it was not implemented until after the 2009 existing year so for the purpose of analysis it is included as a No Action improvement.

Neighborhood Slow Zone Pilot Project

In addition, NYCDOT is studying the possible implementation of a Neighborhood Slow Zone Pilot Project. The Slow Zone project would use traffic calming measures to reduce speeds in the area to 20 mph and eliminate truck traffic. By reducing speed and eliminating through truck traffic, this would lead to safer streets, reduced traffic noise, reduced cut-through traffic and more social streets. While this program would be a first for New York City, results from other cities have shown 46% reduction in fatal and severe injury crashes and average speed reductions by 9 mph. The area designated for this pilot program would be marked by signed gateways, pavement markings and speed humps. Each of the gateways would exist along each roadway entering the speed zone project area Each gateway installed would eliminate two parking spaces due to signage (one on each side of the street). There are 14 locations in the study area that would require gateways, reducing the number of available parking spots by 28 spots. The area designated as the slow zone would be bounded by East 174th Street to the north, East 167th Street to south, Boone Avenue to the east and Southern Boulevard to the west.

Construction Peak Hour Traffic Analysis

A summary of the detailed traffic and level of service analysis is shown in Table S-12. Two of the eleven intersections are expected to experience significant construction traffic impacts in the morning peak (6-7 AM) and four of the eleven intersections are expected to experience significant construction traffic impacts in the afternoon peak (3:30-4:30 PM).

In the AM construction peak hour, there will be impacts on the following movements:

- Longfellow Avenue at East 174th Street will have an impact on the left/through/right movements for the northbound approach on Longfellow Avenue.

- West Farms Road at Home Street and Longfellow Avenue will have an impact on the left/through/right movements for the northwest-bound approach on Home Street.

In the PM construction peak hour, there will be impacts for the following movements:

- East Tremont Avenue at East 177th Street and Devoe Avenue will have an impact on the left turn movements for the northbound approach on East 177th Street/Devoe Avenue.

- East Tremont Avenue at West Farms Road and Boston Road will have an impact on the left/through/right movements for the westbound approach on East Tremont Avenue, the left/through/right movements for the northbound approach on West Farms Road, and the left/through/right movements on the northeast-bound approach on Boston Road.

- East 177th Street at the Sheridan Expressway will have an impact on the left/through/right movements on the northbound approach exiting the Bus Depot and the left/through movements on the southbound approach on East 177th Street.

- Bronx River Avenue at East 174th Street will have an impact on the left/through/right movements on the eastbound approach on East 174th Street.

Measures that have been approved by NYCDOT and are presented in Chapter 3, Mitigation, would fully mitigate all of these impacts except those at the intersections of East 177th Street at the Sheridan Expressway and of East Tremont Avenue and Boston Road at West Farms Road (the two intersections where unmitigated operational traffic impacts would remain unmitigated). The significant adverse construction traffic impacts at those two intersections would remain unmitigated, as is discussed in Chapter 4, Unavoidable Significant Adverse Impacts.

It is expected that this mitigation would be required by week 240 of the construction schedule or sometime during the year 2018.

Table S-12: Baseline Construction Traffic and Level-of-Service Analysis

Int#	Intersection Name	Direction	Lane Group	AM Construction												PM Construction											
				2009 Existing				2018 No Action				2018 With Action				2009 Existing				2018 No Action				2018 With Action			
				Volume	v/c ratio	Delay (sec)	LOS	Volume	v/c ratio	Delay (sec)	LOS	Volume	v/c ratio	Delay (sec)	LOS	Volume	v/c ratio	Delay (sec)	LOS	Volume	v/c ratio	Delay (sec)	LOS	Volume	v/c ratio	Delay (sec)	LOS
1	East Tremont Avenue at East 177th Street, Devoe Avenue Note: Changes to configuration between 2009 Existing and 2018 No Action	Overall		685		13.9	B	773		21.9	C	776		21.9	C	1697		17.9	B	2071		36.9	D	2099		39.5	D
		Eastbound	LT	183	0.07	9.2	A	186	0.21	29.1	C	187	0.21	29.2	C	546	0.17	10	A	561	0.63	37.0	D	563	0.64	37.1	D
		Westbound	DefL	160	0.30	12.0	B	-	-	-	-	-				268	0.68	23.1	C	273	0.52	29.1	C	273	0.52	29.2	C
			TR	246	0.16	9.9	A	-	-	-	-	-				589	0.34	11.7	B	583	0.77	25.2	C	586	0.77	25.4	C
			LTR	-	-	-	-	345	0.26	11.8	B	347	0.26	11.8	B	-	-	-	-	-	-	-	-	-	-	-	-
		Northbound	L	86	0.16	32.4	C	96	0.27	32.3	C	96	0.27	32.3	C	284	0.44	37.9	D	304	0.90	64.3	E	327	0.97	77.6	E
			LTR	2	0.14	32.1	C	-	-	-	-	-				0	0.4	36.9	D	-	-	-	-	-	-	-	-
			TR	-	-	-	-	88	0.19	30.6	C	88	0.19	30.6	C	-	-	-	-	275	0.58	38.1	D	275	0.58	38.1	D
		Southbound	LTR	8	0.03	30.4	C	41	0.08	29	C	41	0.08	29.0	C	10	0.03	30.5	C	56	0.11	28.7	C	56	0.11	28.8	C
			R	-	-	-	-	17	0.04	28.5	C	17	0.04	28.5	C	-	-	-	-	19	0.04	27.9	C	19	0.04	27.9	C
2a	East Tremont Avenue at Boston Rd, West Farms Road (1) Note: Changes to configuration between 2009 Existing and 2018 No Action	Overall		688		41.1	D	700		44.9	D	725		45.2	D	1823		61.2	E	1879		132.3	F	2102		150.9	F
		Eastbound	LTR	173	0.35	40.6	D	177	0.34	40.4	D	177	0.34	40.4	D	439	0.75	50.6	D	451	0.75	50.1	D	462	0.77	51.2	D
		Westbound	LTR	360	0.41	39.5	D	366	0.69	47.5	D	368	0.70	47.7	D	876	0.83	50.3	D	905	1.35	213.7	F	931	1.40	235.8	F
		Northbound	LTR	69	0.24	43.4	D	70	0.24	43.3	D	79	0.27	43.9	D	221	0.62	51.9	D	227	0.63	52.4	D	408	1.13	132.9	F
		Southbound	Def L	-	-	-	-	-	-	-	-	-	-	-	-	153	1.01	116.8	F	156	1.03	122.8	F	156	1.01	117.7	F
			TR	-	-	-	-	-	-	-	-	-	-	-	-	134	0.97	104.7	F	140	0.81	70.8	E	145	0.84	74.2	E
			LTR	86	0.37	46.3	D	87	0.33	45.1	D	101	0.37	45.7	D	-	-	-	-	-	-	-	-	-	-	-	-
2b	East Tremont Avenue at Boston Road, West Farms Road (1)	Overall		610		40.4	D	626		45.6	D	630		45.8	D	1585		55.4	E	1661		156.1	F	1711		170.4	F
		Eastbound	LTR	173	0.34	40.6	D	177	0.35	40.6	D	177	0.35	40.6	D	439	0.75	50.6	D	451	0.76	50.8	D	462	0.78	52.0	D
		Westbound	LTR	360	0.41	39.4	D	366	0.71	48.1	D	368	0.71	48.5	D	876	0.83	50.2	D	905	1.40	233.0	F	931	1.45	254.1	F
		NE-Bound	LTR	77	0.29	44.8	D	83	0.31	45.2	D	85	0.32	45.3	D	270	0.92	79.1	E	305	1.04	106.6	F	318	1.08	120.6	F
4	East 177th Street at Sheridan Expressway	Overall		1160		23.8	C	1187		24.6	C	1197		24.7	C	2277		38.2	D	2367		39.4	D	2565		55.7	E
		Eastbound	L	132	0.49	51.8	D	134	0.41	46.1	D	134	0.41	46.1	D	278	0.7	49.8	D	293	0.73	51.8	D	301	0.75	52.6	D
			TR	41	0.04	4.4	A	-	-	-	-	-	-	-	-	122	0.11	4.8	A	-	-	-	-	-	-	-	-
			LTR	-	-	-	-	42	0.04	4.7	A	42	0.04	4.7	A	-	-	-	-	126	0.12	5.1	A	126	0.12	5.1	A
		Westbound	LT	628	0.42	17.7	B	-	-	-	-	-	-	-	-	817	0.75	32.5	C	-	-	-	-	-	-	-	-
			LTR	-	-	-	-	640	0.45	20.8	C	640	0.45	20.8	C	-	-	-	-	837	0.75	32.9	C	837	0.75	32.9	C
			R	104	0.15	14.7	B	106	0.17	17.4	B	106	0.17	17.4	B	286	0.54	28.4	C	293	0.55	29.4	C	311	0.58	30.4	C
		Northbound	LTR	11	0.06	41.7	D	11	0.06	40.8	D	11	0.06	40.8	D	53	0.35	48.5	D	55	0.34	47.4	D	55	0.51	57.3	E
		Southbound	LT	44	0.25	45.4	D	48	0.26	44.8	D	53	0.29	45.5	D	248	1.01	106.7	F	267	1.04	112.7	F	346	1.35	227.4	F
			R	200	0.24	27.0	C	206	0.21	23.4	C	211	0.22	23.5	C	473	0.48	23.5	C	496	0.47	22.6	C	589	0.56	24.4	C
6	Bronx River Avenue at East 174th Street	Overall		604		18.5	B	614		18.6	B	719		17.7	B	1648		36.0	D	1702		37.6	D	1742		40.3	D
		Eastbound	LTR	190	0.49	26.6	C	193	0.49	26.7	C	193	0.49	26.2	C	497	1.03	76.1	E	506	1.04	81.2	F	529	1.08	90.8	F
		Westbound	LT	140	0.31	23.6	C	143	0.32	23.7	C	157	0.35	23.8	C	282	0.78	39	D	291	0.80	40.7	D	293	0.79	39.2	D
			R	16	0.08	20.6	C	16	0.08	20.6	C	16	0.08	20.3	C	27	0.1	20.8	C	27	0.10	20.8	C	27	0.09	20.5	C
		Northbound	LTR	130	0.13	10.5	B	132	0.13	10.5	B	132	0.14	10.3	B	-	-	-	-	-	-	-	-	-	-	-	-
			DefL	-	-	-	-	-	-	-	-	-	-	-	-	200	0.63	20.7	C	203	0.65	21.7	C	203	0.66	22.2	C
			TR	-	-	-	-	-	-	-	-	-	-	-	-	284	0.41	13.8	B	289	0.42	13.9	B	289	0.42	13.6	B
		Southbound	LTR	128	0.12	10.4	B	130	0.12	10.4	B	221	0.21	10.9	B	358	0.28	11.7	B	386	0.30	11.9	B	401	0.31	11.8	B

Table S-12 (continued) - Baseline Construction Traffic and Level-of-Service Analysis

Int#	Intersection Name	Direction	Lane Group	AM Construction												PM Construction											
				2009 Existing				2018 No Action				2018 With Action				2009 Existing				2018 No Action				2018 With Action			
				Volume	v/c ratio	Delay (sec)	LOS	Volume	v/c ratio	Delay (sec)	LOS	Volume	v/c ratio	Delay (sec)	LOS	Volume	v/c ratio	Delay (sec)	LOS	Volume	v/c ratio	Delay (sec)	LOS	Volume	v/c ratio	Delay (sec)	LOS
7	Boone Avenue at East 174th Street	Overall		494		10.0-	A	503		10.0	A	679		10.8	B	1172		13.5	B	1221		13.8	B	1266		13.9	B
		Eastbound	TR	167	0.22	7.4	A	170	0.22	7.4	A	263	0.39	8.9	A	458	0.53	10.9	B	468	0.54	11.1	B	466	0.54	10.8	B
		Westbound	DefL / L	122	0.28	8.4	A	124	0.29	8.5	A	207	0.49	11.4	B	125	0.4	10.8	B	127	0.42	11.1	B	173	0.56	14.5	B
			T	160	0.19	7.1	A	164	0.19	7.1	A	164	0.19	6.9	A	455	0.48	10.0+	B	489	0.52	10.5	B	490	0.51	10.3	B
		Southbound	LTR	45	0.20	28.6	C	45	0.20	28.6	C	45	0.20	28.2	C	134	0.48	33.9	C	137	0.48	34.2	C	137	0.48	33.6	C
8	Longfellow Avenue at East 174th Street	Overall		349		11.8	B	355		12.1	B	448		25.4	C	1131		26.3	C	1182		31.8	C	1181		30.8	C
		Eastbound	LT	116	0.15	6.5	A	118	0.15	6.5	A	128	0.16	6.4	A	400	0.7	16.3	B	408	0.74	18.1	B	408	0.73	17.4	B
		Westbound	TR	170	0.21	6.9	A	174	0.22	7.0	A	174	0.22	6.8	A	482	0.54	10.7	B	517	0.58	11.4	B	518	0.57	11.0	B
		Northbound	LTR	63	0.29	30.4	C	63	0.34	31.9	C	146	0.81	57.7	E	249	0.92	64.7	E	257	1.00	82.7	F	255	1.00	82.2	F
9	West Farms Road at East 173rd Street (3)	Overall		195				199		9.8	A	321		11.3	B	491				505		8.7	A	696		15.5	B
		Eastbound	RL	57	0.13	13.7	B	59	0.17	16.4	B	88	0.26	17.6	B	83	0.56	28.4	D	86	0.09	7.9	A	194	0.70	28.6	C
		Northbound	TL	57	0.01	8.5	A	58	0.09	7.1	A	135	0.43	10.7	B	217	0.02	8.9	A	225	0.10	8.1	A	308	0.48	10.7	B
		Southbound	RT	81	-	-	-	82	0.12	7.3	A	98	0.15	7.5	A	191	-	-	-	194	0.30	9.0	A	194	0.28	8.5	A
10	Boone Avenue at East 173rd Street	Overall		152				155		7.6	A	277		8.4	A	294				305		8.7	A	452		11.4	B
		Eastbound	TR	21	0.04	11.1	B	21	0.03	7.4	A	25	0.03	7.7	A	49	0.13	12.3	B	50	0.09	7.9	A	42	0.08	8.4	A
		Westbound	LT	16	0.04	11.5	B	16	0.03	7.4	A	99	0.17	8.4	A	44	0.14	14.2	B	50	0.10	8.2	A	54	0.11	8.8	A
		Southbound	LTR	115	0.02	7.5	A	118	0.15	7.7	A	153	0.22	8.5	A	201	0.04	7.5	A	205	0.30	9.0	A	356	0.54	12.3	B
12	West Farms Road at East 172nd Street	Overall		182				185				296				457				474				549			
		Eastbound	LR	35	0.09	10.6	B	35	0.09	10.7	B	35	0.10	11.2	B	63	0.16	13.6	B	65	0.17	13.8	B	98	0.28	15.9	C
		Northbound	LT	58	0.01	7.9	A	59	0.01	7.9	A	168	0.02	7.9	A	199	0.01	8.2	A	208	0.02	8.2	A	225	0.02	8.3	A
		Southbound	RT	89	-	-	-	91	-	-	-	93	-	-	-	195	-	-	-	201	-	-	-	226	-	-	-
18a	West Farms Road at Home Street, Longfellow Avenue (2)	Overall		203		28.1	C	183		27.9	C	290		37.0	D	450		32.4	C	466		53.0	D	501		52.7	D
		NW-Bound	LTR	96	0.41	40.9	D	100	0.40	40.2	D	193	0.71	49.9	D	187	0.8	59	E	224	1.03	100.8	F	235	1.03	102.2	F
		NE-Bound	LT	33	0.06	11.7	B	34	0.06	12.0	B	48	0.08	11.9	B	102	0.19	13	B	105	0.20	13.3	B	111	0.20	13.2	B
		SW-Bound	RT	47	0.07	11.8	B	49	0.08	12.1	B	49	0.08	11.9	B	134	0.21	13.1	B	137	0.22	13.4	B	155	0.25	13.5	B
18b	West Farms Road at Home Street, Longfellow Avenue (2)	Overall		203		16.3	B	111		16.5	B	125		15.8	B	370		32.7	C	377		40.7	D	401		37.3	D
		Northbound	LTR	27	0.14	29.4	C	28	0.15	29.7	C	28	0.15	29.3	C	134	0.85	62.0	E	135	0.95	82.4	F	135	0.93	77.4	E
		NE-Bound	LT	33	0.06	11.7	B	34	0.06	12.0	B	48	0.08	11.9	B	102	0.19	13.0	B	105	0.20	13.3	B	111	0.20	13.2	B
		SW-Bound	RT	47	0.07	11.9	B	49	0.08	12.1	B	49	0.08	11.9	B	134	0.21	13.1	B	137	0.22	13.4	B	155	0.25	13.5	B
21	Bronx Park Avenue at East 177th Street	Overall		872		16.7	B	891		16.8	B	896		16.7	B	2124		27.4	C	2185		28.1	C	2282		28.0	C
		Eastbound	T	106	0.07	10.9	B	111	0.07	10.9	B	116	0.07	11.0	B	371	0.21	12.1	B	394	0.22	12.3	B	473	0.27	12.7	B
		Westbound	T	590	0.35	13.6	B	601	0.35	13.7	B	601	0.35	13.7	B	1237	0.8	23.3	C	1266	0.82	24.2	C	1284	0.83	24.7	C
		Southbound	L	22	0.04	27.2	C	22	0.04	27.2	C	22	0.04	27.2	C	196	0.45	34	C	199	0.46	34.1	C	199	0.46	34.1	C
			R	154	0.33	31.9	C	157	0.34	32.0	C	157	0.34	32.0	C	320	0.84	52.7	D	326	0.85	54.5	D	326	0.85	54.5	D

Notes: (1) Boston Road approaches the intersection in the northeast bound and southbound direction. East Tremont Avenue approaches the intersection in the eastbound and westbound direction.
West Farms Road approaches the intersection in the northbound direction

(2) Home Street approaches the intersection ins the northwest bound direction. Longfellow Avenue approaches the intersection in the northbound direction.
West Farms Road approaches the intersection in the northeast bound and southwest bound directions.

(3) East 173rd Street at West Farms Road is signalized between Existing and No Action scenarios.

Highlighted Lane Groups Represent Impacts

Preliminary Parking Assessment

The parking assessment considered the available parking in the area using the No Action condition as a base condition. The cordon in which the highest number of construction employees was found (Cordon 3, Week 240) was used for purposes of estimating the added parking demand due to construction employees. To be conservative, the overnight parking estimates of parking supply and demand for the No Action condition were used to represent the 6-7 AM peak hour. The estimates of mid-day parking No Action condition supply and demand in the parking study area were used for purposes of the mid-day assessment. The results of that analysis are displayed below, in Table S-13.

Table S-13: Parking Supply And Demand at the Peak Construction Cordon

Parking Supply/Demand	AM	Midday
Parking Study Area Capacity (1/4 mile radius)	4,233	3,800
No Action Demand	3,293	3,059
Construction Work Demand	237	237
Total Demand Druing Construction	3,530	3,296
Spaces Avaiblable During Construction (1/4 mile radius)	703	504
Parking Utilization	83%	87%

The parking supply and demand analysis for the peak construction period indicated there would be 701 and 504 available spaces in the 6-7 AM and mid-day periods, respectively, after accounting for the parking demand expected from construction employees. No parking impacts during construction are expected.

Preliminary Transit and Pedestrian Assessment

The analyses in Chapter 2.M. indicated no impacts would be expected for transit and pedestrians in the Action condition. To assess potential transit and pedestrian impacts during construction, the cordon in which the highest number of construction employees was found (Cordon 3, Week 240) was used for purposes of estimating the added transit and pedestrian trips due to construction employees. The estimated transit and pedestrian trips were then compared to the number of trips analyzed in the Action condition. The results of that analysis are presented below, in Table S-14.

Table S-14: Comparison of Peak Construction Bus, Subway and Walk Trips With the Proposed Action Peak Periods

	Bus	Subway	Walk
AM			
Construction Generated Person Trips	84	152	273
Project Generated Person Trips	459	820	1987
Difference	-375	-668	-1714
PM			
Construction Generated Person Trips	84	152	273
Project Generated Person Trips	663	1015	3548
Difference	-579	-863	-3275

Note: Construction trips in during AM and out during PM.

Walking Trips include Transit and Walk only Trips

The analysis showed that the construction bus, subway and walk trips would be substantially less than that for the Proposed Action, and because the Proposed Action analyses indicated no impacts on these facilities, no construction impacts would be expected on bus, subway or pedestrian facilities.

Preliminary Assessment of Air Quality and Noise

Air Quality

Actions to Minimize Impacts

Standard measures will be incorporated into the construction plans for the applicant-controlled properties to minimize potential impacts in accordance with all applicable laws, regulations, and building codes. All equipment will comply with applicable EPA regulations. To minimize fugitive dust emissions, vehicles on-site would be limited to a speed of 5 mph, and water would be used to wet working surfaces. Storage piles would be covered. Exposed areas will be stabilized after disturbance to minimize dust. Tracking pads will be established at construction exits to prevent dirt from being tracked onto roadways. Dust associated with demolition activities will be controlled with misting systems. Construction areas would be surrounded by perimeter fencing that would help contain fugitive dust emissions. Emission reduction and related construction measures will be included in the specifications of the construction contracts.

As discussed in more detail below, the construction of Site 2N, due to its relatively long construction period (2.5 years), has the potential to have a significant adverse impact on air quality with respect to the residential units to be constructed on Site 2S. To minimize the potential for impacts, the applicant has

agreed to implement a diesel particulate matter (DPM) emissions reduction program during construction of the LSGD that would include best management practice comprised of the following components:

1. *Diesel Equipment Reduction*. Construction on Site 2N would minimize the use diesel engines and maximize the use of electric engines where practical.
2. *Clean Fuel*. Ultra-low sulfur diesel fuel (ULSD) would be used exclusively for diesel engines throughout Site 2N. This would enable the use of tailpipe reduction technologies (see below) and would directly reduce DPM and sulfur oxides (SOx) emissions.
3. *Best Available Tailpipe Reduction Technologies*. Nonroad diesel engines with a power rating of 50 hp or greater and controlled truck fleets (i.e., truck fleets under long-term contract, such as concrete mixing and pumping trucks) would utilize the best available tailpipe reduction technology for reducing DPM emissions, such as diesel particle filters (DPFs).
4. *Utilization of Tier 2 or Newer Equipment*. In addition to the tailpipe controls commitments, the construction program would mandate the use of Tier 2 or later construction equipment for nonroad diesel engines greater than 50 hp.
5. *Location of Equipment*. In order to minimize their effects, some emissions sources such as concrete trucks and pumps would be located away from Site 2S to the extent practicable.
6. *Fugitive Dust.* The fugitive dust control plans described in the preceding paragraph would be required as part of contract specifications.
7. *Idle Times*. Restrictions would be placed on on-site vehicle idle times for all vehicles not using the engine to operate a loading, unloading, or processing device (e.g., concrete mixing trucks) in compliance with applicable laws.
8. *Compliance*. In addition, the applicant would take such additional measures to reduce pollutant emissions during construction of the proposed development on Site 2N as are required under all applicable laws, regulations and building codes.

The emissions reduction practices identified above would avoid a significant adverse air quality impact and would be ensured through the LSGD restrictive declaration.

Potential for Impacts

The potential for impacts includes the cumulative effect of construction-related vehicles and equipment when multiple sites are under evaluation at the same time. For trucks and autos, the accumulation of trips on a given roadway segment accounts for the one way traffic on Boone Avenue (SB) and Longfellow Avenue (NB). As a worst case assumption, the analysis assumes that all arriving employees' vehicles would travel on West Farms Road and then turn towards Boone Avenue at the most convenient side street. For construction sites on a corner, departing vehicles would return via the same side street that they arrived on. This means that no vehicles would travel on Jennings Avenue. For construction sites that are mid-block on Boone Avenue, the departing vehicles would travel south to the nearest side street leading to West Farms Road.

The Building Exterior and Building Interior finishes phases have the least potential for air quality impacts. This is due to the relatively low volume of hourly truck trips and the fact that no diesel equipment would be on site during these phases; only an electric hoist would be used.

Employee vehicles. Based on the NYC *CEQR Technical Manual*, actions resulting in 170 or more auto trips through an intersection in the Bronx may require further analysis. Employee vehicles would arrive in the morning and depart in the afternoon. Forty-six percent of the employees would arrive by car, and each

car would have an average of 1.02 persons. They would occur before and after the hours when construction trucks would be active.

In reviewing the cumulative employee vehicles for the buildings under construction in Cordons 4 through 9, only Cordon 8.1 has the potential to exceed 170 vehicles. However, the vehicles would be distributed on several roadway segments, as shown in Table S-15. Table S-15 shows that no roadway segments would reach or exceed the 170-vehicle threshold. In addition, cumulative employee vehicles were tabulated for Air and Noise Cordons 10 and 15; they did not show potential to exceed 170 vehicles.

Road closings. No need for road closings is anticipated.

Truck traffic. NYCDEP has developed a screening analysis for potential $PM_{2.5}$ impacts based on exhaust emissions from heavy duty diesel-powered vehicles for 2008. A more detailed analysis is required if the proposed action would add emissions from trucks or mixed traffic that would be equivalent to the 2008 emissions from the volumes of heavy duty diesel vehicles (HDDV) listed below.

- 12 HDDV for paved roads with <5,000 vehicles/day,
- 19 HDDV for collector-type roads,
- 23 HDDV for principal and minor arterial roads, and
- 23 HDDV for expressways and limited-access roads.

Table S-15: Distribution of Employees' Vehicles for Air and Noise Cordons 8.1 and 8.2

Cordon	Sites/ Building Type	Construction Activities	Affected Roadways	Duration (Weeks)	Employee Vehicles
8.1	3D(A)	BI			23
	3A (A)	BI			23
	4A (A)	BE,BI			34
	5E (A)	BE,BI			34
			E. 173rd, Boone-West Farms	6	113
8.1	3A (A)	BI			23
	5E (A)	BE,BI			34
			E. 173rd, Boone-Longfellow	6	56
8.1	3A (A)	BI			23
	3D (A)	BI			23
Total			Boone, E. 172nd-E. 173rd	6	46
8.1	4A (A)	BE,BI			34
	5E (A)	BE,BI			34
			Boone, E. 173rd-E. 174th	6	68
8.1	2S (F)	S,BI,BE			23
	3D (A)	BI	E. 172nd, Boone-W. Farms	6	23
					46

Source: Sandstone Environmental Associates and Stantec Consulting

West Farms Road, a minor arterial, is a designated truck route. The screening threshold for an arterial is 23 trucks. All trucks would travel on West Farms Road and turn onto the nearest cross street to reach the construction sites. Truck traffic on West Farms Road would exceed an hourly volume of 23 vehicles only for Cordon 6. This would occur for nine weeks which would therefore be only a short-term impact.

For the relevant segments of Boone Avenue and the cross streets, the roadway designations and thresholds are as follows:

- Boone Avenue, 174th Street to Jennings Street — Local street — 12 HDDV
- E. 173rd Street — Longfellow Ave. – West Farms Rd. — Local street — 12 HDDV
- E. 172nd Street — Longfellow Ave. – West Farms Rd. — Collector — 19 HDDV

Air and Noise Cordons 5 through 8.2 have the potential to exceed 12 truck trips per hour. Table S-16 shows a breakdown of average truck trips per hour on each of the affected roadway segments for these cordons. E. 173rd Street between Boone Avenue and West Farms Road is the only segment likely to exceed the threshold value for hourly truck trips. This would occur for the three-week period for Air and Noise Cordon 7, which would be a short-term impact.

In addition, truck trips were tabulated for Air and Noise Cordons 10 and 15. Although these cordons have the potential to exceed 12 truck trips per hour, none would exceed 12 truck trips per hour on an affected interior roadway segment.

A more refined construction traffic analysis was carried out between the DEIS and FEIS. It was based on a construction year of 2018 and included growth of background traffic for No Action Conditions. For the Proposed Action, it included the increased traffic from occupied new buildings and the decrease in trucks from redevelopment of industrial sites. In addition, the construction truck trips were divided into medium trucks and heavy trucks for the purposes of the noise analysis. This resulted in lower air pollutant emissions and less noise on the affected roadway segments. Thus, the analysis carried out for the DEIS constitutes a worst case analysis, and the discussion of construction traffic air quality and noise in the DEIS was not changed for the FEIS.

Table S-16: Average Hourly Truck Trips for Air and Noise Cordons 5 through 8.1

Cordon	Sites/ Building Type	Building Activity	Daily Trucks			Affected Roadways	Cate-gory	Threshold
			One Way	Total Trips	Average Hourly Trips			
5	3D (A)	Ex	18	18	3.0			
	3A (A)	U,S	8	16	2.7			
Total			26	34	5.7	E. 173rd, Boone-W. Farms	Local	12
5	3A (A)	U,S	8	8	1.3			
	3D (A)	Ex	18	18	3.0			
Total			26	26	4.3	Boone, E. 172nd-E. 173rd	Local	12
5	1 (G)	BI	7	7	1.2	Boone, Jennings-E. 172nd	Local	12
5	2N (G)	Ex,F	11	22	3.7			
	3A (A)	U,S	8	16	2.7			
Total			19	38	6.3	E. 173rd, Boone-Longfellow	Local	12

Cordon	Sites/ Building	Building Activity	Daily Trucks			Affected Roadways	Cate-gory	Threshold
5	2S (F)	D	11	22	3.7			
	3D (A)	Ex	18	18	3.0			
	1 (G)	BI	7	14	2.3			
Total			36	54	9.0	E. 172nd, Boone-W. Farms	Collector	19
6	3A (A)	BE, BI	7	14	2.3			
	4A (A)	Ex	17	34	5.7			
	3D (A)	U,S,BE	12	12	2.0			
Total			36	60	10.0	E. 173rd, Boone-W. Farms	Local	12
6	3A (A)	BE, BI	7	14	2.3	E. 173rd, Boone-Longfellow	Local	12
	3D (A)	U,S,BE	12	12	2.0			
	3A (A)	BE, BI	7	7	1.2			
Total			19	19	3.2	Boone, E. 172nd-E. 173rd	Local	12
6	2S (F)	S	6	12	2.0			
	3D (A)	U,S,BE	12	12	2.0			
	1 (G)	BI	7	14	2.3			
Total			25	38	6.3	E. 172nd, Boone-W. Farms	Collector	19
6	4A (A)	Ex	17	17	2.8	Boone, E. 173rd-E. 174th	Local	12
7	3D (A)	BE,BI	7	7	1.2			
	3A (A)	BI	4	8	1.3			
	4A (A)	S,BE,BI	13	26	4.3			
	5E (A)	Ex,F	23	46	7.7			
Total			47	87	14.5	E. 173rd, Boone-W. Farms	Local	**12**
7	3A (A)	BI	4	8	1.3			
	5E (A)	Ex,F	23	46	7.7			
			27	54	9.0	E. 173rd, Boone-Longfellow	Local	12
	3A (A)	BI	4	4	0.7			
	3D (A)	BE,BI	7	7	1.2			
Total			11	11	1.8	Boone, E. 172nd-E. 173rd	Local	12
7	4A (A)	S,BE,BI	13	13	2.2			
	5E (A)	Ex,F	23	23	3.8			
			36	36	6.0	Boone, E. 173rd-E. 174th	Local	12
7	2S (F)	S	6	12	2.0			
7	3D (A)	BE,BI	7	7	1.2			
			13	19	3.2	E. 172nd, Boone-W. Farms	Collector	19
8	3D (A)	BE,BI	7	7	1.2			
	3A (A)	BI	4	8	1.3			
	4A (A)	BE,BI	7	14	2.3			
	5E (A)	BS	6	12	2.0			
Total			24	41	6.8	E. 173rd, Boone-W. Farms	Local	12
8	3A (A)	BI	4	8	1.3			

Cordon	Sites/ Building	Building Activity	Daily Trucks			Affected Roadways	Cate-gory	Threshold
	3D (A)	BE,BI	7	7	1.2			
Total			11	15	2.5	Boone, E. 172nd-E. 173rd	Local	12
8	3A (A)	BI	4	8	1.3			
	5E (A)	BS	6	12	2.0			
			10	20	3.3	E. 173rd, Boone-Longfellow	Local	12
8	4A (A)	BE,BI	7	7	1.2			
	5E (A)	BS	6	6	1.0			
			13	13	2.2	Boone, E. 173rd-E. 174th	Local	12
8	2S (F)	S,BI	12	24	4.0			
8	3D (A)	BE,BI	7	7	1.2			
			19	31	5.2	E. 172nd, Boone-W. Farms	Collector	19
8.1	3D (A)	BI	4	4	0.7			
	3A (A)	BI	4	8	1.3			
	4A (A)	BE,BI	7	14	2.3			
	5E (A)	BE,BI	7	14	2.3			
Total			22	40	6.7	E. 173rd, Boone-W. Farms	Local	12
8.1	3A (A)	BI	4	8	1.3			
	5E (A)	BE,BI	7	14	2.3			
			11	22	3.7	E. 173rd, Boone-Longfellow	Local	12
8.1	3A (A)	BI	4	8	1.3			
	3D (A)	BI	4	4	0.7			
Total			8	12	2.0	Boone, E. 172nd-E. 173rd	Local	12
8.1	4A (A)	BE,BI	7	7	1.2			
	5E (A)	BE,BI	7	7	1.2			
			14	14	2.3	Boone, E. 173rd-E. 174th	Local	12
8.1	2S (F)	S,BI,BE	17	34	5.7			
8.1	3D (A)	BI	4	4	0.7			
			21	38	6.3	E. 172nd, Boone-W. Farms	Collector	19
	3D (A)	BI	4	4	0.7			
	3A (A)	BI	4	8	1.3			
	4A (A)	BI	4	8	1.3			
	5E (A)	BE,BI	7	14	2.3			
Total			19	34	5.7	E. 173rd, Boone-W. Farms	Local	12

Numbers in bold type exceed the truck threshold for PM2.5 screening.

Source: Stantec Consulting and Sandstone Environmental Associates, Inc.

On-site fugitive dust and exhaust emissions. On-site speeds would be limited to 5 mph, and the surfaces would be watered periodically. Under these conditions, fugitive PM2.5 emissions from moving vehicles would be negligible, and PM10 emissions from moving vehicles would be reduced by 50%. Storage piles would be covered with tarps. Fencing around the perimeter of the development sites would help contain fugitive dust to the construction site.

Potential impacts from fugitive dust and exhaust would occur primarily on adjacent sites. Table S-17 shows the sources on each active construction site and the locations of adjacent sensitive receptors for Air and Noise Cordons 4 through 9. The potential for impacts during the Building Interior and Building Exterior stages would be minimal because: 1) the only major on-site equipment would be a stationary electric hoist, and 2) the mobile sources on-site would be an average of two trucks per hour during these construction stages.

Table S-17: On-Site Truck Trips and Diesel Equipment by Air and Noise Cordon

Cordon	Sites/ Building Type	Activi-ties	Hourly Truck Trips	Mobile Equipment On-Site (#)	Diesel Equipment On-Site (#)	Adjacent Residential Uses
4	1 (G)	BI		0	0	Corner Boone Ave. & E. 172nd St.
	3A (A)	D		2	2	Longfellow; Ave., E. 172nd-E. 173rd Sts.
Total			6	2	2	
5	2S (F)	D		2	2	Corner Boone Ave. & E. 172nd St.
	3A (A)	U,S		4	5	Longfellow; Ave., E. 172nd-E. 173rd Sts.
	3D (A)	Ex		2	2	Longfellow; Ave., E. 172nd-E. 173rd Sts.
	1 (G)	BI		0	0	Corner Boone Ave. & E. 172nd St.
Total			15	8	9	
6	2S (F)	S		4	4	Corner Boone Ave. & E. 172nd St.
	3A (A)	BE, BI		0	0	Longfellow; Ave., E. 172nd-E. 173rd Sts.
	3D (A)	U,S,BI		4	4	Longfellow; Ave., E. 172nd-E. 173rd Sts.
	1 (G)	BI		0	0	Corner Boone Ave. & E. 172nd St.
	4A (A)	Ex		2	2	No adjacent homes
Total			16	10	11	
7	2S (F)	S		4	4	Corner Boone Ave. & E. 172nd St.
	3A (A)	BI		0	0	Longfellow; Ave., E. 172nd-E. 173rd Sts.
	3D (A)	BE,BI		0	0	Longfellow; Ave., E. 172nd-E. 173rd Sts.
	4A (A)	S,BE,BI		3	4	No adjacent homes
	5E (A)	Ex,F		2	2	Longfellow; Ave., E. 173nd-E. 174th Sts.
Total			18	9	10	
8	2S (F)	S, BI		4	4	Corner Boone Ave. & E. 172nd St.
	3A (A)	BI		0	0	Longfellow; Ave., E. 172nd-E. 173rd Sts.
	3D (A)	BE,BI		0	0	Longfellow; Ave., E. 172nd-E. 173rd Sts.
	4A (A)	BE,BI		0	0	No adjacent homes
	5E (A)	S		3	4	Longfellow; Ave., E. 173nd-E. 174th Sts.
Total			12	7	8	
8.1	2S (F)	S,BI,BE		3	4	Corner Boone Ave. & E. 172nd St.
	3A (A)	BI		0	0	Longfellow; Ave., E. 172nd-E. 173rd Sts.
	3D (A)	BI		0	0	Longfellow; Ave., E. 172nd-E. 173rd Sts.
	4A (A)	BE,BI		0	0	No adjacent homes
	5E (A)	BE,BI		0	0	Longfellow; Ave., E. 173nd-E. 174th Sts.

Cordon	Sites/ Building Type	Activi-ties	Hourly Truck Trips	Mobile Equipment On-Site (#)	Diesel Equipment On-Site (#)	Adjacent Residential Uses
Total			13	3	4	
8.2	2S (F)	S,BI,BE		3	4	Corner Boone Ave. & E. 172nd St.
	3A (A)	BI		0	0	Longfellow; Ave., E. 172nd-E. 173rd Sts.
	3D (A)	BI		0	0	Longfellow; Ave., E. 172nd-E. 173rd Sts.
	4A (A)	BI		0	0	No adjacent homes
	5E (A)	BE,BI		0	0	Longfellow; Ave., E. 173nd-E. 174th Sts.
Total			12	3	4	
9	2S (F)	S,BE,BI		3	4	Corner Boone Ave. & E. 172nd St.
	3A (A)	BI		0	0	Longfellow; Ave., E. 172nd-E. 173rd Sts.
	3D (A)	BI		0	0	Longfellow; Ave., E. 172nd-E. 173rd Sts.
	4A (A)	BI		0	0	No adjacent homes
	5E (A)	BI		0	0	Longfellow; Ave., E. 173nd-E. 174th Sts.
Total			11	3	4	

Source: Stantec Consulting and Sandstone Environmental Associates, Inc.

Building 1 would be in the final weeks of the BI stage during Cordons 4, 5, and 6. It is across the street from the homes at the corner of Boone Avenue and E. 172nd Street and adjacent to the school on the south. No diesel equipment would be on-site, and an average of two trucks per hour would visit the site. With the building largely complete and covering most of the site, truck deliveries and pick-ups would be limited to a point near the street. Trucks would not cross the site and kick up fugitive dust. Thus, potential air quality impacts from this site would be minimal.

Site 2S would be in the Demolition construction stage in Air and Noise Cordon 5 (Week 119) and would reach the Building Interior stage in Air and Noise Cordon 11 (Week 189). The adjacent sites to the north and west are development sites in industrial use, and they are therefore not included as sensitive receptors. To the east are West Farms Road and the Sheridan Expressway, which are not sensitive receptors. To the southwest are the homes at the corner of Boone Avenue and E. 172nd Street. Any potential impacts on this residential area from Site 2S would last approximately 70 weeks, from Air and Noise Cordon 5 to Air and Noise Cordon 11, and they would be short-term in nature. Building 1 directly south of Site 2S would be occupied by Air and Noise Cordon 8 (Week 140). Any potential impacts to Building 1 would last about 49 weeks, and would be short-term. Site 3D, which is across the street from Site 2S, would be occupied by Air and Noise Cordon 11 (Week189). Minimal impacts are anticipated for this building because Site 2S would be in the Building Interior stage.

Site 3A would begin demolition in Air and Noise Cordon 4 and would reach Building Exterior and Building Interior finishes by Air and Noise Cordon 6 nineteen weeks later. Any potential impacts would occur to the residential units on the northern portion of Longfellow Avenue between E. 172nd and E. 173rd Streets. No other development site would affect this receptor location before Site 3A reaches the Building Exterior and Building Interior stages. Any impacts would be short-term in nature.

Site 3D does not become active until Air and Noise Cordon 5. It could potentially cause impacts to the residential units on the southern portion of Longfellow Avenue between E. 172nd and E. 173rd Streets. No other development sites would affect these sensitive receptors while Site 3D is active. Truck trips and on-site equipment would be highest for this site from Air and Noise Cordons 5 through 6, a period of 18 weeks. After this, the site would be in the Building Exterior and Building Interior finishes stage, when no diesel or mobile equipment would be on-site, and truck pick-ups and deliveries would average two per

hour. Based on this information, any potential impacts during Air and Noise Cordons 5 through 6 would be short-term. No impacts are likely after Air and Noise Cordon 6.

Site 4A is surrounded by industrial sites that are likely to be redeveloped, and they are therefore not considered sensitive receptors. It would be completed before they become new sensitive receptors. Site 4A would be in construction from Cordon 6 through Air and Noise Cordon 9, but it would reach the Building Exterior and Building Interior finishes stages after 26 weeks (Air and Noise Cordon 8.2). Any potential air quality impacts during this period would be considered short-term. However, no temporary impacts to sensitive receptors are anticipated because none are adjacent to the site.

Site 5E would start development shortly before Air and Noise Cordon 7, a time when Site 3A would be in the Building Exterior and Building Interior finishes stage. Thus, Site 5E is the only one likely to affect residences on Longfellow Avenue between E. 173rd and E. 174th Streets during construction Cordons 4 through 12.1. This site would reach the Building Exterior and Building Interior finishes stage by Air and Noise Cordon 9, a period of 23 weeks. Thus, any potential impacts to adjacent residences would be short-term.

Air and Noise Cordons 10 and 15 also were evaluated. In Air and Noise Cordon 10, most of the buildings under construction would be in the Building Exterior and Interior phases. Only Site 4B would be in an earlier stage. It would be undergoing demolition, but it would not be adjacent to any residential sites.

During Air and Noise Cordon 15, of the buildings that would be in earlier stages, Site 5D would be in the Excavation stage. It is adjacent to homes on Longfellow Avenue, but would reach the Building Interior stage within 6 weeks. Site 3E would be in the Utility and Building Superstructure stage, but would be in the Building Interior stage within 39 weeks. It is adjacent to homes on Longfellow Avenue and E. 172nd Street. Site 2N would be in the Demolition stage. It would reach the Building Interior stage by Air and Noise Cordon 20.1 about 63 weeks later. With the exception of Site 2N, any potential impacts to adjacent residences would be temporary impacts lasting less than one year.

Due to its longer construction period when diesel equipment would be operating at the site, (70 weeks), the construction of Site 2N may have a significant adverse impact on air quality at the completed residential units facing it on Site 2S. Accordingly, for this site, a more rigorous approach to reducing DPM emissions would be carried out as discussed previously in the section on Actions to Minimize Impacts. The proposed DPM measures would be sufficient to prevent significant adverse air quality impacts because they were incorporated as part of a detailed construction analysis for the Fordham University Lincoln Center Master Plan EIS, and the Proposed Action for the Crotona Rezoning would have a lower emissions intensity than the Fordham University Lincoln Center Master Plan as described below.

Emissions intensity is the pollutant emission rate per square foot for a construction area. The emissions from all construction sources for a given pollutants, such as PM2.5, are summed and divided by the square footage of the area to determine an emissions intensity in lbs/day/square foot. The emissions intensity for Parcel 2N was calculated for the 24-hour and annual averaging periods and compared with the Fordham University Lincoln Center Master Plan

For the Fordham EIS, the projected worst-case construction period was for the construction of Sites 4 and 5/5a. PM2.5 emissions from construction were expected to be greatest during a 12-month period when the Excavations and Foundations construction stage was underway. The Fordham analysis included engine exhaust from diesel-powered equipment, fugitive dust from on-site trucks and equipment, and truck exhaust emissions, and fugitive dust from on-site processing, loading and unloading activities. An 8- or 11-hour day was used, with the 11-hour shift every other day. The work week was assumed to be primarily 5 days per week but some weekend work was included in the calculations. AERMOD was used

to model PM2.5 concentrations at the fenceline of the site, on a 7-foot wide sidewalk, and at nearby residential buildings 20 feet from the construction site. The Fordham analysis concluded that no significant adverse air quality impacts would occur.

The emissions intensity that can be calculated for the construction scenario described above is $1.48E^{-05}$ lbs/day/ft^2 for the short-term averaging period and $7.54E^{-06}$ lbs/day/ft^2 for the annual averaging period. This is based on a construction area for Sites 4 and 5/5a that totals 60,900 square feet. The buildings on Sites 4, 5a, and 5 would reach heights of 661 feet, 155 feet, and 381 feet, respectively.

Parcel 2N for the Crotona Rezoning EIS is 60,000 sq. ft., which is similar in surface area to the Fordham sites analyzed. However, it would be developed with three buildings that are smaller than the ones envisioned for Fordham. They would reach maximum heights of 100 to 171 feet, and would require less on-site construction activity. An emissions intensity was calculated for Parcel 2N based on the construction stages over the worst-case 12-month period. The analysis included PM2.5 due to on-site fugitive dust and exhaust emissions. An 8-hour, six-day workweek was assumed as a worst-case analysis.

The emissions intensity calculated for Parcel 2N was 1.44^{-05} lbs/day/ft^2 for the peak 24-hour averaging period and $3.77E^{-06}$ lbs/day/ft^2 for the annual averaging period. This is lower than the emissions intensities calculated for the Fordham EIS. Therefore, the construction best management practices adopted for Fordham would be sufficient to prevent potential construction air quality impacts for the Crotona Rezoning. The emissions reduction practices determined to be necessary to avoid a significant adverse air quality impact would be ensured through the LSGD restrictive declaration.

Noise

Actions to Minimize Impacts

For noise, mitigation measures would comply with Title 15 of the Rules of the City of New York, Chapter 28, Citywide Construction Noise Mitigation, which specifies requirements for a Construction Noise Mitigation Plan, required noise mitigation measures for general construction, and additional measures to be taken if DEP receives noise complaints concerning a construction site. Along with specified requirements for maintaining and operating on-site equipment, the Construction Noise Mitigation Plan includes covering portable compressors, generators, pumps, and other such devices with noise-insulating fabric under Section 28-101 (d), and constructing a perimeter noise barrier fence under Section 28-101 (g). Such a fence would be limited to 15 feet in height and would be constructed of material that would achieve an STC rating of 30 and have a potential insertion loss of 10 dBA under field conditions as indicated in Section 28-107 (c), (d), and (e). The actual insertion loss achieved by the fence under field conditions, however, may be lower at nearby sensitive receptors due to the distance of the fence from the receptor or noise source, as well as the 15-foot limit on the height of the fence..

In addition, to help minimize potential annoyance from back-up alarms, truck routes within the applicant's sites would have one-way patterns, whenever possible, to reduce the need for backing up. For both applicant and non-applicant sites, the assumption is that trucks would avoid traveling on Boone Avenue, which is a one-way street. They would travel on West Farms Road until reaching the nearest cross street to a site on Boone Avenue. Some air quality mitigation measures that reduce the use of diesel equipment, such as activating the electrical grid during a building's superstructure, would also reduce equipment noise levels.

Potential for Impacts

The potential for noise impacts includes the cumulative effect of construction-related vehicles and equipment when multiple sites are undergoing redevelopment at the same time. Since the quantity of on-site construction equipment for each construction phase is the same for all seven building types, the potential noise levels are the same. However, the construction phases may overlap, in which case,

additional equipment may be on-site at any given time. The Building Exterior and Building Interior phases have the least potential to cause noise impacts due to the relatively low volume of hourly trucks and the presence of the electric hoist, which is quieter than diesel-powered equipment.

Road closings. No need for road closings is anticipated.

Employee vehicles. Employees' vehicles would occur before and after the hours when construction trucks would be active. The highest number of vehicles from employees is 180, which would occur during Air and Noise Cordon 8.1 on West Farms Road. The more detailed breakdown in Table S-15 shows a maximum of 113 vehicles on E. 173rd Street between Boone Avenue and West Farms Road. These additional employee vehicles would not be sufficient to cause a doubling of PCEs on the affected roadways.

Truck traffic on roadways. Hourly truck trips would be highest during Cordons 5 through 8.1. Table S-18 shows the distribution of truck trips by roadway segment and the potential increase in PCEs for these worst-case cordons. The truck PCEs were added to the PCEs from traffic observed during noise monitoring periods for mid-block locations, most of which occurred during quieter, off-peak periods. The table shows that the construction truck trips would cause a potential increase of 3.2 dBA on E. 173rd Street between Boone Avenue and West Farms Road during Air and Noise Cordon 7, a period of 3 weeks. All other projected increases in noise are below 3.0 dBA. A review of truck trips for Air and Noise Cordons 10 and 15 showed no potential for noise level increases of 3 dBA or more.

Table S-18: Hourly Truck Trips and PCEs for Air and Noise Cordons 5 through 7

Cordon	Sites/ Building Type	Activities	Hourly Truck Trips	Hourly Truck PCEs	Affected Roadways	Existing PCEs	Noise Increase (dBA)
5	3D (A)	Ex	3.0	141			
	3A (A)	U,S	2.7	125			
Total			5.7	266	E. 173rd, Boone-W. Farms	634	1.5
5	3A (A)	U,S	1.3	63			
	3D (A)	Ex	3.0	141			
Total			4.3	204	Boone, E. 172nd-E. 173rd	924	0.9
5	1 (G)	BI	1.2	55	Boone, Jennings-E. 172nd	277	0.8
5	2N (G)	Ex,F	3.7	172			
	3A (A)	U,S	2.7	125			
Total			6.3	298	E. 173rd, Boone-Longfellow	932	1.2
5	2S (F)	D	3.7	172			
	3D (A)	Ex	3.0	141			
	1 (G)	BI	2.3	110			
Total			9.0	423	E. 172nd, Boone-W. Farms	881	1.7
6	3A (A)	BE, BI	2.3	110			
	4A (A)	Ex	5.7	266			
	3D (A)	U,S,BE	2.0	94			
Total			10.0	470	E. 173rd, Boone-W. Farms	634	2.4

Cordon	Sites/ Building Type	Activities	Hourly Truck Trips	Hourly Truck PCEs	Affected Roadways	Existing PCEs	Noise Increase (dBA)
6	3A (A)	BE, BI	2.3	110	E. 173rd, Boone-Longfellow	932	0.5
	3D (A)	U,S,BE	2.0	94			
	3A (A)	BE, BI	1.2	55			
Total			3.2	149	Boone, E. 172nd-E. 173rd	924	0.6
6	2S (F)	S	2.0	94			
	3D (A)	U,S,BE	2.0	94			
	1 (G)	BI	2.3	110			
Total			6.3	298	E. 172nd, Boone-W. Farms	881	1.3
6	4A (A)	Ex	2.8	133	Boone, E. 173rd-E. 174th	1500	0.4
7	3D (A)	BE,BI	1.2	55			
	3A (A)	BI	1.3	63			
	4A (A)	S,BE,BI	4.3	204			
	5E (A)	Ex,F	7.7	360			
Total			14.5	682	E. 173rd, Boone-W. Farms	634	3.2
7	3A (A)	BI	1.3	63			
	5E (A)	Ex,F	7.7	360			
			9.0	423	E. 173rd, Boone-Longfellow	932	1.6
	3A (A)	BI	0.7	31			
	3D (A)	BE,BI	1.2	55			
Total			1.8	86	Boone, E. 172nd-E. 173rd	924	0.4
7	4A (A)	S,BE,BI	2.2	102			
	5E (A)	Ex,F	3.8	180			
			6.0	282	Boone, E. 173rd-E. 174th	1500	0.7
7	2S (F)	S	2.0	94			
7	3D (A)	BE,BI	1.2	55			
			3.2	149	E. 172nd, Boone-W. Farms	881	0.7
8	3D (A)	BE,BI	1.2	55			
	3A (A)	BI	1.3	63			
	4A (A)	BE,BI	2.3	110			
	5E (A)	BS	2.0	94			
Total			7.0	321	E. 173rd, Boone-W. Farms	634	1.8
8	3A (A)	BI	0.6	63			
	3D (A)	BE,BI	1.2	55			
Total			1.8	118	Boone, E. 172nd-E. 173rd	924	0.4
8	3A (A)	BI	1.3	63			
	5E (A)	BS	2.0	94			

Cordon	Sites/ Building Type	Activities	Hourly Truck Trips	Hourly Truck PCEs	Affected Roadways	Existing PCEs	Noise Increase (dBA)
			3.3	157	E. 173rd, Boone-Longfellow	932	0.7
8	4A (A)	BE,BI	1.2	55			
	5E (A)	BS	1.0	47			
			2.2	102	Boone, E. 173rd-E. 174th	1500	0.3
8	2S (F)	S,BI	4.0	188			
8	3D (A)	BE,BI	1.2	55			
			5.2	243	E. 172nd, Boone-W. Farms	881	1.1
8.1	3D (A)	BI	0.7	31			
	3A (A)	BI	1.3	63			
	4A (A)	BE,BI	2.3	110			
	5E (A)	BE,BI	2.3	110			
Total			7.0	313	E. 173rd, Boone-W. Farms	634	1.7
8.1	3A (A)	BI	1.3	63			
	5E (A)	BE,BI	2.3	110			
			3.7	172	E. 173rd, Boone-Longfellow	932	0.7
8.1	3A (A)	BI	0.6	63			
	3D (A)	BI	0.7	31			
Total			1.3	94	Boone, E. 172nd-E. 173rd	924	0.3
8.1	4A (A)	BE,BI	1.2	55			
	5E (A)	BE,BI	1.2	55			
			2.3	110	Boone, E. 173rd-E. 174th	1500	0.3
8.1	2S (F)	S,BI,BE	5.7	266			
8.1	3D (A)	BI	0.7	31			
			6.3	298	E. 172nd, Boone-W. Farms	881	1.3
8.1	3D (A)	BI	0.7	31			
	3A (A)	BI	1.3	63			
	4A (A)	BI	1.3	63			
	5E (A)	BE,BI	2.3	110			
Total			6.0	266	E. 173rd, Boone-W. Farms	634	1.5
8.2	3A (A)	BI	1.3	63			
	5E (A)	BE,BI	2.3	110			
			3.7	172	E. 173rd, Boone-Longfellow	932	0.7
8.1	3A (A)	BI	0.6	63			
	3D (A)	BI	0.7	31			
Total			1.3	94	Boone, E. 172nd-E. 173rd	924	0.3
8.2	4A (A)	BI	0.7	31			

Cordon	Sites/ Building Type	Activities	Hourly Truck Trips	Hourly Truck PCEs	Affected Roadways	Existing PCEs	Noise Increase (dBA)
	5E (A)	BE,BI	1.2	55			
Total			1.8	86	Boone, E. 173rd-E. 174th	1500	0.2
8.2	2S (F)	S,BI,BE	5.7	266			
	3D (A)	BI	0.7	31			
			6.3	298	E. 172nd, Boone-W. Farms	881	1.3

Source: Sandstone Environmental Associates and Stantec Consulting

High levels of impulse noise. No blasting or sustained periods of pile driving are anticipated. Despite the potential high rock levels on Block 3014, the construction of Site 2N beginning in Air and Noise Cordon 14 is not expected to include extensive rock removal or are extraordinary pile driving activities. Impulse noise from demolition on the sites would be intermittent during a period of two to six weeks depending on the type of building under construction. Any impacts would be short-term.

Noise within a narrow range of frequencies. The equipment on-site would be expected to generate noise within a broad range of range of frequencies. Potential noise sources within a narrow range of frequencies would be the high-pitched tones typical of vehicular back-up alarms. These would occur intermittently for brief periods when the vehicles back up. Where possible, internal track paths would use a one-way traffic pattern to reduce the need for backing up. Overall, any impacts from this source would be short-term.

Noise from on-site trucks. Truck trips would be greatest during the demolition, excavations, and foundations stages, which would last from 8 to 23 weeks, depending on the type or building under construction. During these stages, trucks would have access to interior portions of a site. Once the building superstructure has been erected, which would cover most of a site, truck access onto the site would be limited to perimeter areas along street frontages, and they would be less likely to affect adjacent sensitive receptors. The potential for impacts would be similar to those previously discussed under trucks on roadways. No significant long-term adverse impacts are anticipated.

Noise from on-site equipment. Since the quantity of on-site construction equipment for each construction phase is the same for all seven building types, the potential noise levels are the same, although the length of use of each kind of equipment varies by building size. Table S-13 shows the type of estimated on-site equipment by construction phase and the projected total Leq noise level at 50 feet from the equipment. The equipment utilization and Leq noise levels at a distance of 50 feet were obtained from the *CEQR Technical Manual*.

The formula for converting the maximum noise level to an Leq is shown below:[1]

$$\text{Lmax} + 10 \times \log (\text{operating time/project time})$$

If the equipment has an Lmax of 85 dBA at 50 feet, and it operates 40% of the time over a 1-hour period, then the Leq (1 hr) at 50 feet would be about 4 decibels less, or 85 – 4 = 81 dBA. Beyond 50 feet, the noise level would attenuate at a rate of 6 dBA per distance doubling. Thus, at 100 feet, the Leq would be 75 dBA (81 – 6 = 75).

[1] Noise and Vibration Control Engineering: Principles and Applications, edited by Leo L. Beranek and Istvan L. Ver, John Wiley & Sons, 1992, p. 652.

At a distance of 50 feet, the cumulative Leq from the on-site equipment shown in Table S-19 would range from 62.0 to 85.0 dBA, depending on the construction phase. This does not include potential noise reductions that would be achieved with portable noise barriers. Based on Title 15, Chapter 28 of the Rules of the City of New York, such barriers are among the additional pathway controls to be implemented at construction sites if NYCDEP receives noise complaints.

Table S-19: Equipment Noise (Leq) by Construction Stage

Equipment	Demolition	Excavation & Foundations	Utility & Sewer Conn.	Building Superstructure	Building Exterior	Interior Finishes
Excavator	85					
Utilization	0.4					
Leq @ 50	81.0					
Bulldozer	85					
Utilization	0.4					
Leq @ 50	81.0					
Loader 1		85				
Utilization		0.5				
Leq @ 50		82.0				
Loader 2		85				
Utilization		0.5				
Leq @ 50		82.0				
Concrete pump				82		
Utilization				0.2		
Leq @ 50				75.0		
Backhoe			80			
Utilization			0.4			
Leq @ 50			76.0			
Compressor				82		
Utilization				0.5		
Leq @ 50				79.0		
Crane				85		
Utilization				0.16		
Leq @ 50				77.0		
Generator				82		
Utilization				0.5		
Leq @ 50				79.0		
Electric Hoist					70	70
Utilization					0.16	0.16
Leq @ 50					62.0	62.0
Total Leq @ 50'	**84.0**	**85.0**	**76.0**	**83.8**	**62.0**	**62.0**

Source: Sandstone Environmental Associates, Inc., and Stantec Consulting

Existing noise levels at sites throughout the study area range from 61.8 dBA on Boone Avenue between E. 174th and 176th Streets to 82.4 dBA at Boston Road and E. Tremont Avenue. L_{10} noise levels range from 64.6 dBA to 88.0 dBA. No noise monitoring was carried out on Longfellow Avenue south of the Cross Bronx Expressway. Therefore noise levels were assumed to be similar to the parallel roadway segment on Boone Avenue. Since Longfellow is northbound and Boone is southbound, the assumption is that southbound traffic on Boone Avenue would return via Longfellow Avenue.

Based on the above information, cumulative equipment noise that adds 62 dBA or less to Leq noise levels at the site boundary of sensitive receptors would not constitute an impact because it would not cause a doubling (increase of 3 dBA) in noise levels at most sites. As shown in Table S-19, this would occur during the Building Exterior and Building Interior phases. In addition, the electric hoists on-site during these last two construction phases would be near street frontages and at least 50 feet from nearby residences.

Construction periods for each construction phase and building type are shown in Table S-20. The total weeks during which a construction site would exceed 62 dBA is also shown in Table S-20, and they would range from 16.5 to 73.5 weeks. However, multiple sites in the vicinity of a residential area may be under construction at the same time, in which the cumulative noise from multiple construction sites would affect the residences. Table S-21 shows the sites undergoing redevelopment by cordon as well as on-site diesel equipment and cumulative equipment noise levels at 50 feet.

Table S-20: Duration of Leq Equipment Noise Levels > 62.0 dBA

Building Type	Duration (weeks) by Building Type					
	Demo-lition	Exaca-vation	Utility & Sewer Connections	Building Super-structure	Building Exterior	Total Weeks Leq> 62.0 dBA
A	2	6	1.5	7	14	16.5
B	3	8	1.5	14	17	26.5
C	4	10	1.5	21	23	36.5
D	5	12	1.5	28	36	46.5
E	6	12	1.5	35	34	54.5
F	6	13	1.5	42	34	62.5
G	6	17	1.5	49	40	73.5

Source: Sandstone Environmental Associates, Inc., and Stantec Consulting

Table S-21: On-Site Diesel Equipment by Air and Noise Cordon

Cordon	Site/Bldg-Type	Activities	Diesel Equipment (#)	Cumulative Noise @ 50 feet (dBA)
4	1 (G)	BI	0	62.0
	3A (A)	D	2	84.0
5	2S (F)	D	2	84.0
	3A (A)	U,S	5	84.5
	3D (A)	Ex	2	85.0
	1 (G)	BI	0	62.0
6	2S (F)	S	2	83.8
	3A (A)	BE, BI	0	62.0
	3D (A)	U,S,BI	5	84.5
	1 (G)	BI	0	62.0
	4A (A)	Ex	2	85.0
7	2S (F)	S	4	83.8
	3A (A)	BI	0	62.0
	3D (A)	BE,BI	0	62.0
	4A (A)	S,BE,BI	4	83.8
	5E (A)	Ex,F	2	85.0
8	2S (F)	S,BI	5	83.8
	3A (A)	BI	0	62.0
	3D (A)	BE,BI	0	62.0
	4A (A)	BE,BI	0	62.0
	5E (A)	S	4	83.8
8.1	2S (F)	S,BI,BE	4	83.8
	3A (A)	BI	0	62.0
	3D (A)	BI	0	62.0
	4A (A)	BE,BI	0	62.0
	5E (A)	BE,BI	0	62.0
8.2	2S (F)	S,BI,BE	4	83.8
	3A (A)	BI	0	62.0
	3D (A)	BI	0	62.0
	4A (A)	BI	0	62.0
	5E (A)	BE,BI	0	62.0
9	2S (F)	S,BE,BI	4	83.8
	3A (A)	BI	0	62.0
	3D (A)	BI	0	62.0
	4A (A)	BI	0	62.0
	5E (A)	BI	0	62.0

Source: Sandstone Environmental Associates, Inc.

Cumulative construction noise levels at residential areas within the rezoning area were compared with the peak AM noise levels for Existing Conditions based on the activities at active construction sites and their distances from the residential areas. Where intervening buildings would provide a barrier effect, a conservative reduction of 10 dBA was applied to the equipment noise level. In some cases, a barrier effect was present for some cordons but not others. Shaded areas represent periods when construction either has not started or has been completed. In order to capture worst-case construction noise levels, the evaluation was carried out for Air and Noise Cordons 4 through 12.1.

The cumulative noise levels for Residential Area 1 at the corner of Boone Avenue and E. 172nd Street are shown in Table S-22. The existing noise level at Residential Area 1 is an Leq of 69.3 dBA. Construction noise would exceed this by 3 dBA or more for 53 consecutive weeks, primarily due to the proximity of Site 2S. Noise levels would drop substantially when Site 2S reaches the Building Interior stage.

Site 1G would be completed and ready for occupation in Air and Noise Cordon 7. At this point, it also would become a sensitive receptor. Construction noise levels at this site would be somewhat similar to those shown in Table S-22but the duration would be shorter – 35 weeks – because no impacts would occur before Air and Noise Cordon 7 and none would occur after Air and Noise Cordon 9. In summary, the high construction noise levels for residences at the corner of Boone Avenue and E. 172nd Street would be short-term.

Table S-23shows cumulative construction noise at Residential Area 2, which is the southern half of Longfellow Avenue between E. 172nd and E. 173rd Streets. Existing Leq noise levels are 70.2 dBA. High construction noise levels would occur during an 18-week period from Air and Noise Cordons 5 through 6, primarily due to the early construction stages of Site 3D, which is adjacent to it. Once Site 3D reaches the Building Interior stages, the only equipment on-site would the electric hoist. The hoist would be located on the Boone Avenue frontage, and the building itself would act as a barrier to noise reaching the rear yards on Longfellow Avenue. The construction noise would be short-term.

Table S-24shows cumulative construction noise at Residential Area 3, which is the northern half of Longfellow Avenue between E. 172nd and E. 173rd Streets. Existing Leq noise levels are 70.2 dBA. High noise levels would occur for 39 weeks during Air and Noise Cordons 4 through 8, primarily due to the early construction stages on adjacent sites Site 3A, 4A, and 5E. When these sites reach the Building Interior stages, the only equipment on-site would the electric hoists located on the Boone Avenue frontage. The buildings would then act as barriers to noise reaching the rear yards on Longfellow Avenue. The construction noise for Residential Area 3 would be short-term.

Table S-25shows cumulative construction noise at Residential Area 4, which is the southern half of Longfellow Avenue between E. 173rd and E. 174th Streets. High noise levels would occur for a total of 64 weeks, but this would not be consecutive. A period of 39 consecutive weeks (Air and Noise Cordons 4 through 8) with high noise levels would be followed by more than ten months of noise levels with an increment of less than 3.0 dBA. Then, 25 weeks of high noise levels would occur during Air and Noise Cordons 10 through 12. The high noise levels are due partly to construction at sites 3A and 5E and partly to the relatively low observed Leq noise level of 61.2 dBA. The duration of the noise levels would be considered short-term, especially given the break of 10 months between the more intense stages of construction.

Residential Area 5, a residence on E. 173rd Street between Boone and West Farms Road, has an existing Leq of 69.3 dBA. As shown in Table S-20, this site would experience high noise levels from adjacent Site 3A for 19 weeks during Air and Noise Cordons 4 and 5, then undergo redevelopment as part of Site 3A in Air and Noise Cordon 6. It would become a sensitive receptor again in Air and Noise Cordon 11, but would not experience an increase in noise of 3 dBA or more from construction on other sites.

As the buildings reach completion on Boone Avenue, they would become sensitive receptors, and the sites would no longer be a source of construction noise. The next round of significant construction activities would begin with the demolition operations on Site 2N in Air and Noise Cordon 14. It would continue through Air and Noise Cordon 21. Tables S-22 through S-31 show the equipment noise levels for sites that could experience more than 52 weeks of increases of 3 dBA or more in noise. The longest period is 70 weeks, and it would affect Buildings 2S, 3A, 5E and 4A as sensitive receptors.

Even though no long-term construction noise impacts are expected to occur as a result of the Proposed Action, as noted above, there are shorter periods during which very high increases in construction-noise would occur. For the purposes of identifying a significant adverse impact, the following criteria were used to define high noise levels:

- A cumulative L_{eq} noise level of 85 dBA or more, and
- An increment of 15 dBA or more over projected No Action noise levels lasting for a continuous period of three weeks or more.

As shown in Tables S-22 through S-26, residential area 4, on Longfellow Avenue between E. 173rd and E. 174th Streets is the only area projected to experience high noise levels, as shown in Tables S-25 and S-28.

High noise levels that are considered intermittent would not constitute a significant adverse impact. For the purposes of this analysis, a significant adverse impact would be:

- A period of less than 12 weeks between the occurrences of high noise levels as defined in the first two bullets above.

The high noise levels that would be experienced at sensitive receptors along Longfellow Avenue between East 173rd and East 174th Streets would be generated by construction activities on sites that are not under control of the applicant and therefore cannot be controlled through a restrictive declaration. Accordingly, there is a potential for a significant adverse impact due to construction noise. Further analysis of construction noise affecting these receptors and consideration of potential mitigation measures to reduce the severity and duration of the noise from on-site equipment was carried out between the Draft and Final EIS and is discussed below, following Table S-31.

Table S-22: Cumulative Construction Noise at Boone Avenue & E. 172nd Street, Air and Noise Cordons 4 – 12.1

		Noise Levels @ Residential Area 1 (Corner of Boone Avenue and E. 172nd Street) During Each Cordon													
Noise Source		**4**	**5**	**6**	**7**	**8**	**8.1**	**8.2**	**9**	**10**	**11**	**11.1**	**12**	**12.1**	**Total**
1G	Distance	65	65	65											
	Building IL	0	0	0											
	Equipment (dBA)	**59.8**	**59.8**	**59.8**											
2S	Distance		225	225	225	225	225	225	225	115	115	115	115	115	
	Building IL		0	0	0	0	0	0	0	0	0	0	0	0	
	Equipment (dBA)		**71.0**	**71.9**	**70.8**	**70.8**	**70.8**	**70.8**	**70.8**	**54.8**	**54.8**	**54.8**	**54.8**	**54.8**	
3A	Distance	540	540	635	635	635	635	635	635	635					
	Building IL	10	10	10	10	10	10	10	10	10					
	Equipment (dBA)	**53.4**	**54.3**	**30.0**	**30.0**	**30.0**	**30.0**	**30.0**	**30.0**	**30.0**					
3D	Distance		250	250	195	195	195	195	195	195					
	Building IL		10	10	10	10	10	10	10	10					
	Equipment (dBA)		**61.0**	**59.8**	**40.2**	**40.2**	**40.2**	**40.2**	**40.2**	**40.2**					
4A	Distance			750	750	750	750	750	750	750					
	Building IL			10	10	10	10	10	10	10					
	Equipment (dBA)			**51.5**	**50.3**	**28.5**	**28.5**	**28.5**	**28.5**	**28.5**					
5E	Distance				755	755	755	755	755	755	755	755			
	Building IL				10	10	10	10	10	10	10	10			
	Equipment (dBA)				**51.4**	**50.2**	**28.5**	**28.5**	**28.5**	**28.5**	**28.5**	**28.5**			
4B	Distance									900	900	900	900	900	
	Building IL									10	10	10	10	10	
	Equipment (dBA)									**49.9**	**48.7**	**26.9**	**26.9**	**26.9**	
5C	Distance										1025	1025	1025	1025	
	Building IL										10	10	10	10	
	Equipment (dBA)										**47.8**	**47.6**	**47.6**	**25.8**	
Equipment subtotal		60.7	71.8	72.5	70.8	70.8	70.8	70.8	70.8	56.2	56.4	55.6	55.6	54.8	
Existing noise @ T5		69.3	69.3	69.3	69.3	69.3	69.3	69.3	69.3	69.3	69.3	69.3	69.3	69.3	
Total noise		69.9	73.7	74.2	73.2	73.1	73.1	73.1	73.1	69.5	69.5	69.5	69.5	69.5	
Increase		0.6	4.4	4.9	3.9	3.8	3.8	3.8	3.8	0.2	0.2	0.2	0.2	0.2	
# Weeks > 3 dBA			9	9	3	8	6	6	12						53
Duration of Cordon		10	9	9	3	8	6	6	12	12	17	6	2	4	104

Source: Sandstone Environmental Associates, Inc.

Table S-23: Cumulative Construction Noise at Southern Longfellow Ave., E. 172nd to E. 173rd Streets,

		Noise Levels at Residential Area 2 (Southern half of Longfellow Ave., E. 172nd – E. 173rd Sts) During Each Cordon													
	Noise Source	**4**	**5**	**6**	**7**	**8**	**8.1**	**8.2**	**9**	**10**	**11**	**11.1**	**12**	**12.1**	**Total**
1G	Distance	180	180	180											
	Building IL	0	0	0											
	Equipment (dBA)	**50.9**	**50.9**	**50.9**											
2S	Distance		230	230	230	230	230	230	230	230	230	230	230	230	
	Building IL		10	10	10	10	10	10	10	10	10	10	10	10	
	Equipment (dBA)		**60.8**	**61.7**	**60.6**	**60.6**	**60.6**	**60.6**	**60.6**	**38.8**	**38.8**	**38.8**	**38.8**	**38.8**	
3A	Distance	185	185	185	290	290	290	290	290	290					
	Building IL	10	10	10	10	10	10	10	10	10					
	Equipment (dBA)	**62.7**	**63.6**	**40.7**	**36.8**	**36.8**	**36.8**	**36.8**	**36.8**	**36.8**					
3D	Distance		60	60	95	95	95	95	95	95					
	Building IL		0	0	10	10	10	10	10	10					
	Equipment (dBA)		**83.4**	**82.2**	**46.5**	**46.5**	**46.5**	**46.5**	**46.5**	**46.5**					
4A	Distance			425	425	425	425	425	425	425					
	Building IL			10	10	10	10	10	10	10					
	Equipment (dBA)			**56.4**	**55.2**	**33.5**	**33.5**	**33.5**	**33.5**	**33.5**					
5E	Distance				385	385	385	385	385	385	385	385			
	Building IL				10	10	10	10	10	10	10	10			
	Equipment (dBA)				**57.3**	**56.1**	**34.3**	**34.3**	**34.3**	**34.3**	**34.3**	**34.3**			
4B	Distance									580	580	580	580	580	
	Building IL									10	10	10	10	10	
	Equipment (dBA)									**53.7**	**52.5**	**30.8**	**30.8**	**30.8**	
5C	Distance										680	680	680	680	
	Building IL										10	10	10	10	
	Equipment (dBA)										**51.4**	**51.1**	**51.1**	**29.4**	
Equipment subtotal		62.9	83.5	82.3	63.1	62.0	60.8	60.8	60.8	54.7	55.1	51.5	51.4	39.8	
Existing noise @ C3		70.2	70.2	70.2	70.2	70.2	70.2	70.2	70.2	70.2	70.2	70.2	70.2	70.2	
Total noise		70.9	83.7	82.5	71.0	70.8	70.7	70.7	70.7	70.3	70.3	70.3	70.3	70.2	
Increase		0.7	13.5	12.3	0.8	0.6	0.5	0.5	0.5	0.1	0.1	0.1	0.1	0.0	
Duration (# wks > 3 dBA)			9	9											18
Duration of Cordon		10	9	9	3	8	6	6	12	12	17	6	2	4	104

Source: Sandstone Environmental Associates, Inc.

Table S-24: Cumulative Construction Noise at, Northern Longfellow Ave., E. 172nd to E. 173rd Streets,

		Noise Levels at Residential Area 3 (Northern half of Longfellow Avenue, E. 172nd – E. 173rd Streets) During Each Cordon													
	Noise Source	**4**	**5**	**6**	**7**	**8**	**8.1**	**8.2**	**9**	**10**	**11**	**11.1**	**12**	**12.1**	**Total**
1G	Distance	400	400	400											
	Building IL	10	10	10											
	Equipment (dBA)	**34.0**	**34.0**	**34.0**											
2S	Distance		280	280	280	280	280	280	280	280	280	280	280	280	
	Building IL		10	10	10	10	10	10	10	10	10	10	10	10	
	Equipment (dBA)		**59.1**	**60.0**	**58.9**	**58.9**	**58.9**	**58.9**	**58.9**	**37.1**	**37.1**	**37.1**	**37.1**	**37.1**	
3A	Distance	60	60	60	80	80	80	80	80	80					
	Building IL	0	0	0	10	10	10	10	10	10					
	Equipment (dBA)	**82.4**	**83.4**	**60.5**	**48.0**	**48.0**	**48.0**	**48.0**	**48.0**	**48.0**					
3D	Distance		125	125	125	195	195	195	195	195					
	Building IL		10	10	10	10	10	10	10	10					
	Equipment (dBA)		**67.0**	**65.9**	**44.1**	**40.2**	**40.2**	**40.2**	**40.2**	**40.2**					
4A	Distance			210	210	210	210	210	210	210					
	Building IL			0	0	0	0	0	0	0					
	Equipment (dBA)			**72.5**	**71.4**	**49.6**	**49.6**	**49.6**	**49.6**	**49.6**					
5E	Distance				110	110	110	110	110	110	110	110			
	Building IL				0	0	0	0	0	0	0	0			
	Equipment (dBA)				**78.2**	**77.0**	**55.2**	**55.2**	**55.2**	**55.2**	**55.2**	**55.2**			
4B	Distance									325	325	325	325	325	
	Building IL									10	10	10	10	10	
	Equipment (dBA)									**58.7**	**57.6**	**35.8**	**35.8**	**35.8**	
5C	Distance										385	385	385	385	
	Building IL										10	10	10	10	
	Equipment (dBA)										**56.3**	**56.1**	**56.1**	**34.3**	
Equipment subtotal		82.4	83.5	73.8	79.0	77.0	61.0	61.0	61.0	61.0	61.2	58.7	56.2	40.6	
Existing noise @ C3		70.2	70.2	70.2	70.2	70.2	70.2	70.2	70.2	70.2	70.2	70.2	70.2	70.2	
Total noise		82.7	83.7	75.4	79.6	77.9	70.7	70.7	70.7	70.7	70.7	70.5	70.4	70.2	
Increase		12.5	13.5	5.2	9.4	7.7	0.5	0.5	0.5	0.5	0.5	0.3	0.2	0.0	
Duration (# wks > 3dBA)		10	9	9	3	8									39
Duration of Cordon		10	9	9	3	8	6	6	12	12	17	6	2	4	104

Source: Sandstone Environmental Associates, Inc.

Table S-25: Cumulative Construction Noise at Southern Longfellow Ave., E. 173rd to E. 174th Streets, Air and Noise Cordons 4 – 12.1

		Noise Levels at Residential Area 4 (Southern half of Longfellow Avenue, E. 173rd – E. 174th Streets) During Each Cordon													
	Noise Source	**4**	**5**	**6**	**7**	**8**	**8.1**	**8.2**	**9**	**10**	**11**	**11.1**	**12**	**12.1**	**Total**
1G	Distance	755	755	755											
	Building IL	10	10	10											
	Equipment (dBA)	**28.5**	**28.5**	**28.5**											
2S	Distance		575	575	575	575	575	575	575	575	575	575	575	575	
	Building IL		10	10	10	10	10	10	10	10	10	10	10	10	
	Equipment (dBA)		**52.8**	**53.8**	**52.6**	**52.6**	**52.6**	**52.6**	**52.6**	**30.8**	**30.8**	**30.8**	**30.8**	**30.8**	
3A	Distance	60	60	60	80	80	80	80	80	80					
	Building IL	0	0	0	10	10	10	10	10	10					
	Equipment (dBA)	**82.4**	**83.4**	**60.5**	**48.0**	**48.0**	**48.0**	**48.0**	**48.0**	**48.0**					
3D	Distance		190	190	290	290	290	290	290	290					
	Building IL		10	10	10	10	10	10	10	10					
	Equipment (dBA)		**63.4**	**62.2**	**36.8**	**36.8**	**36.8**	**36.8**	**36.8**	**36.8**					
4A	Distance			200	200	200	200	200	200	200					
	Building IL			10	0	0	10	10	10	10					
	Equipment (dBA)			**63.0**	**71.8**	**50.0**	**40.0**	**40.0**	**40.0**	**40.0**					
5E	Distance				55	55	55	55	55	55	55	55			
	Building IL				0	0	0	10	10	10	10	10			
	Equipment (dBA)				**84.2**	**83.0**	**61.2**	**51.2**	**51.2**	**51.2**	**51.2**	**51.2**			
4B	Distance									220	220	220	220	220	
	Building IL									10	10	10	10	10	
	Equipment (dBA)									**62.1**	**60.9**	**39.2**	**39.2**	**39.2**	
5C	Distance										50	50	50	50	
	Building IL										0	0	0	10	
	Equipment (dBA)										**84.0**	**83.8**	**83.8**	**52.0**	
Equipment subtotal		82.4	83.5	67.0	84.4	83.0	62.0	55.9	55.9	62.7	84.1	83.8	83.8	52.3	
Existing noise @ C2		65.2	65.2	65.2	65.2	65.2	65.2	65.2	65.2	65.2	65.2	65.2	65.2	65.2	
Total noise		82.5	83.5	69.2	84.5	83.1	66.9	65.7	65.7	67.1	84.1	83.9	83.9	65.4	
Increase		17.3	18.3	4.0	19.3	17.9	1.7	0.5	0.5	1.9	18.9	18.7	18.7	0.2	
Duration (# wks > 3dBA)		10	9	9	3	8					17	6	2		64
Duration of Cordon		10	9	9	3	8	6	6	12	12	17	6	2	4	104

Source: Sandstone Environmental Associates, Inc.

Table S-26: Cumulative Construction Noise at E. 173rd Street, Boone Ave – West Farms Road, Air and Noise Cordons 4 – 12.1

		Noise Levels at Residential Area 5 (E. 173rd Street, Boone Avenue - West Farms Road) During Each Cordon													
	Noise Source	**4**	**5**	**6**	**7**	**8**	**8.1**	**8.2**	**9**	**10**	**11**	**11.1**	**12**	**12.1**	**Total**
1G	Distance	725	725												
	Building IL	0	0												
	Equipment (dBA)	**38.8**	**38.8**												
2S	Distance		530								400	400	400	400	
	Building IL		10								0	0	0	0	
	Equipment (dBA)		**53.5**								**44.0**	**44.0**	**44.0**	**44.0**	
3A	Distance	250	250												
	Building IL	0	0												
	Equipment (dBA)	**70.1**	**71.0**												
3D	Distance		500												
	Building IL		0												
	Equipment (dBA)		**65.0**												
4A	Distance														
	Building IL														
	Equipment (dBA)														
5E	Distance										65	65			
	Building IL										0	0			
	Equipment (dBA)										**59.8**	**59.8**			
4B	Distance										200	200	200	200	
	Building IL										10	10	10	10	
	Equipment (dBA)										**61.8**	**40.0**	**40.0**	**40.0**	
5C	Distance										310	310	310	310	
	Building IL										10	10	10	10	
	Equipment (dBA)										**58.2**	**58.0**	**58.0**	**36.2**	
Equipment subtotal		70.1	72.1								65.0	62.1	58.2	45.9	
Existing noise @ C16		69.3	69.3								69.3	69.3	69.3	69.3	
Total noise		72.7	73.9								70.7	70.1	69.6	69.3	
Increase		3.4	4.6								1.4	0.8	0.3	0.0	
Duration (# wks > 3dBA)		10	9												19
Duration of Cordon		10	9	9	3	8	6	6	12	12	17	6	2	4	104

Source: Sandstone Environmental Associates, Inc.

Table S-27: Cumulative Construction Noise at Parcel 2S, Air and Noise Cordons 4 – 12.1

		Noise Levels at Parcel 2S (Southern half of Boone Avenue, E. 172nd- E. 173rd Streets) During Cordons 14 - 21											
	Noise Source	**14**	**15**	**16**	**17**	**17.1**	**18**	**19**	**20**	**20.1**	**20.2**	**21**	**Total**
2N	Distance	150	150	150	150	150	150	150	150	285	285	285	
	Building IL	0	0	0	0	0	0	0	0	10	10	10	
	Equipment (dBA)	**74.5**	**74.5**	**74.3**	**74.3**	**74.3**	**74.3**	**74.3**	**74.3**	**36.9**	**36.9**	**36.9**	
3E	Distance	95	95	95	95	95	45	45					
	Building IL	0	0	0	0	0	10	10					
	Equipment (dBA)	**79.4**	**78.3**	**56.5**	**56.5**	**56.5**	**53.0**	**53.0**					
4B	Distance	435	435	435	435								
	Building IL	10	10	10	10								
	Equipment (dBA)	**33.3**	**33.3**	**33.3**	**33.3**								
5C	Distance	560	560	560	560	560							
	Building IL	10	10	10	10	10							
	Equipment (dBA)	**31.1**	**31.1**	**31.1**	**31.1**	**31.1**							
5D	Distance		500	500	500	500	435	435	435				
	Building IL		10	10	10	10	0	0	0				
	Equipment (dBA)		**55.0**	**54.5**	**53.8**	**32.0**	**43.3**	**43.3**	**43.3**				
5B	Distance			805	805	805	720	720	720	720			
	Building IL			10	10	10	10	10	10	10			
	Equipment (dBA)			**50.9**	**49.7**	**50.3**	**28.9**	**28.9**	**28.9**	**28.9**			
4C	Distance						760	760	760	760	735	735	
	Building IL						10	10	10	10	10	10	
	Equipment (dBA)						**50.4**	**51.4**	**50.8**	**50.2**	**28.7**	**28.7**	
6A	Distance						1010	1010	1010	995			
	Building IL						0	0	0	0			
	Equipment (dBA)						**57.9**	**58.9**	**57.7**	**36.1**			
Equipment subtotal		80.6	79.8	74.4	74.4	74.4	74.5	74.5	74.4	50.6	37.5	37.5	
Existing AM noise @ C3		70.2	70.2	70.2	70.2	70.2	70.2	70.2	70.2	70.2	70.2	70.2	
Total noise		81.0	80.3	75.8	75.8	75.8	75.8	75.9	75.8	70.2	70.2	70.2	
Increase		10.8	10.1	5.6	5.6	5.6	5.6	5.7	5.6	0.0	0.0	0.0	
Duration (# wks > 3dBA)		7	6	4	8	21	9	10	5				70
Duration of Cordon		7	6	4	8	21	9	10	5	8	16	9	103

Source: Sandstone Environmental Associates, Inc.

Table S-28: Cumulative Construction Noise at Longfellow Avenue, E. 173 – E. 174 Streets, Air and Noise Cordons 14 – 21

		Noise Levels at Residential Area 4 (Southern half of Longfellow Avenue, E. 173rd - E. 174th Streets) During Cordons 14 - 21											
Noise Source		**14**	**15**	**16**	**17**	**17.1**	**18**	**19**	**20**	**20.1**	**20.2**	**21**	**Total**
2N	Distance	335	335	335	335	335	335	335	335	190	190	190	
	Building IL	10	10	10	10	10	10	10	10	10	10	10	
	Equipment (dBA)	**57.5**	**57.5**	**57.3**	**57.3**	**57.3**	**57.3**	**57.3**	**57.3**	**40.4**	**40.4**	**40.4**	
3E	Distance	640	640	640	640	640	660	660					
	Building IL	10	10	10	10	10	10	10					
	Equipment (dBA)	**52.9**	**51.7**	**29.9**	**29.9**	**29.9**	**29.6**	**29.6**					
4B	Distance	220	220	220	220								
	Building IL	10	10	10	10								
	Equipment (dBA)	**39.2**	**39.2**	**39.2**	**39.2**								
5C	Distance	50	50	50	50	50							
	Building IL	10	10	10	10	10							
	Equipment (dBA)	**52.0**	**52.0**	**52.0**	**52.0**	**52.0**							
5D	Distance		50	50	50	50	100	100	100				
	Building IL		0	0	0	0	10	10	10				
	Equipment (dBA)		**85.0**	**84.5**	**83.8**	**62.0**	**46.0**	**46.0**	**46.0**				
5B	Distance			145	145	145	140	140	140	140			
	Building IL			10	10	10	10	10	10	10			
	Equipment (dBA)			**65.8**	**64.6**	**65.2**	**43.1**	**43.1**	**43.1**	**43.1**			
4C	Distance						310	310	310	310	195	195	
	Building IL						10	10	10	10	10	10	
	Equipment (dBA)						**58.2**	**59.2**	**58.6**	**58.0**	**40.2**	**40.2**	
6A	Distance						430	430	430	405			
	Building IL						10	10	10	10			
	Equipment (dBA)						**55.3**	**56.3**	**55.1**	**33.9**			
Equipment subtotal		59.7	85.0	84.6	83.9	67.5	62.0	62.7	62.2	58.2	43.3	43.3	
Existing AM noise @ C2		65.2	65.2	65.2	65.2	65.2	65.2	65.2	65.2	65.2	65.2	65.2	
Total noise		66.3	85.1	84.6	84.0	69.5	66.9	67.1	67.0	66.0	65.2	65.2	
Increase		1.1	19.9	19.4	18.8	4.3	1.7	1.9	1.8	0.8	0.0	0.0	
Duration (# wks > 3dBA)			6	4	8	21							39
Duration of Cordon	10 9 9 3 8		6	6	12	12	17	6	2	4	104		

Source: Sandstone Environmental Associates, Inc.

Table S-29: Cumulative Construction Noise at Parcel 3A, Air and Noise Cordons 14 - 21

		Noise Levels at Parcel 3A (Boone Ave, E. 172nd – E. 173rd Streets) During Cordons 14 - 21											Total
Noise Source		**14**	**15**	**16**	**17**	**17.1**	**18**	**19**	**20**	**20.1**	**20.2**	**21**	
2N	Distance	150	150	150	150	150	150	150	150	65	65	65	
	Building IL	0	0	0	0	0	0	0	0	0	0	0	
	Equipment (dBA)	**74.5**	**74.5**	**74.3**	**74.3**	**74.3**	**74.3**	**74.3**	**74.3**	**59.8**	**59.8**	**59.8**	
3E	Distance	355	355	355	355	355	390	390					
	Building IL	10	10	10	10	10	10	10					
	Equipment (dBA)	**58.0**	**56.8**	**35.0**	**35.0**	**35.0**	**34.2**	**34.2**					
4B	Distance	200	200	200	200								
	Building IL	10	10	10	10								
	Equipment (dBA)	**40.0**	**40.0**	**40.0**	**40.0**								
5C	Distance	295	295	295	295	295							
	Building IL	10	10	10	10	10							
	Equipment (dBA)	**36.6**	**36.6**	**36.6**	**36.6**	**36.6**							
5D	Distance		205	205	205	205	150	150	150				
	Building IL		10	10	10	10	10	10	10				
	Equipment (dBA)		**62.7**	**62.2**	**61.6**	**39.8**	**42.5**	**42.5**	**42.5**				
5B	Distance			500	500	500	465	465	465	465			
	Building IL			10	10	10	10	10	10	10			
	Equipment (dBA)			**55.0**	**53.8**	**54.5**	**32.7**	**32.7**	**32.7**	**32.7**			
4C	Distance						525	525	525	525	475	475	
	Building IL						10	10	10	10	10	10	
	Equipment (dBA)						**53.6**	**54.6**	**54.1**	**53.4**	**32.5**	**32.5**	
6A	Distance						760	760	760	750			
	Building IL						10	10	10	10			
	Equipment (dBA)						**50.4**	**51.4**	**50.2**	**28.5**			
Equipment subtotal		74.6	74.8	74.6	74.5	74.3	74.4	74.4	74.4	60.7	59.8	59.8	
Existing noise @ C3		70.2	70.2	70.2	70.2	70.2	70.2	70.2	70.2	70.2	70.2	70.2	
Total noise		75.9	76.1	75.9	75.9	75.7	75.8	75.8	75.8	70.7	70.6	70.6	
Increase		5.7	5.9	5.7	5.7	5.5	5.6	5.6	5.6	0.5	0.4	0.4	
Duration (# wks > 3dBA)		7	6	4	8	21	9	10	5				70
Duration of Cordon		7	6	4	8	21	9	10	5	8	16	9	103

Source: Sandstone Environmental Associates, Inc.

Table S-30: Cumulative Construction Noise at Parcel 5E, Air and Noise Cordons 14 - 21

		Noise Levels at Parcel 5E (Northwest Corner of Boone Avenue and E. 173rd Street) During Each Cordon											
	Noise Source	**14**	**15**	**16**	**17**	**17.1**	**18**	**19**	**20**	**20.1**	**20.2**	**21**	**Total**
2N	Distance	260	260	260	260	260	260	260	260	90	90	90	
	Building IL	0	0	0	0	0	0	0	0	0	0	0	
	Equipment (dBA)	**69.7**	**69.7**	**69.5**	**69.5**	**69.5**	**69.5**	**69.5**	**69.5**	**56.9**	**56.9**	**56.9**	
3E	Distance	615	615	615	615	615	640	640					
	Building IL	10	10	10	10	10	10	10					
	Equipment (dBA)	**53.2**	**52.0**	**30.2**	**30.2**	**30.2**	**29.9**	**29.9**					
4B	Distance	100	100	100	100								
	Building IL	0	0	0	0								
	Equipment (dBA)	**56.0**	**56.0**	**56.0**	**56.0**								
5C	Distance	225	225	225	225	225							
	Building IL	0	0	0	0	0							
	Equipment (dBA)	**49.0**	**49.0**	**49.0**	**49.0**	**49.0**							
5D	Distance		70	70	70	70	15	15	15				
	Building IL		0	0	0	0	0	0	0				
	Equipment (dBA)		**82.1**	**81.6**	**80.9**	**59.1**	**72.5**	**72.5**	**72.5**				
5B	Distance			370	370	370	325	325	325	325			
	Building IL			10	10	10	10	10	10	10			
	Equipment (dBA)			**57.6**	**56.4**	**57.1**	**35.8**	**35.8**	**35.8**	**35.8**			
4C	Distance						415	415	415	415	345	345	
	Building IL						10	10	10	10	10	10	
	Equipment (dBA)						**55.6**	**56.6**	**56.1**	**55.5**	**35.3**	**35.3**	
6A	Distance						630	630	630	625			
	Building IL						10	10	0	0			
	Equipment (dBA)						**52.0**	**53.0**	**61.8**	**40.1**			
Equipment subtotal		70.0	82.3	81.9	81.3	70.1	74.4	74.4	74.6	59.3	57.0	57.0	
Existing noise @ T3		68.9	68.9	68.9	68.9	68.9	68.9	68.9	68.9	68.9	68.9	68.9	
Total noise		72.5	82.5	82.1	81.5	72.6	75.4	75.5	75.6	69.4	69.2	69.2	
Increase		3.6	13.6	13.2	12.6	3.7	6.5	6.6	6.7	0.5	0.3	0.3	
Duration (# wks > 3dBA)		7	6	4	8	21	9	10	5				70
Duration of Cordon		7	6	4	8	21	9	10	5	8	16	9	103

Source: Sandstone Environmental Associates, Inc.

Table S-31: Cumulative Construction Noise at Parcel 4A, Air and Noise Cordons 14 - 21

		Noise Levels at Building 4A (Northeast Corner of Boone Avenue and E. 173rd Street) During Each Cordon											Total
	Noise Source	**14**	**15**	**16**	**17**	**17.1**	**18**	**19**	**20**	**20.1**	**20.2**	**21**	
2N	Distance	210	210	210	210	210	210	210	210	65	65	65	
	Building IL	0	0	0	0	0	0	0	0	0	0	0	
	Equipment (dBA)	**71.6**	**71.6**	**71.4**	**71.4**	**71.4**	**71.4**	**71.4**	**71.4**	**59.8**	**59.8**	**59.8**	
3E	Distance	630	630	630	630	630	650	650					
	Building IL	10	10	10	10	10	10	10					
	Equipment (dBA)	**53.0**	**51.8**	**30.0**	**30.0**	**30.0**	**29.8**	**29.8**					
4B	Distance	20	20	20	20								
	Building IL	0	0	0	0								
	Equipment (dBA)	**70.0**	**70.0**	**70.0**	**70.0**								
5C	Distance	140	140	140	140	140							
	Building IL	0	0	0	0	0							
	Equipment (dBA)	**53.1**	**53.1**	**53.1**	**53.1**	**53.1**							
5D	Distance		125	125	125	125	70	70	70				
	Building IL		0	0	0	0	0	0	0				
	Equipment (dBA)		**77.0**	**76.5**	**75.9**	**54.1**	**59.1**	**59.1**	**59.1**				
5B	Distance			355	355	355	300	300	300	300			
	Building IL			10	10	10	10	10	10	10			
	Equipment (dBA)			**58.0**	**56.8**	**57.5**	**36.5**	**36.5**	**36.5**	**36.5**			
4C	Distance						335	335	335	335	285	285	
	Building IL						10	10	10	10	10	10	
	Equipment (dBA)						**57.5**	**58.5**	**58.0**	**57.3**	**36.9**	**36.9**	
6A	Distance						858	858	858	580			
	Building IL						10	10	10	10			
	Equipment (dBA)						**49.3**	**50.3**	**49.1**	**30.8**			
Equipment subtotal		73.9	78.8	78.4	78.0	71.7	71.8	71.9	71.8	61.7	59.8	59.8	
Existing noise @ T3		68.9	68.9	68.9	68.9	68.9	68.9	68.9	68.9	68.9	68.9	68.9	
Total noise		75.1	79.2	78.9	78.5	73.5	73.6	73.6	73.6	69.7	69.4	69.4	
Increase		6.2	10.3	10.0	9.6	4.6	4.7	4.7	4.7	0.8	0.5	0.5	
Duration (# wks > 3dBA)		7	6	4	8	21	9	10	5				70
Duration of Cordon		7	6	4	8	21	9	10	5	8	16	9	103

Source: Sandstone Environmental Associates, Inc.

The following section (through the presentation of Table S-33) which discusses the detailed noise analysis undertaken between the Draft and Final EIS is new to this chapter. As is discussed below, the detailed noise analysis indicated that there would be a significant construction noise impact at Lot 4 on Block 3010 (a lot fronting on Longfellow Avenue between East 173rd and 174th Streets).

Detailed Construction Noise Analysis

The potential high noise levels on the Longfellow Avenue between E. 173rd and E. 174th Street are not due to construction activities on the applicant's sites. Rather, they are due to construction activities at four adjacent sites not controlled by the applicant. During construction Cordons 4 and 5, Parcel 3A is the cause of cumulative noise levels with increments of more than 18 dBA. Parcel 5E is the cause of cumulative noise levels with increments of more than 17 dBA during Cordons 7 and 8. During Cordons 11 through 12, Parcel 5C is the cause of cumulative noise levels with increments of more than 18 dBA. During construction Cordons 14 through 16, Parcel 5D is the source of cumulative noise levels with increments of more than 19 dBA. Projected noise levels from these specific sources are at least 10 dBA higher than projected noise from other nearby construction sites. Therefore, they can be considered the sole cause of noise levels exceeding an increment of 15 dBA or an L_{eq} of 85 dBA. The potential impacts of Parcel 2N on Parcel 2S following its completion and occupancy were also included in the analysis.

Sensitive receptors. The sensitive receptors for the detailed RCNM analysis are residential area 4 (southern half of Longfellow Avenue between E. 173rd and 174th 'Streets). Block 3010, Lots 1, 2, 4, 12, and 17 are the residential sites on the affected lower half of Longfellow Avenue. Lots 1 and 2 each have a 2.5-story, two-family residential building. Lots 4, 12, and 17 have 6-story apartment buildings. Parcel 2S would have a 15-story residential building.

Cordons. For the affected residences on Longfellow Avenue, the cordons of interest are:

- 4 and 5 due to Parcel 3A. Of these, Cordon 5 is the noisiest.
- 7 and 8 due to Parcel 5E. Of these, Cordon 8 is the noisiest.
- 11, 11.1, and 12 due to Parcel 5C. Of these, Cordon 11 is the noisiest.
- 15, 16, and 17 due to Parcel 5D. Of these, Cordon 15 is the noisiest.

As mentioned previously, projected noise levels from these sources during their construction periods are at least 10 dBA higher than projected noise from other construction sites. This is because the other construction sites are either farther from the receptors, shielded by other buildings, or in a later, quieter stage of construction at that time. Therefore, the noise contributions from these other construction sites would be negligible, and they were not included in the RCNM analysis.

Table S-32 shows the analysis scenarios. Parcel 3A would be in the Excavation stage during Cordon 5. It would have a direct line of sight to the rear windows of the two-family homes on Lots 1 and 2 as well as the rear windows on the upper floors of the apartment building on Lot 4 of Block 3010 (Area 4). Parcel 5E would be in the Building Superstructure stage during Cordon 8. It would affect the same homes as Parcel 3A but would be directly adjacent to Lots 1, 2, and 4 in Area 4.[2]

[2] The residential structure on Parcel 3A would not be completed until Parcel 5E is in the much quieter Building Interior stage. Thus, Parcel 3A is not a potential receptor site for this analysis.

Table S-32: Modeled Sources and Receivers

Construction Cordon	Noise Source	Noise Source Location	Receivers
5	Parcel 3A	SW corner, E. 173rd St. and Boone Ave. (Block 3009, Lot 25)	Block 3010, Lots 1, 2, and 4
8	Parcel 5E	NW corner, E. 173rd St. and Boone Ave. (Block 3010, Lot 46)	Block 3010, Lots 1, 2, and 4
11	Parcel 5C	Midblock, Boone Ave. between E. 173rd and E. 174th Sts. (Block 3010, Lot 33)	Block 3010, Lots 4, 12, and 17
14	Parcel 2N	SE corner, E. 173rd St. and Boone Ave. (Block 3014, Lots 15 and 45)	Block 3014, Parcel 2S
15	Parcel 5D	Midblock, Boone Ave. between E. 173rd and E. 174th Sts. (Block 3010, Lot 40)	Block 3010, Lots 2, 4, and 12

Source: Sandstone Environmental Associates, Inc.

Parcel 5C would be in the demolition stage during Cordon 11. It is directly adjacent to Lots 4, 12, and 17 and would have a direct line of sight to the rear windows of the apartment buildings on them. No other lots would potentially have a direct line of sight to diesel-powered equipment located on Parcel 5C.

Parcel 2N would be in the Demolition stage during Cordon 14. It would be adjacent to the completed residential building on Parcel 2S, although the two buildings would be separated by a 60-foot wide mid-block open area.

Parcel 5D is between parcels 5E and 5C. It is directly adjacent to Lots 2, 4, and 12 on Block 3010 and would have direct lines of sight to the rear windows of 2-family home on Lot 2 and the apartment buildings on Lots 4 and 12. Parcel 5D is also adjacent to Parcel 5E and would had direct, however, no windows would be expected to located along the side lot line separating Parcel 5D from 5E.

RCNM Model. Construction noise levels were modeled with the FHWA's Roadway Construction Noise Model (RCNM). The RCNM is a national model based on the noise calculations and extensive construction noise data compiled during the Central Artery/Tunnel project (CA/T) in Boston, MA. The basis for the national model is a spreadsheet tool developed in support of the CA/T project. The CA/T predictions originated from the Environmental Protection Agency (EPA) noise level work and an Empire State Electric Energy Research Corporation Guide which utilizes an "acoustical usage factor" to estimate the fraction of time each piece of construction equipment is operating at full power (i.e. its loudest condition) during a construction operation. RCNM contains a database used to predict construction noise within the model. The noise levels listed within the model represent the A-weighted maximum sound level (L_{max}), measured at a reference distance of 50 feet from the construction equipment. Noise descriptors calculated by the model are the L_{eq}, and the L_{10}, in addition to the L_{max}.

RCNM has been used to predict construction L_{eq} noise levels for a variety of construction noise projects of varying complexity. It allows the user to quickly create multiple construction scenarios and determine the impact of changing construction equipment or varying the effects of shielding due to barriers and other noise mitigation devices. Recommended noise level reductions due to barriers are also included the

RCNM User's Guide. In addition, the user can vary the L_{max} and the usage of the equipment, so the data can be adjusted to match the recommended construction noise data in the NYC *CEQR Technical Manual*.

Modeling Assumptions. The following guidelines were followed in running the RCNM Model:

- All equipment would be properly maintained and muffled in compliance with EPA's noise emission standards. All equipment would be relatively new. This is because equipment for a project of this scope is typically rented, and the rental companies maintain inventories of current makes and models.

- The receptor point would be the nearest window(s) of the affected building, rather than the property line. The distances from the nearest window of each home to the location of a given source would be measured on a survey map.

- As a worst-case assumption, construction equipment would be 30 feet inside the property line of the construction site for Parcels 3A, 5E, 5C, and 5D. The four non-applicant construction sites to be modeled all have lot depths of 100 feet, and the 30-foot distance assumes the equipment would be outside the foundation line.

- Noise sources would be at or within 6 feet of ground level and not on elevated floors on buildings under construction.

- Typical construction fencing around the perimeter of the construction site would provide shielding in the form of a 15-foot-high barrier. As stated previously, construction fences are regulated by the Rules of the City of New York (§§ 28-100 - 28-109) and would have noise attenuation capabilities.

- If a noise barrier or other obstruction just barely breaks the line-of site between the noise source and the receptor, the shielding factor will be 3 dBA (RCNM User's Guide).

For the purposes of this analysis, only a shielding factor of 3 dBA due to a typical construction fence was used.

For RCNM, the distances to specific receptors on specific lots were refined. Only the distances to ground floor receptors were calculated. Typical construction fencing would be limited to a height of 15 feet, which is not high enough to reduce construction noise levels at upper floors. The distances to upper floors may be sufficiently different to cause a reduction in noise levels by 0.3 to 1.5 dBA without any other shielding, but this was not included in the analysis. The modeled noise levels assume an open-window condition at the receptor buildings. If the windows were closed the interior noise levels would be at least 10 to 20 decibels lower, but this was not considered for the analysis.

Results. Table S-33 shows the construction noise results for each of the affected receptors. Baseline noise levels are shown at each sensitive receptor, which represents the levels present at the residences given no construction activity. The RCNM model produces the composite construction noise component given the

combination of equipment being utilized at each site and attenuates the level to the distance where the receptors are located. Finally, both levels are logarithmically summed to obtain the overall increased noise level between the baseline L_{eq} and the constituent construction noise.

Modeled noise levels were substantially similar to the projected noise levels shown in Tables S-25 and S-28, except for Lots 1 and 2 on Block 3010, during Cordon 5. In this case, a more precise measuring of noise from the construction site to the residential resulted in lower cumulative noise levels. Thus the preliminary noise analysis shown in Tables S-25 and S-28 is conservative.

With no construction fencing in place, as shown in Table S-33, construction of Parcel 3A would not cause significant adverse impacts to residences on Longfellow Avenue. The worst case construction period for Parcel A was Cordon 5. Since no significant adverse construction noise impacts occur during this cordon, none are likely to occur during the other construction cordons for this parcel.

No significant adverse impacts would occur to Parcel 2S during construction of Parcel 2N. This is due in part to the distance of over 100 feet between the two buildings. The worst-case construction period for Parcel 2N would be during Cordon 14. Since no significant adverse construction noise impacts occur during this cordon, none are likely to occur during the other construction cordons.

Construction of Parcels 5E, 5C, and 5D are the only ones with the potential to cause significant construction noise impacts due to cumulative noise levels of 85 dBA or more and noise level increments of 15 dBA or more. Lots 1 or 2 because they are two stories high and the construction fence would provide the first and second floors with 3 dBA of attenuation. Therefore, with 3 dBA of typical construction noise fencing in place, no significant adverse impacts would occur to the residential buildings on Lots 1 and 2.

The typical construction fence would not be sufficient to protect Lots 4, 12, and 17. Lot 4 could experience significant impacts during construction of all three parcels, including Parcel 5E, because the construction fence would only reduce noise levels for the first two floors, not floors 3 through 6. Lot 12 could experience significant impacts during construction of Parcels 5C and 5D, and Lot 17 would experience such exposure only during construction of Parcel 5C.

Potential significant impacts from Parcels 5E, 5C and 5D were further evaluated by examining the length of the periods during which no significant impacts would occur. All of the construction cordons were included in this aspect of the analysis. A typical construction fence providing of 3dBA of shielding was assumed.

As shown in Table S-33, Lot 12 would not experience a cumulative noise level of 85 dBA and an increment of more than 15 dBA until construction of Parcel 5C during Cordon 11 (Week 189). Based on Table S-25, these noise levels could also extend into Cordons 11.1 (Week 195) and 12 (Week 197), and would end at Cordon 12.1 (Week 204), which would be a total of 15 weeks. After Week 204, Lot 12 would not have any more exposure to high construction noise levels. This would be a total of 15 weeks of high construction noise levels. Based on the intermittent occurrence of high construction noise levels, and

their separation of a relatively quiet period of 12 weeks or more, no significant adverse impacts would occur for Lot 12.

Like Lot 12, Lot 17 would not experience high construction noise levels until construction of Parcel 5C during Cordon 11 (Week 189). It would end at Cordon 12.1 (Week 204), which would be a total of 15 weeks. This would be followed by 18 quiet weeks during which construction noise increments would range from 0.2 to 1.1 dBA. The next period of high noise levels would occur with construction on Parcel 5B during a 12-week period during Cordons 16 and 17 (Weeks 228 through 240). After Week 240, Lot 17 would not have any more exposure to high construction noise levels. The periods of high noise levels would last from 12 to 15 weeks and would be separated by a period of 18 weeks. Based on the intermittent occurrence of high construction noise levels, and their separation by a quiet period of 12 weeks or more, no significant adverse impacts would occur for Lot 17.

Lot 4 would be subject to the longest and most frequent periods of construction noise levels. It would experience high construction noise levels for 11 weeks from Cordon 7 (Week 137) until the end of Cordon 8 (Week 148). As stated previously, typical construction fencing with 3 dBA of mitigation would not mitigate the noise levels for floors 3 through 6. This first period of high construction noise would be followed by a break of 41 weeks from Cordons 8.1 through Cordon 10 during which the relative increases would range from 0.5 to 1.9 dBA as shown in Table S-25. The next construction period with high noise levels would last from Cordon 10 through Cordon 12, a period of 32 weeks with noise levels similar to the earlier construction period. Then, a quiet period of 18 weeks would ensue during which construction noise increments would range from 0.2 to 1.1 dBA, which would not constitute an impact. High noise levels would occur again from Cordon 15 (Week 222) to the end of Cordon 17 (Week 232), a period of 11 weeks. After Cordon 17, Lot 4 would not have any more exposure to high construction noise levels. The periods of high noise levels would last from 11 to 32 weeks and would be separated by a periods of 18 to 41 weeks. However, because of the repeated nature of the high noise levels at Lot 4, a significant construction noise impact has been determined. Please refer to Chapter 3, Mitigation for a discussion of potential mitigation measures.

Table S-33: RCNM Construction Noise Results

Construction Cordon / Duration	Noise Source	Receiver	Distance (ft.)	Baseline L_{eq} (dBA)	Construction Noise (dBA)	Total Noise (dBA)	dB Inc.	Exceeds 15 dBA?
No Construction Site Shielding								
5 (Week 119) 9 weeks	Parcel 3A	Block 3010, Lot 1	115	65.2	77.2	77.5	12.3	No
		Block 3010, Lot 2	140		75.5	75.9	10.7	No
		Block 3010, Lot 4	175		73.6	74.2	9.0	No
8 (Week 140) 8 weeks	Parcel 5E	Block 3010, Lot 1	65	65.2	81.5	**81.6**	**16.4**	**YES**
		Block 3010, Lot 2	65		81.5	**81.6**	**16.4**	**YES**
		Block 3010, Lot 4	65		81.5	**81.6**	**16.4**	**YES**
11 (Week 189) 17 weeks	Parcel 5C	Block 3010, Lot 4	45	65.2	84.9	84.9	19.7	**YES**
		Block 3010, Lot 12	45		84.9	**84.9**	**19.7**	**YES**
		Block 3010, Lot 17	45		84.9	84.9	19.7	**YES**
14 (Week 215) 7 weeks	Parcel 2N	Block 3010, Lot 14 & 45	100	70.2	78.0	78.7	8.5	No
15 (Week 222) 6 weeks	Parcel 5D	Block 3010, Lot 2	90	65.2	79.9	80.0	14.8	No
		Block 3010, Lot 4	45		85.9	**85.9**	**20.7**	**YES**
		Block 3010, Lot 12	45		85.9	**85.9**	**20.7**	**YES**
Fence w/ 3 dB Shielding								
5 (Week 119) 9 weeks	Parcel 3A	Block 3010, Lot 1	115	65.2	74.2	74.7	9.5	No
		Block 3010, Lot 2	140		72.5	73.2	8.0	No
		Block 3010, Lot 4	175		70.6	71.7	6.5	No
8 (Week 140) 8 weeks	Parcel 5E	Block 3010, Lot 1	65	65.2	78.5	78.7	13.5	No
		Block 3010, Lot 2	65		78.5	78.7	13.5	No
		Block 3010, Lot 4	65		78.5	78.7	13.5	No
11 (Week 189) 17 weeks	Parcel 5C	Block 3010, Lot 4	45	65.2	81.9	**82.0**	**16.8**	**YES**
		Block 3010, Lot 12	45		81.9	**82.0**	**16.8**	**YES**
		Block 3010, Lot 17	45		81.9	**82.0**	**16.8**	**YES**
14 (Week 215) 7 weeks	Parcel 2N	Block 3010, Lot 14 & 45	100	70.2	75.0	76.2	6.0	No
15 (Week 222) 6 weeks	Parcel 5D	Block 3010, Lot 2	90	65.2	76.9	77.2	12.0	No
		Block 3010, Lot 4	45		82.9	**83.0**	**17.8**	**YES**
		Block 3010, Lot 12	45		82.9	**83.0**	**17.8**	**YES**

Source: Sandstone Environmental Associates, Inc.

Preliminary Assessment of other Impact Areas

Land Use and Neighborhood Character

According to the *CEQR Technical Manual*, a construction impact analysis of land use and neighborhood character is typically needed if construction would require continuous use of property for an extended duration, thereby having the potential to affect the nature of the land use and character of the neighborhood. A land use and neighborhood character assessment for construction impacts looks at the construction activities that would occur on the site (or portions of the site) and their duration. The analysis determines whether the type and duration of the activities would affect neighborhood land use patterns or neighborhood character. For example, a single property might be used for staging for several years, resulting in a "land use" that would be industrial in nature. Depending on the nature of existing land uses in the surrounding area, this use of a single piece of property for an extended duration and its compatibility with neighboring properties may be assessed to determine whether it would have a significant adverse impact on the surrounding area.

The proposed rezoning area is already an industrial area, and generally incompatible with the residential uses to the west. The industrial nature of the construction activities would be a substitution for the industrial uses already extant. While construction of the new buildings would cause temporary impacts, particularly related to noise, it is expected that such impacts in any given area would be relatively short term (e.g., less than two years), even under the reasonable worst case construction sequencing, and therefore not create a neighborhood character impact (see the construction air and noise assessment above). Therefore, no significant construction impacts to land use and neighborhood character are expected.

Socioeconomic Conditions

According to the 2010 *CEQR Technical Manual*, construction impacts to socioeconomic conditions are possible if the proposed project would entail construction of a long duration that could affect the access to and therefore viability of a number of businesses, and if the failure of those businesses has the potential to affect neighborhood character. During the construction period, construction activities would be dispersed throughout the proposed rezoning area and would not affect access to particular businesses over an extended duration. No other businesses are near enough to the proposed rezoning area to be affected by construction activities. A key goal of the proposed rezoning is to make the area more compatible with the more residential nature of the upland areas. In fact, it is an objective of the Proposed Action to eliminate this industrial strip, and enhance the area's neighborhood character by replacing the industrial uses with uses more compatible with that of the surrounding area. The businesses now extant within the proposed rezoning area are not unique nor do they form a special economic segment in the City's economy. These businesses would be expected to relocate as development pressures made their operations less viable. Therefore, construction impacts to socioeconomic conditions are not expected.

Community Facilities

According to the 2010 *CEQR Technical Manual*, construction impacts to community facilities are possible if community facility would be directly affected by construction (*e.g.*, if construction would disrupt services provided at the facility or close the facility temporarily, *etc.*). There are three community facility uses (schools) that abut or are within the project area (two at the south end – Fannie Lou Hamer Freedom High School and PS 66 – and one at the north end – PS 214 - of the proposed rezoning area). No other community facilities are located within or adjacent to the proposed rezoning area. It will not be necessary to alter the entrances to these facilities, nor will it be necessary to close them at any time during the construction period. There would be no direct nor indirect construction effects to any community facilities other than those considered separately under the air, noise and traffic preliminary construction analyses discussed above. Hence, no construction impacts would be expected to community facilities in

the area, and a further preliminary assessment is not needed for the disclosure of potential impacts to community facilities.

Open Space

According to the 2010 *CEQR Technical Manual,* construction impacts to open space are possible if the open space is taken out of service for a period of time during the construction process. No open space resources would be disrupted during the construction of the project, nor would access to any publically accessible open space be impeded during construction within the proposed rezoning area. No construction impacts related to open space are expected and a further preliminary assessment is not needed for the disclosure of potential impacts to open space resources.

Historic and Cultural Resources

According to the guidelines in the CEQR Technical Manual, construction impacts may occur on historic and cultural resources if in-ground disturbances or vibrations associated with project construction could undermine the foundation or structural integrity of nearby resources. No impacts to historic resources are expected as a result of approval of the Proposed Action. The Proposed Action would result in potentially significant impacts to archaeological resources on projected development sites not under the control of the applicant and not subject to a restrictive declaration that would ensure the identification of any archaeological resources prior to development. The archaeological resources are a pre- and post-civil war cemetery generally in the vicinity of Boone Avenue and East 172nd Street and former privies (shafts) located north of the Cross Bronx Expressway. These potential impacts are fully discussed under Chapter 2.F., Historical and Cultural Resources, and a preliminary construction assessment is not needed to disclose these potential impacts (see Chapter 2.F.).

Natural Resources

According to the *CEQR Technical Manual*, natural resources may be affected during construction, particularly during such activities as excavation; grading; site clearance or other vegetation removal; cutting; filling; installation of piles, bulkheads or other waterfront structures; dredging; dewatering; or soil compaction from construction vehicles and equipment. A preliminary construction assessment is not required for natural resources unless the construction activities would disturb a site or be located adjacent to a site containing natural resources.

The Bronx River is a natural resource within the vicinity of the proposed rezoning area. However, it is separated by separated by a distance of 300 to 500 feet, and within that separation is the Sheridan Expressway and the West Farms Road right-of-ways. The primary concern during construction would be the possibility of sediments flowing from the construction sites into the river through sheetflow run-off, increasing turbidity and possibly biochemical oxygen demand. However, both of these roadways have their own drainage systems, so sheetflow run-off from the project sites to the river would not occur.

Finally, Section 3309.1 of the New York City Building code requires that provisions be made to control water run-off and erosion during construction and demolition activities, and NYSDEC has published a manual (New York Standards and Specifications for Erosion and Sediment Controls) which is the standard to be followed to comply with the Building Code.

Given the separation of the building sites from the Bronx River, the two intervening stormwater collections systems and the requirement for erosion and sediment control within the building code, no natural resources would be directly impacted by development which could occur as a result of the Proposed Action. Therefore, no significant construction impacts to natural resources are expected. A

further preliminary assessment is not needed for the disclosure of potential impacts to natural resources. (Also see Chapter 2.H. Natural Resources.)

Hazardous Materials

According to the guidelines in the *CEQR Technical Manual*, any impacts from in-ground disturbance that are identified in hazardous materials studies should be identified in this chapter as well. Institutional controls such as (E) designation or restrictive declarations should be disclosed here as well. If the impact identified in hazardous materials studies is fully mitigated or avoided, no further analysis of the effect from construction activities on hazardous materials is needed.

Any potential impact would be avoided by the inclusion of "E" designations for development sites not under the control of the applicant, and by a restrictive declaration for the sites under the control of the applicant. These institutional controls would require soil testing to identify any hazardous materials and, based on the results of such testing, the development of a Construction Health and Safety Plan. The full assessment of hazardous materials is presented in Chapter 2.I.