Chapter 20: Construction

A. INTRODUCTION

The construction analysis in this chapter updates changes to the proposed project and background conditions since the 2008 FGEIS and assesses whether any changed background conditions or differences in elements between the reasonable worst-case development scenario (RWCDS) and the program assessed in the 2008 FGEIS and subsequent technical memoranda would result in significant adverse construction impacts that were not addressed in the 2008 FGEIS or subsequent technical memoranda. This chapter summarizes the RWCDS and an associated conceptual construction scenario for the proposed project and considers the potential for adverse impacts during construction.

Construction activities, although temporary, can include noticeable and disruptive effects. Determination of the significance of construction impacts and need for mitigation is generally based on the duration and magnitude of the impacts. For construction activities of the scale and duration estimated for the proposed project, the 2012 *City Environmental Quality Review (CEQR) Technical Manual* calls for an assessment of construction-related impacts, with a focus on transportation, air quality, and noise, as well as consideration of other technical areas such as historic and cultural resources, hazardous materials, and open space. The assessment focuses on project construction activities within the project site.

The proposed project is expected to result in the development of new residential, retail, entertainment, community facility, office, convention center, school, structured and surface parking, and open space uses on the project site. Over a period of approximately 19 years, construction would occur as described in detail in Chapter 1, "Project Description," on the three distinct portions of the project site—the approximately 61-acre "Willets Point" portion of the project site (the Special Willets Point District); the approximately 30.7-acre "Willets West" portion of the project site (a section of the surface parking field west of CitiField); and the approximately 16.8-acre "Roosevelt Avenue" portions of the project site comprising three CitiField-related surface parking lots (South Lot and Lots B and D) along Roosevelt Avenue south and southwest of CitiField.

The proposed project would redevelop the Willets Point/CitiField area with a mix of uses that is expected to be completed by 2032. The redevelopment would incorporate a development in the Special Willets Point District substantially as anticipated and analyzed in the 2008 FGEIS and subsequent technical memoranda, as well as a major entertainment/retail component and parking adjacent to CitiField. For analysis purposes, a reasonable worst-case conceptual construction phasing and schedule for the development anticipated to occur under the proposed project was developed to illustrate how the proposed project could occur over approximately 19 years. Under the RWCDS conceptual construction phasing and schedule, construction of the proposed project is anticipated to proceed in the following three sequential phases: Phase 1A construction would commence at the start of 2014 and would last for about 4 years 10 months, with Phase 1A being completed before the end of 2018; Phase 1B construction would commence in mid-2022, lasting for about 6 years 1 month, with Phase 1B being competed in mid-2028; finally, it is anticipated that Phase 2 construction activities would begin at the end of 2026 and would last for about 6 years 1 month, with Phase 2 being competed at the end of 2032.

Given that the project's 19 building sites and other proposed area improvements are distributed over the approximately 108.9 acres of the project site, one or more building sites and other portions of the project site would be under construction during each of the three Phases (1A, 1B, and 2) for part or all of approximately 16 years, over the course of the approximately 19 year construction duration anticipated for the full "build out" of the proposed project. As construction activity associated with the proposed project would occur on multiple building sites and other locations within the same geographic area, there is the potential for several construction timelines to overlap.

The reasonable worst-case construction and phasing schedule conservatively accounts for overlapping construction activities and simultaneously operating construction equipment, thus capturing the cumulative nature of construction impacts which would result in the greatest impacts at nearby receptors. The reasonable worst-case conceptual construction phasing and schedule for the proposed project is described in this chapter, followed by the types of activities likely to occur during construction. An assessment of potential impacts of construction activity and the methods that may be employed to avoid or minimize the potential for significant adverse impacts are then presented.

For each of the various technical areas presented below, appropriate construction analysis years were selected to represent reasonable worst-case conditions relevant to that technical area, which can occur at different times for different analyses. For example, the noisiest part of the construction may not be at the same time as the heaviest construction traffic. Therefore, the analysis periods may differ for different analysis areas. Where appropriate, the analysis accounted for the effects of elements of the proposed project that would be completed and operational during the selected construction analysis years.

While the anticipated construction durations have been developed with an experienced New York City construction manager, the discussion is only illustrative as specific means and methods will be chosen at the time of construction. While the Phase 1A and 1B development programs are those being advanced by the developer team (Queens Development Group, LLC [QDG]) selected to undertake this portion of the proposed project, there are no finalized construction programs or designs for the Phase 1A and 1B elements of the proposed project at this time. Furthermore, as the Phase 2 development will be the subject of a future developer solicitation, the Phase 2 development program analyzed in this SEIS generally reflects the development anticipated for this area based on the development program approved in the 2008 FGEIS, as modified in the subsequent technical memoranda. The construction durations have been conservatively chosen to serve as the basis of the analyses in this chapter and are representative of the reasonable worst-case assumptions for determining potential construction period impacts. The conceptual schedule represents a conservative potential timeline for construction, which shows overlapping construction activities and simultaneously operating construction equipment during the three major construction phases, for the proposed project's 19 building sites and other planned project elements (i.e., new open spaces, public park, surface and structured parking, and/or infrastructure improvements) in proximity to one another. Thus, the analysis captures the cumulative nature of construction impacts, which would result in the greatest impacts at nearby receptors.

PRINCIPAL CONCLUSIONS

There would be temporary inconvenience and disruption arising from the construction of the proposed project throughout the Willets Point/CitiField area. As detailed below, construction of the proposed project would result in significant adverse construction impacts related to transportation and historic and cultural resources. Potential mitigation for these significant adverse impacts is discussed in Chapter 21, “Mitigation.”

TRANSPORTATION

The construction of the proposed project, from 2014 to 2032, would generate construction worker and truck traffic. Because of the lengthy duration of these activities, an evaluation of construction sequencing and worker/truck projections was undertaken to assess the potential transportation-related impacts. It is expected that the project construction activities would yield considerably less traffic than that projected for the proposed project and that parking and staging needs could be managed primarily within the District, or next to the stadium (for Lot B construction). However, given the high traffic volume in the existing and No Action conditions, and the inclusion of traffic from the project as it is being built out as well as construction traffic, significant adverse traffic impacts could still occur at some of the study area locations during construction. Where impacts during construction may occur, measures recommended to mitigate impacts associated with the proposed project could be implemented early to aid in alleviating congested traffic conditions. At locations where the proposed project is expected to result in unmitigated significant adverse traffic impacts, these impacts could similarly exist during construction.

Construction worker transit trips would occur outside of peak periods of transit ridership and would be distributed and dispersed to the nearby transit facilities, and would not result in any significant adverse transit impacts. However, the significant adverse transit impacts disclosed for the 2032 With Action condition may also occur during peak construction in 2031. Similar mitigation measures as those identified for the 2032 With Action condition are expected to also address the potential transit impacts during construction. As with the 2028 and 2032 With Action conditions, the projected subway line-haul impact during the weekday AM peak period may remain unmitigated. ~~Additionally, as discussed in more detail in Chapter 14, "Transportation," and Chapter 21, "Mitigation," subway station impacts may remain unmitigated, if mitigation options are found to be infeasible, or if NYCT changes the current game-day operation of the station.~~

Pedestrian trips during peak construction in 2031 would primarily be concentrated during off-peak hours (6 to 7 AM and 3 to 4 PM) and would be distributed among numerous pedestrian facilities in the area. Accordingly, there would also not be a potential for significant adverse pedestrian impacts attributable to the projected construction worker pedestrian trips. However, the significant adverse pedestrian impacts disclosed for the 2032 With Action condition may also occur during peak construction in 2031. Similar mitigation measures as those identified for the 2032 With Action condition are expected to also address the potential pedestrian impacts during construction. At locations where the proposed project is expected to result in unmitigated significant adverse pedestrian impacts, these impacts could similarly exist during construction.

AIR QUALITY

Based on a detailed analysis of construction during Phase 2 and a qualitative evaluation of construction during Phases 1A and 1B, the proposed project would not result in significant adverse impacts with respect to air quality. A detailed analysis of the combined effects of on-site and on-road emissions, determined that annual-average nitrogen dioxide (NO_2), carbon monoxide (CO), and particulate matter with an aerodynamic diameter less than 10 microns (PM_{10}), and particulate matter with an aerodynamic diameter of less than 2.5 microns ($PM_{2.5}$) concentrations would be below their corresponding National Ambient Air Quality Standards (NAAQS) or *de minimis* criteria. Therefore, the proposed projects would not cause or contribute to any significant adverse air quality impacts with respect to these standards. Additional air quality studies may be undertaken between the Draft SEIS and Final SEIS to further refine the construction mobile source analysis for the Phase 2 analysis year, in consultation with DEP.

Dispersion modeling determined that the maximum predicted incremental concentrations of $PM_{2.5}$ (using a worst-case emissions scenario) would exceed the City's applicable 24-hour interim guidance criterion of 2 $\mu g/m^3$ at a few receptor locations on the northeastern façade of parcel A1 during the construction activities at parcel A11 located immediately to the northeast, where the likelihood of prolonged exposure is very low. The maximum predicted incremental concentrations of $PM_{2.5}$ would also exceed at a sidewalk location due to mobile sources on the southeast corner of 34th Avenue and 126th Street. The occurrences of elevated 24-hour average concentrations for $PM_{2.5}$ would be limited in duration, frequency, and magnitude. Therefore, after taking into account the limited duration and extent of these predicted exceedances, and the limited area-wide extent of the 24-hour impacts, it is concluded that no significant adverse air quality impacts for $PM_{2.5}$ are expected from the on-site construction sources.

Because background concentrations are not known and the analysis methodology for mobile and construction sources have not been developed for the new 1-hour NO_2 NAAQS, exceedances of the 1-hour NO_2 standard resulting from construction activities cannot be ruled out. Therefore, measures including diesel equipment reduction, utilization of newer equipment, and source location and idling restriction, would be implemented by the proposed project to minimize NO_x emissions from construction activities.

NOISE AND VIBRATION

Based on a detailed analysis of construction during Phase 2 and a qualitative evaluation of construction during Phases 1A and 1B, construction activities would not be expected to result in significant noise impacts at any nearby sensitive receptor locations. Proposed buildings that would be completed and occupied before construction is completed at other project building sites would also experience exterior noise levels due to construction activities in the low 70s to mid-80s dBA range. The design of all project buildings would include building façades providing not less than 31-43 dBA of attenuation, and alternate means of ventilation (i.e., air conditioners) that do not degrade the acoustical performance of the façade. During the time period when these proposed buildings would be occupied and loud construction activities would be underway at immediately adjacent building sites (approximately two years according to the conceptual construction schedule on which the construction noise analysis is based), interior noise levels would, during some times, exceed 45 dBA $L_{10(1)}$ (the CEQR acceptable interior noise level criteria for residential uses). Such exceedances may be intrusive, but would be only temporary and of limited duration. Consequently, they would not result in any significant impacts.

On-site, construction activities would produce $L_{10(1)}$ noise levels at open space areas up to approximately the mid 70s dBA, which would exceed the levels recommended by CEQR for passive open spaces (55 dBA L_{10}). (Noise levels in these areas exceed CEQR recommended values for existing and No Action conditions.) While this is not desirable, there is no effective practical mitigation[1] that could be implemented to avoid these levels during construction. Noise levels in many parks and open space areas throughout the city, which are located near heavily trafficked roadways and/or near construction sites, experience comparable and sometimes higher noise levels, and consequently such levels would not be considered a significant adverse impact.

OTHER TECHNICAL AREAS

Consistent with the 2008 FGEIS and subsequent technical memoranda, and as described in greater detail below, construction of the proposed project would not be expected to result in any significant adverse impacts to land use, socioeconomic conditions, community facilities, open space, or natural resources.

Consistent with the findings in the 2008 FGEIS, construction activities related to the development that would occur within the Special Willets Point District during Phase 2 of the proposed project would be anticipated to result in the demolition of the former Empire Millwork Corporation Building, which was found by the New York State Office of Parks, Recreation, and Historic Preservation (OPRHP) to be eligible for listing on the State and National Registers of Historic Places (S/NR). Demolition of this structure would be considered a significant adverse effect on this architectural resource.

As described in detail in Chapter 10, "Hazardous Materials," and consistent with the conclusions of the 2008 FGEIS and subsequent technical memoranda, the proposed project would not result in significant adverse impacts related to hazardous materials during construction. To avoid the potential for significant adverse impacts related to hazardous materials, the proposed project would include appropriate health and safety (e.g., dust control and air monitoring) and investigative/remedial (e.g., delineating and excavating contaminated soils and disposing of them off site at an appropriately licensed facility) measures that would precede or govern both demolition and soil disturbance activities. These measures would be conducted in compliance with all applicable laws and regulations and would conform to appropriate engineering practices.

Construction would create major direct benefits resulting from expenditures on labor, materials, and services, and indirect benefits created by expenditures by material suppliers, construction workers, and other employees involved in the direct activity.

B. SUMMARY OF FINDINGS—2008 FGEIS AND SUBSEQUENT TECHNICAL MEMORANDA

The 2008 FGEIS concluded that because the Special Willets Point District is isolated from the surrounding neighborhoods, no significant adverse impacts related to land use, zoning, or public policy; neighborhood character; or community facilities were expected on the project site or study areas from construction of the Willets Point Development Plan. Subsequent technical memoranda also concluded that revisions to the Plan would not have resulted in significant adverse impacts on land use, zoning, or public policy; neighborhood character; or community facilities on the project site or study areas from construction of the Willets Point Development Plan.

The 2008 FGEIS concluded that the Willets Point Development Plan would have required the demolition of the former Empire Millwork Corporation Building, which was determined eligible for listing on the State and National Registers of Historic Places, and thus would have had a

[1] Noise barriers would not be practical because of security concerns.

significant adverse impact on historic resources. The 2008 FGEIS also concluded that the preparation and enforcement of a Health and Safety Plan (HASP) for the Willets Point Development Plan would have been expected to prevent any significant adverse impacts from hazardous materials.

The 2008 FGEIS concluded that the traffic from construction of the Willets Point Development Plan would have been substantially less than traffic generated by the full operation of the Plan at most intersections, with the exception of the intersection of College Point Boulevard at Roosevelt Avenue, 126th Street at Roosevelt Avenue, and 126th Street at ~~24th~~ 34th Avenue. These intersections would have experienced slightly higher traffic volumes due to limited availability of direct highway access to the District, as the new access ramps to/from the Van Wyck Expressway would not yet have been constructed. Impacts at the study locations could have been mitigated with the early implementation of measures discussed in the 2008 FGEIS. However, unmitigatable impacts would have ~~occured~~ occurred at some of the same locations identified as having unmitigatable impacts during operation of the proposed Plan. Similarly, Technical Memorandum #3 concluded that although the traffic volumes associated with the construction peak for the Adjusted Plan would be lower than under the Approved Plan, significant adverse traffic impacts would still have ~~occured~~ occurred and the same types of mitigation would have applied.

The 2008 FGEIS concluded that air pollutant emissions from construction equipment and trucks from the Willets Point Development Plan would have been reduced to the extent practicable by the enforcement of Local Law 77 of 2005, which required all City-sponsored construction to reduce construction-related emissions of diesel particulate matter (DPM) by using the best available technology (BAT) to control emissions, and which applied to the 2008 project, and other additional measures listed below. The construction control measures committed to in the FGEIS addressed both the emissions levels, and the location of sources relative to such receptor locations, so as to ensure that significant impacts on air quality during construction would not have occurred. For the Adjusted Plan, Technical Memorandum #3 concluded that the same measures to control air emissions would have been implemented.

The 2008 FGEIS concluded that the Willets Point Development Plan would not have resulted in any long-term significant adverse noise impacts that would have been expected from construction activities. While increases in noise levels exceeding the CEQR impact criteria for a shorter period of time (less than the two consecutive year CEQR threshold) may be noisy and intrusive, they are not considered to be significant adverse noise impacts. The District is large, and much of it is well-removed from any sensitive receptor. In addition, little night work was expected, and any exceedances of the CEQR criteria at sensitive locations would have ~~occured~~ occurred during the day. For the Adjusted Plan, Technical Memorandum #3 concluded that the same measures to control noise would have been implemented.

Technical Memorandum #4 found that the schedule change with the Updated Plan would not have resulted in any significant adverse construction impacts that were not previously disclosed in the FGEIS or the subsequent technical memoranda. Technical Memorandum #4 assumed a buffer area within the district between the area to be redeveloped and the surrounding areas. This buffer would not be included in the proposed project, and the absence of the buffer would not have the potential to result in any additional significant adverse construction impacts not found in the 2008 FGEIS as described in the analysis below.

C. ANALYSIS APPROACH

The construction analysis presented in this chapter considers the potential impacts of construction activities anticipated to occur throughout the project site as a result of the proposed project. As discussed in Chapter 1, "Project Description," as part of the reasonable worst-case development scenario (RWCDS), this SEIS also analyzes the potential future development of parking, retail and office uses on Lot B, a portion of the CitiField leasehold along Roosevelt Avenue. For the purposes of the RWCDS, it is assumed that this development would be completed by 2032, and therefore has been included in this assessment. Additionally, while not part of the proposed project, the construction of the new Van Wyck Expressway access ramps—which was anticipated in the 2008 FGEIS and for which the City has received approval from the Federal Highway Administration—and is now slated to be completed in 2024, is also considered in the construction analyses presented in the chapter.

D. METHODOLOGY

This section discusses the level of analysis used to assess the potential for significant adverse impacts in each of the construction-related analysis areas presented in the *CEQR Technical Manual.* For each of the various technical areas presented below, appropriate construction analysis years were selected (as necessary) to represent reasonable worst-case conditions relevant to that technical area, which can occur at different times for different analyses. For example, the noisiest part of the construction may not be at the same time as the heaviest construction traffic. Therefore, the analysis periods may differ for traffic, air quality, and noise. In each section, the methodologies to determine the period of reasonable worst-case conditions for assessing potential impacts are explained. All methodologies used in the impact analyses are in accordance with the *CEQR Technical Manual.* For all construction-related analysis areas, the methodologies used to assess potential construction-related impacts can be found in the chapters for each analysis area addressing potential operational impacts. Additional details relevant only to the construction air quality and noise analysis methodologies are given in their respective analysis sections below.

For the purposes of the construction analyses performed in this SEIS, in the future without the proposed project, the project site is expected to continue to be occupied by existing uses for Phase 1A. For Phase 1B, the Phase 1A uses previously constructed are assumed to be occupied, and the remainder of the Phase 1B portion of the project site is assumed to have been cleared during the demolition and remediation activities that are to take place during Phase 1A. For Phase 2, all of the Phase 1A development is assumed to be completed and occupied, and as Phase 2 commences, most of the Phase 1B development is assumed to be completed and subsequently occupied according to the construction schedule for Phase 1B presented in the next section of this chapter. In addition, the Phase 2 development area is assumed to remain with its existing uses on that portion of the project site until construction of Phase 2 commences.

The next section in this chapter describes the conceptual construction schedule, the construction methods to be used, and city, state, and federal regulations and policies that govern construction. This section also establishes the framework used for the assessment of potential impacts from construction. The construction timeline—determined by the timing of the various major construction stages associated with constructing a building, such as excavation and foundation, core and shell construction, and interior finishing—is described. The types of equipment are discussed, and the number of workers and truck deliveries estimated. The analyses use these data to determine the potential for significant adverse environmental impacts.

E. CONSTRUCTION PHASING AND ACTIVITIES

INTRODUCTION

This section of the chapter first gives an overview of the anticipated conceptual construction phasing and schedule for the proposed project, and then provides a detailed description of each type of major construction activity and the types of equipment typically associated with each. The major construction activities discussed include: abatement and demolition; site preparation and utilities; excavation and foundations; construction of the core and shell of the building; exterior cladding; interior fit-out; and site work, finishing, and open space construction. General construction practices are then presented, including those associated with deliveries and access, hours of work, and sidewalk and lane closures. Finally, the estimated number of workers and truck deliveries for project construction are presented.

CONCEPTUAL CONSTRUCTION PHASING AND SCHEDULE

While the anticipated construction durations described below have been developed with an experienced New York City construction manager (and are commonly used in New York City), the discussion is only illustrative as means and methods may be chosen at the time of construction. The Phase 1A and 1B development programs are those being advanced by QDG selected to undertake this portion of the proposed project; there are no finalized construction programs or designs for the Phase 1A and 1B elements of the proposed project at this time. Furthermore, as the Phase 2 development will be the subject of a future developer solicitation, the Phase 2 development program analyzed in this SEIS generally reflects the development anticipated for this area based on the development program approved in the 2008 FGEIS, as modified in the subsequent technical memoranda.

The described means, methods, and construction durations are conservatively chosen and are representative of the reasonable worst-case for potential impacts. The analyses also account for overlapping construction activities during each phase of construction at the various building sites in proximity to one another to capture the cumulative nature of construction impacts with respect to numbers of workers, trucks, and non-road engines on site at the various building sites within the project site at any given time, within reasonable construction scheduling constraints for the proposed project. The conceptual construction schedule conservatively identifies the first quarter of 2031 (during Phase 2) as the period of peak construction activity as well as the peak for cumulative effects, because it accounts for the cumulative effects of overlapping operational activities (from previously completed phases and building completed earlier in Phase 2) and ongoing construction activities for the proposed project as well as for nearby no build projects, most notably the construction of the development on Lot B assumed as part of the RWCDS.

In this SEIS, the construction of the proposed project is analyzed in three overall phases, which generally represent construction on a portion of the Special Willets Point District, the Willets West site, and the South Lot (Phase 1A), followed by construction on a portion of the District and the remainder of the South Lot and Lot D (Phase 1B), and ending with construction on the remaining portions of the District (Phase 2), and Lot B. Complete build-out of the various project elements and the 19 building sites within the overall project site would occur in the following three distinct sequential phases: Phase 1A would commence at the beginning of 2014 and last for about 4 years 10 months, and be completed before the end of 2018; Phase 1B would commence in mid-2022, last for about 6 years 1 month, and be completed in mid-2028; and Phase 2 would begin at the end of 2026, last for about 6 years 1 month, and be completed at the end of 2032. If the proposed project is not built, it is expected that the project site would remain in its current condition.

Figures 20-1 through 20-3 graphically depict the conceptual construction sequencing and schedule for the various components of the proposed project's Phase 1A, Phase 1B, and Phase 2 development, respectively. **Figure 20-4** visually represents the overall conceptual construction sequence for the entire construction duration of the proposed project. **Table 20-1** presents the overall conceptual construction sequencing and schedule for the proposed project, by phase and specific development site.

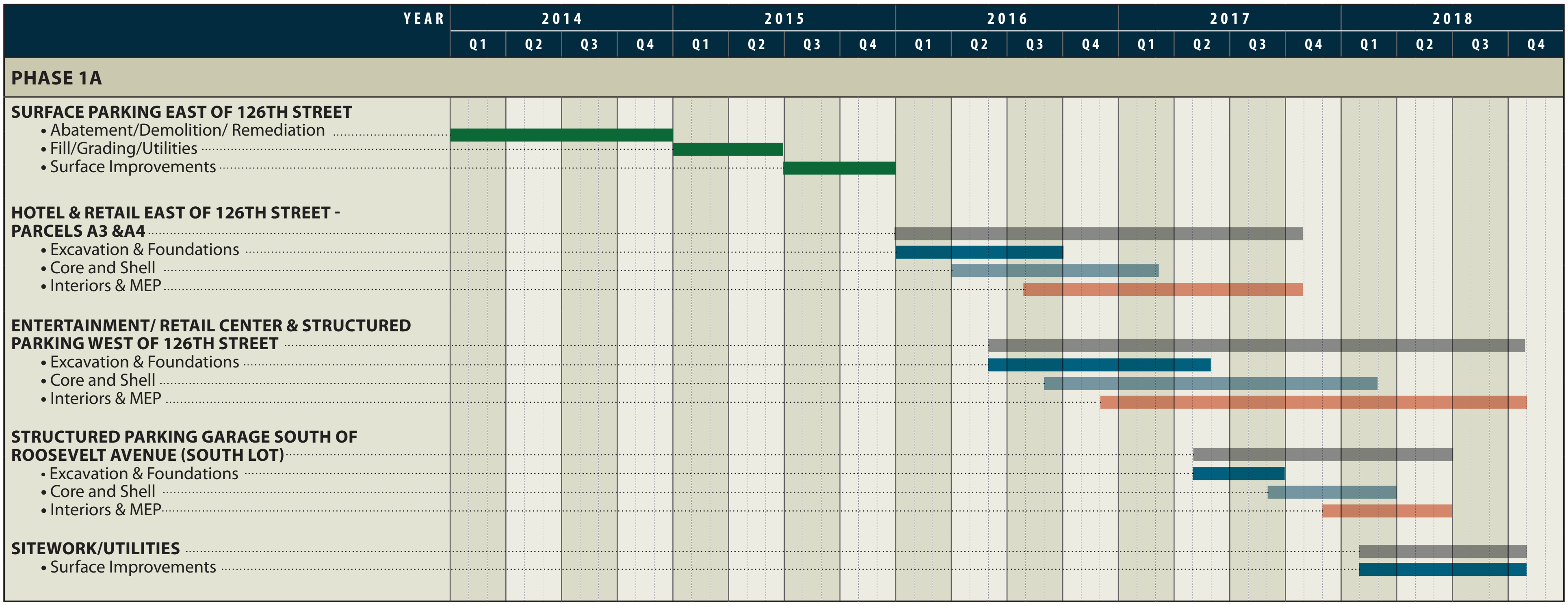
PHASE 1A

Phase 1A involves construction of a hotel and two retail buildings, temporary surface parking, and temporary recreational areas on 11 parcels within the Special Willets Point District (Parcels A1–A11), the entertainment and retail center and associated structured parking west of CitiField on the Willets West site, and structured parking on the western portion of the South Lot, south of Roosevelt Avenue.

Phase 1A site preparation activities are expected to start in the District during the first quarter of 2014, on the site of the interim surface parking east of 126th Street. For the two years between the start of 2014 and the end of 2015, construction activities would be focused on preparing the site for construction of buildings, including the abatement and demolition of existing structures, followed by remedial action work, site grading and fill, installation of utilities, and surface improvements. This would be followed by construction of the hotel and retail developments east of 126th Street on Parcels A3 and A4, beginning in January 2016. These buildings would take about 22 months to complete, with construction of these buildings ending in the 4th quarter of 2017. Construction of the entertainment and retail center west of 126th Street on the Willets West site would begin during the second quarter of 2015, and would continue for about 29 months, finishing in the fourth quarter of 2018. The structured parking garage on the western portion of the South Lot, south of Roosevelt Avenue, would commence construction during the second quarter of 2017, and would continue for about 14 months, being completed by the end of the second quarter of 2018. Finally, the remaining site work and utilities installation, and associated surface improvements would commence during the first quarter of 2018, lasting for about 9 months, and would be completed in the last quarter of 2018. All Phase 1A construction would be anticipated to be completed by the fourth quarter of 2018, with construction of the entertainment and retail center and associated parking structures on the Willets West site and the final site work on parcels in the District being completed last.

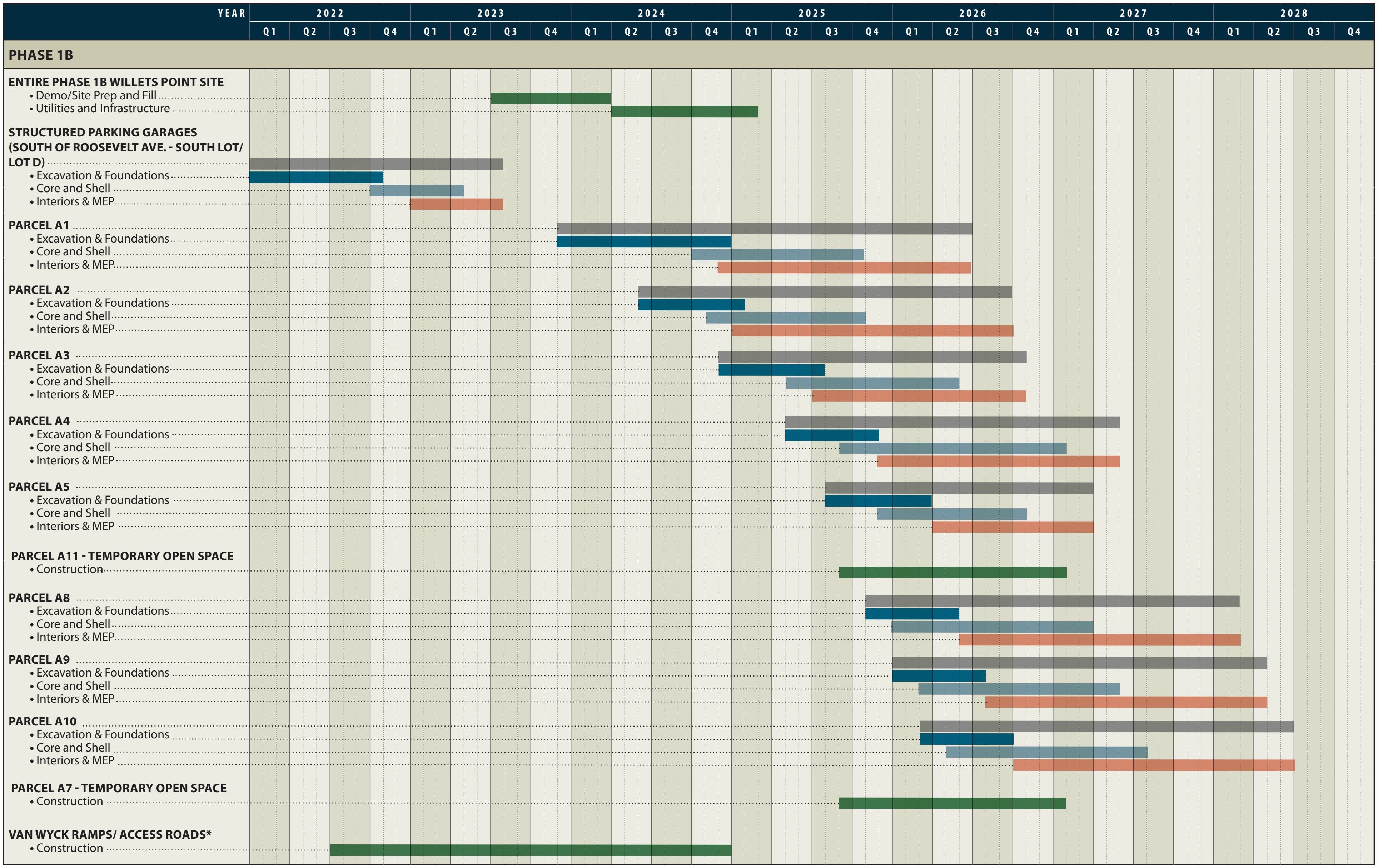
PHASE 1B

Phase 1B involves construction of several mixed use buildings and permanent and temporary public and private open spaces on 10 parcels within the District (Parcels A1-A5, and A7-A11), as well as structured parking on the eastern portion of the South Lot and Lot D, south of Roosevelt Avenue.



Anticipated Construction Schedule (Phase 1A)

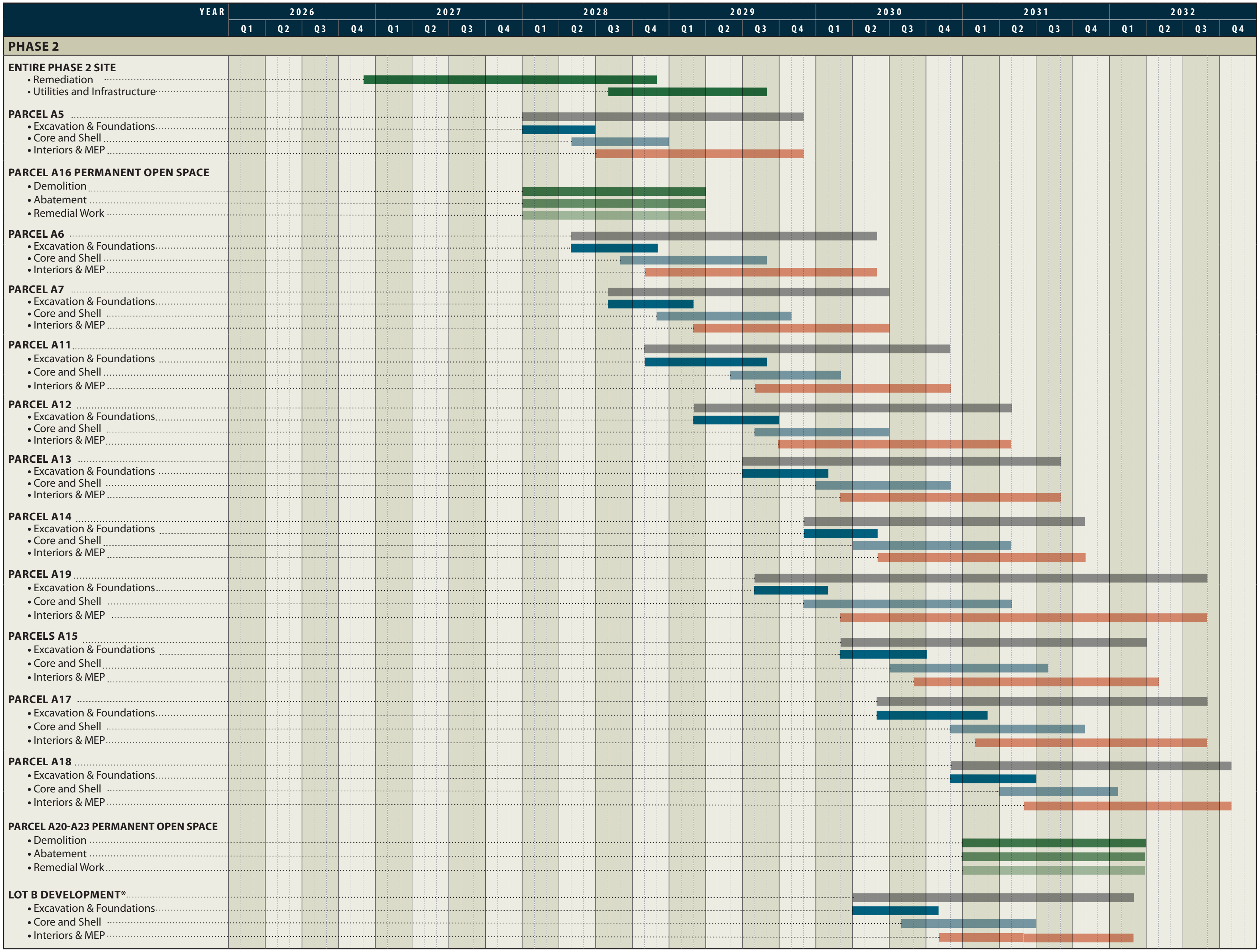
Figure 20-1



NOTE: *= The Van Wyck Access Roads/Ramps is not part of the proposed project, but has been accounted for in the construction analyses; therefore, it is included here to show it's relationship to the proposed project.

Anticipated Construction Schedule (Phase 1B)

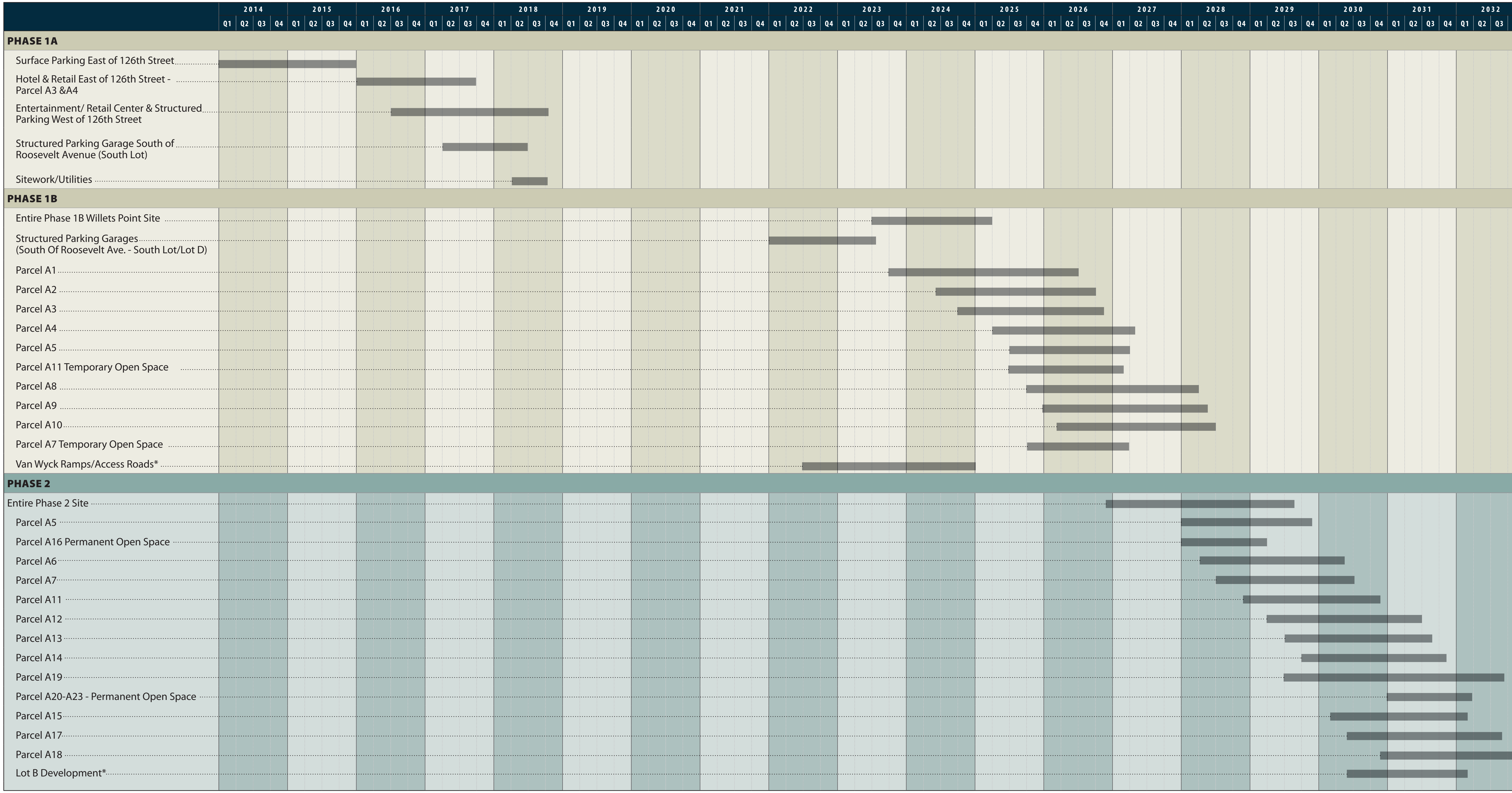
Figure 20-2



NOTE: *= Lot B Development is not part of the proposed project, but has been accounted for in the construction analyses; therefore, it is included here to show it's relationship to the proposed project.

Anticipated Construction Schedule (Phase 2)

Figure 20-3



NOTE: *= The Van Wyck Access Roads/Ramps and Lot B Development are not part of the proposed project, but have been accounted for in the construction analyses; therefore, they are included here to show their relationship to the proposed project.

Anticipated Overall Construction Schedule (All Phases)
Figure 20-4

Table 20-1
Conceptual Construction Schedule

Construction Task	Start Month	Finish Month	Approximate duration (months)
Phase 1A			
Area-wide Site Work/Surface Parking East of 126th Street: Demolition, Abatement, and Remediation, and Fill, Grading, and Utility Activities	January 2014	December 2015	24
Hotel & Retail East of 126th Street (Building Parcels 3A & 4A)	January 2016	October 2017	22
Entertainment/Retail Center & Structured Parking, West of 126th Street (Willets West)	June 2016	October 2018	29
Structured Parking Garage (South of Roosevelt Avenue in the South Lot)	May 2017	June 2018	14
Western Site Work and Utilities/Surface Improvements	February 2018	October 2018	9
Phase 1B			
Structured Parking Garages (South of Roosevelt Avenue - South Lot/Lot D)	June 2022	July 2023	14
Area-wide Site Work: Demolition, Site Preparation, Fill, Grading, and Utility/Infrastructure Activities	July 2023	February 2025	20
Parcel A1 (Office/Residential/Retail)	December 2023	June 2026	31
Parcel A2 (Hotel/Office/Retail/Community)	June 2024	September 2026	28
Parcel A3 (Residential)	December 2024	October 2026	23
Parcel A4 (Residential)	May 2025	May 2027	25
Parcel A5 (Residential/Retail)	August 2025	March 2027	20
Parcel A7 (Temporary Open Space)	January 2027	February 2028	14
Parcel A8(Residential/School)	November 2025	February 2028	28
Parcel A9 (Residential/Retail)	March 2026	April 2028	26
Parcel A10 (Residential/Retail)	August 2026	June 2028	23
Parcel A11 (Temporary Open Space)	January 2027	February 2028	14
Van Wyck Access Roads/Ramps*	July 2022	December 2024	30
Phase 2			
Area-wide Site Work: Demolition, Abatement and Remediation, Site Preparation, Fill, Grading, and Utility/Infrastructure Activities	December 2026	August 2029	33
Parcel A5 (Residential/Retail)	January 2028	November 2029	23
Parcel A16 (Public Park)	January 2028	February 2029	14
Parcel A6 (School/Hotel/Retail/Community)	May 2028	May 2030	25
Parcel A7 (Residential/Retail)	August 2028	June 2030	23
Parcel A11 (Residential/Retail)	November 2028	November 2030	25
Parcel A12 (Residential)	March 2029	April 2031	26
Parcel A13 (Residential)	July 2029	August 2031	26
Parcel A19 (Convention Center)	August 2029	August 2032	37
Parcel A14 (Residential)	December 2029	January 2032	26
Parcel A15 (Residential)	May 2030	April 2032	24
Parcel A17 (Residential)	August 2030	August 2032	25
Parcel A18 (Residential)	December 2030	October 2032	23
Parcels A20-23 (Open Space)	January 2031	February 2032	14
Lot B Development (Mixed Use)*	April 2030	February 2032	23

Notes:
Start date is the first day of the month.
Finish date is last day of the month.
*The Van Wyck Access Roads/Ramps and Lot B development are not part of the proposed project, but have been accounted for in the construction analyses, as described above.
Source: Hunter Roberts Construction Group and QDG.

Phase 1B construction would begin with the construction of the structured parking garages south of Roosevelt Avenue in the second quarter of 2022. Construction of the garages would take about 14 months, with completion anticipated in the third quarter of 2023. Similar to Phase 1A, Phase 1B would involve extensive site preparation, demolition, abatement, fill, and utility and infrastructure activities on the parcels to be developed during this phase (excluding Parcels A3 and A4, which were prepared during Phase 1A). These activities would commence in the third quarter of 2023; extending for about 20 months, and would be complete in the first quarter of 2025. Construction of the buildings on Parcel A1 would begin in the fourth quarter of 2023 and take about 31 months to complete. Construction of the buildings on Parcel A2 would take about 28 months, beginning in the second quarter of 2024. The buildings on Parcel A3 would commence construction during the fourth quarter of 2024, and would be competed in about 23 months. Construction of the buildings on Parcel A4 would take about 25 months, beginning in the second quarter of 2025. The building on the southern portion of Parcel A5 would commence construction during the third quarter of 2025, and would be competed in about 20 months. Construction of the buildings on Parcel A8 (including the school) would take about 28 months, beginning in the fourth quarter of 2025. The buildings on Parcel A9 would commence construction during the first quarter of 2026, and would be competed in about 26 months. Construction of the buildings on Parcel A10 would take about 23 months, beginning in the third quarter of 2026. Finally, the construction of the temporary open spaces on Parcels A7 and A11 would both commence in January 2027, and would each take about 14 months to complete, finishing in the first quarter of 2028. All Phase 1B construction would be anticipated to be completed by the middle of 2028, with construction of the buildings on Parcel A10, being completed last.

As mentioned previously, while not part of the proposed project, the construction of the new Van Wyck Expressway access ramps—which was anticipated in the 2008 FGEIS and for which the City has received approval from the Federal Highway Administration—is also considered in this construction analyses. This infrastructure improvement would also be completed within the Phase 1B timeframe, over approximately two years, starting in the third quarter of 2022 and ending in the fourth quarter of 2024. Phase 1B buildings within the District would not be occupied until after the completion of the Van Wyck Expressway improvements.

PHASE 2

Phase 2 involves construction of several mixed use buildings and permanent public and private open spaces on 16 parcels within the District (Parcels A5-A7 and A11-A23), as well as the mixed use development assumed as part of the RWCDS on Lot B, west of 126th Street, between CitiField and Roosevelt Avenue.

Similar to Phase 1B, Phase 2 would involve extensive site preparation, demolition, fill, and utility and infrastructure activities on the parcels in the District to be developed during this phase. These construction activities would commence in the fourth quarter of 2026; extending for about 33 months, and would be complete in the third quarter of 2029. Construction of the Phase 2 buildings and open spaces would then begin in January of 2028, with the simultaneous construction of the new public park (on Parcel A16) and the building on the northern portion of Parcel A5. The park would take about 14 months to build, while the building on Parcel A5 would take about 23 months to complete. Construction of the buildings (including the school) on Parcel A6 would begin in the second quarter of 2028, and take about 25 months to complete. Construction of the building on Parcel A7 would take about 23 months, beginning in the third quarter of 2028. The buildings on Parcel A11 would commence construction during the fourth quarter of 2028, and would be competed in about 25 months. Construction of the buildings on Parcel A12 would take about 26 months, beginning in the first quarter of 2029. The buildings on Parcel A13 would commence construction during the third quarter of 2029, and would be competed in about 26 months. The convention center on Parcel A19 would commence construction during the third quarter of 2029. This building would take the longest to construct, and would be competed in about 37 months, in the third quarter of 2032. Construction of the buildings on Parcel A14 would take about 26 months, beginning in the fourth quarter of 2029.

Construction of the buildings on Parcel A15 would take about 24 months, beginning in the second quarter of 2030. Construction of the building on Parcel A17 would begin in the third quarter of 2030, and is expected to take about 25 months to complete. The building on Parcel A18 would commence construction during the fourth quarter of 2030, and would be competed in about 23 months. Finally, the construction of the permanent open spaces on Parcels A20-A23 would commence in January 2031, and would collectively take about 14 months to complete, finishing in the first quarter of 2032. All Phase 2 construction would be anticipated to be completed by the fourth quarter of 2032, with construction of the buildings on Parcel A18, being completed last.

While the potential future development on Lot B is not part of the proposed program, and no specific development plans have been proposed, for the purposes of a conservative analysis, a conceptual program for Lot B has been analyzed as part of the RWCDS. Construction of the development on Lot B has been conservatively assumed to commence in the second quarter of 2030, and is anticipated to take about 23 months to construct.

During construction of the proposed project, the highest number of workers and trucks would both be expected to occur in the first quarter of 2031. These peak construction activities during the early part of 2031 reflect the anticipated concurrent construction at seven development parcels in the District (Parcels A12-A15, and A17-A19–which includes the convention center), in addition to overlapping construction of the permanent open spaces on Parcels A20-A23, and the assumed construction of the development on Lot B, south of CitiField, with many of these individual construction sites undergoing labor intensive overlapping construction stages (building core, shell, and finishing) simultaneously during that quarter.

CONSTRUCTION DESCRIPTION

OVERVIEW

Construction of mid-rise or large-scale buildings in New York City typically follows a general pattern. The first task is construction startup, which involves the siting of work trailers, installation of temporary power and communication lines, and the erection of site perimeter fencing. Then, if there is an existing building on the site, any potential hazardous materials (such as asbestos) are abated, and the building is demolished with some of the materials recycled and the debris taken to a licensed disposal facility. For sites requiring new or upgraded public utility connections, these activities are undertaken next (e.g., electrical connections, and installation of new water or sewer lines and hook-ups, etc.). Excavation and removal and/or addition and re-grading of the soils is the next step, followed by construction of building foundations. Specific to this project, as each development phase has several building sites or parcels that will have construction ongoing over the course of each phase, many of the initial site activities will be undertaken for the entire portion of the project site to be developed under the phase all at one time, as described previously. Once the areawide site preparation activities are completed, construction of individual building foundations commences. When the below-grade construction is completed, construction of the core and shell of the new building begins. The core is the central part of the building and is the main part of the structural system. It contains the elevators and the mechanical systems for heating, ventilation, and air conditioning (HVAC). The shell is the outside of the building. As the core and floor decks of the building are being erected, installation of the mechanical and electrical internal networks would start. As the building progresses upward, the exterior cladding is placed, and the interior fit out begins. During the busiest time of building construction, the upper core and structure are built while the mechanical/electrical connections, exterior cladding, and interior finishing progress on lower floors. Finally, site work, including landscaping, and other site work associated with a particular building site, or in some instances the entire project area being developed during a particular phase, like completing or resurfacing new roadways and sidewalks is undertaken, and individual building or areawide development area site access and protection measures required during construction are removed.

GENERAL CONSTRUCTION PRACTICES

Certain activities would be ongoing throughout the construction period for the proposed project. For the areas in Phases 1A and 1B which are to be developed by QDG, there would be a field representative designated to serve as the contact point for the community and local leaders. The representative would be available to meet and work with the community to resolve concerns or problems that arise during the construction process. This is a fairly standard practice for the construction of large buildings or large-scale area developments in New York City, and it is anticipated that the ultimate developers of the project area for Phase 2, as well as for Lot B, and the Van Wyck access improvements would also designate field representatives to serve as contact points for the community with respect to construction on that site, when it is under construction.

Governmental Coordination and Oversight

The following describes governmental construction oversight agencies and typical construction practices in New York City. In certain instances, specific practices may vary from those described below. However, the typical practices are expected to be used because they have been developed over many years and have been found to be necessary to successfully complete large projects in a confined urban area.

The governmental oversight of construction in New York City is extensive and involves a number of city, state, and federal agencies. **Table 20-2** 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 the building is structurally, electrically, and mechanically safe. In addition, DOB enforces safety regulations to protect both the workers and the public. The areas of responsibility include installation and operation of the 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 and regulates water disposal into the sewer system. The New York City Fire Department (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 responsible for subway access and, if necessary, bus stop relocations. NYCT also coordinates construction work which could affect the subway system. The New York City Landmarks Preservation Commission (LPC) approves studies and testing to prevent loss of archaeological materials and approves the construction protection plan (CPP) used when the construction is in proximity to historic structures. The New York City Department of Parks and Recreation (DPR) is responsible for the oversight, enforcement, and permitting of the replacement of street trees that are lost due to construction. Section 5-102 et. seq. of the Laws of the City of New York requires a permit to remove any trees and the replacement of the trees as determined by calculating the size, condition, species, and location rating of the tree proposed for removal. New York City maintains a 24-hour-a-day telephone hotline (311) so that concerns can be registered with the city.

Table 20-2
Construction Oversight in New York City

Agency	Areas of Responsibility
New York City:	
Department of Buildings	Primary oversight for Building Code and site safety
Department of Environmental Protection	Noise, hazardous materials, dewatering
Department of Environmental Protection and/or Office of Environmental Remediation	Remedial Action Plans (RAPs)/Construction Health and Safety Plans (CHASPs)
Fire Department	Compliance with Fire Code, tank operation
Department of Transportation	Lane and sidewalk closures
New York City Transit	Subway access, bus stop relocation
Department of Parks & Recreation	Street trees
Landmarks Preservation Commission	Archaeological and architectural resources 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

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 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 Occupational Safety and Health Administration (OSHA) sets standards for work site safety and the construction equipment.

Deliveries and Access

Although the construction on the project site in the various phases will occupy large tracts of land, because of the numbers of trucks and workers, as well as the volume of materials that will be delivered to the site at any given time, specific construction staging and truck marshaling and laydown areas will be designated during each phase of construction to allow for an orderly and safe working environment at the project site. All deliveries, material removals, and hoist uses have to be tightly scheduled to maintain an orderly work area and to keep the construction on schedule and within budget.

Access to the various construction sites of the proposed project would be controlled. The work areas would be fenced off, and limited access points for workers and trucks would be provided. Private worker vehicles would not be allowed into the construction area. Security guards and flaggers may be posted as necessary, and all persons and trucks would have to pass through security points. Workers or trucks without a need to be on the site would not be allowed entry. After work hours, the gates would be closed and locked. Security guards may patrol the construction sites after work hours and over the weekends to prevent unauthorized access.

Material deliveries to the site would be controlled and scheduled. Unscheduled or haphazard deliveries would be minimized. To aid in adhering to the delivery schedules, as is normal for building construction in New York City, flaggers would be employed at each of the gates. The flaggers could be supplied by the subcontractor on-site at that time or by the construction manager. The flaggers would control trucks entering and exiting the site, so that they would not interfere with one another. In addition, they would provide an additional traffic aid as the trucks enter and exit the on-street traffic streams.

Hours of Work

Construction activities for the proposed project's various building sites and other project elements would take place in accordance with New York City laws and regulations, which allow construction activities to take place between 7 AM and 6 PM. Construction work would begin at 7 AM on weekdays, with most workers arriving between 6 AM and 7 AM. Typically, work would end at 3:30 PM, but could be extended until 6 PM for such tasks as finishing a concrete pour for a pad, or completing the bolting of a steel frame erected that day. Extended workday activities would not include all construction workers on site, but only those involved in the specific task. Extended workdays would be most likely to occur during foundation and superstructure tasks, and limited extended workdays could occur during other tasks over the course of construction, but would likely be minimized.

At limited times over the course of constructing a building, weekend work could be required to make up for weather delays or other unforeseen circumstances. In such cases, the numbers of workers and pieces of equipment in operation would be limited to those needed to complete the particular authorized task. Therefore, the level of activity for any weekend work would be less than a normal workday. Weekend work requires a permit from DOB and, in certain instances, approval of a noise mitigation plan from the DEP under the City's Noise Code. The New York City Noise Control Code, as amended in December 2005 and effective July 1, 2007, limits construction (other than special circumstances as described below) to weekdays between the hours of 7 AM and 6 PM, and sets noise limits for certain specific pieces of construction equipment. Construction activities occurring after hours (weekdays between 6 PM and 7 AM and on weekends) may be permitted only to accommodate: (1) emergency conditions; (2) public safety; (3) construction projects by or on behalf of City agencies; (4) construction activities with minimal noise impacts; and (5) undue hardship resulting from unique site characteristics, unforeseen conditions, scheduling conflicts, and/or financial considerations. In such cases, the numbers of workers and pieces of equipment in operation would be limited to those needed to complete the particular authorized task. Therefore, the level of activity for any weekend work would be less than a normal workday. If it were to become necessary, the typical weekend workday would be on Saturday, beginning with worker arrival and site preparation at 7 AM, and ending with site cleanup at 5 PM.

A few tasks may have to be completed without interruption, and the work can extend past 6 PM. In certain situations, concrete must be poured continuously to form one structure without joints. This type of concrete pour is usually associated with foundations and structural slabs at grade, which could require a minimum of 12 hours or more to complete, depending on the size of the area being poured.

Sidewalk and Lane Closures

During the course of construction, traffic lanes and sidewalks would be closed or protected for varying periods of time. Truck movements would be spread throughout the day and would generally occur between the hours of 6:00 AM and 3:00 PM, depending on the stage of construction. No rerouting of traffic is anticipated and moving lanes of traffic are expected to be available at all times. Some street lanes and sidewalks could be continuously closed, and some lanes and sidewalks would be closed only intermittently to allow for certain construction activities. For construction at the various building sites, any necessary sidewalk and lane closures would maintain pedestrian flow throughout the construction period for each site, and would generally not divert pedestrians to the other side of the street. Pedestrian circulation and access would be maintained through the use of protected sidewalk enclosures, temporary sidewalks or sidewalk bridges. NYCDOT would be consulted to determine the appropriate protective measures for ensuring pedestrian safety surrounding the various building sites; this work would be coordinated with and approved by NYCDOT.

GENERAL CONSTRUCTION TASKS

Abatement, Demolition, Remediation, and Grading

The proposed project would result in the extensive demolition of surface parking and/or loading areas and existing buildings on the project site. As indicated in **Figures 20-1 through 20-3** (see above), all project site-wide demolition activities required for the proposed project during each phase have been assumed would be undertaken at one time, and would be anticipated to last for between 20 and 33 months, depending on the phase of construction (see **Table 20-1**). These areas would be abated of asbestos and any other hazardous materials within the existing buildings and structures, where applicable.

A New York City-certified asbestos investigator would inspect the buildings for asbestos-containing materials (ACMs), and those materials must be removed by a NYCDOL-licensed asbestos abatement contractor prior to interior demolition. Asbestos abatement is strictly regulated by DEP, NYCDOL, EPA, and OSHA to protect the health and safety of construction workers and nearby residents and workers. Depending on the extent and type of ACMs, these agencies would be notified of the asbestos removal project and may inspect the abatement site to ensure that work is being performed in accordance with applicable regulations, including the new February 2, 2011 DEP regulations. These regulations specify abatement methods, including wet removal of ACMs that minimize asbestos fibers from becoming airborne, and containment measures. The areas of the building with ACMs would be isolated from the surrounding area with a containment system and a decontamination system. The types of these systems would depend on the type and quantity of ACMs, and may include hard barriers, isolation barriers, critical barriers, and caution tape. Specially trained and certified workers, wearing personal protective equipment, would remove the ACMs and place them in bags or containers lined with plastic sheeting for disposal at an asbestos-permitted landfill. Depending on the extent and type of ACMs, an independent third-party air-monitoring firm would collect air samples before, during, and after the asbestos abatement. These samples would be analyzed in a laboratory to ensure that regulated fiber levels are not exceeded. After the abatement is completed and the work areas have passed a visual inspection and monitoring, if applicable, the general demolition work can begin.

Any activities with the potential to disturb lead-based paint would be performed in accordance with the applicable OSHA regulation (OSHA 29 CFR 1926.62—*Lead Exposure in Construction*). When conducting demolition (unlike lead abatement work), lead-based paint is generally not stripped from surfaces. Structures may be disassembled or broken apart with most paint still intact. Dust control measures (spraying with water) would be used if necessary. The lead content of any resulting dust is therefore expected to be low. Work zone air monitoring for lead may be performed during certain activities with a high potential for releasing airborne lead-containing particulates in the immediate work zone, such as manual demolition of walls with lead paint or cutting of steel with lead-containing coatings. Such monitoring would be performed to ensure that workers performing these activities are properly protected against lead exposure.

Any suspected PCB-containing equipment (such as fluorescent light ballasts) that would be disturbed would be evaluated prior to disturbance. Unless labeling or test data indicate that the suspected PCB-containing equipment does not contain PCBs, it would be assumed to contain PCBs and removed and disposed of at properly licensed facilities in accordance with all applicable regulatory requirements.

All of these procedures related to the handling of ACM, lead-based paint, and potential PCB-containing equipment would be contained in the DEP-approved CHASP.

General demolition is the next step, where necessary. Demolition would occur in accordance with DOB guidelines/requirements. In general, the first step is to remove any economically salvageable materials. Then the building is deconstructed using large equipment. Typical demolition requires fencing around the building to prevent accidental dispersal of building materials into areas accessible to the general public. The demolition debris would be sorted prior to being disposed at landfills to maximize recycling opportunities.

The project site is within the Federal Emergency Management Agency (FEMA) 100-year floodplain, and thus in some locations, particularly within the District, new fill would be required to grade and raise the project site structures above the 100-year floodplain level, consistent with the New York City Building Code. Changes to the grade elevation are expected to occur in phases. During Phase 1A the majority of the project site will remain at the existing grade and only the hotel and commercial spaces would be built at a higher grade above the floodplain elevation. The remainder of the extent of Phase 1A and 1B would be raised above the floodplain elevation prior to completion of the development of Phase 1B in 2028. Those grade changes will either occur though new fill and retaining walls or by building atop basements that raise the finished floor height above the floodplain elevation. Grade transitions would be created between the new streets in Phase 1B and the existing street grades that would remain in the Phase 2 area until that area is raised prior to completion of Phase 2 development in 2032.

For the general remediation, demolition, and site grading activities necessary for the proposed project, it is estimated that there would be approximately 59, 71, and 148 workers per day on-site during Phase 1A, Phase 1B and Phase 2, respectively, with a peak of up to about 420 workers per day during Phase 2. Typically approximately 12, 6, and 29 truckloads of debris would be removed per day from the project site during Phase 1A, Phase 1B and Phase 2, respectively, with a peak of up to about 58 trucks per day during Phase 2. The general abatement, remediation, and demolition phase is expected to last approximately two to three months at any given occupied parcel, with the project site-wide demolition activities anticipated lasting between approximately 20 and 33 months, depending on the phase of construction (see **Table 20-1**).

Site Preparation and Utilities—Construction Startup Tasks

The following tasks are considered to be typical startup work to prepare a site for construction. The tasks could include, but are not limited to, the following items. The means and methods and order of completion of these tasks could change as necessary. Startup work generally involves the installation of public safety measures, such as fencing, sidewalk sheds, and Jersey barriers. The site is fenced off, typically with solid fencing to minimize interference between the persons passing by the site and the construction work. Separate gates for workers and for trucks are installed, and sidewalk shed and Jersey barriers are erected. Trailers for the construction engineers and managers are hauled to the site and installed. These trailers could be placed within the fence line, in the curb lane, or over the sidewalk sheds. Also, portable toilets, dumpsters for trash, and water and fuel tankers are brought to the site and installed. Temporary utilities are connected to the construction trailers. During the startup period, permanent utility connections may be made, especially if the contractor has obtained early electric power for construction use, but utility connections may be made almost any time during the construction sequence.

In addition to the new public infrastructure, the proposed project may need to relocate existing public infrastructure, particularly water and sewer connections, as well as electric, gas, and telephone lines that will be required for the project. Because the development areas will be cleared for each phase in anticipation of construction, it is assumed that there would be no existing uses in the Phase 1A/1B areas while those areas are under construction. Similarly, for Phase 2 construction, that area is also assumed to be clear, with no existing uses on that portion of the project site during Phase 2 construction. Some services (e.g., sanitary sewers) are currently not available in the District; however, during construction of Phase 1A/1B, the services that are currently available in the Phase 2 area (e.g., telephone, electric, water) will be maintained until the construction of that phase.

Installation of new or upgraded utilities would occur during this stage, and are anticipated to take an average of 3 months at each individual building site. However, as with site preparation activities, some of the more involved installation of new infrastructure elements would occur on an areawide basis. For the areawide installation of new utilities and infrastructure, it is estimated that there would be approximately 59, 71, and 272 workers per day on-site during Phase 1A, Phase 1B and Phase 2, respectively. Typically approximately 12, 6, and 29 truckloads of material would be delivered or debris would be removed per day from the project site during Phase 1A, Phase 1B and Phase 2, respectively. The general areawide installation of new utilities and infrastructure phase are anticipated to last between approximately 9 and 13 months, depending on the phase of construction.

New utility connections for any given building can be made at any time during the construction process. The initial investigatory work often occurs early during excavation and foundations, with the actual connections typically occurring once the building mechanical, electrical and plumbing systems are installed.

Sanitary Sewer System

The proposed project would include the development of a sanitary sewer system that would provide a new sanitary collection service to the area and eliminate the existing septic systems. Nearby areas, such as CitiField, direct their sanitary sewage to the 37th Avenue pump station. However, sewage from the Phase 2 construction may require upgrades to this pump station to increase its capacity. New sanitary collection lines within the District would be connected to the City sewer system that conveys sanitary sewage to the Bowery Bay Water Pollution Control Plant (WPCP) for treatment.

Sewer construction work primarily is a “cut-and-cover” technique. A trench would be excavated in the street, and short piles may need to be driven through the bottom of the trench. Concrete cradles would be installed to hold the sewer pipe. The sewer pipe would be installed in short lengths and connected. The trench would then be backfilled and the pavement replaced. While the new sewers are being constructed, temporary flumes may have to be installed to handle the existing sewer flows. DEP regularly performs this task at sites throughout the City. About 20 to 40 workers would be needed to install the sewer line and to control traffic for any portions that are installed in public streets. Typical equipment includes backhoes, cranes, and front-end loaders. Trucks bring the sewer pipes to the construction, and depending on the suitability of the soil for re-use, trucks may be needed to cart off existing soils and bring suitable soil to the construction site.

In terms of the new utilities and infrastructure that will be required for the proposed project, the following describes the necessary new utilities by Phase (for more detailed discussion and description, please see Chapter 11, "Infrastructure"). The construction of these project elements has been taken into consideration in the construction estimates developed for each phase of the proposed project, and the effects of construction of these project elements are included in the various analyses.

Phase 1A

New 12-inch water mains in 35th Avenue, 126th Street, 127th Street, and Willets Point Boulevard would be constructed. For Willets West, a new on-site water loop would be required to tie into existing water main in Roosevelt Avenue. Sanitary sewer infrastructure, either existing or being built by the New York City Economic Development Corporation (EDC), would be adequate to accommodate the Phase 1A development. As a part of the proposed project, the 16-inch sanitary sewer connection would be extended south along 126th Street. In addition, a 7.5-foot by 5-foot box storm sewer currently under construction by EDC would be extended south along 126th Street as part of the proposed project to accommodate Phase 1A development within the District. No additional infrastructure would be anticipated to be required to support Willets West and the other sites during this phase.

Phase 1B

Consultation with DEP would be required to determine if upgrades (including a new regulator and connection) to the 72-inch water main in Willets Point Boulevard would be required to support the Phase 1B development. As assumed in the 2008 FGEIS, the existing 72-inch water main within Willets Point Boulevard would remain in place and a permanent easement, mapped on the City map, would be provided to enable acceptable access to this water main. Upgrades to the 37th Avenue pump station and its force main would likely be required for Phase 1B development. Verification of this requirement by DEP will be obtained prior to Phase 1B development. Stormwater and sanitary sewer infrastructure constructed as part of Phase 1A will be sized in accordance with the amended drainage plan (ADP), which would be required to be developed by QDG and would include anticipated flows associated with Phase 1B and Phase 2 development.

Phase 2

For the District, consultation with DEP would be required to determine water supply requirements for Phase 2 of the proposed project. At a minimum, DEP water mains would be required in 34th Avenue, 127th Street, and Willets Point Boulevard; these water mains would be extensions of the mains constructed in Phase 1A. Additional internal water service would likely be required to support the proposed development in 2032. Additionally, consultation with DEP would be required to determine if upgrades (including a new regulator and connection) to the 72-inch water main in Willets Point Boulevard would be required to support the Phase 2 development, if not already constructed in a prior phase. For all other sites, water service would remain as constructed.

For the District, new sanitary sewer trunk mains would be required in Northern Boulevard, 34th Avenue, 126th Street, 127th Street, Willets Point Boulevard, and Roosevelt Avenue. These sewers would be sized in accordance with the ADP that would be developed. Upgrades to the

37th Avenue pump station and its force main would likely be required for Phase 2 development. Verification of this requirement by DEP will be obtained prior to Phase 2 development. Upgrades to the 37th Avenue pump station and its force main would be required for Phase 2 development, if not already constructed in a prior phase.

For the District, new storm sewers would be required in Northern Boulevard, 34th Avenue, Willets Point Boulevard, and Roosevelt Avenue. These sewers would be sized in accordance with the ADP developed for Phase 2. In addition, a 60-inch outfall would be required in 127th Street for Phase 2.

All other existing utilities in the streets within the project site have sufficient capacity to support the development anticipated as a result of the proposed project. Connections to new buildings would be made from the existing utility lines.

Excavation and Foundation

Soil excavation, supplementation, re-grading, and foundation construction for the various building sites anticipated to be constructed as part of the proposed project has been estimated to take anywhere from 5 to 12 months to complete for buildings in Phase 1A; from 5 to 10 months to complete for buildings in Phase 1B (with an average of around 7.6 months); and anywhere from 5 to 12 months to complete for buildings in Phase 2 (with an average of around 7.6 months), with the exception of the convention center, which would take approximately 13 months (see **Figures 20-1** through **20-3**, for Phases 1A, 1B, and 2, respectively).

Excavators would be used for the task of digging foundations. Any excavated soil to be removed from the project site would be loaded onto dump trucks for transport to a licensed disposal facility. Foundation work could include pile driving and pouring concrete footings and foundation. The excavation/foundation task could involve the use of excavators, cranes, pile drivers, concrete pumps, concrete trucks, generators, and hand tools.

During construction of the Phase 1A buildings, anywhere from 20 to 128 workers would be on-site at each building site, at any given time, with a corresponding number of about 1 to 25 trucks per day are expected at any given building site. During construction of the Phase 1B buildings, anywhere from 38 to 116 workers would be on-site at each building site, at any given time, with a corresponding number of about 3 to 8 trucks per day are expected at any given building site. During construction of the Phase 2 buildings, anywhere from 25 to 121 workers would be on-site at each building site, at any given time, with a corresponding number of about 3 to 12 trucks per day are expected at any given building site.

Below-Grade Hazardous Materials

All construction subsurface soil disturbances would be performed in accordance with an DEP-approved RAP and CHASP. At a minimum, the RAP would provide for the appropriate handling, stockpiling, testing, transportation, and disposal of excavated materials, as well as any unexpectedly encountered tanks, in accordance with all applicable federal, state, and local regulatory requirements. The RAP would also provide for vapor control measures such as vapor barriers, as deemed necessary. The CHASP would ensure that all subsurface disturbances are done in a manner protective of workers, the community, and the environment.

Dewatering

The excavated area at any given site could be subject to accumulating groundwater until the slab-on-grade and/or above-grade portions of buildings are built. In addition to groundwater, rain and snow could collect in the excavation, and that water would have to be removed. If necessary, the water would be pretreated prior to discharge. The decanted water would then be discharged into the New York City sewer system. Discharge in the sewer system is governed by DEP regulations.

DEP has a formal procedure for issuing a Letter of Approval to discharge into the New York City sewer system. The authorization is issued by the DEP borough office if the discharge is less than 10,000 gallons per day; an additional approval by the Division of Connections & Permitting is needed if the discharge is more than 10,000 gallons per day. All chemical and physical testing of the water has to be done by a laboratory that is certified by the New York State Department of Health (DOH). The design of the pretreatment system has to be signed by a New York State Professional Engineer or Registered Architect. For water discharged into New York City sewers, DEP regulations specify the following maximum concentration of pollutants.

- Petroleum hydrocarbons 50 parts per million (ppm)
- Cadmium 2 ppm
- Hexavalent chromium 5 ppm
- Copper 5 ppm
- Amenable cyanide 0.2 ppm
- Lead 2 ppm
- Mercury 0.05 ppm
- Nickel 3 ppm
- Zinc 5 ppm
- pH between 5 to 12
- Temperature less than 150 degrees Fahrenheit (F)
- Flash Point greater than 140 degrees F
- Benzene 134 parts per billion (ppb)
- Ethylbenzene 380 ppb
- Methyl-Tert-Butyl-Ether (MTBE) 50 ppb
- Naphthalene 47 ppb
- Tetrachloroethylene (perc) 20 ppb
- Toluene 74 ppb
- Xylenes 74 ppb
- PCB 1 ppb
- Total Suspended Solids 350 ppm

Any groundwater discharged in the New York City system would meet these limits. DEP can also impose project-specific limits, depending on the location of the project and contamination that has been found in nearby areas.

Core and Shell

In general, core (superstructure) and shell (exterior fit out) construction of the various buildings anticipated to be constructed as part of the proposed project would depend on the size and type of the building being constructed. For the buildings being constructed in Phase 1A, core and shell construction would be expected to last approximately 7 to 18 months, depending on the size of the building. Phase 1B core and shell construction for the buildings proposed during this phase would be expected to take approximately 11 to 13 months, depending on the size of the building. For the buildings being constructed in Phase 2, depending on the size of the building, core and shell construction would be expected to last approximately 8 to 12 months, with the convention center taking about 18 months. Construction of the interior structure, or core, of the buildings would include elevator shafts; vertical risers for mechanical, electrical, and plumbing systems; electrical and mechanical equipment rooms; core stairs; and restroom areas. This phase of work would also include construction of the building's framework (installation of beams and columns), and floor decks. Exterior construction involves the installation of the façade (exterior walls, windows, and cladding) and the roof. Cranes would be used to lift the façade into place, and welding machines and impact wrenches would secure the exterior to the superstructure. These activities would require the use of cranes, delivery trucks, concrete pumps, concrete trowels, welding equipment, and a variety of handheld tools. Temporary construction elevators (hoists) would also be constructed for the delivery of materials and vertical movement of workers during this stage where necessary.

During the core and shell construction of the Phase 1A buildings, anywhere from 54 to 346 workers would be on-site at each building site, at any given time, with a corresponding number of about 1 to 14 trucks per day are expected at any given building site. Core and shell construction would require anywhere from 98 to 382 workers would be on-site at each building site, at any given time, with a corresponding number of about 2 to 14 trucks per day are expected at any given building site, during construction of the Phase 1B buildings. During the core and shell construction of the Phase 2 buildings, anywhere from 98 to 258 workers would be on-site at each building site, at any given time, with a corresponding number of about 3 to 7 trucks per day are expected at any given building site.

Interior Fit-Out

This stage of construction would include the construction of interior partitions, installation of lighting fixtures, interior finishes (flooring, painting, etc.), and mechanical (e.g., installation of elevators) electrical, and plumbing (MEP) work. Mechanical and other interior work at each building would overlap with the building core and shell construction for between 4 and 15 months, partly depending on the size and type of building being constructed. On average the core/shell and interior/MEP work at the various project buildings would overlap for between 8 and 11 months, the largest buildings would have an overlap of up to 15 months. The interior fit-out and MEP work activities would employ a similar number of construction workers as the core and shell work, but would generally have greater numbers of trucks. During MEP and interior construction of the Phase 1A buildings, anywhere from 48 to 349 workers would be on-site at each building site, at any given time, with a corresponding number of about 5 to 25 trucks per day are expected at any given building site. Interior fit-out and MEP work would require anywhere from 64 to 321 workers would be on-site at each building site, at any given time, with a corresponding number of about 5 to 34 trucks per day are expected at any given building site, during construction of the Phase 1B buildings. The interior fit-out and MEP construction of the Phase 2 buildings would have anywhere from 64 to 232 workers on-site at each building at any given time, with a corresponding number of about 5 to 21 trucks per day are expected at any given building site. Equipment used during interior construction would include hoists, delivery trucks, and a variety of small hand-held tools. However, this stage of construction is the quietest, and does not generate fugitive dust.

Site Work and Finishing

This stage of construction would include the final finishing of the building and grounds, including landscaping activities. This is also when the construction protection measures (fencing, sidewalk enclosures, bridges, or temporary sidewalk, remaining scaffolding, etc.)

around the building sites would be removed. This activity would employ the least number of construction workers: with about 5 to 10 workers per day at each building site. In addition, minimal daily truck deliveries would be expected at each building during this stage of construction, with most days having no deliveries. Equipment used during this stage of construction would include hoists, delivery trucks, and a variety of small hand-held tools.

Open Space Areas and Other Surfaces

During construction of the publicly accessible open spaces, top soil may be imported for installation of the grassy areas and landscaping. Concrete sidewalks would be poured, and street furniture, such as benches and tables, would be installed. Dump trucks would bring the soil to the site for spreading by hand. Trees with about a 3- to 4-inch caliper (diameter) and shrubs would be planted. For the active recreation areas, the ground surfaces would be installed, followed by the appropriate amenities (e.g., basketball hoops, volleyball nets, etc.). The majority of this work would be done by hand. For the construction of the open spaces, this phase would require an average of about 45 workers for the construction of the temporary open spaces; about 54 workers form the construction of the new public park on Parcel A16, and about 75 workers for the construction of the open spaces on Parcels A20-A22. For the construction of the open spaces, this phase would require an average of about 3 daily truck deliveries for the construction of the temporary and permanent open spaces and park. Construction of the temporary and permanent open spaces and park are each anticipated to last for about 14 months at each location.

Access Road and Van Wyck Expressway Ramps

A new access ramp from the northbound Van Wyck Expressway would be constructed off the existing Exit 13 ramp and would connect to the new street network within the District at the northeast corner. A new ramp to the southbound Van Wyck Expressway would connect the northeast corner of the District to the expressway mainline immediately south of the interchange with the Whitestone Expressway. The ramps would start at grade and rise on columns to the height of the elevated expressway.

To build the ramps, foundations would be excavated and built for the columns, which could be steel or concrete. Lines of columns would be installed and connected with steel girders. The roadway would be built on the girders. Typically, excavators would be used and the foundations formed by concrete. Cranes would be used to place the columns and girders. Cranes would also be used to place the plates on which the roadway is built. At any given time, up to 50 workers could be engaged in building the ramps and access roads. The number of truck deliveries would be expected to average about 25 trucks per day throughout the majority of the construction of the access road and ramps.

NUMBER OF CONSTRUCTION WORKERS AND MATERIAL DELIVERIES

Construction is labor intensive, and the number of workers varies with the general construction task and the size of the building. Likewise, material deliveries generate many truck trips, and the number also varies. **Table 20-3** shows the estimated numbers of workers and deliveries to the project area by calendar quarter for all construction of the proposed project, regardless of construction Phase. The numbers shown in the table below conservatively include construction of the development on Lot B as well as the construction of the Van Wyck access improvements.

Table 20-3
Average Number of Daily Workers and Trucks by Quarter

Year	2014				2015				2016				2017			
Quarter	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
Workers	59	59	59	59	59	59	59	59	20	116	345	638	770	767	835	1,036
Trucks	12	12	12	12	12	12	12	12	1	9	30	47	63	72	71	56
Year	**2018**				**2019**				**2020**				**2021**			
Quarter	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
Workers	1,166	610	261	261	0	0	0	0	0	0	0	0	**0**	0	0	0
Trucks	60	38	26	26	0	0	0	0	0	0	0	0	0	0	0	0
Year	**2022**				**2023**				**2024**				**2025**			
Quarter	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
Workers	0	66	116	273	453	319	188	160	237	257	786	1,012	1,136	1,240	1,300	1,301
Trucks	0	8	33	42	46	37	33	32	36	37	61	82	72	74	87	92
Year	**2026**				**2027**				**2028**				**2029**			
Quarter	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
Workers	1,440	1,624	1,567	1,560	1,702	1,348	1,143	873	813	583	765	1,230	1,278	1,365	1,642	1,406
Trucks	103	108	94	111	119	106	93	85	83	61	70	91	84	89	104	98
Year	2030				2031				2032				**Average**		**Peak**	
Quarter	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th				
Workers	1,673	1,891	1,761	2,115	**2,200**	2,154	1,594	1,247	940	489	334	164	838		2,200	
Trucks	106	122	107	122	127	**128**	111	95	79	47	32	14	58		128	

Notes: Construction assumed to begin in January of 2014.
Sources: Hunter Roberts Construction Group and AKRF, Inc.

The average number of workers would be about 838 per day throughout the construction period. The peak average number of workers would be 2,200 per day in the first quarter of 2031. For truck trips, the average number of trucks would be 58 per day, and the peak average would occur in the second quarter of 2031 with 128 trucks per day (the first quarter of 2031 would have just one less average truck trip per day during that quarter, compared with the peak quarter for trucking activity). Detailed workforce and delivery projections can be found in **Appendix E**.

F. THE FUTURE WITHOUT THE PROPOSED PROJECT

For the purposes of this SEIS, the no action condition generally assumes that the proposed project is not built, and the project site would continue to be occupied by existing uses, and other known background projects in the area, along with specified background growth will have occurred (e.g., traffic analysis). However, for some analysis areas, including air quality and noise, the future without the proposed project includes the completed phases of the project in the background conditions for those analyses. The only changes to the project site that are assumed would be the infrastructure improvements that are currently under construction, related to sewers and stormwater outfalls. Additionally, the construction of the new Van Wyck Expressway access ramps—which was anticipated in the 2008 FGEIS and for which the City has received approval from the Federal Highway Administration—which are slated to be completed in 2024 are also assumed to be in place by that time.

G. PROBABLE IMPACTS OF THE PROPOSED PROJECT

Similar to many large development projects in New York City, construction can be disruptive to the surrounding area for periods of time. While the anticipated construction durations for the proposed project have been developed with an experienced New York City construction manager, the discussion is only illustrative as specific means and methods will be chosen at the time of construction. While the Phase 1A and 1B development programs are those being advanced by QDG selected to undertake this portion of the proposed project, there are no finalized construction programs or designs for the Phase 1A and 1B elements of the proposed project at this time. Furthermore, as the Phase 2 development will be the subject of a future developer solicitation, the Phase 2 development program analyzed in this SEIS generally reflects the development anticipated for this area based on the development program approved in the 2008 FGEIS, as modified in the subsequent technical memoranda. The construction durations have been conservatively chosen to serve as the basis of the analyses in this chapter and are representative of the reasonable worst-case assumptions for determining potential construction period impacts. The proposed project's conceptual schedule represents a conservative potential timeline for construction, which shows overlapping construction activities and simultaneously operating construction equipment for the proposed project's 19 building sites and other planned project elements (i.e., new park and open spaces, the proposed surface and structured parking, and/or infrastructure improvements) in proximity to one another. Thus, the analysis captures the cumulative nature of construction impacts, which would result in the greatest impacts at nearby receptors.

The following analyses describe the potential impacts that could result from construction of the proposed project, with respect to transportation, air quality, noise and vibration, historic and cultural resources, hazardous materials, open space, socioeconomic conditions, community facilities, natural resources, land use, and rodent control.

TRANSPORTATION

TRAFFIC

The proposed project would be developed in three sequential phases, from 2014 to 2032, and would generate construction worker and truck traffic. Because of the lengthy duration of these activities, an evaluation of construction sequencing and worker/truck projections was undertaken to identify the construction-related peak hour trip-making activities and to assess the potential transportation-related impacts. As described above, it is expected that parking and staging needs would be managed at each construction site and available areas adjacent to CitiField and within the District.

During the construction of Phase 1A, peak construction activities were projected to take place in the fourth quarter of 2017. By this time, only a small portion of the Phase 1A development program would be completed. **Table 20-4** provides a comparison of the cumulative construction and operational trips projected for peak Phase 1A construction to what would be realized upon the full build-out of Phase 1A. During the construction of Phase 1B, peak construction activities were projected to take place in the first quarter of 2027. By this time, the Phase 1A development program would have been in operation along with portions of the Phase 1B development components. **Table 20-5** provides a comparison of the cumulative construction and operational trips projected for peak Phase 1B construction to what would be realized upon the full build-out of Phase 1B. During the construction of Phase 2, peak construction activities were projected to take place in the first quarter of 2031. By this time, the Phase 1A and Phase B development program would have been in operation along with portions of the Phase 2 development components. **Table 20-6** provides a comparison of the cumulative construction and operational trips projected for peak Phase 2 construction to what would be realized upon the full build-out of Phase 2, or the entire proposed project. As demonstrated by these comparisons, the cumulative project-generated trips would be less than what would be realized upon the build-out of each of

Table 20-4
Comparison of Weekday Vehicle Trip Generation for Peak Phase 1A Construction—Cumulative Construction and Operational Trips

Time	Peak Construction in 2017									2018 Phase 1A Full Build-Out Operational Trips in PCEs		
	Incremental Construction Trips in PCEs (Q4 2017)			Incremental Operational Trips from Completed Projects in PCEs			Total PCEs					
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
6-7 AM	533	28	561	6	6	12	539	34	573	6	6	12
7-8 AM	138	12	150	11	10	21	149	22	171	104	89	193
8-9 AM*	12	12	24	74	86	160	86	98	184	543	394	937
12-1 PM*	12	12	24	214	158	372	226	170	396	1,422	1,159	2,581
3-4 PM	6	511	517	79	103	182	85	614	699	1,243	1,135	2,378
4-5 PM	0	94	94	78	104	182	78	198	276	1,194	1,276	2,470
5-6 PM*	0	0	0	163	146	309	163	146	309	1,276	1,352	2,628

Notes: Traffic volumes summarized for the 8-9 AM, 12-1 PM, and 5-6 PM account for a conservative overlap of construction-related traffic during these hours and operational trips during the operational analysis peak hours.
PCEs = passenger car equivalents where 1 truck trip equals 2 PCEs.

Table 20-5
Comparison of Weekday Vehicle Trip Generation for Peak Phase 1B Construction—Cumulative Construction and Operational Trips

Time	Peak Construction in 2027									2028 Phase 1B Full Build-Out Operational Trips in PCEs		
	Incremental Construction Trips in PCEs (Q1 2027)			Incremental Operational Trips from Completed Projects in PCEs			Total PCEs					
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
6-7 AM	889	60	949	2	2	4	891	62	953	15	15	30
7-8 AM	231	24	255	200	168	368	431	192	623	243	293	536
8-9 AM*	24	24	48	1,338	753	2,091	1,362	777	2,139	1,611	1,146	2,757
12-1 PM*	24	24	48	2,412	2,030	4,442	2,436	2,054	4,490	2,855	2,432	5,287
3-4 PM	12	841	853	1,871	1,746	3,617	1,883	2,587	4,470	2,268	2,141	4,409
4-5 PM	0	155	155	1,801	2,171	3,972	1,801	2,326	4,127	2,177	2,532	4,709
5-6 PM*	0	0	0	1,994	2,564	4,558	1,994	2,564	4,558	2,473	2,977	5,450

Notes: Traffic volumes summarized for the 8-9 AM, 12-1 PM, and 5-6 PM account for a conservative overlap of construction-related traffic during these hours and operational trips during the operational analysis peak hours.
PCEs = passenger car equivalents where 1 truck trip equals 2 PCEs.

Table 20-6
Comparison of Weekday Vehicle Trip Generation for Peak Phase 2 Construction—Cumulative Construction and Operational Trips

Time	Peak Construction in 2031									2032 Phase 2 Full Build-Out Operational Trips in PCEs		
	Incremental Construction Trips in PCEs (Q1 2031)			Incremental Operational Trips from Completed Projects in PCEs			Total PCEs					
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
6-7 AM	1,135	64	1,199	19	19	38	1,154	83	1,237	64	37	101
7-8 AM	294	26	320	296	362	658	590	388	978	592	562	1,154
8-9 AM*	26	26	52	1,931	1,498	3,429	1,957	1,524	3,481	2,758	1,969	4,727
12-1 PM*	26	26	52	3,423	2,946	6,369	3,449	2,972	6,421	4,233	3,546	7,779
3-4 PM	12	1,083	1,095	2,638	2,549	5,187	2,650	3,632	6,282	3,113	3,246	6,359
4-5 PM	0	201	201	2,500	2,872	5,372	2,500	3,073	5,573	3,013	3,770	6,783
5-6 PM*	0	0	0	2,936	3,391	6,327	2,936	3,391	6,327	3,552	4,843	8,395

Notes: Traffic volumes summarized for the 8-9 AM, 12-1 PM, and 5-6 PM account for a conservative overlap of construction-related traffic during these hours and operational trips during the operational analysis peak hours.
PCEs = passenger car equivalents where 1 truck trip equals 2 PCEs.

the respective development phases. Therefore, the overall extent of potential traffic impacts during peak construction would be within the envelope of significant adverse traffic impacts identified for the With Action condition in Chapter 14, "Transportation." For a reasonable worst-case assessment of potential construction traffic impacts, the discussion below focuses on the overall peak construction condition, which as identified above, would take place during the construction of Phase 2 of the proposed project in the first quarter of 2031.

Construction Trip generation

Average daily construction worker and truck activities by quarter were projected for the entire construction period. Construction is anticipated to begin in the first quarter of 2014 and be completed by the end of 2032. Construction worker and truck trip projections were refined to account for worker modal splits and vehicle occupancy, arrival and departure distribution, and passenger car equivalent (PCE) factors for construction truck traffic.[1] These estimates are presented in **Table 20-7**.

Daily Workforce and Truck Deliveries

For a reasonable worst-case analysis of potential transportation-related impacts during construction, the daily workforce and truck trip projections in the peak quarter were used as the basis for estimating peak hour construction trips. Based on a schedule of commencing construction in the beginning of 2014, the combined construction worker and truck traffic peak would occur in the first quarter of 2031. The daily average numbers of construction workers and truck deliveries during this construction peak quarter were estimated at 2,200 workers and 127 truck deliveries per day (see **Appendix E** for details). By the first quarter of 2031, Phase 1A and 1B of the proposed project and the first four buildings of Phase 2 would be completed and would also generate operational traffic. This operational traffic is combined with the construction traffic to assess the worst-case traffic impacts during this period. Estimates of construction activities are further discussed below.

Construction Worker Modal Splits and Vehicle Occupancy

Similar to the FGEIS, approximately 70 percent of construction workers would be expected to travel to the sites by private autos at an average occupancy of 1.15 persons per vehicle. The remaining 30 percent would use public transit.

Peak Hour Construction Worker Vehicle and Truck Trips

Construction activities would mostly take place during the typical construction shift of 7:00 AM to 3:30 PM. While construction truck trips would be made throughout the day (with more trips made during the early morning), most trucks would remain in the area for short durations and construction workers would typically commute during the hours before and after the work shift. For analysis purposes, each worker vehicle was assumed to arrive in the morning and depart in the afternoon or early evening, whereas each truck delivery was assumed to result in two truck trips during the same hour (one "in" and one "out"). Furthermore, in accordance with the 2012 *CEQR Technical Manual*, the traffic analysis assumed that each truck has a PCE of 2.0.

[1] The traffic analysis assumed that each truck has a PCE of 2.0.

Table 20-7
Construction Trip Generation

Vehicle PCEs (Autos + Trucks)	2014				2015				2016				2017				2018			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
6 AM - 7 AM	41	41	41	41	41	41	41	41	10	65	200	359	439	446	479	561	628	337	155	155
7 AM - 8 AM	11	11	11	11	11	11	11	11	2	18	54	98	118	121	130	150	166	90	44	44
8 AM - 9 AM	4	4	4	4	4	4	4	4	0	4	12	20	24	28	28	24	24	16	12	12
9 AM - 10 AM	4	4	4	4	4	4	4	4	0	4	12	20	24	28	28	24	24	16	12	12
10 AM - 11 AM	4	4	4	4	4	4	4	4	0	4	12	20	24	28	28	24	24	16	12	12
11 AM - 12 PM	4	4	4	4	4	4	4	4	0	4	12	20	24	28	28	24	24	16	12	12
12 PM - 1 PM	4	4	4	4	4	4	4	4	0	4	12	20	24	28	28	24	24	16	12	12
1 PM - 2 PM	4	4	4	4	4	4	4	4	0	0	8	8	12	16	16	12	12	8	4	4
2 PM - 3 PM	6	6	6	6	6	6	6	6	1	4	18	27	35	39	41	44	47	27	12	12
3 PM - 4 PM	33	33	33	33	33	33	33	33	10	57	176	319	387	390	423	517	580	305	131	131
4 PM - 5 PM	5	5	5	5	5	5	5	5	1	10	32	59	71	70	76	94	107	55	24	24
5 PM - 6 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Daily Total	120	120	120	120	120	120	120	120	24	174	548	970	1,182	1,222	1,305	1,498	1,660	902	430	430

Vehicle PCEs (Autos + Trucks)	2019				2020				2021				2022				2023			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
6 AM - 7 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	40	88	173	269	191	124	110
7 AM - 8 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	12	26	49	75	55	35	31
8 AM - 9 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	12	16	20	16	12	12
9 AM - 10 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	12	16	20	16	12	12
10 AM - 11 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	12	16	20	16	12	12
11 AM - 12 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	12	16	20	16	12	12
12 PM - 1 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	12	16	20	16	12	12
1 PM - 2 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	8	8	8	8	8
2 PM - 3 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	12	16	22	18	14	13
3 PM - 4 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	32	64	141	229	163	100	86
4 PM - 5 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	6	10	25	41	29	17	14
5 PM - 6 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Daily Total	0	0	0	0	0	0	0	0	0	0	0	0	0	112	268	492	744	544	358	322

Vehicle PCEs (Autos + Trucks)	2024				2025				2026				2027				2028			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
6 AM - 7 AM	151	161	443	573	625	676	721	726	805	899	855	872	949	764	649	509	480	344	440	691
7 AM - 8 AM	45	47	120	155	166	179	194	194	215	242	227	234	255	208	175	138	131	95	121	186
8 AM - 9 AM	16	16	24	32	28	28	36	36	40	44	36	44	48	44	36	32	32	24	28	36
9 AM - 10 AM	16	16	24	32	28	28	36	36	40	44	36	44	48	44	36	32	32	24	28	36
10 AM - 11 AM	16	16	24	32	28	28	36	36	40	44	36	44	48	44	36	32	32	24	28	36
11 AM - 12 PM	16	16	24	32	28	28	36	36	40	44	36	44	48	44	36	32	32	24	28	36
12 PM - 1 PM	16	16	24	32	28	28	36	36	40	44	36	44	48	44	36	32	32	24	28	36
1 PM - 2 PM	8	8	12	16	16	16	16	20	20	20	20	24	24	20	20	16	16	12	12	20
2 PM - 3 PM	15	16	36	47	51	54	56	60	64	69	68	71	76	61	55	43	41	30	35	57
3 PM - 4 PM	123	133	395	509	569	620	649	654	721	811	783	784	853	676	577	441	412	296	384	619
4 PM - 5 PM	22	23	72	92	103	113	118	118	131	149	143	143	155	123	104	79	74	53	70	113
5 PM - 6 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Daily Total	444	468	1,198	1,552	1,670	1,798	1,934	1,952	2,156	2,410	2,276	2,348	2,552	2,072	1,760	1,386	1,314	950	1,202	1,866

Vehicle PCEs (Autos + Trucks)	2029				2030				2031				2032			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
6 AM - 7 AM	706	753	904	784	919	1,041	966	1,150	1,199	1,177	888	703	538	286	195	92
7 AM - 8 AM	188	202	240	211	248	278	258	306	320	314	238	188	146	79	53	24
8 AM - 9 AM	32	36	40	40	44	48	44	48	52	52	44	36	32	20	12	4
9 AM - 10 AM	32	36	40	40	44	48	44	48	52	52	44	36	32	20	12	4
10 AM - 11 AM	32	36	40	40	44	48	44	48	52	52	44	36	32	20	12	4
11 AM - 12 PM	32	36	40	40	44	48	44	48	52	52	44	36	32	20	12	4
12 PM - 1 PM	32	36	40	40	44	48	44	48	52	52	44	36	32	20	12	4
1 PM - 2 PM	16	16	20	20	20	24	20	24	24	24	24	20	16	8	8	4
2 PM - 3 PM	55	58	70	63	71	82	74	88	91	90	73	58	45	23	18	9
3 PM - 4 PM	638	681	820	704	835	945	878	1,054	1,095	1,073	800	627	474	246	171	84
4 PM - 5 PM	117	124	150	128	153	172	160	194	201	196	145	114	85	44	31	15
5 PM - 6 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Daily Total	1,880	2,014	2,404	2,110	2,466	2,782	2,576	3,056	3,190	3,134	2,388	1,890	1,464	786	536	248

The estimated daily vehicle trips were distributed throughout the workday based on projected work shift allocations and conventional arrival/departure patterns of construction workers and trucks. For construction workers, the majority (approximately 80 percent) of the arrival and departure trips would take place during the hour before and after each shift. For construction trucks, deliveries would occur throughout the day when the construction site is active. Construction truck deliveries typically peak during the early morning (approximately 25 percent), overlapping with construction worker arrival traffic. The peak construction hourly trip projections are summarized in **Table 20-8**.

Table 20-8
Peak Construction Vehicle Trip Projections

	Auto Trips			Truck Trips			Total					
	Regular Shift			Regular Shift			Vehicle Trips			PCE Trips		
Hour	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
Weekday (1st Quarter of 2031)												
6 AM - 7 AM	1,071	0	1,071	32	32	64	1,103	32	1,135	1,135	64	1,199
7 AM - 8 AM	268	0	268	13	13	26	281	13	294	294	26	320
8 AM - 9 AM	0	0	0	13	13	26	13	13	26	26	26	52
9 AM - 10 AM	0	0	0	13	13	26	13	13	26	26	26	52
10 AM - 11 AM	0	0	0	13	13	26	13	13	26	26	26	52
11 AM - 12 PM	0	0	0	13	13	26	13	13	26	26	26	52
12 PM - 1 PM	0	0	0	13	13	26	13	13	26	26	26	52
1 PM - 2 PM	0	0	0	6	6	12	6	6	12	12	12	24
2 PM - 3 PM	0	67	67	6	6	12	6	73	79	12	79	91
3 PM - 4 PM	0	1,071	1,071	6	6	12	6	1,077	1,083	12	1,083	1,095
4 PM - 5 PM	0	201	201	0	0	0	0	201	201	0	201	201
Daily Total	1,339	1,339	2,678	128	128	256	1,467	1,467	2,934	1,595	1,595	3,190

Notes: Hourly construction worker and truck trips were derived from an estimated quarterly average number of construction workers and truck deliveries per day, with each truck delivery resulting in two daily trips (arrival and departure). Construction peak hours are shaded in this table.

The projected construction activities in the first quarter of 2031 would result in 1,199 PCEs between 6 and 7 AM and 1,095 PCEs between 3 and 4 PM on weekdays. Since Phase 1A/1B and some components of Phase 2 of the proposed project would have already been completed and occupied, operational traffic generated by those completed components together with the projected construction traffic were considered for the construction traffic impact analysis. The analysis results are presented below.

Construction Traffic Capacity Analysis

Vehicles generated by construction activities were assigned to the street network, and eight key intersections for analysis were identified. These intersections are the same intersections addressed in the FGEIS. These intersections were analyzed from 6-7 AM and 3-4 PM, which correspond to the hours of peak vehicular traffic generated by construction plus operational traffic during the first quarter of 2031. Construction is not expected to take place on any game days or Saturdays. The key study intersections include:

- 126th Street and Northern Boulevard
- 126th Street at 34th Avenue
- 114th Street at Roosevelt Avenue
- 126th Street at Roosevelt Avenue
- College Point Boulevard at Roosevelt Avenue
- College Point Boulevard at the Northern Boulevard service road
- Boat Basin Road at World’s Fair Marina

- 126th Street at New Willets Point Boulevard

The operations at these intersections were analyzed using the Highway Capacity Software (HCS+) version 5.5, which is based on the methodologies presented in the *2000 Highway Capacity Manual (HCM)*. A discussion of the analysis methodology can be found in Chapter 14, “Transportation.”

Construction Peak Traffic Volumes and Conditions

The AM peak hour of construction was selected to be 6-7 AM as the number of projected construction trips are significantly higher (1,135 vehicles) compared to the number of construction trips generated (approximately 26 vehicles) during the proposed project weekday non-game AM peak hour of 8-9 AM. The ATR volume comparison showed that 6-7 AM construction peak traffic volumes are 41.5 percent less than the typical 8-9 AM commuter peak hour. Hence, the 6-7 AM volumes were calculated by decreasing the 8-9 AM volumes by 41.5 percent.

The PM peak hour of construction was selected to be 3-4 PM since no construction trips are anticipated during the proposed project weekday non-game PM peak hour of 5-6 PM. The ATR volume comparison showed that 3-4 PM construction peak traffic volumes are approximately 2 percent less than the typical 5-6 PM peak hour. Hence, the 3-4 PM volumes were calculated by decreasing the 5-6 PM volumes by 2 percent.

Future Without Construction of the Proposed Project

The existing AM and PM peak construction hour volumes were increased to year 2031 using a background growth rate of 0.5 percent per year from 2012 to 2017 and 0.25 percent per year from 2017 to 2031, or a 6.2 percent growth in overall traffic volumes. In addition, No Action conditions for the construction analysis account for traffic generated by the anticipated No Action development sites identified in Chapter 14, “Transportation.” Similar to the existing volumes, these No Action increments were decreased by 41.5 percent in the AM and about 2 percent in the PM peak construction hours.

Overall intersection levels of service (LOS) would be at LOS C or better for all intersections during the 6-7 AM peak construction hour. In the 3-4 PM peak construction hour, ~~four~~ five intersections would operate at overall LOS C or better, ~~one~~ two would operate at LOS D and one would operate at LOS F. During the 6-7 AM peak construction hour, of the 35 traffic lane groups at these intersections, 21 would operate at LOS C or better, 13 would operate at LOS D and one would operate at LOS E. During the 3-4 PM peak construction hour, of the 36 traffic lane groups analyzed (there is one more in the PM peak hour), ~~20~~ 19 would operate at LOS C or better, eight would operate at LOS D, and ~~eight~~ nine would operate at LOS E or F.

Future With Construction of the Proposed Project

During the 6-7AM peak construction hour, construction activities would generate 1,071 construction worker auto trips and 64 delivery (in and out) truck trips. During the 3-4 PM peak construction hour, construction activities would generate 1,071 construction worker auto trips and 12 delivery truck trips. Auto trips were assigned along roadways leading to on-site parking facilities, and trucks were assigned to designated NYCDOT truck routes.

Levels of service for the 2031 With Action condition were determined for the eight intersections analyzed under the No Action condition. The unsignalized portion of the intersection of Willets Point Boulevard and 126th Street would be eliminated due to street demapping, while one new intersection—126th Street at New Willets Point Boulevard—would be created as part of the proposed project under Phase ~~2~~ 1B. Future traffic levels of service under the 2031 With Action condition are shown in **Tables 20-9** and **20-10**. Detailed levels of service tables are presented in **Appendix E-2**.

Table 20-9
Overall Intersection Level of Service Summary Comparison
Phase 2 (2031) Construction No Action vs. With Action Conditions – Non-Game Day

Signalized Intersections	Phase 2 No Action Condition		Phase 2 With Action Condition	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
	6 Signalized Intersections		7 Signalized Intersections	
Overall Intersection LOS A/B/C	6	~~4~~ 3	6	1
Overall Intersection LOS D	0	~~1~~ 2	0	1
Overall Intersection LOS E	0	0	0	~~1~~ 0
Overall Intersection LOS F	0	1	1	~~4~~ 5
No. of Locations with Significant Impacts	—	—	~~1~~ 2	6

Notes:
During the non-game peak hours in the Phase 2 With Action condition, one of the two unsignalized intersections analyzed would be significantly impacted in the weekday AM and PM peak hours.

Table 20-10
Traffic Lane Group Level of Service Summary Comparison
Phase 2 (2031) Construction No Action vs. With Action Conditions – Non-Game Day

Signalized Intersections	Phase 2 No Action Condition		Phase 2 With Action Condition	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
	6 Signalized Intersections		7 Signalized Intersections	
No. of Lane Groups at LOS A/B/C	16	~~15~~ 14	~~20~~ 18	~~14~~ 13
No. of Lane Groups at LOS D	13	8	~~11~~ 12	~~5~~ 4
No. of Lane Groups at LOS E	1	2	~~1~~ 2	~~2~~ 1
No. of Lane Groups at LOS F	0	~~6~~ 7	2	~~16~~ 19

Notes:
All five signalized lane groups would operate at LOS C or better during the non-game peak hours in the Phase 2 No Action condition. During the non-game peak hours in the Phase 2 With Action condition, one of the three unsignalized lane groups analyzed would operate at LOS E in the non-game weekday AM peak hour and one of the three unsignalized lane groups would operate at LOS F in the non-game weekday PM peak hour. ~~of the two unsignalized intersections analyzed would be significantly impacted in the weekday AM and PM peak hours.~~

The summary overview of the Phase 2 construction condition indicates that:

- In the 6-7 AM peak construction hour, one of the seven analyzed signalized intersections is projected to operate at overall LOS F, which is one more than that under the No Action condition. (Note: there would be one more signalized intersection in the Phase 2 With Action condition as compared to the No Action condition.) ~~One intersection~~ Two signalized intersections and one unsignalized intersection would be significantly impacted. The number of traffic lane groups expected to operate at LOS E or F would increase from one to ~~three~~ five between the No Action and With Action conditions.
- In the 3-4 PM peak construction hour, five of the seven analyzed signalized intersections are projected to operate at overall LOS E or F, four more than under the No Action condition. Six signalized intersections and one unsignalized intersection would be significantly impacted. The number of traffic lane groups expected to operate at LOS E or F would increase from ~~eight to 18~~ nine to 21 (including 2 unsignalized lane groups not included in **Table 20-10**) between the No Action and ~~construction~~ With Action conditions.

All significantly impacted intersections could be fully or partially mitigated, the majority of which would require standard mitigation measures typically implemented by NYCDOT. In addition, two locations—126th Street at Northern Boulevard and 126th Street/Grand Central Parkway Ramp at 34th Avenue—would require special more intensive mitigation measures to mitigate the significant impacts in the 3–4 PM peak construction hour. The recommended mitigation measures would be similar to those proposed to mitigate the intersection impacts associated with the project's build-out and occupancy. A discussion of the recommended mitigation measures for each of the impacted intersections is provided below.

- *Northern Boulevard at 126th Street*—Impacts on this intersection would occur during the 3-4 PM peak construction hour. The significant impacts expected on the northbound 126th Street approach and on eastbound and westbound Northern Boulevard (leading to the intersection from the Van Wyck and Whitestone Expressway off-ramps) could not be mitigated by applying traditional mitigation measures. Therefore, to fully mitigate significant impacts during the 3–4 PM peak construction hour, this intersection would require cost intensive mitigation measures. These measures include installation of quick-curb (i.e., plastic reflective pylons used for channelizing the traffic) and traffic signal louvers (used on traffic signals to avoid confusion on two closely spaced intersection approaches where approaching motorists may be able to see the signal indication for another approach) on the westbound approach between the right-most lane and the center lane to allow the Van Wyck and Whitestone Expressway ramp traffic to operate as free flow through the intersection, modification of signal timing, widening of the eastbound Northern Boulevard approach to the intersection from two 12-foot-wide lanes to three 10-foot-wide lanes, prohibition of pedestrian crossing in the east crosswalk and diversion of those pedestrians to the west crosswalk of Northern Boulevard at 126th Place, and implementation of signal timing changes needed to coordinate the northbound 126th Street approach with the upstream signal at the intersection of 126th Street and 34th Avenue.
- *34th Avenue at 126th Street*—Significant impacts are expected to occur on the slip ramp from GCP/Astoria Boulevard to 126th Street, eastbound Shea Road approach, and westbound 34th Avenue approach during both the 6–7 AM and 3–4 PM peak construction hours and the northbound de facto left turn movement on the northbound 126th Street approach during the 3–4 PM peak construction hour. The geometric complexity of this intersection, with approaches from two exit ramps in addition to the northbound 126th Street, eastbound Shea Road and westbound 34th Avenue approaches, limits traditional capacity improvement options. Signal timing changes would fully mitigate the significant impacts only during the 6–7 AM peak construction hour. To partially mitigate significant impacts during the 3–4 PM peak construction hour, this intersection would require cost intensive mitigation measures including closing the ramp from eastbound Northern Boulevard to 126th Street and diverting those vehicles to 126th Place and 34th Avenue, reconstructing ~~and merging~~ the Grand Central Parkway ~~and Northern Boulevard~~ ramp approach~~es~~ to have one 11-foot-wide left turn lane, two 11-foot-wide travel lanes and ~~one 11 foot wide exclusive right-turn lane~~ a channelized right turn from the Grand Central Parkway ramp to westbound Shea Road, widening the roadway on the east leg of the intersection to ~~40~~ 44 feet to provide two 11-foot-wide westbound approach lanes and two 11-foot-wide eastbound receiving lanes, restriping the northbound 126th Street approach from two 11-foot-wide travel lanes, one 12-foot-wide travel lane, and one 7-foot-wide hatched median to one 12-foot-wide exclusive left turn lane, two 12-foot-wide travel lanes, and one 5-foot-wide Class II bicycle lane, and modifying the signal timing and phasing plan.
- *Roosevelt Avenue at 114th Street*—Significant impacts would occur during the 3-4 PM peak construction hour on ~~the southbound 114th Street approach and the eastbound and westbound Roosevelt Avenue~~ all approaches. These impacts could be mitigated through geometric changes, signal phasing and timing plan changes, limited prohibition of parking,

and pavement restriping. The centerline on the westbound approach would be shifted 11 feet to the south and the approach would be restriped from two 11-foot-wide travel lanes to one 11-foot-wide exclusive left turn lane, one 11-foot-wide through lane, and one 11-foot-wide exclusive right turn lane. The eastbound approach would be restriped from two 11-foot-wide travel lanes to one 11-foot-wide exclusive left turn lane and one 11-foot-wide travel lane. The centerline on the northbound approach would be shifted three feet to the east and the approach would be restriped from one 16-foot-wide travel lane to one 13-foot-wide travel lane. The centerline on the southbound approach would be shifted two feet to the east. Parking prohibitions at this location include installing "No Standing Anytime" regulations along the east curb of the northbound 114th Street approach 250 feet from the intersection, installing "No Standing Anytime" regulations along the south curb of the eastbound Roosevelt Avenue Street approach 250 feet from the intersection, and installing "No Standing ~~3~~ 4 PM–7 PM Monday-Friday" regulations along the west curb of the southbound 114th Street approach 150 feet from the intersection to allow for one 12-foot-wide left-through lane and one 10-foot-wide right turn lane. Signal phasing and timing plans would also be modified.

- *Roosevelt Avenue at 126th Street*—Significant impacts would occur during the 3–4 PM peak construction hour on the northbound and southbound 126th Street approaches and the eastbound Roosevelt Avenue de facto left turn movement. The intersection could be partially mitigated by reconfiguring the northbound 126th Street approach to have one 10-foot-wide exclusive left turn lane and two 10-foot-wide travel lanes. The centerline on the southbound 126th Street approach would be shifted nine feet to the east and restriped from one 11-foot-wide and one 12-foot-wide travel lane to one 11-foot-wide exclusive left turn lane, one 10-foot-wide through lane, and one 11-foot-wide exclusive right turn lane. The centerline of the eastbound Roosevelt Avenue approach would be shifted one foot to the north and the centerline of the westbound approach would be shifted one foot to the south. The eastbound approach would be restriped from one 10-foot-wide and one 11-foot-wide travel lane to two 11-foot-wide travel lanes and the westbound approach would be restriped from one 11-foot-wide travel lane and one 10-foot-wide travel lane to two 11-foot-wide travel lanes. The signal timing and phasing would also be modified.
- *Roosevelt Avenue at College Point Boulevard*—Significant impacts would occur during the 3–4 PM peak construction hour on the northbound College Point Boulevard left turn movement, the southbound College Point Boulevard approach, and the eastbound Roosevelt Avenue through-right turn movement. The impacts could be partially mitigated by ~~removing the center median on the east leg of Roosevelt Avenue and~~ restriping the westbound Roosevelt Avenue approach from ~~one 22-foot-wide center median,~~ one 13-foot-wide travel lane~~,~~ and one 17-foot-wide travel lane to ~~one 13-foot-wide left turn pocket, one 9-foot-wide tapered hatched median, one 11-foot-wide travel lane and one 19-foot-wide travel lane for 80 feet~~ two 15-foot-wide travel lanes. The northbound College Point Boulevard approach would be restriped from one 9-foot-wide exclusive left turn lane, one 13-foot-wide travel lane, and one 18-foot-wide travel lane with parking to two 10-foot-wide exclusive left turn lanes, and two 10-foot-wide travel lanes for 200 feet. The southbound College Point Boulevard approach would be restriped from one 11-foot-wide travel lane and one 19-foot-wide travel lane to three 10-foot-wide travel lanes for 200 feet. The northbound and southbound lanes in the Roosevelt Avenue median would be restriped from one 24-foot-wide travel lane, one 11-foot-wide travel lane, and one 10-foot-wide exclusive left turn lane in the northbound direction and one 10-foot-wide travel lane and one 20-foot-wide travel lane in the southbound direction to one 15-foot-wide travel lane, one 10-foot-wide travel

lane, and two 10-foot-wide exclusive left turn lanes in the northbound direction, and three 10-foot-wide travel lanes in the southbound direction. Parking prohibitions would include installing "No Standing Anytime" regulations along the east curb of the northbound approach of College Point Boulevard for 250 feet and along the west curb of the southbound approach for 200 feet. Southbound right turn traffic on College Point Boulevard would be prohibited and directed to use 39th Avenue and Janet Place and westbound left-turn traffic on Roosevelt Avenue would be prohibited and directed to use Janet Place and 39th Avenue en route back to southbound College Point Boulevard. Additionally, the signal timing and phasing would be modified.

- *College Point Boulevard at Northern Boulevard Service Road*—The westbound approach of the Northern Boulevard service road would be significantly impacted during the 3–4 PM peak construction hour, but could be fully mitigated by modifying the signal timing.
- *Boat Basin Road at World's Fair Marina*—Significant impacts would occur on the northbound Boat Basin Road left turn movement during the 6–7 AM and 3–4 PM peak construction hours. The intersection would be fully mitigated by installing a traffic signal with a 90 second cycle length, striping the westbound approach as one 11-foot-wide left turn lane and one 11-foot-wide shared left-through lane, and striping the northbound approach as two 10-foot-wide left turn lanes and one 10-foot-wide right turn lane.
- *126th Street at New Willets Point Boulevard*—Significant impacts are not expected during either of the analysis peak hours.

In addition to the above impact and mitigation findings described for peak construction in 2031, the significant adverse traffic impacts disclosed for the 2032 With Action condition may also occur during peak construction in 2031. Similar mitigation measures as those identified for the 2032 With Action condition are expected to also address the potential traffic impacts during construction. As with the 2032 With Action condition, several of the projected traffic impacts during various analysis peak periods may remain unmitigated.

DELIVERIES

Construction trucks would be required to use NYCDOT-designated truck routes, including the Van Wyck Expressway, the Long Island Expressway (LIE), Northern Boulevard, Roosevelt Avenue, and College Point Boulevard. At the construction site, flaggers would manage the access and movements of trucks. Limited site deliveries may occur along the perimeters of the construction sites within delineated closed-off areas for concrete pour or steel delivery.

CURB LANE CLOSURES AND STAGING

Curb lanes and sidewalks within and adjacent to the project site might be temporarily closed due to construction activities. Sidewalk protection or temporary sidewalks would be provided to maintain pedestrian access. Staging areas would be required from the start of foundation work until cranes and hoists are completely removed at the completion of the core and shell stage. Because the majority of construction activities would be accommodated on-site, construction trucks would be staged primarily at each construction site and available areas adjacent to CitiField and within the District. Maintenance and protection of traffic plans would be developed for all anticipated curb lane and sidewalk closures.

PARKING

The construction activities would generate a maximum daily parking demand of 1,339 spaces in the first quarter of 2031. Parking would be managed within available parking in the South Lot/Lot D and the District, and if necessary, supplemented by the existing parking areas adjacent to the District. As with the 2032 With Action condition, there would not be a parking impact during construction.

TRANSIT

With approximately 70 percent of the construction workers predicted to commute via auto, the remaining 30 percent would travel to and from the construction sites via transit. Based on the peak first quarter 2031 projections (maximum of 2,200 average daily construction workers), this distribution would represent correspondingly up to 660 daily workers traveling by transit. With 80 percent of these workers arriving or departing during the construction peak hours, the estimated number of total peak hour transit trips would be 528. These construction worker trips would occur outside of peak periods of transit ridership and would be distributed and dispersed to the nearby transit facilities, and would not result in any significant adverse transit impacts. However, the significant adverse transit impacts disclosed for the 2032 With Action condition may also occur during peak construction in 2031. Similar mitigation measures as those identified for the 2032 With Action condition (i.e., stairway widening at the Mets-Willets Point subway station and bus frequency increase) are expected to also address the potential transit impacts during construction. As with the 2028 and 2032 With Action conditions, projected line-haul impacts may remain unmitigated. ~~Additionally, as discussed in more detail in Chapter 14, "Transportation," and Chapter 21, "Mitigation," subway station impacts may remain unmitigated, if mitigation options are found to be infeasible, or if NYCT changes the current game-day operation of the station.~~

PEDESTRIANS

Sidewalk protection or temporary sidewalks would be provided in accordance with NYCDOT requirements to maintain pedestrian access for most construction periods. With a maximum of 2,200 average daily construction workers, as shown in **Appendix E,** there would be up to approximately 1,760 workers arriving or departing during the construction peak hours via various modes of transportation. These pedestrian trips would primarily be concentrated during off-peak hours (6 to 7 AM and 3 to 4 PM) and would be distributed among numerous pedestrian facilities (i.e., sidewalks, corner reservoirs, and crosswalks) in the area. Accordingly, there would also not be a potential for significant adverse pedestrian impacts attributable to the projected construction worker pedestrian trips. However, the significant adverse pedestrian impacts disclosed for the 2032 With Action condition may also occur during peak construction in 2031. Similar mitigation measures as those identified for the 2032 With Action condition (i.e., crosswalk widening) are expected to also address the potential pedestrian impacts during construction. Where mitigation measures may be deemed impractical to mitigate the projected With Action significant adverse pedestrian impacts, those impacts could similarly be unmitigatable during construction.

AIR QUALITY

INTRODUCTION

Emissions from on-site construction equipment and on-road construction-related vehicles, and the effect of construction vehicles on background traffic congestion, have the potential to affect air quality. The analysis of potential impacts of the construction of the proposed project on air quality includes a quantitative analysis of both on-site and on-road sources of air emissions, and the overall combined impact of both sources, where applicable.

In general, most construction engines are diesel-powered, and produce relatively high levels of nitrogen oxides (NO_x) and particulate matter (PM). Construction activities also emit fugitive dust. Although diesel engines emit much lower levels of carbon monoxide (CO) than gasoline engines, the stationary nature of construction emissions and the large quantity of engines could lead to elevated CO concentrations, and impacts on traffic could increase mobile source-related emissions of CO as well. Therefore, the pollutants analyzed for the construction period are nitrogen dioxide (NO_2), particles with an aerodynamic diameter of less than or equal to 10 micrometers (PM_{10}), particles with an aerodynamic diameter of less than or equal to 2.5 micrometers ($PM_{2.5}$), and CO. Since ultra-low-sulfur diesel (ULSD) would be used for all diesel engines used in the construction of the proposed project, sulfur oxides (SO_x) emitted from those construction activities would be negligible. For more details on air pollutants, see Chapter 15, "Air Quality."

Construction activity in general, and large-scale construction in particular, has the potential to adversely affect air quality as a result of diesel emissions. The main component of diesel exhaust that has been identified as having an adverse effect on human health is fine PM. To ensure that the construction of the proposed project results in the lowest practicable diesel particulate matter (DPM) emissions, the project sponsors would implement an emissions reduction program for all construction activities, consisting of the following components:

- *Diesel Equipment Reduction.* Construction of the proposed project would minimize the use of diesel engines and use electric engines, to the extent practicable. QDG would apply for a grid power connection early on so as to ensure the availability of grid power, reducing the need for on-site generators, and require the use of electric engines in lieu of diesel where practicable.
- *Clean Fuel.* Ultra-low sulfur diesel (ULSD) would be used exclusively for all diesel engines throughout the construction sites, to the extent practicable.
- *Best Available Tailpipe Reduction Technologies*. Nonroad diesel engines with a power rating of 50 horsepower (hp) or greater and controlled truck fleets (i.e., truck fleets under long-term contract with the project) including but not limited to concrete mixing and pumping trucks, would utilize the best available tailpipe (BAT) technology for reducing DPM emissions. Diesel particle filters (DPFs) have been identified as being the tailpipe technology currently proven to have the highest reduction capability. Construction contracts would specify that all diesel nonroad engines rated at 50 hp or greater would utilize DPFs to the extent practicable, either installed on the engine by the original equipment manufacturer (OEM) or a retrofit DPF verified by the EPA or the California Air Resources Board, and

may include active DPFs,[1] if necessary; or other technology proven to ~~reduce DPM by at least 90 percent~~ achieve equivalent emissions reduction. This measure is expected to reduce site-wide tailpipe PM emissions by at least 90 percent.

- *Utilization of Newer Equipment.* EPA's Tier 1 through 4 standards for nonroad engines regulate the emission of criteria pollutants from new engines, including PM, CO, NO_x, and hydrocarbons (HC). All nonroad construction equipment in the proposed project with a power rating of 50 hp or greater would meet at least the Tier 3 emissions standard, to the extent practicable. Tier 3 NO_x emissions range from 40 to 60 percent lower than Tier 1 emissions and considerably lower than uncontrolled engines. All nonroad engines in the project rated less than 50 hp would meet at least the Tier 2 emissions standard.
- *Dust Control.* Fugitive dust control plans would be required as part of contract specifications. For example, stabilized truck exit areas would be established for washing off the wheels of all trucks that exit the construction site. Truck routes within the sites would be either watered as needed or, in cases where such routes would remain in the same place for an extended duration, the routes would be stabilized, covered with gravel, or temporarily paved to avoid the re-suspension of dust. All trucks hauling loose material would be equipped with tight fitting tailgates and their loads securely covered prior to leaving the sites. Chutes would be used for material drops during demolition. Water sprays would be used for all excavation, demolition, and transfer of spoils to ensure that materials are dampened as necessary to avoid the suspension of dust into the air. Loose materials would be watered, stabilized with a biodegradable suppressing agent, or covered. In addition, all necessary measures would be implemented to ensure that the New York City Air Pollution Control Code regulating construction-related dust emissions is followed.
- *Source Location.* In order to reduce the resulting concentration increments, large emissions sources and activities such as concrete trucks and pumps would be located away from residential buildings and publicly accessible open spaces to the extent practicable and feasible.
- *Idle Restriction.* In addition to adhering to the local law restricting unnecessary idling on roadways, on-site vehicle idle time will also be restricted to three minutes for all equipment and vehicles that are not using their engines to operate a loading, unloading, or processing device (e.g., concrete mixing trucks) or otherwise required for the proper operation of the engine.

Additional measures may be taken to reduce pollutant emissions during construction of the proposed project in accordance with all applicable laws, regulations, and building codes. Overall, the proposed emission reduction program is expected to significantly reduce DPM emissions consistent with the goals of the currently best available control technologies under New York City Local Law 77, which are required only for publically funded City projects.

As discussed in Chapter 15, "Air Quality," EPA recently established a 1-hour average standard for NO_2. Great uncertainty exists as to 1-hour NO_2 background concentrations at ground level, especially near roadways, since these concentrations have not been measured. In addition, there are no clear methods to predict the rate of transformation of NO to NO_2 at ground-level given

[1] There are two types of DPFs currently in use: passive and active. Most DPFs currently in use are the "passive" type, which means that the heat from the exhaust is used to regenerate (burn off) the PM to eliminate the buildup of PM in the filter. Some engines do not maintain temperatures high enough for passive regeneration. In such cases, "active" DPFs can be used (i.e., DPFs that are heated either by an electrical connection from the engine, by plugging in during periods of inactivity, or by removal of the filter for external regeneration).

the level of existing data and models. Therefore, the significance of predicted construction impacts cannot be determined based on comparison with the new 1-hour NO_2 NAAQS since total 98th percentile values, including local area roadway contributions, cannot be estimated. In addition, methods for accurately predicting 1-hour NO_2 concentrations from construction activities have not been developed. However, exceedances of the 1-hour NO_2 standard resulting from construction activities cannot be ruled out and therefore, as discussed above, non-road diesel-powered vehicles and construction equipment rated Tier 3 or higher would be used during construction to reduce NO_x emissions. The electrification, source location and idling restrictions mentioned above would also reduce NO_X emissions and NO_2 concentration levels.

METHODOLOGY

Chapter 15, "Air Quality," contains a review of the pollutants for analysis; applicable regulations, standards, and benchmarks; and general methodology for stationary and mobile source air quality analyses. The general methodology for stationary source modeling (regarding model selection, receptor placement, and meteorological data) presented in Chapter 15 was followed for modeling dispersion of pollutants from on-site sources during the construction period. Additional details relevant only to the construction air quality analysis methodology are presented in the following section.

The *CEQR Technical Manual* states that the significance of a likely consequence (i.e., whether it is material, substantial, large, or important) should be assessed in connection with its setting (e.g., urban or rural), its probability of occurrence, its duration, its irreversibility, its geographic scope, its magnitude, and the number of people affected. In terms of the magnitude of air quality impacts, an action predicted to increase the concentration of a criteria air pollutant to a level that would exceed the NAAQS, or increase the concentration of $PM_{2.5}$ above the ~~interim guidance thresholds~~ *de minimis* criteria, could have an adverse impact of significant magnitude. The factors identified above would then be considered in determining the overall significance of the potential impact.

On-Site Construction Activity Assessment

The CitiField Stadium, the home of the New York Mets major league baseball team, is located near the construction sites. However, most of the baseball games would occur during weeknights or weekends when limited construction activities are expected for the proposed project. Therefore, construction activities would not likely impair the enjoyment of stadium users. Since there are no other sensitive residential and open space receptors located near the construction of Phases 1A and 1B, the quantitative analysis focused on Phase 2 construction of the proposed project, which would be built in proximity of residential and open space areas.

To determine which construction periods constitute the worst-case periods for the pollutants of concern (PM, CO, NO_2), construction-related emissions were calculated throughout the duration of construction on an annual and peak day basis for $PM_{2.5}$. $PM_{2.5}$ was selected for determining the worst-case periods for all pollutants as analyzed, because the ratio of $PM_{2.5}$ emissions to impact criteria is higher than for other pollutants. Therefore, initial estimates of $PM_{2.5}$ emissions throughout the construction years were used for determining the worst-case periods for analysis of all pollutants. Generally, emission patterns of PM_{10} and NO_2 would follow $PM_{2.5}$ emissions, since they are related to diesel engines by horsepower (hp). CO emissions may have a somewhat different pattern but generally would also be highest during periods when the most activity would occur. Based on the resulting multi-year profiles of annual average and peak day average emissions of $PM_{2.5}$, and the proximity of the construction activities to residences and publicly accessible open spaces, a worst-case year and a worst-case short-term period for construction were identified for dispersion modeling of annual and short-term (i.e., 24-hour, 8-hour, and 1-hour) averaging periods. Dispersion of the relevant air pollutants from the sites during these periods was then analyzed, and the highest resulting concentrations are presented in the following sections. Broader conclusions regarding potential concentrations during other periods, which were not modeled, are presented as well, based on the multi-year emissions profiles and the worst-case period results.

The sizes, types, and number of construction equipment were estimated based on the construction activity schedule. Emission factors for NO_x, CO, PM_{10}, and $PM_{2.5}$ from on-site construction engines were developed using the EPA's NONROAD2008 Emission Model (NONROAD). Since emission factors for concrete pumps are not available from either the EPA Motor Vehicle Emission Simulator (MOVES) emissions model or NONROAD, emission factors specifically developed for this type of application were used.[1] With respect to trucks, emission rates for $NO_{X,}$ CO, PM_{10}, and $PM_{2.5}$ for truck engines were developed using MOVES.

As described in the introduction above, the project sponsors would be committed to a number of measures to reduce air pollutant emissions during construction of the proposed project, with special attention given to DPM. These measures include the exclusive use of ULSD for all construction engines, the use of Tier 3 or newer equipment with DPFs (OEM or the equivalent tailpipe controls to reduce DPM emissions by at least 90 percent compared with normal private construction practices) during construction on all nonroad construction engines with an engine output rating of 50 hp or greater. In addition, controlled truck fleets (i.e., truck fleets under long-term contract, such as concrete trucks) would use trucks equipped with DPFs.

Based on the above commitments, emission factors for the construction of the proposed project were calculated assuming the exclusive use of ULSD, diesel engines of Tier 3 certification, and the application of DPFs on all nonroad diesel engines 50 hp or greater and on concrete delivery and pumping trucks; other trucks were assumed to have emissions consistent with the general truck fleet (all on-road diesel vehicles currently use ULSD, as mandated by federal regulations). $PM_{2.5}$ emission factors for engines retrofit with a DPF (i.e., all nonroad engines with a power output of 50 hp or greater and all concrete delivery trucks) were calculated as 10 percent of the NONROAD Tier 3 emission factors. The emission factors specifically developed for concrete pump trucks were also reduced by 90 percent to account for the DPFs. All personnel/material hoists and small hand tools would be electric and would therefore have no associated emissions.

In addition to engine emissions, fugitive dust emissions from operations (e.g., excavation and loading excavated materials into dump trucks) were calculated based on EPA procedures delineated in AP-42 Table 13.2.3-1. It was estimated that the planned control of fugitive emissions would reduce PM emissions from such processes by 50 percent. A robust watering program would be implemented for all demolition, excavation, and transfer of loose materials to and from trucks.

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[1] Concrete pumps are truck mounted and use the truck engine to power the pumps at high load. This application of truck engines is not addressed by the MOVES model, and since it is not a non-road engine, it is not included in the NONROAD model. Emission factors were obtained from a study which developed factors specifically for this type of activity. *FEIS for the Proposed Manhattanville in West Harlem Rezoning and Academic Mixed-Use Development*, CPC–NYCDCP, November 16, 2007.

The resulting emission factors were used for the emissions and dispersion analyses. Average annual (running 12-month averages) and peak-day $PM_{2.5}$ engine emissions profiles for the entire duration of the construction were prepared by multiplying the above emission rates by the number of engines, the work hours per day, and fraction of the day each engine would be expected to work during each month. The resulting overall peak day and annual average emission profiles are presented in **Figures 20-5** and **20-6**. Based on the $PM_{2.5}$ construction emissions profiles, August 2029 and the year from August 2029 to July 2030 were identified as the worst-case short-term and annual periods, respectively, since the highest project-wide emissions were predicted in these periods, construction activities would occur simultaneously at parcels A6, A7, A11, A12, A13, A14, A15 and A19, and the construction activities would take place in close proximity to completed Phase 1B residential locations and open spaces during these periods.

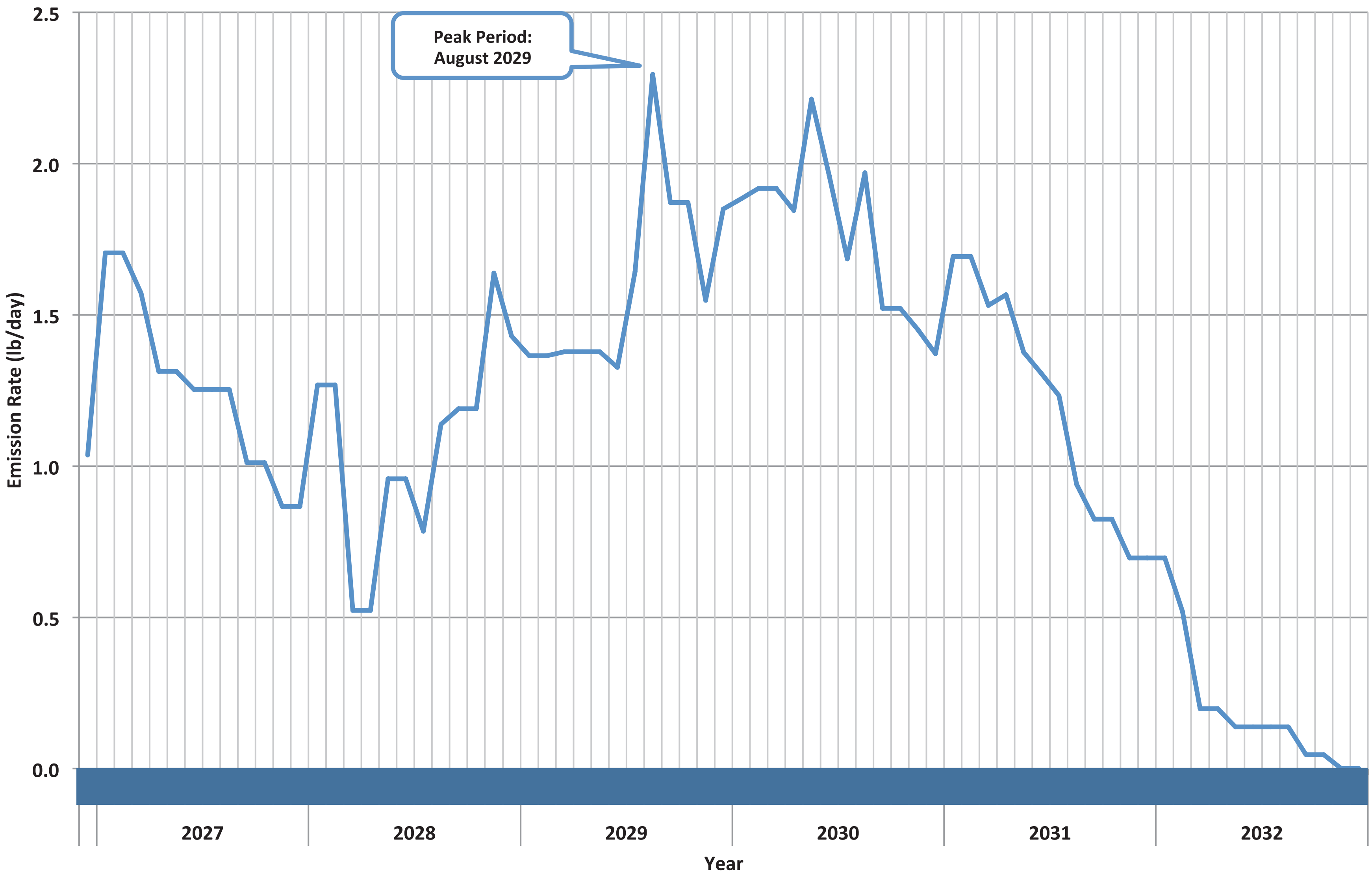
The dispersion of pollutants during the worst-case short-term and annual periods was then modeled in detail to predict resulting maximum concentration increments from construction activity and total concentrations (including background concentrations) in the surrounding area. Although the modeled results are based on construction scenarios for specific sample periods, conclusions regarding other periods, were derived based on the fact that lower concentration increments from construction would generally be expected during periods with lower construction emissions. As presented in **Figures 20-5** and **20-6**, emissions during other periods would be lower—often much lower—than the peak emissions. However, since the worst-case short-term results may often be indicative of very local impacts, similar maximum local impacts may occur at any stage at various locations but would not persist in any single location, since emission sources would not be located continuously at any single location throughout construction. Equipment would move throughout the site as construction progresses.

For the short-term model scenarios, predicting concentration averages for periods of 24 hours or less, all stationary sources, such as compressors, pumps, or concrete trucks, which idle in a single location while unloading, were simulated as point sources. Other engines, which would move around the site on any given day, were simulated as area sources. For periods of 8 hours or less (less than the length of a shift), it was assumed that all engines would be active simultaneously. All sources would move around the site throughout the year and were therefore simulated as area sources in the annual analyses.

Receptors (locations in the model where concentrations are predicted) were placed along the sidewalks surrounding the construction sites on both sides of the street at locations that would be publicly accessible, at residential and other sensitive uses at both ground-level and elevated locations (e.g., residential windows), at completed and occupied Phase 1B buildings, and at open spaces.

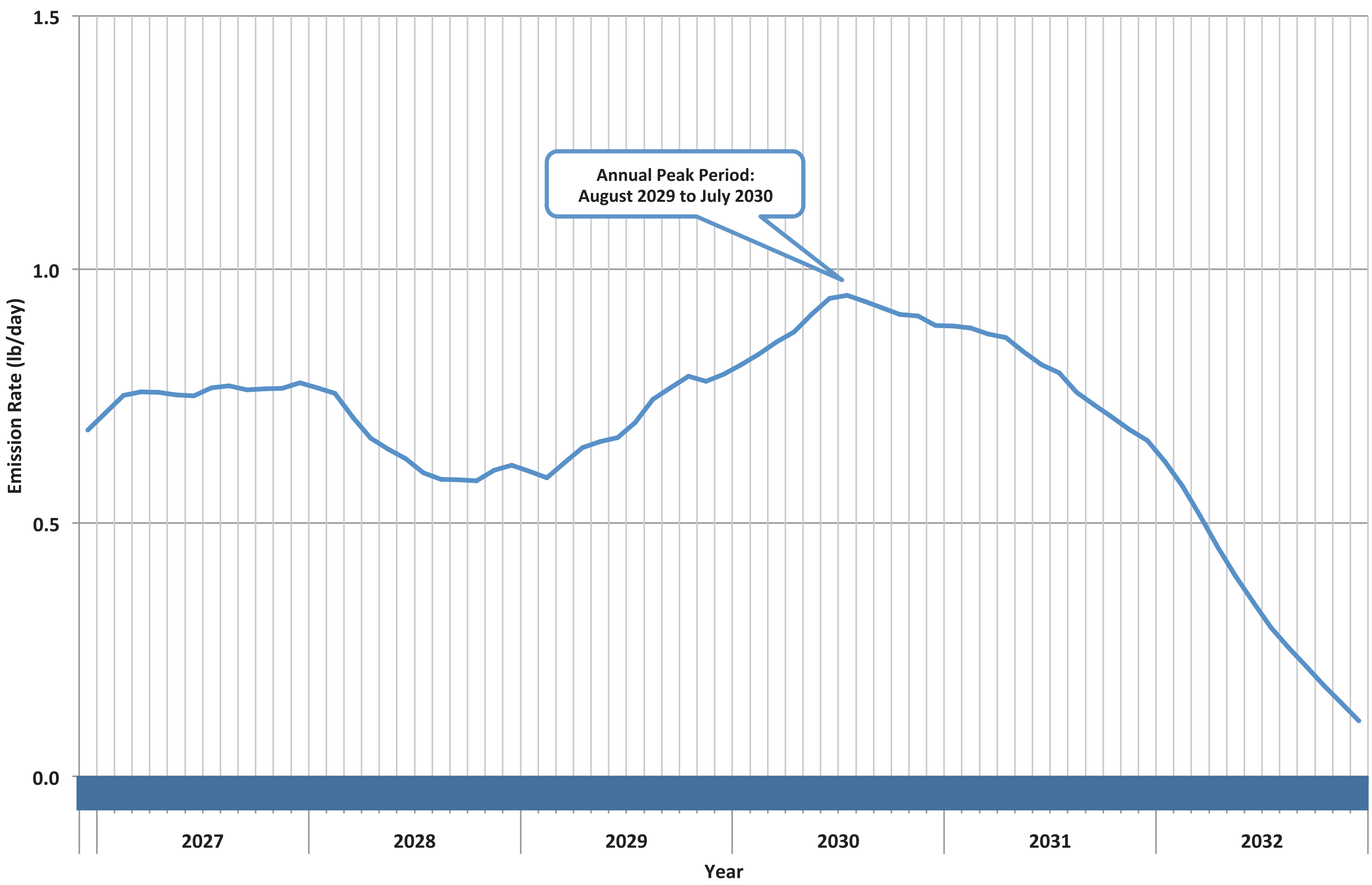
Mobile Source Assessment

The general methodology for mobile source modeling presented in Chapter 15 was followed for intersection modeling during the construction period. The CAL3QHC model was used to perform mobile source CO computations, while CAL3QHCR, a refined version of the CAL3QHC model, was used to determine motor vehicle generated PM concentrations. The intersection selected for CO, PM_{10} and $PM_{2.5}$ modeling is presented in **Table 20-11**. This intersection was selected after considering all intersection locations analyzed for the traffic study because it is a signalized location where the greatest number of cumulative construction and operational vehicles generated by the proposed project and, therefore, the maximum change in the concentrations and greatest potential for air quality impacts is expected.



Short-Term (24-Hour Average) $PM_{2.5}$ Construction Emissions Profile

Figure 20-5



Annual (Moving 12-Month Average) $PM_{2.5}$ Construction Emissions Profile

Figure 20-6

Table 20-11
Mobile Source Analysis Intersection Location

Analysis Site	Location	Pollutants Analyzed
1	34th Avenue and 126th Street	CO, PM_{10}, $PM_{2.5}$

Cumulative Assessment

Since emissions from on-site construction equipment and on-road construction-related vehicles may contribute to concentration increments concurrently, a cumulative assessment was undertaken to determine the potential effect of these sources combined. The mobile source and stationary source analyses are performed separately with different dispersion models, as appropriate for the different types of analyses. Total cumulative concentration increments were estimated qualitatively by examining the highest results from the on-site construction analysis to the maximum mobile-source increments from the mobile source site closest to the location of the on-site construction activities. The combination of the results from different models is a conservatively high estimate of potential impacts, since it is likely that the highest results from different sources would occur under different meteorological conditions (e.g., different wind direction and speed) and would not actually occur simultaneously.

FUTURE WITHOUT THE PROPOSED PROJECT

Background Air Quality

In the future without the proposed project, there would likely be much less or possibly no development at the proposed sites. Since air quality regulations mandated by the Clean Air Act are anticipated to maintain or improve air quality in the region, it can be expected that air quality conditions in the future without the proposed project would be similar to or no worse than those that presently exist. However, it should be noted that, without the proposed project, the current auto-related and other industrial uses—as well as the attendant pollutants emitted by those uses—would continue to have an effect on local air quality.

Mobile Source Assessment

CO

CO concentrations without the proposed project were determined using the methodology previously described. **Table 20-12** shows future maximum predicted 8-hour average CO concentrations at the analysis intersections without the proposed project. The values shown are the highest predicted concentrations for the receptor locations for any of the time periods analyzed. As indicated in **Table 20-12**, the predicted 8-hour concentrations of CO, including background, are below the corresponding ambient air quality standard.

Table 20-12
8-Hour Average CO Concentrations
Without the Proposed Project (ppm)

Analysis Site	Location	8-Hour Concentration	NAAQS
1	34th Avenue and 126th Street	2.1	9
Note:	An adjusted ambient background concentration of 2.0 ppm is included in the No Action values presented above.		

PM

Concentrations of PM_{10} and $PM_{2.5}$ from mobile sources without the proposed project were also determined. Concentrations of PM_{10} included a 24-hour averaging period and $PM_{2.5}$ included the 24-hour and annual averaging periods. As shown in **Table 20-13**, including a background concentration of 50 $\mu g/m^3$, the maximum PM_{10} 24-hour No Action concentrations are predicted to be below the applicable NAAQS of 150 $\mu g/m^3$. Note that $PM_{2.5}$ concentrations for No Action condition are not presented, since impacts are assessed on an incremental basis.

Table 20-13
24-Hour Average PM_{10} Concentrations Without the Proposed Project ($\mu g/m^3$)

Analysis Site	Location	24-Hour Concentration	NAAQS
1	34th Avenue and 126th Street	63.7	150
Note: An adjusted ambient background concentration of 50 $\mu g/m^3$ is included in the No Action values presented above.			

FUTURE WITH THE PROPOSED PROJECT

On-Site Construction Activity Assessment

Maximum predicted concentration increments from construction of the proposed project, and overall concentrations including background concentrations, are presented in **Table 20-14**. For $PM_{2.5}$, monitored concentrations are not added to modeled concentrations from sources, since impacts are determined by comparing the predicted increment from the proposed project as compared to the No Action with the ~~interim guidance~~ *de minimis* criteria. The total maximum combined concentrations, including mobile sources and construction, are presented in the "Cumulative Assessment" section, below.

The maximum predicted total concentrations of PM_{10}, CO, and annual-average NO_2 are not expected to exceed the NAAQS.

From the on-site sources related to the construction, the maximum predicted 24-hour average $PM_{2.5}$ incremental concentration (3.3$\mu g/m^3$) would occur ~~occurred~~ at a sidewalk receptor location southwest of the construction activities at parcel A11. This maximum predicted 24-hour average $PM_{2.5}$ incremental concentration would not exceed the *de minimis* criterion of 4.5 $\mu g/m^3$. The maximum predicted neighborhood-scale annual average $PM_{2.5}$ concentration would be 0.001 $\mu g/m^3$—lower than the *de minimis* criterion of 0.1 $\mu g/m^3$, and the maximum predicted local annual average $PM_{2.5}$ concentration would be less than the applicable *de minimis* criterion.

The maximum predicted 24-hour average and annual-average $PM_{2.5}$ concentration increments ~~exceeded 2 $\mu g/m^3$~~ at a ~~few~~ sensitive residential receptor location~~s~~ would occur on the northeastern façade of parcel A1 immediately southwest of the construction of parcel A11. As shown in **Table 20-4**, the maximum predicted 24-hour average and annual-average $PM_{2.5}$ incremental concentrations would not exceed the *de minimis* criterion of 4.5 $\mu g/m^3$ and 0.1 $\mu g/m^3$ respectively. ~~(See **Figure 1-6** for locations of parcels A1 and A11). At these locations, the maximum predicted frequency ranged from one to four times per year with an annual average frequency of two times per year or less.~~

Therefore, the predicted concentrations and increments from on-site construction sources associated with the proposed project would not result in any significant adverse air quality impacts.

Table 20-14
Maximum Predicted Pollutant Concentrations from Construction Site Sources ($\mu g/m^3$)

Pollutant	Averaging Period	No Action	Proposed Project	Increment	*De Minimis*	NAAQS
Residence, Academic Buildings or Open Space						
$PM_{2.5}$	24-hour[1]	—	—	2.7[3]	4.5[2]	35
	Annual Local[1]	—	—	0.19	0.30	15
PM_{10}	24-hour	50	54.7	4.7	—	150
NO_2	Annual	43	56.4	13.4	—	100
CO	1-hour	3.4 ppm	4.5 ppm	1.1 ppm	—	35 ppm
	8-hour	2.0 ppm	2.5 ppm	0.5 ppm	—	9 ppm
Sidewalks and Covered Walkways Adjacent to Construction						
$PM_{2.5}$	24-hour[1]	—	—	3.3[3]	4.5[2]	35
	Annual Local[1]	—	—	0.21	0.30	15
PM_{10}	24-hour	50	55.5	5.5	—	150
NO_2	Annual	43	60.6	17.6	—	100
CO	1-hour	3.4 ppm	0.6 ppm	4.0 ppm	—	35 ppm
	8-hour	2.0 ppm	0.3 ppm	2.3 ppm	—	9 ppm

Notes:

Results for any other time period would be lower.

$PM_{2.5}$ concentration increments were compared with threshold values. Total concentrations were compared with the NAAQS.

1 Monitored concentrations are not added to modeled $PM_{2.5}$ values.

2 ~~NYCDEP is currently applying threshold criteria for assessing the significance of 24-hour average $PM_{2.5}$ impacts. The significance of temporary concentration increments greater than 2 $\mu g/m^3$ is assessed in the context of the magnitude, frequency, duration, location and size of area affected by the concentration increment.~~ The $PM_{2.5}$ *de minimis* criteria superseded the $PM_{2.5}$ interim guidance criteria on June 5, 2013. The 24-hour average interim guidance criteria for $PM_{2.5}$ were as follows: > 2 $\mu g/m^3$ (5 $\mu g/m^3$ not-to-exceed value), based on the magnitude, frequency, duration, location, and size of the area of the predicted concentrations.

3 ~~This value exceeds the interim guidance threshold level. See text for further discussion.~~ The $PM_{2.5}$ increments shown are less than the *de minimis* value. These increments were not considered significant when they were compared with the interim guidance criteria in the DSEIS, and are also not significant when compared to the *de minimis* value.

~~The maximum predicted concentrations are probably overstated because the model did not include the effects of the noise reduction wall along the site perimeter that would be between sensitive receptors and the source of the emissions. The location of the maximum 24-hour average increments would vary based on the location of the sources during construction, which would move throughout the site over time. Therefore, continuous daily exposures would not be likely to occur at any one location. Based on the limited duration and extent of these predicted exceedances, the low frequency of occurrence, and the limited potential for exposure, this would not result in significant adverse impacts.~~

~~These maximum increments were computed for the peak construction period; for other construction time periods with lesser emissions, the potential 24-hour increments would be less. The maximum predicted neighborhood-scale annual average $PM_{2.5}$ concentration would be 0.001 $\mu g/m^3$— lower than the interim guidance threshold level of 0.1 $\mu g/m^3$, and the maximum predicted local annual average $PM_{2.5}$ concentration would be less than the applicable interim guidance threshold.~~

Construction during Phases 1A and 1B of the Proposed Project

Based on the results of the detailed quantitative analysis of construction air quality during Phase 2, the effects of construction during the earlier phases of the proposed project could be qualitatively evaluated. As described above, besides CitiField Stadium, there are no sensitive residential and open space receptors located near the construction of Phases 1A and 1B of the proposed project. However, most of the baseball games would occur during weeknights or weekends when limited construction activities are expected for the proposed project. Therefore, construction activities would not likely impair the enjoyment of Stadium users. Although Phase 1A construction activities would be nearest to the sensitive receptor locations west of 114th Street, these receptor locations are more than 500 feet away from the Phase 1A construction site. Such distance between the emissions sources and these receptors locations would result in enhanced dispersion of pollutants and therefore potential concentration increments from on-site sources at such locations would be reduced. A review of the surrogate receptors from the detailed analysis performed for Phase 2 construction activities showed that results at 500 feet away from the sources would result in concentrations well below the corresponding standards and thresholds. Therefore, there would be no significant adverse construction air quality impacts at sensitive receptor locations west of 114th Street. Furthermore, Phase 2 would include the most intense construction activities during construction of the proposed project as compared to Phases 1A and 1B. Therefore, since the construction of Phase 2 of the proposed project would not result in significant adverse impacts with respect to air quality, Phases 1A and 1B construction activities would also not result in significant adverse impacts with respect to air quality.

Mobile Source Assessment

A mobile source air quality analysis was conducted for the project during construction activities at the site for the peak construction traffic year of 2030. Localized pollutant impacts from the vehicles queuing at the selected intersection were analyzed for CO for the 8-hour averaging period. PM_{10} was analyzed for the 24-hour averaging period and $PM_{2.5}$ was analyzed for the 24-hour and annual averaging periods.

CO

CO concentrations with the proposed project were determined using the methodology previously described. **Table 20-15** shows the future maximum predicted 8-hour average CO concentration with the proposed project at the analysis intersections studied. (No 1-hour values are shown, since no exceedances of the NAAQS would occur and the *de minimis* criteria are only applicable to 8-hour concentrations; therefore, the 8-hour values are the most critical for impact assessment.) The values shown are the highest predicted concentrations for the time periods analyzed. In addition, the incremental increases in 8-hour average CO concentration is small, and consequently would not result in a violation of the CEQR *de minimis* CO criteria. Therefore, construction of the proposed project would not result in any significant CO air quality impacts in the With Action condition.

Table 20-15
Maximum Predicted Future No Action and With Action 8-Hour Average CO Concentrations (ppm)

Analysis Site	Location	No Action 8-Hour Concentration	With Action 8-Hour Concentration	Increment	*De Minimis*	NAAQS
1	34th Avenue and 126th Street	2.1	2.6	0.5	3.4	9
Note:	An adjusted ambient background concentration of 2.0 ppm is included in the No Action values presented above.					

PM

Concentrations of PM_{10} and $PM_{2.5}$ from mobile sources with the proposed project were also determined. **Table 20-16** shows the future maximum predicted 24-hour average PM_{10}

concentrations with the proposed project. The values shown are the highest predicted concentrations for all locations analyzed and include the ambient background concentrations. The results indicate that the construction of the proposed project would not result in any violations of the PM_{10} standard or any significant adverse impacts on air quality.

Table 20-16
Maximum Predicted Future No Action and With Action
24-Hour Average PM_{10} Concentrations (µg/m³)

Analysis Site	Location	No Action 24-Hour Concentration	With Action 24-Hour Concentration	NAAQS
1	34th Avenue and 126th Street	63.6	80.3	150
Note: An adjusted ambient background concentration of 50 µg/m³ is included in the No Action values presented above.				

Future maximum predicted 24-hour and annual average $PM_{2.5}$ concentration increments were calculated so that they could be compared to the interim guidance *de minimis* criteria that would determine the potential significance of any impacts from the proposed project. Based on this analysis, the maximum predicted localized 24-hour average and neighborhood-scale annual average incremental $PM_{2.5}$ concentrations are presented in **Tables 20-17** and **20-18**, respectively. The results show that the maximum daily (24-hour) $PM_{2.5}$ increments are predicted to be below the applicable interim guidance *de minimis* criterion of 54.5 µg/m³, and the maximum annual average $PM_{2.5}$ increments are not predicted to exceed the applicable interim guidance *de minimis* criterion of 0.1 µg/m³. Therefore, the predicted $PM_{2.5}$ increments from mobile sources associated with construction of the proposed project would not result in any significant adverse impacts on air quality.

Table 20-17
Maximum Predicted Future
24-Hour Average $PM_{2.5}$ Concentration Increments (µg/m³)

Analysis Site	Location	Increment	*De Minimis*
1	34th Avenue and 126th Street	3.1	4.5
Note: The $PM_{2.5}$ *de minimis* criteria superseded the $PM_{2.5}$ interim guidance criteria on June 5, 2013. The 24-hour average interim guidance criteria for $PM_{2.5}$ were as follows:24-hour average, ≥ 2 µg/m³ (5 µg/m³ not-to-exceed value), based on the magnitude, frequency, duration, location, and size of the area of the predicted concentrations. The $PM_{2.5}$ increments shown are less than the *de minimis* value. These increments were not considered significant when they were compared with the interim guidance criteria in the DSEIS, and are also not significant when compared to the *de minimis* value.			

Table 20-18
Maximum Predicted Future
Neighborhood Scale $PM_{2.5}$ Concentrations (µg/m³)

Analysis Site	Location	Increment	*De Minimis*
1	34th Avenue and 126th Street	0.09	0.1
Note: $PM_{2.5}$ interim guidance *de minimis* criteria—annual average (neighborhood scale) greater than 0.1 µg/m³. The *de minimis* criteria superseded the interim guidance criteria that were used for impact assessment in the DSEIS. For annual increments, the *de minimis* criteria are the same as the superseded interim guidance criteria.			

The maximum 24-hour average incremental $PM_{2.5}$ concentration from mobile source analysis site 1, 3.1 µg/m³ (shown in **Table 20-17**), was predicted on the southeast corner of 34th Avenue and 126th Street. At this location, $PM_{2.5}$ concentration increments above 2.0 µg/m³ were predicted to occur for at most six times in a year, and at an average of four times per year. At

~~other modeled locations, maximum predicted $PM_{2.5}$ increments are predicted to be below the interim guidance criteria. Based on the magnitude, extent, and frequency of 24-hour average $PM_{2.5}$ concentrations above 2.0 µg/m^3, the proposed project would not result in significant $PM_{2.5}$ impacts at the analyzed receptor locations. Additional air quality studies may be undertaken between the Draft SEIS and Final SEIS to further refine the construction mobile source analysis for the Phase 2 analysis year, in consultation with DEP.~~

Cumulative Assessment

As described in the cumulative assessment methodology section above, the combination of the highest results from separate analyses performed with different dispersion models are highly conservative, since it is likely that the highest results from different sources would occur under different meteorological conditions (e.g., different wind direction and speed) and would not actually occur simultaneously. In addition, as described above in the methodology section, August 2029 was identified as the worst-case short-term period since the highest project-wide emissions were predicted in these periods, when construction activities would occur simultaneously at parcels A6, A7, A11, A12, A13, A14, A15 and A19 and when construction activities would take place in close proximity to completed Phase 1B residential locations and open spaces. However, most of the activities during this peak period would be away from the intersection (34th Avenue and 126th Street) where the greatest number of cumulative construction and operational vehicles would be generated by the proposed project and away from the proposed school in A8 that would be constructed during Phase 1A.

As described above, from the on-site sources related to the construction, the maximum predicted 24-hour average $PM_{2.5}$ incremental concentration (3.3µg/m^3) occurred at a sidewalk receptor location southwest of the construction activities at parcel A11. It should be noted that the maximum increments, predicted at sidewalks and covered walkways adjacent to construction, are overstated, since they do not include the effect of the solid fence and sidewalk protection on mixing. In addition, sidewalk locations are for transient use and people would not be expected to be present for extended durations. Furthermore, the location of the maximum 24-hour average increments would vary based on the location of the sources, which would move throughout the site over time. Therefore, continuous daily exposures would not be likely to occur at these locations. For $PM_{2.5}$, although the maximum predicted concentration due to stationary sources only (at a sensitive receptor location) and mobile sources only are 2.7 µg/m^3 and 3.1 µg/m^3, respectively, the combined effect of these sources ~~would be minimal~~ ~~and~~ would be much less than just adding the highest results, as explained below. ~~Similarly, for short-term cumulative CO and PM_{10} and annual $PM_{2.5}$ concentrations, the combined effect of these sources would also be minimal and would be much less than just adding the highest results. In addition,~~ The peak construction traffic period corresponds to a time when interior fit-out construction work would occur in multiple buildings due to the number of deliveries and construction workers required for this task; however, interior fit-out work would generate the lowest levels of air emissions since most of the large diesel equipment (i.e., excavators, loaders) on-site would no longer be required during this stage of construction. In addition, 38th Avenue (between Buildings A1 and A11 where the maximum 24-hour average $PM_{2.5}$ concentration from on-site construction sources is predicted) is not a major thoroughfare so a substantial percentage of the construction vehicles passing through 34th Avenue and 126th Street would not also pass through the 38th Avenue corridor. Furthermore, the maximum predicted concentrations resulting from stationary sources are likely to be overstated because the model does not include the shielding effects of the noise reduction wall along the site perimeter that would be between sensitive receptors and the source of the emissions. Moreover, the location of the maximum increments would vary based on the location of the sources, which would move throughout the construction sites over time so continuous daily exposures would not be likely to occur at the same locations. Therefore, based on an analysis of all of the above factors affecting construction emissions and the limited potential for exposure, the combined effects of on-site and on-road construction sources would be minimal and not result in significant adverse impacts. Similarly, for short-term cumulative CO and PM_{10} and annual $PM_{2.5}$ concentrations, the combined effect of these sources would also be minimal and would be much less than just adding the highest results.

Further examination of the Phase 2 construction plan shows that activities at Buildings A5 and A7 would be located near the completed school within Building A8 and much closer to the intersection of 34th Avenue and 126th Street, where the greatest number of cumulative construction and operational vehicles would be generated by the proposed project, than the Phase 2 peak construction period. In terms of air pollutant emissions, the most intense construction activities are excavation and foundations work when multiple heavy duty diesel equipment (i.e., excavators, loaders etc.) would be used. However, as shown in **Figure 20-3**, the excavation and foundation activities for Buildings A5 and A7 would not coincide: the excavation and foundation activities for Building A5 is expected to occur from January 2028 to June 2028 while the excavation and foundation activities for Building A7 is expected to occur from August 2028 to February 2029. In addition, as shown in **Appendix E**, the peak combined construction emissions for Buildings A5 and A7 are expected to be four times less than that for the peak construction period. Therefore, the maximum 24-hour average $PM_{2.5}$ concentration increments at the school within Building A8 due to construction activities at Buildings A5 and A7 would be much less than the 2.7 $\mu g/m^3$ predicted during the peak Phase 2 construction period. Similarly, for short-term CO and PM_{10} and annual $PM_{2.5}$ concentrations, concentration increments at the school within Building A8 due to construction activities at Buildings A5 and A7 would be much less than the 0.5 ppm (8-hour CO), 4.7 $\mu g/m^3$ (24-hour PM_{10}), and 0.19 $\mu g/m^3$ (annual $PM_{2.5}$) predicted during the peak Phase 2 construction period. As explained above, the peak construction traffic period corresponds to a time when interior fit-out construction work would occur in multiple buildings due to the number of deliveries and construction workers required for this task; however, interior fit-out work would generate the lowest levels of air emissions since most of the large diesel equipment (i.e., excavators, loaders) on-site would no longer be required during this stage of construction. As shown in **Appendix E,** the peak construction traffic peak period would occur in the first quarter of 2031 and would generate more traffic than the period when peak on-site construction activities would occur at Buildings A5 and A7 (first quarter of 2028 to 1st quarter of 2029). Furthermore, the construction traffic on 35th Avenue (between Buildings A5 and A7, and the school within Building A8) is not a major thoroughfare such that a substantial percentage of the construction vehicles passing through 34th Avenue and 126th Street would not pass through the 35th Avenue corridor. Hence, the maximum 24-hour average $PM_{2.5}$ concentration increments at the school within Building A8 due to mobile sources would be much less than the 3.1 $\mu g/m^3$ predicted during the peak construction traffic period at the intersection of 34th Avenue and 126th Street. Similarly, for short-term CO and PM_{10} and annual $PM_{2.5}$ concentrations, concentration increments at the school within Building A8 due to mobile sources at Buildings A5 and A7 would be much less than the 0.5 ppm (8-hour CO), 30.3 $\mu g/m^3$ (24-hour PM_{10}), and 0.09 $\mu g/m^3$ (annual $PM_{2.5}$) predicted during the peak construction traffic period. Therefore, based on an analysis of all of the above factors affecting construction emissions, the combined effects of on-site and on-road construction sources at the school within Building A8 due to construction activities at Buildings A5 and A7 would also not result in significant adverse air quality impacts.

CONCLUSIONS

A detailed analysis of the combined effects of on-site and on-road emissions determined that annual-average NO_2, CO, ~~and~~ PM_{10}, and $PM_{2.5}$ concentrations would be below their corresponding NAAQS or *de minimis* criteria. Therefore, the proposed project would not cause or contribute to any significant adverse air quality impacts with respect to these standards.

~~Dispersion modeling determined that the maximum predicted incremental concentrations of $PM_{2.5}$ (using a worst-case emissions scenario) would exceed the City's applicable 24-hour interim guidance criterion of 2 µg/m^3 at a few receptor locations on the northeastern façade of parcel A1 during the construction activities at parcel A11 located immediately to the northeast, where the likelihood of prolonged exposure is very low. The maximum predicted incremental concentrations of $PM_{2.5}$ would also be exceeded at a sidewalk location due to mobile sources on the southeast corner of 34th Avenue and 126th Street. The occurrences of elevated 24-hour average concentrations for $PM_{2.5}$ would be limited in duration, frequency, and magnitude. Therefore, after taking into account the limited duration and extent of these predicted exceedances, and the limited area-wide extent of the 24-hour impacts, it is concluded that no significant adverse air quality impacts for $PM_{2.5}$ are expected from the on-site construction sources.~~

Because background concentrations are not known and the analysis methodology for mobile and stationary sources has not been developed for the new 1-hour NO_2 NAAQS, exceedances of the 1-hour NO_2 standard resulting from construction activities cannot be ruled out. Therefore, measures including diesel equipment reduction, utilization of newer equipment, and source location and idling restriction, would be implemented by the proposed project to minimize NO_x emissions from construction

NOISE AND VIBRATION

INTRODUCTION

Potential impacts on community noise levels during construction of a proposed project can result from noise from construction equipment operation and from construction vehicles and delivery vehicles traveling to and from the site. Noise and vibration levels at a given location are dependent on the kind and number of pieces of construction equipment being operated, the acoustical utilization factor of the equipment (i.e., the percentage of time a piece of equipment is operating at full power), the distance from the construction site, and any shielding effects (from structures such as buildings, walls, or barriers). Noise levels caused by construction activities would vary widely, depending on the phase of construction and the location of the construction relative to receptor locations. The most significant construction noise sources are expected to be impact equipment such as jackhammers, excavators with ram hoes, drill rigs, rock drills, impact wrenches, tower cranes, and paving breakers, as well as the movements of trucks.

Noise from construction activities and some construction equipment is regulated by the New York City Noise Control Code and by the EPA. The New York City Noise Control Code, as amended December 2005 and effective July 1, 2007, requires the adoption and implementation of a noise mitigation plan for each construction site, limits construction (absent special circumstances as described below) to weekdays between the hours of 7:00 AM and 6:00 PM, and sets noise limits for certain specific pieces of construction equipment. Construction activities occurring after hours (weekdays between 6:00 PM and 7:00 AM, and on weekends) may be authorized in the following circumstances: (1) emergency conditions; (2) public safety; (3)

construction projects by or on behalf of City agencies; (4) construction activities with minimal noise impacts; and (5) where there is a claim of undue hardship resulting from unique site characteristics, unforeseen conditions, scheduling conflicts, and/or financial considerations. EPA requirements mandate that certain classifications of construction equipment meet specified noise emissions standards.

Given the scope and duration of construction activities for the proposed project, a quantified construction noise analysis was performed for Phase 2 of the proposed project. Based on the results of the detailed construction noise analysis of Phase 2 of the proposed project, construction noise associated with the earlier phases of construction was qualitatively evaluated. The purpose of this analysis was to determine if significant adverse noise impacts would occur during construction, and if so, to examine the feasibility of implementing mitigation measures to reduce or eliminate such impacts.

CONSTRUCTION NOISE IMPACT CRITERIA

Construction noise impact criteria consider the magnitude and the duration. If the magnitude of the noise level increments due to construction are below the impact criteria applied to the proposed project (3-5 dBA), they are not considered to be significant impacts. If the noise level increments due to construction exceed the 3-5 dBA criteria, the duration of the impacts would be also considered. The *CEQR Technical Manual* states that significant noise impacts due to construction would occur "only at sensitive receptors that would be subjected to high construction noise levels for an extensive period of time." This has been interpreted to mean that such impacts would occur only at sensitive receptors where the activity with the potential to create high noise levels would occur continuously for approximately two years or longer.

In addition, the *CEQR Technical Manual* states that the impact criteria for vehicular sources, using the No Action noise level as the baseline, should be used for assessing construction impacts. As recommended in the *CEQR Technical Manual*, this study uses the following criteria to define a significant adverse noise impact:

- An increase of 5 dBA, or more, in Build $L_{eq(1)}$ noise levels at sensitive receptors (including residences, play areas, parks, schools, libraries, and houses of worship) over those calculated for the No Build condition, if the No Build levels are less than or equal to 60 dBA $L_{eq(1)}$ and the analysis period is not a nighttime period.
- An increase in Build $L_{eq(1)}$ noise levels at sensitive receptors of such that the total Build $L_{eq(1)}$ noise levels would be 65 dBA or greater, if the No Build levels are between 60 and 62 dBA $L_{eq(1)}$ and the analysis period is not a nighttime period.
- An increase of 3 dBA, or more, in Build $L_{eq(1)}$ noise levels at sensitive receptors over those calculated for the No Build condition, if the No Build levels are greater than or equal to 62 dBA $L_{eq(1)}$ and the analysis period is not a nighttime period.
- An increase of 3 dBA, or more, in Build $L_{eq(1)}$ noise levels at sensitive receptors over those calculated for the No Build condition, if the analysis period is a nighttime period (defined by the *CEQR Technical Manual* criteria as being between 10 PM and 7 AM).

NOISE ANALYSIS METHODOLOGY

Construction activities for the proposed project would be expected to result in increased noise levels as a result of: (1) the operation of construction equipment on-site; and (2) the movement of construction-related vehicles (i.e., worker trips, and material and equipment trips) on the surrounding roadways. The effect of each of these noise sources was evaluated. The results presented below show the effects of construction activities (i.e., noise due to both on-site construction equipment and construction-related vehicle operation) and the total cumulative impacts due to operational effects (caused by project-generated vehicular trips) and construction effects (as construction proceeds on uncompleted components of the project).

Noise from the operation of construction equipment on-site at a specific receptor location near a construction site is calculated by computing the sum of the noise produced by all pieces of equipment operating at the construction site. For each piece of equipment, the noise level at a receptor site is a function of:

- The noise emission level of the equipment;
- A usage factor, which accounts for the percentage of time the equipment is operating at full power;
- The distance between the piece of equipment and the receptor;
- Topography and ground effects; and
- Shielding.

Similarly, noise levels due to construction-related traffic are a function of:

- The noise emission levels of the type of vehicle (e.g., auto, light-duty truck, heavy-duty truck, bus, etc.);
- Vehicular speed;
- The distance between the roadway and the receptor;
- Topography and ground effects; and
- Shielding.

CONSTRUCTION NOISE MODELING

Noise effects from Phase 2 construction activities were evaluated using the CadnaA model, a computerized model developed by DataKustik for noise prediction and assessment. The model can be used for the analysis of a wide variety of noise sources, including stationary sources (e.g., construction equipment, industrial equipment, power generation equipment), transportation sources (e.g., roads, highways, railroad lines, busways, airports), and other specialized sources (e.g., sporting facilities). The model takes into account the reference sound pressure levels of the noise sources at 50 feet, attenuation with distance, ground contours, reflections from barriers and structures, attenuation due to shielding, etc. The CadnaA model is based on the acoustic propagation standards promulgated in International Standard ISO 9613-2. This standard is currently under review for adoption by the American National Standards Institute (ANSI) as an American Standard. The CadnaA model is a state-of-the-art tool for noise analysis and is approved for construction noise level prediction by the *CEQR Technical Manual*.

Geographic input data used with the CadnaA model included CAD drawings that defined site work areas, adjacent building footprints and heights, locations of streets, and locations of sensitive receptors. For each analysis period, the geographic location and operational characteristics—including equipment usage rates (percentage of time operating at full power) for each piece of construction equipment operating at the project site, as well as noise control measures—were input to the model. In addition, reflections and shielding by barriers erected on the construction site, and shielding from both adjacent buildings and project buildings as they are constructed, were accounted for in the model. In addition, construction-related vehicles were assigned to the adjacent roadways. The model produced A-weighted $L_{eq(1)}$ noise levels at each receptor location for each analysis period, as well as the contribution from each noise source.

DETERMINATION OF NO ACTION AND NON-CONSTRUCTION NOISE LEVELS

Noise generated by construction activities is added to noise generated by non-construction traffic on adjacent roadways in order to determine the total noise levels at each receptor location. No Action levels would be expected to be similar to existing noise levels in the study area, because no substantial increases in traffic are predicted to occur in the No Action condition. Consequently, existing noise levels were conservatively used as the baseline noise levels for determining construction-generated noise level increases. Existing noise levels at the analysis receptors were determined by:

- Performing noise measurements at various at-grade locations;
- Calculating noise levels at the receptor sites and measurement locations using the CadnaA model with existing site geometry and existing traffic on adjacent roadways as inputs;
- Determining adjustment factors based on the difference between the measured and calculated existing noise levels at the measurement locations; and
- Applying the adjustment factors to the calculated existing noise levels at the construction noise receptors.

ANALYSIS PERIODS

As described above, construction activities are expected to take place over a period of about 19 years (i.e., from 2014 through 2032). Except for unusual circumstances construction activities would occur on weekdays only. Therefore, construction noise analyses were performed only for the weekday periods.

A qualitative analysis of Phases 1A and 1B was performed, but the quantitative construction noise analysis focused on Phase 2 of the proposed project, lasting from 2028 through 2032, which is the Phase of the project whose construction would be most likely to result in significant construction noise impacts. Anticipated construction schedule and durations for this Phase were developed by Hunter Roberts Construction Group, an experienced New York City construction manager, and are representative of the reasonable worst-case conditions for assessing potential impacts. The schedule included projections of the number of workers, types and number of pieces of equipment, and number of construction vehicles anticipated to be operating during each month of the Phase 2 construction period. An analysis was performed based on this construction schedule to determine the months during the Phase 2 construction period (i.e., 2028-2032) when the maximum potential for significant noise impacts would occur. This analysis conservatively assumed that the worst-case month of each year would represent the entire year, and the year was modeled according to its peak month. In addition, to be conservative, the noise analysis assumed that both peak on-site construction activities and peak construction-related traffic conditions occurred simultaneously.

NOISE REDUCTION MEASURES

Construction at the project site would be required to follow the requirements of the New York City Noise Control Code (NYC Noise Code) for construction noise control measures. Specific noise control measures will be described in a noise mitigation plan required under the NYC Noise Code. These measures could include a variety of source and path controls.

In terms of source controls (i.e., reducing noise levels at the source or during the most sensitive time periods), the following measures would be implemented in accordance with the NYC Noise Code:

- Equipment that meets the sound level standards specified in Subchapter 5 of the New York City Noise Control Code would be utilized from the start of construction. **Table 20-19** shows the noise levels for typical construction equipment and the mandated noise levels for the equipment that would be used for construction of the proposed project.

Table 20-19
Typical Construction Equipment Noise Emission Levels (dBA)

Equipment List	NYCDEP & FTA Typical Noise Level at 50 feet[1]	Noise Level with Noise Control Measures at 50 feet[2]
Compressors	58	
Concrete Pump	82	
Crane (Crawler Cranes)	85	
Cranes (Tower Cranes)	85	
Delivery Trucks	84	
Dump Trucks	84	
Excavator	85	
Generators	82	72
Hand Tool	59	
Hoist	75	
Lift	85	
Pile Driving Rig (Impact)	95	85

Notes:
1 Sources: Citywide Construction Noise Mitigation, Chapter 28, Department of Environmental Protection of New York City, 2007. Transit Noise and Vibration Impact Assessment, FTA, May 2006.
2 Path controls include portable noise barriers, enclosures, acoustical panels, and curtains, whichever are feasible and practicable.
3 Source: Kessler, Frederick M., “Noise Control for Construction Equipment and Construction Sites,” report for Hydro Quebec.

- As early in the construction period as logistics will allow, diesel- or gas-powered equipment would be replaced with electrical-powered equipment such as welders, water pumps, bench saws, and table saws (i.e., early electrification) to the extent feasible and practicable.
- Where feasible and practicable, construction sites would be configured to minimize back-up alarm noise. In addition, all trucks would not be allowed to idle more than three minutes at the construction site based upon New York City Local Law, unless necessary for construction operations.
- Contractors and subcontractors would be required to properly maintain their equipment and mufflers.
- A properly secured impact cushion (either a commercially available model or one fabricated from scrap wood, leather, or rubber at the job site) would be installed on top of piles that are being driven by an impact hammer.

In terms of path controls (e.g., placement of equipment, implementation of barriers or enclosures between equipment and sensitive receptors), the following measures for construction, which go beyond typical construction techniques, would be implemented to the extent feasible and practical:

- Where logistics allow, noisy equipment, such as cranes, concrete pumps, concrete trucks, and delivery trucks, would be located away from and shielded from sensitive receptor locations. Once building foundations are completed, delivery trucks would operate behind construction fence, where possible.
- Noise barriers constructed from plywood or other materials would be utilized to provide shielding (e.g., the construction sites would have a minimum 8-foot barrier during Phase 1A

construction and a minimum 16-foot barrier during Phase 1B and Phase 2 construction, and, where logistics allow, truck deliveries would take place behind these barriers once building foundations are completed).

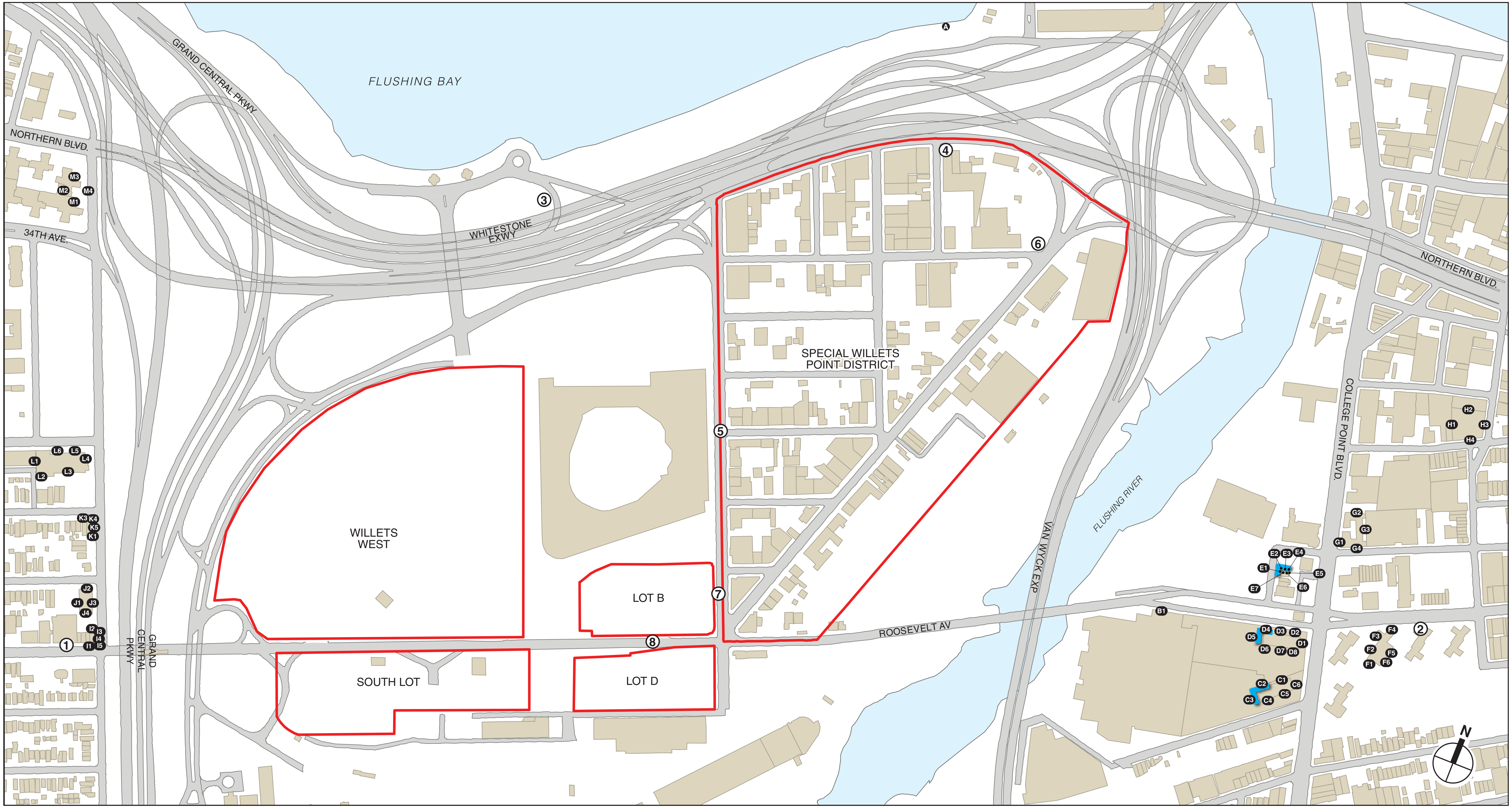
- During Phase 1B and Phase 2 construction, path noise control measures (i.e., portable noise barriers, panels, enclosures, and acoustical tents, where feasible) would be used for impact pile drivers and generators used on site. These path control measures were conservatively assumed to offer only a 10 dBA reduction in noise levels for each piece of equipment to which they are applied, as shown in **Table 20-19**. The details to construct portable noise barriers, enclosures, tents, etc. are based upon the instructions of NYCDEP Citywide Construction Noise Mitigation.

RECEPTOR SITES

Eight (8) noise measurement locations (i.e., sites 1 to 8) were selected to determine the baseline existing noise levels, and fourteen (14) receptor locations (i.e., sites 1 to 14) close to the project area were selected as discrete noise receptor sites for the construction noise analysis. These receptors were either located directly adjacent to the project site or streets where construction trucks would pass. Each receptor site was the location of a residence or other noise-sensitive use. At some buildings, multiple building façades were analyzed. At high-rise buildings, noise receptors were selected at multiple elevations. At open space locations, receptors were selected at street level. **Figure 20-7** shows the locations of the 16 noise receptor sites, and **Table 20-20** lists the noise receptor sites and the associated land use at each site. The receptor sites selected for detailed analysis are representative of other noise receptors in the immediate project area and are the locations where maximum project impacts due to construction noise would be expected.

Table 20-20
Noise Receptor Locations

Receptor	Location	Associated Land Use
1	Roosevelt Avenue between 114th Street and 111th Street	Residential/Commercial
2	Roosevelt Avenue between College Point Boulevard and Prince Street	Residential
3	World’s Fair Marina Park- Center	Open Space
4	Northern Boulevard between 127th Street and 127th Place	Future Residential/Commercial
5	126th Street between 36th Avenue and 37th Avenue	Future Residential/Commercial
6	Willets Point Boulevard between 34th Avenue and Northern Boulevard	Future Residential/Commercial
7	126th Street between 39th Avenue and Roosevelt Avenue	Future Commercial
8	Roosevelt Avenue between 114th Street and 126th Street	Future Commercial
A	Word’s Fair Marina Park- East End	Open Space
B	42-26 College Point Boulevard/131-07 40th Road (floors 1-6)	Retail
C	131-07 40th Road (floors 7-17)	Residential
D	42-26 College Point Boulevard (floors 7-17)	Residential
E	39-15 and 39-17 Janet Place	Residential
F	Southeast corner of College Point Boulevard and Roosevelt Avenue	Residential
G	Northeast corner of College Point Boulevard and 39th Street	Residential
H	Northwest corner of 38th Avenue and Prince Street	Residential/Commercial
I	Northwest corner of Roosevelt Avenue and 114th Street	Residential/Commercial
J	114th Street between Roosevelt Avenue and 39th Avenue	Residential
K	114th Street between 39th Avenue and 38th Avenue	Residential
L	114th Street between 38th Avenue and 37th Avenue	Residential
M	114th Street between Northern Boulevard and 34th Avenue	Residential



Project Site

Significant Construction Noise Impact

Noise Monitoring Receptor

Analysis Receptor

Construction Noise Analysis Receptors
Figure 20-7

CONSTRUCTION NOISE ANALYSIS RESULTS

Cumulative Analysis

Using the methodology described above, and considering the noise abatement measures for source and path controls specified above, cumulative noise analyses were performed to determine maximum one-hour equivalent ($L_{eq(1)}$) noise levels that would be expected to occur during each year of construction.

The noise analysis results in **Appendix E** show that predicted noise levels due to construction-related activities would result in increases in noise levels that would exceed the CEQR impact criteria during one or more years at three (3) of the fourteen (14) receptor sites.

The noise analysis results show that predicted noise levels would not exceed the CEQR impact criteria for two or more consecutive years on one or more floors at any of the fourteen (14) receptor sites. (Additional details of the construction analysis are presented in **Appendix E**).

The conceptual schedule on which the noise analysis was based assumes a compressed and conservative potential timeline for construction that tended to show the most construction activity and most construction equipment operating simultaneously, which conditions would result in the largest increase in noise levels at the nearby receptors. Actual construction activities may take place over a longer time period, and result in lower noise levels than those predicted for the worst-case conditions analyzed.

Construction During Phase 1A of the Proposed Project

Phase 1A construction includes construction on parcels within the District as well as the Willets West parcel, and parking lot parcels south of Roosevelt Avenue. However, the construction on each parcel is generally of very short duration. Construction of the retail building on the Willets West parcel would be the longest duration construction of any of the parcels included in Phase 1A. It is also the parcel nearest to the sensitive receptor locations west of 114th Street.

Based on the results of the detailed analysis of Phase 2 construction, the demolition, excavation and foundation phases of the construction period were determined to generate the most noise, especially during the times when pile drivers and excavators would be operating on site. Phase 1A construction does not include the additional noise controls, including higher site-perimeter noise barriers (which would tend to shield excavators from receptors) and additional path controls on impact pile drivers that would be used for Phases 1B and 2. While the full duration of construction on the Willets West parcel is 31 months, the most noise-intensive construction activities (demolition/excavation/foundation work) would last only approximately 16 months (as shown in the conceptual schedule in **Appendix E**).

Based on the results of the detailed analysis of Phase 2 construction, maximum $L_{eq(1h)}$ noise levels at the nearby receptors during this period would be expected to be in the low 70s dBA range, which may result in some exceedances of the *CEQR Technical Manual* noise impact criteria at these locations. However, the duration of these exceedances would be less than 24 consecutive months. So, while the resulting noise level increases may be perceptible and intrusive, they would not be considered “long-term” or significant according to CEQR criteria.

Furthermore, there is a long distance between the Willets West parcel and the receptors west of 114th Street and the Grand Central Parkway, which generates high levels of traffic noise, runs in between the Willets West parcel and the receptors west of 114th Street. Because of these factors, the magnitudes of the noise level increments at the nearby receptors resulting from construction on the Willets West parcel, while they may result in some exceedances of the *CEQR Technical*

Manual noise impact criteria, would not be large enough to disrupt quality of life at these receptors during their limited durations.

Construction at other parcels included in Phase 1A of the proposed project would occur over even shorter durations, and would be located even further from sensitive receptor locations. Consequently, Phase 1A construction in its entirety would not be expected to result in any significant adverse noise impacts.

Construction During Phase 1B of the Proposed Project

Construction of Phase 1B of the proposed project would occur within the District, similarly to the Phase 2 construction. Additionally, Phase 1B construction would utilize all of the same noise control measures included in the detailed analysis of Phase 2 construction, and would include a comparable or smaller amount of construction equipment to that of the Phase 2 construction. Consequently, the conclusions of the detailed analysis of Phase 2 would be applicable to the Phase 1B construction as well, and Phase 1B construction would not be expected to result in any significant adverse noise impacts.

Noise Levels During Construction at Locations Included in the Proposed Project

Proposed buildings that would be completed and occupied before construction is completed at other project building sites, including buildings included in Phase 1B and buildings included in Phase 2 that are completed and occupied before the completion of construction of Phase 2, would also experience elevated exterior noise levels due to ongoing construction activities associated with the proposed project. During the Phase 2 construction periods, these project noise receptors would experience $L_{10(1)}$ noise levels due to construction ranging from 73.4 dBA to 83.6 dBA. These noise levels would result in increments up to 8.6 dBA, comparing noise levels during construction to the noise levels at these receptors without construction. The highest predicted construction noise levels at these receptors are based on the modeling of the worst-case hour of the worst-case quarters of construction and would occur only when the most intense construction activities, such as excavation and foundation work, are underway at immediately adjacent buildings. As shown in **Figure 20-3**, these particularly loud construction tasks at each Phase 2 building parcel would last not longer than six to ten months, and consequently the highest construction noise levels would not be expected to occur at any one building façade for longer than that amount of time. Additionally, the receptors included in the proposed project would include building façades providing not less than 31-43 dBA of attenuation, and alternate means of ventilation (i.e., air conditioners) that do not degrade the acoustical performance of the façade, which would result in acceptable interior noise levels at these receptors during much of the construction period. However, noise levels during construction may exceed 45 dBA $L_{10(1)}$ (the CEQR acceptable interior noise level criteria for residential uses) when the most intense construction activities (including excavation and foundation work), which could result in noise levels in excess of 80 dBA for limited periods of time, would occur immediately adjacent to buildings whose façades provide 35 dBA or less of attenuation. The predicted noise level increments at these receptors, while in excess of CEQR noise impact thresholds, would be noticeable, but would not necessarily result in disruption to quality of life at these receptors. As a result of the relatively small predicted construction noise increments, the short duration of the most intense construction noise adjacent to any one building façade, and the high levels of attenuation provided by project building facades, proposed buildings that would be completed and occupied before construction is completed at other project building sites, including buildings included in Phase 1B and buildings included in Phase 2 that are completed and occupied before the completion of construction of Phase 2, would experience perceptible noise impacts during ongoing construction of Phase 2, but would not experience significant adverse impacts requiring mitigation.

On-site, construction activities would produce $L_{10(1)}$ noise levels at open space areas up to approximately 70 dBA, which would exceed the levels recommended by CEQR for passive open spaces (55 dBA L_{10}). (Noise levels in these areas exceed CEQR recommended values for existing and No Action conditions.) While this is not desirable, there is no effective practicable mitigation[1] that could be implemented to avoid these levels during construction. Noise levels in many parks and open space areas throughout the city, which are located near heavily trafficked roadways and/or near construction sites, experience comparable and sometimes higher noise levels, and consequently such levels would not be considered a significant adverse impact.

VIBRATION

Introduction

Construction activities have the potential to result in vibration levels that may in turn result in structural or architectural damage, and/or annoyance or interference with vibration-sensitive activities. In general, vibratory levels at a receiver are a function of the source strength (which in turn is dependent upon the construction equipment and methods utilized), the distance between the equipment and the receiver, the characteristics of the transmitting medium, and the construction of the receiver building. Construction equipment operation causes ground vibrations that spread through the ground and decrease in strength with distance. Vehicular traffic, even in locations close to major roadways, typically does not result in perceptible vibration levels unless there are discontinuities in the roadway surface. With the exception of the case of fragile and possibly historically significant structures or buildings, generally construction activities do not reach the levels that can cause architectural or structural damage, but can achieve levels that may be perceptible in buildings close to a construction site. An assessment has been prepared to quantify potential vibration impacts of construction activities on structures and residences near the project site.

Construction Vibration Criteria

For purposes of assessing potential structural or architectural damage, the determination of a significant impact was based on the vibration impact criterion used by LPC of a peak particle velocity (PPV) of 0.50 inches/second. For non-fragile buildings, vibration levels below 0.60 inches/second would not be expected to result in any structural or architectural damage.

For purposes of evaluating potential annoyance or interference with vibration-sensitive activities, vibration levels greater than 65 vibration decibels (VdB) would have the potential to result in significant adverse impacts if they were to occur for a prolonged period of time.

Analysis Methodology

For purposes of assessing potential structural or architectural damage, the following formula was used:

$$PPV_{equip} = PPV_{ref} \text{ x } (25/D)^{1.5}$$

where: PPV_{equip} is the peak particle velocity in in/sec of the equipment at the receiver location;

PPV_{ref} is the reference vibration level in in/sec at 25 feet; and

D is the distance from the equipment to the received location in feet.

[1] Noise barriers would not be practicable because of security concerns.

For purposes of assessing potential annoyance or interference with vibration sensitive activities, the following formula was used:

$$L_v(D) = L_v(ref) - 30\log(D/25)$$

where: $L_v(D)$ is the vibration level in VdB of the equipment at the receiver location;
$L_v(ref)$ is the reference vibration level in VdB at 25 feet; and
D is the distance from the equipment to the receiver location in feet.

Table 20-21 shows vibration source levels for typical construction equipment.

Table 20-21
Vibration Source Levels for Construction Equipment

Equipment	PPV_{ref} (in/sec)	Approximate L_v (ref) (VdB)
Pile Driver (Impact)	0.644-1.518	104-112
Pile Driver (Sonic)	0.170-0.734	93-105
Clam Shovel drop (slurry wall)	0.202	94
Hydromill (slurry wall in rock)	0.017	75
Vibratory Roller	0.210	94
Hoe Ram	0.089	87
Large bulldozer	0.089	87
Caisson drilling	0.089	87
Loaded trucks	0.076	86
Jackhammer	0.035	79
Small bulldozer	0.003	58
Source: *Transit Noise and Vibration Impact Assessment*, FTA-VA-90-1003-06, May 2006.		

Construction Vibration Analysis Results

The buildings and structures of most concern with regard to the potential for structural or architectural damage due to vibration are the buildings included in the proposed project that would be completed while construction occurs on an adjacent parcel. However, vibration levels at all of these buildings and structures would be well below the 0.50 inches/second PPV limit, and—being new structures—these buildings would not be particularly susceptible to structural or architectural damage due to vibration. At all other locations, the distance between construction equipment and receiving buildings or structures is large enough to avoid vibratory levels that would approach the levels that would have the potential to result in architectural or structural damage.

In terms of potential vibration levels that would be perceptible and annoying, the pieces of equipment that would have the most potential for producing levels that exceed the 65 VdB limit are pile drivers. They would produce perceptible vibration levels (i.e., vibration levels exceeding 65 VdB) at receptor locations within a distance of approximately 230 feet. However, the operation would only occur for limited periods of time at a particular location and, therefore, resulting from the proposed project would not result in any significant adverse impacts. In no case are significant adverse impacts from vibrations expected to occur.

OTHER TECHNICAL AREAS

HISTORIC AND CULTURAL RESOURCES

As described in Chapter 7, consistent with the findings in the 2008 FGEIS, construction activities related to the development that would occur within the District during Phase 2 of the proposed project would be anticipated to result in the demolition of the former Empire Millwork

Corporation Building, which was found by OPRHP to be eligible for listing on the State and National Registers of Historic Places (S/NR). Demolition of this structure would be considered a significant adverse effect on this architectural resource.

Retaining the former Empire Millwork Corporation Building would be challenging from a site grading and engineering perspective. The District is below the Federal Emergency Management Agency (FEMA) 100-year floodplain level of 14 feet above mean sea level (AMSL), and up to seven feet of fill would be required in some locations to grade and raise the entire District to an elevation of between 14 and 17 feet AMSL. If the City were to provide new infrastructure—including new roadways, sidewalks, and storm and sanitary sewer lines—at the existing grade, potential future development could be subject to flooding on the lower floors. As such, the City plans to raise the District and require that any new development be raised above the 100-year floodplain level. The site of the former Empire Millwork Corporation Building would require up to 3.4 feet of fill to conform to the future grade of the District.

As the former Empire Millwork Corporation Building is at the District's existing grade and located near the Flushing Bay inlet, it is presumed that it is subject to flooding on the lower floors and would remain so in the future without the proposed project. If the former Empire Millwork Corporation Building were not raised it would be significantly more vulnerable to flooding, both because it is below AMSL, and because the surrounding topography would be raised, directing water runoff into lower areas. Raising the grade in a majority of the District while maintaining the existing grade on the former Empire Millwork Corporation Building site would require special engineering measures to protect the building during site preparation and construction to prevent future flooding on the site, and to visually and functionally integrate the building with the rest of the District despite the differences in grade.

In a letter dated May 30, 2008, OPRHP stated that the demolition of the former Empire Millwork Corporation Building would constitute an adverse impact, and that all alternatives to demolition have not been explored. The substantial challenges inherent in retaining the former Empire Millwork Corporation Building as part of the proposed project are detailed above. Furthermore, as the structure would remain under private ownership in the No Action condition, it could be demolished as-of-right in that scenario, and mitigation measures such as photographic documentation would not be required. Retention of the structure also would not advance the goals and objectives of the approved Willets Point Development Plan, including the improvement of environmental conditions and the development of affordable housing, community facilities, and public open space.

A developer for Phase 2 has not yet been selected, and QDG may or may not be selected as the designated developer for Phase 2. Before the development of Phase 2, the selected developer will consult with OPRHP and LPC to evaluate any remaining potential alternatives to demolition. If none are identified, measures to mitigate this adverse impact have been or will be developed, as discussed in Chapter 21, "Mitigation." As discussed in the 2008 FGEIS, these would include consultation with OPRHP to develop mitigation measures, such as recording the building through a Historic American Buildings Survey (HABS)-level photographic documentation and accompanying narrative.

HAZARDOUS MATERIALS

Consistent with the conclusions of the 2008 FGEIS and subsequent technical memoranda, the proposed project would not result in significant adverse impacts related to hazardous materials during construction.

Consistent with the Staged Acquisition Alternative analyzed in the 2008 FGEIS as well as the Adjusted Plan and Updated Plan analyzed in subsequent technical memoranda, the proposed project would phase remediation and redevelopment of the District. Construction of Phase 1A of the proposed project would commence with the remediation to standards appropriate for multi-family residences of an approximately 23-acre portion of the District and involve the construction of hotel, retail, and interim surface parking/recreational uses in this area. The interim uses would be developed on an impermeable surface. Remediation of areas to be developed in Phase 1A would be completed prior to 2018. Construction activities involving the remediation of the portion of the District not already redeveloped in Phases 1A and 1B to standards appropriate for multi-family residences is assumed to be completed prior to 2028, and thus before the commencement of construction of the Phase 2 development.

To avoid the potential for significant adverse impacts related to hazardous materials, the proposed project would include appropriate health and safety (e.g., dust control and air monitoring) and investigative/remedial (e.g., delineating and excavating contaminated soils and disposing of them off site at an appropriately licensed facility) measures that would precede or govern both demolition and soil disturbance activities. These measures would be conducted in compliance with all applicable laws and regulations and would conform to appropriate engineering practices. Also, given that some subsurface contamination would likely remain after completion of construction (e.g., historical fill materials underlying the development area) and in nearby areas that would not be cleaned up until a subsequent phase of development, new development would require engineering controls, which could include capping to prevent exposure to underlying soils, groundwater controls at construction site boundaries, and vapor barriers with active or passive sub-slab depressurization systems beneath enclosed or occupied buildings (e.g., not open parking structures). As development of the District is contemplated to occur in phases, excavation and cleanup during Phase 1B and Phase 2 would occur near already developed buildings and uses, requiring stringent controls on construction dust and other potential sources of contaminant migration. Institutional controls would be used to ensure the investigations and remedial measures would be implemented along with requirements to prevent future exposure during intrusive work and subsurface utility repairs at developed sites. Specifically, these institutional controls would be the existing E designations (possibly supplemented by additional requirements should any lots enroll in the BCP) for the District, and restrictions added to the proposed lease amendments or development agreements for the remainder of the project site.

The institutional controls would require the project sponsor, prior to seeking or obtaining DOB permits associated with redevelopment, conduct Phase I and Phase II ESAs (to the extent they have not already been conducted), and complete necessary remediation (with appropriate construction-related HASPs) either prior to or as a part of site development, to the satisfaction of (for the District) the New York City Office of Environmental Remediation (OER) or (for lots outside of the District) DEP. Should all or portions of the District be entered into the BCP, this State program would entail similar requirements to OER's (which would not be superseded). The BCP is a voluntary program in which a property owner/developer enters into an agreement with the State to conduct investigation and remediation in accordance with a variety of requirements, including public participation. Following the cleanup, with, if required, the implementation of deed restrictions to ensure the performance of institutional and engineering controls, the State issues a Certificate of Completion indicating cleanup has been achieved consistent with the proposed site use. It is not anticipated that cleanup requirements of the State and City would differ substantively. Likely components of site remediation and other measures to avoid impacts are essentially unchanged from those described in Chapter 12 of the 2008 FGEIS, i.e., they would include:

- Procedures for pre-demolition removal of asbestos and appropriate management of LBP and PCB-containing equipment.
- Additional subsurface investigation, both within the District and of areas not yet investigated, to better characterize soils to be removed for excavation.
- Development of a CHASP and Site Management Plan (SMP) for site remediation, excavation, and redevelopment that would include detailed procedures for managing both known contamination issues (e.g., tank removal, and soil and groundwater remediation of existing petroleum spills, excavation, and removal of existing septic tanks or fields, floor drains, and historic fill) and any unexpectedly encountered contamination issues. The CHASP would also include procedures for avoiding the generation of dust that could affect the surrounding community (especially at later-phase sites neighboring already developed sites), as well as the monitoring necessary to ensure that no such impacts occur.
- Prevention of contaminant migration to a particular development site from other properties might entail the use of various forms of groundwater flow controls at construction site boundaries and/or vapor barriers and sub-slab venting systems could be incorporated into the foundations of new buildings to prevent remaining subsurface contaminated vapors from entering buildings. Procedures that are instituted would be consistent with applicable laws and regulations.

Institutional controls (specifically, E designations, BCP requirements, or restrictions added to leases or development agreements) would be used to ensure required post-development procedures (e.g., implementation of health and safety procedures during subsurface utility repair) would be implemented. Methods for guaranteeing the continued effectiveness of these controls would include periodic (e.g., annual) certification and reporting requirements.

Contamination in the subsurface (including petroleum contamination) within the District has been identified through limited Phase II ESAs. This contamination is likely related primarily to the District's current and historical automotive-related businesses. Although detailed investigations have not yet been performed at the other portions of the project site, less extensive contamination has been found and is anticipated to be encountered, with levels (including elevated methane levels) expected to be consistent with the area's historical ash filling. In addition to subsurface contamination, asbestos-, LBP-, and PCB-containing equipment are likely to be present inside existing buildings.

With the implementation of the variety of measures described above, not only would no significant adverse impacts related to hazardous materials be expected to occur as a result of construction of the proposed project, but the proposed project, with its associated extensive cleanup which would otherwise likely not occur at all or only much more slowly, would result in significant potential benefits to public health and the environment. To ensure the various required measures would be implemented, they would be made binding on all site developers through conditions in the project documents. Although some hazardous materials would likely remain in the subsurface following construction of the proposed project, with the building vapor control measures outlined above, there would be no exposure pathways and thus no further potential for significant adverse impacts. Thus, consistent with the conclusions of the 2008 FGEIS and subsequent technical memoranda, the proposed project would not result in significant adverse impacts related to hazardous materials.

OPEN SPACE

Consistent with the 2008 FGEIS and subsequent technical memoranda, this analysis finds that the proposed project would not result in any significant adverse construction impacts with respect to open space.

Construction of the proposed project would not remove or alter any existing publicly accessible open spaces, and construction of the proposed project would not change the use of any existing publicly accessible open space on the project site or in the study area. Construction of the proposed project also would not limit access to area parks or other publicly accessible open space resources in the vicinity of the proposed project.

Phase 1A construction of the Willets West portion of the proposed project would occupy 30.7 acres of the surface parking lot west of CitiField, as well as one of the CitiField parking lots along Roosevelt Avenue (South Lot). While this land is mapped as parkland, it does not function as open space. The land was formerly occupied by Shea Stadium and associated parking and circulation space until the stadium was replaced by CitiField in 2009, and it is now occupied exclusively by surface parking. Therefore, construction of portions of the proposed project on this mapped parkland would have no direct effect on the use or adequacy of open space for the study area residential and non-residential populations during construction. While it is anticipated that some of the trees within the Willets West portion of the project site would require removal during construction, as would trees within the Lot B area, tree replacement would be conducted in conformance with DPR requirements. Construction of the Phase 1B and Phase 2 portions of the proposed project to be constructed by 2028 and 2032, respectively, also would have no direct effect on the use or adequacy of open space for the study area residential and non-residential populations during construction. Furthermore, throughout the course of the proposed project's construction, substantial new open spaces would be introduced (some temporary), and study area residents would continue to have access to the portions of Flushing Meadows-Corona Park and the Flushing Bay Promenade that are outside of the proposed project's boundaries.

However, because Phase 2 construction activities on Parcels A12, A13, A14, A17, and A18 of the project site would occur immediately adjacent to the new public park on Parcel A16 (anticipated to be complete and open by early 2029), special measures would be taken to prevent construction activities intrusion into this new public park. Similarly, Phase 2 construction activities on Parcels A15, A17, A18, and A19 would occur immediately adjacent to new passive open spaces on Parcels A20, A22, and A23 (anticipated to be completed by early 2032). In each case, a solid fence would be erected along the perimeter of the site that borders the new park or open spaces. The fence would have no openings between the construction site and the new park or open spaces and would be high enough to reduce sound from construction activity from these building sites, to the extent practicable, and to minimize dust. The hoists, cranes, and other equipment would be located on the side of the building sites away from the new park or open spaces, to the extent practicable. As the various building superstructures are being erected, netting would be installed on the side of the buildings facing the new park or open spaces to prevent any materials from falling into the new park or open spaces.

Construction activities would be conducted with the care mandated by the close proximity of an open space to the project site. Dust control measures—including watering of exposed areas and dust covers for trucks—would be implemented to ensure compliance with the New York City Air Pollution Control Code, which regulates construction-related dust emissions. As discussed below, there would be no significant adverse air quality impacts on open spaces.

However, as described in the Noise section of this chapter, at limited times some project site and study area public and private open spaces (including some of the new private open spaces being constructed as part of the proposed project) would experience project-related short-term significant noise impacts from activities such as excavation and foundation construction. These activities would generate noise that could impair the enjoyment of nearby public open space users; however, because of the temporary nature of these impacts, and their short duration (in all cases less than 9 months), these would not be considered significant.

SOCIOECONOMIC CONDITIONS

Consistent with the 2008 FGEIS and subsequent technical memoranda, this analysis finds that the proposed project would not result in any significant adverse construction impacts with respect to socioeconomic conditions.

Construction could, in some instances, temporarily affect pedestrian and vehicular access on street frontages immediately adjacent to the proposed project's various building sites or the areas of the other project elements. However, lane and/or sidewalk closures are expected to be of very limited duration, and are not expected to occur in front of entrances to any existing or planned retail businesses, construction activities would not obstruct major thoroughfares used by customers or businesses, and businesses would not be significantly affected by any temporary reductions in the amount of pedestrian foot traffic or vehicular delays that could occur as a result of construction activities, because of the maintenance and protection of traffic (MPT) measures required by NYCDOT. Utility service would be maintained to all businesses, although very short-term interruptions (i.e., hours) may occur when new equipment (e.g., a transformer, or a sewer or water line) is put into operation. Overall, construction resulting from the proposed project is not expected to result in any significant adverse impacts on surrounding businesses.

Construction would create major direct benefits resulting from expenditures on labor, materials, and services, and indirect benefits created by expenditures by material suppliers, construction workers, and other employees involved in the direct activity.

COMMUNITY FACILITIES

Consistent with the conclusions of the 2008 FGEIS, construction of the proposed project would not result in any significant adverse impacts on community facilities and services, including libraries; health care facilities; and police and fire protection facilities.

No community facilities are located within the project site. Therefore, construction of the proposed project would not have a significant adverse impact on community facilities. Construction activities related to the proposed project would not physically displace or alter any existing community facilities. No study area community facilities would be directly affected by construction activities for an extended duration. The analysis of potential indirect effects on schools finds that the proposed project would not result in any significant adverse impacts on high schools. For Phase 1B, QDG would coordinate with the School Construction Authority (SCA) to determine whether the public school space currently planned as part of Phase 1B would be sufficient to accommodate all of the elementary and intermediate school children generated by the proposed project by 2028. For Phase 2, the New York City Economic Development Corporation (EDC) would require as part of the developer's agreement that the designated developer similarly coordinate with SCA. If necessary, the school spaces would be expanded, and corresponding reductions in square footage would be made elsewhere in the development program.

The construction of the proposed schools on Parcel A8 (during Phase 1B) and Parcel A6 (during Phase 2), as well as ongoing project construction effects on the school located on Parcel A8 once it is operational, are discussed in this chapter. The construction sites adjacent to the school on Parcel A8 would be surrounded by construction fencing and barriers that would limit the effects of construction on this facility. Similarly, the proposed convention center construction site on Parcel A19, adjacent to the school on Parcel A6 would be surrounded by construction fencing and barriers that would limit the effects of construction on this facility.

Construction workers would not place any burden on public schools and would have minimal, if any, demands on libraries, child care facilities, and health care. Construction of the proposed buildings and the other project elements would not block or restrict access to any facilities in the area, and would not materially affect emergency response times. New York Police Department (NYPD) and Fire Department (FDNY) emergency services and response times would not be materially affected as a result of the geographic distribution of the police and fire facilities and their respective coverage areas.

NATURAL RESOURCES

As discussed in detail in Chapter 9, "Natural Resources," and consistent with the findings of the 2008 FGEIS and subsequent technical memoranda, construction of the proposed project would not result in significant adverse impacts to groundwater, floodplains, water quality, aquatic biota, wetlands, terrestrial natural resources, threatened or endangered species, or essential fish habitat (EFH) within and near the project site.

Willets West, the South Lot, and Lots B and D are within the current 100-year floodplain, the level of which is projected to increase as a result of climate change, as discussed in more detail in Chapter 9, "Natural Resources". Most of the District is also within the 100 year floodplain, with the exception of three areas located in the northwest, along the eastern border and along Roosevelt Avenue that are within the 500-year floodplain. Thus in some locations, particularly within the District, new fill would be required during construction of the proposed project to grade and raise the project site structures above the 100-year flood elevation, consistent with the New York City Building Code.[1] Changes to the grade elevation are expected to occur in phases, as construction of the proposed project progresses. During Phase 1A the majority of the project site will remain at the existing grade and only the hotel and commercial spaces would be built at a higher grade above the floodplain elevation. The remainder of the extent of Phase 1A and 1B would be raised above the 100-year flood elevation during the initial stages of construction for Phase 1B. Those grade changes will either occur though bringing in new fill and constructing retaining walls or by building atop basements that raise the finished floor height above the floodplain elevation. Grade transitions would be created between the new streets in Phase 1B and the existing street grades that would remain in the Phase 2 area until that area is raised, most likely during the initial stages of construction for Phase 2. Because the 100-year floodplain within and adjacent to the study area is affected by coastal flooding (rather than local or fluvial flooding) as a result of astronomic tide and meteorological forces, flooding conditions in the

[1] As specified in Appendix G: "Flood Resistant Construction" of the *New York City Building Code* [1] for the applicable building category (see Table 1604.5 of the *New York City Building Code* or Table 1-1 of Appendix G to the *New York City Building Code*), and revisions to these requirements prior to construction.

project site and surrounding area would not be affected by construction or regrading/filling that would occur as part of the RWCDS.

The project site is more than 180 feet away from the nearest NYSDEC-mapped tidal wetland and more than 165 feet away from the nearest U.S. Fish and Wildlife Services (USFWS) NWI-mapped wetland. As described in the 2008 FGEIS, NYSDEC and NWI-mapped wetlands would not be impacted as a result of construction of the proposed project within the District, and Lots B and D. Similarly, because there are no wetlands present within Willets West or the South Lot, construction of the RWCDS would not adversely affect wetland resources. Therefore, adverse impacts on NYSDEC or USFWS mapped wetlands from construction activities are not expected.

Measures to protect existing trees would include protection plans to minimize impacts to the critical root zones, trunks, and canopies. The potential loss of trees and the existing "terrestrial cultural" ecological communities within the project site, which are common to the New York metropolitan area, would not result in significant adverse impacts to vegetation resources within the region.

Site preparation activities and construction of the RWCDS would generate noise and anthropogenic activity. However, impacts to wildlife would be minimal because wildlife within the study area consists of urban-adapted, highly disturbance-tolerant species. The species of wildlife in the area are ubiquitous throughout the city and commonly inhabit areas with extensive levels of human disturbance and degraded habitat conditions. Wildlife occurring in the area would not be expected to be significantly impacted by the noise and other anthropogenic disturbances generated by project construction.

As discussed in Chapter 10, "Hazardous Materials," management of wastes generated during project construction related to the cleanup and redevelopment of the project site will be conducted in accordance with applicable federal, state, and local regulatory requirements and with oversight of New York City regulatory agencies. As a result, the proposed project would have the potential to have a direct benefit to soils of the study area. Therefore, consistent with the conclusions in the 2008 FGEIS, construction of the RWCDS would not result in direct or indirect adverse impacts to soils of the study area.

As discussed in Chapter 10, "Hazardous Materials," a CHASP and SMP for site remediation, excavation, and redevelopment would be developed and would include detailed procedures for managing known contamination issues (e.g., tank removal, and soil and groundwater remediation of existing petroleum spills, excavation, and removal of existing septic tanks or fields, floor drains, and historic fill), as well as any unexpectedly encountered contamination issues during construction. As a result, the proposed project would have the potential to result in a net benefit to groundwater of the study area. Thus, consistent with the conclusions of the 2008 FGEIS and subsequent technical memoranda, the proposed project would not result in significant adverse impacts related to groundwater quality.

No in-water construction activities would result from the construction of the RWCDS. Soil disturbing activities associated with construction all phases of the RWCDS would be conducted in accordance with the NYSDEC State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activity (GP-0-10-001). Erosion and sediment control measures to be implemented during construction activities would be specified in the stormwater pollution prevention plan (SWPPP). With the implementation of these measures, stormwater discharged through the existing stormwater outfalls would not result in significant adverse impacts to water quality and aquatic biota of Flushing Bay. Additionally, with implementation of the proposed site remediation (detailed in Chapter 10, "Hazardous Materials") construction and operation of the RWCDS would reduce the potential for contaminants to enter Flushing Bay and the Flushing River, thereby having the potential to improve the water quality of these waterbodies.

No in-water construction would take place in Flushing Creek and Flushing Bay as a result of the RWCDS. Therefore, the sediments of Flushing Creek and Flushing Bay would not be impacted during the construction or operation of the proposed project. Furthermore, the dredging plans for Flushing Bay, as proposed by DEP and as part of the U.S. Army Corps of Engineers' (USACE) navigational channel clearance maintenance, would not be impacted by the construction or operation of the proposed project.

As discussed in the 2008 FGEIS and in Chapter 9, "Natural Resources," no federally- or state-listed species or ecological communities are known to occur within the study area nor is habitat present. Therefore, consistent with the conclusions of the 2008 FGEIS, construction of the RWCDS would not result in adverse impacts to federally- and state-listed species.

As discussed above, no significant adverse impacts to aquatic biota are expected as a result of construction of the proposed project. Construction would not occur within Flushing Bay or Flushing Creek. Therefore, consistent with the conclusions of the 2008 FGEIS, construction of the RWCDS would not result in significant adverse impacts to EFH.

LAND USE

Consistent with the 2008 FGEIS and subsequent technical memoranda, construction of the proposed project would not be expected to result in any significant adverse impacts to land use.

Construction activities resulting from the proposed project would affect land use within the District and on the Willets West, South Lot, Lot D and Lot B sites, but would not alter surrounding land uses. Because the District is isolated from the surrounding uses by the Flushing River, the Whitestone Expressway, the Van Wyck Expressway, and Northern Boulevard, construction is expected to have no significant adverse effects on the surrounding areas. As is typical with construction projects, during periods of peak construction activity there would be some disruption, predominantly noise, to the nearby area. There would be construction trucks and construction workers coming to the various sites. There would also be noise, sometimes intrusive, from building construction as well as trucks and other vehicles backing up, loading, and unloading. These disruptions would be temporary in nature and would have limited effects on land uses within the study area, particularly as most construction activities would take place within each of the building sites, existing surface parking lots, areas of the other project elements, or within portions of sidewalks, curbs, and travel lanes of public streets immediately adjacent to these sites. Throughout construction, access to any remaining or new surrounding residences, businesses, and institutions in the area would be maintained. In addition, measures would be implemented to control noise, vibration, emissions, and dust on construction sites, including the erection of construction fencing incorporating sound-reducing measures. Overall, while the construction at the various building sites and areas of the other project elements within the project site would be evident to the local community, the limited duration of construction at each of the proposed project's building sites and the areas of the other project elements, coupled with the project site's isolation from the neighboring community by the Flushing River, the Whitestone Expressway, the Van Wyck Expressway, and Northern Boulevard, construction of the proposed project would not result in significant or long-term adverse impacts on local land use patterns or the character of the nearby area.

RODENT CONTROL

Construction contracts for the various RWCDS building sites (Willets West, Parcels A1-A15, A17-A19, and Lot B) and areas of the other proposed project elements—open spaces, public park (Parcel A16), surface and structured parking (South Lot and Lot D), and infrastructure improvements—would include provisions for a rodent (mouse and rat) control program, as standard construction practice. Before the start of construction at any given Phase or development parcel within the project site, construction contractors would survey and bait the appropriate areas and provide for proper site sanitation. During construction, as necessary, the contractors would carry out a maintenance program. Coordination would be maintained with appropriate public agencies. Only EPA- and NYSDEC-registered rodenticides would be utilized, and the contractors would be required to perform rodent control programs in a manner that avoids hazards to persons, domestic animals, and non-target wildlife. ✷