CHAPTER 19: AIR QUALITY

19.1 Overview

This chapter analyzes and summarizes the potential air quality impacts associated with the Proposed Action. The air quality analysis has been conducted in accordance with Federal and State rules and regulations including the National Environmental Policy Act (NEPA), the Clean Air Act and Amendments (CAAA), the New York State Implementation Plan (SIP), the New York State Environmental Quality Review Act (SEQRA), and New York City Environmental Quality Review (CEQR), as well as the applicable requirements of the federal conformity rules. The effect on ambient air quality from the Proposed Action, as described in Chapter 1, "Project Description," has been evaluated for both stationary and mobile sources.

As detailed below, the Proposed Action would not have a significant adverse impact on ambient air quality, and short- and long-term National Ambient Air Quality Standards (NAAQS) would be maintained within the study area and immediate vicinity, and in accordance with CAAA requirements.

19.1.1 National Ambient Air Quality Standards

As required by the Clean Air Act, primary and secondary National Ambient Air Quality Standards (NAAQS) have been established for six major air pollutants: carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM), sulfur dioxide (SO_2), and lead (Pb). Hydrocarbon standards have been rescinded because these pollutants are primarily of concern only in their role as ozone precursors. The U.S. Environmental Protection Agency (EPA) has established standards for respirable particulates with an aerodynamic equivalent diameter less than 10.0 micrometers (μm). In addition to retaining these standards, EPA has adopted 24-hour and annual standards for $PM_{2.5}$, or inhalable particulate matter with an aerodynamic equivalent diameter less than 2.5 μm. This latter standard became effective September 16, 1997. As recognized by EPA, the adoption of the $PM_{2.5}$ standard is intended to provide increased protection of public health from fossil fuel combustion. EPA also has established new NAAQS for ozone levels. The current one-hour standard will eventually be supplanted by a new eight-hour standard. Table 19-1 shows the standards for these pollutants. These standards have also been adopted as the ambient air quality standards by the State of New York. The primary standards protect the public health, and represent levels at which there are no known significant effects on human health. Secondary standards are designed to protect the environment from any known or anticipated adverse effects of a pollutant, including the effects on the natural environment (soil, water, vegetation) and the manmade environment (physical structures). Areas that do not meet the NAAQS for a particular pollutant are called "nonattainment areas" for the criteria pollutant; areas that meet both primary and secondary standards are known as "attainment areas." Areas determined to be in recent attainment are known as "maintenance areas."

Table 19-1: National and New York State Ambient Air Quality Standards

Pollutant	Primary	Secondary
Carbon Monoxide (CO)		
Maximum 1-hour Average[1]	35 ppm	35 ppm
Maximum 8-hour Average[1]	9 ppm	9 ppm
Sulfur Dioxide (SO_2)		
Maximum 3-hour Average[1]	n/a	1300 ug/m^3
Maximum 24-hour Average[1]	365 ug/m^3	n/a
Annual Arithmetic Mean	80 ug/m^3	n/a
Respirable Particulates (PM_{10})		
Maximum 24-hour[2]	150 ug/m^3	150 ug/m^3
Annual Geometric Mean	50 ug/m^3	50 ug/m^3
Respirable Particulates ($PM_{2.5}$)		
Maximum 24-hour[3]	65 ug/m^3	65 ug/m^3
Annual Geometric Mean	15 ug/m^3	15 ug/m^3
Total Suspended Particulate (TSP)[4]		
Maximum 24-hour	250 ug/m^3	n/a
Annual Geometric Mean	75 ug/m^3	n/a
Ozone (O_3)		
1-hour Average[5]	0.12 ppm	0.12 ppm
8-hour Average	0.08 ppm	0.08 ppm
Nitrogen Dioxide (NO_2)		
Annual Arithmetic Mean	100 ug/m^3	100 ug/m^3
Lead (Pb)		
Quarterly Average	1.5 ug/m^3	1.5 ug/m^3

Notes:
ppm: parts per million; ug/m^3 : micrograms per cubic meter

1 Not to be exceeded more than once a year.
2 Not to be exceeded by 99th percentile of 24-hr PM10 concentrations in a year (averaged over 3 years)
3 Not to be exceeded by 99th percentile of 24-hr $PM_{2.5}$ concentrations in a year (averaged over 3 years)
4 TSP standards are regulated by New York standards only.
5 Applied only to areas that were designated nonattainment for ozone in July 1997.

Annual standards never to be exceeded; short-term standards not to be exceeded more than once per year.

Primary standards protect the public health, and represent levels at which there are no known significant effects on human health. Secondary standards are designed to protect the environment from any known or anticipated adverse effects of a pollutant, including effects on the natural and man-made environments.

Sources: Code of Federal Regulations Title 40, Part 50, July, 1991, Ambient Air Quality Standards; New York State NYCRR Title 6, Environmental Conservation, Part 257, Air Quality Standards.

19.1.2 Compliance Status

Staten Island has been designated as being in attainment of NAAQS for criteria pollutants SO_2, PM_{10}, NO_2 and Pb. However, the Staten Island, as part of the New York Metropolitan Area (NYMA), is designated as nonattainment for 1-hour and 8-hour O_3. In addition, effective April 2005, EPA officially designated the entire NYMA area as $PM_{2.5}$ non-attainment. The NYMA area also was previously designated by EPA on November 15, 1990 as moderate nonattainment for CO. Effective May 20, 2002, the entire NYMA has been re-designated as a CO attainment area with a maintenance plan which provides for continued attainment for the CO NAAQS.

19.1.3 New York State Implementation Plan

The Clean Air Act requires each state to submit a SIP for attainment of the NAAQS to EPA. The 1977 and 1990 amendments require comprehensive plan revisions for areas where one or more of the standards have yet to be attained. In addition, Section 176(c) of the 1990 CAAA requires all Federally-sponsored or approved activities in nonattainment or maintenance areas to conform to the applicable SIPs. To demonstrate conformity, a proposed action must not exacerbate or delay the achievement of attainment of standards. Since the NYMA was designated as nonattainment, SIPs have been submitted to EPA documenting the necessary measures to achieve attainment status for O_3, as well as for CO maintenance. In addition, because EPA designated Staten Island and the entire NYMA area as $PM_{2.5}$ nonattainment in January 2005, New York State will also propose a SIP to demonstrate the future compliance (year 2010) of NAAQS for $PM_{2.5}$. The applicable SIPs are described below.

For attaining the CO NAAQS, the New York State Department of Environmental Conservation (NYSDEC), in conjunction with the City of New York, had submitted a CO SIP and revisions to EPA and obtained final approval of its control programs and contingency measures that would be necessary to reduce CO emissions to meet the standard in New York City. A series of measures were conducted or implemented to improve the CO status. Effective May 20, 2002, EPA re-designated the entire NYMA as a CO attainment area with a maintenance plan which provides for continued attainment of the CO NAAQS. To improve O_3 levels, both the City and State implemented measures to reduce levels of hydrocarbons and nitrogen oxides in an effort to attain the NAAQS O_3 standard. Moreover, the CAAA requires a series of SIP revisions, including air quality control measures for emission reductions of O_3 precursor emissions (volatile organic compounds and nitrogen oxides) during target years, and for an O_3 attainment demonstration by 2007. In June 1997, and again in September 2003, NYSDEC submitted the O_3 SIP revision for the entire state, which addressed the status of these requirements.

19.1.4 Significant Adverse Impact Criteria

In addition to the NAAQS, state and local agencies have developed criteria to assess the significance of impacts on air quality that would result from a proposed action. These thresholds, known as *de minimis* criteria, set the minimum change in air concentration that defines a significant environmental impact. These criteria for impact evaluation are described respectively in the mobile source CO and PM analysis sections.

19.1.5 Conformity Rules

The 1990 CAAA Section 176(c) requires all Federally-sponsored or approved activities in nonattainment or maintenance areas to conform to the applicable SIP. For meeting this requirement, EPA has developed criteria and procedures for determining conformity. These Federal air quality requirements are promulgated in *Criteria and Procedures for Determining Conformity to State or Federal Implementation Plans of Transportation Plans, Programs and Projects Funded or Approved Under Title 23 USC or the Federal Transit Act* (40 CFR Parts 51 and 93) and *Amendments* (August 15, 1997 and July 1, 2004). For determining whether an action conforms to the SIP's purpose, a proposed

action must not exacerbate or delay the attainment of standards in the NYMA.

19.1.6 Project Relevant Criteria Pollutants

The Proposed Action's emission sources and the criteria pollutants regulated by the NAAQS are of concern nationally, statewide and regionally, as described below.

Carbon monoxide (CO) is a colorless and odorless gas that results from the incomplete combustion of gasoline and other fossil fuels. In most cities, approximately 80 percent of CO emissions are from motor vehicles. Since CO disperses quickly, the concentrations can vary greatly over relatively short distances. Elevated concentrations are usually limited to locations near crowded intersections and along heavily congested roadways. Consequently, it is important to evaluate CO concentrations on a localized or microscale basis to determine the impacts of the Proposed Action.

Ozone (O_3), also a colorless gas, is a major constituent of photochemical smog at the earth's surface. The precursors in the formation of ozone are volatile organic compounds (VOCs) and nitrogen oxides (NO_x). In the presence of sunlight, O_3 is formed through a series of chemical reactions that take place in the atmosphere. Because the reactions occur as the pollutants are diffusing downwind, elevated ozone levels are often found many miles from sources of the precursor pollutants. Therefore, the effects of NO_x and VOC emissions from mobile sources are usually examined on a regional or mesoscale basis by regional transportation planning agencies. The change in regional mobile source emissions of these pollutants is related to the total number of vehicle miles traveled (VMT) throughout an area.

Respirable particulates (PM_{10} and $PM_{2.5}$) are emitted from various sources: industrial facilities, power plants, construction activity and diesel-powered vehicles. These particulates are less than 10 or 2.5 micrometers (μm) in diameter and, therefore, inhalable. An evaluation of inhalable particulates impacts generally is only required when a project is located within a PM concerned area.

Sulfur dioxide (SO_2) emissions are primarily associated with the combustion of sulfur-containing fuels, oil and coal. No appreciable quantities of this pollutant are emitted from the Proposed Action or nearby stationary sources. Therefore, analyses of potential impacts from SO_2 are not required.

Lead (Pb) emissions are primarily associated with motor vehicles and industrial sources that use gasoline containing lead additives. All vehicles produced in the U.S. after 1980 are designed to use unleaded fuel, and the ambient air concentrations for lead have declined significantly. Therefore, the analyses of lead emissions are not required.

19.2 Methodology

The impact analysis methodology and approach follows the guidelines and protocols that have been established for the evaluation of air quality impacts associated with a variety of projects in the City, State, and throughout the region and country. The combination of approach and assumptions results in a conservative estimate of expected pollutant

concentrations and resulting air quality impacts that could be caused by the Proposed Action.

Four major sources of air emissions and relevant potential impacts were evaluated, including:

1) Proposed Action's mobile source impacts for CO and PM;
2) Proposed Action's heating, ventilation and air conditioning systems (HVAC) and other stationary sources impacts;
3) Industrial facilities and nearby major stationary sources impacts; and
4) Impacts from emissions of project-related construction activities.

The major regulations, guidelines and models applicable to the air quality analysis conducted for the Proposed Action include:

- EPA National Ambient Air Quality Standards (NAAQS), as required under CAAA;
- CAAA and associated Federal conformity rules;
- NYSDEC State Implementation Plan (SIP) and New York State Department of Transportation (NYSDOT) *Environmental Procedures Manual* (*EPM*);
- NYSDOT *Project Level Particulate Matter Analysis Final Policy* (September 2004);
- NYSDEC and New York City Department of Environmental Protection (NYCDEP) *CEQR Technical Manual* threshold for mobile sources CO and PM and screening procedures for stationary sources;
- EPA AP-42 Emission Inventory;
- Industrial Source Complex (ISC) Model for stationary source impact analysis and construction emission impact, where applicable.

19.2.1 Stationary Sources Analysis

Based on CEQR procedures, screening analyses were conducted for both nearby stationary sources and the Proposed Action's HVAC and boilers system as described below.

Nearby Stationary Sources Evaluation

Study area land uses and NYCDEP facility data, as well as the EPA stationary sources inventory, were reviewed. No large stationary sources (such as solid waste, incinerators, cogeneration facilities, asphalt and concrete plants, or power generating plants) were identified within a 1,000-foot radius of the Proposed Action; no major manufacturing and or chemical processing facilities were identified within a 400-foot radius of the project site. The existing New York City Transit Authority's Clifton Yard, located at 845 Bay Street, is the only regulated stationary source within the study area. Data indicate that the yard does not release significant air pollutants from its operation, as regulated by State and City agencies. According to the *CEQR Technical Manual*, only emission sources or processing facilities within 400 feet - 1,000 feet of a school, hospital, park, or residence

are considered to have a potentially significant impact on a receiver; therefore, air quality impacts of nearby stationary sources would be minor.

HVAC and Hot Water Boiler Exhaust Impact Evaluation

No major air emission sources have been identified within the study area under the No Build Condition; the on-site stationary sources primarily consist of the exhaust from hot water boilers and HVACs. A CEQR screening is required for the Proposed Action's HVAC and hot water boilers emissions. The size of the Proposed Action, zoning square footage of the new construction, and proposed height of exhaust release were utilized for the screening analysis. Based on CEQR criteria, the maximum size of development that would not result in significant HVAC air quality impacts on a typical building can be determined. The development plan for the Proposed Action was compared to this threshold. Thus, the significance of HVAC and boiler exhaust system impacts can be classified and the need for a detailed stationary source analysis determined.

19.2.2 Mobile Sources Carbon Monoxide Analysis

The prediction of on-road, motor vehicle-generated CO emissions and resulting impact concentrations are characterized by meteorology, traffic conditions, and physical configurations. Air pollutant dispersion models were used to simulate mathematically how traffic, meteorology, and geometry combine to affect pollutant concentrations. Air quality analysts first assembled the traffic data, which include peak hour or design hour volumes, vehicle operating speeds, hot/cold start estimates, vehicle classifications, directional splits, turning volumes, and signal timing (as applicable). The traffic data were organized into a mathematical model input format by traffic link(s) for the analysis years. The thermal states (hot/cold start estimates) used in emission estimates account for three possible vehicle operating conditions: cold-vehicle operation, hot-start operation, and hot-stabilized operation. Vehicles emit carbon monoxide at different rates depending on whether they are cold or warmed up. Cold vehicles emit higher emissions than hot vehicles. Operating conditions used in the air analysis were obtained from NYSDOT *EPM* guidelines. On-road regional and localized vehicle CO emission factors, such as idle or cruise emissions from trucks, were predicted using vehicle emission modeling software (MOBILE6.2), as applicable for New York State.

The air quality analysis evaluated the effects of project-generated traffic on CO at intersection locations within the study area, and at sites where significant impacts resulting from the Proposed Action were projected to occur. The analysis methodology consists of the selection of analysis receptor sites, calculation of vehicular emissions, and calculation and determination of impact concentration levels using dispersion models that have been approved by the applicable air quality review agencies. In summary, the CO analysis for the Proposed Action consisted of the following steps:

- Select intersection locations and sensitive sites for microscale analysis based on a screening analysis of traffic conditions. The intersections evaluated for the Build Condition coincide with the intersections analyzed under the No Build Condition. At each analyzed intersection, a series of multiple receptor sites were analyzed in accordance with State or Federal guidelines.

- Select emission calculation methodology and "worst-case" meteorological conditions. Vehicular cruise and idle emissions for the dispersion modeling were computed using EPA's latest MOBILE6.2 model available for the State.
- Conduct impact calculation by using EPA's CAL3QHC/CAL3QHCR dispersion model. The EPA's refined intersection CO model, CAL3QHCR, is used only at locations where CAL3QHC yields pollutant levels that exceed standards, or where significant air quality impacts are expected.
- At each microscale receptor site, calculate maximum 1- and 8-hour CO concentrations for Existing, No Build and Build Conditions. Based on New York State recommendations, a persistence factor of 0.7 was used to convert 1-hour CO exhaust concentration calculated by CAL3QHC to the 8-hour CO concentration.
- Compare CO concentration levels with NAAQS.
- Compare project CO impact with applicable d*e minimis* thresholds as presented in the *CEQR Technical Manual*, which define significant impacts as follows:
  - If a project induces an increase of 0.5 ppm or more in the maximum 8-hour average CO concentration at a location where the no action 8-hour concentration is equal or above 8 ppm; or
  - If a project induces an increase of more than half the difference between baseline (no action) concentrations and the 8-hour standard, when no action concentrations are below 8 ppm.

Thus, the total ambient concentrations and impacts from mobile sources CO emissions were evaluated for Existing, No Build, and Build Conditions. A conservative estimate was made by adding the highest results from models to the background levels recommended by the NYCDEP to obtain the predicted total ambient concentrations at analyzed receptor locations.

19.2.3 Mobile Sources Particulate Matter Analysis

Relevant particulate matter (PM_{10} and $PM_{2.5}$) pollutants were analyzed by evaluating the number of, and potential emissions associated with, diesel vehicles, heavy trucks and buses that the Proposed Action would generate. The PM impact analysis followed the screening and analysis procedures established in the NYSDOT *Project Level Particulate Matter Analysis* (September 2004) and NYCDEP guidance. The analysis included a review of existing data and parameters monitored by NYSDEC, NYSDEP, and EPA; an evaluation of regional and localized PM emissions using EPA's MOBILE6.2; and dispersion modeling using conservative meteorological conditions. The applicable procedures and modeling of road PM emission factors for 24-hour and annual average followed the current modeling practices, based on the latest policies and procedures defined by NYCDEP, NYSDOT and NYSDEC. The persistence factors of 0.4 and 0.08 were utilized for converting CAL3QHC estimated 1-hour PM concentration to 24-hour exhaust and annual average concentrations, respectively, based upon NYSDOT PM analysis policy (September 2004). The total PM_{10} concentrations were calculated by adding the available 24-hour and annual background concentrations (obtained from available State or City monitoring data), or published background values, to the highest

modeled concentrations and then comparing the total ambient concentrations with the NAAQS.

The predicted project-induced PM_{10} and $PM_{2.5}$ impacts were compared with the applicable significance impact thresholds or criteria established by NYSDOT and NYCDEP. These thresholds are set to determine the potential for significant adverse impacts. These State and City thresholds are:

- Predicted worst-case incremental impacts of PM greater than 5 ug/m^3 averaged over a 24-hour period, as regulated by NYSDOT and NYCDEP.
- Predicted worst-case incremental impacts PM_{10} greater than 1.0 ug/m^3 on an annual average; and predicted worst-case incremental impacts $PM_{2.5}$ greater than 0.3 ug/m^3 on an annual average, as regulated by NYSDOT and NYSDEC.

The air quality analysis study area is illustrated in Figure 19-1 and generally coincides with a quarter-mile buffer around the Project Area, as defined in Chapter 1, "Project Description."

19.2.4 Parking Facility Analysis

The parking facility analysis was performed using the methodology set forth in the *CEQR Technical Manual, Air Quality Appendix*, to evaluate air quality impacts from the 500-car parking garage on parcel B1, the 130-space parking lot on parcel B2, the 220-space parking lot on parcel B3, and the 75-space parking lot on parcel C1. Emissions of CO, PM_{10}, and $PM_{2.5}$ from vehicles entering, parking, idling, and exiting the parking garage and parking lots were estimated using the EPA MOBILE6.2 model. For all arriving and departing vehicles, an average speed of five miles per hour (mph) was conservatively assumed for travel within the garage or parking lots. All departing vehicles were assumed to idle for one minute before proceeding to the exit. The concentrations within the enclosed garage were calculated assuming a minimum ventilation rate, based on New York City Building Code requirements, of one cubic foot per minute of fresh air per gross square foot of garage area. Based on the EPA's idling and running emission factors and estimated queuing time, the CO idling emission rate (ER) and emission strength per unit area for the parking area were determined. The ambient impact concentrations were then calculated based on EPA's *Guidelines for Air Quality Maintenance Planning and Analysis, Volume 9 (Revised), Evaluating Indirect Sources* and formats pertaining to the dispersion of pollutants from area sources, and the methodology in EPA's *Workbook of Atmospheric Dispersion Estimates*, AP-26. The PM_{10} and $PM_{2.5}$ emissions were also calculated, although they are mainly released from diesel vehicles which only account for a small portion (less than 5 percent) of the vehicle fleet using the parking facilities. The analysis sites were placed on the areas near entrance/exit of the parking lots and garage, as well as the nearby major intersections. The locations of these sites are: Front Street and Bay Street at Prospect Street and Wave Street.


Legend
Staten Island Railroad
Block/Lot
Project Area
Waterbody
Air Quality Receptor Site Locations
.25 Mile
ST GEORGE FERRY
SOUTH ST
WALL ST
STUYVESANT PL
BELMONT TER
FORTHILL CIR
BEECHWOOD AV
LAYTON AV
TAFT AV
HENDRICKS AV
BENZIGER AV
BISMARK AV
WINTER AV
SCRIBNER AV
CORSON AV
LOW TER
MONROE AV
SHERMAN AV
ST MARKS PL
CENTRAL AV
BAY ST
JERSEY ST
VICTORY BLVD
HANNAH ST
SWAN ST
WARD AV
GRANT ST
CEBRA AV
CHESTER PL
AUSTIN PL
ST PAULS AV
BREWSTER ST
VANDUZER ST
BALTIC ST
LOUIS ST
WAVE ST
SANDS ST
PROSPECT ST
FRONT ST
BEACH ST
WRIGHT ST
CROSS ST
TROSSACH RD
WATER ST
PEARL ST
CANAL ST
THOMPSON ST
TARGEE ST
GORDON ST
BROAD ST
TOMPKINS ST
HARRISON ST
BEASLEY WAY
HILL ST
VANDERBILT AV
NORWOOD AV
TOWNSEND AV
GREENFIELD AV
HOFFBRAU CT
FULTON ST
LAUREL AV
OSGOOD AV
WILLOW AV
EDGEWATER ST
LYNHURST AV
CHESTNUT AV
SHAUGHNESSY LA
ST MARY'S AV
VERMONT AV
VIRGINIA AV
CLIFTON AV
HYLAN BLVD
Source: Landbase, NYCDoITT
Map PLUTO database, NYC DCP
BYTES of the BIG APPLE, NYC DCP
New York City Economic Development Corporation
New Stapleton Waterfront Development Plan DEIS
Preliminary Air Quality Receptor Site Locations
The Louis Berger Group, Inc.
Figure 19-1

19.3 Existing Conditions

The Existing Conditions analysis includes the review and evaluation of recorded ambient air quality data that are monitored by NYSDEC in the study area. Ambient air quality in the study area has been monitored for many years by NYSDEC and tabulated in annual reports such as the *New York State Air Quality Report, Ambient Air Monitoring System.* Representative monitored concentrations for the study area are shown in Table 19-2 for the year 2005. The ambient air quality data presented are the worst-case concentration data monitored by NYSDEC within the Staten Island area or the NYMA. For available pollutant concentrations examined in 2005, the CO, SO_2, nitrogen dioxide and lead concentrations are well below (within) the standards, and no monitored data exceeded the NAAQS. The monitored ozone concentrations in the NYMA exceeded the standards, thereby classifying it as an ozone nonattainment area. Both the PM_{10} and $PM_{2.5}$ levels measured in the study area were below (within) the NAAQS, although this area is currently designated as $PM_{2.5}$ non-attainment.

19.3.1 Stationary Sources Screening Analysis

Based on CEQR procedures, screening analyses were conducted for nearby stationary sources, adjacent manufacturing and/or chemical processing facilities, and for the Proposed Action's HVAC and boiler systems.

Table 19-2: Representative Monitored Ambient Air Quality Data (2005)

Pollutant	NYSDEC Monitored Data		
	Monitoring Station	**Period**	**1st/2nd Highest**
Carbon Monoxide (CO)	MTA, Flatbush Ave. Brooklyn	1-hour 8-hour	4.1 / 3.5 ppm 2.4 / 2.2 ppm
Particulates ($PM_{2.5}$)	Susan Wagner HS, Between Brielle Ave, & Manor Road, State Island	24-hour Annual	24 / 23 ug/m^3 11.7 ug/m^3
Particulates (PM_{10})	Susan Wagner HS, Between Brielle Ave, & Manor Road, State Island	24-hour Annual	41 / 35 ug/m^3 15.0 ug/m^3
Ozone (O_3)	Susan Wagner HS, Between Brielle Ave, & Manor Road, State Island	1-hour 8-hour	0.136 / 0.117 ppm 0.094 ppm (4^{th})
Nitrogen Dioxide (NO_2)	PS 59, 288 E. 57^{th} Street, Manhattan	Annual Average	74 ug/m^3
Lead (Pb) Quarterly Average	JHS 126, 424 Leonard Street, Brooklyn	Quarterly Average	0.03 ug/m^3
Sulfur Dioxide (SO_2)	PS 59, 288 E. 57^{th} Street, Manhattan	3-hour 24-hour Annual	150.8 / 145.6 ug/m^3 109.2 / 98.8 ug/m^3 28.6 ug/m^3

ppm = parts per million,ug/m^3 = micrograms per cubic meter

Sources: New York State Air Quality Report, Ambient Air Monitoring Systems, 2005;
EPA, AirData Web Site, Monitor Value Report.

19.3.2 Mobile Sources Screening Analysis

A screening analysis for project-impacted intersections and sensitive sites was conducted based on a review of traffic volumes and levels of service (LOS) under both the No Build and Build Conditions, and the estimated number of vehicular trips that the Proposed Action would generate. By following the CEQR procedures and criteria, the following four intersections were selected for analysis due to the highest traffic flows, worst LOS conditions, and expected project generated trips: Bay Street and Edgewater Street/Front Street; Bay Street and Vanderbilt Avenue; Bay Street and Hannah Street; and Bay Street and Victory Boulevard. Multiple receptor sites were analyzed at each intersection, in accordance with State and Federal guidelines. The air quality analysis receptors are shown in Figure 19-1.

19.3.3 Mobile Sources

For all of the mobile sources concentration analyses under Existing Conditions, the predicted total maximum ambient air quality concentrations of all pollutants at the receptor locations do not exceed the NAAQS. The detailed results are presented below and back-up technical data is contained in Appendix E.

Ambient CO Concentrations

Following the procedures described in Section 19.2, the total ambient CO concentrations from mobile sources emissions were evaluated for Existing Conditions. A conservative estimate was conducted by adding the highest results from models to the background levels recommended by the NYCDEP to obtain the predicted total ambient concentrations at analyzed receptor locations. The total ambient CO concentrations predicted at the study intersections for Existing Conditions are presented in Table 19-3.

The analysis finds that the predicted ambient CO concentrations are far below (within) the NAAQS. Under Existing Conditions, the highest predicted total 1-hour and 8-hour ambient CO concentrations, which occur at Bay Street and Vanderbilt Avenue, are 5.70 ppm and 3.98 ppm respectively, while the NAAQS are 35 ppm and 9 ppm, respectively.

Ambient PM Concentrations

The predicted PM_{10} total ambient concentrations at the study area intersections for Existing Conditions are presented in Table 19-4. The predicted worst-case 24-hour total ambient PM_{10} concentration under Existing Conditions is 54.6 ug/m^3 for the Bay Street and Victory Boulevard analysis site, which is far below (within) the 24-hour NAAQS of 150 ug/m^3. Under Existing Conditions, the highest predicted annual average total ambient PM_{10} concentration is 17.71 ug/m^3, which also is well within the annual NAAQS of 50 ug/m^3.

Table 19-3: Predicted Existing Ambient CO Concentrations

Analysis Site	1- Hour (ppm)			8-Hour (ppm)		
	CO from Mobile Sources	Total Conc.*	NAAQS	CO from Mobile Sources	Total Conc.**	NAAQS
Bay Street and Edgewater Street/ Front Street	1.90	5.20	35.0	1.33	3.63	9.0
Bay Street and Vanderbilt Avenue	2.40	5.70	35.0	1.68	3.98	9.0
Bay Street and Hannah Street	2.00	5.30	35.0	1.40	3.70	9.0
Bay Street and Victory Boulevard	1.90	5.20	35.0	1.33	3.63	9.0

*****Concentration, including 1-hour background concentration 3.3 ppm

******Concentration, including 8-hour background concentration 2.3 ppm

Source: The Louis Berger Group, Inc., 2006.

Table 19-4: Predicted Existing Ambient PM_{10} Concentrations

Analysis Site	24- Hour (ug/m^3)			Annual Avg. (ug/m^3)		
	PM_{10} from Mobile Sources	Total Conc.*	NAAQS	PM_{10} from Mobile Sources	Total Conc.**	NAAQS
Bay Street and Edgewater Street/ Front Street	2.2	53.2	150.0	0.44	17.44	50.0
Bay Street and Vanderbilt Avenue	2.7	53.7	150.0	0.53	17.53	50.0
Bay Street and Hannah Street	3.1	54.1	150.0	0.62	17.62	50.0
Bay Street and Victory Boulevard	3.6	54.6	150.0	0.71	17.71	50.0

*****Concentration, including 24-hour background concentration 51 ug/m^3

******Concentration, including annual average background concentration 17 ug/m^3

Source: The Louis Berger Group, Inc., 2006.

19.4 No Build Condition

19.4.1 Stationary Sources

There are no known major sources of air emissions added in the No Build Condition and other that removing the sources from the temporary sources on the Homeport Site, no anticipated changes to emissions in the Project Area.

19.4.2 Mobile Sources

For all of the mobile sources concentration analyses under the No Build Condition, the predicted total maximum ambient air quality concentrations of all pollutants at the receptor locations do not exceed the NAAQS. The detailed results are presented below with technical back-up material supplied in Appendix E.

Ambient CO Concentrations

Following the procedures described in Section 19.2, the total ambient CO concentrations from mobile sources emissions were evaluated for the No Build Condition. A conservative estimate was conducted by adding the highest results from models to the background levels recommended by the NYCDEP to obtain the predicted total ambient concentrations at receptor locations. The total ambient CO concentrations predicted at the study intersections for the No Build Condition are presented in Table 19-5.

The analysis finds that the predicted ambient CO concentrations are well within the NAAQS. Similar to Existing Conditions, the highest ambient CO concentrations under the No Build Condition were measured at the Bay Street and Vanderbilt Avenue site. The total 1-hour and 8-hour CO concentrations for this site are 4.70 ppm and 3.28 ppm, respectively; while the NAAQS are 35 ppm and 9 ppm, respectively. .

Ambient PM Concentrations

The predicted total ambient PM_{10} concentrations at the study area intersections for the No Build Condition are presented in Table 19-6. The predicted worst-case 24-hour total ambient PM_{10} concentration under the No Build Condition is 52.8 ug/m^3, far below the 24-hour NAAQS of 150 ug/m^3. The highest predicted annual average ambient PM_{10} concentration is 17.36 ug/m^3, also which is well within the annual NAAQS of 50 ug/m^3.

Table 19-5: Predicted No Build Ambient CO Concentrations

Analysis Site	1- Hour (ppm)			8-Hour (ppm)		
	CO from Mobile Sources	Total Conc.*	NAAQS	CO from Mobile Sources	Total Conc.**	NAAQS
Bay Street and Edgewater Street/ Front Street	1.00	4.30	35.0	0.70	3.00	9.0
Bay Street and Vanderbilt Avenue	1.40	4.70	35.0	0.98	3.28	9.0
Bay Street and Hannah Street	1.00	4.30	35.0	0.70	3.00	9.0
Bay Street and Victory Boulevard	1.20	4.50	35.0	0.84	3.14	9.0

*Concentration, including 1-hour background concentration 3.3 ppm

**Concentration, including 8-hour background concentration 2.3 ppm

Source: The Louis Berger Group, Inc., 2006.

Table 19-6: Predicted No Build Ambient PM_{10} Concentrations

Analysis Site	24- Hour (ug/m^3)			Annual Avg. (ug/m^3)		
	PM_{10} from Mobile Sources	Total Conc.*	NAAQS	PM_{10} from Mobile Sources	Total Conc.**	NAAQS
Bay Street and Edgewater Street/ Front Street	1.3	52.3	150.0	0.27	17.27	50.0
Bay Street and Vanderbilt Avenue	1.8	52.8	150.0	0.36	17.36	50.0
Bay Street and Hannah Street	1.8	52.8	150.0	0.36	17.36	50.0
Bay Street and Victory Boulevard	1.8	52.8	150.0	0.36	17.36	50.0

*Concentration, including 24-hour background concentration 51 ug/m^3

**Concentration, including annual average background concentration 17 ug/m^3

Source: The Louis Berger Group, Inc., 2006.

19.5 Build Condition

19.5.1 Stationary Sources

Nearby Stationary Sources and Manufacturing Facilities

The stationary sources screening of nearby sources was conducted by reviewing land uses, including schools, hospitals, parks and residences; NYCDEP facility data and EPA stationary sources inventory for any potential emission sources (such as solid waste, incinerators, cogeneration facilities, asphalt and concrete plants, or power generating plants within 1,000 feet of the Project Area); and any major manufacturing or chemical processing facilities within 400 feet of the Project Area. No sources that might significantly impact the air quality in the neighborhood were identified. Therefore, air quality impacts from nearby stationary sources would be minor.

Stationary Sources

On-site stationary sources include hot water boilers and HVAC systems. In order to determine the significance of the Proposed Action's potential air quality impacts, CEQR screening-level analyses were performed for the on-site stationary sources. The screening is based on the size of the Proposed Action's development, the zoning square footage of the proposed new construction, and the height of exhaust releases.

A conservative emission release height of 20 feet was assumed. The Proposed Action's boilers and HVAC systems were evaluated and the results are outlined in Table 19-7. Since the development sizes of all Proposed Action elements are smaller than the CEQR-estimated maximum sizes that would result in substantial impacts, the boilers and HVAC systems for all of the Proposed Action elements are not expected to significantly affect nearby buildings or the adjacent environment.

Table 19-7: Stationary Sources Screening

Location		Size (square feet)	Distance to Nearest Building (feet)	CEQR – Estimated Maximum Size of Development for Insignificant Impact (square feet)
Parcel A	Residential (125 Units, 140 Parking Spaces)	131,250	400	1,000,000
Parcel B1	Restaurant and Banquet (600 Parking Spaces)	60,000	300	650,000
Parcel B2	Sport Complex and Retail (130 Parking Spaces)	80,000	300	650,000
Parcel B3	Residential and Farmer Market (125 Units, 220 Parking Spaces)	166,500	300	650,000
Parcel B4	Commercial (225 Parking Spaces)	75,000	250	500,000
Parcel B5	Residential (100 Units, 120 Parking Spaces)	105,000	400	1,000,000
Area C	Residential and Retail (288 Units, 290 Parking Spaces)	343,700	300	650,000

Sources: *CEQR Technical Manual,* 2001; New York City Economic Development Corporation, 2006; The Louis Berger Group, Inc., 2006.

19.5.2 Mobile Sources

Build Condition analyses were conducted to assess the Proposed Action's potential air quality impacts, utilizing the same approach and methodology as the Existing and No Build Conditions analyses. The results are presented below with technical back-up material supplied in Appendix E.

CO Concentration Analysis

The predicted ambient CO concentrations of project-generated traffic at intersections within the study area were estimated using EPA dispersion models. The analysis intersections are the same as those which were analyzed for the No Build Condition. At each receptor or analysis site, maximum 1- and 8-hour CO concentrations were calculated. The predicted ambient CO concentration levels were then compared with NAAQS. The CO impacts attributable to the Proposed Action also were compared with *de minimis* criteria, which are thresholds used to determine significant impacts under CEQR.

The total predicted ambient CO concentrations for the study area intersections under the Build Condition are presented in Table 19-8. The analysis results indicate that the predicted concentrations would not exceed the NAAQS for 1-hour and 8-hour CO. The highest total predicted 1-hour and 8-hour ambient CO concentrations for the Build Condition occur at the Bay Street and Vanderbilt Avenue analysis site. The predicted 1-hour and 8-hour ambient CO concentrations are 4.90 ppm and 3.42 ppm, respectively, which are well below the corresponding NAAQS (35 ppm and 9 ppm, respectively).

The predicted maximum project-induced 8-hour CO impact, or the difference between 8-hour CO impacts under the No Build and Build Conditions, is 0.14 ppm. This is far below the *de minimis* criterion of 2.86 ppm.[1] The Proposed Action would not cause or contribute to new violations of the standards; would not increase the frequency or severity of existing violations; and would not delay timely attainment of the standards. Therefore, the Proposed Action would not have a significant adverse impact on ambient air quality, and would not exceed CAAA or CEQR thresholds.

The total predicted ambient CO concentrations for the study area intersections under the Build Condition are presented in Table 19-8. The analysis results indicate that the predicted concentrations would not exceed the NAAQS for 1-hour and 8-hour CO. The highest total predicted 1-hour and 8-hour ambient CO concentrations for the Build Condition occur at the Bay Street and Vanderbilt Avenue analysis site. The predicted 1-hour and 8-hour ambient CO concentrations are 4.90 ppm and 3.42 ppm, respectively, which are well below the corresponding NAAQS (35 ppm and 9 ppm, respectively).

Table 19-8: Predicted Build Ambient CO Concentrations

	1- Hour (ppm)			8-Hour (ppm)		
Analysis Site	**CO from Mobile Sources**	**Total Conc.***	**NAAQS**	**CO from Mobile Sources**	**Total Conc.****	**NAAQS**
Bay Street and Edgewater Street/ Front Street	1.30	4.60	35.0	0.91	3.21	9.0
Bay Street and Vanderbilt Avenue	1.60	4.90	35.0	1.12	3.42	9.0
Bay Street and Hannah Street	1.20	4.50	35.0	0.84	3.14	9.0
Bay Street and Victory Boulevard	1.30	4.60	35.0	0.91	3.21	9.0

***Concentration, including 1-hour background concentration 3.3 ppm

****Concentration, including 8-hour background concentration 2.3 ppm

Source: The Louis Berger Group, Inc., 2006.

The predicted maximum project-induced 8-hour CO impact, or the difference between 8-hour CO impacts under the No Build and Build Conditions, is 0.14 ppm. This is far below the *de minimis* criterion of 2.86 ppm.[2] The Proposed Action would not cause or contribute to new violations of the standards; would not increase the frequency or severity of existing violations; and would not delay timely attainment of the standards. Therefore, the Proposed Action would not have a significant adverse impact on ambient air quality, and would not exceed CAAA or CEQR thresholds.

[1] The *de minimis* criterion is equal to half of the difference between the baseline predicted 8-hour CO concentration (3.28 ppm in this case), and the NAAQS for 8-hour CO concentration (9 ppm).

[2] The *de minimis* criterion is equal to half of the difference between the baseline predicted 8-hour CO concentration (3.28 ppm in this case), and the NAAQS for 8-hour CO concentration (9 ppm).

PM Concentration Analysis

The on-road PM emissions and impacts were assessed by analyzing the number of diesel vehicles and heavy trucks and buses to be utilized and their potential emissions. The PM impact analysis followed the procedures established in the *NYSDOT Project Level Particulate Matter Analysis Final Policy* (September 2004) and NYCDEP Guidance, as described in Section 19.2. The total ambient PM_{10} concentrations were calculated by adding the available 24-hour and annual background concentration to the highest modeled concentrations, which were then compared with the NAAQS. Predicted worst-case, incremental impacts of PM_{10} were also compared to NYSDOT and NYCDEP thresholds.

The predicted PM_{10} total ambient concentration for the study area intersections under the Build Condition are presented in Table 19-9. The predicted worst-case 24-hour total PM_{10} ambient concentration is 53.2 ug/m^3 at three separate analysis sites, which is far below the 24-hour NAAQS (150 ug/m^3). The predicted worst-case annual average total PM_{10} ambient concentration for the Build Condition is 17.44 ug/m^3 at the same three analysis sites, which is also well within the annual NAAQS (50 ug/m^3).

For the Build Condition impact analyses, the predicted total maximum ambient air quality concentrations of all pollutants at all receptor locations do not exceed the NAAQS.

Table 19-9: Predicted Build Ambient PM_{10} Concentrations

	24- Hour (ug/m^3)			Annual Avg. (ug/m^3)		
Analysis Site	**PM_{10} from Mobile Sources**	**Total Conc.***	**NAAQS**	**PM_{10} from Mobile Sources**	**Total Conc.****	**NAAQS**
Bay Street and Edgewater Street/ Front Street	1.3	52.3	150.0	0.27	17.27	50.0
Bay Street and Vanderbilt Avenue	1.8	52.8	150.0	0.36	17.36	50.0
Bay Street and Hannah Street	1.8	52.8	150.0	0.36	17.36	50.0
Bay Street and Victory Boulevard	2.2	53.2	150.0	0.44	17.44	50.0

***Concentration, including 24-hour background concentration 51 ug/m^3

****Concentration, including annual average background concentration 17 ug/m^3

Source: The Louis Berger Group, Inc., 2006.

Mobile Source PM Impacts

The predicted project-induced PM_{10} and $PM_{2.5}$ impact concentrations are presented in Tables 19-10 and 19-11, respectively, based on NYSDOT and NYCDEP policies for comparing with impact *de minimis* thresholds. The PM impacts at analyzed intersections were determined by calculating the difference in concentrations from engine emissions between the No Build and Build Conditions.

Table 19-10: Predicted Project-Induced Impact PM_{10} Concentrations (Build/No-Build Comparison)

Analysis Site	24- Hour (ug/m^3)				Annual Avg. (ug/m^3)			
	Build	No Build	Impact Conc.**	Threshold	Build	No Build	Impact Conc.**	Threshold
Bay Street and Edgewater Street	1.3	1.2	0.0	5.0	0.27	0.27	0.00	1.0
Bay Street and Vanderbilt Avenue	1.8	1.8	0.0	5.0	0.36	0.36	0.00	1.0
Bay Street and Hannah Street	1.8	1.8	0.0	5.0	0.36	0.36	0.00	1.0
Bay Street and Victory Boulevard	2.2	1.8	0.4	5.0	0.44	0.36	0.08	1.0

***** New York State Thresholds for worst-case receptor

****** Concentration, differences between No-Build and Build concentrations

Source: The Louis Berger Group, Inc., 2006.

Table 19-11: Predicted Project-Induced Impact $PM_{2.5}$ Concentrations (Build/No-Build Comparison)

Analysis Site	24- Hour (ug/m^3)				Annual Avg. (ug/m^3)			
	Build	No Build	Impact Conc.**	Threshold	Build	No Build	Impact Conc.**	Threshold
Bay Street and Edgewater Street	1.2	1.2	0.0	5.0	0.24	0.24	0.00	0.3
Bay Street and Vanderbilt Avenue	1.6	1.6	0.0	5.0	0.32	0.32	0.00	0.3
Bay Street and Hannah Street	1.6	1.6	0.0	5.0	0.32	0.32	0.00	0.3
Bay Street and Victory Boulevard	2.0	1.6	0.4	5.0	0.44	0.32	0.08	0.3

*****New York State Thresholds for worst-case receptor

******Concentration, differences between No-Build and Build concentrations

Source: The Louis Berger Group, Inc., 2006.

The predicted project-induced 24-hour and annual average PM_{10} impact concentrations at the worst-case receptor, Bay Street and Victory Boulevard, are 0.4 ug/m^3 and 0.08 ug/m^3, respectively. These worst case concentrations are below (within) the NYSDOT PM_{10} impact thresholds of 5.0 ug/m^3 and 1.0 ug/m^3, respectively. The predicted project-induced 24-hour $PM_{2.5}$ impact concentration at the worst-case receptor, Bay Street and

Victory Boulevard, is 0.4 ug/m^3, which is below (within) the NYSDOT and NYCDEP $PM_{2.5}$ impact threshold of 5.0 ug/m^3. The predicted project-induced annual average $PM_{2.5}$ impact concentrations at the same worst-case receptor are 0.08 ug/m^3, which is also below NYSDOT and NYS.

Parking Facility Analysis

By using the analysis procedures described above, the modeled CO, PM_{10}, and $PM_{2.5}$ concentrations resulting from the parking garage on parcel B1, and the parking lots on parcels B2, B3, and C1, as well as from nearby roadway sources at each analysis site were added to the background concentrations to predict total pollutant concentrations. The total ambient concentrations levels were then compared to the NAAQS.

The worst-case 1- and 8-hour CO concentrations predicted for all analysis sites are summarized in Table 19-12 and Table 19-13, respectively. The worst-case predicted PM_{10} ambient concentrations levels are presented in Table 19-14 and Table 19-15, respectively, for 24-hour and annual average levels; the PM_{10} and $PM_{2.5}$ impacts are presented in Table 19-16 and Table 19.17, respectively, to compare with the New York thresholds.

All estimated concentrations under both Build and No Build conditions are well below (within) the standards and New York impact thresholds for CO and PM. No exceedances of the NAAQS were predicted. The 8-hour CO impacts of the garage on parcel B1, and parking lots on parcels B2, B3, and C1, and nearby roadways are:

- 0.476 ppm at the receptor located at Front Street and Lot B1 (five feet from parking garage);
- 0.117 ppm at receptor of intersection of Front Street and Wave Street;
- 0.106 ppm at receptor of intersection of Front Street and Prospect Street;
- 0.087 ppm at receptor of intersection Bay Street and Wave Street; and
- 0.084 ppm at receptor of intersection Bay Street and Prospect Street.

These combined impacts from parking facilities and roadway emissions are all well below CEQR thresholds. The maximum 8-hour impact 0.476 ppm would occur at the receptor location five feet from the parking garage on parcel B1, and is well below the CEQR threshold of 3.32 ppm (half of the difference between the No Build concentration of 2.37 ppm and the 8-hour CO NAAQS of 9 ppm). Likewise, PM_{10} and $PM_{2.5}$ impacts are all below New York State thresholds.

Table 19-12: Predicted Ambient CO Concentrations[a] 1-hour (ppm)[b]

Analysis Site	Impacts From				Total Conc[c]. Roadways		No-Build Conc[c]. Roadways
	B1 Garage	B2 Lot	B3 Lot	C1 Lot			
Front Street & Lot B1	0.494	0.007	0.012	0.004	0.300	4.117	3.400
Front Street & Wave Street	0.028	0.010	0.017	0.006	0.300	3.661	3.500
Front Street& Prospect St.	0.014	0.013	0.022	0.008	0.300	3.657	3.500
Bay Street & Wave Street	0.009	0.006	0.010	0.003	0.600	3.928	3.800
Bay Street & Prospect St.	0.005	0.006	0.010	0.003	0.500	3.824	3.700

Notes:
a. NAAQS (National Ambient Air Quality Standard) for 1-hr CO = 35 ppm
b. ppm = parts per million Impacts resulting from worst-case wind direction
c. Including 1-hour background concentrations 3.3 ppm
Source: The Louis Berger Group, Inc., April 2006

Table 19-13: Predicted Ambient CO Concentrations[a] 8-hour (ppm)[b]

Analysis Site	Impacts From				Total Conc[c]. Roadways		No-Build Conc[c]. Roadways
	B1 Garage	B2 Lot	B3 Lot	C1 Lot			
Front Street & Lot B1	0.320	0.005	0. 012	0. 004	0. 210	2.557	2.370
Front Street & Wave Street	0. 024	0. 007	0.017	0.006	0.300	3.661	2.440
Front Street & Prospect Street	0. 007	0. 009	0. 015	0. 005	0. 210	2.546	2.440
Bay Street & Wave Street	0. 005	0. 004	0. 006	0. 002	0. 420	2.737	2.650
Bay Street & Prospect St.	0. 002	0. 004	0. 006	0. 002	0. 350	2.664	2.580

Notes:
a. NAAQS (National Ambient Air Quality Standard) for 1-hr CO = 35 ppm
b. ppm = parts per million Impacts resulting from worst-case wind direction
c. Including 1-hour background concentrations 3.3 ppm
Source: The Louis Berger Group, Inc., April 2006

Table 19-14: Predicted Ambient PM_{10} Concentrations[a] 24-hour (ug/m^3)[b]

Analysis Site	Impacts From				Total Conc[c]. Roadways		No-Build Conc[c]. Roadways
	B1 Garage	B2 Lot	B3 Lot	C1 Lot			
Front Street & Lot B1	0. 012	0. 003	0. 005	0. 002	0. 890	51.912	51.440
Front Street & Wave Street	0. 015	0. 004	0. 007	0. 002	0. 002	51.918	51.440
Front Street & Prospect Street	0. 019	0. 005	0. 008	0. 003	1.330	51.925	51.440
Bay Street & Wave Street	0. 012	0. 003	0. 005	0. 002	0. 420	52.352	52.330
Bay Street & Prospect St.	0. 012	0. 003	0. 005	0. 002	1.330	52.352	52.330

Notes:
a. NAAQS (National Ambient Air Quality Standard) for 1-hr CO = 35 ppm
b. ppm = parts per million Impacts resulting from worst-case wind direction
c. Including 1-hour background concentrations 3.3 ppm
Source: The Louis Berger Group, Inc., April 2006

Table 19-15: Predicted Ambient PM_{10} Concentrations[a] Annual Average (ug/m^3)[b]

Analysis Site	Impacts From				Total Conc[c]. Roadways		No-Build Conc[c]. Roadways
	B1 Garage	B2 Lot	B3 Lot	C1 Lot			
Front Street & Lot B1	0. 002	0. 0	0. 0	0. 0	0. 178	17.180	17.089
Front Street & Wave Street	0. 003	0. 001	0. 001	0. 0	0. 002	17.183	51.440
Front Street & Prospect Street	0. 004	0. 001	0. 001	0. 0	0. 178	17.184	17.089
Bay Street & Wave Street	0. 002	0. 0	0. 0	0. 0	0. 267	17.269	17.267
Bay Street & Prospect St.	0. 002	0. 0	0. 0	0. 0	0. 267	17.269	17.267

Notes:
a. NAAQS (National Ambient Air Quality Standard) for 1-hr CO = 35 ppm
b. ppm = parts per million Impacts resulting from worst-case wind direction
c. Including 1-hour background concentrations 3.3 ppm
Source: The Louis Berger Group, Inc., April 2006

Table 19-16: Predicted Parking-Related Impact PM_{10} Concentrations (Build/No-Build Comparison)

Analysis Sites	24-hour (ug/m^3)				Annual Avergae (ug/m^3)			
	Build[a]	No-Build[a]	Impact	Threshold[c]	Build[b]	No-Build[b]	Impact	Threshold[c]
Front Street & Lot B1	51.912	51.440	0.47	5.0	17.180	17.089	0.091	1.0
Front Street & Wave Street	51.918	51.440	0.48	5.0	17.183	17.089	0.094	1.0
Front Street & Prospect St.	51.925	51.440	0.49	5.0	17.184	17.089	0.095	1.0
Bay Street & Wave Street	52.352	52.330	0.02	5.0	17.269	17.267	0.002	1.0
Bay Street & Prospect St.	52.352	52.330	0.02	5.0	17.269	17.267	0.002	1.0

Notes:
a. Including 24-hour background concentrations 51 ug/m^3
b. Including annual average background concentrations 17 ug/m^3
c. New York Thresholds for worst-case receptor
Source: The Louis Berger Group, Inc., April 2006

Table 19-17: Predicted Parking-Related Impact $PM_{2.5}$ Concentrations (Build/No-Build Comparison)

Analysis Sites	24-hour (ug/m^3)		Annual Avergae (ug/m^3)	
	Impact[a]	Threshold[b]	Impact[a]	Threshold[b]
Front Street & Lot B1	0.420	5.0	0.082	0.3
Front Street & Wave Street	0.430	5.0	0.085	0.3
Front Street & Prospect St.	0.440	5.0	0.086	0.3
Bay Street & Wave Street	0.02	5.0	0.002	0.3
Bay Street & Prospect St.	0.02	5.0	0.002	0.3

Notes:
a. Concentrations, difference between No-Build and Build concentrations
b. New York Thresholds for worst-case receptor
Source: The Louis Berger Group, Inc., April 2006

19.6 Conclusion

Under Existing, No Build and Build Conditions, the predicted total maximum ambient air quality concentrations of all pollutants at all worst-case locations would not exceed the NAAQS. The worst-case project impacts also would not exceed State or City impact thresholds. Therefore, the Proposed Action would not have a significant adverse impact on ambient air quality, and short- and long-term NAAQS would be maintained within the study area and immediate vicinity.

The combined impacts from parking facilities and roadway emissions are all well below CEQR thresholds. The maximum 8-hour impact 0.476 ppm would occur at the receptor location five feet from the parking garage on parcel B1, and is well below CEQR threshold of 3.32 ppm (half of the difference between the No Build concentration of 2.37 ppm and the 8-hour CO NAAQS of 9 ppm). Likewise, PM_{10} and $PM_{2.5}$ impacts are all below New York thresholds.

Since the ambient air quality standards would be met and impact thresholds would not be exceeded, the Proposed Action is not expected to cause or contribute to a new violation of the standards, to increase the frequency or severity of an existing violation, or to delay the timely attainment of the standards. Therefore, the Proposed Action complies with the CAAA requirements and would not result in a significant adverse air quality impact.