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Air Quality

Ambient air quality, or the quality of the surrounding air, may be affected by air pollutants produced by motor vehicles, referred to as "mobile sources;" by fixed facilities, referred to as "stationary sources;" or by a combination of both. Under CEQR, an air quality assessment determines both a proposed project's effects on ambient air quality as well as the effects of ambient air quality on the project.

Introduction

As discussed in the *2020 CEQR Technical Manual*, a proposed project may potentially result in the following types of air quality impacts:

- Potential impacts from mobile sources introduced by a project.
- Potential impacts from potential air pollutant sources introduced by a project, such as:
  - Emissions from a project's heating, ventilation, and air conditioning (HVAC) system
  - Emissions from a project's enclosed parking garage.
- Potential impacts on the proposed project from either manufacturing/processing facilities or large/major sources that are located near the project site.

As described in **Chapter 1, Project Description,** the Proposed Actions would allow the applicants to lease space in the existing Starrett-Lehigh Building and Terminal Warehouse to a more diverse range of tenant types. No new floor area would be developed nor would construction occur, other than interior renovations typically associated with a change of tenant. As discussed in the Environmental Assessment Statement Part II Supplemental

Analyses (EAS Part II), the Proposed Actions would not result in changes to either the Starrett-Lehigh Building's HVAC system or the Terminal Warehouse HVAC system. The existing buildings are currently occupied with office, manufacturing, warehouse, and showroom uses, cafes and restaurants, and other commercial uses that would continue to be allowed as-of-right. The Proposed Actions would add certain types of retail and community facility uses to the current permitted uses. The EAS Part II screened the need for an analysis of stationary sources impacts from the project and on the the project since there would be no construction as part of the Proposed Actions. Neither building has a parking garage, and in the future with the Proposed Actions, no parking would be introduced at either building; parking would continue to be accommodated on-street or at off-site locations. Therefore, the Proposed Actions would not affect parking at either building. As a result, an analysis of stationary sources is not warranted.

Instead, the air quality analysis for the Proposed Actions focuses on mobile sources since the number of vehicles traveling to and from the project area is expected to increase. This analysis assesses the potential for changes in vehicular travel associated with the Proposed Actions to result in significant mobile source (vehicle-related) air quality impacts.

Principal Conclusions

The Proposed Actions would not result in significant adverse air quality impacts. An analysis of mobile sources undertaken for the Proposed Actions concluded that the maximum hourly incremental traffic volumes generated by the Proposed Actions would not exceed the *CEQR Technical Manual* carbon monoxide (CO) screening threshold of 170 peak-hour vehicle trips at a single intersection in the study area. In addition, action generated volumes would not exceed the particulate matter (PM) emission screening thresholds discussed in Chapter 17, Sections 210 and 311 of the *CEQR Technical Manual*. No other air quality impacts are anticipated from the Proposed Actions.

Air Quality Standards

In accordance with the requirements of the Clean Air Act (CAA), as amended 1990, the U.S. Environmental Protection Agency (EPA) has promulgated National Ambient Air Quality Standards (NAAQS) (40 CFR part 50) for pollutants considered harmful to public health and the environment. The Clean Air Act established two types of national air quality standards. Primary standards set limits to protect public health, including the health of sensitive populations such as sick, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings.

The EPA Office of Air Quality Planning and Standards (OAQPS) has set NAAQS for six principal pollutants, which are called "criteria" pollutants. These six pollutants are ozone, CO, nitrogen dioxide (NO_2), sulfur dioxide (SO_2), PM less than 10 microns in diameter (PM_{10}) and less than 2.5 microns in diameter ($PM_{2.5}$), and lead (Pb). These standards are reviewed from time to time and may be revised.

The State of New York has adopted similar standards as those set by the EPA, with the exception of sulfur dioxide, particulates, fluorides, and hydrogen sulfide. The NAAQS are presented in **Table 5-1**.

Table 5-1 National Ambient Air Quality Standards

Pollutant	Primary/ Secondary	Averaging Level	Level	Form
Carbon Monoxide (CO)	Primary	8 hours	9 ppm	Not to be exceeded more than once per year
		1 hour	35 ppm	
Lead (Pb)	Primary and secondary	Rolling 3-month average	0.15 µg/m^3 [(1)]	Not to be exceeded
Nitrogen Dioxide (NO_2)	Primary	1 hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	Primary and secondary	1 year	53 ppb [(2)]	Annual mean
Ozone (O_3)	Primary and secondary	8 hours	0.070 ppm [(3)]	Annual fourth-highest daily maximum concentration, averaged over 3 years
Particulate Matter ($PM_{2.5}$)	Primary	1 year	12.0 µg/m^3	Annual mean, averaged over 3 years
	Secondary	1 year	15.0 µg/m^3	Annual mean, averaged over 3 years
	Primary and secondary	24 hours	35 µg/m^3	98th percentile, averaged over 3 years
Particulate Matter (PM_{10})	Primary and secondary	24 hours	150 µg/m^3	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide (SO_2)	Primary	1 hour	75 ppb[(4)]	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	Secondary	3 hours	0.5 ppm	Not to be exceeded more than once per year

Notes:

[(1)] In areas designated nonattainment for the Pb standards prior to the promulgation of the current (2008) standards, and for which implementation plans to attain or maintain the current (2008) standards have not been submitted and approved, the previous standards (1.5 µg/m^3 as a calendar quarter average) also remain in effect.

[(2)] The level of the annual NO_2 standard is 0.053 ppm. It is shown here in terms of ppb for the purposes of clearer comparison to the 1-hour standard level.

[(3)] Final rule signed October 1, 2015, and effective December 28, 2015. The previous (2008) O_3 standards additionally remain in effect in some areas. Revocation of the previous (2008) O3 standards and transitioning to the current (2015) standards will be addressed in the implementation rule for the current standards.

[(4)] The previous SO_2 standards (0.14 ppm 24-hour and 0.03 ppm annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2)any area for which an implementation plan providing for attainment of the current (2010) standard has not been submitted and approved and which is designated nonattainment under the previous SO_2 standards or is not meeting the requirements of a SIP call under the previous SO_2 standards (40 CFR 50.4(3)). A SIP call is a USEPA action requiring a state to resubmit all or part of its State Implementation Plan to demonstrate attainment of the required NAAQS.

Source: EPA NAAQS Table, https://www.epa.gov/criteria-air-pollutants/naaqs-table, accessed January 2021

In addition to criteria pollutants, there are other pollutants, air toxics, not included by the EPA in the list of principal pollutants. Non-criteria pollutants are emitted by a wide range of man-made and naturally occurring sources. These pollutants are sometimes referred to as hazardous air pollutants (HAP) and when emitted from mobile sources, as Mobile Source Air Toxics (MSATs). No federal ambient air quality standards have been promulgated for toxic air

pollutants. However, EPA and New York State Department of Environmental Conservation (NYSDEC) have issued guidelines that establish acceptable ambient levels for these pollutants based on human exposure.

Regulatory Context

The 1990 CAA with Amendments resulted in states being divided into attainment and non-attainment areas, with classifications based upon the severity of their air quality problems. Air quality control regions are classified and divided into one of four categories: attainment, unclassified, maintenance or non-attainment depending upon air quality data and ambient concentrations of pollutants. Attainment areas are regions where ambient concentrations of a pollutant are below the respective NAAQS; non-attainment areas are those where concentrations exceed the NAAQS. Maintenance areas are former non-attainment that achieved attainment. An unclassified area is a region where data are insufficient to make a determination and is generally considered as an attainment area for administrative purposes. A single area can be in attainment of the standards for some pollutants while being in non-attainment for others.

New York County is designated as a serious non-attainment area for the 2008 8-hour ozone standard and a moderate non-attainment area for the 2015 8-hour ozone standard. Both designations are part of a larger New York-Northern New Jersey-Long Island, NY-NJ-CT non-attainment areas. New York County has been a PM_{10} non-attainment area since 1994. The county has been designated as a maintenance area for CO as of May 20, 2002 and for the 2006 $PM_{2.5}$ standard as of April 18, 2014. New York County is in attainment for all other criteria pollutants (Pb, NO_2, and SO_2).

Pollutants of Concern

Air pollution is of concern because of its demonstrated effects on human health. Of special concern are the respiratory effects of the pollutants and their potential toxic effects, as described below.

Carbon monoxide (CO) is a colorless and odorless gas that is a product of incomplete combustion. Carbon monoxide is absorbed by the lungs and reacts with hemoglobin to reduce the oxygen carrying capacity of the blood. At low concentrations, CO has been shown to aggravate the symptoms of cardiovascular disease. It can cause headaches, nausea, and at sustained high concentration levels, can lead to coma and death.

Particulate matter is made up of small solid particles and liquid droplets. PM_{10} refers to particulate matter with a nominal aerodynamic diameter of 10 micrometers or less, and $PM_{2.5}$ refers to particulate matter with an aerodynamic diameter of 2.5 micrometers or less. Particulates can enter the body through the respiratory system. Particulates over 10 micrometers in size are generally captured in the nose and throat and are readily expelled from the body. Particulates smaller than 10 micrometers, and especially particles smaller than 2.5 micrometers, can reach the air ducts (bronchi) and the air sacs (alveoli) in the lungs. Particulates are associated with increased incidence of respiratory diseases, cardiopulmonary disease, and cancer.

Non-criteria pollutants may be of concern in addition to the criteria pollutants discussed above. Non-criteria pollutants are emitted by a wide range of man-made and naturally occurring sources. These pollutants are sometimes referred to as hazardous air pollutants (HAP) and when emitted from mobile sources, as Mobile Source Air Toxics (MSATs). Emissions of non-criteria pollutants from industrial sources are regulated by the United States Environmental Protection Agency (EPA).

Federal ambient air quality standards do not exist for non-criteria pollutants; however, NYSDEC has issued standards for certain non-criteria compounds, including beryllium, gaseous fluorides, and hydrogen sulfide. NYSDEC has also developed guidance document DAR-1 (August 2016), which contains a compilation of annual and short term (1-hour) guideline concentration thresholds for these compounds. The NYSDEC's DAR-1 guidance thresholds represent ambient levels that are considered safe for public exposure. EPA has also developed guidelines for assessing exposure to non-criteria pollutants. These exposure guidelines are used in health risk assessments to determine the potential effects to the public.

Impact Criteria

The State Environmental Quality Review Act (SEQRA) regulations and *CEQR Technical Manual* indicate that the significance of a predicted consequence of a project (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.[1] The predicted concentrations of pollutants of concern associated with a proposed project are compared with the NAAQS for criteria air pollutants or ambient guideline concentrations for non-criteria pollutants. Generally, if project-related concentrations are higher than NAAQS, there is a potential for significant adverse air quality impacts from the project. In addition, the City's *de minimis* criteria are also used to determine significance of impacts for CO and $PM_{2.5}$.

CO De Minimis Criteria

New York City has developed de minimis criteria to assess the significance of the increase in CO concentrations that would result from the impact of project-generated mobile sources, as set forth in the *CEQR Technical Manual*. These criteria set the minimum change in CO concentration that defines a significant adverse environmental impact. Significant increases of CO concentrations in New York City are defined as:

- An increase of 0.5 ppm or more in the maximum eight-hour average CO concentration at a location where the predicted No-Action eight-hour concentration is equal to or between 8.0 and 9.0 ppm; or
- An increase of more than half the difference between baseline (i.e., No-Action) concentrations and the eight-hour standard, when No-Action concentrations are below 8.0 ppm.

[1] *CEQR Technical Manual* (2020); and State Environmental Quality Review Regulations, 6 NYCRR §617.7

$PM_{2.5}$ De Minimis Criteria

New York City uses de minimis criteria to determine a project's potential to result in a significant adverse $PM_{2.5}$ impact under CEQR. The *de minimis* criteria are as follows:

- Predicted increase of more than half the difference between the background concentration and the 24-hour standard;
- Annual average $PM_{2.5}$ concentration increments which are predicted to be greater than 0.1 µg/m^3 at ground level on a neighborhood scale (i.e., the annual increase in concentration representing the average over an area of approximately 1 square kilometer, centered on the location where the maximum ground-level impact is predicted for stationary sources; or at a distance from a roadway corridor similar to the minimum distance defined for locating neighborhood scale monitoring stations); or
- Annual average $PM_{2.5}$ concentration increments which are predicted to be greater than 0.3 µg/m^3 at a discrete receptor location (elevated or ground level).

Background Concentrations

Background concentrations are ambient pollution levels associated with existing stationary, mobile, and other area emission sources. NYSDEC maintains an air quality monitoring network that provides live monitoring data to the EPA. EPA summarizes these data and publishes summaries on line. Observations include monitoring data for PM_{10}, $PM_{2.5}$, and CO. The latest three full years of monitoring data (2017 to 2019) from the representative monitoring stations from the EPA website[2] were used to develop background concentrations for all pollutants. CO and PM background concentrations were obtained from monitoring stations in Manhattan: CO was collected at the City College of New York, 160 Convent Avenue; PM_{10} was collected at the Yung Wing Elementary School, 40 Division Street; and $PM_{2.5}$ was collected from the station at PS19, 185 First Avenue (see **Table 5-2**). These concentrations were estimated using the form of the NAAQS (see **Table 5-1**).

Table 5-2 Background Concentrations

Pollutant	Averaging Time	Monitoring Location	Background Concentration
Carbon Monoxide	1-Hour	160 Convent Ave	2.5 ppm
	8-Hour		1.2 ppm
Particulate Matter (PM_{10})	24-Hour	Division St	39 µg/m^3
Particulate Matter ($PM_{2.5}$)	24-Hour	PS 19	23.3 µg/m^3
	Annual		9.4 µg/m^3

Source: VHB, Inc. November 2020

Mobile Source Screening Analysis Approach

A screening analysis of mobile source emissions of CO and PM on ambient pollutant levels in the study area was conducted per *CEQR Technical Manual* guidance. For the project's study

[2] https://www.epa.gov/outdoor-air-quality-data/monitor-values-report

area, as described in Chapter 17, Sections 210 and 311 of the *CEQR Technical Manual*, the threshold for conducting an analysis of CO emissions corresponds to 140 (above 30th Street) or 170 (for the rest of the city) project-generated vehicles at a given intersection in the peak hour. The need for conducting an analysis of PM emissions is based on road type and the number of project-generated peak hour heavy-duty diesel vehicles (or its equivalency in vehicular $PM_{2.5}$ emissions) as determined using the worksheet provided on page 17-12 of the *CEQR Technical Manual* (autos are assumed to be LDGT1 and trucks, such as delivery trucks, are conservatively assumed to be HDDV3 in the worksheet).

The mobile source screening analysis at the intersections affected by the Proposed Actions was conducted within the network considered by the traffic analysis.

Existing Conditions

Existing conditions in the area are characterized by the monitored concentrations representative of the project area. The same monitoring stations used to develop background concentrations were used to represent the existing conditions in the project area for the same pollutants. Concentrations for other pollutants were collected at the available monitoring locations in the City. Carbon monoxide and ozone concentrations were obtained from the City College of New York at 160 Convent Avenue. Lead concentrations are monitored only at one location in New York City, in the Bronx at IS 52 at 681 Kelly Street. Existing concentrations are presented in **Table 5-3**. Concentrations of NO_2 and SO_2 are the same as in **Table 5-2** only in different units.

Concentrations of all pollutants except ozone were below their respective NAAQS. Ozone concentrations slightly exceeded the 2015 8-hour standard which corresponds with the non-attainment status of the New York County.

Table 5-3 Existing Monitored Concentrations (2017-2019)

Pollutant	Averaging Time	Concentration	NAAQS
Carbon Monoxide	1-Hour	2.5 ppm	35 ppm
	8-Hour	1.2 ppm	9 ppm
Lead	3-month	0.004 µg/m^3	0.15 µg/m^3
Nitrogen Dioxide	1-Hour	55 ppb	100 ppb
	Annual	14.6 ppb	53 ppb
Ozone	8-Hour	0.071 ppm	0.07 ppm
Particulate Matter (PM_{10})	24-Hour	39 µg/m^3	150 µg/m^3
Particulate Matter ($PM_{2.5}$)	24-Hour	23.3 µg/m^3	35 µg/m^3
	Annual	9.4 µg/m^3	12 µg/m^3
Sulfur Dioxide	1-Hour	5.3 ppb	75 ppb

Source: VHB, Inc. January 2021
ppm – parts per million; ppb – parts per billion

Mobile Source Assessment

No-Action Condition

Without the Proposed Actions, the buildings will continue to be tenanted with uses allowed under existing zoning. In the No-Action condition, there would be no more than 104 trips generated at any intersection in any of the analyzed time period, Saturday, AM, PM, and midday peak hours. The projected trips at the 30th Street and Tenth Avenue intersection (maximum of 104 during the PM peak hour) are lower than the CEQR CO threshold of either 140 trips for Midtown above 30th Street or 170 trips for Manhattan below 30th Street. The truck trips generated by the No-Action condition will also be delivery truck trips, trucks considered to be class 3 in the FHWA classification. No more than 16 of such trucks within a peak hour will be generated on any link (see **Chapter 4, Transportation**).

Assuming that the passenger cars are LDT1 and the trucks are HDDV3, the total number of equivalent trucks were lower than the CEQR threshold at the principal arterials. Those trips were forcast for West 30th Street between Eleventh Avenue and Tenth Avenue which is classified as a principal arterial functional class roadway.

With-Action Condition

Traffic analysis estimated that no more than 103 trips would be generated by the Proposed Actions (see **Chapter 4, Transportation, Figure 4-8** through **Figure 4-10**) at any intersection in any of the analyzed time periods, AM and PM peak hours or at midday. The projected trips at the 30th Street and Tenth Avenue intersection (maximum of 103 on Saturday, see **Chapter 4, Transportation, Figure 4-10**) are lower than the CEQR CO threshold of either 140 trips for Midtown above 30th Street or 170 trips for Manhattan below 30th Street. The traffic analysis projected no more than 2 truck trips within an hour under the With-Action condition (**Chapter 4, Transportation, Table 4-4**). These trips, similar to the No-Action condition, are forecasted to be class 3 truck trips made by delivery trucks.

Assuming that the passenger cars are LDGT1 and the trucks are HDDV3, the total number of equivalent trucks would be lower than the CEQR threshold at the principal arterials. Those trips were forecasted for Tenth Avenue and Route 9A, which are classified as a principal arterial functional class roadways by the New York City Department of Transportation.

As such, the Proposed Actions would not have a potential for significant adverse air quality impacts from mobile sources, and therefore, would not result in any significant adverse air quality impacts.