Appendix E
Air Quality

A. INTRODUCTION

This appendix examines the potential for air quality impacts associated with the Proposed Action, which involves the construction of a five-level parking garage that would be located on the site of an existing garage and adjacent surface lot and utility building at 50 Haarlem Avenue in White Plains, Westchester County, New York (the "Proposed Action").

Air quality impacts can be either direct or indirect. Direct impacts stem from emissions generated by stationary sources at a project site, such as emissions from fuel burned on-site for heating, ventilation, and air conditioning (HVAC) systems. The Proposed Action would not involve the addition of any new emission sources related to HVAC systems. Therefore, an HVAC analysis is not warranted. However, the Proposed Action would include a naturally-ventilated parking garage; ventilation of air from the garage could potentially result in increases in carbon monoxide (CO) concentrations in the immediate vicinity of the ventilation outlets. Therefore, to ensure that air quality impacts from the proposed garage would not result in a violation of standards, a stationary source parking garage analysis was conducted to evaluate potential future CO concentrations that may result from the proposed parking garage.

Indirect impacts could be caused by potential mobile source emissions generated by the Proposed Action. The Proposed Action would result in localized increases in CO levels. Therefore, a screening analysis was performed to assess the potential air quality effects of the Proposed Action on CO concentrations that would result from vehicles coming to and departing from the project site.

This appendix provides an analysis of the air quality impacts from the Proposed Action. It is organized as follows:

- Summary of air quality regulations, standards and benchmarks;
- Existing measured air quality conditions in the vicinity of the project site;
- Pollutants for further analysis; and
- Detailed analysis of air quality with implementation of the Proposed Action.

B. AIR QUALITY REGULATIONS, STANDARDS, AND BENCHMARKS

1. NATIONAL AND STATE AIR QUALITY STANDARDS

As required by the Clean Air Act (CAA), primary and secondary National Ambient Air Quality Standards (NAAQS) have been established for six major air pollutants: CO, lead, nitrogen dioxide (NO_2), ozone, sulfur dioxide (SO_2), and respirable particulate matter (PM), including both particles with an aerodynamic diameter of less than or equal to 2.5 micrometers ($PM_{2.5}$), and particles with an aerodynamic diameter of less than or equal to 10 micrometers (PM_{10}), which includes $PM_{2.5}$. The primary standards represent levels that are requisite to protect the

public health, allowing an adequate margin of safety. The secondary standards are intended to protect the nation's welfare, and account for air pollutant effects on soil, water, visibility, materials, vegetation, and other aspects of the environment. The primary and secondary standards are the same for NO_2, ozone, lead, and PM, and there is no secondary standard for CO. The NAAQS for CO, NO_2, and SO_2 standards have also been adopted as the ambient air quality standards for New York State, but are defined on a running 12-month basis rather than for calendar years only. New York State also has standards for total suspended particulate matter (TSP), settleable particles, non-methane hydrocarbons (NMHC), and ozone which correspond to federal standards that have since been revoked or replaced, and for beryllium, fluoride, and hydrogen sulfide (H_2S). The standards are presented in Table E–1.

2. STATE IMPLEMENTATION PLAN (SIP)

The CAA, as amended in 1990, defines non-attainment areas (NAA) as geographic regions that have been designated as not meeting one or more of the NAAQS. When an area is designated as non-attainment by EPA, the state is required to develop and implement a State Implementation Plan (SIP), which is a state's plan on how it will meet the NAAQS under the deadlines established by the CAA.

PARTICULATE MATTER (PM_{10} $PM_{2.5}$)

On December 17, 2004, EPA took final action designating the five New York City counties, Nassau, Suffolk, Rockland, Westchester, and Orange counties as a $PM_{2.5}$ non-attainment area under the CAA due to exceedance of the annual average standard. New York State has submitted a draft SIP to EPA, dated April 2008, designed to meet the annual average standard by April 8, 2010, which will be finalized after public review.

As described above, EPA has revised the 24-hour average $PM_{2.5}$ standard. In October 2009 EPA finalized the designation of the New York City Metropolitan Area as nonattainment with the 2006 24-hour $PM_{2.5}$ NAAQS, effective in November 2009. The nonattainment area includes the same 10-county area EPA designated as nonattainment with the 1997 annual $PM_{2.5}$ NAAQS. By November 2012 New York will be required to submit a SIP demonstrating attainment with the 2006 24-hour standard by November 2014 (EPA may grant attainment date extensions for up to five additional years).

OZONE

Nassau, Rockland, Suffolk, Westchester, Lower Orange County Metropolitan Area (LOCMA), and the five New York City counties had been designated as a severe non-attainment area for ozone (1-hour average standard). In November 1998, New York State submitted its *Phase II Alternative Attainment Demonstration for Ozone*, which was finalized and approved by EPA effective March 6, 2002, addressing attainment of the 1-hour ozone NAAQS by 2007. These SIP revisions included additional emission reductions that EPA requested to demonstrate attainment of the standard, and an update of the SIP estimates using the latest versions of the mobile source emissions model, MOBILE6.2, and the nonroad emissions model, NONROAD—which have been updated to reflect current knowledge of engine emissions and the latest mobile and nonroad engine emissions regulations.

Table E–1
Ambient Air Quality Standards

Pollutant	Primary		Secondary	
	ppm	µg/m^3	ppm	µg/m^3
Carbon Monoxide (CO)				
Maximum 8-Hour Concentration[1]	9	10,000	None	
Maximum 1-Hour Concentration[1]	35	40,000		
Lead				
Rolling 3-Month Average[2]	NA	0.15	NA	0.15
Nitrogen Dioxide (NO_2)[3]				
Annual Average	0.053	100	0.053	100
Ozone (O_3)				
8-Hour Average[4,5]	0.075	150	0.075	150
Total Suspended Particles (TSP)				
Annual Mean Rural Open Space Rural Residential Urban Residential Urban Industrial	NA	 45 55 65 75	None	
24-Hour Average[1]	NA	250		
Respirable Particulate Matter (PM_{10})				
24-Hour Average[1]	NA	150	NA	150
Fine Respirable Particulate Matter ($PM_{2.5}$)				
Average of 3 Annual Arithmetic Means	NA	15	NA	15
24-Hour Average [6,7]	NA	35	NA	35
Sulfur Dioxide (SO_2)				
Annual Arithmetic Mean[8]	0.03	80	NA	NA
Maximum 24-Hour Average[1,8]	0.14	365	NA	NA
Maximum 3-Hour Average[1]	NA	NA	0.50	1,300

Notes: ppm – parts per million
µg/m^3 – micrograms per cubic meter
NA – not applicable

Particulate matter concentrations are in µg/m^3. Concentrations of all gaseous pollutants are defined in ppm—approximately equivalent concentrations in µg/m^3 are presented.

TSP levels are regulated by a New York State Standard only. All other standards are National Ambient Air Quality Standards (NAAQS).

1 Not to be exceeded more than once a year.
2 EPA has lowered the NAAQS down from 1.5 µg/m^3, effective January 12, 2009.
3 EPA has proposed an additional 1-hour avarege NO_2 standard in the range of 0.080-0.100 ppm.
4 Three-year average of the annual fourth highest daily maximum 8-hr average concentration. EPA has reduced these standards down from 0.08 ppm, effective May 27, 2008.
5 EPA has proposed lowering this standard further to within the range of 0.060-0.070 ppm.
6 Not to be exceeded by the 98th percentile averaged over 3 years.
7 EPA has lowered these standards down from 65 µg/m^3, effective December 18, 2006.
8 EPA has proposed replacing the 24-hour and annual primary standards with a 1-hour average standard in the range of 0.050-0.100 ppm.

Sources: 40 CFR Part 50: National Primary and Secondary Ambient Air Quality Standards;
6 NYCRR Part 257: Air Quality Standards.

On April 15, 2004, EPA designated these same counties as moderate non-attainment for the 8-hour average ozone standard which became effective as of June 15, 2004 (LOCMA was moved to the Poughkeepsie moderate non-attainment area for 8-hour ozone). EPA revoked the 1-hour standard on June 15, 2005; however, the specific control measures for the 1-hour standard included in the SIP are required to stay in place until the 8-hour standard is attained. The discretionary emissions reductions in the SIP would also remain but could be revised or dropped based on modeling. On February 8, 2008, the New York State Department of Environmental Conservation (NYSDEC) submitted final revisions to a new SIP for the ozone to EPA. NYSDEC has determined that achieving attainment for ozone before 2012 is unlikely, and has therefore made a request for a voluntary reclassification of the New York nonattainment area as "serious."

In March 2008, EPA strengthened the 8–hour ozone standards. SIPs will be due three years after the final designations are made. On March 12, 2009, NYSDEC recommended that the counties of Suffolk, Nassau, Bronx, Kings, New York, Queens, Richmond, Rockland, and Westchester be designated as a non-attainment area for the 2008 ozone NAAQS (the NYMA MSA nonattainment area).

NITROGEN OXIDE (NO_X)

Westchester County is currently in attainment of the annual-average NO_2 standard. EPA has proposed a new 1-hour standard, but it is unclear at this time what the County's attainment status will be due to the range of concentrations proposed in the new standard.

SULFUR DIOXIDE (SO_2)

Westchester County is currently in attainment of the SO_2 standards. EPA has proposed to replace the current standards with a new 1-hour standard. Based on current measurements the County is below the proposed range.

CARBON MONOXIDE (CO)

EPA has re-designated Westchester County as in attainment for CO. The CAA requires that a maintenance plan ensure continued compliance with the CO NAAQS for former non-attainment areas.

3. DETERMINING THE SIGNIFICANCE OF AIR QUALITY IMPACTS

The State Environmental Quality Review Act (SEQRA) regulations state 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] In terms of the magnitude of air quality impacts, any action predicted to increase the concentration of a criteria air pollutant to a level that would exceed the concentrations defined by the NAAQS (see Table E-1) would be deemed to have a potential significant adverse impact. In addition, in order to maintain concentrations lower than the NAAQS in attainment areas, or to ensure that concentrations will not be significantly increased in non-attainment areas, threshold levels have been defined for certain pollutants; any action

[1] State Environmental Quality Review Regulations, 6 NYCRR § 617.7

predicted to increase the concentrations of these pollutants above the thresholds would be deemed to have a potential significant adverse impact, even in cases where violations of the NAAQS are not predicted.

CONFORMITY REQUIREMENTS

The conformity requirements of the CAA and regulations promulgated thereunder (conformity requirements) limit the ability of federal agencies to assist, fund, permit, and approve transportation projects in non-attainment areas that do not conform to the applicable SIP. An area's Metropolitan Planning Organization (MPO), which is an entity responsible for transportation planning, together with the State, are responsible for demonstrating conformity with respect to the SIP on metropolitan long-range transportation plans and Transportation Improvement Programs (TIPs). EPA must then concur with such conformity determinations. The U.S. Department of Transportation (USDOT) has final approval of conforming plans and TIPs. Conformity determinations must be made according to the requirements of 40 Code of Federal Regulations (CFR) Part 51 and 93.

Conformity to a SIP is defined as conformity to a Plan's purpose of eliminating or reducing the severity and number or violations of the NAAQS and achieving expeditious attainment of the standards. To meet conformity requirements, all regionally significant highway and transit projects must either come from a conforming TIP and Plan, have been included in a regional emissions analysis supporting the TIP and Plan's conformity determination, or be included in a newly performed regional emissions analysis.

The Proposed Action is included in the currently conforming Federal Fiscal Year (FFY) 2008-2012 TIP and FFY 2010-2035 Regional Transportation Plan, which have been found to conform to the purpose of the SIP by the New York Metropolitan Transportation Council (NYMTC) and Federal Highway Administration (FHWA)/Federal Transit Administration (FTA).

C. MEASURED CONDITIONS

Monitored ambient pollutant concentrations for the metropolitan region are shown in Table E-2. These values represent the most recent monitored data available that have been published by NYSDEC for these locations. Values of ozone and $PM_{2.5}$ were monitored in White Plains and lead values were from the monitoring station in Orange County. No CO, NO_2, SO_2 or PM_{10} monitoring is performed in the area; the nearest monitoring stations are at the Botanical Gardens and IS52, both located in the Bronx.

There were no monitored violations of the NAAQS for the pollutants at these sites in 2008, with the exception of ozone, which is a regional pollutant and not affected by increases in traffic at any one site.

Table E-2
Representative Monitored Ambient Air Quality Data

Pollutants	Location	Units	Period	Concentrations			Number of Exceedances of Federal Standard	
				Mean	Highest	Second Highest	Primary	Secondary
CO	Botanical Gardens	ppm	8-hour	-	1.8	1.6	0	-
			1-hour	-	2.3	2.1	0	-
SO_2	IS 52	ppm	Annual	0.007	-	-	0	-
			24-hour	-	0.028	0.025	0	-
			3-hour	-	0.048	0.044	-	0
Respirable Particulates (PM_{10})	IS 52	µg/m^3	Annual	21	-	-	0	0
			24-hour	-	60	45	0	0
Respirable Particulates ($PM_{2.5}$)	White Plains	µg/m^3	Annual	9.4	-	-	-	-
			24-hour	-	30.6	30.6	-	-
NO_2	Botanical Gardens	ppm	Annual	0.023	-	-	0	0
Lead	Wallkill	µg/m^3	3-month	-	0.086	0.063	0	-
O_3	White Plains	ppm	8-hour	-	0.082[1]	-	1	0

Note: (1) Fourth Highest Daily Maximum 8-hour Average
Source: 2008 Annual New York State Air Quality Report, NYSDEC 2009

D. POLLUTANTS FOR ANALYSIS

Ambient air quality is affected by air pollutants produced by both motor vehicles and stationary sources. Emissions from motor vehicles are referred to as mobile source emissions, while emissions from fixed facilities are referred to as stationary source emissions. Ambient concentrations of CO are predominantly influenced by mobile source emissions. PM, volatile organic compounds (VOCs), and nitrogen oxides (NO and NO_2, collectively referred to as NO_x) are emitted from both mobile and stationary sources. Fine PM is also formed when emissions of NO_x, sulfur oxides (SO_x), ammonia, organic compounds, and other gases react or condense in the atmosphere. Emissions of SO_2 are associated mainly with stationary sources, and sources utilizing non-road diesel such as diesel trains, marine engines, and non-road vehicles (e.g., construction engines). On-road diesel vehicles currently contribute very little to SO_2 emissions since the sulfur content of on-road diesel fuel, which is federally regulated, is extremely low. Ozone is formed in the atmosphere by complex photochemical processes that include NO_x and VOCs. A list of the major air pollutants for which primary and secondary National Ambient Air Quality Standards (NAAQS) have been established, as well as the basis for determining whether an analysis is necessary for each pollutant, are presented below.

1. NITROGEN OXIDES, VOCS, AND OZONE

Nitrogen oxides are of principal concern because of their role, together with VOCs, as precursors in the formation of ozone. Ozone is formed through a series of reactions that take place in the atmosphere in the presence of sunlight. Because the reactions are slow, and occur as the pollutants are diffusing downwind, elevated ozone levels are often found many miles from sources of the precursor pollutants. The effects of NO_x and VOC emissions from mobile sources are therefore generally examined on a regional basis, together with the emission of these pollutants from stationary sources. The change in regional mobile source emissions of these pollutants is related to the total number of vehicle trips and the vehicle miles traveled throughout

the New York metropolitan area, which is designated as a moderate non-attainment area for ozone by EPA.

Although the Proposed Action would increase traffic volumes on streets near the project site, it would not have a significant adverse effect on the overall volume of vehicular travel on a regional level. It would not, therefore, have any measurable impact on regional NO_x emissions or on ozone levels. An analysis of project-related impacts from mobile sources for these pollutants was therefore not warranted.

In addition to being a precursor to the formation of ozone, NO_2 (one component of NO_x) is also a regulated pollutant. Since NO_2 is mostly formed from the transformation of NO in the atmosphere, it is mostly of concern further downwind from large stationary point sources, and is not a local concern from mobile sources. (NO_x emissions from fuel combustion consist of approximately 90 percent NO and 10 percent NO_2 at the source.) The Proposed Action would not involve the addition of any new stationary emission sources. Therefore, an analysis of potential increases in NO_x emissions from stationary sources was not warranted.

2. LEAD

Airborne lead emissions are currently associated principally with industrial sources. Effective January 1, 1996, the CAA banned the sale of the small amount of leaded fuel that was still available in some parts of the country for use in on-road vehicles, concluding a 25-year effort to phase out lead in gasoline. Even at locations in the New York City area where traffic volumes are very high, atmospheric lead concentrations are far below the 3-month average national standard of 0.15 micrograms per cubic meter ($\mu g/m^3$).

No significant sources of lead are associated with the Proposed Action and, therefore, analysis was not warranted.

3. RESPIRABLE PARTICULATE MATTER—PM_{10} AND $PM_{2.5}$

PM is a broad class of air pollutants that includes discrete particles of a wide range of sizes and chemical compositions, as either liquid droplets (aerosols) or solids suspended in the atmosphere. The constituents of PM are both numerous and varied, and they are emitted from a wide variety of sources (both natural and anthropogenic). Natural sources include the condensed and reacted forms of natural organic vapors: salt particles resulting from the evaporation of sea spray; wind-borne pollen, fungi, molds, algae, yeasts, rusts, bacteria, and material from live and decaying plant and animal life; particles eroded from beaches, soil, and rock; and particles emitted from volcanic and geothermal eruptions and from forest fires. Major anthropogenic sources include the combustion of fossil fuels (e.g., vehicular exhaust, power generation, boilers, engines, and home heating), chemical and manufacturing processes, all types of construction, agricultural activities, as well as wood-burning stoves and fireplaces. PM also acts as a substrate for the adsorption of other pollutants, often toxic and some likely carcinogenic compounds.

As described below, PM is regulated in two size categories: particles with an aerodynamic diameter of less than or equal to 2.5 micrometers ($PM_{2.5}$), and particles with an aerodynamic diameter of less than or equal to 10 micrometers (PM_{10}, which includes $PM_{2.5}$). $PM_{2.5}$ has the ability to reach the lower regions of the respiratory tract, delivering with it other compounds that adsorb to the surfaces of the particles, and is also extremely persistent in the atmosphere. $PM_{2.5}$ is mainly derived from combustion material that has volatilized and then condensed to form

primary PM (often soon after the release from a source exhaust) or from precursor gases reacting in the atmosphere to form secondary PM.

Diesel-powered vehicles, especially heavy duty trucks and buses, are a significant source of respirable PM, most of which is $PM_{2.5}$; PM concentrations may, consequently, be locally elevated near roadways with high volumes of heavy diesel powered vehicles. The Proposed Action would not result in any significant increases in truck traffic near the project site or in the region, and therefore, an analysis of potential impacts from respirable particulate matter was not warranted. (See Section 3.3.7, "Construction Impacts" of Chapter 3 for a description of truck-related particulate matter during construction.)

4. SULFUR DIOXIDE

SO_2 emissions are primarily associated with the combustion of sulfur-containing fuels (oil and coal). Monitored SO_2 concentrations in New York City are lower than the current national standards. Due to the federal restrictions on the sulfur content in diesel fuel for on-road vehicles, no significant quantities are emitted from vehicular sources. Vehicular sources of SO_2 are not significant and, therefore, an analysis of this pollutant from mobile sources was not warranted.

The Proposed Action would not involve the addition of any new stationary emission sources. Therefore, an analysis of potential increases in SO_2 emissions from stationary sources was not warranted.

5. CARBON MONOXIDE

CO, a colorless and odorless gas, is produced in the urban environment primarily by the incomplete combustion of gasoline and other fossil fuels. In urban areas, approximately 80 to 90 percent of CO emissions are from motor vehicles. CO concentrations can vary greatly over relatively short distances. Elevated concentrations are usually limited to locations near crowded intersections, heavily traveled and congested roadways, parking lots, and garages. Consequently, CO concentrations must be predicted on a local, or microscale, basis.

The Proposed Action would increase traffic volumes on streets near the project site and could result in localized increases in CO levels. Therefore, a mobile source screening analysis was performed to determine the locations where a more detailed mobile source analysis may be required. The results of the mobile source screening analysis are presented below.

D. DETAILED ANALYSIS

1. METHODOLOGY FOR PREDICTING POLLUTANT CONCENTRATIONS

As a result of the screening presented above, CO is the only pollutant of concern that requires detailed analysis. The methods used for assessing the impact of the Proposed Actions on air quality from vehicles entering, parking, and exiting the garage (Parking Facility Analysis) and from vehicles travelling to and from the project site (CO Mobile Source Air Quality Screening Analysis) are presented in this section.

PARKING FACILITIES

The Proposed Action would result in the operation of an approximate 500-space, five-level parking garage on the site of the existing customer parking garage at 50 Haarlem Avenue

between Glenn and Bond Streets. Emissions from vehicles using the naturally ventilated parking garage could potentially affect ambient levels of CO in the project study area.

An analysis was performed using standard methodology that applies modeling techniques and calculates pollutant levels at various distances from the parking garage. Emissions from vehicles entering, parking, and exiting the garage were estimated using the EPA MOBILE6.2 mobile source emission model. For all arriving and departing vehicles, an average speed of 5 miles per hour was conservatively assumed for travel within the parking garages. In addition, all departing vehicles were assumed to idle for 1 minute before proceeding to the exit. To determine compliance with the NAAQS, CO concentrations were determined for the maximum 8-hour average period. (No exceedances of the 1-hour standard would occur and the 8-hour values are the most critical for impact assessment.)

To determine pollutant levels from each level of the parking facility, the analysis was based on a correction factor for an elevated point source using the methodology in EPA's *Workbook of Atmospheric Dispersion Estimates, AP-26*. This methodology estimates CO concentrations by determining the appropriate height correction factor for each level, based on the difference between pedestrian height and the respective parking level elevation. Total ambient levels at each receptor location are then calculated by adding together contributions from each level of the facility and ambient background levels.

The CO concentrations were determined for the time periods when overall garage usage would be the greatest, considering the hours when the greatest number of vehicles would exit the facility. Departing vehicles were assumed to be operating in a "cold-start" mode, emitting higher levels of CO than arriving "hot-stabilized" vehicles. Maximum emissions would result in the highest CO levels and the greatest potential impacts. Traffic data for the parking garage analysis were derived from the trip generation analysis prepared as part of the traffic impact study.

The emissions from the parking garage were modeled to directly discharge to the nearest location of public access surrounding the perimeter of the parking garage. "Near" and "far" receptors were placed along the garage perimeter at a pedestrian height of 6 feet and at a distance 7 feet and 131 feet, respectively, from one edge of the parking garage. A persistence factor of 0.7 was used to convert the calculated 1-hour average maximum concentrations to 8-hour averages, accounting for meteorological variability over the average 8-hour period.

MOBILE SOURCE AIR QUALITY SCREENING ANALYSIS

An assessment of the potential air quality effects of the Proposed Action on CO concentrations that would result from vehicles coming to and departing from the project site was performed following the procedures outlined in the New York State Department of Transportation (NYSDOT) *Environmental Procedures Manual (EPM)*, January 2001. The Proposed Action described in Chapter 2, "Project Alternatives," is analyzed in the air quality screening. The study area corresponds to that of the traffic analysis. Unsignalized intersections identified in the traffic analysis were not analyzed unless they become signalized in the Build condition and generate new queued approaches. The screening criteria described below were applied to the traffic analysis results for the 2015 analysis year.

CO Screening Criteria

Screening criteria described in the *EPM* were employed to determine whether the Proposed Action requires a detailed air quality analysis at the intersections in the study area. Before undertaking a detailed microscale modeling analysis of CO concentrations at the study area

intersections, the screening criteria first determine whether the Proposed Action would increase traffic volumes or implement any other changes (e.g. changes in speed, roadway width, sidewalk locations, or traffic signals) to the extent whereby significant increases in air pollutant concentrations could be expected. The following multi-step procedure is suggested in the *EPM* to determine if there is the potential for CO impacts from the Proposed Action:

- **Level of Service (LOS) Screening**: If the Build condition LOS is A, B, or C, no air quality analysis is required. For intersections operating at LOS D or worse, proceed to Capture Criteria.
- **Capture Criteria**: If the Build condition LOS is at D, E, or F, then the following Capture Criteria should be applied at each intersection or corridor to determine if an air quality analysis may be warranted:
  - A 10 percent or more reduction in the source-to-receptor distance (e.g., street or highway widening); or
  - A 10 percent or more increase in traffic volume on affected roadways for the Build year; or
  - A 10 percent or more increase in vehicle emissions for the Build year using emission factors provided in the *EPM*; or
  - Any increase in the number of queued lanes for the Build year (this applies to intersections). It is not expected that intersections in the Build condition controlled by stop signs would require an air quality analysis; or
  - A 20 percent reduction in speed when Build average speeds are below 30 miles per hour (mph).

If the project does not meet any of the above criteria, a microscale analysis is not required. If the project is located within a half mile of any intersections evaluated in the CO SIP Attainment Demonstration, (as identified in the NYSDOT *EPM*'s Chapter 1.1, Table 2 by county), more stringent screening criteria are applied at project-affected intersections. Should any one of the above Capture Criteria be met in addition to the LOS screening, then a Volume Threshold Screening is performed, using traffic volume and emission factor data to compare with specific volume thresholds established in the *EPM*.

Both the Capture Criteria and Volume Threshold Screening were developed by the NYSDOT to be very conservative air quality estimates based on worst-case assumptions. The *EPM* states that if the project-related traffic volumes are below the volume threshold criteria, then a microscale air quality analysis is unnecessary even if the other Capture Criteria are met for a LOS D or worse location, since a violation of the NAAQS would be extremely unlikely.

2. POTENTIAL IMPACTS OF THE PROPOSED ACTION

The following section evaluates potential impacts of the proposed parking facility and associated traffic on local streets.

PARKING FACILITIES

Based on the methodology previously discussed, the maximum overall predicted future 1-hour and 8-hour CO concentrations, including ambient background levels and on-site traffic, at public access receptor locations would be 3.54 ppm and 2.23 ppm, respectively. These values are the highest predicted concentrations for either of the two time periods analyzed: the AM and PM

peak periods. These maximum predicted CO levels are below the applicable standards displayed in Table E-1 and, therefore, no significant adverse impacts from the Proposed Action are expected.

CO MOBILE SOURCE AIR QUALITY SCREENING ANALYSIS

The area roadway intersections were reviewed based on NYSDOT's *EPM* criteria for determining locations that may warrant a CO microscale air quality analysis. The screening analysis examined the Build LOS and projected volume increases by intersection approach for intersections that are signalized in the Build condition. This corresponds to 13 of the 18 intersections identified in Appendix D, "Traffic Impact Analysis," one of which being unsignalized in the No Build condition. However, for the purpose of the screening, the intersection of Bond Street/Otis Avenue and Route 22 was analyzed as separate intersections based on SYNCHRO traffic analysis outputs and data extraction by approach. Therefore, 14 signalized intersections were considered. As described below, the results of the screening analysis show that none of the signalized intersections affected by the Proposed Action would require a detailed microscale air quality analysis.

LOS Screening Analysis

Results of the traffic capacity analysis performed for the 2015 Build year condition in both the AM and PM site and street peak periods were reviewed at each of the study area's signalized intersections to determine the potential need for a microscale air quality analysis. The LOS screening criteria were first applied to identify those intersections with approach LOS D or worse.

Capture Criteria Screening Analysis

Further screening of the signalized intersections identified in the LOS Screening Analysis was conducted using the Capture Criteria outlined above. This screening indicated that at least one of the listed Capture Criteria would be met at at least one of the intersections identified. The triggered Capture Criteria, and the intersections at which the Criteria were triggered, are as follows:

An increase in the number of queued lanes would occur at the following intersections:

- Fisher Lane and Bronx River Parkway
- Otis Avenue and Route 22
- Bond Street and Route 22

A 10 percent or more increase in traffic volume would occur at the following intersections:

- Fisher Lane/Tompkins Avenue and Route 22
- Route 22 and Reservoir Road and Central Westchester Parkway
- Bond Street and Route 22

Therefore, a Volume Threshold Screening was conducted for the above intersections.

Volume Threshold Screening

A Volume Threshold Screening analysis was conducted to further determine the need for a microscale air quality analysis. The volume thresholds (provided in the *EPM*) establish traffic volumes below which a violation of the NAAQS for CO is extremely unlikely. This approach uses project area-specific emissions data to determine corresponding vehicle thresholds. For intersections where approach volumes are equal to or less than the applicable thresholds, microscale air quality

analysis is not required. As shown in Table E-3, the project-related traffic approach volumes at each of the intersections would be below the volume threshold criteria. Therefore, a detailed CO microscale air quality analysis was not warranted at these intersections and no significant adverse air quality impacts would be expected to occur as a result of the Proposed Action.

Table E-3
EPM Volume Threshold Screening Analysis Results (2015)

Intersection Approach	2015 Build Traffic Approach Volume / EPM Screening Threshold Volume
Fisher Lane EB at Route 22	636/4,000
Fisher Lane WB at Bronx River Pkwy	272/4,000
Route 22 NB at Reservoir Rd & Central Westchester Pkwy	845/4,000
Otis Ave WB at Route 22	10/4,000
Route 22 NB at Otis Ave	1,102/4,000
Route 22 SB at Otis Ave	1,578/4,000
Bond St EB at Route 22	593/4,000
Route 22 NB at Bond St	1,081/4,000
Route 22 SB at Bond St	1,027/4,000
Notes: Only the maximum approach volume among peak hours is shown. The peak hours are Site AM, Site PM, Street AM and Street PM.	

MESOSCALE (REGIONAL) AIR QUALITY ANALYSIS

As part of its application for Congestion Management and Air Quality Mitigation Program (CMAQ) funding, Metro-North estimated total air quality benefits of the Proposed Action for the period 2012 to 2030. Air quality benefits would derive from a reduction in the total number of vehicle miles traveled in the roadway network if transit service becomes more attractive due to the availability of parking. Estimated total air quality benefits of the Proposed Action for the period 2012 to 2030 are a reduction of approximately 121,510 kg of carbon monoxide (CO), 3,665 kg of volatile organic compounds (VOC), 2,365 kg nitrogen oxides (NO_x), and particulate matter (160 kg of $PM_{2.5}$ and 355 kg of PM_{10}) as a result of vehicles removed from the road. The calculation worksheets that demonstrate the expected benefits are provided at the end of this appendix.

CONCLUSION

The Proposed Action would have no significant impacts on air quality and would contribute to overall reductions in CO emissions.

E. CONSISTENCY WITH THE NEW YORK STATE AIR QUALITY IMPLEMENTATION PLAN

The Proposed Action is not expected to cause any new violations of air quality standards or exacerbate any existing violations for the projected 2015 Build year conditions. Therefore, the Proposed Action would not have a significant adverse impact on local air quality and would be considered consistent with the requirements of the New York SIP. ✷

CMAQ*traq* 6.2

Project Summary

NORTH WHITE PLAINS PARKING EXPANSION

ProjectID: 2008-38

PIN:

County: Westchester

Project Type: Transit

Projected First Year Operation: 2012

Applicant: MNRR

Contact: Ernie Schneider
Phone: 212-340-2684
Fax: 212-340-4860

Mailing Address: 345 Madison Avenue
New York, NY 10017-3739

Sponsor: MNRR

Contact: Ernie Schneider
Phone: 212-340-2684
Fax: 212-340-4860

Mailing Address: 345 Madison Avenue
New York, NY 10017-3739

Computation Date: 9/15/2006

Total Project Benefit

	CO	VOC	NOx	PM2.5	PM10
kg	-650,510.87	-17,950.40	-14,797.37	-819.94	-1,805.03
kg/day	-2,561.07	-70.67	-58.26	-3.23	-7.11

Annual Project Benefits (kg/yr)

Year	CO	VOC	NOx	PM2.5	PM10
2012	-37,862.91	-1,555.78	-1,354.54	-43.78	-95.63
2013	-37,042.58	-1,395.25	-1,237.02	-43.40	-95.24
2014	-36,193.45	-1,266.21	-1,136.78	-43.40	-95.24
2015	-35,664.62	-1,165.20	-1,045.38	-43.40	-95.24
2016	-35,178.41	-1,095.30	-964.34	-43.40	-95.24
2017	-34,849.28	-1,043.46	-895.60	-43.40	-95.24
2018	-34,247.48	-990.08	-794.98	-43.01	-94.86
2019	-33,886.48	-962.81	-744.67	-43.01	-94.86
2020	-33,707.51	-897.14	-707.03	-43.01	-94.86
2021	-33,582.31	-843.37	-665.94	-43.01	-94.86
2022	-33,421.39	-780.00	-632.91	-43.01	-94.86
2023	-33,304.64	-756.96	-607.56	-43.01	-94.86
2024	-33,199.41	-748.89	-589.90	-43.01	-94.86
2025	-33,129.52	-746.21	-580.30	-43.01	-94.86
2026	-33,084.58	-743.90	-574.15	-43.01	-94.86

Mobile 6.2, 2003 Registration Data

2027	-33,024.67	-741.98	-570.31	-43.01	-94.86
2028	-33,059.62	-740.83	-572.62	-43.01	-94.86
2029	-33,069.22	-739.29	-567.62	-43.01	-94.86
2030	-33,002.78	-737.76	-555.72	-43.01	-94.86
2031					

Emissions Detail (kg/yr)

Year	County	Segment Name	CO	VOC	NOx	PM2.5	PM10
Transit							
2012	Westchester	PARKING GARAGE	-37,862.91	-1,555.78	-1,354.54	-43.7815	-95.6280
2013	Westchester	PARKING GARAGE	-37,042.58	-1,395.25	-1,237.02	-43.3974	-95.2439
2014	Westchester	PARKING GARAGE	-36,193.45	-1,266.21	-1,136.78	-43.3974	-95.2439
2015	Westchester	PARKING GARAGE	-35,664.62	-1,165.20	-1,045.38	-43.3974	-95.2439
2016	Westchester	PARKING GARAGE	-35,178.41	-1,095.30	-964.34	-43.3974	-95.2439
2017	Westchester	PARKING GARAGE	-34,849.28	-1,043.46	-895.60	-43.3974	-95.2439
2018	Westchester	PARKING GARAGE	-34,247.48	-990.08	-794.98	-43.0134	-94.8599
2019	Westchester	PARKING GARAGE	-33,886.48	-962.81	-744.67	-43.0134	-94.8599
2020	Westchester	PARKING GARAGE	-33,707.51	-897.14	-707.03	-43.0134	-94.8599
2021	Westchester	PARKING GARAGE	-33,582.31	-843.37	-665.94	-43.0134	-94.8599
2022	Westchester	PARKING GARAGE	-33,421.39	-780.00	-632.91	-43.0134	-94.8599
2023	Westchester	PARKING GARAGE	-33,304.64	-756.96	-607.56	-43.0134	-94.8599
2024	Westchester	PARKING GARAGE	-33,199.41	-748.89	-589.90	-43.0134	-94.8599
2025	Westchester	PARKING GARAGE	-33,129.52	-746.21	-580.30	-43.0134	-94.8599
2026	Westchester	PARKING GARAGE	-33,084.58	-743.90	-574.15	-43.0134	-94.8599
2027	Westchester	PARKING GARAGE	-33,024.67	-741.98	-570.31	-43.0134	-94.8599
2028	Westchester	PARKING GARAGE	-33,059.62	-740.83	-572.62	-43.0134	-94.8599
2029	Westchester	PARKING GARAGE	-33,069.22	-739.29	-567.62	-43.0134	-94.8599
2030	Westchester	PARKING GARAGE	-33,002.78	-737.76	-555.72	-43.0134	-94.8599
2031	Westchester	PARKING GARAGE					