

13.0 AIR QUALITY

13.1 Existing Conditions

Air quality is a relative measure of the amount of noxious substances that occur in the air and that are caused by natural and human processes. Certain airborne gases and particles can cause or contribute to the deterioration and /or destruction of biological life as well as damage to property and other physical components of the environment. Air quality in any particular location is influenced by contaminants discharged into the atmosphere and by regional and local climatic and weather conditions. Atmospheric conditions such as sunlight, rainfall, temperature, and wind speed can disperse, intensify or alter the compositions of air contaminants.

Air Quality Standards and Compliance

The United States Environmental Protection Agency (EPA) and the New York State Department of Environmental Conservation (NYSDEC) have promulgated Ambient Air Quality Standards (AAQS) intended to protect the public health and welfare. These standards are designed to protect the most vulnerable segment of the population such as children, the elderly and the infirm, which are more susceptible to respiratory infections and other air quality-related health problems. Locations or source-receptors that would be considered are schools, hospitals and convalescent homes as well as other related facilities.

Several air contaminants have been identified by the EPA as being of concern nationwide. These pollutants include carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃) (also termed photochemical oxidants), particulate matter, sulfur dioxide (SO₂), and lead (Pb). The sources of these contaminants, their effect on human health and the nation's welfare, and their final disposition in the atmosphere vary considerably. Particulate standards include only those particles with nominal diameters less than 10 microns which are inhalable.

National Ambient Air Quality Standards (NAAQS) are mandated by the Federal Clean Air Act (1990). Standards promulgated by the EPA include primary and secondary standards. National Primary Standards are levels of air quality necessary, with a margin of safety, to protect the public health. National Secondary Standards are levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant, such as an adverse effect on vegetation. For all contaminants except sulfur dioxide and suspended particulates, the primary and secondary standards are identical.

With the enactment of the Clean Air Act and subsequent amendments, each state was required to develop a State Implementation Plan (SIP) to provide a regulatory framework in which to implement requirements of the Act. The New York SIP adopted Ambient Air Quality Standards (AAQS) from a list of seven criteria pollutants established by the EPA. These pollutants were selected by the EPA based on a list of pollutants of primary concern nationwide. Attainment of the AAQS is required under the Act, and each State has a designated time period in which to bring nonconforming areas into compliance. The AAQS establish levels to protect the health (primary standard) and welfare (secondary standard) of the general public with an adequate margin of safety.

Table 13-1 lists federal and state air quality standards.

Table 13-1
Ambient Air Quality Standards
New York State and Federal Standards

Pollutant¹	Avg Period	Conc.	Units	Stat²
Sulfur Dioxide	12 consecutive months	0.03	PPM	Arithmetic Mean (A.M)
	1-hour	75	PPB	Maximum, Primary
	3-hour	0.50	PPM	Maximum, Secondary
Carbon Monoxide	8-hour	9	PPM	Maximum, Primary
	1-hour	35	PPM	Maximum, Primary
Ozone	8-hour	0.07	PPM	Maximum, Primary and Secondary
Nitrogen Dioxide	12 consecutive months (annual)	53	PPB	Annual Mean, Primary and Secondary
	1-hour	100	PPB	Maximum, Primary
Lead ³	3 consecutive months	0.15	µg/m ³	Not to be exceeded, Primary and Secondary
Particulate Pollution (PM _{2.5})	12 consecutive months	12	µg/m ³	Annual Mean, Primary
	12 consecutive months	15	µg/m ³	Annual Mean, Secondary
	24-hours	35	µg/m ³	Primary and Secondary
Inhalable Particulates (PM ₁₀) ⁴	24-hours	150	µg/m ³	Primary and Secondary
Total Suspended Particulates (TSP) ⁵	12 consecutive months	75	µg/m ³	Geometric Mean (G.M.)
	24-hours	250	µg/m ³	Maximum

-PPM – parts per million.

-PPB – parts per billion.

-µg/m³ - micrograms per cubic meter.

¹ New York State also has standards for beryllium, fluorides, hydrogen sulfide, and settleable particulates (dustfall). Ambient monitoring for these pollutants is not currently conducted.

² All maximum values are concentrations not to be exceeded more than once per calendar year. (Federal Ozone Standard not to be exceeded more than three days in three calendar years).

³ Federal standard for lead not yet officially adopted by NYS, but is currently being applied to determine compliance status.

⁴ Federal standard for PM₁₀ not yet officially adopted by NYS, but is currently being applied to determine compliance status.

⁵ New York State also has 30, 60, and 90-day standards as well as geometric mean standards of 45, 55, and 65 µg/m³ in Part 257 of NYCRR. While these TSP standards have been superseded by the above PM₁₀ standards, TSP measurements may still serve as surrogates to PM₁₀ measurements in the determination of compliance status.

Principal sources of air pollutants are summarized in Table 13-2, below.

Table 13-2 Principal Sources of Air Pollutants	
Pollutant	Principal Sources
Carbon Monoxide (CO)	Motor Vehicles (90%) Other Combustion Sources (10%)
Oxidants (primarily Ozone)	Produced by the Action of Sunlight on HC and NO _x Compounds in the Atmosphere
Nitrogen Oxides (NO _x)	Stationary Source Combustion (50%) Mobile Sources (50%)
Hydrocarbons (HC)	Motor Vehicles (60%) Industrial Process and Evaporative Losses from Storage Facilities (40%)
Particulates (part)	Many Sources (Stationary and Mobile) Including Crushing and Grinding Operations and Natural Resources
Sulfur Dioxide (SO ₂)	Electric Power Generation (40%) Space Heating (30%) Other Combustion of Fuels in Industrial Processes (30%)
Sources: DGEIS for IBM - Proposed Re-zoning, IBM Properties, Town of Fishkill, October 3, 1983, prepared by Ronald A. Freeman Associates, P.C. Consulting Engineers NYSDEC Region 3, NYS Air Quality Report, Ambient Air Monitoring System Annual Report 1992-DAR-93-1 Note: The percentage figures represent approximate contributions for the sources identified in middle-latitude areas. For more specific information, refer to the annual reports of the Council on Environmental Quality.	

Sources of air pollution are generally characterized as mobile or non-point sources (transportation-related) or stationary sources (e.g., a smokestack). In general, the primary pollutants related to mobile sources are carbon monoxide (CO), nitrogen oxides (NO_x), and Hydrocarbons. Oxidants, primarily ozone results from the breakdown of NO_x compounds in the atmosphere by sunlight. Total suspended particulates are the result of both mobile sources, as well as industrial sources and operations.

Stationary sources, primarily manufacturing or utility operations, result in the addition of sulfur dioxides (SO₂), nitrogen oxides (NO_x), hydrocarbons and particulates to the atmosphere.

Existing Air Quality

New York State is divided into nine Air Quality Control Regions (AQCR), in order to evaluate air quality by geographic regions. The NYSDEC has a network of ambient air monitoring stations located throughout the State in each of the AQCR's in order to evaluate the attainment status of each region with respect to the SIP.

The proposed project site is located in Region 3: Hudson Valley AQCR, one of nine regions in New York State monitored for compliance with Federal and State AAQS. The Federal criteria pollutants currently monitored within the Region 3 include:

- ◆ sulfur dioxide (SO₂);
- ◆ ozone (O₃);
- ◆ inhalable particulates (PM_{2.5}); and,
- ◆ lead.

The remaining criteria pollutants, carbon monoxide (CO) and nitrogen dioxide (NO₂), are not monitored in the Region 3 AQCR, but are monitored in Region 2 AQCR, which includes the five boroughs of New York City. The sources of these contaminants, their effect on human health and the nation's welfare, and their final disposition in the atmosphere vary considerably.

NYSDEC maintains a number of monitoring stations in the Hudson Valley to measure existing ambient air quality. Monitoring stations are sometimes operated over limited periods of time and certain stations are utilized to sample only certain parameters. Table 13-3 lists stations referenced in the NYSDEC *Air Quality Report* and the pollutants monitored at each. Monitoring stations are located at White Plains in Westchester County; Mt. Ninham in Putnam County; Valley Central, Newburgh, and Wallkill in Orange County; and Millbrook in Dutchess County.

Table 13-3 NYSDEC Air Quality Monitoring				
Stations	Parameters			
	Lead	Sulfur dioxide	Inhalable particulates	Ozone
NYSDEC Region 3				
Wallkill	✓			
Mt. Ninham (Town of Carmel)		✓	✓	✓
Newburgh (F)			✓	
Newburgh (C)			✓	
White Plains			✓	✓
Valley Central				✓
Millbrook				✓
Rockland County (C)			✓	✓
(F) – Federal Reference Method or Federal Equivalent Method. (C) – Continuous, used for AQI calculations. Values based on 24-hour averages of 1-hour values. Source: <i>2020 Region 3 Air Quality Data</i> , NYSDEC Division of Air Resources				

The above table, Table 13-3, summarizes the regional data collected. Table 3-4 shows the Mount Ninham specific air quality results, the monitoring station which is located approximately 3.7 miles west/northwest of the project site and therefore provides air quality data in the general vicinity of the site. The specific air quality for the remainder of the NYSDEC Region 3 stations can be found in the New York State Ambient Air Quality Report for 2020 (the relevant excerpt is in DEIS Appendix L).

Table 13-4 Regional Air Quality Data Summary				
Monitoring Location	Pollutant	Concentration	Air Quality Standard	Within Standard?
Mt. Ninham	Ozone (O ₃)	0.065 ppm ⁽²⁾	0.07 ppm ⁽²⁾	Yes
Mt. Ninham	Sulfur Dioxide (SO ₂)	0.12 ppb ⁽¹⁾	30 ppb ⁽¹⁾	Yes
NOTES: (1) Annual Arithmetic Mean in parts per billion (ppb). (2) 4th Highest Daily Maximum 8-Hour Average in parts per million (ppm). Source: NYSDEC, Region 3, Air Quality Data 2020.				

Based upon 2020 data, all monitored contaminants, except for ozone, have achieved acceptable levels within the region.

Ozone levels exceeding the air quality standards are found throughout the northeastern United States, and non-attainment of the standard is more of a regional than a local problem, and cannot be resolved without coordinated regional air pollution control programs. The State of New York and surrounding states have developed coordinated regulatory programs to bring the region into compliance.

Air contaminants which typically are of concern with respect to vehicle-related projects (mobile sources) include ozone, carbon monoxide, nitrogen oxides, and lead. Air contaminants typically of concern with respect to heating and hot water systems of commercial projects (stationary sources) include sulfur dioxide and inhalable particulate matter.

Existing Air Pollution Sources

Vehicle Generated Air Quality Impacts – Existing Conditions

The primary pollutants associated with vehicular exhaust emissions are nitrogen dioxide (NO₂), hydrocarbons (HC), and carbon monoxide (CO). Since short-term exposure to elevated CO concentrations can have acute health impacts, state and federal standards have been developed for ambient CO concentrations to protect the health and welfare of the general public. There are no currently enforced short-term health standards for NO₂ and HC. The primary concern with these pollutants is their role in the photochemical reactions that lead to the formation of secondary pollutants known as ozone (O₃) and “smog”. Recent (3-year average) ozone levels meet air quality standards in the upper Hudson Valley and therefore are not a pollutant of concern for the area.

Land in the vicinity of the project area generally supports a mixture of residential, commercial, and light industrial uses and includes Interstate-84. Existing sources of air pollution in the vicinity include vehicle and engine exhaust, and emissions from commercial, and residential heating and hot water systems.

Existing Air Pollution Receptors

Potential sensitive receptors in the vicinity of the project include residential dwellings located at the northern property border and further to the north near Fair Street and Theodore Trail. Those latter neighbors are a minimum of 1,800 feet from the project site.

13.2 Future Without the Proposed Project

Without the proposed project, the air quality of the project area would maintain levels of contaminants generally consistent with the levels reported above. Ambient air quality is dependent on numerous factors and varies over time. No significant change in air quality affecting local receptors is anticipated to result if the proposed project is not developed.

13.3 Potential Impacts

Temporary air quality impacts from construction activities were assessed along with a determination of long-term impacts from project induced traffic (mobile sources) and from heating and cooling equipment at the site (stationary sources).

Short-Term Construction Air Impacts

Potential short-term adverse air quality impacts that may result from the proposed project include the generation of fugitive dust and particulate matter during construction and emissions from construction equipment and vehicles.

The construction of the proposed Brewster Yards development will involve grading activities that may result in the release of fugitive dust and particulate matter from the project site. During this period, dust from the site may be released into the air and carried off-site by wind. Construction-related air emissions will result from the use of diesel fuel as a source of energy for construction vehicles and equipment. Mitigation measures are proposed as a part of the project during construction to limit the generation of dust and potential emissions from construction equipment. On-site generation of construction related dust and equipment emissions will be temporary.

During and following project construction, unvegetated areas on the site would be either developed or fully landscaped, thereby reducing the potential for dust generation from the project area long-term.

Long-Term Air Quality Impacts

The primary generator of air emissions from the Brewster Yards project will be the operation of passenger vehicles travelling to and from the site. The potential impact from the project-generated traffic was evaluated using the New York State Department of Transportation (NYSDOT) Environmental Procedures Manual (EPM) Chapter 1, Section 9, Projects Needing Air Quality Analysis (January, 2001). Carbon monoxide (CO) is the primary pollutant of concern for traffic generated air emissions and is used by the NYSDOT as a screening tool since CO generally has local impacts and higher concentrations of CO are limited within a short distance of heavily traveled roadways.

The site of the proposed project is not regionally significant from an air quality standpoint, therefore it is "exempt" from the EPA's conformity rules and is not required to be part of the "regional emissions analysis or part of the TIP"; therefore, a mesoscale air quality analysis is not required and the air quality impact analyses for Brewster Yards focus on local (microscale) air quality impacts and evaluating compliance with the CO standards.

According to the NYSDOT EPM, signalized intersections with level of service C or better, do not require air quality analysis. Three (3) signalized intersections examined in the traffic analyses (Chapter 11) were found to have a LOS D or E, as listed below:

- NY Route 312 and NY Route 6
- NY Route 312 and I-84 Eastbound Ramps/Independent Way
- NY Route 312 and I-84 Westbound Ramps

Two unsignalized, stop sign controlled intersections provide access to the site on Fields Corner Road at the north and Pugsley Road to the south. Fields Corner Road intersects Fair Street north of the site. Pugsley Road intersects NY Route 312 south of the site.

The NYSDOT EPM states: *“It is not expected that intersections in a build alternative controlled by stop signs will require an air quality analysis”*. Thus, while some non-signalized intersections may have a Build level of service lower than “C”, the screening analysis concludes that traffic volumes associated with stop sign controlled intersections are not sufficiently high to warrant further CO microscale analysis. The level of CO at a stop sign controlled intersection would not exceed ambient air quality standards.

The three signalized intersections analyzed in the traffic study, were evaluated as having a level of service D or E for the build condition during the peak PM hour and the peak Saturday hour. Therefore, the NYSDOT EPM was used to further evaluate these intersections to determine the need for a microscale air quality analysis. The screening criteria are as follows:

- 10 percent or more reduction in the source-receptor distance;
- 10 percent or more increase in traffic volume on affected roadways between the No Build and Build scenarios;
- 10 percent or more increase in vehicle emissions;
- Any increase in the number of queued lanes; and,
- 20 percent reduction in speed.

Evaluation of the projected traffic and the criteria above indicates the proposed project will not exceed any of the criteria for further CO micro-scale air quality analysis. Therefore, a microscale air quality analysis is not required for the three signalized intersections, as it is not anticipated that the ambient air quality standards would be exceeded based on the screening analysis.

The proposed Brewster Yards development will not be of a scale to be regionally significant with regard to air quality attainment and therefore should not interfere with the any of the ongoing programs to bring the area into compliance with the ozone standards.

Stationary Sources

The primary generators of air emissions from the proposed recreational development include heating and cooling equipment for the on-site building and emissions from maintenance equipment such as lawn mowers and landscaping equipment. Air contaminants typically of concern with respect to heating and hot water systems are sulfur dioxide and inhalable particulate matter related to the use of fuel oil. It is anticipated that the heating and cooling system for the main recreational building and offices will be modern energy efficient equipment with minimal emissions. The building is proposed to be heated with either propane or electric service.

Maintenance and landscaping equipment such as mowers, tractors and power tools will be new energy efficient equipment which will result in lower emissions than older equipment. Some equipment is anticipated to be electric, further reducing emissions. Also, the extent of areas

needing lawn mowing is relatively small since the play fields are proposed to have synthetic turf surfaces.

Given the projected volume of traffic, the installation of new and efficient heating systems, and proposed energy efficient landscaping, no significant adverse long-term air quality impacts are expected to result from the proposed Brewster Yards development.

13.4 Mitigation Measures

Short-term Fugitive Dust Emissions

Construction activities on the project site may generate airborne or fugitive dust during ground clearing and excavation activities. Throughout the construction period, passage of delivery trucks and other vehicles over temporary dirt roads and other exposed soil surfaces could also generate fugitive dust. The anticipated duration of the construction period is approximately 18 to 21 months. Construction activity will be limited to the hours set forth in the Town of Southeast Code (Section 69-10 – Excavation). Excavation and grading work shall be limited to the hours of 7:00 a.m. to 5:00 p.m., Monday through Friday, and 7:00 a.m. to 1:00 p.m. on Saturday. On-site mitigation measures are proposed as part of the project during construction to limit the dispersal of dust to nearby residences.

Fugitive Dust Controls

To mitigate against potential impacts associated with fugitive dust that may be generated by earthwork activities, a separate fugitive dust control plan has been developed. The fugitive dust control and management measures include earth-moving operation controls, track-out controls, high wind condition controls, and stabilizing soil stored or stockpiled on the project site.

A summary of fugitive dust controls to be implemented are as follows:

Earth-moving operation controls

- When dry conditions occur, apply water by means of truck, hoses, and/or sprinklers prior to and during earthwork and construction activity.
- Cover trucks with a tightly secured cover (tarp) before leaving the project site.
- Maintain low speeds on Pugsley Road and Fields Corner Roads.
- Phase the project to limit and minimize the area disturbed at any one time.

Track-out controls

- A stabilized construction entrance will be provided with a lined stone and gravel pad of appropriate dimensions to reduce the transport of soil to adjacent roadways.
- Wash, vacuum, or sweep to remove materials from the exterior of the trucks over gravel pad before leaving the site to prevent track-out of soil onto public paved roadways.

- Limit load size and cover trucks with a tightly secured cover (tarp).
- Sweep and keep clean public roadways to remove all visible dust tracked-out onto public roadways as a result of active operations.

Soil stored or stockpiled

- Any exposed soils that are left bare for a period of 14 days and not under active construction will be stabilized with temporary seed mix and mulch.
- Mulching or hydroseeding will be applied to ground with low slopes that have been stripped of natural vegetation.
- Seeding, mulch or sodding will be applied to soils for permanent stabilization if conditions warrant.

The Construction Manager would be responsible for ensuring the appropriate controls are implemented during day-to-day operations. Implementation of these controls would prevent dust from exiting the property, and prevent public nuisances.

Although exhaust emissions from construction equipment is not as significant as fugitive dust generation, particulate matter from diesel exhaust emission will also be controlled through proper tuning of the engine and maintenance of the air pollution controls. This will minimize additional contribution to site generated particulate emissions during construction.

Vehicle Generated Impacts

The carbon monoxide screening analysis of vehicle generated emissions documents that the additional site traffic would not result in adverse air quality impacts at the primary intersections accessing the site. Proposed traffic mitigation measures were included in all screening air quality impact analyses. Based on the intersection capacity analysis, the projected vehicle queues at the study intersections resulting from the project would not be significant enough to cause air quality concerns.

Conclusion

Based on air quality analysis described above, no significant air quality impact to local receptors is anticipated to result from the proposed project.