3.9 Noise and Air Resources

Noise and air resources were documented in the DEIS. The following section on noise summarizes the results of the DEIS findings. The air resources portion of this section has been revised to reflect the updated traffic analysis conducted for the revised project, which now proposes a substantial commercial component in the Town of Haverstraw.

3.9.1 Noise

3.9.1.1 Existing Conditions

Tables 3.9-1 and 3.9-2 summarize community perceptions to noise change and responses to increased levels. The level of a noise is measured and expressed in decibels (dB). Commonly, a standardized A-weighting is applied to sound levels to correct for certain characteristics of human hearing. The A-weighted sound level (dBA) is useful for gauging and comparing the subjective loudness of sounds.

Table 3.9-1
Perception of Changes in Noise Levels

Change (dBA)	Average Ability to Perceive Changes in Noise Levels Human Perception of Change
2-3	Barely perceptible
5	Readily Noticeable
10	A doubling or halving of the loudness of sound
20	A dramatic change
40	Difference between a faintly audible sound and a very loud sound

Source: Bolt Baranek and Neuman, Inc. Fundamentals and Abatement of Highway Traffic Noise, Report No. PB-222-703. Prepared for Federal Highway Administration, June 1973.

Table 3.9-2
Community Response to Increases in Noise Levels

	Estimated Community Response	
Change (dBA)	Category	Description
0	None	No observed reaction
5	Little	Sporadic complaints
10	Medium	Widespread complaints
15	Strong	Threats of community action
20	Very strong	Vigorous community action

Source: International Standard Organization, Noise Assessment with Respect to Community Reactions, 150/TC 43. (New York: United Nations, November 1969.)

Town of Ramapo Noise Ordinance

Chapter 244, Noise, of the Ramapo Town Code regulates noise. Noise sensitive uses include hospitals, nursing homes, schools, courts, churches, or public libraries. Various activities are regulated, as described in the DEIS. The following activities are regulated:

- The keeping of animals that frequently or for continued duration make noise which creates an unreasonable noise across a residential property boundary;
- Any commercial, business or industrial equipment that produces an unreasonable sound level;
- Construction between the hours of 10:00 PM and 8:00 AM on weekdays, or at any time on Sundays or legal holidays, or during any other times, which produces an L_{10} of 60 dBA for the daily operation, if measured at a residential real property boundary;
- The use of any power tools outdoors within a residential area between the hours of 10:00 PM and 8:00 AM, which results in unreasonable noise across a residential real property boundary;
- The use of explosives, firearms or similar devices which create impulsive sounds so as to cause unreasonable noise across a real property boundary;
- The sounding of any horn or signaling device except to serve as a danger warning;
- The operation, repair or testing of any motor vehicle in such a manner as to cause unreasonable noise across a residential real property boundary within a noise sensitive zone;
- The use of any engine not equipped with a muffler in constant operation and maintained as to prevent any unreasonable noise or disturbance;
- The operation of any sound reproducing device that causes unreasonable noise across a real residential property boundary between the hours of 11:00 PM and 8:00 AM, or any time within a sensitive zone;
- Operation of any garbage or trash compactor, or any other truck where the loading or unloading is conducted within a residential district or within 300 feet from a hotel or motel between the hours of 11:00 PM and 6:00 AM.

Noises generated by notification signals, emergency, and noises generated from a sound reproduction device at any public event are exempt from the Town's regulations. Variances for noise levels above levels permitted by the regulations may be granted by the Town Board.

Town of Haverstraw Noise Ordinance

The Town of Haverstraw Noise Control Law is provided as Chapter 114, Noise, of the Town of Haverstraw Code. This regulation sets the maximum allowable noise measurements of 60 dBA during the hours of 8:00 AM to 6:00 PM or 45 dBA during the hours of 6:00 PM to 8:00 AM as measured on any residential property within a residential zoning district.

Sounds which are considered nuisances and automatically violate the Noise Control Law include those generated by the following acts:

- Honking of horns by any vehicle except to as a danger warning;
- Playing of sound system devices that is plainly audible at fifty (50) feet from the source;
- The projection of any amplified sound onto public streets for commercial advertising or attracting the attention of the public;
- Noises made by any pets that is frequent or continued;
- Creation of excessive noise near schools, courts, churches and hospitals while in use
- Burglar alarms not terminated within fifteen (15) minutes of activation; and,
- Running of any motorized vehicle that emits sounds louder than as originally manufactured through modification or disrepair.

The following sounds are regulated by the law:

- sounds from air conditioning or air handling equipment, provided that they produce less than fifty-five (55) dBA at any property used for residential purposes within any residential zoning district;
- sounds from domestic power tools, lawn mowers and garden equipment when operated between the hours of 8:00 AM to sundown Monday through Friday, excluding holidays, or 9 AM to sundown on weekends and holidays. All other times the sounds must produce less than forty-five (45) dBA at any property used for residential purposes within any residential zoning district;
- sound from a snow blower, snow thrower, electric snow shovel or snowplow used for the purpose of snow removal;
- sound from an exterior burglar alarm of any building or motor vehicle, provided that such alarm shall terminate within fifteen (15) minutes after it has been activated.

Sounds that are exempt from regulation are:

- music in connection with any military or civic parade, funeral procession or religious service;
- sounds for the bells or chimes of a church, synagogue, other house of worship or school on or within premises;
- sounds created by any governmental agency by use of public warning device;
- sounds created by a public utilities in carrying out the operations if the franchise;
- sounds connected with sporting events of any public or private school, swim or tennis club, country club or permitted specials events or sports programs;
- sounds created by aircraft or motor vehicles on public streets.

Noise variances may be issued by the Town Board.

Section 167-40 of the Town of Haverstraw zoning law also restricts the time periods when construction operations may occur in order to control short-term noise impacts to surrounding properties. Construction, blasting, drilling or demolition is permitted:

- Between the hours of 7 AM to 7 PM on weekdays and from 8 AM to 5 PM on Saturdays. All such work is prohibited on Sundays and legal holidays.
- The provisions of this section shall not apply to emergency work and to work performed for a municipal agency.

Rockland County Health Code

The Haverstraw zoning law limits the noise levels of activities conducted within the PIO zoning district. Specifically, Section 167-13.C states that all uses in the PIO district shall conform to the standards employed by the Rockland County Department of Health. These standards are provided to address concerns expressed by Barr Labs with regard to its ability to continue to operate in compliance with applicable regulations.

Chapter 9, Prevention and Control of Environmental Noise Pollution, of the Rockland County Sanitary Code, regulates noise. The code utilizes a land use classification system to establish acceptable noise limits. The law states that land classification shall be based on the permissible land use as designated by a local zoning ordinance as of July 1, 1977. The land classifications are as follows:

1. Class AA: Lands which require a state of tranquility, serenity or quiet, such as wildlife preservations.
2. Class A: Land intended and used for primarily sleeping purposes by people. Primarily residential areas, but also includes commercial living accommodations, such as hotels, camping facilities and community services, such as group homes and correctional facilities.
3. Class B: Land where humans typically interact and communicate with others, including residential and commercial zones. Most commercial uses fall into this classification, as well as schools, churches, offices, and active recreation areas.
4. Class C: Land where primary use is other than human sleeping or communication. Includes uses such as warehouses and distribution facilities, industrial and manufacturing plants and agricultural uses.

Commercial, business and industrial uses are regulated by the continuous sound in air which crosses the property line of a commercial, business, or industrial operation according to the adjoining land's classification. In 1977, the project site would have been Classified "B" as it was and is zoned for commercial use.

Noises generated on residential property are not regulated, nor are construction noises between the hours of 6 AM and 10 PM.

Table 3.9-3 Rockland County Noise Regulations for Commercial, Business & Industrial Uses	
	Maximum Allowed (dBA)
Class AA	Not exceeding L_{90} ambient noise
Class A	
7am to 10pm	65 dBA or L_{10} of 60 dBA
10pm to 7am	55 dBA or L_{10} of 50 dBA
Class B	65 dBA or L_{10} of 60 dBA
Class C	
24 hours	80 dBA
16 hours	82 dBA
8 hours	85 dBA
4 hours	88 dBA
2 hours	91 dBA
1 hour	94 dBA
½ hour	97 dBA
<1/2 hour	100 dBA
Impulsive sound	130 dBA
Source: Rockland County Sanitary Code, Section 9.8.2	

It is noted that sources of sound external to the property line of the commercial, business, or industrial operation shall be excluded when determining whether noise is present.

Existing Ambient Noise Levels

Vacant portions of the project site do not generate noise. Noise is generated from the existing, one-acre automotive repair garage site and limited to daytime hours when the shop is in operation. Russell Acoustics, LLC, monitored ambient noise levels on the project site. Table 3.9-4 indicates the locations, times and noise levels recorded. Noise measurements were collected for fifteen minutes intervals, shortly after noon on Friday September 30, 2005 and then in the vicinity of 10:30 pm on the same day. The weather during the noise measurements was clear with temperatures ranging from 40 to 65 degrees, with light wind. On-site noise monitoring locations are shown in Figure 3.9-1 Noise Monitoring Locations.

In addition, noise measurements were collected by Tim Miller Associates, Inc. on May 22, 2006 at four off-site locations to monitor ambient noise in near existing residences in the vicinity of the project site. As shown in Figure 3.9-1 noise measurements were collected on Quaker Road, in the vicinity of the Quaker Road mobile homes, and in the Crystal Hill residential development on Route 202, east of the project site. These off-site measurements were collected between

3:00 and 5:00 pm. Weather during the measurements was partly cloudy with temperatures ranging from 50 to 63. Wind was moderate with an average of approximately 10 mph.

On-site Noise

Sources of noise on-site are from Barr Labs operations to the north of the site and vehicles traveling along area roads including the Palisades Interstate Parkway on the east and Route 202 on the south. It is evident that with increasing distance, the noise levels drop off as one travels north to south on the project site. Generally, a doubling of distance results in a noise reduction of 3 dBA.

Table 3.9-4
Site Noise Measurements

On-site Noise Monitoring Locations	**Noise Measurements (dBA)**		
	Noon	10:30pm	Average
#1	50.1	49.7	49.9
#2	66.4	63.4	64.9
#3	63.8	60.1	62.0
#4	57.5	52.7	55.1
Off-site Noise Monitoring Locations	**Noise Measurements (dBA)** 3:00 - 5:00 pm		
#5			61.8
#6			60.2
#7			50.3
#8			57.7

Source: Russell Acoustics, LLC, 2005 (on-site locations)
Tim Miller Associates, Inc. 2005 (off-site locations)

Location #1 is located in the center of the project property, approximately 600 feet from the northern property line, within the Town of Haverstraw. Noise observed during the measurements included: traffic noise from the Palisades State Parkway and Route 202 and distant equipment noise from Barr Labs. Noise monitoring locations #2-4 are located in the northern part of the project parcel, approximately 60 feet south of the property line. Location #2 is at the east end of the Barr Laboratory building, Location #3 is centered on the building, and Location #4 is at the west end of the building. Noise observed at these locations included equipment noise from Barr Labs (air cooled condensers) and traffic from Palisades State Parkway.

It is expected that the exclusion of Palisades Interstate Parkway noise would drop the sound levels at the northerly property line below those levels measured above. This is evident from a comparison of the noon and 10:30 PM noise results; the drop in noise levels is due to the drop in traffic traveling on the local road network, including the PIP. The Barr Labs property is within the noise limits for Class B lands.

Off-site Noise

As described above, measurements were collected at residential developments in the vicinity of the project site. Location 5 was opposite the Barr Labs entrance on Quaker Road near an existing residence. Location 6 was just north of Location 5 near the entrance to the mobile home park. Noise sources observed at these two locations included passing traffic on Quaker Road, traffic on the Palisades State Parkway, and distant operational noise from Barr Labs.

Measurement Locations 7 and 8 were at the Crystal Hill residential development near Route 202 (see Figure 3.9-1 Noise Monitoring Locations). Noise observed at these locations was limited to traffic on Route 202 and limited internal traffic in the residential development.

Sensitive Noise Receptors

Sensitive noise receptors are facilities and uses that are dependent on a state of serenity and quiet, or are uses that are particularly sensitive to noise energy and decibel levels. Land uses that are typically considered to be sensitive to noise would be residences, schools, hospitals, churches, cemeteries, libraries, nature preserves and certain types of outdoor recreation areas. According to the Town of Ramapo Noise Ordinance, sensitive noise uses include hospitals, nursing homes, schools, courts, churches or public libraries. The Town of Ramapo and the Town of Haverstraw regulate noise in residential areas, as described above.Therefore, residential areas surrounding the project site can be considered sensitive noise receptors. The closest residential properties to the project site include the Quaker Road mobile homes, located approximately 500 feet north of the site, opposite Barr Laboratories and existing residences along Quaker Road, northwest of the site. The closest residential rear yards are approximately 1,300 feet from proposed developed portions of the Minisceongo Park project.

The nearest school to the project site is the Pomona Middle School, which is located approximately one mile south of the site. Parks in the vicinity of the site include the Samuel G. Fisher Mount Ivy Environmental Park located 300 feet south of the site, across Route 202 and opposite the shopping center. In addition, the Burgess Merideth Park is located approximately 2000 feet north of the site, adjacent to the Palisades Interstate Parkway. These two parks are undeveloped land and used for passive recreation. No hospitals, churches, cemeteries, or libraries are located within one mile of the subject property (see Figure 3.7-1: Location of Community Facilities).

Introduction of a residential development in this location would introduce a sensitive noise receptor, residential uses, to the project site. The proposed residential buildings would be located approximately 900 feet from the northern property line and development on the Barr Labs property.

During construction activities, the project could result in elevated noise levels that would affect other sensitive receptors. The nearest single-family residences, located northeast of the site, across from the mobile home park are approximately 600 feet from the nearest area of the site to be disturbed (see Figure 3.9-1 Noise Monitoring Locations). A mobile home park is located to the north of the Barr Labs facility, approximately 500 feet north of the property line. Additional single family residences are located along Quaker Lane northwest of the site approximately 1,300 feet from areas of proposed grading. See below, for discussion of potential construction noise impacts to nearby residences.

3.9.1.2 Potential Impacts

Short Term Construction-related Noise

Local daytime ambient noise levels will increase both on and off of the project site during construction of the proposed Minisceongo Park. Construction activities and the operation of construction equipment are an expected and required consequence of any new construction project and cannot be avoided. Thus, some noise impacts would be expected. It is important to note that noise resulting from construction activities is a temporary impact, and will cease upon completion of the project. The following table shows representative maximum sound levels for diesel powered equipment and activities at a range of receptor distances.

Table 3.9-5
Construction Noise Levels
(dBA)

	Maximum Sound Level			
Equipment/Activity	**50 feet**	**200 feet**	**500 feet**	**1000 feet**
Backhoe	82-84	70-72	62-64	56-58
Bulldozer	80	68	60	54
Concrete Pump	74-84	62-72	54-64	48-58
Generator	71-87	59-75	51-67	45-61
Grader	85	73	65	59
Hailer	83-86	71-74	63-66	57-60
Loader	86-90	74-78	66-70	60-64
Trucks	81-87	69-75	61-67	55-61

Source: Tim Miller Associates, Inc., 2005 and Assessing and Mitigating Noise Impacts, NYSDEC, Rev. February 2, 2001.

Noise levels of trucks loading and moving fill will depend on the distance from any receptor. The area to be surcharged is at least 500 feet from the nearest corner of the Barr Labs building. Generally, noise from trucks, bulldozers and graders operating at this distance would be in the 60-67 dBA range. This is a comparable range to existing ambient noise levels along the northern property line. As described above, ambient noise levels ranged from 57 to 66 dBA along the northern property line.

The amount of fill required would be approximately 49,000 cubic yards trucked to yield a total volume of 35,000 cu yards in place, compacted. Based on truck capacity of 15 to 20 cubic yards, this would represent between 2,450 and 3,267 truck trips entering and exiting the site. Over the course of an assumed six month period, or between 100 to 150 working days of operation, there would be approximately 20 to 35 trucks per day, or 3 to 5 trucks entering and 3 to 5 trucks exiting per hour on a given day. Trucks are expected to utilize Route 202, both eastbound and westbound, since it is the major local road near the site. The Palisades Parkway cannot be used by trucks. Route 202 contains primarily commercial development, but

residential development near the site includes the Crystal Hill development located east of the site.

During construction, graders, bulldozers and rollers will be operating on-site to bring it to grade. In addition, during the building construction phase, noise levels would be greatest near the northern property line during construction of the retail buildings and associated parking areas within approximately 100 feet feet of the Barr Labs building. During the limited period of grading near the northern property line, noise levels near the Barr Labs building may range from 74 to 81 dBA, when graders, bulldozers and trucks are used.

Noise levels generated by compaction and construction activities elsewhere on the site, beyond the 200-foot range, would drop off with increasing distance and would not be readily noticeable to Barr Labs given the existing ambient noise levels at the property line. Activities within the 200-foot are limited in scale and are not anticipated to have a significant impact.

For sensitive receptors such as residences, the level of impact from construction noise sources depends upon the type and number of pieces of construction equipment being operated, the duration of the construction activities, as well as the distance of the receptor from the construction sites. The noisiest period of construction will occur during site clearing and grading activities, when sections of the site are prepared for the building; although all construction activities at the site are likely to produce increased noise levels.

As described above, the closest residences to the property are trailer homes located north of the site along Quaker Lane. These residences are located approximately 500 feet north of the site. Based upon the estimated construction noise levels and attenuation of noise over distance, maximum noise levels for the trailer park residences would be in the range of 60 to 67 dBA when trucks, graders and bulldozers are operating near the northern property line. A portion of this noise will be blocked by the Barr Labs building (see Figure 3.9-1). Estimated construction noise levels for other nearby residences (northeast and northwest of the site near Quaker Lane) would be lower based upon distance.

Elevated noise occurrences are typically sporadic during the construction period. Noise levels actually experienced on a nearby property would be expected to be lower, accounting for distance from the noise source and other attenuating factors.

Blasting and rock removal are not anticipated for the project.

Long-Term Noise Effects

Minisceongo Park is a development that will generate noises typical of commercial and residential developments. For the commercial component, noise sources would include operating vehicles accessing the commercial buildings, loading and unloading of merchandise, waste collection, and the operation of rooftop HVAC equipment. For the residential development, located along Route 202, residents driving to and from the development and common area maintenance activities (e.g., lawnmowing) would be the prevalent sources of noise.

The introduction of a mixed use development will introduce noise sources to the project site. Residential uses are in and of themselves sensitive receptors and would not be expected to have a significant impact on ambient noise levels.

Traffic generated by the proposed Minisceongo Park project is not expected to impact nearby residential development, based upon an assessment of the traffic and traffic generated noise. The traffic study for Minisceongo Park included an assessment of projected traffic increase at the Route 202/ Crystal Hill/ Balsam Road intersection. Based upon the traffic study, total vehicles are expected to increase by 318 vehicles or 988 passenger car equivalents (PCE), (build traffic with other projects). For Saturday traffic, traffic is expected to increase by 333 vehicles or 1039 PCE's.

The vehicular noise analysis for the proposed Minisceongo Park project employed a logarithmic equation to identify if there would be the potential for significant noise impacts as a result of the proposed Project. Due to its ease of use, the New York City Environmental Quality Review (CEQR) Manual formula was used to estimate projected noise increases due to traffic noise. Based upon the analysis, noise was estimated to increase by approximately one decibel at the Route 202 Crystal Hill Intersection, for both weekday and Saturday build condition traffic (with other projects). Noise was projected to increase from 57.7 dBA (existing) to 58.5 dBA (future weekday build condition traffic with other projects) and to 58.6 dBA for future Saturday build condition traffic with other projects. Therefore, traffic from the proposed Minisceongo Park project is not expected to result in any noticeable increase in noise levels to residences in the vicinity of the project.

A significant commercial component consisting of 254,000 square feet of commercial retail space, has been introduced to the Haverstraw portion of the project site which will be compatible in character to the adjoining Barr Labs facility. Since the project site was zoned for commercial uses in 1977, the standards applicable to the maximum acceptable noise levels for Barr Lab operations will not change as a result of the Minisceongo Park project.

3.9.1.3 Mitigation Measures

Construction activities must comply with the Towns' noise ordinances. To mitigate against potential noise impacts, construction will be limited as follows:

- In the Town of Haverstraw, construction activities will occur only between the hours of 7 AM to 7 PM on weekdays and from 8 AM to 5 PM on Saturdays. No work will be conducted on Sundays and legal holidays.
- In the Town of Ramapo, construction will not occur between the hours of 10:00 PM and 8:00 AM on weekdays, or at any time on Sundays or legal holidays.

Given that the proposed residences in the Minisceongo Park project are located greater than 600 feet from the Barr Labs property, no mitigation measures are necessary to mitigate or lessen the noise from the Barr Labs operations.

The applicant may request waivers from the applicable jurisdiction to commence construction at 7 AM and discontinue activities at 9 PM.

Once constructed, residents and commercial users will be expected to comply with the noise codes applicable to each town jurisdiction as described previously.

3.9.2 Air Quality

3.9.2.1 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 contaminants or pollutants can be defined as solid particles, liquefied particles, and vapor or gases, which are discharged into, or form in, the outdoor atmosphere. 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 and humidity, air turbulence, temperature differences, and wind speed and direction can disperse, intensify or chemically change or alter the compositions of air contaminants.

Air Quality Standards and Compliance

The United States Environmental Protection Agency (USEPA) 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 USEPA as being of concern nationwide. These pollutants include carbon monoxide (CO), nitrogen dioxide ($NO_{2)}$, ozone (O_3) (also termed photochemical oxidants), particulate matter, sulfur dioxide (SO_2), 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 USEPA 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 AAQS from a list of seven criteria pollutants established by the USEPA. These pollutants were selected by the USEPA 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 3.9-6 provides federal and state air quality standards.

Table 3.9-6
Federal and State Air Quality Standards

Pollutant	Avg. Period	Federal Air Quality				New York Standards	
		Primary Standard		Secondary Standard			
		Level	Statistic	Level	Statistic	Level	Statistic
Carbon Monoxide	8-hour	9 ppm	Maximum	None		9 ppm	Maximum
	1-hour	35 ppm	Maximum			35 ppm	Maximum
Lead[1]	Quarterly Average	1.5 ug/m^3	Maximum	Same as Primary		None	
	Rolling 3-month Average	0.15 ug/m^3	None	Same as Primary		None	
Nitrogen Dioxide	Annual	0.053 ppm	Arithmetic Mean	Same as Primary		0.05 ppm	Arithmetic Mean
Total Suspended Particulates (TSP)	12 Consecutive months	None		None		75 ug/m^3	Geometric Mean
	24-hour	260 ug/m^3	Maximum	150 ug/m^3	Maximum	250 ug/m^3	Maximum
Particulate Matter (PM_{10})	24-hour	150 ug/m^3	Maximum	Same as Primary		None	
Particulate Matter ($PM_{2.5}$)[2]	Annual	15 ug/m^3	Arithmetic Mean	Same as Primary		None	
	24-hour	35 ug/m^3 (3)	3 Year Avg.	Same as Primary			
Ozone (O_3)	8-hour (2008 std)	0.075 ppm	3 Year Ave.	Same as Primary		None	
	8-hour (1997 std)	0.08 ppm	3 Year Ave.	Same as Primary		0.08 ppm	Maximum
	1-hour	0.12 ppm	Not Applicable in NYS	Same as Primary		0.12 ppm	Maximum
Sulfer Dioxide	Annual	0.03 ppm	Arithmetic Mean	None		0.03 ppm	Arithmetic Mean
	24-hour	0.14 ppm	Maximum			0.14 ppm	Maximum
	3-hour	None		0.5 ppm	Maximum	0.50 ppm	Maximum

NOTES:
(1) Federal standard for lead not yet officially adopted by NYS, but is currently being applied to determine compliance status.
(2) Federal standard for PM_{10} not yet officially adopted by NYS but is currently being applied to determine compliance status.
(3) Federal standard was changed from 65 to 35 ug/m^3 on December 17, 2006. Compliance with the Federal standard is determined by using the average of 98th percentile 24-hour value during the past three years, which can not exceed 35 ug/m^3.

Sources of air pollutants are summarized in Table 3.9-7, below.

Table 3.9-7
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 (NOx), and Hydrocarbons. Oxidants, primarily ozone results from the breakdown of NOx 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 (SO_2), nitrogen oxides (NOx), 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 New York State Department of Environmental Conservation (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 Air Quality Control Region, 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 (SO_2);
- ozone (O_3);
- total suspended particulates ($PM_{2.5}$);
- inhalable particulates (PM_{10}); and,
- lead.

The remaining criteria pollutants, carbon monoxide (CO) and nitrogen dioxide ($NO_{2)}$, 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. Particulate standards include only those particles with diameters less than 10 microns which are inhalable.

The 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 3.9-8 lists stations referenced in the NYSDEC *Air Quality Report* and the pollutants monitored at each. Monitoring stations are located at White Plains and Mamaroneck in Westchester County; Mt. Ninham in Putnam County; Valley Central, Newburgh (2), Wallkill (3), and Scotchtown in Orange County; Millbrook and Poughkeepsie in Dutchess County; and Belleayre Mountain, New Paltz and Saugerties in Ulster County. There are currently no air quality monitoring stations within Rockland County.

Table 3.9-8
NYSDEC Air Quality Monitoring

Stations	Parameters				
	Lead	Sulfur dioxide	Inhalable particulates	Ozone	Carbon monoxide
NYSDEC Region 3					
Mamaroneck 5956-01	✓		✓		
Wallkill 3566-02/3566-09	✓				
Scotchtown 3566-11	✓				
Mt. Ninham 3951-01		✓	✓	✓	
Belleayre Mtn. 5565-03		✓	✓	✓	
Saugerties 5524-03			✓		
New Paltz 5522-01			✓		
Newburgh 3502-04			✓		
White Plains 5902-04			✓	✓	
Valley Central 3527-01				✓	
Millbrook 1328-01				✓	
NYSDEC Region 4 (closest available data)					
Loudonville 0101-33					✓
Schenectady 4601-05					✓

P = Monitoring Location for Pollutant.
Source: *2007Annual New York State Air Quality Report*, NYSDEC Division of Air Resources

Table 3.9-9 summarizes 2007 data for the NYSDEC Region 3. Sampling information for pollutants not included in the table is either not collected in NYSDEC Region 3 or is collected at locations distant from the project site. Information from distant locations would not be representative of ambient air quality conditions in the project vicinity.

Table 3.9-9
2007 Regional Air Quality Data Summary

Monitoring Location	Pollutant	Concentration	Air Quality Standard	Within Standard?
White Plains	Ozone (O_3)	0.095 ppm (1)	0.075 ppm (1)	No
Valley Central (Hud. Valley)	Ozone (O_3)	0.084 ppm (1)	0.075 ppm (1)	No
Millbrook	Ozone (O_3)	0.078 ppm (1)	0.075 ppm (1)	No
Mt. Ninham	Ozone (O_3)	0.086 ppm (1)	0.075 ppm (1)	No
Belleayre	Ozone (O_3)	0.073 ppm (1)	0.075 ppm (1)	Yes
Mt. Ninham	Sulfur Dioxide (SO_2) (12 months)	1.5 ppb (2)	30 ppb (2)	Yes
Mt. Ninham	Sulfur Dioxide (SO_2) (24-hour)	9 ppb (3)	140 ppb	Yes
Mt. Ninham	Sulfur Dioxide (SO_2) (3-hour)	17 ppb (4)	500 ppb	Yes
Belleayre	Sulfur Dioxide (SO_2) (12 months)	1.2 ppb (2)	30 ppb (2)	Yes
Belleayre	Sulfur Dioxide (SO_2) (24 hour)	9 ppb (3)	140 ppb	Yes
Belleayre	Sulfur Dioxide (SO_2) (3-hour)	15 ppb (3)	500 ppb	
White Plains	Inhalable Particulates ($PM_{2.5}$) (5)	9.4 ug/m^3	15 ug/m^3	Yes
White Plains	Inhalable Particulates ($PM_{2.5}$) (24-hour)	29 ug/m^3	35 ug/m^3	Yes
Mamaroneck	Inhalable Particulates ($PM_{2.5}$) (5)	11.7 ug/m^3	15 ug/m^3	Yes
Mamaroneck	Inhalable Particulates ($PM_{2.5}$) (24-hour)	33 ug/m^3	35 ug/m^3	Yes
Newburgh (T)	Inhalable Particulates ($PM_{2.5}$) (5)	10.1 ug/m^3	15 ug/m^3	Yes
Newburgh (T)	Inhalable Particulates ($PM_{2.5}$) (24-hour)	30 ug/m^3	35 ug/m^3	Yes
Newburgh (F)	Inhalable Particulates ($PM_{2.5}$) (5)	10.6 ug/m^3	15 ug/m^3	Yes
Newburgh (F)	Inhalable Particulates ($PM_{2.5}$)) 24-hour	29 ug/m^3	35 ug/m^3	Yes
Wallkill	Lead (Pb)	0.02 ug/m^3 (6)	1.5 ug/m^3	Yes
Scotchtown	Lead (Pb)	0.01 ug/m^3 (6)	1.5 ug/m^3	Yes

NOTES:
(1) 4th Highest Daily Maximum 8-hour Average..
(2) Annual Arithmetic Mean in parts per billion (ppb).
(3) An average of the three (3) 24-hour averages.
(4) An average of the three (3) 3-hour averages.
(5) Annual means not to exceed 15 ug/m^3.
(6) Average of three quarters, maximum not to exceed 1.5 ug/m^3.(F) Federal Reference Method.
(T) TEOM (Tapered Element Oscillating Microbalance).
-No Inhalable Particulates (PM_{10}) measurements were conducted in Region 3 near Rockland County, therefore none are mentioned in the above table.

Based upon 2007 data, all monitored contaminants have achieved acceptable levels within the region except ozone.

The Clean Air Act Amendments enacted in 1977 set forth a process for New York and all other states to achieve clean air through the submission of a State Implementation Plan (SIP) to the

USEPA for criteria pollutants which are not in attainment with the NAAQS. The SIPs describe how each state will attain and maintain air quality standards in non-attainment areas.

Rockland County is in a severe non-attainment area for ozone which is no longer subject to the one-hour standard for ozone as of June 15, 2005. It is within a moderate non-attainment area for the 8-hour standard for ozone. As required under the Clean Air Act, the State drafted a SIP to achieve compliance with the ozone NAAQS by November 15, 2007. The draft SIP, prepared by the NYSDEC Air Resources Division, is currently undergoing review by the USEPA for approval. The draft SIP cites strategies for reducing ozone levels including limits on gasoline volatility, lower gasoline sulfur levels, diesel fuel reformation, annual inspections for heavy-duty diesel vehicles, nitrogen oxide controls, and other measures.

Air contaminants which typically are of concern with respect to vehicle-related projects include ozone, carbon monoxide, nitrogen oxides, and lead. Air contaminants typically of concern with respect to heating and hot water systems of residential projects include sulfur dioxide and invaluable particulate matter.

The traffic volumes generated by the proposed project are below the screening thresholds for the New York State Department of Transportation (NYSDOT) regional transportation control programs, and thus conform with the SIP to bring the area into compliance with the carbon monoxide standards.

Existing Air Pollution Sources

Vehicle Generated Air Quality Impacts – Existing Conditions

The primary pollutants associated with vehicular exhaust emissions are nitrogen dioxide ($NO_)$, 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 with an adequate margin of safety. There are no currently enforced short-term health standards for NO 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 (O_3) and "smog", which are known lung and eye irritants, Ozone and smog formation is a slow process that occurs outside the primary impact area of the project, thus these pollutants are only reviewed on a regional (mesoscale) basis for "regionally significant" projects. Because the Minisceongo Park project is not regionally significant, it is "exempt" from the USEPA's conformity rules and thus it 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 all air quality impact analyses focus on local (microscale) air quality impacts and documenting compliance with the CO standards.

Land in the vicinity of the project area generally supports a mixture of residential, commercial, and industrial uses. 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 within the project vicinity include residential dwellings located approximately 1/3-mile to the north and west of the site.

3.9.2.2 Potential Impacts

There are no proposed stationary air emission sources that would be introduced by this project. Air quality impacts from construction activities were assessed along with a determination of impacts from project induced traffic.

Short-term Construction Air Impacts

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

The construction of the proposed Minisceongo Park 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 and particulate matter from the project 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 dispersal of particulate matter. Such increases in construction-related dust will be temporary.

Following project construction, unvegetated areas on the site currently exposed to wind would be either developed or landscaped, thereby reducing the potential for dust generation from the project area long-term.

Long-Term Air Quality Impacts

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.

According to the NYSDOT EPM, intersections with level of service (LOS) C or better do not require air quality analysis. Eight (8) signalized intersections were examined near the project site as part of the traffic analysis, as listed below:

- U.S. Route 202 and NYS Route 45
- U.S. Route 202 and Thiells Mount Ivy Road
- U.S. Route 202 and PIP Southbound On/Off Ramp
- U.S. Route 202 and Camp Hill Road
- U.S. Route 202 and Pacesetter Shopping Center
- U.S. Route 202 and Martino Way
- U.S. Route 202 and NYS Route 306
- U.S. Route 202 and Crystal Hill Club and Balsam Road

Two intersections, U.S. Route 202 and NYS Route 45 and US Route 202 and the Pacesetter Shopping Center entrance, have a LOS D for the build condition either during weekday PM and/or Saturday peak periods, as shown in Table 3.5-2 in Section 3.5 of this document. The U.S. Route 202 and the Pacesetter Shopping Center intersection has a LOS D for the Saturday

peak hour. These intersections were evaluated further 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.

Below is a table that summarizes the criteria for a microscale analysis to be performed.

Table 3.9-10
Microscale Analysis

	YES	NO	ACTION
Does the proposed development impact signalized intersections?	✓		If YES, continue to next question. If NO, a Microscale Analysis is not required.
If yes, is the LOS for any of the signalized intersections D, E or F? These intersections are: • U.S Route 202 and NYS 45 (LOS D for PM peak and Saturday peak hour) • U.S Route 202 and Pacesetter Shopping Center (LOS D Saturday peak hour)	✓		If YES, continue to next question. If NO, a Microscale Analysis is not required.
Do any of the intersections result in the following:			If YES, a Volume Threshold Screening is required. If NO, a Microscale Analysis is not required.
A 10% or more reduction in the source-receptor distance?		✓	
A 10% or more increase in traffic volume on affected roadways?	✓		
A 10% or more increase in vehicle emissions?		✓	
Any increase in the number of queued lanes?		✓	
A 20% reduction in speed, when the build estimated average is at 30 mph or less?		✓	
Source: Tim Miller Associates, Inc., 2008			

Table 3.9-11
10% or More Increase in Traffic Volume Evaluation
Build Year 2011

		Traffic Counts	Difference Between Traffic Counts	10% of NB Traffic Volumes	Greater than 10% increase?
Intersection 1: US Route 202 & NYS Route 45 (Weekday PM & Saturday Peak) - LOS D	PM No-Build w/o Other Developments	2,558 [1]	302	255.8	Yes
	PM Build w/o Other Developments	2,861 [2]			
	Saturday No-Build w/o Other Developments	1,969 [3]	349	196.9	Yes
	Saturday Build w/o Other Developments	2,318 [4]			
	PM No-Build with Other Developments	2,591 [5]	272	259.1	Yes
	PM Build with Other Developments	2,863 [6]			
	Saturday No-Build with Other Developments	2,001 [7]	323	200.1	Yes
	Saturday Build with Other Developments	2,324 [8]			
Intersection 8: US Route 202 & Shopping Center (Saturday Peak) - LOS D	Saturday No-Build w/o Other Developments	1,470 [3]	504	147	Yes
	Saturday Build w/o Other Developments	1,974 [4]			
	Saturday No-Build with Other Developments	1,596 [7]	504	159.6	Yes
	Saturday Build with Other Developments	2,100 [8]			

Notes/Sources:
[1] - Figure 3.5-12: 2011 No-Build Traffic Volumes Weekday Peak PM Highway Hour (w/o Patrick Farm
[2] - Figure 3.5-25: 2011 Build Traffic Volumes Weekday Peak PM Highway Hour (w/o Patrick Farm)
[3] - Figure 3.5-13: 2011 No-Build Traffic Volumes Weekend Peak Saturday Highway Hour (w/o Patrick Farm)
[4] - Figure 3.5-26: 2011 Build Traffic Volumes Weekend Peak Saturday Highway Hour (w/o Patrick Farm)
[5] - Figure 3.5-31: 2011 No-Build Traffic Volumes Weekday Peak PM Highway Hour (w/ Patrick Farm)
[6] - Figure 3.5-34: 2011 Build Traffic Volumes Weekday Peak PM Highway Hour (w/ Patrick Farm)
[7] - Figure 3.5-32: 2011 No-Build Traffic Volumes Weekend Peak Saturday Highway Hour (w/ Patrick Farm)
[8] - Figure 3.5-35: 2011 Build Traffic Volumes Weekend Peak Saturday Highway Hour (w/ Patrick Farm)

Evaluation of the projected traffic and the criteria above indicates that both of the intersections in question exceed the 10 percent or more increase in traffic volumes on affected roadways between the No Build and the Build scenarios using traffic counts with and without other proposed developments in the area, shown in Table 3.9-11above. Therefore a volume threshold screening analysis needs to be conducted to determine if the intersections require a microscale air quality analysis. For both intersections, Table 3c "Peak Hour Traffic Volume Thresholds at any Approach for Signalized Intersections" of the EPM was used to determine if a microscale analysis is warranted.

For the intersection located at U.S. Route 202 and NYS Route 45, free flow or CO emission factors of 10.27 and 9.70, for the weekday PM peak hour and the Saturday peak hour, respectively, were used. These factors were determined by using the Vehicle Distribution by NYSDOT Region 8 Table and the MOBILE 6 Emission Factor Table, both found in the New York State Department of Transportation, Mobile 6.2 CO Emission Factors for Project-Level Microscale Analysis, April 2008 document. TMA determined the emission factor, using these tables, by multiplying the vehicle distribution (categorized by road type - Urban Principal Arterial/Urban Minor Arterial) by the mile per hour measured on the road type (15.0 mph for weekday PM and 20.0 mph for Saturday peak hour) and then added to the different emission factors for each vehicle type. This calculation gave the free flow or CO emission factors mentioned above.

As specified in the EPM, both emission factors were rounded up to the upper bound value of the table ranges. A queue emission factor of 100 was used and 12.5 and 10.0 free flow emission factors were used to determine the maximum amount of vehicles per hour that can pass through the intersection before a microscale analysis is required. During the weekday PM peak hour, a maximum of 3,075 vehicles can pass through the intersection and during Saturday peak hour, a maximum of 3,800 vehicles can pass through the intersection. Since the build condition for weekday PM and Saturday peak for both this development and other proposed developments in the area does not surpass this number, a microscale analysis is not required for this intersection.

For the intersection of U.S. Route 202 with the Pacesetter Shopping Center, the 100 queue emission factor was used and 10.0 free flow emission factor was used. During the Saturday peak hour, a maximum of 3,800 vehicles can pass through the intersection. Since the build condition for Saturday peak for both this development and other proposed developments in the area does not surpass this number, a microscale analysis is not required for this intersection.

All other intersections involved in the project area are or will be stop sign controlled. 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 nonsignalized 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 CO microscale analysis. The level of CO at a stop sign controlled intersection would not exceed ambient air quality standards. This screening methodology was also confirmed in phone conversations with Jane Lao and Dr. John Zamurs, from the NYSDOT Environmental Analysis Bureau (EAB).

The primary generators of air emissions from the development include passenger vehicles, gas-powered equipment, and heating systems. Given the proposed density of the project, the projected volume of traffic, the installation of new and efficient heating systems, and proposed landscaping, no significant adverse long-term air quality impacts are expected to result from the proposed Minisceongo Park development.

3.9.2.3 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 42 months. Construction activity will be limited to the hours set forth in the Haverstraw and Ramapo laws. On-site mitigation measures are proposed as part of the project during construction to limit the dispersal of particular matter. No significant impacts to nearby residences on Quaker Road or Theills Mount Ivy Road are expected to result from the construction-related dust emissions due to distance, over 1/3-mile, from the nearest residence. Methods to control dust will include:

- minimizing the area of grading at any one time and stabilizing exposed areas with mulch and seed as soon as practicable;
- minimizing vehicle movement over areas of exposed soil, and covering all trucks transporting soil;
- unpaved areas subject to traffic would be sprayed with water to reduce dust generation;
- truck vehicle washing pads would be constructed at all construction entrances to avoid the tracking of soil onto paved surfaces.

During dry weather conditions spraying water on unpaved areas subject to heavy construction vehicle traffic will help control dust. Paved areas will also be kept clear of loose dirt that can be re-entrained into the air during vehicle passage. The use of stone tracking pads at access points to the site or washing of vehicle tires will greatly lessen the tracking of soil onto adjacent roadways.

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 impacts to local receptors are anticipated to result from the proposed project.