3.3 Air Resources

3.3.1 Introduction

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 (EPA) and the New York State Department of Environmental Conservation (NYSDEC) have promulgated National Ambient Air Quality Standards (NAAQS) intended to protect the public health and welfare. These standards are designed to protect the most vulnerable segment of the population including children, the elderly and the infirm, who 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 and related facilities.

Several air contaminants have been identified by the EPA 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.

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 (the Act) and subsequent amendments, each state was required to achieve clean air through the submission of a State Implementation Plan (SIP) to the EPA 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. The New York SIP adopted NAAQS 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 NAAQS is required under the Act, and each State has a designated time period in which to bring nonconforming areas into compliance.

New York State drafted a SIP to achieve compliance with the ozone NAAQS by November 15, 2007. The draft SIP was prepared by the NYSDEC Air Resources Division and reviewed by the

EPA 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. Table 3.3-1 provides federal and state air quality standards.

Table 3.3-1
State and Federal Air Quality Standards

		New York State Standards			Corresponding Federal Standards (Primary Standards)		
Pollutant[1]	**Avg Period**	**Conc.**	**Units**	**Stat**[2]	**Conc.**	**Units**[3]	**Stat**
Sulfur Dioxide	12 consecutive months	0.03	PPM	Arithmetic Mean (A.M)	80	µg/m³	Arithmetic Mean (A.M)
	24-hour	0.14	PPM	Maximum	365	µg/m³	Maximum
	3-hour	0.50	PPM	Maximum			
Carbon Monoxide	8-hour	9	PPM	Maximum	10	µg/m³	Maximum
	1-hour	35	PPM	Maximum	40	µg/m³	Maximum
Ozone	1-hour	0.12	PPM	Maximum	235	µg/m³	Maximum
	8-hour	0.08	PPM	Maximum	157	µg/m³	Maximum
Hydrocarbons (non-methane)	3-hour (6-9 am)	0.24	PPM	Maximum			
Nitrogen Dioxide	12 consecutive months	0.05	PPM	Maximum	100	µg/m³	AM
Lead [5]	3 consecutive months				1.5	µg/m³	Maximum
Fine Particulate Matter ($PM_{2.5}$)	12 consecutive months				15	µg/m³	Geometric Mean (G.M.)
	24-hours				65	µg/m³	Maximum
Inhalable Particulates (PM_{10}) [6]	12 consecutive months				50	µg/m³	Geometric Mean (G.M.)
	24-hours				150	µg/m³	Maximum
Total Suspended Particulates (TSP) [7]	12 consecutive months	75	µg/m³	Geometric Mean (G.M.)			
	24-hours	250	µg/m³	Maximum	260	µg/m³	Maximum

[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] Gaseous concentrations for Federal standards are corrected to a reference temperature of 25°C and to a reference pressure of 760 millimeters of mercury.
[4] Former NYS Standard for ozone of 0.08 PPM was not officially revised via regulatory process to coincide with the Federal standard of 0.12 PPM which is currently being applied by NYS to determine compliance status.
[5] Federal standard for lead not yet officially adopted by NYS, but is currently being applied to determine compliance status.
[6] Federal standard for PM_{10} not yet officially adopted by NYS, but is currently being applied to determine compliance status.
[7] 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 PM_{10} standards, TSP measurements may still serve as surrogates to PM_{10} measurements in the determination of compliance status.

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 inhalable particulate matter.

Sources of air pollutants are summarized in Table 3.3-2, below.

Table 3.3-2
Principal Sources of Air Pollutants

Pollutant	**Principal Sources**
Carbon Monoxide (CO)	Motor Vehicles (78%), Fuel Combustion (6%), Industrial Processes (4%), Other Sources (12%)
Emissions leading to the creation of Ozone	Produced by the Action of Sunlight on Volatile Organic Compounds (VOC) and Nitrogen Oxindes (NO_x) Compounds in the Atmosphere
• VOC	Industrial/Commercial Processes (50%), Motor Vehicles (45%), Consumer Solvents (5%)
• NO_x	Motor Vehicles (55%), Utilities (22%), Industrial/Commercial/Residential (22%), Other Sources (1%)
Particulate Matter (PM)	Many Sources (Stationary and Mobile) Including Crushing and Grinding Operations and Natural Resources
Sulfur Dioxide (SO_2)	Electric Power Generation (67%), Fuel Combustion (18%), Non-road engines (5%), Metal Processing (3%), Other Sources (7%)
Lead	Metal Processing (52%), Waste Disposal (16%), Non-road Engines (13%), Fuel Combustion (13%), Other Sources (6%)
Source: US Environmental Protection Agency, 2007.	

Sources of air pollution are generally characterized as mobile or non-point sources (transportation-related) and stationary or point 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.

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 Air Quality Control Region. The Federal criteria pollutants currently monitored within the Region 3 include:

- Sulfur dioxide (SO_2);
- Ozone (O_3);
- Inhalable 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. 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.

3.3.2 Existing Conditions

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 3.3-3 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 3.3-3
NYSDEC Air Quality Monitoring

Stations	Parameters			
	Lead	Sulfur dioxide	Inhalable particulates	Ozone
NYSDEC Region 3				
Mamaroneck			**P**	
Wallkill	**P**			
Scotchtown	**P**			
Mt. Ninham		**P**	**P**	**P**
Belleayre Mtn.		**P**	**P**	**P**
Newburgh			**P**	
White Plains			**P**	**P**
Valley Central				**P**
Millbrook				**P**

P = Monitoring Location for Pollutant.
Source: *2005 Annual New York State Air Quality Report*, July 2006, NYSDEC Division of Air Resources

Table 3.3-4 summarizes 2005 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.

Nitrogen oxides (NO_x), a designation for nitrogen oxide (NO) and nitrogen dioxide (NO_2), are not monitored in Region 3. However, since they are precursors to the formation of ozone, they are of principal concern. The nearest monitoring station for nitrogen oxides is located in Region 2 at the Botanical Gardens in the Bronx.

Table 3.3-4
2005 Regional Air Quality Data Summary

Monitoring Location	Pollutant	Concentration	Air Quality Standard	Within Standard?
White Plains	Ozone (O_3)	0.088 ppm (2)	.08 ppm (2)	No
Mt. Ninham	Sulfur Dioxide (SO_2)	2.2 ppb (1)	30 ppb (1)	Yes
Belleayre	Inhalable Particulates (PM_{10})	11.0 g/m^3 (1) (4)	50 g/m^3 (1)	Yes
White Plains	Inhalable Particulates ($PM_{2.5}$)	11.0 g/m^3 (1)	15 g/m^3 (1)	Yes
Wallkill	Lead (Pb)	0.07 g/m^3 (3) (4)	------	Yes
Belleayre	PM Sulfate	3.3 g/m^3 (1) (4)	------	Yes
Belleayre	PM Nitrate	0.2 g/m^3 (1) (4)	------	Yes
Botantical Gardens	Nitrogen Oxides	0.027 ppm (5)	0.05 ppm (5)	Yes

NOTES:
(1) Annual Arithmetric Mean in parts per billion (ppb).
(2) 4th Highest Daily Maximum 8-Hour Average in parts per million (ppm).
(3) Maximum Quarterly Average in grams per cubic meter (g/m^3).
(4) Data is 2004 data since 2005 was not available.
(5) 12-month average.

Existing Air Quality

Based upon 2005 data, all monitored contaminants, except ozone, have achieved acceptable levels within the region. A geographic area that meets or exceeds the primary standard is defined as an attainment area; those that do not meet the primary standard are identified as non-attainment areas.

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. The proposed Tripi Subdivision development is not a large-scale regionally significant project, and therefore should not interfere with the any of the ongoing programs to bring the area into compliance with the ozone standards.

As indicated in Table 3.3-4, Westchester County is in a non-attainment area for the 8-hour standard for ozone levels. This means that the average of the highest daily 8-hour ozone levels recorded at the White Plains monitoring station for the last three years exceeds the standard of

0.08 parts per million. The 1-hour ozone standard no longer applies to New York State since it was revoked by the EPA effective June 15, 2005 for all locations with the exception of 14 metropolitan areas.

The traffic volumes generated by the Tripi Subdivision 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

Land in the vicinity of the project area is a mix of commercial, industrial and residential land uses. Existing sources of air pollution in the vicinity include vehicle and engine exhaust, and emissions from residential heating and hot water systems.

Existing Air Pollution Receptors

The area in the vicinity of the project site is developed and there are several potential sensitive receptors in the vicinity. Potential sensitive receptors within one half mile of the project site include the Katonah Elementary School located on Huntville Road to the northwest and residential properties located in the surrounding area.

3.3.3 Potential Impacts

Air quality impacts associated with the proposed subdivision project were assessed to determine whether this proposal would have an adverse impact on the surrounding general population. As described in Section 2.0 Project Description, the overall scale and duration of construction would be similar for both the Conventional Plan and the Conservation Plan. The Conservation Plan, described herein, would involve less area of grading (3.76 acres or 22 percent less) than the Conventional Plan. Air quality impacts from construction activities for both the Conventional Plan and the Conservation Plan were assessed along with a determination of impacts from project-induced traffic along the primary access routes to and from the project site.

Construction Impacts

Potential short-term adverse air quality impacts that may result from the construction of the Proposed Project include fugitive dust and particulate matter from the clearing of the site and movement of equipment and vehicles across the site and emissions from the operation of the construction equipment and vehicles.

Fugitive and Airborne Dust

Construction activities on the project site would have a potential impact on the local air quality through generation of fugitive or airborne dust. Fugitive dust is generated during ground clearing and excavation activities, and generally when soils are exposed during dry periods. Throughout the construction period, earth moving and the passage of vehicles over temporary dirt roads and other exposed soil surfaces may also generate fugitive dust, particularly during dry and windy conditions. On-site mitigation measures are proposed as part of the project during construction to limit the dispersal of fugitive dust.

Residences along Harris Road, Westview Drive and New Street, closest to the proposed areas of grading, would have the greatest potential to be impacted by dust.

With proper site maintenance and careful attention to construction activities, impacts from fugitive dust can be maintained below the State or Federal NAAQS at off-site properties. Standard construction dust control methods would be employed to ensure that construction generated dust does not impact off-site residents. These methods include:

- Minimizing the area of grading at any one time and stabilizing all exposed areas, including areas where work would not occur for periods longer than two weeks, with mulch and seed immediately;
- Minimizing vehicle movement over areas of exposed soil, and covering all trucks transporting soil; and
- 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.

When conditions are favorable for dust generation, dust control can be provided through appropriate measures to reduce off-site impacts as well as improve on-site working conditions. Such measures include using water to spray unpaved areas, especially during dry weather conditions, to help reduce any dust on roads subject to heavy construction vehicle traffic, and a sweeping schedule. Harris Road and New Street will be swept as needed to avoid the creation of dust. The use of stone tracking pads at the Harris Road and New Street construction entrances and the washing of vehicle tires will greatly lessen the tracking of soil onto adjacent roadways.

Upon project construction, the project site will be covered with landscaping, turf, buildings, pavement, or remain in its natural state thereby reducing the potential for dust generation from the project area long-term.

Equipment and Vehicle Emissions

Construction-related air emissions will result from the use of diesel fuel as a source of energy for construction vehicles and equipment. Pollution from these engines comes from the combustion process in the form of exhaust. Temporary impacts on local air quality are expected to occur during the construction phase of the project from mobile source emissions of construction vehicles and equipment. These air emissions will occur in those portions of the project site where construction activity is proposed.

On-site mitigation measures are proposed as a part of the project during construction to limit dispersal of particulate matter. Well maintained diesel engines are more fuel efficient than gasoline engines, however, they are a source of some air pollutants.

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

Vegetation Removal

The potential air quality impacts resulting from the removal of vegetation and trees are related to the generation of dust. The potential impacts caused by vegetation removal would be temporary impacts during project construction, and mitigation measures are described below. Following project construction, unvegetated areas on the site exposed during construction to wind and stormwater would be either developed or landscaped, thereby reducing the potential for dust generation from the project area.

The proposed project would not introduce a long-term source of air pollutants that would have a significant impact on air quality within the project vicinity.

3.3.4 Mitigation Measures

The anticipated duration of the construction period is approximately 60 months, for both the Conventional and the Conservation plans. Construction will occur during normal working hours, approximately 7 AM to 6 PM Monday through Saturday. No work is anticipated to occur on Sunday or on holidays. All construction vehicles and equipment would be expected to be well maintained and operated in an efficient manner, thereby minimizing air pollution to the greatest extent practicable.

Blasting is not anticipated for construction of the proposed project. Construction methods, other than blasting will be evaluated, such as cutting, ripping, or chipping. In a case that blasting is required, it will meet all requirements of Title 12 of the New York State Code of Rules and Regulations as well as Chapter 125-48 and all other applicable chapters of the Town of Bedford Code.

Through the incorporation of dust control measures and construction vehicle measures to control emissions, no short- or long-term significant air quality impacts as a result of construction operations are anticipated and no further mitigation measures are proposed.