3.16 Noise and Air Resources

3.16.1 Existing Noise and Air

Noise

The existing level of noise in the community is generally moderate, with the majority of noise from nearby traffic on the adjacent roadways, and typical residential noises from occupancy of the adjacent sites.

Current site noise levels were measured to determine the ambient noise levels at various locations. Noise measurements were made to determine the various levels of noise sources in the area (i.e. traffic, aircrafts, song birds, etc.) To determine the impact on noise, a single value of broadband noise level meter was utilized. Measurement in units of A – weighted noise or decibels – A (dBA) were specified. A CEL – 460 Sound Level Meter (serial number 2/051208) was used to measure existing conditions. The actual measurements and calibration procedures followed were in accordance with the American National Standards Institute (ANSI) Standards. The measurements were taken on September 9, 2004 with a microphone located without obstruction from a stationary object with a height of 4-feet above the ground service. Times and reading levels are as follows:

Table 44 – Existing Noise Levels

	Lmax	Leq	Max A	Time	Notes
Location #1: Manhole on Cul-de-sac of Bonticou View Drive					
5 min	104.8	54.4	64.2	12:15	Bugs, lawn mower in distance, trees in wind, birds
10 min	105.0	68.5	86.2		car entering drive, car door open/close, distant traffic
15 min	105.1	67.6	86.2		@ 12 30 school bus turning around with back up alarm, talking
20 min	105.1	67.0	86.2		
25 min	105.1	66.3	86.2		
Location #2: Sunset Ridge Road at corner of school parking lot					
5 min	105.3	59.0	76.5	13:23	wind, kids talking
10 min	105.3	57.7	76.5		car alarm, distant garbage cans
15 min	105.3	57.4	76.5		1 car
20 min	105.3	57.8	76.5		1 truck with back up alarm
25 min	105.3	57.4	76.5		1 car
Location #3: ATV trail off Hummel Rd, south intersection					
5 min	92.5	53.6	59.0	14:28	wind, birds, construction further on Hummel Rd
10 min	92.5	53.8	59.0		wind, birds, construction further on Hummel Rd, sirens in distance
15 min	92.5	54.0	59.0		wind, birds, construction further

					on Hummel Rd
20 min	92.5	54.1	59.0		
25 min	92.5	54.3	60.0		
Location #4: ATV trail 200' off Hummel Road					
5 min	92.5	53.6	59.0	14:28	wind, birds, construction further on Hummel Rd
10 min	92.5	53.8	59.0		wind, birds, construction further on Hummel Rd, sirens in distance
15 min	92.5	54.0	59.0		wind, birds, construction further on Hummel Rd
20 min	92.5	54.1	59.0		
25 min	92.5	54.3	60.0		

Notes:
1- Leq , Equivalent Sound Level

The proposed site work for Stoneleigh Woods @ New Paltz will be conducted approximately 50 feet from the nearest existing house. Building construction will occur approximately 100 feet from the nearest existing house.

Air Resources

The following bulletin from the EPA Office of Air Quality Planning discusses the National Ambient Air Quality Standards (NAAQA), and how they are to be measured.

Table 45 - National Ambient Air Quality Standards (NAAQS)

The Clean Air Act, which was last amended in 1990, requires EPA to set National Ambient Air Quality Standards for pollutants considered harmful to public health and the environment. The Clean Air Act established two types of national air quality standards. Primary standards set limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings.

The EPA Office of Air Quality Planning and Standards (OAQPS) has set National Ambient Air Quality Standards for six principal pollutants, which are called "criteria" pollutants. They are listed below. Units of measure for the standards are parts per million (ppm) by volume, milligrams per cubic meter of air (mg/m3), and micrograms per cubic meter of air (µg/m3).

Pollutant	Primary Standards	Averaging Times	Secondary Standards
Carbon Monoxide	9 ppm (10 mg/m^3)	8 hour[72]	None
	35 ppm (40 mg/m^3)	1 hour[47]	None
Lead	1.5 µg/m^3	Quarterly Average	Same as Primary
Nitrogen Dioxide	0.053 ppm (100 µg/m^3)	Annual (Arithmetic Mean)	Same as Primary
Particulate Matter (PM_{10})	50 µg/m^3	Annual[73] (Arith. Mean)	Same as Primary
	150 ug/m^3	24-hour[47]	Same as Primary
Particulate Matter ($PM_{2.5}$)	15 µg/m^3	Annual[74] (Arith. Mean)	Same as Primary
	65 ug/m^3	24-hour[75]	Same as Primary
Ozone	0.08 ppm	8-hour[76]	Same as Primary
	0.12 ppm	1-hour[77]	Same as Primary
Sulfur Oxides	0.03 ppm	Annual (Arith. Mean)	-------
	0.14 ppm	24-hour[47]	-------
	-------	3-hour[47]	0.5 ppm (1300 ug/m^3)

The NYSDEC analyzes the compliance with NAAQS annually. The most recent data available was obtained from the NYADEC Division of Air Resources 2002 Annual New

[72] Not to be exceeded more than once per year.
[73] To attain this standard, the expected annual arithmetic mean PM10 concentration at each monitor within an area must not exceed 50 ug/m^3.
[74] To attain this standard, the 3-year average of the annual arithmetic mean $PM_{2.5}$ concentrations from single or multiple community-oriented monitors must not exceed 15 ug/m^3.
[75] To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 65 ug/m^3.
[76] To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.
[77] (a) The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is <= 1, as determined by appendix H.
(b) The 1-hour NAAQS will no longer apply to an area one year after the effective date of the designation of that area for the 8-hour ozone NAAQS. The effective designation date for most areas is June 15, 2004. (40 CFR 50.9; see Federal Register of April 30, 2004 (69 FR 23996).)

York State Air Quality Report Ambient Air Monitoring System, July 2003. The following constituents were measured and reported on in this document:

- Sulfur dioxide
- Inhalable Particulates
- Inhalable Particulates (<2.5 Microns)
- Ozone
- Lead
- Inhalable Particulates- Sulfate, Nitrate Fractions

3.16.2 Potential Impact to Noise and Air

Noise

The construction that will occur at the site will consist of site clearing, grading, infrastructure installation and building construction. In general, heavy equipment (bulldozers, dump trucks) will be used during fill, grading, and infrastructure development activities. Noise levels of construction equipment typically utilized for these types of activities are presented in Table 35. It is important to note that equipment used are not generally operated continuously, nor are the equipment always operated simultaneously. The highest site average sound levels (83-86 dBA) are associated with excavation activities with a backhoe.

Table 46 – Noise Levels of Major Construction Equipment			
Equipment Type	Noise Level (dBA)		
	50 Feet	400 Feet	800 Feet
Trucks (General)	91	73	67
Cement Mixer	63-71	45-53	39-47
Bulldozers	80	32	26
Chainsaw cutting trees	75-81	57-63	51-57
Backhoes	83-86	65-68	59-62
Compressor	67	49	43
Dump Truck	71-83	53-65	47-58
Jackhammer	82	64	58
Generators	78	60	54

Source: NYSDEC, *Mitigating Noise Impacts*, September 29, 2000, revised June 3, 2003

The noise levels presented in Table 35 are for a distance of 50 feet, but noise actually transmitted from the construction site will be attenuated by a variety of mechanisms. The most significant of these is the diversion of the sound waves with distance (attenuation by divergence). As discussed in *Making Sense out of Sound*[78]

> *The area of the expanding [sound] wave front is proportional to the square of the distance from the source and the total power is constant. The intensity of the wave diminishes as it moves away from the source. A sound wave 20 feet from its source is one-fourth as intense as it is 10 feet from the sources. At 40 feet, the intensity is 1/16 of that at 10 feet.*

[78] Alvis J. Evans; *Making Sense of Sound. The Basics of Audio Theory and Technology*, 1992, page 8.

In general, this will result in a 6-dBA decrease in the sound level with each doubling of distance from the source. For example, the 84 dBA average sound level associated with ground site clearing will be attenuated to 78 dBA at 100 feet, 72 dBA at 200 feet, and 66 dBA at 400 feet. There will be periods of time when no equipment will be operating and noise will be at or near ambient levels. Also, construction activities are scheduled to occur during daytime hours, when many people are at work and away from home. The noise levels presented in Tables 33 and 35 are those that will be experienced by people outdoors. A house or building will provide significant attenuation for those who are indoors. Sound levels can be expected to be up to 27 dBA lower indoors with the windows closed. Even in homes with the windows open, indoor sound levels can be reduced by up to 17 dBA (EPA, 1978).

Generally, the highest noise levels generated on-site will be by trucks delivering building supplies and equipment to the site. In most cases, the impact from these trucks will be to residences along Hummel Road and Sunset Ridge Road. Because of the volumes of traffic on these roadways, residents are currently already subject to noise impacts from occasional truck traffic. On-site noise from delivery trucks will be sporadic and normally concentrated toward the center of the site.

Based on noise attenuation by divergence and attenuation, a resident inside an existing dwelling with the windows open would experience a peak noise level of 66-69 dBA. (83-86 dBA (50' separation) – 17 dBA (house) = 66-69 dBA). A resident in the nearest existing dwelling {83-86 dBA (50' separation) – 6 dBA (100' separation) – 17 dBA (house) = 60-63 dBA} or a student in the Duzine School with the windows closed would experience a noise level of {83-86 dBA (50' separation – 18 dBA (+400' separation) – 17 dBA (house) – 3-7 dBA (existing 150' depth of vegetation) = 41-48 dBA} during excavation activities.

The outside noise levels will peak between 66-69 dBA for the nearest of the residences to the outside limits of the project construction and at most 60-66 dBA for the majority of the other residents and 41-48 dBA for the School. These levels would only be reached when site excavation is occurring close to the site boundaries in the proximity of the residence.

Air Resources

The Stoneleigh Woods @ New Paltz project will not generate significant air emissions. The only expected impact would be as a result of increased traffic levels. As stated in the adopted scoping document, based on a recommendation of the Village's traffic consultant:

> *An air quality analysis is not necessary since this project will not increase traffic volumes, reduce source-receptor distances or change other existing conditions to such a degree as to jeopardize attainment of the National Ambient Air Quality Standards.*

The NAAQS Data was reviewed for exceedances of Federal standards in the region. There were no exceedances, except Ozone which was exceeded at the White Plains

and Millbrook stations, but not in Hudson Valley or Belleayre.[79] This indicates that the exceedance is not west of Hudson, and therefore not in the vicinity of this project.

Potential air quality impacts would come from construction activities on the project site through the generation of fugitive dust. Fugitive (airborne) dust is generated during ground clearing and grading activities as earthmoving equipment modifies the landform to its final elevation. Throughout the construction period, passage of delivery trucks and other vehicles over temporary dirt roads and other exposed soil surfaces also generates fugitive dust.

3.16.3 Noise and Air Mitigation Measures

Noise

To mitigate noise impacts, construction will only take place during normal construction times, 8 a.m. to 5 p.m. or 7 a.m. to 4 p.m., Monday through Friday. This will minimize potential noise impacts during sensitive times.

All construction equipment shall have properly sized and maintained mufflers. In addition, all construction equipment shall be turned off when not in use.

As noted above, the project will be constructed in phases. In addition to the above site work, all proposed plantings along the southeast, northern and western property lines will be installed in Phase I. These plants will be planted during Phase I to mitigate any short-term construction noise that may be generated during the construction of the project. The plantings include Eastern White Pine, Norway and White Spruce, and Douglas Fir trees. Dense vegetation that is at least 100 feet in depth will reduce the sound levels by 3-7 dBA[80]. Evergreens provide a better vegetative sound screen than deciduous trees. A newly planted vegetative screen may take 15 years or more of growth before it becomes effective.

Air Resources

During construction dust would be generated as a result of vehicle movement on unpaved areas and disturbance of surface soils during excavation for internal roads and building foundations. Mitigation measures to avoid impacts on air quality during construction are principally designed to prevent blowing of dust off-site. The majority of soil dust emissions are expected to settle out within a few feet of the area of disturbance. Smaller dust particles may, however, become airborne for longer periods of time and, depending on wind velocity and turbulence could be carried off-site. The following measures will be undertaken to avoid blowing of dust off-site:

- Maintenance of the forest and brush cover found at the property boundary as the screen to trap fugitive dust emissions and prevent off-site release.

- Placement of all removed topsoil into a topsoil storage area which would be

[79] NYSDEC Division of Air Resources 2002 Annual New York State Air Quality Report Ambient Air Monitoring System, July 2003, Tables for NYSDEC Region 3, Ozone.
[80] NYSDEC Program Policy, Assessing and Mitigating Noise Impacts, June 3, 2003

seeded with quick cover vegetation to prevent erosion.

- Grading and graveling of all roadways along with periodic regarding, compacting and replacement of gravel as needed.

- Wetting of the roadways with water daily.

- Maintenance of a maximum on-site speed limit of 15 mph to minimize pulverization and lifting of surface soil in the air-current wake of heavy equipment.

- Upon completion of building construction, upgrading all roads with pavement and drainage structures.

- Strict adherence to the erosion control plan established for this project

No significant impact to air quality is expected to result from traffic generated by the Stoneleigh Woods @ New Paltz development, therefore, no mitigation measures have been proposed. It should be noted that vegetation would remain around the perimeter of the property and would continue to retain dust particles generated as a result of occupancy of the site.

Despite projected increases in traffic volumes at the relevant intersections, vehicle related carbon monoxide emissions are projected to decrease over time. The decrease in emissions is the result of strict regulation requiring emission control devices (catalytic converters) on all new vehicles to meet mandated air quality levels. These regulations will remain in effect; therefore, total vehicle emissions would steadily decline. Carbon Monoxide levels are expected to remain well below the New York State and NAAQS one hour peak concentration levels.