3.9 Noise Resources

3.9.1 Existing Conditions

Noise can be defined as undesirable or "unwanted sound." Even though noise is somewhat subjective, it affects the full range of human activities and must be considered in local and regional planning. Most of the sounds heard in the environment are not composed of a single frequency, but are a band of frequencies, each with a different intensity or level. Levels of noise are measured in units called decibels. Since the human ear cannot perceive all pitches or frequencies equally well, these measures are adjusted or weighted to correspond to human hearing. This adjusted unit is known as the A-weighted decibel, or dBA.

It should be noted that a one decibel change in noise is the smallest change detectable by the human ear under suitable laboratory conditions. However, under normal conditions, a change in noise levels of two or three decibels is required for the average person to notice a difference. Tables 3.9-1 and 3.9-2 show community perception of noise change and response 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.)

The following specific guidelines apply to ambient noise levels in the Towns of Clarkstown.

Town of Clarkstown Noise Ordinance

Chapter 205, Noise, of the Clarkstown Town Code regulates noise. The following activities are regulated per §205-4 Certain sounds deemed unnecessary:

- "Any sound caused by the operation of any lawn mower, leaf blower, chain saw, hedge clipper, mulching or chipping machine during the week from Monday through Friday prior to 7:00 a.m. and after 8:00 p.m., on Saturdays prior to 8:00 a.m. and after 6:00 p.m., and on Sundays prior to 11:00 a.m. and after 5:00 p.m. in any residential zone or any other zone as such zone is established or may be established by any zoning ordinance or local law enacted by the Town Board of the Town of Clarkstown.
- Any sound of any bulldozer, backhoe or excavation or earthmoving equipment operated anywhere in the unincorporated portion of the Town of Clarkstown during the week from Monday through Friday prior to 7:00 a.m. and after 8:00 p.m., on Saturdays prior to 8:00 a.m. and after 6:00 p.m., and on Sundays prior to 11:00 a.m. and after 5:00 p.m.
- The sound of any gasoline or diesel engine or the sound produced by the operation of any motor vehicle, as defined by the Vehicle and Traffic Law of the State of New York, when said engine or vehicle is not properly equipped with a muffler, or which has defective equipment, or is operated so as to produce a sound not commonly associated with the operation of such vehicle, which is of a level that constitutes unreasonable noise.
- The sound of any power tool, machinery or equipment in use in any construction project or the repair of any building or in any commercial activity or manufacturing process not wholly contained within a closed structure, prior to 7:00 a.m. or after 8:00 p.m. in any zone other than residential zone and during the week from Monday through Friday prior to 7:00 a.m. and after 8:00 p.m., on Saturdays prior to 8:00 a.m. and after 6:00 p.m., and on Sundays prior to 11:00 a.m. and after 5:00 p.m. an any residential zone when such sound is of a level that constitutes unreasonable noise.
- Any sound produced by the operation of any pump, compressor generator during the week from Monday through Friday between the hours of 8:00 p.m. and 7:00 a.m., on Saturdays between the hours of 6:00 p.m. and 8:00 a.m., and on Sundays between the hours of 5:00 p.m. and 11:00 a.m. in any zone when such equipment is not housed within a closed structure or equipped with sound-suppressing equipment so as to prevent the sound of operation from reaching the adjoining property line."

Noises that are deemed exceptions, per §205-6 Exceptions, from the Town of Clarkstown Noise Code, are as follows:

- "The sound produced by any siren, alarm or other warning device operated by any ambulance service, police or fire department or any government agency when intended to warn the public of any danger or emergency.
- The sound produced by any equipment being used at any time to restore or repair any public utility or to repair any roadway, bridge or traffic safety equipment when such operation has been authorized by a duly issued permit, or when the same

occurs during the existence of any emergency condition which threatens personal safety or endangers property.

- Any sound associated with any sporting event, carnival, fair, exhibition or parade occurring on any public or private property when such even has been duly authorized by any government body or agency.
- Any sound associated with any quarrying or blasting operation conducted in accordance with the provisions of Chapter 136, Explosive, or Chapter 20, Quarrying and Blasting, of the Town Code.

Existing Ambient Noise Levels

The Orchard Ridge property is currently vacant and does not generate noise. Noise on the property is associated from adjacent parcels including the CSX railroad located west of the site and along it's western boundary. Other noises that are heard while onsite are noise associated with traffic from NYS Route 303 and wildlife noises. As shown on Figure 3.9-1, three noise locations were monitored onsite. These locations were chosen to show how the existing CSX railroad noise may impact the proposed residential development.

Table 3.9-3
Onsite Noise Measurements

Location #1 - 150 feet east of CSX Railroad Tracks				
	Leq (dB) (A)	**L10 (dB) (A)**	**L90 (dB) (A)**	**LMax (dB) (A)**
Daytime (07:00-20:00)	61.3	57.1	40.9	90.0
Nighttime (20:00-07:00)	63.4	57.4	37.0	90.0
Location #2 - 450 feet east from CSX Railroad				
	Leq (dB) (A)	**L10 (dB) (A)**	**L90 (dB) (A)**	**LMax (dB) (A)**
Daytime (07:00-20:00)	56.3	60.1	41.2	76.8
Nighttime (20:00-07:00)	54.6	53.4	37.7	77.8
Location #3 - 100 feet west of Route 303				
	Leq (dB) (A)	**L10 (dB) (A)**	**L90 (dB) (A)**	**LMax (dB) (A)**
Daytime (07:00-20:00)	61.4	64.0	56.6	88.7
Nighttime (20:00-07:00)	57.4	61.0	42.2	87.1

Source: TMA 2010; Casella 460 Dosimeter, dB12 Software

Leq - The time-averaged sound level (or equivalent sound level) over the measurement period, *T, that has the same mean square sound pressure level as the time-varying sound level under consideration. Commonly referred to as an 'energy average ' measure of sound exposure.*

L10 - The level of sound exceeded for no more than 10% of the monitoring period. This level of sound therefore equates to an average maximum sound and is used widely in emission limits as the L10 correlates well with the subjective reaction to sound.

L90 - The level of sound exceeded for 90% of the monitoring period. This level of sound can be used to define the **background sound level,** and is influenced by constant sources such as industrial equipment and constant background city sounds, e.g. from air handling equipment. Noise emission limits are not generally specified in terms of an L90 level.

LMax - The single highest sampled level of sound. Used in nighttime emission limits as a means of ensuring sleep protection. Short duration, high-level sounds such as audible warning devices, pressure relief valves have a significant effect on Lmax values.

As shown on Figure 3.9-1, location #1 is located 150 feet off the CSX railroad line and 125 feet off the western boundary as well as 350 feet north of the southern boundary. Location #2, is located in a straight line from location #1 approximately 300 feet away. Location #3, is located 100 feet off of Route 303 within the southern portion of the site.

The CSX Railroad line located adjacent and west of the site is a potential source of noise generation. Although repeated attempts to obtain a train schedule were made by Tim Miller Associates a schedule is not available. In their letter dated November 19, 2010 included in Appendix B, CSX states that "The schedule of the trains or frequency of the trains is not supplied to the public for security reasons".

However, during the assessment of the noise monitoring and a review of the raw datapoints, it was apparent when trains passed by the project site. The datapoints for Location 1 and Location 2 were analyzed based upon their proximity to the train tracks. As a result of the noise analysis it was apparent that approximately 24 trains passed the site within a 24 hour time frame, approximately 1 train an hour.

If the train noise datapoints are removed, an average noise reading can be calculated for daytime and nighttime averages without train noise. They are as follow:

- Location 1: Daytime Average = 53.49 dBA and Nighttime Average = 48.74 dBA
- Location 2: Daytime Average = 54.82 dBA and Nighttime Average = 46.95 dBA

Comparing the daytime averages and nighttime averages, including the train noise, with the ambient noise measurements identified above, there is a difference of 7.89 dBAs and 14.66 dBAs at Location 1 for daytime and nighttime noise averages respectively and 1.48 dBAs and 7.65 dBAs at Location 2 for daytime and nighttime noise averages respectively.

A Noise Assessment , included as Appendix I, was conducted to evaluate existing noise from the CSX Rail operation and to evaluate potential future noise conditions. The Noise Guidebook published by the US Department of Housing and Urban Development establishes acceptable noise levels at 65 dB DNL (Day-Night Average sound level).

The CSX railroad line is a source of noise generation impacting the property, mainly on the western half of the Property. Traffic noise from Route 303 is a source of noise generation impacting the eastern boundary of the Property. The average noise measurement for daytime for each of the noise locations shown in Figure 3.9-1 range from 56.3 dBA to 61.4 dBA and the average noise measurement for nighttime ranges from 54.6 dBA to 63.4 dBA.

3.9.2 Potential Impacts

Short Term Construction-related Noise

The project related impacts of the Meola Road Access Preferred Alternative are similar to the Hemlock Drive Access Plan with regard to construction related noise impacts, with the exception of construction an emergency access across from Hemlock Drive instead of the main entrance.

Local daytime ambient noise levels will increase both on and off of the project site during construction of the proposed Orchard Ridge development. 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 3.9-4
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
Concrete Pump	74-84	62-72	54-64	48-58
Generator	71-87	59-75	51-67	45-61
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., 2010

Throughout construction of the project, the grading would involve approximately 30,500 cubic yards (cy) of earth cut and 70,000 cy of fill. This results in approximately 39,500 cubic yards of material which will need to be imported onto the site to provide level areas for buildings, parking and driveways. As indicated, the Applicant will continue to refine the grading plan in an effort to achieve an earthwork balance for the project as far as practical, and noise levels associated with the loading and moving of fill will depend on the distance from any receptor.

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. During site visits the closest sensitive receptors are located 600 feet west of the site, across the CSX Railroad Tracks.

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.

As stated in Section 3.1 of this DEIS, blasting is not anticipated on this site so noise associated with blasting will not be an issue.

Long-Term Noise Effects

The Orchard Ridge development will generate noises typical of residential neighborhoods. Sources of noise would include operating vehicles driving through the development, residents involved in recreational activities, and common area maintenance activities (e.g., lawnmowers).

The introduction of a residential neighborhood will introduce a noise source to the project site. Residential uses are sensitive receptors and would not be expected to have a significant effect on noise levels.

CSX Railroad Noise

Although the proposed project is not expected to generate significant noise, the proximity of the proposed residences to the CSX rail line, as close as 200', is a consideration. As indicated above, the CSX rail road operates an average of approximately one train per hour during both daytime and nighttime hours. The impact of the operation of the train is an increase in ambient noise levels ranging from 1.48 dBA to 14.66 dBA depending upon location and time of day.

3.9.3 Mitigation Measures

Several mitigation measures are proposed to reduce noise to onsite residents. These mitigation measures include planning and operational measures, building design measures to reduce the impact of train noise on future residents, as well as the construction of physical noise barriers, in conjunction with the project development and construction.

Construction Noise Mitigation

Construction activity will not occur between the hours of 8:00 PM and 7:00 AM on weekdays, or at any time on Sundays or legal holidays in accordance with the Town of Clarkstown Noise Code. Typically, construction activities would be expected to cease prior to 6:00 p.m. All construction vehicles and equipment would be expected to be well maintained and operated in an efficient manner.

CSX Railroad Noise Mitigation

The projected noise levels are for the exterior of the residential buildings within 150 and 450 feet from the railroad. According to the Highway Traffic Noise Analysis and Abatement Policy and Guidance, US Dept. Of Transportation (1995), interior noise levels are generally reduced by 10 dBA, with open windows and 20 dBA with closed ordinary sash windows. Storm windows provide up to 25 dBA sound reduction. The Noise Guidebook published by the US Department of Housing and Urban Development establishes acceptable noise levels at 65 dB DNL (Day-Night Average sound level).

Due to the proximity of the CSX Railroad tracks, noise attenuation measures including sound proof insulation and other sound proof building techniques will be incorporated into the project design. In addition to specific construction materials used to reduce noise in residential buildings, the proposed plan shows a row of garages, non-residential structures, which will line the property boundary directly adjacent to the CSX Rail line. This row of buildings will act as a barrier to the residential buildings an will serve to further reduce the outdoor ambient noise level associated with the CSX Railroad noise. As detailed in the Noise Assessment Study (Appendix I), upon completion the DNL is projected to be 60.5 dB, well with the acceptable HUD limits. This assumes the garages or other barrier along the western boundary are to be no shorter than 12 feet high and that there are no unlandscaped gaps in the garage buildings.

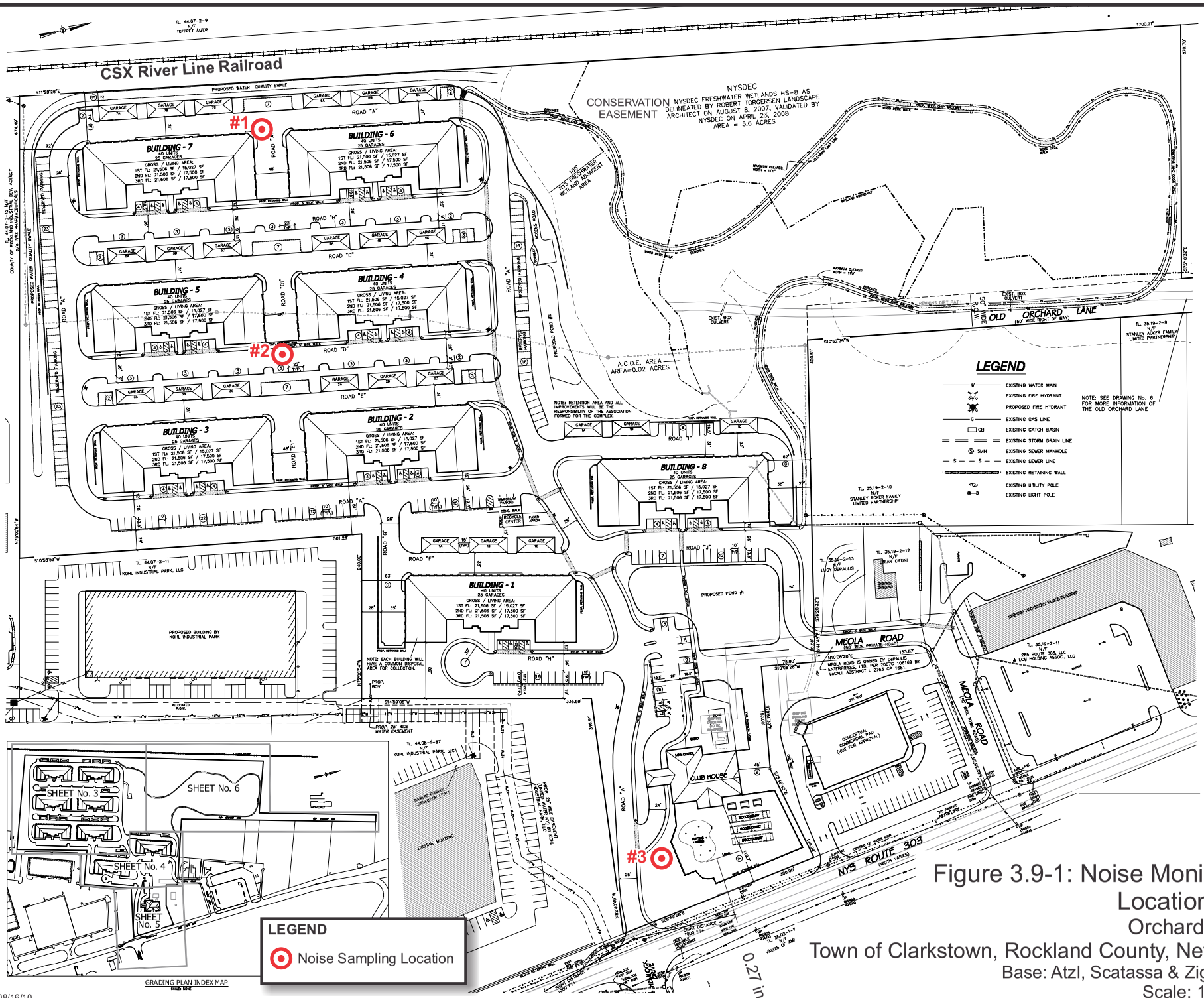

Figure 3.9-1: Noise Monitoring Location Map

Orchard Ridge

Town of Clarkstown, Rockland County, New York

Base: Atzl, Scatassa & Zigler P.C.

Scale: 1" = 185'

File 10024 08/16/10
JS:\10024

Tim Miller Associates, Inc.,10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418