3.7 Effects on the Use and Conservation of Energy Resources

Both short-term and long-term energy consumption effects are associated with all residential construction projects. Short-term energy consumption impacts would occur during construction of the proposed development, primarily due to the consumption of fossil fuels through the operation of power equipment and construction vehicles.

Once constructed, the eleven (11) residential single family homes would be occupied by households that would place long-term demands on various energy sources. Once construction is completed, energy from several possible sources will be required for space heating, air conditioning, water heating, refrigerators and lighting as well as other appliances and incidental domestic electrical uses. Indoors climate control systems will demand the largest quantities of energy consumed over the lifetime of the project, and energy efficient heating, cooling and insulation systems will be utilized to conserve energy resources associated with climate control within the housing units.

Energy conservation in New York is regulated at the state level for new residential and commercial construction. The Waters Edge development would be constructed in accordance with the New York State Energy Code. In effect since 2002, the code specifies basic requirements that are mandatory for newly constructed buildings. Requirements apply to heating and cooling systems, hot water systems, electrical systems, construction materials, equipment specifications and building sealing and insulation. Additionally, the New York State Energy Research and Development Authority and the Public Service Commission promote compliance with Energy Star® and New York Energy Smart℠ programs by construction firms, building management firms and homeowners that encourage the use of energy conserving appliances, materials, technologies and building techniques. Compliance with provisions of these energy conservation programs would reduce the overall long-term energy consumption of the project.

The Energy Information Administration of the US Department of Energy conducts a Residential Energy Consumption Survey (RECS) which provides statistical information on the use of household energy in the United States. RECS data for New York indicates that approximately 64 million BTUs[1] are consumed per household annually in New York State. While actual electrical and gas demands for individual homes may vary considerably based upon the lifestyles and habits of the occupants, the RECS consumption data generates an estimate that the eleven (11) households proposed for this project would consume 768 million BTU of energy annually.

Residential electric service and gas service for the project site is provided by Consolidated Edison (ConEd). The proposed residential dwellings will be served by underground utility lines. All new utility connections will meet Village Code and industry specifications.

ConEd supports a variety of programs that encourage the use of renewable energy resources and conservation of energy.

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[1] *BTU, or British Thermal Unit, is a unit of heat measurement.*

3.8 Noise and Air Resources

3.8.1 Existing Conditions - Noise

The noise analysis completed for this DEIS was conducted in accordance with the New York State Department of Environmental Conservation (NYSDEC) policy guidance document *Assessing and Mitigating Noise Impacts (2000)*.

The NYSDEC policy document defines noise as "unwanted sound." Certain activities inherently produce sound levels or sound characteristics that have the potential to create noise. However, noise is dependent on the existing land uses which surround the project site and whether these land uses are sensitive to noise. Even though noise is somewhat subjective, it affects the full range of human activities and must be considered in local and regional planning.

Most 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 sound are measured in units called decibels (dB). 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. Since dBA describes a sound level at just one instant and since ambient sound levels are constantly varying, other ways of describing sound levels over extended periods are needed. The L_{eq} quantifies the noise environment as a single value of sound level for any desired duration. The $L_{eq(h)}$ is the hourly value of L_{eq}. For example, $L_{eq(8)}$ is the average sound over an 8-hour period.

A one decibel change in sound is the smallest change detectable to the human ear under suitable laboratory conditions. However, under normal conditions, a change in sound pressure level of two or three decibels is required for the average person to notice a difference. Tables 3.8-1 and 3.8-2 show community responses to increased noise levels.

Environmental noise is considered with regard to several factors, including *level* - which relates to perceived loudness of a noise - as well as character, duration, time of day and frequency of occurrence. The level of a noise is measured and expressed in dBA.

Table 3.8-1
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 3.8-2 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.)		

Table 3.8-3 lists noise levels associated with various activities.

Table 3.8-3 Sound Levels of Common Activities	
Activity	**dBA**
Rock Concerts	110
Subway Platform	100
Sidewalk, Passing Truck	90
Sidewalk, Typical Highway	80
Typical Urban Area	60-70
Typical Suburban Area	50-60
Quiet Suburban Area at Night	40-50
Typical Rural Area at Night	30-40
Isolated Broadcast Studio	20
Audiometric Booth	10
Threshold of Hearing	0
Sources: Cowan, James, Handbook of Environmental Acoustics, 1994. Egan, David, Architectural Acoustics, 1998.	

Village of Dobbs Ferry Noise Ordinance

The Village of Dobbs Ferry Code, Chapter 234, Peace and Good Order, regulates the times when unreasonably loud noise can be made. As stated in chapter 234-52: Construction Work Prohibited at Certain Hours and on Certain Days “No person shall engage in construction work earlier than 7:30 AM or later than 6:30 PM, prevailing time, on any day or at any hour on Sunday or any of the following holidays: New Year’s Day, Presidents’ Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day.” Construction work is defined as “all work performed by one or more employees and/or independent contractors pursuant to an oral or written agreement for compensation and involving the construction, reconstruction, demolition or removal of buildings or major repairs to buildings, the excavation, clearing, filling or grading of land or the placement or removal of earth, stone or building material of any kind, whether or not the work involves the use of machinery or power tools. The term “construction work” shall not mean the performance of necessary emergency repairs.”.

Chapter 234-56 specifically addresses noise, certain types of construction work and when they are allowable. Homeowners have specific times they are allowed to personally work on their homes, and are allowed to perform work on their own premises between 7:30 AM and 6:30 PM

Monday through Friday, and 10:00 a.m. to 6:30 p.m. Saturdays, Sundays and Holidays. It was also stated in the Code that "work involving the use of machinery, including but not limited to rock breaking, pile driving, riveting, power sandblasting and chain sawing that emits continuous sounds, audible from a distance of 300 feet or more from the work site must cease for 30 minutes within every three hours of operation to provide respite to the surrounding community."

The Village Noise Ordinance will be adhered to when the proposed project is being constructed.

Existing Setting and Ambient Noise Levels

The project site is located on the east side of the Metro-North Railroad right of way (ROW), on the East Bank of the Hudson River, in the southwestern portion of the Village of Dobbs Ferry. The project site is located at the end of Fairlawn Avenue and west of Constance Avenue in the neighborhood known as Fairmead. The property is approximately 250 feet west of Broadway (NYS Route 9).

Single family development is located directly to the south and east of the property within the Fairmead neighborhood. Further east, across Broadway (NYS Route 9), is also an existing single family residential neighborhood. St. Christopher's, Inc., an institutional use, is located directly north of the project site and St. Cabrini Nursing Home is located north of St. Christopher, Inc. Both developments are located on the west side of Broadway. Multifamily residences are located south of the project site, beyond the Fairmead neighborhood, in the Village of Hastings-on-Hudson. The western portion of the site is comprised of steep slopes that descend to the land adjacent to the Metro-North right of way.

Ambient noise levels were monitored by Tim Miller Associates, Inc. (TMA) staff. Existing levels were collected at six (6) locations. Monitoring locations were based on the scoping requirements, taking into account the traffic noise traveling both on and off the site. The noise monitoring locations are shown in Figure 3.8-1, Noise Monitoring Locations, and are as follows:

- Site 1: located at the northern intersection of Broadway (NYS Route 9) and Fairlawn Avenue;
- Site 2: located at the northern intersection of Atilda Avenue and Fairlawn Avenue;
- Site 3: located at slightly west of the northern intersection of Constance Avenue and Fairlawn Avenue;
- Site 4: located on the eastern portion of Fairlawn Avenue within the site;
- Site 5: located at the southern intersection of Broadway (NYS Route 9) and Fairlawn Avenue;
- Site 6: located at the southern intersection of Atilda Avenue and Fairlawn Avenue.

Monitoring was conducted on Thursday, October 5, 2006, between the hours of 4:00 and 5:30 PM. These hours were chosen to comply with the Scoping Document, which required an impacts analysis conducted for noise in relation to traffic. This time period is consistent with the peak afternoon traffic period. The noise levels, listed below in Table 3.8-4, represent the existing ambient noise both on and off the site for this period of time. Sound levels were recorded for 10 minute periods at each location. These levels, measured in Leq, are provided in Table 3.8-4, below.

Table 3.8-4 Average Sound Levels (dBA)		
Location	**dBA**	**Time**
Site 1	72.5	1610-1621
Site 2	55.0	1624-1634
Site 3	50.8	1639-1649
Site 4	50.8	1650-1700
Site 5	71.5	1710-1720
Site 6	54.8	1722-1732
Source: Tim Miller Associates, 2006.		

As shown in Figure 3.8-1 Noise Monitoring Locations, Sites 1 through 4 are located 200 feet from each other and sites 5 and 6 are also located 200 feet from each other. The locations were chosen for their distance from the mobile noise sources (vehicles) on Broadway (NYS Route 9) and to provide a range of sampling locations between Broadway and the project site. Noise levels decreased with greater distance from Broadway.

As indicated in Table 3.8-4, existing noise levels are highest at Site 1 during the peak traffic hours. Noise at this location is affected by mobile sources, specifically the commuter traffic along Broadway (NYS Route 9). Little noise could be attributed to cars entering Fairlawn Avenue. During the noise monitoring period only one (1) vehicle was observed leaving Fairlawn Avenue and turning right, south, onto Broadway (NYS Route 9).

Noise levels collected at Site 2, located 200 feet west of Site 1 and Broadway (NYS Route 9), decreased from 72.5 to 55 dBA, which is a 17.5 dBA decrease. Site 3, located 200 feet further west of site 2 had a decrease of 4.2 dBA and site 4, located 200 feet west of site 3 had no decrease in dBA levels from site 3.

Existing noise levels at the Waters Edge site are influenced by surrounding land uses since the site is vacant. A dwelling located on the northern boundary of the site, is currently not inhabited and is scheduled for demolition. Background noise is primarily from vehicles traveling along Broadway (NYS Route 9) to the east of the site and train noise from the Metro North right of way west of the property. As a note, the trains running along the Metro North right of way were operating on an afternoon weekday peak schedule. Therefore, the ambient noise readings were influenced by the peak train schedule.

Additional noise was associated with the residential uses in the vicinity of the property, such as lawn mowers, leaf blowers and children playing. In summary, noise sources that contribute to the ambient noise levels at the project site are as follows:

- Off-site mobile source noise from traffic on Broadway (NYS Route 9) east of the site;
- Residential traffic in the direct vicinity of the Waters Edge property including from along Fairlawn Avenue, Atilida Avenue, and Constance Avenue;
- Residential noises such as lawn care, dogs barking, and children playing; and

- Peak commuter train related noises from the Metro North train tracks to the west of the site.

Sensitive Receptors

Sensitive noise receptors are 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 are residences, schools, hospitals, churches, libraries, motels and hotels, nature preserves and outdoor recreation areas. These uses fall within activity categories "A" and "B" set forth in *23 CFR Part 772--Procedures for Abatement of Highway Traffic Noise and Construction Noise* regulating activities of the Federal Highway Administration (FHWA). The FHWA guidelines are used to define sensitive receptors, since the NYSDEC policy document does not define same.

Based upon the above, the residences located to the east, southeast and south of the project site, would be considered sensitive receptors as well as the St. Christopher's School , located to the north of the site. St. Cabrini Nursing Home, which is north of St. Christopher's School, would also be considered a sensitive receptor. All sensitive receptors are considered in the impact analysis provided below.

3.8.2 Potential Impacts - Noise

The Waters Edge project is a proposed 11-lot subdivision that is likely to result in eleven (11) single family homes. The property would not introduce a major new stationary source of noise and would not introduce noise sources different from typical residential neighborhoods.

Sources of noise introduced by the project would include:

- Normal residential activities, including lawnmowers;
- residential vehicular traffic; and
- heating and air-conditioning equipment.

Long Term Anticipated Vehicular Impacts

A traffic study was completed and included in the Full Environmental Assessment Form (EAF) prepared in May, 2006 (Appendix I). Fourteen (14) additional vehicular trips will be generated in the PM peak hours as a result of the 11-lot single family home development.

To determine the anticipated noise impacts Tim Miller Associates, Inc. (TMA) staff conducted a simulation of future vehicular traffic. The noise to be generated by the Proposed Action was based on a a twelve lot subdivision from an earlier plan. A twelve lot subdivision would create sixteen (16) additional vehicle trips generated during the PM peak hours, which would average three (3) vehicle trips per 10-minute time frame (the time frame used to conduct each of the ambient noise level readings). The methodology for a twelve lot subdivision would therefore be a conservative estimate (a worst case scenario) for the Proposed Action of eleven (11) lots.

The noise level meter was placed at the northern intersection of Atilida Avenue and Fairlawn Avenue (Site 2) and a vehicle was driven by the meter three times to simulate the build condition and to generate noise impacts. This simulation was also conducted at Site 4, located

on Fairlawn Avenue within the project site. Both simulations occurred during normal Peak PM traffic. A comparison of the ambient noise levels collected to the simulated impacts is shown below in Table 3.8-5.

Table 3.8-5
Site 2 & 4 - Average Sound Levels (dBA)

Location	dBA - Ambient	Time - Ambient	dBA - Simulation	Time - Simulation
Site 2	55.0	1610-1621	56.1	1745-1755
Site 4	50.8	1624-1634	53.8	1757-1807
Source: Tim Miller Associates, 2006.				

As shown above in Table 3.8-5 the comparison between the existing or ambient noise readings during PM peak hours and the simulation for build conditions shows only a slight increase in noise. The measured sound increase at Site 2 is 1.1 dBA and the increase at Site 4 is 3 dBA. The increase in noise at site 4 compared to site 2 could be attributed to current road/site conditions. The noise meter was stationed within the project site on Fairlawn Avenue. This section of Fairlawn Avenue, although traveled by current residences, is a gravel road in poor condition. The road condition likely contributed to the higher decibel reading during the noise simulation. In proposed build conditions this section of Fairlawn Avenue will be improved and paved, which will ultimately result in less noise when driving over it.

The projected noise increases of 1.1 and 3 dBA at Sites 2 and 4, respectively are categorized as barely perceptible, as shown in Table 3.8-1 Perception of Changes in Noise Levels. Therefore, future traffic generated noise resulting from the project is not expected to be significant.

Short Term Noise Impacts During Construction

Local daytime ambient noise levels in the immediate vicinity of the site will increase during construction of the proposed development. Construction activities and the operation of construction equipment are an expected impact of any new construction project and cannot be avoided. Therefore, some noise impacts would be expected from the Proposed Action. The following table shows representative maximum sound levels for diesel powered equipment and activities at a range of receptor distances.

Table 3.8-6 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
Blasting	93-94	81-82	73-74	67-68
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
Rock Drill	83-99	71-87	63-79	57-73
Trucks	81-87	69-75	61-67	55-61
Source: Compiled by Tim Miller Associates, Inc., 2005 (including source: U.S. Environmental Protection Agency)				

To the average person, a noise level increase of 2 to 3 dBA is barely perceptible; an increase of 5 dBA is noticeable; and an increase of 20 dBA or more is perceived as a dramatic change. Annoyance to people frequently results from increases of 10 dBA or more, depending upon the frequency and duration of the noise events.

The level of impact from these 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 Construction Process and Subsequent Maintenance schedule is located in Section 2.0, Project Description. During construction of the Proposed Action, residences of nearby properties may potentially experience construction related impacts including increased vehicular and truck movements and associated elevated noise and vehicular emissions during occasional periods. These are temporary, unavoidable impacts resulting from project construction and will cease upon completion of the project.

3.8.3 Mitigation Measures - Construction Noise Mitigation Plan

Although the application is for the subdivision of land, not the construction of homes, home construction will inevitably result. As noted above, it is anticipated that nearby properties will experience elevated noise levels at occasional periods during construction. This is a temporary, unavoidable impact resulting from project construction. The Construction Noise Mitigation Plan is as follows:

- Construction will occur during normal working hours, within the hours of 7:30 AM to 6:30 PM Monday through Friday and possibly Saturday, consistent with the Village Code. No work will be permitted on Sunday or on specific holidays specified in the Code.
- All construction vehicles and equipment will be well maintained (including engine mufflers) and operated in an efficient manner, thereby minimizing noise to the greatest extent practicable.
- If the construction of the Proposed Action results in complaints from surrounding residents, the complaints will be addressed through the Village Building Inspector and the project construction manager.

3.8.4 Traffic Based Air Quality Impacts

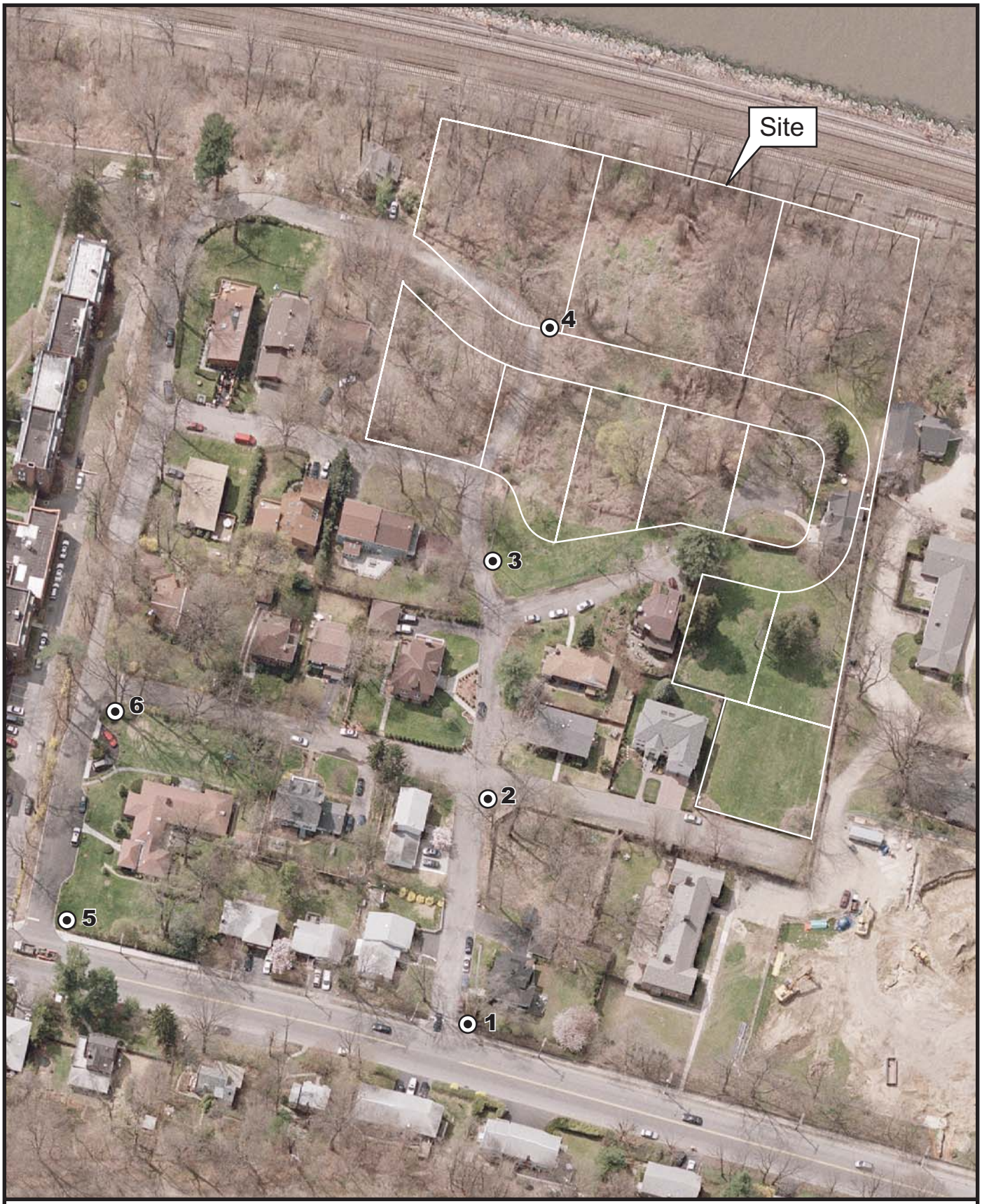
The primary pollutants associated with vehicular exhaust emissions are nitrogen dioxide (NO_2), hydrocarbons (HC), and carbon monoxide (CO). Since short term exposure to elevated CO concentrations can have acute health impacts, state and Federal Ambient Air Quality Standards (AAQS) have been developed for ambient CO concentrations requisite to protect the health and welfare of the general public with an adequate margin of safety. There are no short term health standards (currently enforced) for NO_2 and HC, since the primary concern with these pollutants is their role in the photochemical reactions that lead to the formation of secondary pollutants known as ozone and "smog" which are known lung and eye irritants. Since ozone and smog formation is a slow process, which occurs outside the vicinity of the project, these pollutants are only reviewed on a regional (mesoscale) and not a local (microscale) basis. Because the project conforms with the NYSDOT regional transportation control programs, a mesoscale analysis is not required, and the air quality impact assessment will thus focus on microscale air quality impacts.

The potential impacts 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). The NYSDOT EPM states: *"It is not expected that intersections in a build alternative controlled by stop signs will require an air quality analysis*". Therefore, while some nonsignalized intersections may have a poor level of service (i.e. a Build level of service lower than "C"), the screening analysis concludes that traffic volumes associated with stop sign controlled intersections are not sufficiently high to warrant further CO microscale analysis. The level of CO at a stop sign controlled intersection would not exceed ambient air quality standards. This screening methodology was also confirmed in phone conversations with Jane Lao and Dr. John Zamurs, from the NYSDOT Environmental Analysis Bureau (EAB).

The traffic intersections analyzed in the traffic study did not include any signalized intersections. Intersections controlled by stop signs were evaluated. Therefore, a microscale air quality

analysis is not warranted according to NYSDOT screening criteria. However, according to the traffic analysis, no intersections evaluated exceeded a level of service of C and therefore impacts to air quality are highly unlikely.

In summary, the proposed residential project would not introduce a long-term source of air pollutants that would have a significant impact on air quality in the vicinity of the project.



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Monitoring Location

Figure 3.8-1: Noise Monitoring Locations
Waters Edge
Village of Dobbs Ferry, Westchester County, New York
Base: NYS GIS Clearinghouse, 2004 Aerial Photo
Approx. Scale: 1" = 120'

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