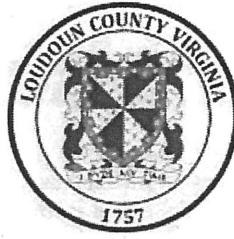


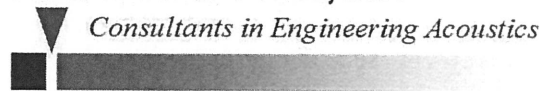
Draft 1, Revision: April 10, 2015



Noise Standards

Section 5-1507 for Loudoun County, VA

Hessler Associates, Inc.



ARTICLE 1

3862 Clifton Manor Place, Suite B
Haymarket, VA 20169 USA
t. 703-753-1602
f. 703-753-1522
www.hesslernoise.com

Hessler Associates Inc. has been retained by Loudoun County for study and technical support for potential amendment of the subject zoning ordinance. A series of drafts are submitted for evaluation and possible implementation.

Section 5-1507
Revision Date: April 10, 2015 ~~April 16, 2014~~

5-1507

Noise Standards. The purpose of these standards is to protect residential properties from excessive sound (noise). Unless expressly provided elsewhere in this Ordinance, no typical sound source shall be unlawful for any person to operate operated or permit permitted to be operated any stationary noise source in such a manner as to create a sound level which exceeds the the maximum sound levels limits set forth in Table 5-1507 (C-1). These standards shall not apply where the performance standards in Section 5-600 (Additional Regulations for Specific Uses) specify different regulations for a specific use, the following tables:

~~except for extraction and mining special exception operations otherwise regulated herein. In addition, before 7 a.m. and after 7 p.m., the permissible sound levels, at residential district boundaries where they adjoin nonresidential districts, shall be reduced by 5 dba in the table for impact noises.~~

(A) Definitions. For the purposes of this section only, the below terms are defined as follows:

- (1) A-Weighted Sound Level is the sound pressure level in decibels as measured on a sound level meter using the A-weighting network. The level is designated as dB(A) or dBA.
- (2) Around Residence Area is a point of measurement between 20 and 50 feet from the vertical surfaces of a residential dwelling unit in the general direction of the subject sound source.
- (3) L equivalent (Leq) is the constant sound level that, in a given situation and time period, conveys the same sound energy as the actual time-varying A-weighted sound.
- (4) Mixed-Use Residential is any residential dwelling unit located in a Planned Development zoning districts listed in Article 4, Division A and Division D that permit residential uses, excluding the Planned Development – Housing (PD-H) zoning district.
- (5) Non-Suburban Residential, is any residential dwelling unit that meets the following criteria:
 - (a) The residential dwelling unit is located in a zoning district that is listed in Article 2; and
 - (b) The parcel that the residential dwelling unit is located upon is 15 acres or greater in size; and
 - (c) The residential dwelling unit is a minimum distance of 400 feet from the property line of the parcel from which the sound source is emitted.

~~(6) Suburban, Residential, is any residential dwelling unit located in Residential zoning districts listed in Article 3 or a PD-H zoning district administered as a Residential zoning district, and any other residential dwelling unit that does not meet the definition of Mixed-Use Residential or Non-Suburban Residential.~~

~~(7) Typical Sound Source, is anything that causes an oscillation in pressure, particle displacement, particle velocity, or other physical parameter, in a medium with internal forces that causes compression and rarefaction of that medium. Examples of typical sound sources regulated by this Ordinance include, but are not limited to: Utility generating plants, utility substations, water or sewer pumping stations, data centers, commercial HVAC systems, commercial uses, amplified music or voice, barking dogs, firearm range, institutional and industrial uses.~~

~~(A)(B) Methods of Measurement.~~

~~(1) Noise levels shall be measured with a sound level meter and shall meet or exceed performance standards for a "Type Two" meter, as specified by the American National Standards Institute.~~

~~(2) Noise levels shall be recorded as A-weighted sound pressure level. The level so read shall be postscripted dBA.~~

~~(1) A-Weighted Sound Levels shall be measured with an integrating sound level meter (SLM) that meets or exceeds American National Standard Institute S1.43-1997 for Class 2 SLMs. The response of such SLM shall be set to FAST, and a time period of 15 seconds shall be used unless the operator determines that another time period is more appropriate. If the operator judges that another sampling time of more or less than 15 seconds may be better for documenting repeatability of sound from the unique sound source of interest, supplemental measurements may be made and reported.~~

~~(2) Samples shall be taken only when the subject sound source can be clearly heard and is identified by the operator without any extraneous sound sources such as passing traffic, bird songs, etc. Samples that contain extraneous sound sources shall not be used.~~

~~(3) The operator shall take a minimum of three samples that demonstrate the repeatability and consistency of the subject~~

sound source. When possible, the operator should also take a sample when the subject sound source is not heard for impact assessment.

(4) The arithmetic average of all samples that demonstrate the repeatability and consistency of the subject sound source shall comply with the maximum sound levels in Table 5-1507 (C-1).

(5) Calibration.

(a) A portable calibrator shall be used to check calibration before and after taking each set of samples.

(b) Both the portable calibrator and SLM shall be sent to a National Voluntary Laboratory Accreditation Program for calibration at least once every two years.

~~(B)(C) Maximum Sound Levels (dBA). Measurements of noise levels shall be taken at the property boundary of the noise source. Where differing zoning districts abut, the more restrictive limit shall apply. Maximum sound levels are provided in Table 5-1507 (C-1) and shall apply any time of day or night.~~

~~(1) Maximum dBA, Continuous Noise.~~

~~Residential 55~~

~~Commercial 60~~

~~Industrial 70~~

~~Continuous noise shall be measured using the slow meter response of the sound level meter.~~

~~(2) Maximum dBA, Impact Noise.~~

~~Residential 60~~

~~Commercial 70~~

~~Industrial 80~~

~~Impact noise shall be measured using the fast meter response of the sound level meter. Impact noises are intermittent sounds of a single pressure peak or a single burst (multiple pressure peaks) for a duration usually less than one second. Examples of impact noise sources are a punch press, drop forge hammer, or explosive blasting.~~

<u>TABLE 5-1507 (C-1) MAXIMUM SOUND LEVELS (dBA)</u>				
<u>Development Type</u>	<u>Mixed use Residential</u>	<u>Suburban Residential</u>	<u>Non-Suburban Residential</u>	<u>Commercial, Civic, and Institutional Uses</u>
<u>Point of Measurement:</u>	<u>Receiving Property Line</u>	<u>Receiving Property Line</u>	<u>Around Residence Area</u>	<u>Receiving Property Line</u>
<u>dBA</u>	<u>60</u>	<u>55</u>	<u>45</u>	<u>65</u>

~~(C)(D)~~ Exemptions. The maximum sound levels shown in Table 5-1507 (C-1) shall not apply to the following:

- ~~(1)~~ Any aircraft sound within the boundaries of the Airport Impact Overlay District as shown on the Zoning Map.
- ~~(1)~~ The limitations stated above shall not apply within any district nor within any area subject to a Noise Exposure Forecast in excess of the 30 level as indicated on the "Noise Exposure Forecast (NEF) Areas in the Vicinity of Dulles International Airport for 1975 Operations, September 1969" as prepared by FAA. The boundaries of such noise areas within Loudoun County are indicated on the Zoning Map.
- ~~(2)~~ Sound created by the ~~The~~ operation of power equipment, such as power lawn mowers, chain saws, and similar equipment, between the hours of 7:00 a.m. and 9:00 p.m. shall not be regulated by these noise standards.
- ~~(3)~~ Standby generator sets operating under emergency power conditions, and maintenance and testing of standby generator sets if operated one set at a time between the hours of 9:00 a.m. until 3:00 p.m.
- ~~(4)~~ Construction sounds except as set forth in the Code of Virginia and Codified Ordinances of Loudoun County.
- ~~(5)~~ Air conditioner condensers permitted pursuant to Section 5-200(B)(4).

Countryside Village Plaza: An open, generally impervious, public space at least 3,000 square feet in size, which may contain landscaped areas and street furniture.

County: Loudoun County, Virginia.

Court: An open, unoccupied space, other than a yard with a building or group of buildings, which is bounded on two or more sides by such building or buildings, and every part of which is clear and unobstructed from its lowest point to the sky, except for landscaping, if any.

Craft shop: A retail store which displays and offers for sale handcrafted items by local artisans.

Crematorium: A building with a furnace for cremating dead bodies, either animal or human.

Cross-country ski business: A facility which offers to members of the public cross-country ski recreation opportunities, including the rental of non-motorized ski equipment, changing facilities, and access to maintained trails or trail shelters.

Cross Section: Shape and dimensions of a channel and valley of the floodplain perpendicular to the line of flow.

Cultural and Government Facilities: Public or nonprofit facilities displaying or preserving objects of interest or providing facilities for one or more of the arts or sciences or provision of government services. Accessory uses may include parking and storage areas.

Cultural Center: Establishments such as museums, art galleries, botanical and zoological gardens of an historic, educational or cultural interest which are not operated commercially.

Custom Operator: An enterprise in which a contractor or other operator agrees to perform all or some machine operations, providing equipment and labor, for production and related activities on agricultural sites in exchange for a payment or a payment along with a percentage of profits. Field operations performed by a custom operator may include field preparation, planting, cultivating, harvesting, tilling, haymaking, bush hogging, crop storage, hauling, fencing, and barn construction.

D

Data center: A facility used primarily for the storage, management, processing, and transmission of digital data, which houses computer and/or network equipment, systems, servers, appliances and other associated components related to digital data operations. Such facility may also include air handlers, power generators, water cooling and storage facilities, utility substations, and other associated utility infrastructure to support sustained operations at a data center.

Day Care Facilities: Facilities for the care, protection, and supervision of children or adults on a regular basis away from their primary residence for less than 24 hours a day. Accessory uses may include offices, recreation areas, and parking.

Decibel (dB): A unit of measuring the volume of sound using the A-weighting network on a sound level meter. Expressed as dB(A), dBA, dba, or db(A). ~~used to express the intensity of a sound wave.~~

Household Living: Uses characterized by the residential occupancy of a dwelling unit by a household, whether owned by the occupant or otherwise where tenancy is arranged on a month-to-month or longer basis. Accessory uses may include recreational activities, caring for pets, gardens, personal storage structures, hobbies, and parking of occupants' vehicles.

Hydrogeological Report: A study of groundwater, its location and prevalence that is prepared according to standards in the Facilities Standards Manual (FSM).

Impervious Surface: Any material such as paved parking areas, sidewalks, or trail surfaces, which prevents absorption of storm water in or through such surface but shall not include permeable or "pervious" paving materials.

Impulsive Sound: Sound of a short duration, usually less than one second, with an abrupt onset and rapid decline. Examples include, but are not limited to, punch press, discharge of firearm, and explosive blasting.

Industrial, Scientific or Technical Exposition: A place, structure, area or other facility used for temporary or permanent display or exhibit of industrial or scientific equipment, machinery, tools, or other merchandise. Such activities could include trade shows, conventions, merchandise marts, or industrial or scientific fairs or displays. Activities categorized as wholesale trade establishments shall not be deemed to be industrial, scientific or technical expositions.

Industrial Use: Non-residential and non-commercial employment uses such as, but not limited to, mining, milling and manufacturing.

Infrastructure: The basic installations and facilities on which new development depends. The public infrastructure includes roads and water and sewer lines.

Inner Core Subarea: A Planned Development Transit Related Center district subarea that includes the total gross land area located generally within a one-quarter (1/4) mile from the outer edge of the planned rail station platform, as shown on the approved Concept Development Plan. The highest land-use intensities will be located close to the planned transit stop. The primary focal point of the development will be located in this subarea. Retail, office, service, commercial and high density residential uses are located in this subarea, with a vertical mix of uses, public gathering places, and a predominance of pedestrian oriented uses.

Inoperable Vehicle: A motorcycle or motor vehicle, trailer, or attachment thereto which is required by the Commonwealth of Virginia to display current license plates and/or meet safety standards, as evidenced by display of an approved inspection sticker, which motorcycle, vehicle, trailer, or attachment therefore does not display said license plates and/or approved inspection sticker.

Institutional Use: Public or private health, recreational or educational uses such as parks, schools, libraries, hospitals and camps.