



**BOARD OF SUPERVISORS PUBLIC HEARING**

**SUBJECT:** ZOAM 2014-0006, Noise Standards

**ELECTION DISTRICT:** Countywide

**CRITICAL ACTION DATE:** At the Pleasure of the Board

**STAFF CONTACTS:** Theresa Stein, Planner, Zoning Administration  
Mark Stultz, Zoning Administrator  
Chris Mohn, Deputy Zoning Administrator  
Ricky Barker, Director, Planning and Zoning

**PURPOSE:** To amend the Noise Standards (Section 5-1507), Additional Regulations for Specific Uses (Section 5-600), and related Definitions (Article 8) of the Revised 1993 Loudoun County Zoning Ordinance (Zoning Ordinance) in order to revise outdated standards and better protect residents from excessive noise levels while balancing the needs of businesses to promote increased economic development.

**RECOMMENDATIONS:**

**Transportation and Land Use Committee:** The Transportation and Land Use Committee (TLUC) voted 4-0-1 (Chair Randall absent) at its May 13, 2016 meeting to forward ZOAM 2014-0006, Noise Standards (Noise ZOAM) to the Board of Supervisors' (Board) June 7, 2016 Business Meeting with a recommendation to direct Staff to advertise the item for the Board's July 13, 2016 Public Hearing. The TLUC's motion included recommendations to (1) amend Section 5-600 to revise the location from which noise is measured for bed and breakfasts and commercial wineries to be consistent with the noise regulations of farm wineries and limited breweries; and (2) that archery and firearm ranges be added to the definition of recreation establishment, outdoor with the first available rural zoning ordinance amendment.

**Planning Commission:** On March 10, 2016, the Planning Commission (Commission) voted 8-1-0 (Scheel opposed) to recommend approval of ZOAM-2014-0006, with changes to Section 5-1507(B) that require expansions or extensions of existing uses on a commonly held parcel be subject to the new ordinance in the aggregate after the expansion.

**Staff:** Staff recommends that ZOAM 2014-0006, Noise Standards, be approved as amended by the Commission and the TLUC, and attached hereto as **Attachment 1**.

<b>CONTENTS OF STAFF REPORT</b>			
<b>Section</b>	<b>Page</b>	<b>Section</b>	<b>Page</b>
Motions	2	Agency Referrals	9
Background	3	Summary of Outstanding Issues	10
TLUC Recommendation	4	Criteria for Approval	10
Commission Recommendation	5	Recommended Text	10
Summary of Proposed Text Change	8	Fiscal Impacts	11
Applicability	9	Attachments	11

**SUGGESTED MOTIONS:**

1. I move that the Board of Supervisors **forward** ZOAM 2014-0006, Noise Standards, to the September 22, 2016 Board of Supervisors **Business Meeting** for action.

OR

2. I move that the Board of Supervisors **forward** ZOAM 2014-0006, Noise Standards, to the **Transportation and Land Use Committee** for further discussion.

OR

- 3a. I move that the Board of Supervisors **suspend the rules**.

AND

- 3b. I move that the Board of Supervisors **approve** ZOAM 2014-0006, Noise Standards, as provided in Attachment 1 of the July 13, 2016 Board of Supervisors Public Hearing Staff Report with an effective date of November 1, 2016.

OR

4. I move an alternate motion.

## I. BACKGROUND

The Noise ZOAM process has been formally underway since July 16, 2014, at which time the Board adopted a Scope of Work and Work Plan authorizing staff to hire a consultant to assist with a comprehensive review and refinement of the Noise Standards of the Zoning Ordinance. This initiative was prompted by feedback received during review of the Data Center ZOAM (ZOAM 2013-0003) that highlighted the need for noise standards that ensure more effective and equitable regulation of noise throughout the County, not merely in the context of data centers. Of particular note, the Zoning Ordinance Action Group (ZOAG) suggested in its Data Center Report, dated February 18, 2014 that the noise standards better define the appropriate location for measuring sound, address methods of enforcement, and consider the height of adjoining structures during testing. On April 1, 2015 the Board voted (9-0-0) to adopt a Resolution of Intent to Amend the Zoning Ordinance Noise Standards (Resolution). The Copy Teste and Resolution have been included as **Attachment 2**.

Staff and the consultant on the Noise ZOAM application, Hessler Associates, Inc. (Consultant), researched the noise standards of various jurisdictions within the Commonwealth of Virginia, the State of Maryland, and federal agencies. The Consultant further performed supplemental noise analysis from three typical noise sources within the County: a kennel, a data center, and a bed and breakfast with outdoor activities. The Consultant's research, noise reports, and analysis have been compiled into the "Research In Support of Amending the Current Loudoun County Zoning Ordinance Section 5-1507 Noise Standards", dated December 2014 and Technical Memorandum Addendum 1 to Data Center Noise Analysis, amended April 29, 2016 (Research Report) and attached hereto as **Attachment 3**. The results of the Consultant's analysis, taking into account the maximum sound levels of neighboring jurisdictions, is the basis for the recommended revisions to the Zoning Ordinance text.

From May 2015 through April 2016, Staff held numerous meetings with members of the Loudoun County Chamber of Commerce, the ZOAG, subcommittees of the Economic Development Advisory Commission, the National Association of Office and Industrial Parks, the Department of Economic Development, data center and other industry representatives, as well as held three public outreach meetings. After each group provided suggestions for the draft text or expressed concerns, Staff made edits to improve and address those concerns. One significant change in the initial draft text was the inclusion of a "non-suburban" category meant to address noise in the more rural areas of the County, which was set at a lower maximum decibel level and measured at a different location than at the property line. Members of the public and business communities were unclear as to the best approach to regulate rural areas, including how "rural" was defined or distinguished and the appropriate noise level. The Consultant and Staff ultimately determined that because of the vast differences in rural parcel size and uses permitted in the rural zoning districts, the most equitable approach would be to regulate all residential uses the same Countywide, with the exception of the newly

created mixed-use residential, and thus eliminated the “non-suburban” category in subsequent draft text. The input received from the community outreach meetings has been compiled and summarized in **Attachment 4**, and a chronology of the Noise ZOAM process to date is provided as **Attachment 5**.

In addition to the three public outreach sessions, Staff established an email address for the public to forward their comments. Since July 2015 there have been approximately two dozen emails received. The public comments have centered on the regulation of animal noises, loud parties/excessive outdoor music, passing vehicle noise, excessive aircraft/airport noise, noise from quarries, and noise associated with the discharging of firearms.

## II. TLUC REVIEW AND RECOMMENDATION

The TLUC also discussed how the Zoning Ordinance regulates noise differently for certain similar uses in the rural areas. Specifically, the Zoning Ordinance currently applies specific noise limitations to certain rural economy uses, such as commercial wineries and bed and breakfasts, pursuant to Section 5-600, *Additional Regulations for Specific Uses*, which supersede the generally applicable noise standards of Section 5-1507, whereas Virginia farm wineries and limited breweries do not have such noise standards and are therefore subject to the generally applicable standards. Those rural economy uses governed by the noise standards of Section 5-1507 would be subject to the Noise ZOAM, to include changes in how and where noise levels are measured, while those subject to the more specific standards of Section 5-600 would not. **Attachment 6** sets forth the current noise standards applicable to breweries, wineries, and bed and breakfasts. The attachment also indicates the revisions proposed by TLUC, which is to remove the permitted maximum decibel level and measurement points from the performance standards (Section 5-600) and allow Section 5-1507 to apply uniformly. The performance standards with regard to outdoor music will continue to apply.

The TLUC discussed the implications of regulating noise differently for similarly situated rural economy uses, concluding that the Noise ZOAM should be revised to ensure consistent regulation of such uses, and that such refinement be achieved by removing the noise standards for rural economy uses found in Section 5-600, *Additional Regulations for Specific Uses*, or otherwise making noise regulation for all bed and breakfasts, breweries and wineries the same. It should be noted that any use lawfully established prior to the adoption of the Noise ZOAM shall continue to be governed by the noise standards in effect at the time of establishment.

In addition, TLUC questioned the removal of the “non-suburban” category that was originally included in the draft text, which applied a lower maximum decibel level for rural zoning districts. Staff, with input from the Consultant, eliminated this category and instead proposed one maximum noise level for all residential development types, with the exception of mixed-use residential. Removal of the “non-suburban” category was

due to the variation in parcel sizes and subdivision types in the western part of the County. For example, clustering of lots is permitted in the rural zoning districts, which is more suburban in character than traditional large lot rural subdivisions. Further, lot sizes west of Route 15 vary to such an extent that determining an appropriate "rural" size for the purpose of noise regulation is subjective. Using one standard for all residential uses, as currently proposed, eliminates any distinction that could be considered unfair or arbitrary.

Noise complaints are a small portion of the total number of zoning complaints received by Planning and Zoning, and the majority of such complaints originate in eastern Loudoun and are not attributable to rural uses. Of the 64 noise complaints received from 2010 to 2015, only 3 involved uses in western Loudoun (i.e. west of Route 15), and were related to the following: a home occupation; a refrigerator unit at a winery; and a restaurant.

**Attachment 7** is a chart, provided to TLUC, comparing the proposed changes to Section 5-1507 with the existing Loudoun County noise standards and maximum noise levels of surrounding jurisdictions.

The TLUC voted 4-0-1 (Randall absent) to recommend that the Noise ZOAM be forwarded to the June 7, 2016 Board business meeting with a recommendation that the Board direct Staff to advertise the Noise ZOAM, as revised at the May 13, 2016 TLUC meeting, for the Board's July 13, 2016 public hearing. The revised text as amended by the Commission and the TLUC is found in **Attachment 1**.

### **III. PLANNING COMMISSION REVIEW AND RECOMMENDATION**

The Commission held a public hearing on the Noise ZOAM on December 15, 2015. At its March 10, 2016 work session, the Commission voted 8-1 (Scheel opposed) to forward the Noise ZOAM to the Board with a recommendation of approval, subject to changes to the draft Zoning Ordinance made at the meeting. Specifically, the Commission recommended changes to Section 5-1507(B), *Applicability*, to require that expansions or extensions of existing uses on a commonly held parcel be subject to the new ordinance in the aggregate after the expansion. The text, as amended and recommended by the Commission, and as further amended by the TLUC at its May 13, 2016 meeting, is found in **Attachment 1**.

At the December 15, 2015 public hearing the Commission received comments from seven residents of The Regency and Grenata Preserve communities. Comments provided by speakers from The Regency advocated for greater sound control on data centers because of their proximity to an existing facility and their long standing issues with noise from that nearby data center. Residents of Grenata Preserve spoke to lighting and noise impacts from an adjacent outdoor rural recreational establishment. Both communities have filed zoning complaints for noise and lighting, which were ultimately

found to be in compliance with applicable standards. The comments received at the public hearing are summarized as follows:

1. *Speakers from The Regency stated that the tonal quality of noise, that is noise that contains a noticeable or discrete continuous note, such as hums, hisses, and the greatest detrimental factor in their opinion, was not being addressed with the proposed text.*

Staff Response: The comment is accurate, as the proposed ordinance does not include regulation of tonal noise. Tonal noise is concentrated in a narrow part of the sound frequency spectrum and is typically constant in nature, whereas other noise is spread over a wide band of frequencies. Examples of sources that can cause tonal noise include fans, compressors, motors and transformers. Tonal noise is generally more noticeable and more annoying than non-tonal (atonal) noise of the same level. Measurement of tonal noise is extremely difficult and beyond the capabilities of most jurisdictions' enforcement officials to properly measure. Indeed, there are no jurisdictions in the area that are known to regulate tonal sound. Due to these considerations, Staff continues to recommend against regulation of tonal noise in the proposed Zoning Ordinance.

2. *Speakers stated that it was unclear when existing uses are exempt from the proposed text or when/if incremental additions to an existing data center would be subject to the proposed standards.*

Staff Response: The Commission addressed the issue with a recommendation that an existing use must continue to meet the regulations in effect at the time of their establishment, however, the existing use and any expansion must meet the proposed noise standards in the aggregate.

3. *Speakers expressed confusion as to when Chapter 654.02, Excessive Sound in Residential Areas and Dwellings regulations of the Codified Ordinances of the County of Loudoun, Virginia (Codified Ordinances), enforced by the Sheriff's Office, applied to a situation and when the noise standards found in the Zoning Ordinance, enforced by Planning and Zoning, applied.*

Staff Response: Staff is aware of the confusion expressed by the public speakers and is formulating measures to eliminate the confusion and educate the public, which goes beyond the draft text proposed with the Noise ZOAM. A set of "Frequently Asked Questions" are being developed and will appear on the County and Sheriff's Office website to help guide residents to the correct agency.

#### **PLANNING COMMISSIONER QUESTIONS:**

Several questions were asked by members of the Commission in response to the comments received during the public hearing, which are outlined and answered below:

1. *What is the number of noise complaints received by the Sheriff's Office and Zoning Enforcement in the last five years?*

Staff Response: In total, Zoning Enforcement received 64 noise complaints from 2010 to 2015. Of the 64 noise complaints over a 5 year period, 34 (53%) have been related to three specific data centers, and were received in 2012, 2013, and 2014. The Sheriff's Office received over 6,000 noise complaints; however, they do not track data center noise complaints specifically.

2. *Were the data centers subject to noise complaints developed by-right under the standards created with the Data Center ZOAM or through approval of a special exception under the prior standards? Were the data center complaints widespread or specific to The Regency?*

Staff Response: Prior to the Data Center ZOAM in 2014, data centers could be developed by-right in those zoning districts that permitted office uses as the Zoning Administrator determined that data centers were most similar to office. Special exception approval for a data center (office) was only required when the applicant wished to exceed the permitted floor area ratio. There are three data centers that have been the subject of noise complaints over the last five years and they were developed as by-right uses prior to the adoption of the Data Center ZOAM. One data center expanded under the performance standards approved as part of the Data Center ZOAM. The majority of data center noise complaints received between 2010 and 2015 have been specifically related to the Digital Realty data center in Loudoun Station, adjacent to The Regency, with the bulk of the complaints received in 2014 during the Data Center ZOAM review process.

3. *What is the impact of temperature, wind speed, and humidity upon noise volume?*

Staff Response: Practice has shown that atmospheric variables such as wind speed, temperature and humidity have a relatively small impact on noise at the receiver at distances at less than 400-feet, but the impact becomes more pronounced at 1,000-feet and greater. Note that longer distances from the sound source require more samples on different days or nights to account for sound propagation variations. Wind speed may accentuate or decrease the measurable noise level depending on the wind direction relative to the receiver.

4. *What is the impact of zoning enforcement on Staff and what is the timelines of a response?*

Staff Response: Planning and Zoning is charged with investigating all zoning complaints, including noise complains. Noise complaints are processed in the same manner as any zoning violation. When a complaint is received, enforcement Staff investigates the complaint, takes measurements, and determines if the noise meets

or exceeds the noise standards. Typically, Staff will respond to a complaint within 24 hours. With noise complaints, the noise may end by the time Staff arrives to investigate, so there may be instances where it will be necessary for Staff to schedule an inspection when the noise issue is next expected. Noise complaints have comprised a minor component of the Zoning Enforcement work program from 2010 - 2015, as only 1.6% of the total number of zoning complaints during this time period were noise-related. The proposed ordinance is not expected to substantially increase work load or otherwise strain Staff resources.

#### **IV. SUMMARY OF PROPOSED TEXT CHANGES**

The following revisions are proposed to Section 5-600, 5-1507, and Article 8:

Section 5-600, Additional Regulations for Specific Uses:

- Section 5-601(A)(5)(a): delete section regarding maximum decibel level and measurement point.
- Section 5-601(B)(5)(a): delete section regarding maximum decibel level and measurement point.
- Section 5-601(C)(5)(a): delete section regarding maximum decibel level and measurement point.
- Section 5-601(D)(8)(h): delete section regarding maximum decibel level and measurement point.
- Section 5-625(G): delete reference to Section 5-652(B) for noise regulations.

Section 5-1507, Noise Standards:

- Section 5-1507(A): Add and revise text to describe the purpose of the noise standards.
- Section 5-1507(B): Add the applicability of the noise standards to include the maximum sound levels to non-stationary noise sources rather than just stationary noise sources as is currently the case; clarify and explicitly state that the noise standards do not apply to those specific uses that have noise standards in Section 5-600, *Additional Regulations for Specific Uses*, and to extraction and mining special exception uses as otherwise regulated therein.
- Section 5-1507(C): Revise existing and add new terms used solely in the noise standards for A-Weighted Sound Level, Emergency, L Equivalent, Mixed-Use Residential, Residential, Receiving property, and sound.
- Section 5-1507(D): Add specifications on the type of sound meter used to measure sound and standardize the methodology for taking sound measurements.

- Section 5-1507(E): Revise the maximum sound level table to retain the maximum sound level at 55 decibels for residential developments and 70 decibels for industrial developments; increase the maximum sound level for commercial from 60 decibels to 65 decibels; create a maximum sound level for civic and institutional uses of 65 decibels; and create a maximum sound level for mixed - use residential of 60 decibels. Also, delete the separate sound levels for impact noise and make impact noise subject to the sound level limits applicable to all types of noise and move where sound is measured from the emitter property line to the receiving property line.
- Section 5-1507(F): Add exemption for generators and equipment during emergencies, air conditioner condensers for single-family attached and detached dwellings, and add exemption for utilities and public uses; revise exemption for aircraft sound; and clarify exemptions for sounds regulated by the Codified Ordinance.

Article 8, Definitions:

- Revise the existing definition of “decibel” to reflect the Environmental Protection Agency’s Model Community Noise Control Ordinance (EPA Model Ordinance) definition and to include all abbreviations used throughout the Zoning Ordinance.
- Add a definition of “impulsive sound” based on EPA Model Ordinance for noise standards found in Section 5-600 and in Section 5-1505, Earthborn Vibration Standards, which was previously undefined.

## **V. APPLICABILITY**

ZOAM 2014-0006, Noise Standards, will apply to all uses established after the effective date of the ZOAM. Uses that have received site plan or zoning permit approval or have otherwise been lawfully established prior to the effective date of the ZOAM will continue to be governed by the noise standards in effect at the time of their establishment.

## **VI. AGENCY REFERRALS**

The Noise ZOAM draft text was sent for review and comment to the: Zoning Ordinance Action Group (ZOAG); Building and Development, Engineering; Building and Development, Zoning Permits; Department of Economic Development; Department of Planning and Zoning, Zoning Enforcement; Department of Planning and Zoning, Zoning Administration, Department of Planning and Zoning, Land Use Review; Department of Planning and Zoning, Community Planning.

Referral comments were received by the agencies and are found in **Attachment 8**. Staff met with Department of Economic Development on September 4, 2015 to review their concerns with the draft text as it relates to data centers, agricultural businesses (such as

wineries and breweries) and public utilities. As a result of the meeting, additional changes to the draft text were made to clarify those issues and to exempt public utilities. Suggestions by other agencies and various business representatives were also incorporated into the draft text that was sent to the Commission.

## **VII. SUMMARY OUTSTANDING ISSUES**

There are no outstanding substantive issues. The effective date of the revised standards must take into account the time necessary to purchase and receive standard noise meters (discussed in Fiscal Impact), as well as the completion of training of Zoning Enforcement Staff. For this reason, the effective date of the revised noise standards should be three months from the date of Board approval.

## **VIII. ZONING ORDINANCE CRITERIA FOR APPROVAL**

Section 6-1210(D), Text Amendments, of the Revised 1993 Loudoun County Zoning Ordinance states "...for an amendment of the text of this Ordinance, the Planning Commission shall consider the following matters:"

Standard *Whether the proposed text amendment is consistent with the Comprehensive Plan.*

Analysis As proposed, the text amendments are supported by and are consistent with Policies of the Comprehensive Plan. The Revised General Plan envisions a "peaceful character suitable for private domestic life" (Revised General Plan, Chapter 11, Implementation, Design Guidelines, Residential Neighborhoods, 1.a).

Standard *Whether the proposed text amendment is consistent with the intent and purpose of this Ordinance.*

Analysis The purpose and intent of this Zoning Ordinance is defined under Section 1-102, which states: "This Ordinance is enacted in order to promote the health, safety and welfare of the residents of Loudoun County and to implement the Loudoun County Comprehensive Plan." The amendment is consistent with the intent and purpose of the Zoning Ordinance by protecting the health and welfare of the residents by regulating maximum noise levels that cause disturbance and impair quality of life.

## **IX. RECOMMENDED TEXT**

See **Attachment 1**, which incorporates the revisions suggested by the Commission and the TLUC.

**X. FISCAL IMPACT**

The revised noise standards require a specific type of noise meter not currently in use by Planning and Zoning. The new noise meters are more versatile and more accurately measure sound by filtering out and adjusting for background sound. As such, implementation of the revised noise standards will require the purchase of new equipment and training of nine (9) members of the Zoning Enforcement division of Planning and Zoning regarding its operation and use.

Staff recommends the purchase of two (2) sound level meters (SLM) to account for operational contingencies as well as the annual calibration of the SLM, which will require shipment to the manufacturer. The upfront cost for purchase of the two SLMs and training of Zoning Enforcement staff is approximately \$18,000. The initial purchase price includes the first calibration of each device. The initial funds for equipment and training has been identified in the Planning and Zoning FY 2016 and FY 2017 budgets.

Recurring expenses impacting subsequent year budgets are estimated to total approximately \$800, not accounting for inflation, to cover annual equipment calibration. Additional training costs when necessitated by the addition of new Staff may increase the cost.

Staff recommends the effective date of the revised noise standards be approximately three months from the date of Board approval.

<b>XI. ATTACHMENTS</b>	
1	Draft text, dated June 20, 2016
2	Copy Teste and Resolution of Intent to Amend
3	Research In Support of Amending the Current Loudoun County Zoning Ordinance Section 5-1507 Noise Standards”, dated December 2014 and Technical Memorandum Addendum 1 to Data Center Noise Analysis, amended April 29, 2016
4	Community Outreach Meetings Summary
5	Chronology of Noise ZOAM Noise Process
6	Noise Standards For Wineries, Breweries and B&Bs
7	Comparison of Maximum Decibel Level of Area Jurisdictions Land Use Related Noise
8	Agency Referrals
*This Staff Report with attachments (file name 2016-07-13 BOSPH STAFF REPORT.PDF) can be viewed online on the Loudoun Online Land Applications System (LOLA) at <a href="http://www.loudoun.gov">www.loudoun.gov</a> . Paper copies are also available in the Department of Planning and Zoning.	

**Section 5-600**

**Additional Regulations for Specific Uses.** The following additional regulations apply to specific uses as set forth below. These regulations are intended to serve as the minimum standards for these uses, and are not intended to be in substitution for other provisions of this ordinance that may apply, or for additional conditions that may be imposed in connection with special exception or rezoning approvals. Unless otherwise specified, the following additional regulations may be modified by Minor Special Exception in accordance with the provisions of Section 6-1300. Modifications may be approved by the Board of Supervisors upon a finding that such modification to the regulations will achieve an innovative design, improve upon the existing regulations, preserve the County's historic or archeological heritage, or otherwise exceed the public purpose of the existing regulation. No modification shall be granted to any of the underlying zoning district regulations.

**5-601**

**Bed and Breakfast Homestay, Bed and Breakfast Inn, Country Inn and Rural Retreats and Rural Resorts Establishments.** No such use shall be established either as the initial use of the subject property or by change of use of the property or by conversion of one such use to another until a sketch plan or site plan, as applicable, for such proposed new use has been approved and the appropriate building permit and applicable Fire Prevention Code permits have been obtained. These establishments may be located in accord with the lists of permitted and special exception uses for the individual zoning districts subject to the following criteria:

(A) **Bed and Breakfast Homestay.**

(1) **Intensity/Character.**

- (a) **Management.** The owner of the premises shall reside on the premise and manage the Bed and Breakfast Homestay.
- (b) **Guest Rooms.** 1-4 guest rooms.
- (c) **Lot Size.** No minimum lot area.
- (d) **Food Service.** The Bed and Breakfast Homestay shall not contain restaurant facilities, but may provide food service for overnight guests or private party attendees, only.
- (e) **Private Parties.**
  - (i) Private parties for up to 20 attendees, including overnight guests, may be held daily at the Bed and Breakfast Homestay.

- (ii) Private parties for more than 20 attendees may be held up to 10 times per calendar year and shall require approval of a Building Permit to allow the structure to be used for such private parties and a Zoning Permit for each private party. A Zoning Permit shall be applied for at least thirty (30) days in advance of each private party. The Zoning Permit application shall be accompanied by a copy of the approved Building Permit and proof of any necessary approvals from County agencies, such as the Health Department and Fire Official.
- (f) **Hours of Operation.** Hours of operation for private parties shall be limited to 7:00 AM to 12:00 midnight.
- (2) **Landscaping/Buffering/Screening.**
  - (a) The use shall comply with the landscaping and screening standards of Section 5-653(A) to screen outdoor private party areas, regardless the size of adjacent property. The landscaping and screening requirements of Section 5-653(A) may be waived or modified in whole or in part by the Zoning Administrator in the circumstances listed in Section 5-1409 or under the additional circumstance where the adjacent property owner(s) provides written consent to waive all or a portion of the required landscaping/buffering/screening requirements.
- (3) **Parking.**
  - (a) **General.** Parking and loading for a Bed and Breakfast Homestay shall be provided as required by Section 5-1102.
- (4) **Exterior Lighting.** Exterior lighting for a Bed and Breakfast Homestay shall be subject to Section 5-652(A)(2)-(3) (Exterior Lighting Standards). In addition to the requirements of Section 5-652, the maximum height of pole-mounted exterior lighting shall be 12 feet.
- (5) **Noise.**

~~(a) The maximum allowable dB(A) level of impulsive sound emitted from the use, as measured at the property line, shall not exceed 55 dB(A).~~

~~(b)~~(a) No outdoor music shall be permitted between 11 PM and 10 AM on Friday, Saturday, and any evening preceding a holiday recognized by Loudoun County, and between 10 PM and 10 AM on any other day.

(6) **Roads/Access.** For any Bed and Breakfast Homestay that is located on a lot which does not have frontage on a publicly maintained road, documentation shall be provided to the Zoning Administrator demonstrating that the private access easement serving such lot may be used to provide access to the establishment.

(B) **Bed and Breakfast Inn.**

(1) **Intensity/Character.**

(a) **Management.** The owner or manager of the premises shall provide full-time management at all times when the Bed and Breakfast Inn is occupied by overnight guests or private party attendees. An owner or manager may live on the premises.

(b) **Guest Rooms.** The number of guest rooms shall not exceed 10.

(c) **Lot Area.** The minimum lot area shall be 5 acres.

(d) **Size of Use.** The floor area ratio shall not exceed 0.04.

(e) **Food Service.** The Bed and Breakfast Inn shall not contain restaurant facilities, but may provide food service for overnight guests or private party attendees, only.

(f) **Private Parties.**

(i) Private parties for up to 50 attendees, including overnight guests, may be held daily at the Bed and Breakfast Inn.

(ii) Private parties for more than 50 attendees, including overnight guests, may be held up to 20 times per calendar year and shall require approval of a Building Permit to allow the

structure to be used for such private parties and a Zoning Permit for the private parties. A Zoning Permit shall be applied for at least thirty (30) days in advance of each private party, or at least 30 days in advance of the first private party of the calendar year if the dates of all such private parties are listed. The Zoning Permit application shall be accompanied by a copy of the approved Building Permit and proof of any necessary approvals from County agencies, such as the Health Department and Fire Official.

- (g) **Hours of Operation.** Hours of operation for private parties shall be limited to 7:00 AM to 12:00 midnight.
- (h) **Yard Standards.**
  - (i) Parking shall be setback 40 feet from all lot lines.

(2) **Landscaping/Buffering/Screening.**

- (a) The use shall comply with the landscaping and screening standards of Section 5-653(A) to screen outdoor private party areas, regardless the size of adjacent property. The landscaping and screening requirements of Section 5-653(A) may be waived or modified in whole or in part by the Zoning Administrator in the circumstances listed in Section 5-1409 or under the additional circumstance where the adjacent property owner(s) provides written consent to waive all or a portion of the required landscaping/buffering/screening requirements.
- (b) Parking areas shall comply with the landscaping and screening standards of Section 5-653(B).
- (c) New driveways providing access to a Bed and Breakfast Inn use shall not be located within a required buffer yard area except as minimally necessary to access the site.

(3) **Parking.**

- (a) **General.** Parking and loading for a Bed and Breakfast Inn shall be provided as required by Section 5-1102.

(4) **Exterior Lighting.** Exterior lighting for a Bed and Breakfast Inn shall be subject to Section 5-652(A)(1)-(3) (Exterior Lighting Standards). In addition to the requirements of Section 5-652, the maximum height of pole-mounted exterior lighting, outside of parking areas, shall be 12 feet.

(5) **Noise.**

~~(a) The maximum allowable dB(A) level of impulsive sound emitted from the use, as measured at the property line, shall not exceed 55 dB(A).~~

~~(b)~~(a) No outdoor music shall be permitted between 11 PM and 10 AM on Friday, Saturday, and any evening preceding a holiday recognized by Loudoun County, and between 10 PM and 10 AM on any other day.

(6) **Roads/Access.**

(a) The Bed and Breakfast Inn shall comply with the Road Access Standards in Section 5-654.

(b) For any Bed and Breakfast Inn that is located on a lot which does not have frontage on a publicly maintained road, documentation shall be provided to the Zoning Administrator demonstrating that the private access easement serving such lot may be used to provide access to the establishment.

(c) There shall be no more than two points of access for the Bed and Breakfast Inn.

(7) A structure existing prior to January 7, 2003, located within an Historic Site District or Historic and Cultural Conservation District may be used as a Bed and Breakfast Inn and shall be exempt from the minimum lot area, yard and floor area ratio requirements specified above, provided that any expansion or enlargement of such structure shall not exceed 15% of the total floor area existing prior to January 7, 2003, unless a greater expansion is approved by Minor Special Exception, pursuant to Section 6-1300.

(C) **Country Inn.**

(1) **Intensity/Character.**

(a) **Management.** The owner or manager of the premises shall provide full-time management at all

times when the Country Inn is occupied by overnight guests or private party attendees. An owner or manager may live on the premises.

- (b) **Guest Rooms.** 1-40 guest rooms.
- (c) **Minimum Lot Area.** The minimum lot area shall be 20 acres.
- (d) **Size of Use.**
  - (i) The floor area ratio shall not exceed 0.04.
  - (ii) Any restaurant and indoor Banquet/Event Facility(ies) located on the property shall not exceed 49 percent of the total floor area of the Country Inn.
- (e) **Food Service.**
  - (i) Food service may be provided for overnight guests and private party attendees.
  - (ii) Full-service restaurant facilities may be provided to the general public in accordance with the individual Zoning District regulations.
- (f) **Private Parties.**
  - (i) Private parties for up to 100 attendees, including overnight guests, may be held daily at the Country Inn.
  - (ii) Private parties for more than 100 attendees, including overnight guests, may be held up to 20 times per calendar year and shall require approval of a Building Permit to allow the structure to be used for such private parties and a Zoning Permit for the private parties. A Zoning Permit shall be applied for at least thirty (30) days in advance of each private party, or at least 30 days in advance of the first private party of the calendar year if the dates of all such private parties are listed. The Zoning Permit application shall be accompanied by a copy of the approved Building Permit and proof of any necessary

approvals from County agencies, such as the Health Department and Fire Official.

(g) **Hours of Operation.** Hours of operation for private parties shall be limited to 7:00 AM to 12:00 midnight.

(h) **Yard Standards.**

(i) The Country Inn use shall be setback 100 feet from all lot lines.

(ii) Parking shall be setback 100 feet from all lot lines.

(iii) Outdoor private party areas shall be setback 200 feet from all lot lines or 100 feet from a lot line of a property having a commercial use.

(i) **Accessory Use.** A maximum of 10% of the gross floor area of the Country Inn may be composed of accessory day treatment, spa facilities.

(2) **Landscaping/Buffering/Screening.**

(a) The use shall comply with the landscaping and screening standards of Section 5-653(A) to screen outdoor private party areas from adjacent properties, regardless the size of adjacent property.

(b) Parking areas shall comply with the landscaping and screening standards of Section 5-653(B).

(c) New driveways providing access to the Country Inn shall not be located within a required buffer yard area except as minimally necessary to access the site.

(3) **Parking.**

(a) **General.** Parking and loading for a Country Inn shall be provided as required by Section 5-1102.

(4) **Exterior Lighting.** All exterior lighting shall comply with the standards of Section 5-652(A)(1)-(3) (Exterior Lighting Standards). In addition to the requirements of Section 5-652, the maximum height of pole-mounted exterior lighting, outside of parking areas, shall be 12 feet.

(5) **Noise.**

~~(a) The maximum allowable dB(A) level of impulsive sound emitted from the use, as measured at the property line, shall not exceed 55 dB(A).~~

~~(b)~~(a) No outdoor music shall be permitted between 12 AM (midnight) and 7 AM.

(6) **Roads/Access.**

(a) The Country Inn shall comply with the Road Access Standards in Section 5-654.

(b) For any Country Inn that is located on a lot which does not have frontage on a publicly maintained road, documentation shall be provided to the Zoning Administrator demonstrating that the private access easement serving such lot may be used to provide access to the establishment.

(c) There shall be no more than two points of access for guests of the Country Inn.

(7) A structure existing prior to January 7, 2003, located within an Historic Site District or Historic and Cultural Conservation District may be used as a Country Inn and shall be exempt from the minimum lot area, yard and floor area ratio requirements specified above, provided that any expansion or enlargement of such structure shall not exceed 15% of the total floor area existing prior to January 7, 2003, unless a greater expansion is approved by Minor Special Exception, pursuant to Section 6-1300.

(D) **Rural Retreats and Resorts.** Rural retreats and rural resorts shall comply with the following standards.

(1) **Parcel Size.** The minimum lot area of rural resorts and retreats shall comply with Section 5-601(D)(8)(a), except when located within the buffer area of a Planned Development-Rural Village (PD-RV) district.

(2) **Separation Requirement.** When not located within a Planned Development-Rural Village (PD-RV) district, rural retreats shall be appropriately sited so as not to infringe on the character of any existing village. At a minimum, rural retreats shall be located at least one (1) mile from the boundaries of an existing Village Conservation Overlay District or an existing PD-CV or PD-RV zoned parcel.

- (3) **Setbacks.** All new buildings, active recreational areas, parking, and lighted areas shall be set back a minimum of 200 feet from adjacent properties.
- (4) **Access.** All rural retreats and resorts shall comply with the road access standards in Section 5-654.
- (5) **Water and Sewer.** The establishment shall be served by public water and sewer if located in a PD-RV district. Otherwise, the establishment shall be served by a communal water system and a communal wastewater collection and treatment system. Communal water and sewer systems may be located within the open space.
- (6) **Open Space.** A minimum of 75% of the site shall remain as open space. Recreational uses customarily incidental and subordinate to the rural resort or retreat permitted in the open space area may include: swimming pools and related facilities, boating facilities, tennis and other sports courts, equestrian facilities, picnic areas, golf courses and related facilities, ballfields, children’s play equipment and passive recreation facilities. Driveways and parking areas supporting these recreational facilities may also be located in the open space area.
- (7) **May be Open to Public.** These establishments may be open to the general public for patronage. A Rural Retreat or Rural Resort shall be entitled to treatment as an Event Facility pursuant to Section 5-642 by Minor Special Exception.
- (8) **Additional Standards for AR and TR Districts.** In the AR and TR districts, rural retreats and resorts shall comply with the following additional requirements in addition to the general standards identified above. Where there is a conflict between these standards and the general standards controlling the development of rural resorts and retreats, these standards shall control.
  - (a) **Intensity/Character.** The minimum lot area shall be as follows.

Use	Size of Lot (Minimum)	Nos. of Guest Rooms
Level I – Rural Retreat small scale	40 acres	Up to 20 rooms
Level II – Rural Retreat medium scale	60 acres	21-40 rooms

Use	Size of Lot (Minimum)	Nos. of Guest Rooms
Level III –Rural Retreat large scale	80 acres	41-60 rooms
Level I – Rural Resort small scale	100 acres	61-80 rooms
Level II – Rural Resort medium scale	120 acres	81-100 rooms
Level III –Rural resort large scale	150 acres	101-120 rooms
More than 120 rooms requires special exception approval pursuant to Section 6-1300		

(b) **Size of Use.**

- (i) The restaurant and Banquet/Event Facilities, and conference and training facilities shall be less than fifty (50) percent of the total floor area of the rural retreat or resort.
- (ii) Outdoor storage related to the rural retreat or resort facilities shall be permitted.
- (iii) The floor area ratio shall not exceed 0.04.

(c) **Yard Standards.** The minimum required yards shall be as follows:

- (i) Level I-Rural Retreat: 125 feet minimum from all lot lines.
- (ii) Level II-Rural Retreat: 200 feet minimum from all lot lines.
- (iii) Level III-Rural Retreat: 250 feet minimum from all lot lines.
- (iv) Level I-Rural Resort: 300 feet minimum from all lot lines.
- (v) Level II-Rural Resort: 350 feet minimum from all lot lines.
- (vi) Level III-Rural Resort: 375 feet minimum from all lot lines.

(d) **Landscaping/Buffering/Screening.**

- (i) The use shall comply with the landscaping and screening standards of Section 5-653(A).
- (ii) Parking areas shall be screened to comply with the standards of Section 5-653(B).
- (iii) Driveways shall not be located within a required buffer yard area except as minimally necessary to access the site.

(e) **Roads/Access.**

- (i) The rural retreat or resort shall comply with the road access standards in Section 5-654.
- (ii) There shall be no more than two points of access to a rural retreat or resort. This requirement shall not preclude an additional access for emergency vehicles only.

(f) **Parking.**

- (i) **General.** Parking and loading shall be provided as required by Section 5-1102.
- (ii) **Surface.** All parking areas serving the use shall use a dust-free surfacing material as provided in the Facilities Standards Manual.

(g) **Exterior Lighting Standards.** All exterior lighting shall comply with the standards of Section 5-652(A) (Exterior Lighting Standards).

(h) **Noise.** ~~The maximum allowable dB(A) level of impulsive sound emitted from the use, as measured at the property line, shall not exceed 55 dB(A). In addition, o~~ Outdoor music shall not be allowed after 11:00 PM.

**5-625**

**Winery, Commercial.** Commercial wineries in the AR, JMLA, and Route 28 CO, PD-CM and CB districts shall comply with the following standards:

(A) **Intensity/Character.**

- (1) **Site Size.** The minimum lot area for a commercial winery is 10 acres.
- (2) **Wine Tasting Rooms and Accessory Food Sales.** Facilities for wine tasting rooms and accessory food sales (including a kitchen) shall not exceed 49 percent of the total gross floor area of all structures at the commercial winery.
- (3) **Hours of Operation.** Hours of operation shall be limited to 10:00 a.m. to 10:00 p.m.

(B) **Size of Use.**

- (1) **Floor Area Ratio.** The floor area ratio for a commercial winery shall not exceed 0.04.
- (2) **Storage Yards.** The total area of storage yards shall not exceed 20 percent of the total area of the principal structure.

(C) **Location on Site/Dimensional Standards.** A commercial winery shall be set back at least 125 feet from all lot lines.

(D) **Landscaping/Buffering/Screening.**

- (1) **Buffer.** The use shall comply with the landscaping and screening standards of Section 5-653(A).
- (2) **Parking and Storage Areas.** Parking and storage areas shall be screened to comply with the requirements of Section 5-653(B).

(E) **Roads/Access Standards.**

- (1) **General Access Standards.** A commercial winery shall comply with the road access standards of Section 5-654.
- (2) **Driveways.** Driveways to a commercial winery shall not be located within a required buffer yard area except as minimally necessary to access the site.
- (3) **Vehicles/Equipment.** Commercial wineries that use heavy equipment shall have direct access to a paved public road.

(F) **Exterior Lighting Standards.** All exterior lighting shall comply with the standards of Section 5-652(A) (Exterior Lighting Standards).

~~(G) **Noise Standards.** The use shall comply with the noise standards of Section 5-652(B) (Noise Standards).~~

~~(H)~~(G) **Parking.**

(1) **General.** Parking and loading shall be provided as required by Section 5-1102.

(2) **Surface.** All parking shall use a dust-free surfacing material as provided in the Facilities Standards Manual.

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5-652

**Exterior Lighting and Noise Standards for Specific Uses.** The following exterior lighting and noise standards shall apply to specific uses in this section when they are expressly referenced in the standards for the specific use.

(A) **Exterior Lighting Standards.**

- (1) **Pole-Mounted Exterior Lighting.** The maximum height of pole-mounted exterior lighting shall be 25 feet.
- (2) **Shielded Lighting/Light Element.** Fully shielded lighting fixtures shall be used in all areas. The light element (lamp or globe) of a fixture shall not extend below the cutoff shield.
- (3) **Hours of Operation.** All exterior lighting shall be extinguished from 10:00 p.m. to 6:00 a.m., except for exterior lighting that is determined necessary for security purposes.
- (4) **No Illuminated Signage.** Signage related to the use shall not be illuminated.

(B) **Noise Standards.**

- (1) **Location in Relation to Residential Use.** No loading/unloading activities or other noise-producing activities shall be allowed within 250 feet of an existing single family residential use.
- (2) **Maximum dB(A).** The maximum allowable dB(A) level of impulsive sound emitted from the use, as measured at the property line of any adjacent residential lot where the lot is designed for a single family dwelling unit as a principal use, shall not exceed 55 dB(A). In addition, outdoor music shall not be allowed after 11:00 PM.

**5-667**

**Brewery, Limited.** A limited brewery shall be licensed as a Limited Brewery in accordance with Section 4.1-208 of the Code of Virginia, as amended, and shall be located in the AR-1, AR-2, A-10, or A-3 districts. No Limited Brewery shall be established either as the initial use of the subject property or by change of use of the property until a sketch plan has been approved. The owner of a limited brewery is requested to contact the Loudoun County Department of Fire, Rescue and Emergency Management and Department of Building and Development for an informational inspection of the building(s) or structure(s) to be used for the limited brewery prior to establishing use.

(A) **Sketch Plan.** A sketch plan is required as part of a zoning permit application for a Limited Brewery. Such sketch plans shall include the following:

- (3) Property boundaries;
- (4) Location, function (manufacturing, storage, tasting, residence, etc.), size and dimensions of structure(s) and outdoor area(s). If structure(s) are located more than 300 feet from the property line approximate distances may be provided;
- (5) Location of residences not located on the property that are within 300' of a structure;
- (6) Location and dimensions of all ingress/egress points (including emergency access), access drives and easements;
- (7) Location of parking areas;
- (8) Location of floodplain, well, septic fields, and restroom facilities;
- (9) Location of landscaping and screening for outdoor tasting room and event areas within 300' of a residence not located on the property;
- (10) Location, height, and type of proposed lighting; and
- (11) Location of vegetation, fences, streams, directional signs, or other similar feature that may limit access onto or direct access away from an adjacent residential property line within 300' of tasting room and event areas.

(B) The Sketch Plan need not be drawn to scale, nor does it have to be prepared by a licensed professional. However, distances from structures to adjacent lot lines must be accurately depicted.

- (C) Limited Breweries that share a private access easement with another property owner/s, must show the easement allows a use of this type or written permission must be obtained by the sharing parties.

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**Noise Standards:-**

(A) **Purpose.** The purpose of these standards is to protect citizens from excessive sound (noise), which is detrimental to health and peaceful enjoyment of property. No use~~It 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 maximum A-weighted sound levels ~~limits~~ set forth in Table 5-1507(E). Examples of sounds regulated by this Ordinance include, but are not limited to amplified music or voice, or barking dogs at kennels.

(B) **Applicability.** Any legally established use, existing prior to the adoption of these standards, shall continue to comply with the noise standards in effect at the time of establishment. The aggregate sound created by such legally established use and any expansion or extension of such use beyond the floor area or portion of the lot area that it occupied on the effective date of this Ordinance shall comply with these standards.

These standards shall not apply to extraction and mining special exception operations otherwise regulated herein; or where Section 5-600, Additional Regulations for Specific Uses, specifies noise standards for a specific use; or between multiple uses located within the same building or on the same lot, unless the receiving property is Mixed-Use residential. ~~the following tables. except for. 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.~~

(C) **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 (SLM) using the A-weighting network.

(2) Emergency is any occurrence or set of circumstances involving actual or imminent physical trauma, property damage or loss of electric or phone services, which require immediate action.

(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 level.

(4) Mixed-Use Residential is any dwelling unit located in a Planned Development zoning district listed in Article 4, Division A and Division D that permits residential uses,

1 excluding the Planned Development – Housing (PD-H) zoning  
2 district.

3 (5) Residential is any dwelling unit located in a zoning district  
4 listed in Article 2 or 3, or the PD-H zoning district, and any  
5 other dwelling unit that does not meet the definition of mixed-  
6 use residential.

7 (6) Receiving property is the lot or parcel, or for mixed-use  
8 residential, the affected dwelling unit, that is the recipient of  
9 the subject sound.

10 (7) Sound is an oscillation in pressure, particle displacement,  
11 particle velocity, or other physical parameter, in a medium  
12 with internal forces that causes compression and rarefaction of  
13 that medium.

14 ~~(A)~~(D) **Methods of Measurement.**

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

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

21 (1) A-weighted sound levels shall be measured with an integrating  
22 sound level meter (SLM) that meets or exceeds American  
23 National Standard Institute S1.43-1997 for Class 2 SLMs. The  
24 response of such SLM shall be set to FAST, and a time period  
25 of fifteen (15) seconds shall be used. The operator may select  
26 another time period between a minimum of ten (10) seconds  
27 and maximum of one (1) minute if a fifteen (15) second time  
28 period cannot adequately capture the A-weighted sound level.

29 (2) Samples shall be taken only when the subject sound can be  
30 clearly heard and identified by the operator without any  
31 extraneous sounds such as passing traffic, bird songs, etc.

32 (3) The operator shall take a minimum of three (3) samples that  
33 demonstrate the repeatability and consistency of the subject  
34 sound. When possible, the operator should also take at least  
35 one (1) sample when the subject sound is not heard for the  
36 purpose of comparison.

37 (4) The arithmetic average of all samples that demonstrate the  
38 repeatability and consistency of the subject sound shall  
39 comply with the maximum A-weighted sound levels in Table  
40 5-1507(E).

1 (5) For residential, commercial, civic, institutional, and industrial  
2 uses, samples of the subject sound shall be taken from the  
3 point on the receiving property line that is located the closest  
4 to the source of the subject sound. The microphone of the  
5 SLM shall be aimed toward the source of the subject sound,  
6 and a standard microphone height of five feet (5') above grade  
7 shall be used.

8 (6) For mixed-use residential, samples of the subject sound shall  
9 be taken from the receiving property at an open window, door,  
10 or other aperture that faces in the direction of the source of the  
11 subject sound. The window, door, or other aperture that is the  
12 closest to the source of the subject sound shall be used. The  
13 microphone of the SLM shall use a windscreen, shall be  
14 located at the center, and shall extend approximately 0.5 inch  
15 beyond the outer plane of said open window, door, or other  
16 aperture, and shall be aimed towards the source of the subject  
17 sound.

18 ~~(B)~~(E) Maximum A-Weighted Sound Levels (decibelsBA). Measurements  
19 of noise levels shall be taken at the property boundary of the noise  
20 source. Where differing zoning districts abut, the more restrictive  
21 limit shall apply. The maximum A-weighted sound level is provided  
22 in Table 5-1507 (E) and shall apply any time of day or night.

23 ~~(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.

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

25

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(E)</u>				
<u>Receiving Development Type</u>	<u>Mixed - Use Residential</u>	<u>Residential Uses</u>	<u>Commercial, Civic, and Institutional Uses</u>	<u>Industrial Uses</u>
<u>Maximum A-Weighted Sound Level (decibels)</u>	<u>60</u>	<u>55</u>	<u>65</u>	<u>70</u>

~~(C)~~(F) — **Exemptions.** The maximum A-weighted sound levels in Table 5-1507(E) shall not apply to the following:

(1) All aircraft sound.

~~(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) Sounds that are regulated under Chapter 654.02 of the Codified Ordinances of Loudoun County, such as, but not limited to, sounds created by the operation of power equipment (, such as power lawn mowers, chain saws, and similar equipment), or related to construction, maintenance and repair, between the hours of 7:00 a.m. and 9:00 p.m. shall not be regulated by these noise issues.

(3) Sounds created by generators and associated equipment operating during an emergency or at the request of a utility, and the testing of said generators and associated equipment.

~~(3)~~(4) Sounds created by air conditioner condensers for single-family attached dwellings and single-family detached dwellings.

~~(4)~~(5) Sounds created by utilities and public uses, including, but not limited to utility substations, utility transmission lines, sanitary landfills, public sewer, and public water.

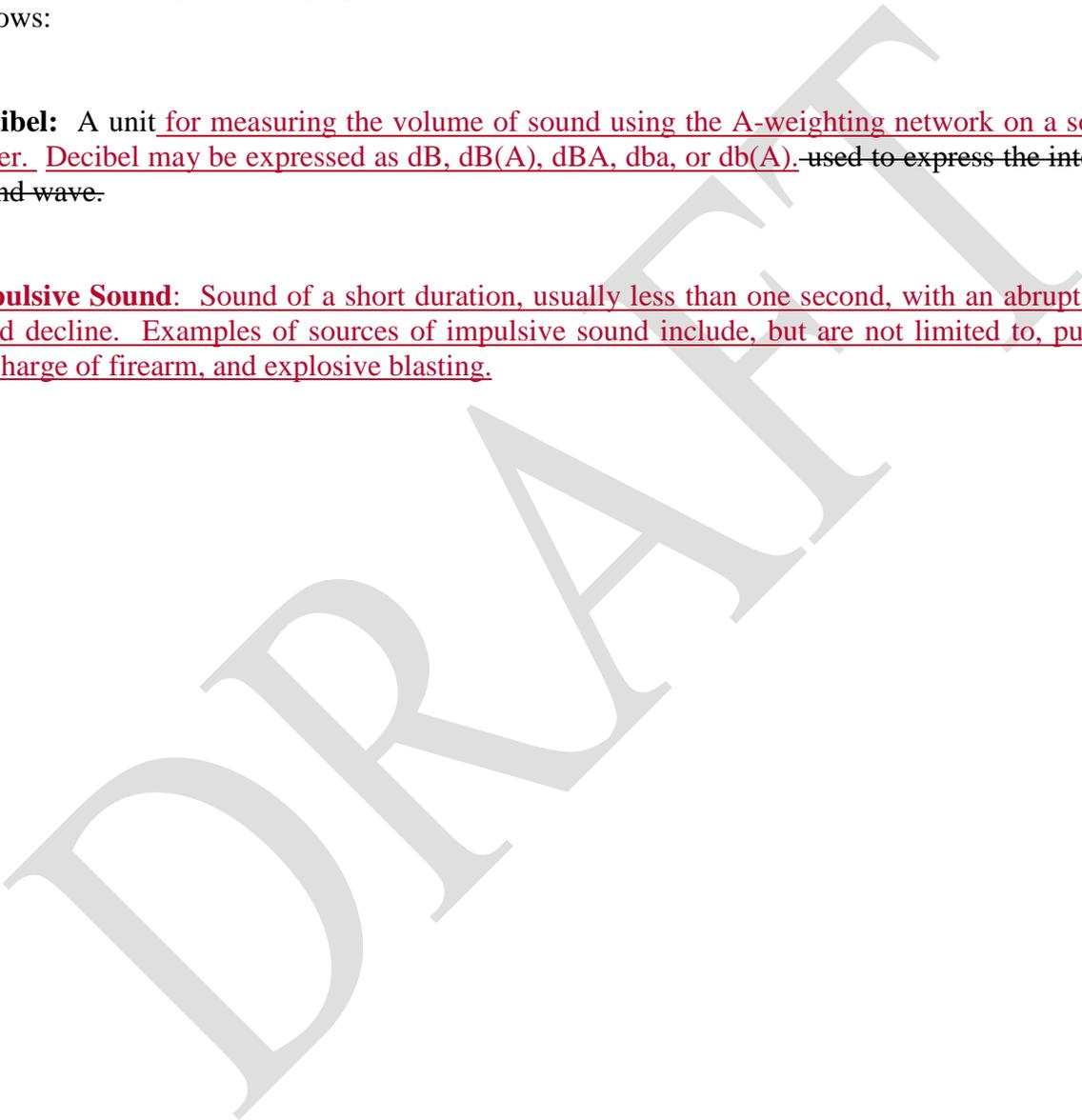
**ARTICLE 8 - DEFINITIONS**

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Words and terms set forth below shall have the meanings ascribed to them. Any word, term, or phrase used in this Ordinance not defined below shall have the meaning ascribed to such word, term or phrase in the most recent edition of Webster's Unabridged Dictionary, unless in the opinion of the Zoning Administrator, established customs or practices in Loudoun County, Virginia justify a different or additional meaning. For the purpose of this Ordinance, certain words and terms are herein defined as follows:

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

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





Loudoun County, Virginia

[www.loudoun.gov](http://www.loudoun.gov)

Office of the County Administrator

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Telephone (703) 777-0200 • Fax (703) 777-0325

At a business meeting of the Board of Supervisors of Loudoun County, Virginia, held in the County Government Center, Board of Supervisors' Meeting Room, 1 Harrison St., S.E., Leesburg, Virginia, on Wednesday, April 1, 2015 at 4:00 p.m.

IN RE: ZOAM 2014-0006, NOISE STANDARDS/RESOLUTION OF INTENT TO AMEND  
THE REVISED 1993 LOUDOUN COUNTY ZONING ORDINANCE  
(COUNTYWIDE)

Mr. Buona moved that the Board of Supervisors adopt the attached Resolution of Intent to Amend the Revised 1993 Loudoun County Zoning Ordinance, provided as Attachment 1 to the April 1, 2015 Board of Supervisors Action Item.

Seconded by Mr. Reid.

Voting on the Motion: Supervisors Buona, Clarke, Delgaudio, Higgins, Letourneau, Reid, Volpe, Williams and York – Yes; None – No.

JANETTE SEIBERT  
DEPUTY CLERK FOR THE LOUDOUN  
COUNTY BOARD OF SUPERVISORS

(4-ZOAM 2014-0006, NOISE STANDARDS/RESOLUTION OF INTENT TO AMEND THE REVISED 1993 LOUDOUN COUNTY ZONING ORDINANCE (COUNTYWIDE))

April 1, 2015

**BOARD OF SUPERVISORS OF LOUDOUN COUNTY**

**RESOLUTION OF INTENT TO AMEND THE REVISED 1993  
LOUDOUN COUNTY ZONING ORDINANCE  
TO REVISE THE NOISE STANDARDS**

WHEREAS, the Board of Supervisors wish to initiate amendments to the Revised 1993 Loudoun County Zoning Ordinance (the "Zoning Ordinance") in furtherance of the purposes of zoning as set out in §15.2-2283 of the Code of Virginia and to further implement the comprehensive plan; and

WHEREAS, the Board of Supervisors, as part of their Strategic Plan discussion on June 4, 2014, directed the preparation of a Work Plan for the purpose of amending the noise standards in the Zoning Ordinance; and

WHEREAS, the Board of Supervisors adopted a Work Plan on July 16, 2014, for the purpose of amending the noise standards in the Zoning Ordinance, which included the authorization to procure consultant services to research and recommend revisions to the noise standards; and

WHEREAS, the Board of Supervisors wishes to initiate amendments to Article 5, Additional Regulations and Standards of the Zoning Ordinance to revise the noise standards.

NOW, THEREFORE, BE IT RESOLVED, that the Board of Supervisors states its intention to amend the Revised 1993 Loudoun County Zoning Ordinance as follows:

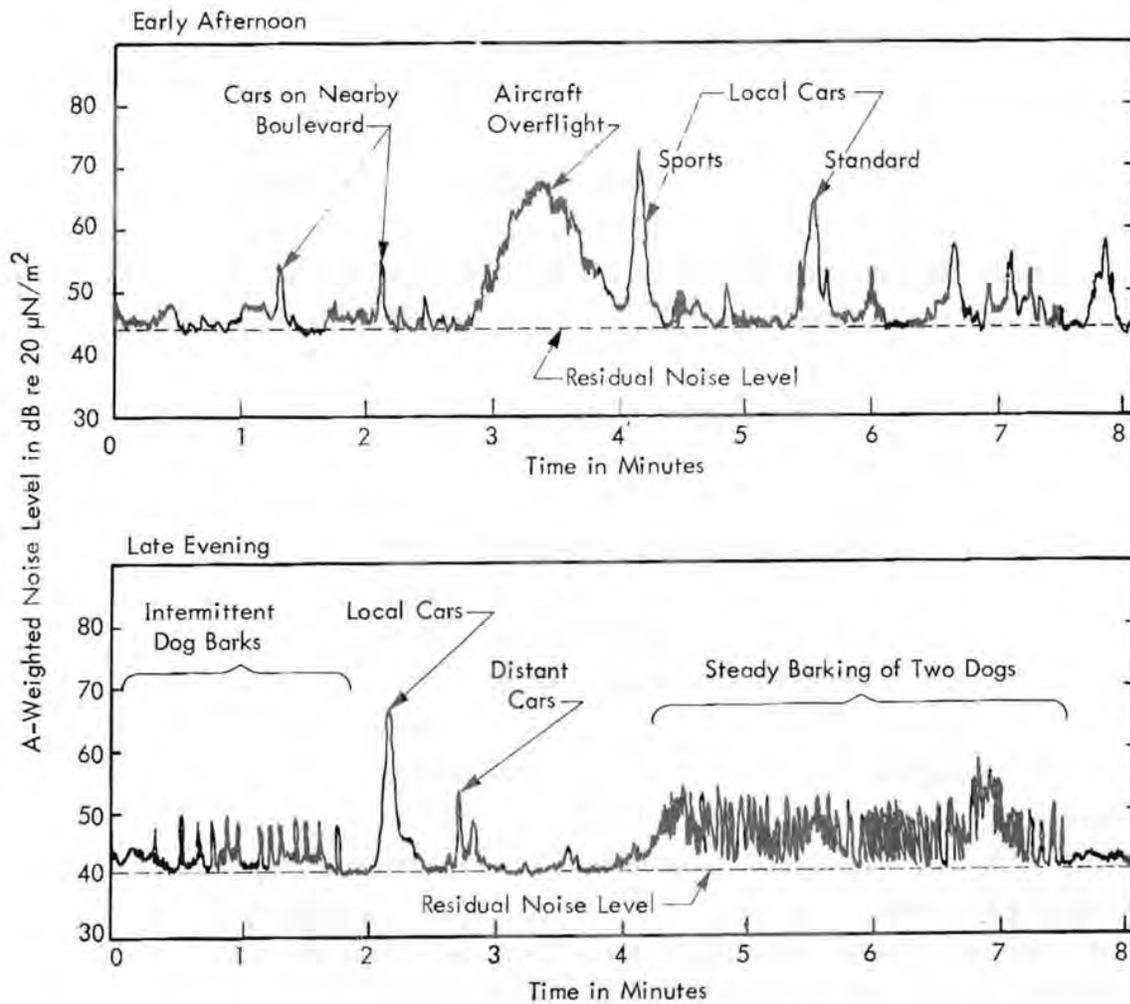
1. Amend Section 5-1503, Applicability, to clarify and/or revise the regulations in regard to the applicability of Performance Standards (to include, without limitation, Noise Standards) to Existing Uses and Agricultural Uses; and
2. Amend Section 5-1507, Noise Standards, as may be necessary to clarify and/or revise existing, and establish new, regulations in regard to Noise Standards; and
3. Amend Article 8, Definitions, as may be necessary to clarify and/or revise existing, and establish new, Definitions for the administration of Noise Standards; and
4. Amend Section 5-600, et seq., Additional Regulations for Specific Uses, as may be necessary to revise existing Additional Regulations to maintain consistency with the foregoing amendments; and
5. Amend such other sections of the Zoning Ordinance as may be necessary to fully implement and maintain consistency with the foregoing amendments, to correct typographical errors and update references, and to achieve the full intent of this Resolution; and

BE IT FURTHER RESOLVED, that (1) these amendments are in furtherance of the public necessity, convenience, general welfare, and good zoning practice; (2) Staff is directed to prepare draft amendments for consideration; and (3) the proposed amendments on these matters be brought forward for notice, hearing, Planning Commission recommendation, and Board of Supervisors' action

December 2014

Report Number HAI 121814-1

## Research in Support of Amending the Current Loudoun County Zoning Ordinance Section 5-1507 Noise Standards



Prepared By:  
Principal Consultant:  
George F. Hessler Jr., P.E., Bd. Cert. INCE

## 1.0\_Introduction

This report provides background and research in support of amending the current section 5-1507 Noise Standards. Noise is commonly defined as unwanted sound. The following tasks have been undertaken for this effort:

- Search the literature for the latest findings for predicting community response to noise.
- Compare the current County standards to World wide, Federal, State and Local restrictions of surrounding jurisdictions.
- Visit and measure typical complaint situations in the County at a kennel, data center and an outdoor entertainment venue at a B&B to derive a simple enforcement measurement technique for enforcement of the ordinance.
- Provide recommendations for noise limits that respect the County citizens rights to a noise-free environment balanced against desirable community development.

## 2.0\_Community Response

Response to intruding noise has been studied extensively throughout the world for the past 60 years and response analysis techniques are mature and reliable. Funding for such studies is directly proportional to the size of government with large funding at the federal level decreasing to little support at the local level.

### 2.1\_World Standards

Starting at the top, the World Health Organization (WHO) publishes the following current guidelines for community noise in residential environments.

55 dBA Leq Daytime Levels: “Serious Annoyance, daytime and evening”

50 dBA Leq Daytime Levels: “Moderate Annoyance, daytime and evening”

45 dBA Exterior/30 dBA Interior Leq Nighttime Levels: To avoid sleep disturbance issues.

The U.S. is not a member of the WHO and in general these guidelines are considered conservative and desirable as future goals for governmental agencies. The existing Loudoun County ordinance prescribes a limit of 55 dBA for day and night periods with an expected response of “Serious Annoyance”.

### 2.2\_U.S. Federal Standards

The U.S. federal government issues no standards for industrial noise, but does promulgate noise regulations for major transportation systems. These regulations by the Federal Aviation Authority (FAA) and the Federal Highway Administration (FHWA) are predicated on the fundamental basis that some noise annoyance is justified or offset by the public good provided by the systems. Generally, acceptable regulatory levels in the 60 to 65 DNL (day night sound level) range have been shown to “highly annoy” approximately 10 to 15% of affected residential receptors near the systems. Hence, these standards are not useful for a general ordinance.

The U.S. EPA Office of Noise Abatement was disbanded in the late seventies but did issue a landmark report suggesting guidelines for environmental noise in residential communities from all environmental sources. The report<sup>1</sup> is often called the “Levels” document for short. The document has become a de facto standard for such organizations as the World Bank and others. Unfortunately the report is often misused and the cited recommended level of DNL = 55 dB for residential land use is commonly used as an acceptable or criterion level for emission sources in *any* type residential environment. The EPA intent was to provide a guideline or country goal for total environmental noise (ambient noise plus any other industrial and/or transportation sources).

The report acknowledges there was no cost-benefit analysis performed. In addition, the report clearly demonstrates the level of DNL = 55 dB is applicable to an *urban residential* background and must be normalized to any other specific environment under consideration to obtain just an acceptable level of correlation between DNL and community response. Otherwise, correlation is very poor based on the analysis presented in the levels document and others.

The EPA did conclude in the document that an outside noise level of 45 dBA at nighttime (10 p.m. to 7 a.m.) is adequate to preclude sleep-interference issues. This was based on a noise reduction of 10 dBA with open windows that results in interior bedroom levels of 35 dBA. The much later work summarized above by the WHO also recommends an exterior background level of 45 dBA to avoid sleep interference, but implies a 15 dBA open-window noise reduction resulting in an interior level of 30 dBA.

It should be made clear the above EPA DNL level is a 24 hour metric that mathematically penalizes the nighttime hours from 10 pm to 7 am for greater sensitivity at night. This metric cannot be compared to sound level dBA limits and must be converted for comparison. Research has shown that the correlation between DNL and community response is best with an expected response of “No Response Although Sound is Generally Noticeable” when the following sound levels for differing sound environments are accounted for. Table 2.2-1 should be considered the best available sound levels to specify without any cost/benefit analysis.

Table 2.2-1	Ideal Noise Limits Derived from EPA Research			
	24 hr. DNL-ref.	Daytime dBA	Nighttime dBA	Continuous day & night dBA
Urban and Suburban	55	55	45	49
Quiet Rural	45	45	35	39

### 2.3\_State Standards

Just over a dozen states have codified regulations or zoning guidance or siting standards that have the same result as regulations for industrial noise. Most allow a higher limit for daytime hours. The *nighttime* limits for industrial or commercial noise sources are tabulated below for thirteen states, assuming a residual or equivalent ambient level of 33 dBA for the last listed states using an ambient based standard.

Clearly there is a large variance of “acceptable” levels for nighttime noise emissions at sensitive receptors from state to state amounting to a huge range of 17 dBA for the example above. Not all can possibly be appropriate.

Eight states issue ‘maximum emission limits’ that differ during daytime and nighttime hours and are applicable at residential receptor areas *regardless* of the acoustic environment in those areas. While simple to codify and enforce, it is illogical that the same level could be satisfactory for any residential environment ranging from loud urban to remote quiet rural residential locations. The state of Maryland<sup>ii</sup> acknowledges this and has found that fully 50% of excessive noise complaints comply with the State’s regulation of 55 dBA at night that implies 55 dBA at night is just too loud for at least 50% of citizens.

Maine and Washington acknowledge the differing ambient environments by including a clause that reduces the allowable emission limit for “quiet” areas in Maine and “rural” areas in Washington. The states of New York, Massachusetts and California use ambient-based emission levels, i.e. the allowable emission level is calculated based on some prescribed relatively small increase to existing ambient or background sound levels. An ambient-based method is based on the *perception* of the new sound in the *specific* residential community.

A perception-based method is clearly a better approach than a single emissions level limit, and in fact many years of experience have shown this approach is working successfully in these three states.

STATE	NOISE LIMIT AT RESIDENTIAL RECEPTORS		COMMENTS
	"A" WTD. EMISSIONS LEVEL		
MARYLAND	55		EMISSION LIMIT, ANY AMBIENT
DISTRICT OF COLUMBIA	55		EMISSION LIMIT, ANY AMBIENT
DELAWARE	55		EMISSION LIMIT, ANY AMBIENT
ILLINOIS	51		EMISSION LIMIT, ANY AMBIENT-EQUIVALENT A-WTD LEVEL FROM SPECIFIED OCTAVE BANDS
CONNECTICUT	51		EMISSION LIMIT, ANY AMBIENT
MINNESOTA	51		EMISSION LIMIT, ANY AMBIENT
NEW JERSEY	50		EMISSION LIMIT, ANY AMBIENT
OREGON	50		L50 IN ANY ONE HOUR IN "QUIET" ENVIRONMENTS
COLORADO	50		EMISSION LIMIT, ANY AMBIENT
MAINE	45		50 dBA WHEN AMBIENT LEQ>35 dBA, 45 dBA BELOW (USE Leq=33 dBA)
MASSACHUSETTS	40		MAXIMUM OF 5 TO 10 dBA ABOVE LOWEST L90 AMBIENT (USE MIN L90=33 + 7 dBA)
WASHINGTON	39		EMISSION LIMIT DEPENDING ON RURAL (39) OR RESIDENTIAL (42) ZONING
CALIFORNIA	38		MAXIMUM OF 5 dBA ABOVE L90 AMBIENT (FOUR QUIETEST CONSECUTIVE HOURS, USE MIN L90=33 dBA)
NEW YORK	38		MAXIMUM OF 5 dBA ABOVE UNDEFINED AMBIENT (USE MIN L90 OR Leq =33 dBA)
MEAN STATE NIGHTTIME LIMIT:	50		
AVERAGE STATE NIGHTTIME LIMIT	47.7		

**Table 2.3.1** Tabulation for State Noise Regulations and Standards

The difficulty of just selecting one of these state methods for general use is in the definitions and implementation of the standards, i.e. in the details and methods. For examples, the states of CA and NY set the threshold for potential adverse response at a level of 5 to 6 dBA above the background while MA uses an increase of 10 dBA except for major power plants over 100 MW where the burden is placed on the applicant to demonstrate that the power plant cannot be made quieter for technical or economic reasons.

In addition the three states define the baseline background differently. MA defines the background as the quietest hourly LA90 measured while CA has evolved into using the minimum hourly LA90 for the quietest consecutive four hour period. NY does not specifically define the ambient metric to use so various units and measurement times are used by different applicants that can result in quite different permit levels. These differences are complicated by the fact the ambient can be measured in as little as one day.

Despite the detail variances in the three states, experience over many years has shown the standards to be effective in avoiding adverse impact from facility noise emissions. This experience plus safeguards for tonal and excessive low frequency noise can be crafted into a proven objective and fair ambient-based method for assessing noise impact for major facilities.

For ease, a simple fixed limit is recommended for this project rather than the complex analysis and necessary background measurements required for the ambient-based methodology. With this in mind the average of the State's nighttime fixed limit is 52 dBA.

## 2.4\_Local Standards

Finally, it should be said that countless counties and local municipalities have enacted noise laws and codes. These vary even more than state standards, and are very often ill defined and outdated probably due to budget constraints. Nevertheless, the zoning ordinances of the surrounding counties have been reviewed and are given in Appendix A. The table below compared these results:

Comparison of Local Day and Nighttime Noise Limits for Continuous Noise at Residential Zones			
	Daytime	Nighttime	Comment
	dBA	dBA	
Loudoun County	55	55	Under review
Prince William County	60	55	
Fauquier County	"Unreasonable Language"		
Montgomery County	65	55	
Fairfax County	60	55	Under review
Town of Leesburg	70	55	Under review
State of Maryland	65	55	
Sate of Virginia	None	None	

Table 2.4-1: Comparison of Local Ordinances to the current Loudoun Zoning Ordinance

While most prescribe a daytime limit, it is superfluous because it is not practical to design noise emissions to two limits therefore the most stringent (nighttime) limit is used for design.

## 2.5\_Summary of Literature Review

If we correctly consider the allowable nighttime zoning limit at residential receptors to be the major issue, we have a large 10 to 20 dBA gap between current practice in surrounding local ordinances at 55 dBA compared to the ideal goal of a range of 35 to 45 dBA based on ideal EPA and WHO guidelines. The range from 35 to 45 dBA depends on the moderate to very quiet environments found in Loudoun County. The only value of staying with the current practice of 55 dBA at night is that exceedence of this value guarantees the problem is real to the majority of listeners, not just to a small proportion of citizens.

We conclude and recommend that the mid-point between the ideal goals of WHO and EPA and current practice considering desired development be used as a basis for amending the ordinance. For examples, a new day/night limit of 50 dBA (mid-point of 45 & 55 dBA) is appropriate for urban and suburban environments within the County and balances the citizens and developer. Likewise, a limit of 40 dBA is appropriate in the outer quiet areas of the County. Such areas have large acreage compared to inner County development so the free noise abatement with distance would provide a buffer and offset the noise abatement cost of development.

### 3.0\_ Site Visits and Test Methodology

Appendix B contains detail Technical Memos (TM Reports) for visits to:

- TM-102114-1: Kennel noise analysis in a quiet rural area
- TM-102814-1: Data center next to mixed use and detached residential
- B&B Entertainment sound in a residential neighborhood

The main focus was on developing a measurement technique that could be used for mostly any complaint situation. It is desirous to use a highly accurate sound level meter (SLM) that integrates the varying sound as it is received by the microphone called an integrating SLM. The cover of this report shows time/level (dBA) traces over two 8 minute periods in a typical suburban environment where it is clear there is the true instantaneous signal that varies constantly as normal events occur and a residual level, i.e. the level that excludes these transient sources.

Our task may be to measure both of these signals or only one. For example, next to a data center we are interested in the residual level caused by the high capacity HVAC equipment required in data centers to cool the electronic equipment. In this case we want to exclude the normal transients so clean samples without any transients are required.

At a kennel or near an outdoor music event the signal of interest is the ever changing music or barking signal itself. Both signals can be captured by an integrating SLM set for 15 second intervals. The technician pushes a button to start the measurement and listens intently for the 15 seconds or selected interval. If only the signal of interest is heard during the 15 seconds, we have a valid measurement. As a minimum, the ordinance will require three “clean” samples. For music or kennels more than three samples is desirable.

However, the same instrumentation and technique is employed. This was demonstrated by our visits and data analysis at these actual sites.

End of Text

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<sup>i</sup> U.S. EPA number PB-239 429, “*Information on Levels of Environmental Noise Requisite to Protect Health and Welfare with an Adequate Margin of Safety*”, March 1974

<sup>ii</sup> Title 26, Department of the Environment, Chapter 03 Control of Noise Pollution, State of Maryland, Note 3, The Noise Control program – How it Works, 1974.

# **Appendix A**

## **Report HAI-121814-1**

### Ordinances from Surrounding Communities

- Town of Leesburg
- Prince William County
  - Fauquier
  - Fairfax
- Montgomery County, MD (Chapter 31B)
  - State of Maryland

**Proposed Town of Leesburg Noise Ordinance Amendment  
Information Sheet  
March 28, 2014**

The Town of Leesburg is proposing an amendment to its current Noise Ordinance (Section 24-182). This information is provided to help understand the proposed changes.

Existing Ordinance:

- The current Town of Leesburg Noise ordinance is based on the “Plainly Audible” standard, and does not have decibel standards.
- The Plainly Audible standard is based on the following definitions within our Ordinance:
  - *Plainly audible* means any sound that can be heard clearly by a person using his or her unaided hearing faculties. When music is involved, the detection of rhythmic bass tones shall be sufficient to be considered plainly audible sound.
  - *Excessive noise* means any sound which annoys or disturbs humans or which causes or tends to cause an adverse psychological or physiological effect on humans. Specific examples of prohibited excessive noise are set forth in Section 24-182(3) of the Town Code.
- Under this standard, per Section 24-182(3), if sound, generated from a variety of sources as listed in Section 24-182(3) is “plainly audible” at a distance of 50 feet, it is considered “excessive noise” and is considered a public nuisance, constituting a violation.
- This applies to residential and commercial areas with no distinction.

Proposed Ordinance:

- Section 24-182 will be amended to create distinction between residential and commercial areas.
- In residential areas, the plainly audible standard will still apply and not be changed.
- In commercial areas only, the plainly audible standard would not apply during the following days and times:
  - 8:00 a.m. and 10:00 p.m., Sunday through Wednesday
  - 8:00 a.m. and 11:00 p.m., Thursday through Saturday
- Outside of these times, the plainly audible standard would still apply in commercial areas.
- Creation of a decibel standard in commercial areas (during the times above when plainly audible does not apply) as it affects an adjacent residential area. Commercial areas would not be

allowed to create noise that exceeds:

- 70 dB(A) between 8:00 a.m. and 10:00 p.m. within a residential area
  - 55 dB(A) between 10:01 p.m. and 7:59 a.m. within a residential area
- The decibel limit would be enforced by the Leesburg Police Department, utilizing a sound meter.

Other Changes:

- The addition of Section 24-182 (d) to address noise generated by a gathering of ten (10) or more people. The plainly audible section currently applies only to sound that is mechanically produced. This section addresses noise from gatherings of people, in residential and commercial areas, that is created by non-mechanical means (i.e., yelling, shouting, parties, etc.)
- The elimination from the definition section of the term “sound amplifying equipment” and the elimination of section 24-182(5), *Sound amplifying equipment - Registration*. This current provision in the Code provides that “... no person shall use or cause to be used sound amplifying equipment in or over the town, unless such equipment is first registered with the town. Application for such registration shall be filed with the Town Manager at least 48 hours in advance of the use and shall state the following...”

The staff report presented to Town Council at the Public Hearing of March 25, 2014, is attached [here](#).

The Power Point shown to Town Council at the Public Hearing of March 25, 2014, is attached [here](#).

The proposed Ordinance (with changes highlighted) is attached [here](#).

For further information, please contact the Project Manager:

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Assistant Town Manager  
[sparker@leesburgva.gov](mailto:sparker@leesburgva.gov)  
703.771.2771

Prince William County, Virginia, Code of Ordinances >> **Chapter 14 NOISE** >>

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## CHAPTER 14 NOISE <sup>[1]</sup>

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[Sec. 14-1. Declaration of policy.](#)

[Sec. 14-2. Violations of chapter.](#)

[Sec. 14-3. Definitions.](#)

[Sec. 14-4. Maximum permissible sound levels generally.](#)

[Sec. 14-5. Prohibitions generally.](#)

[Sec. 14-5.1. Noise from animals.](#)

[Sec. 14-6. Trash or refuse.](#)

[Sec. 14-7. Measurement procedures.](#)

[Sec. 14-7.1. Sport shooting ranges.](#)

[Sec. 14-8. Exemptions.](#)

### **Sec. 14-1. Declaration of policy.**

It is hereby declared to be the public policy of Prince William County to protect its citizens against excessive noise which is detrimental to life, health and enjoyment of property. In order to promote the public health, safety, welfare and the peace and quiet of the inhabitants of the county, the following measurements and standards relating to noise are hereby adopted.

*(Ord. No. 89-143, 10-24-89)*

### **Sec. 14-2. Violations of chapter.**

Any person violating any provision of this chapter shall be guilty of a Class 2 misdemeanor

*(Ord. No. 89-143, 10-24-89)*

### **Sec. 14-3. Definitions.**

For the purposes of this chapter, the following words and phrases shall have the meanings respectively ascribed to them by this section:

*A-weighted decibel* means the sound level, in decibels, measured with a sound level meter using the A-weighting network or scale as specified in the ANSI S1.4-1983 (specification for sound level meters). The level so read shall be postscripted dB(A) or dBA.

*ANSI* means the American National Standards Institute, Inc., New York, New York.

*Chief* means the chief of police of Prince William County or his authorized agents.

*Daytime* means the local time of day between the hours of 7:00 a.m. and 10:00 p.m. weekdays and from 9:00 a.m. to 10:00 p.m. on Saturdays, Sundays and legal holidays observed by county government unless otherwise specified.

*Decibel* means a unit that describes the sound pressure level or intensity of sound. The sound pressure level in decibels is 20 times the logarithm to the base ten of the ratio of the pressure of the sound in microbars to a reference pressure of 0.0002 microbar; abbreviated dB.

*Director* means the director of the department of public works or his authorized agent.

*Nighttime* means those times excluded from the definition of daytime.

*Noise* means any steady-state or impulsive sound occurring on either a continuous or intermittent basis.

*Noise disturbance* means any sound which:

- (1) Endangers or injures the safety or health of humans; or
- (2) Endangers or injures personal or real property; or
- (3) Exceeds the applicable maximum permissible sound levels as they appear in the table in section 14-4

*Sound level meter* means an instrument to measure sound pressure levels that meets or exceeds performance standards for a Type 2 meter as specified by the ANSI.

*Sound pressure level* means the intensity in decibels (dB) of a sound.

*Zoning district classification* is the scheme of land use classification contained in the Prince William County Zoning Ordinance.

(Ord. No. 89-143, 10-24-89; Ord. No. 90-20, 2-6-90; Ord. No. 92-59, 6-16-92; Ord. No. 11-66, Attch., 12-06-11)

#### **Sec. 14-4. Maximum permissible sound levels generally.**

- (a) Except as otherwise provided, any noise which emanates from any operation, activity or source and which exceeds the maximum permissible sound levels established in this section below is hereby prohibited. Such levels shall be measured at the property boundary of the sound source or at any point within any other property affected by the noise. When a noise source can be identified

and its noise measured in more than one zoning district classification, the limits of the most restrictive classification shall apply.

**MAXIMUM PERMISSIBLE SOUND PRESSURE LEVELS**

Zoning District Classification	Maximum dBA Daytime	Maximum dBA Nighttime
Residential	60	55
Mixed Use District	60	55
Commercial	65	60
Office	65	60
Industrial	79	72

- (b) Heating and cooling systems, including but not limited to air conditioners and heat pumps, shall not be subject to the night levels enumerated above.
- (c) Any person, with lawfully obtained permits, who between the hours of 6:00 a.m. and 10:00 p.m. weekdays and between the hours of 9:00 a.m. and 10:00 p.m. on Saturdays, Sundays and legal holidays observed by county government operates or causes to be operated any equipment used in construction, repair, alteration or demolition work on buildings, structures, alleys or appurtenances thereto in the outdoors in any residential district within 100 yards of a lawfully occupied dwelling shall not be subject to the levels enumerated above.
- (d) Persons performing construction of public projects, repair or maintenance work for such projects or persons performing work for private or public utilities for the repair of facilities or restoration of services shall not be subject to the levels enumerated above.

*(Ord. No. 89-143, 10-24-89; Ord. No. 90-20, 2-6-90)*

**Sec. 14-5. Prohibitions generally.**

The following acts are violations of this chapter:

- (1) Sounding a horn or other signaling device on any motor vehicle except as an emergency or danger warning signal.
  - a. Operating or causing to be operated a public or private motor vehicle or motorcycle on a public right-of-way at any time in such a manner that the sound level emitted by the motor vehicle or motorcycle, when measured at a distance of 50 feet or more, exceeds the level set forth in the following table:

	Sound level in dBA	
Vehicle Class	Speed limit 35 MPH or less	Speed limit over 35 MPH

All motor vehicles of GVWR or GCWR of 6,000 lbs. or more	86	90
Any motorcycle	82	86
Any other motor vehicle or any combination of vehicles towed by any motor vehicle	76	82

- b. This section shall not apply to any motor carrier vehicle engaged in interstate commerce.
- [(2)] Operating, loading or unloading any vehicle, including but not limited to trucks, or the opening and destruction of bales, boxes, crates and containers in the outdoors in zones other than industrial within 100 yards of a lawfully occupied dwelling between the hours of 10:00 p.m. and 6:00 a.m.
- [(3)] Operating or causing to be operated between the hours of 10:00 p.m. and 6:00 a.m. on weekdays and between the hours of 10:00 p.m. and 9:00 a.m. on Saturdays, Sundays and legal holidays observed by county government any equipment used in construction, repair, alteration or demolition work on buildings, structures, alleys or appurtenances thereto in the outdoors in any residential district within 100 yards of a lawfully occupied dwelling. This section shall not apply to construction of public projects, the repair or maintenance work performed on such projects or work performed by private or public utility companies for the repair of facilities or restoration of services.
- [(4)] Using, operating or causing to be operated mechanical loud speakers or other sound amplification devices on trucks or other moving vehicles or in commercial establishments for the purpose of commercial advertising or attracting the attention of the public during the nighttime. The use of such at all other times shall be subject to the following conditions:
- a. The only sounds permitted are music or human speech.
  - b. Sound shall not be issued or devices shall not be used within 100 yards of hospitals, schools, churches or courthouses.
  - c. The human speech and music amplified shall not be obscene.
- [(5)]

Operating or permitting to be operated any powered model aircraft in the outdoors during the nighttime. Any person desiring to use county parks or facilities to operate such aircraft at any time must first obtain permission from the park authority.

- [(6)] The playing of radio, phonographs, television, tape or disc players, musical instruments or drums, sound amplifiers or similar devices which produce, reproduce or amplify sound in such a manner as to emit sound audible at a distance of 50 feet outside of a building or audible through partitions common to two or more residences within a building.
- [(7)] Talking, yelling, shouting, screaming, singing, or any other form of human sounds produced by any person or group of people between the hours of 10:00 p.m. and 6:00 a.m. in such a manner as to be audible across property boundaries or audible through partitions common to two or more residences within a building.
- [(8)] Playing, operating or permitting to be operated, any radio, tape player, compact disc player, loud speaker or other electronic device used for the amplification of sound, which emits sound within a motor vehicle being operated or parked on a public street alley, parking lot open to the public, or public park, and which emits sound audible from outside the motor vehicle at a distance of 50 feet or more. The provisions of this subsection shall not apply to motor vehicle alarms or other security devices, the emission of sound for purposes of alerting persons to the existence of an emergency, or the emission of sound in performance of emergency work.

(Ord. No. 89-143, 10-24-89; Ord. No. 90-20, 2-6-90; Ord. No. 95-8, 1-10-95; Ord. No. 00-65, 9-5-00; Ord. No. 11-66, Attch., 12-06-11)

#### **Sec. 14-5.1. Noise from animals.**

- (a) It shall be unlawful for any person to allow any animal or bird except farm animals in agricultural districts to create noise such that it is audible at least once a minute for ten consecutive minutes (i) inside the confines of the dwelling unit, house or apartment of another; or (ii) at 50 or more feet from the animal or bird.

(Code 1965, 13.1-41(g); Ord. No. 77-40-23, 11-1-77; Ord. No. 83-1006, 12-20-83; Ord. No. 89-143, 10-24-89; Ord. No. 11-66, Attch., 12-06-11)

**Editor's note—**

Pursuant to Ord. No. 89-143, adopted Oct. 24, 1989, former § 14-3 remains in full force and effect; redesignation of such provisions as § 14-5.1 was at the discretion of the editor.

**Cross reference—** *Animals and fowl, Ch. 4.*

#### **Sec. 14-6. Trash or refuse.**

Noise relating to the collection of trash or refuse is regulated under section 22-42 of this Code.

(Ord. No. 89-143, 10-24-89)

#### **Sec. 14-7. Measurement procedures.**

The measurement of sound or noise pursuant to this section shall be as follows:

- (1) The measurement of sound or noise shall be made with sound level meters Type 1 or Type 2 which meet the standards prescribed by the ANSI. The instruments shall be maintained in calibration and good working order. A calibration shall be made of the system at the time of any noise measurement. Measurements recorded shall be taken so as to provide a proper representation of the noise source. The microphone during measurement shall be positioned so as not to create any unnatural enhancement or diminution of the measured noise. A windscreen for the microphone shall be used when required. A minimum of three sound level readings will be taken. The geometric mean of these readings will be used as the average sound level. If the background noise is equal to the levels set forth in [section 14-4](#) above, three dB shall be subtracted out of the average sound level.
- (2) The slow meter response of the sound level meter shall be used to determine that the average amplitude has not exceeded the dBA readings or the limiting noise spectra set forth in [section 14-4](#) above.
- (3) Unless otherwise specified, the measurement shall be made at the property boundary on which such noise is generated, or at any point within the receiving property affected by the noise.

(Ord. No. 89-143, 10-24-89)

#### **Sec. 14-7.1. Sport shooting ranges.**

- (a) The provisions of this chapter shall not subject a sport shooting range to noise control standards more stringent than those in effect at the time the construction or operation of the range initially was approved, or at the time any application was submitted for the construction or operation of the range. The operation or use of a sport shooting range shall not be enjoined on the basis of noise, nor shall any person be subject to action for nuisance or criminal prosecution in any manner relating to noise resulting from the operation of the range, if the range is in compliance with all ordinances relating to noise in effect at the time construction or operation of the range was approved, or at the time any application was submitted for the construction or operation of the range.
- (b) For purposes of this section, "sport shooting range" means an area or structure designed for the use of rifles, shotguns, pistols, silhouettes, skeet, trap, black powder, or any other similar sport shooting.

(Ord. No. 90-77, 6-5-90; Ord. No. 05-43, 6-28-05)

*State law reference— Similar provisions, Code of Virginia, § 15.2-917*

#### **Sec. 14-8. Exemptions.**

Exemptions from the provisions of this chapter may be granted in accordance with the requirements below:

- (1) Any person responsible for any noise from the operating of any equipment used in construction, repair, alteration or demolition work on building structures, alleys or appurtenances thereto shall apply to the director for an exemption or partial exemption from the provisions of this chapter. All other requests for exemptions shall be directed to the chief. The director or the chief may grant such exemption or partial exemption if he finds that:
  - a. The noise does not endanger the public health, safety or welfare; or

- b. Compliance with the provisions of this chapter from which an exemption is sought would cause a serious hardship without producing equal or greater benefit to the public.
- (2) In determining whether to grant such exemption the director or chief shall consider the following:
  - a. The time of day the noise will occur;
  - b. The duration of the noise;
  - c. The loudness of the noise in relation to the maximum permissible sound levels set forth in [section 14-4](#) of this chapter;
  - d. Whether the noise is intermittent or continuous; and
  - e. Such other matters as are reasonably related to the impact of the noise on the health, safety and welfare of the community and the degree of hardship which may result from the enforcement of the provisions of this chapter.
- (3) Exemptions or partial exemptions issued pursuant to this section shall be granted for such period as the director or chief deems reasonable. Any such exemption shall be reviewed if complaints are received by the director or chief and may be revoked if, when the foregoing standards are applied, circumstances no longer justify the exemption or partial exemption.
- (4) Any person aggrieved by a decision of the director or the chief made pursuant to this section may obtain review of such decision by the county executive or his authorized agent by delivering a written statement of appeal to the office of the county executive within ten days of the date of the decision. The county executive shall review all statements of grievances and shall, within ten days after receipt of such written statement of grievance, either affirm or set such decision aside, and make any such further determination as may be necessary to effectuate the provisions of this section. The decision of the county executive shall be final and binding.

(Ord. No. 89-143, 10-24-89)

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FOOTNOTE(S):

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**Editor's note**— Ord. No. 89-143, adopted Oct. 24, 1989, amended Ch. 14 in its entirety to read as set forth in §§ 14-1—14-8. Additionally, former § 14-3 was retained in full force and effect by such ordinance, and was renumbered as § 14-5.1 by the editor. Prior to amendment by Ord. No. 89-143, Ch. 14 consisted of §§ 14-1—14-9, which pertained to noise and derived from §§ 13.1-40—13.1-43 of the 1965 Code and Ord. No. 89-127, adopted Sept. 12, 1989. [\(Back\)](#)

**State Law reference**— Use of air cannons, Code of Virginia, § 15.2-918. [\(Back\)](#)

Fauquier County, Virginia, Code of Ordinances >> - CODE OF ORDINANCES >> **Chapter 13.5 NOISE >>**

**Chapter 13.5 NOISE <sup>[1]</sup>**

[Sec. 13.5-1. Violations of chapter.](#)

[Sec. 13.5-2. General prohibitions.](#)

[Sec. 13.5-3. Specific prohibitions.](#)

[Sec. 13.5-4. Exemptions.](#)

[Sec. 13.5-5. Severability; private nuisance actions preserved; enforceability.](#)

**Sec. 13.5-1. Violations of chapter.**

Unless otherwise specifically provided, a violation of any provision of this chapter shall constitute a Class 4 misdemeanor.

*(Ord. No. 88-3, 6-7-88)*

**Sec. 13.5-2. General prohibitions.**

The creation of any unreasonably loud, disturbing and unnecessary noise in the county is prohibited. Noise as hereinafter defined, of such character, intensity and duration as to be detrimental to the health, safety or general welfare of any individual is prohibited.

*(Ord. No. 88-3, 6-7-88)*

**Sec. 13.5-3. Specific prohibitions.**

- (a) *Noise near schools, hospitals, etc.* The creation of any excessive noise on any street adjacent to any school, institution of learning, library, hospital or sanitarium, or any court while the same is in session, which unreasonably interferes with the working or activities of such place.
- (b) *Noisy animals.* Owning, keeping, possessing or harboring any animal or animals which frequently or habitually howl, bark, meow, squawk or make such other noise as is plainly audible across property boundaries or through partitions common to two (2) persons within a building.
- (c) *Loud parties, playing of radios, musical instruments, etc.*
  - (1) Operating or permitting the use, or operation of any radio receiving set, musical instrument, television, phonograph or any other

device for the production of sound between the hours of 10:00 p.m. and 7:00 a.m. the following day, except Friday and Saturday evenings, when the hours of noise limitation shall be 11:00 p.m. to 7:00 a.m. the following day in such a manner as to be plainly audible across property boundaries or through partitions common to two (2) persons within a building or plainly audible at fifty (50) feet from such device when operated within a motor vehicle parked on a public right-of-way or in a public place.

- (2) The conducting of any loud party, between the hours of 10:00 p.m. and 7:00 a.m., except Friday and Saturday evenings, when the hours of noise limitation shall be 11:00 p.m. to 7:00 a.m. the following day, with or without radios, musical instruments or stereos in such a manner as to be plainly audible across property boundaries or through partitions common to two (2) persons within a building or plainly audible at fifty (50) feet from such device.
- (d) *Engine braking.* The creation of any unreasonably loud, disturbing or unnecessary noise caused by the application of engine brakes by any driver of a motor vehicle and is not as of a result a bona fide emergency occurrence necessitating the application of an engine brake. Any violation of this subsection shall constitute a Class 1 misdemeanor, which misdemeanor is punishable by a fine of not more than two thousand five hundred dollars (\$2,500.00) or confinement in jail for not more than twelve (12) months, or both.
- (e) The collection of trash or refuse in residential use districts between the hours of 10 p.m. and 5 a.m. the following day.  
(Ord. No. 88-3, 6-7-88; Ord. No. 02-07, 10-21-02; Ord. No. 09-06, 7-9-09)

#### **Sec. 13.5-4. Exemptions.**

The following activities shall be exempt from the provisions of this chapter:

- (1) Animal shelters or kennels which were in existence as of the date of adoption of this chapter.
- (2) Sporting events operated and conducted under the auspices of an official organization such as a hunt club, civic organization, high school.
- (3) Agricultural activities.
- (4) Automobile races at commercial facilities before 10:00 p.m., except Friday and Saturday evenings, which will be before 11:00 p.m.

(Ord. No. 88-3, 6-7-88)

#### **Sec. 13.5-5. Severability; private nuisance actions preserved; enforceability.**

- (a) In the event that any portion of this chapter is declared unconstitutional, invalid, or unenforceable for any reason, such declaration shall not affect the validity or enforceability of any other portion of this chapter.
- (b) Nothing in this chapter is intended to preclude private actions to abate or enjoin nuisances. The enforcement of this chapter by public officers shall not be a precondition to the bringing of an action to restrain, abate or enjoin such nuisance.
- (c) This chapter may be enforced by the zoning administrator or any zoning inspector of Fauquier County, or by the sheriff or any deputy sheriff of Fauquier County.
- (d) The provisions of this chapter are cumulative and not exclusive and shall supplement and be in addition to any noise performance

standards or other standards set in the zoning ordinance of Fauquier County. It shall not be necessary to utilize a sound measurement device to determine the precise decibel level of many sounds which are the subject of this chapter.

*(Ord. No. 88-3, 6-7-88)*

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FOOTNOTE(S):

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— (1) —

**Editor's note**— *Ord. No. 88-3, adopted June 7, 1988, amended the Code by adding provisions designated as Ch. 20, § 20-1—20-5. In order to maintain the alphabetical sequence of chapters, said provisions have been included herein as Ch. 13.5, §§ 13.5-1—13.5-5, at the discretion of the editor. ([Back](#))*

**Cross reference**— *Animals and fowl, Ch. 4; nuisances, Ch. 14. ([Back](#))*

9/8/14

*Changes since the 4/18/14 draft are shown in red italics*

## ARTICLE 1. General Provisions.

### Section 108.1-1-1. Short title.

This Chapter may be referred to as the "Noise Ordinance" of the County of Fairfax.

(24-75-16A; 1-1-76)

### Section 108.1-1-2. Declarations of findings and policy.

~~It is hereby declared to be the public policy of Fairfax County, in cooperation with Federal, State and local governments and regional agencies, to promote an environment for its citizens free from noise that jeopardizes their health or welfare or degrades the quality of life. Nothing contained in this Chapter shall be construed to authorize or direct any action which shall result in any substantial increase in noise levels from any noise source in Fairfax County. The Board hereby finds and declares that certain noise is a serious hazard to the public health, welfare, peace and safety and the quality of life of the citizens of Fairfax County; that the people have a right to and should be ensured of an environment free from such noise sound that may jeopardizes the public health, welfare, peace and safety or degrade the quality of life; and that it is the policy of the Board to prevent such noise to the extent such action is not inconsistent with a citizen's First Amendment rights or noise that may be permitted pursuant to Federal or State law.~~

## ARTICLE 2. Definitions.

### Section 108.1-2-1. Definitions.

(a) The following words and phrases, when used in this Chapter, shall for the purposes of this Chapter, have the meanings respectively ascribed to them in this Section, except in those situations where the context clearly indicates a different meaning:

(1) *A-weighted sound pressure level* shall mean the sound pressure level as measured on a sound level meter using the A-weighted network. The level so read shall be postscribed dB(A) or dBA.

(2) *Board* shall mean the Fairfax County Board of Supervisors.

(3) *Continuous sound* shall mean a sound whose intensity remains essentially constant during the period of observation. *Continuous noise sound* for measurement purposes shall be defined as *noise sound* which is measured by the slow response setting of a *noise sound* level meter.

(24) *Decibel* shall mean a unit which describes the sound pressure level or intensity of sound. The sound pressure level in decibels is twenty (20) times the logarithm to the base ten (10) of the ratio of the pressure of the sound in microbars to a reference pressure of 0.0002 microbar; abbreviated dB.

(35) *Device* shall mean any mechanism which is intended to, or which actually produces *noise sound* when operated or handled.

(6) *Discernible* shall mean that the *noise sound* is sufficiently distinct such that its source can be clearly identified.

(4) *Disposal* shall mean the discharge, deposit, injection, dumping, spilling, leaking or placing of any solid waste into or on any land.

9/8/14

~~(57) Emergency work shall mean any work made necessary to restore property to a safe condition following a public calamity, or work required to protect persons or property from immediate exposure to danger, performed for the purpose of preventing or alleviating physical injury or illness or property damage threatened or caused by an emergency, including work performed by public service companies when emergency inspection, repair of facilities, or restoration of services is required for the immediate health, safety, or welfare of the community and the operation of police cars, fire trucks, ambulances, helicopters and other vehicles that are responding to emergencies.~~

~~(6) Equivalent sound level (Leq) shall mean 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 pressure level.~~

~~(8) Impulse sound shall mean brief bursts of sound including, but not limited to, the start up of a motor or engine.~~

**OPTIONS**

~~(8) Impulse sound shall mean sound with the following qualities: (a) the peak of the sound level, as measured with an impulse sound level meter, is maintained for less than one (1) second; (b) such time is short compared to the occurrence rate; (3) the onset is abrupt; and (4) the decrease in sound level is rapid. Impulse sound may include, but is not limited to, sound from the firing of weapons, pile drivers or blasting.~~

or

~~(8) Impulse sound shall mean acoustical energy characterized by a rapid rise to a maximum sound pressure followed by a somewhat slower decrease in sound pressure, both occurring within one (1) second. Impulse sound may include, but is not limited to, sound from weapons fire, pile drivers or blasting.~~

~~(9) Instrument shall mean any musical instrument, radio, phonograph, compact disc player, amplifier or any other similar device which produces, reproduces or amplifies noise sound.~~

~~(710) Landfill shall mean a site used for the disposal of solid waste in a controlled manner by a person for the dumping of debris; or a disposal site operated by means of compacting and covering solid waste at least once a day with an approved material. This term is intended to include both debris landfills and sanitary landfills as defined in Chapters 104 and 109.1 of the Fairfax County Code.~~

~~(10) Mixed use area means the parcel on which one or more residential dwellings and at least one other non-residential use are located and any contiguous rights-of-ways, roads, streets, lanes, sidewalks, or other such means of egress and ingress to any such parcel.~~

~~(811) Motor vehicle shall mean any vehicle which is self-propelled or designed for self-propulsion including but not limited to, passenger cars, automobiles, trucks, truck-trailers, semitrailers, campers, motorcycles, mini-bikes, motor scooters and motor boats, and racing vehicles; and any motorcycle (including but not limited to motor scooters and mini-bikes) as defined in Paragraph 14 of § 46.1-1, Va. Code Ann. Motor vehicles shall not include lawn mowers or other lawn equipment and nothing herein shall conflict with state law.~~

~~(912) Noise shall mean any sound which may cause or tend to cause an adverse psychological or physiological effect on human beings, the intensity, frequency, duration or character of sounds from a single source or multiple sources that may degrade the public health, safety or welfare.~~

~~(13) Non-residential area shall mean a parcel in a residential district that does not contain a residential dwelling and contains non-residential uses such as schools, parks, places of worship, fire stations and sewage treatment plants.~~

~~(10) Noise disturbance shall mean any unnecessary sound which annoys, disturbs, or perturbs reasonable persons with normal sensitivities; or any unnecessary sound which reasonably may be perceived to injure or endanger the comfort, repose, health, peace or safety of any person.~~

9/8/14

~~(11) *Octave band analyzer* shall mean an instrument to measure the octave band composition of a sound by means of a bandpass filter. It shall meet the specifications of the American National Standards Institute publications S1.4-1961, S1.6-1967, and S1.11-1966, or their successor publications.~~

(1214) *Person* shall mean any individual, corporation, cooperative, partnership, firm, association, trust, estate, private institution, group, agency, or any legal successor, representative, agent, or agency thereof.

(15) *Plainly audible* shall mean the sound can be heard by the human ear with or without a medically approved hearing aid or device.

(1316) *Powered model vehicles* shall mean any mechanically powered vehicle, either airborne, waterborne or landborne, which is not designed to carry persons ~~or property~~ including, but not limited to, model airplanes, boats, cars, drones and rockets.

(17) *Recreational grounds* shall mean any playground, athletic field, park or open space area that is publicly or privately owned, including land owned by a homeowner's or condominium association. Recreational grounds shall not include areas that are located on individual single family residential dwelling lots.

(18) *Residential area* shall mean a parcel on which a residential dwelling is located and any contiguous rights of way, roads, streets, lanes, sidewalks, or other such means of egress and ingress to any such parcel.

(19) *Residential dwelling* shall mean any structure in which one or more persons live on a permanent or temporary basis, including, but not limited to, single family dwellings, multiple family dwellings, hotels and motels.

(1420) Public *Road right-of-way* shall mean any street, avenue, boulevard, highway, or alley or public space which is owned or controlled by a public governmental entity open to the public.

(15) *Solid waste* shall mean any garbage, trash, refuse, debris, construction rubble and other discarded material.

(1621) *Sound* shall mean a temporal and spatial oscillation in pressure, or other physical quantity, in a medium with internal forces that causes compression and rare fraction of that medium, and which propagates at finite speed to distant points 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. The description of sound may include any characteristic of such sound, including duration, intensity and frequency.

(1722) *Sound level meter* shall mean an instrument to measure sound pressure levels which shall meet or exceed performance standards the American National Standards Institute (ANSI) Standard S1.4 for a "Type Two" meter as specified by the American National Standards Institute and shall be calibrated by the manufacturer or a company that can certify the calibration at least one (1) time each year.

(23) *Sound generation or to generate sound* shall mean any conduct, activity or operation, whether human, mechanical, electronic or other, including but not limited to, any animal or bird, and any instrument, machine or device, whether continuous, intermittent or sporadic, and whether stationary or ambulatory in nature, which produces or results in a sound that is plainly audible and discernible to the human ear.

(18) *Sound pressure* shall mean the instantaneous difference between the actual pressure and the average or barometric pressure at a given point in space.

(19) *Stationary noise source* shall mean any equipment or facility, fixed or movable, capable of emitting sound beyond the property boundary of the property on which it is used.

(24) *Transportation facility* shall mean bus and rail facilities to include stations, platforms, garages, maintenance and staging areas, associated parking areas, and other associated mechanical

9/8/14

appurtenances such as traction power stations, communication rooms, train control rooms, tie-breaker stations and other similar facilities

(2025) *Zoning administrator* shall mean the Fairfax County Zoning Administrator or his/her duly authorized agent.

(2426) *Zoning district classification*: Refers to the scheme of land use classification contained in the Fairfax County Zoning Ordinance.

(7-17-68, § 17-5.2; 24-75-16A; 1961 Code, § 16A.2.1; 3-79-108; 37-81-108.)

### **ARTICLE 3. Administration, Penalties and Authority and Duties.**

#### **Section 108.1-3-1. Administration of the Ordinance and Enforcement.**

(a) The provisions of this Chapter shall be administered and enforced by the Zoning Administrator and/or his/her duly authorized agent, including the Department of Code Compliance, and shall be assisted by other County departments as applicable.

(b) In addition, Paragraphs (j) and (k) of Sect. 108.1-4-1 may also be enforced by the Police Department. If so enforced by the Police Department, the civil remedies referenced below shall not be applicable.

(c) The person operating or controlling the sound generation or source shall be guilty of any violation caused by that generation or source. If it cannot be determined which person is operating or controlling the sound generation or source, any owner, tenant, resident or manager physically present on the property where the violation is occurring is rebuttably presumed to be operating or controlling the sound generation or source.

*(d) Except as hereinbefore provided in Subparagraph (a) of this Section, a warrant may be obtained for the violation of any provision of Paragraphs (j) and (k) of Sect. 108.1-4-1 only upon the sworn complaint of a police officer or two (2) persons who are not members of the same household alleging the specific violation complained of, that either or both of the complainants requested or made reasonable attempt to request abatement of the violation and that the violation continued after such request. Provided, however, that if there be no more than one household within one half mile of the sound source, a warrant may be issued upon the sworn complaint of one person making the foregoing allegations.*

#### **Comment:**

*New Par. (d) is currently in Chapter 108 and the Police Department has specifically requested that this language be retained as it provides greater flexibility and provides an additional enforcement tool.*

#### **Section 108.1-3-2. Penalties.**

(a) Any violation of any provision of this Chapter shall constitute a misdemeanor and, any person violating this Chapter shall, upon conviction, be punishable by imprisonment not to exceed thirty (30) days or by a fine not to exceed one thousand dollars (\$1,000.00), or both. Each separate act on the part of the person violating the Chapter shall be deemed a separate offense, and each day a violation is permitted to continue unabated shall be deemed to constitute a separate offense upon conviction thereof, shall be punishable by a fine of not less than \$10 and not more \$1,000. Failure to abate any such violation within the time period established by the Court shall constitute a separate misdemeanor offense punishable by a

9/8/14

fine of not less than \$10 nor more than \$1,000, and any such failure during any succeeding ten (10) day period shall constitute a separate misdemeanor offense for each ten (10) day period punishable by a fine of not less than \$100 nor more than \$1,500.

(b) In lieu of the criminal penalties set forth above, a violation of any provision of this Chapter may be punishable by a civil penalty of \$200 for the first violation; and subsequent violations arising from the same set of operative facts shall be punishable by a civil penalty of \$500 for each separate offense.

(c) Each day during any violation of the provisions under Par. (b) above is found to have existed shall constitute a separate offense. However, in no event shall any such violation arising from the same set of operative facts be charged more frequently than one in any ten (10) day period, nor shall a series of such violations arising from the same set of operative facts result in civil penalties that exceed a total of \$5,000. If the civil penalties total more than \$5,000, the violation may be prosecuted as a criminal misdemeanor.

(d) In addition to, and not in lieu of, the penalties prescribed in this section, the Board may apply to the circuit court for an injunction against the continuing violation of any of the provisions of this Chapter and may seek any other remedy or relief authorized by law.

### **Section 108.1-3-3. Authority and duties of the Zoning Administrator.**

In addition to any other authority vested in him by law, the Zoning Administrator:

~~(a) May conduct, or cause to be conducted, studies, research and monitoring related to noise and its prevention, abatement and control.~~

~~(b) May conduct programs of public education regarding the causes and effects of noise and the means for its abatement, and encourage the participation of public interest groups in related public information efforts.~~

(e) May coordinate the *noise sound* control activities of all agencies and departments of the Fairfax County government and advise, consult, cooperate and coordinate *noise sound* control activities with other local governmental units, state agencies, *interstate and interlocal inter-governmental* agencies, the Federal government, and with interested persons and groups with respect to the provisions of this Chapter.

(d) Shall issue such orders, rules and regulations and measurement procedures and methodologies as may be necessary to effectuate the provisions of this Chapter and enforce the same by all appropriate administrative and judicial proceedings.

~~(e) May make recommendations to the Board of Supervisors for changes to this Chapter to make it consistent with all preemptive State and Federal legislation.~~

(f) May enter and inspect any property, premises or place at any reasonable time for the purpose of ascertaining compliance with any provision of this Chapter when granted permission by the owner, or some person with reasonably apparent authority to act for the owner. When permission is refused or cannot be obtained, a proper search warrant may be obtained from a Court of competent jurisdiction upon showing of probable cause to believe that a violation of this Chapter may exist.

~~(g) May administer grants or other funds or gifts from public and private agencies, including the State and Federal governments, for the purpose of carrying out any of the provisions of this Chapter.~~

~~(h) May secure necessary scientific, technical, administrative and operational services, including laboratory facilities, by contract or otherwise.~~

9/8/14

(id) May obtain warrants for violations of any of the provisions of this Chapter and apply to any court of competent jurisdiction for such injunctive relief as shall be necessary to terminate continuing violations of this Chapter.

~~(j) Shall make an annual report to the Board of Supervisors on the status and effectiveness of the Noise Ordinance, including the reasonableness of the noise standards prescribed therein, and shall make recommendations for improvement of this Ordinance.~~

(e) Shall adhere to the notice and procedure requirements of Part 9 of Article 18 of the Fairfax County Zoning Ordinance in order to prosecute any civil or criminal violation of this Chapter

(kf) May perform such other acts as may be necessary to carry out the functions of this Chapter and such other acts as may be specifically enumerated herein. (24-75-16A; 1961 Code, § 16A.3.2; 3-79-108.)

#### ARTICLE 4. ~~Noises Prohibited~~ Sounds.

##### Section 108.1-4-1. Specific prohibitions.

The following acts are violations of this Chapter:

~~(a) Using or operating~~ Use of a loudspeaker or other sound amplification device in a fixed or movable position that is mounted on the exterior to of any building, or mounted upon any structure or motor vehicle for the purpose of commercial advertising, giving instructions, information, directions, talks, addresses, lectures, or providing entertainment to any persons or assemblage of persons on any private or public property, between the hours of 11 p.m. and 7 a.m. the following day Monday through Friday and between 11 p.m. and 9 a.m. on Saturdays, Sundays and Federal holidays.

~~(b) Operating or causing to be operated any equipment used in~~ Any action related to the construction, repair, alteration, or maintenance, remodeling or demolition, work on buildings, structures, streets, alleys, or appurtenances thereto grading or other improvement of real property in the outdoors between the hours of 9 p.m. and 7 a.m. the following day except that no such activity shall commence prior to 9 a.m. Monday through Friday and between 9 p.m. and 9 a.m. on Saturdays, Sundays and Federal holidays.

~~(c) Repairing, rebuilding, or modifying, any motor vehicle or other mechanical device in the outdoors between the hours of 9 p.m. and 7 a.m. the following day.~~

~~(d) Operating or permitting~~ The operation of powered model vehicles in the outdoors between the hours of 9 p.m. and 7 a.m. the following day.

~~(e) The collection of trash or refuse~~ or recyclable materials in residential use districts and/or within 100 yards of a residential dwelling between the hours of 9 p.m. and 6 a.m. the following day.

~~(f) The operation of a landfill within 100 yards of a residential dwelling between the hours of 9 p.m. and 6 a.m.~~

~~(g) Loading or unloading trucks in the outdoors within one hundred (100) yards of a residence~~ residential dwelling between the hours of 9 p.m. and 6 a.m. the following day. (7-17-68, § 17.9; 24-75-16A; 1961 Code, § 16A.4.1; 34-76-108; 24-98-108.)

~~(h) Unless otherwise addressed by this chapter, the operation of power lawn equipment, including but not limited to lawn mowers, leaf blowers, chain saws, trimmers and edgers:~~

(1) between 9 p.m. and 7 a.m. when located within 100 yards from a residential dwelling, and

(2) between 9 p.m. and 6 a.m. when located 100 yards or more from of a residential dwelling.

9/8/14

(i) Unless otherwise excepted by this Chapter, the operation of mechanical devices within 100 yards of a residential dwelling for the cleaning of outdoor parking, pedestrian and/or loading areas between 9 p.m. and 7 a.m.

(j) Unless otherwise excepted by this Chapter, any person, motor vehicle or instrument that permits, operates, or causes any source of sound or sound generation to create a *noise sound* that is plainly audible *and discernible* in any other person's residential dwelling with the doors and windows closed between 11 p.m. and 7 a.m. In addition, the source of *noise sound* or sound generation must be discernible regardless of whether such doors and windows are closed.

(k) Any owner or person in control of any animal that allows or otherwise permits any such animal to bark, howl, bay, meow, squawk, quack, crow or make such other *noise sound* for more than ten (10) consecutive or non-consecutive minutes in any thirty (30) minute period of time, if throughout the ten (10) minute period the sound generated by the animal is plainly audible and discernible:

- (1) across real property boundaries, or
- (2) through partitions common to residential dwellings, or
- (3) at a distance of fifty (50) feet or more from the sound source.

The provisions of this paragraph shall not apply to any animal that, at the time of the *noise sound* or sound generation, was responding to pain or injury or was protecting itself, its kennel, its offspring, a person, or when the animal is a police dog that is engaged in the performance of its duties at the time of making the sound. *Notwithstanding the provisions of this paragraph, animals located on a recreational ground shall be subject to the provision of Par. (b) of Sect. 108.1-3-1.*

#### **Section 108.1-4-2. Places of public entertainment or assembly.**

~~It shall be unlawful after the Zoning Administrator has given appropriate notice requesting abatement, for any person to operate, or permit to be operated, any loudspeaker or other device for the production of sound in any place of public entertainment or other place of public assembly which produces sound pressure levels of 90 dB(A) or greater at any point that is normally occupied by a person, as read with the slow response on a sound level meter, unless a conspicuous and legible sign is located outside such place, near the entrance, stating "WARNING! PROLONGED EXPOSURE TO SOUND ENVIRONMENT WITHIN MAY CAUSE HEARING IMPAIRMENT." (24-75-16A; 1961 Code, § 16A.4.2; 3-79108.)~~

#### **Section 108.1-4-3. Quiet zone.**

~~(a) It shall be unlawful for any person to create any noise in excess of that prescribed within any area designated as a "quiet zone" in conformance with the provisions of Sub-paragraph (b) of this Section; provided, conspicuous signs are displayed in adjacent or contiguous streets indicating that said area is a quiet zone.~~

~~(b) Whenever the protection of the public health, safety and welfare so require, after a duly advertised public hearing, the Board of Supervisors may designate any geographical area of Fairfax County as a "quiet zone." Such designation shall include a description of the subject area, the reasons for its designation as a quiet zone, and shall prescribe the level of noise which shall be permitted in such quiet zone. (24-75-16A; 1961 Code, § 16A.4.3.)~~

#### **Section 108.1-4-2. Maximum permissible sound pressure levels Sound generation.**

~~(a) It shall be unlawful for any person to operate, or permit to be operated, any stationary noise source in such a manner as to create a sound pressure level Unless otherwise addressed by this~~

9/8/14

*Exclusive of ambient*

Chapter, no person shall permit, operate, or cause any source of sound or sound generation to create a sound which exceeds the limits set forth in the following table titled "Maximum Sound Pressure Levels" when measured at the property boundary of the noise sound source or at any point within any other property affected by the noise sound. When a noise sound source can be identified and its noise sound measured in more than one (1) zoning district classification, the limits of the most restrictive classification shall apply. the sound shall not exceed the sound limits set forth in the following table for the zoning district or area in which the source of sound is located, and the sound levels on the affected properties shall not exceed the sound levels set forth in the table for the affected property.

(b) Notwithstanding the provisions of the foregoing Subsection, sound created by the operation of power equipment, such as power lawn mowers and chain saws, between the hours of 7 a.m. and 9 p.m. the same day shall be permitted so long as they do not constitute a noise disturbance. (7-17-68, § 17-4-3; 24-75-16A; 1961 Code, § 16A.4.4.; 34-76-108.)

**MAXIMUM SOUND PRESSURE LEVELS**

ZONING DISTRICT CLASSIFICATION	MAXIMUM dBA	OCTAVE BAND LIMIT	
		CENTER FREQUENCY HERTZ - (HZ)	dB
		31.5	70
		63	69
		125	64
		250	59
RESIDENTIAL	55	500	53
		1,000	47
		2,000	42
		4,000	38
		8,000	35
		31.5	75
		63	74
		125	69
		250	64

- Fairfax County Code  
CHAPTER 108.1 – Noise.

9/8/14

COMMERCIAL	60	500	58
		1,000	52
		2,000	47
		4,000	43
		8,000	40
		31.5	85
		63	84
		125	79
		250	74
INDUSTRIAL	72	500	68
		1,000	62
		2,000	57
		4,000	53
		8,000	50

**MAXIMUM SOUND LEVELS**

<u>Use and Zoning District Classification</u>	<u>Time of Day</u>	<u>Continuous Sound (dBA)</u>	<u>Impulse Sound (dBA)</u>
<u>Residential Areas (as defined herein) in Residential Districts</u>	<u>7 a.m. to 11 p.m.</u>	<u>60</u>	<u>100</u>
<u>Residential Areas (as defined herein) in Residential Districts</u>	<u>11 p.m. to 7 a.m.</u>	<u>55</u>	<u>90</u>
<u>Non-Residential Areas in Residential Districts</u>	<u>All</u>	<u>60</u>	<u>100</u>
<u>Mixed Use Area (as defined herein)</u>	<u>All</u>	<u>60</u>	<u>100</u>
<u>Commercial Districts</u>	<u>All</u>	<u>60</u>	<u>100</u>
<u>Industrial Districts</u>	<u>7 a.m. to 11 p.m.</u>	<u>72</u>	<u>120</u>
<u>Industrial Districts</u>	<u>11 p.m. to 7 a.m.</u>	<u>65</u>	<u>100</u>

*Town of Plympton WY*

9/8/14

**Section 108-4-5. Permissible motor vehicle sound pressure levels.**

- (a) ~~The maximum sound pressure level emitted by motor vehicles not equipped with a muffler conforming to the requirements of §§ 46.1-301 and 46.1-302, Va. Code Ann., operated on a public right-of-way as measured at a point fifty (50) feet from the motor vehicle shall be as provided in the table below titled "Motor Vehicle Noise Limits."~~

**MOTOR VEHICLE NOISE LIMITS**

Vehicle Class	Sound Pressure Level, dB(A) Speed limit 35 mph or less	Speed limit above 35 mph
<del>Any motor vehicle with a manufacturers gross vehicle rating of 10,000 pounds or more, and any combination of vehicles towed by such motor vehicle</del>	<del>86</del>	<del>90</del>
<del>Any motorcycle</del>	<del>82</del>	<del>86</del>
<del>Any other motor vehicle and any combination of vehicles towed by such motor vehicle</del>	<del>76</del>	<del>82</del>

(24-75-16A; 1961 Code, § 16A.4.5.)

**Section 108-4-6. Civil transport category airplane operations; noise limitations.**

- (a) ~~No person may operate, to or from an airport wholly or partially located within Fairfax County, Virginia, any civil transport category airplane unless:~~
- ~~(1) That airplane complies with the noise level requirements of the Federal Aviation Administration (14 CFR, Part 36) for subsonic transport category airplanes; or~~
  - ~~(2) That airplane had flight time before December 31, 1974.~~
- (b) ~~This amendment shall remain in full force and effect only until such time as its provisions are superseded by FAA standards (established under § 711 of the FAA Act) which can be enforced by any citizen of Fairfax County.~~
- (c) ~~Notwithstanding any other provision of this ordinance, the Zoning Administrator shall enforce the noise limitations for civil transport category airplane operations only in the following manner. He shall serve a notice of violation on any person who violates these provisions, providing a reasonable time for abatement or discontinuance of the violation. Should the person in violation of these provisions fail to take such corrective steps, the Zoning Administrator shall request the County Attorney to seek injunctive relief.~~

(3-76-108; 21-76-208; 3-79-108.)

**Section 108.1-4-3. Landfills; maximum sound pressure levels.**

~~It shall be unlawful for any person to operate, or permit to be operated, any motor vehicle, stationary noise source or device, or any combination thereof, at a landfill in such a manner as to create noise sound which:~~

9/8/14

~~(a) When measured at any point within any other property affected by the noise exceeds the following equivalent sound levels (Leq):~~

- ~~(1) Property used for residential—Leq of 55 dB(A).~~
- ~~(2) Property used for commercial—Leq of 60 dB(A).~~
- ~~(3) Property used for industrial—Leq of 72 dB(A).~~

or

~~(b) When measured at the property boundary of the landfill or at any point within any other property affected by the noise exceeds an A-weighted sound pressure level of seventy-five (75) dB(A).~~

~~For the purpose of this Section, a minimum test period of one (1) hour shall be used for the Leq, and the survey shall be conducted in accordance with the standards and procedures specified in Procedural Memorandum 103-2.<sup>11</sup>~~

~~(37-81-108.)~~

#### **Section 108-4-8. Measurement procedures.**

~~(a) Field measurement procedures for the enforcement of the sound pressure levels set forth in this Chapter shall be promulgated by the Zoning Administrator.~~

~~(b) Noise shall be measured with a sound level meter and octave band analyzer.~~

~~(24-75-16A; 1961 Code, § 16A.4.6; 3-76-108; 3-79-108; 37-81-108.)~~

#### **ARTICLE 5. – Exceptions.**

##### **Section 108.1-5-1. EmergenciesExceptions.**

~~(a) An exemption from the No provisions of this Chapter is granted for noise caused in the performance of emergency work. Nothing in this Section shall be construed to permit law enforcement, ambulance, fire or other emergency personnel to make excessive noise in the performance of their duties when such noise is clearly unnecessary. shall apply to:~~

~~(b) Notwithstanding the provisions of the foregoing Subsection, sound created by the operation of power equipment, such as power lawn mowers and chain saws, between the hours of 7 a.m. and 9 p.m. the same day shall be permitted so long as they do not constitute a noise disturbance. (7-17-68, § 17-4-3; 24-75-16A; 1961 Code, § 16A.4.4.; 34-76-108.)~~

~~(a) The emission of sound for the purpose of alerting persons to the existence of an emergency, provided that such alarm signals cease once any such threat is no longer imminent.~~

~~(b) The emission of sound in the performance of emergency work.~~

~~(c) Activities for which the regulation of sound has been preempted by Federal or State law.~~

~~(d) Activities protected by the First Amendment of the Constitution of the United States and Sections 12 and 16 of Article 1 of the Virginia Constitution.~~

~~(e) Motor vehicles traveling on road right-of-way.~~

9/8/14

(f) Operation of airplanes and helicopters.

(g) Trains traveling on tracks located in railroad right-of-way or easements, including trains serving an interstate area and trains serving the Washington metropolitan region.

(e) Back-up generators subject to the following:

(1) The operation of back-up generators during power outages resulting from storms and other emergencies.

(2) The routine testing and maintenance of back-up generators provided that such activity occurs only between 9 a.m. and 7 p.m. ~~and the routine testing shall not occur for more than two (2) continuous or cumulative hours in any one (1) day.~~

(f) Heat pumps and/or air conditioners located on property containing single family detached or attached residential dwellings that are operating in accordance with the manufacturer's specifications.

(g) Activities associated with the removal of snow and/or ice from walkways, parking areas and travel lanes.

(h) Impulse sound that occurs no more than ~~three (3) two (2)~~ consecutive or non-consecutive seconds in any ~~thirty (30) ten (10)~~ minute time period, provided that the sound does not exceed the maximum impulse sound levels contained in the Maximum Sound Levels Table contained in Sect.108.1-4-4 above.

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(h) Impulse sound that lasts no more than one (1) second, provided that the sound does not exceed the maximum impulse sound levels contained in the Maximum Sound Levels Table contained in Sect.108.1-4-4 above.

(i) Activities related to the construction, repair, maintenance, remodeling or demolition, grading or other improvement of real property between 7 a.m. and 9 p.m., except it shall be a violation of this Chapter to commence such activity before 9 a.m. on Saturdays, Sundays, and Federal holidays.

(j) Operation of power lawn equipment:

(1) between 7 a.m. and 9 p.m. when located within 100 yards from a residential dwelling, and

(2) between 6 a.m. and 9 p.m. when located 100 yards or more from a residential dwelling.

(k) Operation of mechanical devices to sweep or clean outdoor parking, pedestrian and/or loading areas, except it shall be a violation of this Chapter to operate such devices when located within 100 yards of a residential dwelling between 9 p.m. and 7 a.m.

(l) Trash ~~and recycling~~ collection, except it shall be a violation of this chapter to collect trash or recyclable materials in residential districts and/or within 100 yards of a residential dwelling between 9 p.m. and 6 a.m.

(m) Operation of a landfill, except it shall be a violation of this chapter to operate a landfill within 100 yards of a residential dwelling between 9 p.m. and 6 a.m.

9/8/14

(n) The testing of plainly audible and discernible signal devices which are employed as warning or alarm signals in case of fire, emergency, theft, or burglary, or imminent danger, provided that such testing shall not occur for more than two (2) continuous or cumulative hours in any one (1) day.

(o) Operation of transportation facilities between 7 a.m. and 9 p.m.

(p) Band performances or practices, athletic contests or practices and other such activities on school or recreational grounds, or any activity on recreational grounds customarily associated with its intended use shall not be subject to the provisions of this Chapter between 7 a.m. to 11:00 p.m. However, between 7 a.m. to 9 a.m. on Saturdays, Sundays, and Federal holidays no loud speakers shall be permitted and such activities shall be regulated by the Maximum Sound Levels contained in Sect. 108.1-4-2.

(q) Bells, carillons, and other calls to worship shall not be subject to this chapter between 7 a.m. and 11 p.m. provided that any such sounds do not occur for a duration of longer than five (5) minutes per hour.

#### **Section 108-1-5. Enforcement.**

~~(a) Whenever the Zoning Administrator has reason to believe that a violation of any provision of this Chapter or a rule or regulation issued pursuant thereto has occurred, he may give notice of such violation to the person failing to comply with this Chapter and order said person to take such corrective measures as are necessary within a reasonable time thereafter.~~

~~Such notice and order shall be in writing and shall be served personally upon the person to whom directed, or if he be not found, by mailing a copy thereof by certified mail to his usual place of abode and conspicuously posting a copy at the premises, if any, affected by the notice and order.~~

~~If such person fails to comply with the order issued hereunder, the Zoning Administrator may institute such actions as are necessary to terminate the violation, including obtaining criminal warrants, and applying to courts of competent jurisdiction for injunctive relief.~~

~~Failure on the part of such person to take steps to comply with such order within the time provided for therein shall constitute a separate violation of this Chapter. If such person complies with such order promptly, no further action to terminate the violation shall be required, but compliance shall not be deemed to inhibit prosecution of such person for the violation.~~

~~(b) If the noise source is a motor vehicle moving on a public right-of-way, violation of this Chapter shall be cause for the Zoning Administrator to obtain a criminal warrant forthwith.~~

~~(c) Except as hereinbefore provided in Subparagraph (a) of this Section, a warrant may be obtained for the violation of any provision of Article 5 of this Chapter only upon the sworn complaint of a police officer or two (2) persons who are not members of the same household alleging the specific violation complained of, that either or both of the complainants requested or made reasonable attempt to request abatement of the violation and that the violation continued after such request. Provided, however, that if there be no more than one household within one-half mile of the noise source, a warrant may be issued upon the sworn complaint of one person making the foregoing allegations.~~

~~(d) Section 108-5-2(b) shall also be enforced by the Director of the Department of Animal Control, or his duly authorized agent.~~

~~(7-17-68, § 17-5; 24-75-16A; 1961 Code, § 16A.1.5; 3-75-108.)~~

9/8/14

## **ARTICLE 6. Variances Waivers**

### **Section 108.1-6-1. Undue hardship Variances, Waivers.**

(a) Any person responsible for any noise source may apply to the Zoning Administrator for a variance waiver or partial variance-waiver from the provisions of this Chapter. The Zoning Administrator may grant such variance waiver or partial variance waiver if he finds that:

- (1) The noise does not endanger the public health, safety or welfare; or
- (2) Compliance with the provisions of this Chapter from which variance waiver is sought would produce serious hardship without producing equal or greater benefit to the public.

(b) In determining whether to grant such variance waiver, the Zoning Administrator shall consider the time of day when noise will occur, duration of the noise its loudness relative to the required limits of this Chapter, whether the noise is intermittent or continuous, its extensiveness, the technical and economic feasibility of bringing the noise into conformance with this Chapter and such other matters as are reasonably related to the impact of the noise on the health, safety and welfare of the community and the degree of hardship which may result from the enforcement of the provisions of this Chapter.

(c) No variance waiver or partial waiver variance issued pursuant to this Section shall be granted for a period to exceed one (1) year, but any such variance waiver or partial variance waiver may be renewed for like periods if the Zoning Administrator shall find that such renewal is justified after again applying the standards set forth in this Section. No renewal shall be granted except upon application therefor.

(d) Any person aggrieved by a decision of the Zoning Administrator made pursuant to Article 6 of this Chapter this Section may obtain review of such decision by the County Executive by delivering a written statement of grievance to the Office of the County Executive within thirty (30) days from the date of the decision.

The County Executive shall review all statements of grievances and shall, within sixty (60) days from the date of the Zoning Administrator's decision, either affirm or set it aside, making such further order as shall be necessary to effectuate the provisions of this Section.

## **ARTICLE 7. Proffered and Development Condition Applicability**

### **Section 108.1-7-1 Proffered and Development Condition Applicability.**

The provisions of this Chapter shall not negate any applicable proffered condition, development condition, special permit or special exception condition pertaining to noise or sound. In the event of any conflict between the conditions and this Chapter, the more restrictive of the conditions or the provisions of this Chapter shall be applicable.

## **ARTICLE 8. Severability**

### **Section 108.1-8-1. Severability.**

If any of the Articles, Sections, Paragraphs, sentences, clauses, or phrases of this Chapter shall be declared unconstitutional or invalid by the valid judgment or decree of a court of competent jurisdiction, such unconstitutionality or invalidity shall not affect the validity of the Chapter in its entirety or any of the remaining Articles, Sections, Paragraphs, sentences, clauses, and phrases.

## Chapter 31B – Noise Control

- § 31B-2. Definitions.
- § 31B-3. Regulations.
- § 31B-4. Noise control advisory board.
- § 31B-5. Noise level and noise disturbance violations.
- § 31B-6. Noise level and noise disturbance standards for construction.
- § 31B-7. Measurement of sound.
- § 31B-8. Noise sensitive areas.
- § 31B-9. Leafblowers.
- § 31B-10. Exemptions.
- § 31B-11. Waivers.
- § 31B-12. Enforcement and penalties.

### Sec. 31B-1. Declaration of policy.

- (a) The County Council finds that excessive noise harms public health and welfare and impairs enjoyment of property. The intent of this Chapter is to control noise sources to protect public health and welfare and to allow the peaceful enjoyment of property. This Chapter must be liberally construed to carry out this intent.
- (b) The Department of Environmental Protection administers this Chapter.
  - (1) The Department must coordinate noise abatement programs of all County agencies, municipalities, and regional agencies.
  - (2) A County agency, municipality in which this Chapter applies, or regional authority subject to County law must not adopt a standard or regulation that is less stringent than this Chapter or any regulation adopted under this Chapter.
  - (3) The Director may form an Interagency Coordinating Committee to assist the Director in coordinating noise control policy. If the Director forms the Committee, the Director must designate an individual to chair the Committee. The members of the Committee should be designated by County, local, and regional agencies that the Director invites to participate.
  - (4) The Department must establish procedures to identify and reduce noise sources when the County plans and issues permits, variances, exemptions, or approvals.
  - (5) The Department should make recommendations to the County Executive, County Council, and Planning Board regarding noise control policy, regulations, enforcement, and noise sensitive areas. (1996 L.M.C., ch. 32, § 1.)

**Editor's note**—See County Attorney Opinion dated 3/16/92 explaining that the Washington Metropolitan Area Transportation Authority (esp. Metrorail) is subject to the County's noise control law, although an exemption may be obtained if it is in the public interest.

### Sec. 31B-2. Definitions.

In this Chapter, the following words and phrases have the following meanings:

- (a) *Construction* means temporary activities directly associated with site preparation, assembly, erection, repair, alteration, or demolition of structures or roadways.
- (b) *dba* means decibels of sound, as determined by the A-weighting network of a sound level meter or by calculation from octave band or one-third octave band data.
- (c) *Daytime* means the hours from 7 a.m. to 9 p.m. on weekdays and 9 a.m. to 9 p.m. on weekends and holidays.

- (d) Decibel means a unit of measure equal to 10 times the logarithm to the base 10 of the ratio of a particular sound pressure squared to the standard reference pressure squared. For this Chapter, the standard reference pressure is 20 micropascals.
- (e) *Department* means the Department of Environmental Protection.
- (f) *Director* means the Director of the Department of Environmental Protection or the Director's authorized designee.
- (g) *Enforcement officer* means:
  - (1) for a noise originating from any source:
    - (A) an employee or agent of the Department designated by the Director to enforce this Chapter;
    - (B) a police officer; or
    - (C) a person authorized under Section 31B-12(a) to enforce this Chapter;
    - (D) a person authorized by a municipality to enforce this Chapter; or
  - (2) for a noise originating from an animal source, the Director of the Animal Services Division in the Police Department or the Director's authorized designee.
- (h) *Impulsive noise* means short bursts of a acoustical energy, measured at a receiving property line, characterized by a rapid rise to a maximum pressure followed by a somewhat slower decay, having a duration not greater than one second and a field crest factor of 10 dBA or more. Impulsive noise may include, for example, noise from weapons fire, pile drivers, or punch presses.
- (i) *Leaf blower* means any portable device designed or intended to blow, vacuum, or move leaves or any other type of unattached debris or material by generating a concentrated stream of air. Leafblower includes devices or machines that accept vacuum attachments.
- (j) *Nighttime* means the hours from 9 p.m. to 7 a.m. weekdays and 9 p.m. to 9 a.m. weekends and holidays.
- (k) *Noise* means sound, created or controlled by human activity, from one or more sources, heard by an individual.
- (l) *Noise area* means a residential or non-residential noise area:
  - (1) *Residential noise area* means land in a zone established under Section 59-C-1.1, Section 59-C-2.1, Division 59-C-3, Section 59-C-6.1, Section 59-C-7.0, Section 59-C-8.1, Section 59-C-9.1 for which the owner has not transferred the development rights, or Section 59-C-10.1, or land within similar zones established in the future or by a political subdivision where Chapter 59 does not apply.
  - (2) *Non-residential noise area* means land within a zone established under Section 59-C-4.1, Section 59-C-5.1, Section 59-C-9.1 for which the owner has transferred the development rights, or Division 59-C-12, or land in similar zones established in the future or by a political subdivision where Chapter 59 does not apply.
- (m) *Noise disturbance* means any noise that is:
  - (1) unpleasant, annoying, offensive, loud, or obnoxious;
  - (2) unusual for the time of day or location where it is produced or heard; or
  - (3) detrimental to the health, comfort, or safety of any individual or to the reasonable enjoyment of property or the lawful conduct of business because of the loudness, duration, or character of the noise.
- (n) *Noise sensitive area* means land designated by the County Executive as a noise sensitive area under Section 31B-8.

- (o) *Noise-suppression plan* means a written plan to use the most effective noise-suppression equipment, materials, and methods appropriate and reasonably available for a particular type of construction.
- (p) *Person* means an individual, group of individuals, corporation, firm, partnership, or voluntary association; or a department, bureau, agency, or instrument of the County or any municipality, or of any other government to the extent allowed by law.
- (q) *Prominent discrete tone* means a sound, often perceived as a whine or hum, that can be heard distinctly as a single pitch or a set of pitches. A prominent discrete tone exists if the one-third octave band sound pressure level in the band with the tone exceeds the arithmetic average of the sound pressure levels of the 2 contiguous one-third octave bands by:
  - (1) 5 dB for center frequencies of 500 Hz and above;
  - (2) 8 dB for center frequencies between 160 and 400 Hz; or
  - (3) 15 dB for center frequencies less than or equal to 125 Hz.
- (r) *Qualifying performing arts facility* means the outdoor area of a building, outdoor seasonal, temporary, or permanent stage, or other clearly defined outdoor area or space, which is:
  - (1) used for an outdoor arts and entertainment activity; and
  - (2) owned or operated by the County; and
  - (3) so designated by the County Executive in an Executive Order published in the County Register. The Executive may revoke a designation at any time by publishing an Executive Order revoking the designation in the County Register.
- (s) *Receiving property* means any real property where people live or work and where noise is heard, including an apartment, condominium unit, or cooperative building unit.
- (t) *Sound* means an auditory sensation evoked by the oscillation of air pressure.
- (u) *Source* means any person, installation, device, or animal causing or contributing to noise. (1996 L.M.C., ch. 32, § 1; 2001 L.M.C., ch. 2, § 1.)

**Editor's note**—See County Attorney Opinion dated 10/6/00 indicating that long-term parking on public streets is prohibited in certain circumstances, but not based on the size of the vehicle. See County Attorney Opinion dated 3/16/92 explaining that the Washington Metropolitan Area Transportation Authority (esp. Metrorail) is subject to the County's noise control law, although an exemption may be obtained if it is in the public interest.

### **Sec. 31B-3. Regulations.**

The County Executive may establish noise control regulations and standards as necessary to accomplish the purposes and intent of this Chapter. Any regulation must be at least as stringent as this Chapter. The Executive by regulation may set fees that are sufficient to offset the costs of Department reviews or other actions required or authorized by this Chapter. (1996 L.M.C., ch. 32, § 1.)

### **Sec. 31B-4. Noise control advisory board.**

- (a) A Noise Control Advisory Board must advise the County Executive, Director, County Council, and Planning Board on noise control issues, including administration and enforcement of this Chapter.
- (b) The Board consists of 11 members appointed by the Executive and confirmed by the Council.
- (c) The Board must elect one member as Chair and another member as Vice-Chair to serve at the pleasure of the Board. The Board must meet at the call of the chairperson as required to perform its duties, but not less than once each quarter. A majority of the members of the

Board constitutes a quorum for transacting business. The Board may act by a majority vote of those present.

- (d) At least every third year, the Board must evaluate the effectiveness of the County's noise control program and recommend any improvements to the Director, County Executive, County Council, and Planning Board.
- (e) No later than March 1 each year, the Chair of the Board must report to the Director, County Executive, County Council, and Planning Board on activities and actions the Noise Control Advisory Board took during the previous calendar year. (1996 L.M.C., ch. 32, § 1; 1999 L.M.C., ch. 2, § 1.)

**Editor's note**-1999 L.M.C., ch. 2, § 1, increased the number of Board members from 7 to 11. 1999 L.M.C., ch. 2, § 2, states:

Sec. 2. Transition.

- (a) The terms of the 4 members of the Noise Control Advisory Board added by this Act end:
  - (1) for 1 member, on September 30, 1999, and every third year thereafter;
  - (2) for 2 members, on September 30, 2000, and every third year thereafter; and
  - (3) for 1 member, on September 30, 2001, and every third year thereafter.
- (b) When appointing the first individual to serve in one of the 4 new positions, the County Executive must designate the term in subsection (a) for which the Executive is appointing the individual.
- (c) This Act does not affect the term of any current member of the Board.  
**Cross reference**-Boards and commissions generally, § 2-141 et seq.

**Sec. 31B-5. Noise level and noise disturbance violations.**

- (a) *Maximum allowable noise levels.*
  - (1) Except as otherwise provided in Sections 31B-6(a) and 31B-8, a person must not cause or permit noise levels that exceed the following levels:

<i>Maximum Allowable Noise Levels (dBA) for Receiving Noise Areas</i>		
	<i>Daytime</i>	<i>Nighttime</i>
Non-residential noise area	67	62
Residential noise area	65	55

- (2) A person must not cause or permit the emission of a prominent discrete tone or impulsive noise that exceeds a level, at the location on a receiving property where noise from the source is greatest, that is 5 dBA lower than the level set in paragraph (1) for the applicable noise area and time.
  - (3) Sound that crosses between residential and non-residential noise areas must not exceed the levels set in paragraph (1) for residential noise areas.
- (b) *Noise disturbance.* A person must not cause or permit noise that creates a noise disturbance.
- (c) *Examples.* The following examples illustrate common noise-producing acts that violate this section if they exceed the noise level standards set in subsection (a) or create a noise

disturbance. The examples are illustrative only and do not limit or expand the noise level or noise disturbance standards of this section:

- (1) Sounding a horn or other signaling device on any motor vehicle on private property except:
  - (A) in an emergency; or
  - (B) as a danger warning signal during daytime hours if the device complies with noise level limits.
- (2) Operating a sound-producing device on public streets for commercial advertising or to attract public attention.
- (3) Selling anything by outcry.
- (4) Loading, unloading, opening, closing or otherwise handling containers, building materials, construction equipment, or similar objects.
- (5) Operating a device that produces, reproduces, or amplifies sound.
- (6) Allowing an animal to create a noise disturbance.
- (7) Operating power equipment mounted on a motor vehicle or operating other devices powered by a generator or a motor vehicle. (1996 L.M.C., ch. 32, § 1.)

**Editor's note**—See County Attorney Opinion dated 10/6/00 indicating that long-term parking on public streets is prohibited in certain circumstances, but not based on the size of the vehicle. See County Attorney Opinion dated 3/16/92 explaining that the Washington Metropolitan Area Transportation Authority (esp. Metrorail) is subject to the County's noise control law, although an exemption may be obtained if it is in the public interest.

**Sec. 31B-6. Noise level and noise disturbance standards for construction.**

- (a) *Maximum allowable noise levels for construction.*
  - (1) A person must not cause or permit noise levels from construction activity that exceed the following levels:
    - (A) From 7 a.m. to 5 p.m. weekdays:
      - (i) 75 dBA if the Department has not approved a noise-suppression plan for the activity; or
      - (ii) 85 dBA if the Department has approved a noise-suppression plan for the activity.
    - (B) The level specified in Section 31B-5 at all other times.
  - (2) Construction noise levels must be measured at the location, at least 50 feet from the source, on a receiving property where noise from the source is greatest.
  - (3) The Department must by regulation establish requirements for noise-suppression plans and adopt procedures for evaluating and approving plans. The regulations must provide that, at least 10 days before approving a noise-suppression plan, the Director must provide public notice reasonably calculated to reach at least a majority of households that might be affected by the construction activity noise levels above 75 dBA.
- (b) *Construction noise disturbance.* The prohibition on noise disturbance in Section 31B- 5(b) applies to construction activities, notwithstanding subsection (a).
- (c) *Examples.* The following examples illustrate common construction noise-producing acts that violate this section if they exceed the noise level standards set in subsection (a) or create a noise disturbance. The examples are illustrative only and do not limit or expand the construction noise level or noise disturbance standards of this section:
  - (1) Delivering materials or equipment, or loading or unloading during nighttime hours in a residential noise area.
  - (2) Operating construction equipment with audible back-up warning devices during nighttime hours. (1996 L.M.C., ch. 32, § 1.)

**Sec. 31B-6A. Seasonal noise level standard for qualifying outdoor arts and entertainment activities.**

- (a) Each outdoor arts and entertainment activity held at a qualifying performing arts facility must not exceed the following noise decibel limits:
  - (1) from 11 a.m. to 11 p.m. during April 1 through October 31, 75 dBA, as measured on the receiving property; and
  - (2) at all other times, the maximum allowable noise level set in Section 31B-5.
- (b) A qualifying performing arts facility which has complied with this Section must not cause or permit noise levels from an outdoor arts and entertainment activity to exceed the standards in subsection (a).
- (c) Any outdoor arts and entertainment activity conducted at a qualifying performing arts facility which has complied with this Section must not be cited as causing a noise disturbance.
- (d) The Department must annually advise the Executive and Council, and the operator of each qualifying performing arts facility, whether the noise levels specified in this Section remain appropriate for that facility and the extent of compliance with those levels. (2011 L.M.C., ch. 7, § 1)

**Sec. 31B-7. Measurement of sound.**

- (a) The Department must issue regulations establishing the equipment and techniques it will use to measure sound levels. The Department may rely on currently accepted standards of recognized organizations, including the American National Standards Institute (ANSI), American Society for Testing and Materials (ASTM), and the United States Environmental Protection Agency.
- (b) For multiple sources of sound, the Department may measure sound levels at any point to determine the source of a noise. (1996 L.M.C., ch. 32, § 1.)

**Sec. 31B-8. Noise sensitive areas.**

- (a) The County Executive may designate by regulation land within any geographical area as a noise sensitive area to protect public health, safety, and welfare. The regulation may prohibit certain noise producing activities in the noise sensitive area.
- (b) A regulation under subsection (a) must:
  - (1) describe the area by reference to named streets or other geographic features;
  - (2) explain the reasons for the designation;
  - (3) establish specific noise limits or requirements that apply in the noise sensitive area; and
  - (4) describe by example or enumeration activities or sources that violate the limits or requirements.
- (c) A regulation under subsection (a) may establish limits or requirements for a noise sensitive area that are more stringent than those that otherwise would apply to the area under this Chapter. (1996 L.M.C., ch. 32, § 1.)

**Sec. 31B-9. Leafblowers.**

- (a) Except as provided in this section, a person must not sell, buy, offer for sale, or use a leafblower at any time that has an average sound level exceeding 70 dBA at a distance of 50

feet. This requirement is in addition to any other noise level or noise disturbance standard that applies under this Chapter.

- (b) An individual who owns or occupies a residence in a residential noise area may use at the individual's residence a leafblower bought or manufactured before July 1, 1990, until July 1, 1998, even if it exceeds the standard in subsection (a). After July 1, 1998, a person must not use any leafblower that violates the standard in subsection (a).
- (c) The Department must apply the standard in subsection (a) in accordance with the most current leaf-blower testing standard of the American National Standards Institute (ANSI).
- (d) The Department may inspect, and on its request a person must produce, any leafblower that is sold, offered for sale, or used in the County, to determine whether the leafblower complies with this section. A person who relies in good faith on a manufacturer's written representation of the sound level of a leafblower that has not been modified is not subject to a penalty for violating this section. (1996 L.M.C., ch. 32, § 1.)

#### **Sec. 31B-10. Exemptions.**

- (a) This Chapter does not apply to:
  - (1) agricultural field machinery used and maintained in accordance with the manufacturer's specifications;
  - (2) emergency operations by fire and rescue services, police agencies, or public utilities and their contractors;
  - (3) a source or condition expressly subject to any State or federal noise-control law or regulation that is more stringent than this Chapter;
  - (4) sound, not electronically amplified, created between 7 a.m. and 11 p.m. by sports, amusements, or entertainment events or other public gatherings operating according to the requirements of the appropriate permit or licensing authority. This includes athletic contests, carnivals, fairgrounds, parades, band and orchestra activities, and public celebrations.
- (b) The County Executive may issue regulations exempting from Section 31B-5 sources associated with routine residential living during daytime hours, such as home workshops, power tools, and power lawn and garden equipment, when used in accordance with manufacturer specifications. This exception does not apply to repairs or maintenance on a motor vehicle that is not registered for use on public roads. (1996 L.M.C., ch. 32, § 1.)

#### **Sec. 31B-11. Waivers.**

- (a) *Temporary waiver.*
  - (1) The Director may waive any part of this Chapter for a temporary event if the noise the event will create or cause in excess of the limits established under this Chapter is offset by the benefits of the event to the public.
  - (2) When the Director receives an application under this subsection, the Director must provide public notice of the application reasonably calculated to reach at least a majority of households that might be affected by noise levels anticipated for the event. The Director must not approve an application under this subsection less than 10 days after the public notice.
- (b) *General waiver.*
  - (1) The Director may waive any part of this Chapter if the Director determines that compliance in a particular case is not practical and would impose undue hardship.
  - (2) When the Director receives an application under this subsection, the Director must schedule a hearing on the application within 60 days.
  - (3) At least 30 days before the hearing, the applicant must advertise the hearing by:

- (A) placing a display advertisement in a newspaper of general circulation in the community where the source that is the subject of the application is located; and
    - (B) posting a sign at the location of the source.
  - (4) Based on evidence presented at the hearing, the Director may grant a waiver for up to 3 years, under terms and conditions appropriate to reduce the impact of the exception.
  - (5) The Director may renew a waiver granted under this subsection if the applicant shows that the circumstances supporting the original waiver have not changed.
- (c) *Violation of waiver.* The Director may suspend, modify, or revoke a waiver granted under this section if a person violates the terms or conditions of the waiver.
- (d) *Regulations and fees.* The County Executive must issue regulations implementing this section that:
- (1) set the procedures and fees to apply for a waiver under subsections (a) or (b);
  - (2) require the applicant to use the best technology and strategy reasonably available to mitigate noise, as determined by the Director;
  - (3) allow temporary waivers under subsection (a) of no more than 30 days, renewable at the discretion of the Director no more than twice; and
  - (4) specify the requirements for the hearing advertisement and sign required under subsection (b)(3). (1996 L.M.C., ch. 32, § 1.)

**Sec. 31B-12. Enforcement and penalties.**

- (a) The Department must enforce this Chapter. The County Executive may delegate in writing the authority to enforce parts of this Chapter to the Police Department or any other Executive agency.
- (b) A violation of this Chapter is a Class A violation. Each day a violation continues is a separate offense. A violation of Section 31B-6 is a separate offense in addition to any other violation of this Chapter arising from the same act or occurrence.
- (c) The Department may seek injunctive or other appropriate judicial relief to stop or prevent continuing violations of this Chapter.
- (d) If the Director finds that a person has violated this Chapter, the Director may issue a notice of violation and corrective order to the person. The notice must contain the following information:
  - (1) the section of this Chapter that the person violated;
  - (2) the date, nature, and extent of the violation;
  - (3) the action required to correct the violation;
  - (4) if the Director requires a compliance plan, the deadline for submitting the plan to the Director; and
  - (5) the deadline for compliance.
- (e) The compliance plan referred to in subsection (d)(4) must establish a schedule for achieving compliance with this Chapter, as specified in the corrective order. A compliance plan, and amendments to a plan, are not effective until the Director approves the plan or amendment. An action allowed under an approved compliance plan does not violate this Chapter.
- (f) An enforcement officer may issue a civil citation for any violation of this Chapter if the enforcement officer:
  - (1) witnesses the violation; or

- (2) receives complaints from at least 2 witnesses of a noise disturbance. Complaints by 2 witnesses are required to issue a citation under paragraph (2), but are not required to prove that a person violated this Chapter.
- (g) The Director of the Animal Services Division may initiate administrative action before the Animal Matters Hearing Board instead of an enforcement officer issuing a citation under subsection (f) for a violation of this Chapter originating from an animal source.
- (h) A person aggrieved by any action or order of the Director under Sections 31B-9 and 31B-11 may seek reconsideration within 10 days after the date of the action or order. A request for reconsideration must be in writing to the Director, and must specify the date and nature of the action or order, the injury sustained, the remedy requested, and the legal basis for the remedy. If the Director finds that there are material facts in dispute, the Director may refer the matter to a hearing officer under the procedures specified in Chapter 2A. If the Director finds that there are no material facts in dispute, the Director must make a final decision on the request for reconsideration in writing within 45 days after receiving the request. The aggrieved person may appeal from the Director's final decision within 30 days after the Director issues the decision, as provided in Section 2A-11.
- (i) (1) A person responsible for a violation of Section 31B-6 and the person responsible for the management or supervision of the construction site where the source of the violation is located are jointly and severally liable for the violation.  
 (2) For recurring violations of Section 31B-6 on the same construction site, in addition to any other penalty under this Chapter, the Director may issue a stop work order, as provided in Section 8-20, for up to:  
 (A) 3 consecutive working days for a second violation within 30 days after the first violation;  
 (B) 5 consecutive working days for a third violation within 60 days after the first violation; and  
 (C) 7 working days per offense for the fourth and subsequent violations within a 120-day period.  
 (3) This Chapter does not limit the Director's authority under Chapter 8 to revoke a permit or approval issued under that Chapter.
- (j) Any person aggrieved by a violation of this Chapter may file a civil action in any court with jurisdiction against a person responsible for the alleged violation. The aggrieved person must notify the alleged violator and the Director of the alleged violation at least 60 days before filing the action. A person must not file an action under this subsection if the County Attorney has filed a civil action against the same alleged violator regarding the same violation. (1996 L.M.C., ch. 32, § 1; 2001 L.M.C., ch. 2, § 1.)

#### Endnotes

Editor's note—In *Burrows v. United States*, 2004 U.S. Dist. LEXIS 1104 (2004), the Court interpreted Montgomery County Code Chapter 31B neither to permit a private cause of action for noise control, nor to permit suit against the federal government. Chapter 31B is discussed in *Miller v. Maloney Concrete Company*, 63 Md.App. 38, 491 A.2d 1218 (1985). \*Cross references-Noise from quarries, § 38-14; radio, etc., without earphones prohibited in public transit facilities, § 54A-2; industrial area noise regulations, § 59-A-5.7.

[Note]

## **Title 26**

### **DEPARTMENT OF THE ENVIRONMENT**

#### **Subtitle 02 OCCUPATIONAL, INDUSTRIAL, AND RESIDENTIAL HAZARDS.**

#### **Chapter 03 Control of Noise Pollution ([link to website](#))**

Authority Environment Article, §3-401, Annotated Code of Maryland

### **Preface**

The Environmental Noise Act of 1974 of the State of Maryland declares as policy the limitation of noise to that level which will protect the health, general welfare, and property of the people of the State. It requires that the Department assume responsibility for the jurisdiction over the level of noise, and prepare regulations for the control of noise, including the establishment of standards for ambient noise levels and equipment performance with respect to noise, for adoption by the Secretary of the Environment. Enforcement of the regulation and Standards is the responsibility of the Department in all areas, using the facilities and services of local agencies within the areas to the greatest extent possible. The Department shall coordinate the programs of all State agencies relating to noise abatement, and each State agency prescribing sound level limits or regulation respecting noise shall obtain the endorsement of the Department in prescribing any limits or regulations.

#### **.01 Definitions.**

- A. "ANSI" means American National Standards Institute or its successor bodies.
- B. "Construction" means any site preparation, assembly, erection, repair, alteration, or similar activity.
- C. "Day-night average sound level (Ldn)" means in decibels, the energy average sound level for a 24-hour day with a 10 decibel penalty applied to noise occurring during the nighttime period; i.e., noise levels occurring during the period from 10 p.m. one day until 7 a.m. the next are treated as though they were 10 dBA higher than they actually are. The use of the A-weighting is understood. The mathematical expression for Ldn is as follows:

$$L_{dn} = 10 \log_{10} \left[ \left( \frac{15}{24} \right) 10^{L_d + 10} + \left( \frac{9}{24} \right) 10^{(L_n + 10) + 10} \right]$$

where  $L_d$  = The daytime average sound level.

$L_n$  = The nighttime average sound level.

D. "dBA" means abbreviation for the sound level in decibels determined by the A-weighting network of a sound level meter or by calculation from octave band or one-third octave band data.

E. "Daytime hours" means 7 a.m. to 10 p.m., local time.

F. "Decibel (dB)" means a unit of measure equal to ten times the logarithm to the base ten of the ratio of a particular sound pressure squared to a standard reference pressure squared. For the purpose of this subtitle, 20 micropascals shall be the standard reference pressure.

G. "Demolition" means any dismantling, destruction, or removal activities.

H. "Department" means the Department of the Environment.

I. "Emergency" means any occurrence or set of circumstances involving actual or imminent physical trauma or property damage which demands immediate action.

J. "Environmental noise" means the noise that exists at any location from all sources.

K. "Environmental noise standards" means the goals for environmental noise, the attainment and maintenance of which, in defined areas and under specific conditions, are necessary to protect the public health and general welfare.

L. "Equivalent sound level" (also "average sound level") means the level of a constant sound which, in a given situation and time period, would convey the same sound energy as does the actual time-varying sound during the same period. Equivalent sound level is the level of the time weighted, mean-square, A-weighted sound pressure. A numerical subscript may be used to indicate the time period under consideration; i.e.,  $L_{eq}(24)$  or  $L_{eq}(8)$  for 24-hour and 8-hour periods, respectively. No subscript indicates a 24-hour period. The mathematical expression for the  $L_{eq}$  is as follows:

$$L_{eq} = 10 \log_{10} \left[ \frac{1}{t_2 - t_1} \int_{t_1}^{t_2} 10^{L_A(t)/10} dt \right] \text{ dBA}$$

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## OCCUPATIONAL HAZARDS

26.02.03.10

where  $t_1$  and  $t_2$  are the beginning and ending times, respectively, of the period over which the average is determined and  $LA(t)$  is the instantaneous A-weighted sound pressure level fluctuating with time.

M. "Nighttime hours" means 10 p.m. to 7 p.m., local time.

N. "Noise" means the intensity, frequency, duration, and character of sound, including sound and vibration of sub-audible frequencies.

O. "Noise pollution" means the presence of noise of sufficient loudness, character, and duration, which whether from a single source or multiple sources, is, or may be predicted with reasonable certainty to be, injurious to health or which unreasonably interferes with the proper enjoyment of property or with any lawful business or activity.

P. "Periodic noise" means noise possessing a repetitive on-and-off characteristic

Q. "Person" means any individual group of individuals, firm partnership, voluntary association, or private, public, or municipal corporation, or political subdivision of the State, or department, bureau, agency, or instrument of federal, State, or local government responsible for the use of property

R. "Prominent discrete tone" means any sound that can be distinctly heard as a single pitch or a set of single pitches. For the purposes of this regulation, a prominent discrete tone shall exist if the one-third octave band sound pressure level in the band with the tone exceeds the arithmetic average of the sound pressure levels of the 2 contiguous one-third octave bands by 5 dB for center frequencies of 500 Hz and above and by 8 dB for center frequencies between 160 and 400 Hz and by 15 dB for center frequencies less than or equal to 125 Hz.

S. "Sound level" means, in decibels, the weighted sound pressure level measured by the use of a sound level meter satisfying the requirements of ANSI S1.4 1971 "Specifications for Sound Level Meters". Sound level and noise level are synonymous. The weighting employed shall always be specified.

T. "Sound level meter" means an instrument, meeting ANSI S1.4

1971 "Specifications for Sound Level Meters", comprising a microphone, an amplifier, an output meter, and frequency-weighting network(s) that is used for the measurement of sound pressure levels in a specified manner.

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## ENVIRONMENT

26.02.03.02

### U. Sound Pressure.

- (1) "Sound pressure" means the minute fluctuations in atmospheric pressure, which accompany the passage of a sound wave.
  - (2) For a steady sound, the value of the sound pressure average over a period of time.
  - (3) Sound pressure is usually measured in dynes per square centimeter (dyne/cm<sup>2</sup>), or in newtons per square meter (N/m<sup>2</sup>), or in micropascals.
- V. "Sound pressure level" means, in decibels, 20 times the logarithm to the base ten of the ratio of a sound pressure to the reference sound pressure of 20 micropascals (20 micronewtons per square meter). In the absence of any modifier, the level is understood to be that of a root-mean-square pressure.

W. "Source" means any person or property, real or personal, contributing to noise pollution.

K "Vibration" means any oscillatory motion of solid bodies.

Y. "Zoning district" means a general land use category, defined according to local subdivision, the activities and uses for which are generally uniform throughout the subdivision. For the purposes of this regulation, property which is not zoned "residential", "commercial", or "industrial", shall be classified according to use as follows:

- (1) "Commercial" means property used for buying and selling goods and services;
- (2) "Industrial" means property used for manufacturing and storing goods;
- (3) "Residential" means property used for dwellings.

### **.02 Environmental Noise Standards.**

#### A. Precepts.

- (1) It is known that noise above certain levels is harmful to the health of human. Although precise levels at which all adverse health effects occur have not definitely been ascertained it is known that one's well-being can be affected by noise through loss of sleep, speech interference, hearing

impairment, and a variety of other psychological and physiological factors. The establishment of ambient noise standards, or goals, must provide margins of safety in reaching conclusions based on available data which relate noise exposure to health and welfare effects, with due consideration to technical and economic factors.

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## OCCUPATIONAL HAZARDS

26.02.03.03

(2) The environmental noise standards set forth here represent goals expressed in terms of equivalent A-weighted sound levels, which are protective of the public health and welfare. The ambient noise levels shall be achieved through application, under provisions of laws or regulations or otherwise, of means for reducing noise levels including, but not limited to, isolation of noise producing equipment, dampening of sound waves by insulation, equipment modification and redesign, and land use management.

### B. Standards for Environmental Noise-General.

(1) The standards are goals for the attainment of an adequate environment. The standards set out in Regulation .03 are intended to achieve these goals.

(1) The following sound levels represent the standards for the

State by general zoning district:

**Table I**  
**Environmental Noise standards**

Zoning District	Level	Measure
Industrial	70 dBA	$L_{eq}(24)$
Commercial	64 dBA	$L_{dn}$
Residential	55 dBA	$L_{dn}$

### **.03 General Regulations.**

#### A. Noise and Vibration Prohibitions.

1) A person may not cause or permit noise levels which exceed those specified in Table 2 except as provided in §A(2) or (3), or §B, below.

**Table .2**  
**Maximum Allowable Noise Level (dBA)**  
**For Receiving Land Use Categories**

Effective Date	Day/Night	Industrial	Commercial	Residential
	Day	75	67	65
Upon Adoption	Night	75	62	55

(2) A person may not cause or permit noise levels emanating from construction or demolition site activities which exceed:

(a) 90 dBA during daytime hours;

(b) The levels specified in Table 2 during nighttime hours.

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### **Environment**

26.02.03.03

(3) A person may not cause or permit the emission of prominent discrete tones and periodic noises which exceed a level which is 5 dBA lower than the applicable level listed in Table 2.

(4) A person may not cause or permit, beyond the property line of a source, vibration of such direct intensity to cause another person to be aware of the vibration by such direct means as sensation of touch or visual observation of moving objects. The observer shall be located at or within the

property line of the receiving property when vibration determinations are made.

#### B. Exemptions.

- (1) The provisions of this regulation may not apply to devices used solely for the purpose of warning, protecting, or alerting the public, or some segment thereof, of the existence of an emergency situation.
- (2) The provisions of this regulation do not apply to the following
  - (a) Household tools and portable appliances in normal usage.
  - (b) Lawn care and snow removal equipment (daytime only) when used and maintained in accordance with the manufacturer's specifications.
  - (c) Agricultural field machinery when used and maintained in accordance with manufacturer's specifications.
  - (d) Blasting operations for demolition, construction, and mining or quarrying (daytime only).
  - (e) Motor vehicles on, public roads.
  - (f) Aircraft and related airport operations at airports licensed by the State Aviation Administration.
  - (g) Boats on State waters or motor vehicles on State lands under the jurisdiction of the Department of Natural Resources.
  - (h) Emergency operations.
  - (i) Pile driving equipment during the daytime hours of 8 a.m. to 5 p.m.
  - (j) Sound not electronically amplified created by sporting, amusement, and entertainment events and other public gatherings operating according to terms and conditions of the appropriate local jurisdictional body. This includes but is not limited to athletic contests, amusement parks, carnivals, fairground, sanctioned auto racing facilities,

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## OCCUPATIONAL HAZARDS

parades, and public celebrations. This exemption only applies between the hours of 7 mm. and 12 midnight

(k) Rapid rail transit vehicles and railroads.

(l) Construction and repair work on public property.

(m) Air conditioning or heat pump equipment used to cool or heat housing on residential property. For this equipment, a person may not cause or permit noise levels which exceed 70 dBA for air conditioning equipment at receiving residential property and 75 dBA for heat pump equipment at receiving residential property.

### **C. Variance Procedure.**

(1) Any Person who believes that meeting the requirements of §A, above, is not practical in a particular case may request an exception to its requirements.

(2) Requests submitted to the Department shall be in writing and shall include evidence to show that compliance is not practical.

(3) Upon receipt of a request for an exception, the Department shall schedule a hearing to be held within 60 days.

(4) The applicant for the exception, at least 30 days before the hearing date, shall advertise prominently the hearing by placing a notice in a newspaper of general circulation in the subdivision in which the facility or source for which the exception is sought is located. The notice shall include the name of the facility or source and such additional information as the Department may require.

(5) Based upon evidence presented at the hearing, the Secretary may grant an exception to §A, above, for a period not to exceed 5 years

Under terms and conditions appropriate to reduce the impact of the exception.

(6) Exceptions shall be renewable upon receipt by the Department

Of evidence that conditions under which the exception was originally granted have not changed significantly.

### **D. Measurement.**

(1) The equipment and techniques employed in the measurement

Of noise levels may be those recommended by the Department, which  
WAY, but need not, refer to currently accepted standards or recognized  
Organizations, including, but not limited to, the American National  
Standards Institute (ANSI), American Society for Testing and Materials (ASTM),

## 43

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### ENVIRONMENT

26.02.03.04

Society of Automotive Engineers (SAE), and the United States Environmental Protection Agency (EPA).

(2) The measurement of noise levels shall be conducted at points on or within the property line of the receiving property or the boundary of a zoning district, and may be conducted at any point for the determination of identity in multiple source situations.

(3) Sound level meters used to determine compliance with Regulation .03 shall meet or exceed the specifications of the American National Standards Institute or -its successor bodies ANSI S1.4-1971 for

Type II sound level meters.

#### **.04 Emission Regulations.**

Reserved.

#### **.05 Penalties.**

A. Civil Penalty. Any person who willfully violates these regulations shall be liable to a civil penalty of not more than \$10,000. Each day during which a violation continues them shall be liability for a separate penalty.

B. Plan for Compliance. A violator who has submitted a plan for compliance with these regulations and has that plan or amendments to it approved by the Secretary, upon recommendation of the Department, may not be considered to be in violation of these regulations as long as he acts in accordance with the original or amended plan.

### **Administrative History**

Effective date: August 6, 1975 (2:17 Md R 1189)

Regulation .01A-1, W-I adopted effective February 15, 1982 (9:3 Md R 222); repealed effective March 28, 1983 (10:6 Md R 558)

Regulations .01 and .03A, B, D amended effective September 14, 1977 (4:19 Md R.1468)

Regulation .01C amended effective March 28, 1983 (10:6 ML R 558)

Regulations .01C, Q; .02B; .038, D amended effective February 15, 1982(9:3 Md. R. 222)

Regulation .03A amended as an emergency provision effective November 13, 1979 (6:24 Md R 1917); emergency status expired March 29, 1980

Regulation .03A and B amended effective March 28, 1983 (10:6 Md R 558)

Regulation .04 repealed effective September 14, 1977 (4:19 Md R 1468).

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Chapter recodified from COMAS 10.20.01 to COMAS 26.02.03

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## **Maryland Department of the Environment**

2500 Broening Highway -- Baltimore, Maryland 21224

(410) 631-3000 -- 1-800-633-6101 -- <http://www.mde.state.md.us>

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Parris N. Glendening  
Governor

Jane T. Nishida  
Secretary

## Maryland's Noise Control Program

### Purpose

The Noise Control Program was established in the mid 1970's to provide technical assistance and enforcement help to citizens and local jurisdictions across the State regarding community intruding noise issues that are not, for whatever reason, adequately handled at the local level. Noise has become an increasingly contentious "Quality of Life" issue as the State's population increases and urban sprawl progresses. The Noise Program pursues its mission on a complaint driven basis addressing specific requests from individual citizens as well as governmental entities. Because of very limited staff the program actively encourages local jurisdictions to take a more active role in addressing noise problems and issues while the program stands ready to provide technical back-up, enforcement help, noise control training and advisory assistance. The program has been addressing approximately 150 noise complaints yearly across the State resulting in about 300 to 400 annualized site visits. It is the program's goal when possible to resolve noise violations as opposed to primarily pursuing enforcement and penalties.

### Authority

State: Environment Article, Title 3-101 .... and COMAR, Title 26.02.03....

### Process

In addressing noise complaints a small portion of those registered can be resolved by telephone without field investigation. However, the vast majority of complaints require multiple field visits to monitor and measure the offending noise-levels, this may occur anytime of the day or night, including weekends and holidays, depending on the noise source. In evaluating and processing noise complaints the program utilizes state of the art real-time computer integrated sound level analyzers for determining the existence of a community noise violation. When a noise level violation is encountered primary emphasis is placed on cooperative resolution rather than penalties and litigation. This approach has been quite successful in almost all cases.

### Contact

Dave Jarinko / Noise Control Specialist: 410-537-3938

George Harman / Program Manager: 410-631-3856

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## The Noise Control Program - How it Works

1. Established by the Legislature in the mid 1970s as a 'quality of life' program.
2. State noise regulations set a maximum intruding sound level limit statewide: therefore **all jurisdictions have a Noise Regulation.**
3. The maximum limit does not constitute silence or assure total lack of annoyance from an intruding sound (50% plus of complaints do not exceed the limit - and are not actionable).
4. Because the State sets the maximum limit, which may be considered in some areas to be too high, it allows the local jurisdictions to establish a lower limit or a more restrictive regulation if they so choose. (as to time, sound level limits, and exemptions.)
5. State regulations establish two time periods and two sound level limits:
  - a. Daytime 7 a.m. - 10 p.m. 65 dBA - for residential receiving properties

- b. Nighttime 10 p.m. - 7 a.m. 55 dBA - for residential receiving properties
6. If a local jurisdiction establishes more restrictive limits, it is strongly suggested that the limit be tied to a specific decibel level and not a subjectively defined annoyance criteria.
  7. Police and local officials initially process 99% of all noise related complaints across the State. This statistic **is not as good as it appears** because most police and local jurisdictions do not have sound level meters or noise training and typically do not pursue noise complaints unless they involve additional elements of disruptive behavior or illegal activity.
  8. The Noise Program, upon request, will investigate those complaints that fall through the cracks at the local level.
  9. The Noise Program is not designed or intended to be a first responder to complaints. It is designed to handle noise complaints that are not adequately addressed at the local level.
  10. The Noise Program is complaint driven. It does not seek out noise sources.
  11. To be handled by Noise Control, a noise complaint must be repetitive or reoccurring with some degree of predictability. The Noise Program cannot handle a one-time noise occurrence or a non-predictable infrequently occurring noise.
  12. A noise complaint can be registered by calling 410-631-3991
  13. When a complaint is registered, the complainant must have information concerning the type of noise and the probable time or times of occurrence.
  14. When a complaint is registered, a site visit is arranged to take sound level measurements. Measurements are taken at the complainant's property, not at the source of the sound.
  15. If a sound level violation is measured, the responsible party is notified to take corrective action. Failure to do so could result in a penalty of up to \$10,000 per each day of continuing violation. However, to date, Noise Control has gotten compliance in all cases without resorting to financial penalties.
  16. **Examples of common noise complaints subject to COMAR regulations:**
    - a. Office Buildings, Hospitals, Schools and even Nursing Homes
    - b. Dirt Bike noise - riding legally but too close to neighboring homes
    - c. Band noise - clubs, taverns, bars, restaurants, schools, practice sessions
    - d. Swimming pool pumps
    - e. Early morning construction noise prior to 7 a.m.
    - f. Power sweepers at night
    - g. Truck mounted refrigeration units / parking lot truck noise / shopping centers
    - h. Gun clubs - 9 Counties are subject to the noise regulations / 14 Counties are exempt
    - i. Early morning trash pickup (usually dumpster emptying noise)
    - j. Commercial and industrial equipment noise (commonly HVAC units)
    - k. Loud speakers at: car dealerships / fast food restaurants / swim clubs / etc.
      - l. Church bells
    - m. Barking dogs - MDE will only address kennel related complaints, not household pets.
    - n. And many others too numerous to mention
  17. **Exemptions from the COMAR noise regulations:**
    - a. Emergency sirens and warning signals
    - b. Railroads

- c. Motor vehicles on public roads - addressed by MSP and SHA
  - d. Aircraft and airports - addressed by FAA and MAA
  - e. Construction noise 7 a.m. - 10 p.m.
  - f. Boats on state controlled waters - addressed by DNR
  - g. Residential Heat Pumps and Air-conditioners
  - h. Construction on Public Property at any time
  - i. Sanctioned auto racing facilities - 7 a.m. to midnight
  - j. Parades, public celebrations, amusement parks, sporting events
18. **In addition to handling specific noise complaints, Noise Control will upon request conduct noise control and enforcement training classes as well as attend hearings and departmental meetings regarding noise related issues to provide technical information and / or testimony.**
19. To reiterate - The Noise Control Program is a Complaint driven activity set up to handle repetitive and predictable noise sources that have not been resolved at the local level. It is not designed to be a first responder to a noise complaint.
20. Contact - Dave Jarinko / Noise Control Specialist: 410-537-3938 or George Harman / Program Manager: 410-631-3856. Visit the [Noise Control Program website](#).
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# **Appendix B**

**Report HAI-121814-1**

TM Reports

## TECHNICAL MEMORANDUM

**Title:** KENNEL NOISE ANALYSIS  
**Project:** LOUDOUN COUNTY ZONING ORDINANCE AMENDMENT  
**Location:** LOUDOUN COUNTY, VIRGINIA  
**Prepared For:** LOUDOUN COUNTY  
**Prepared By:** George F. Hessler, P.E.  
**Revision:** 0  
**Issue Date:** October 21, 2014 **REV. 10/22/14**  
**HAI Reference No:** TM-102114-1  
**Reference:**  
**Attachments:**

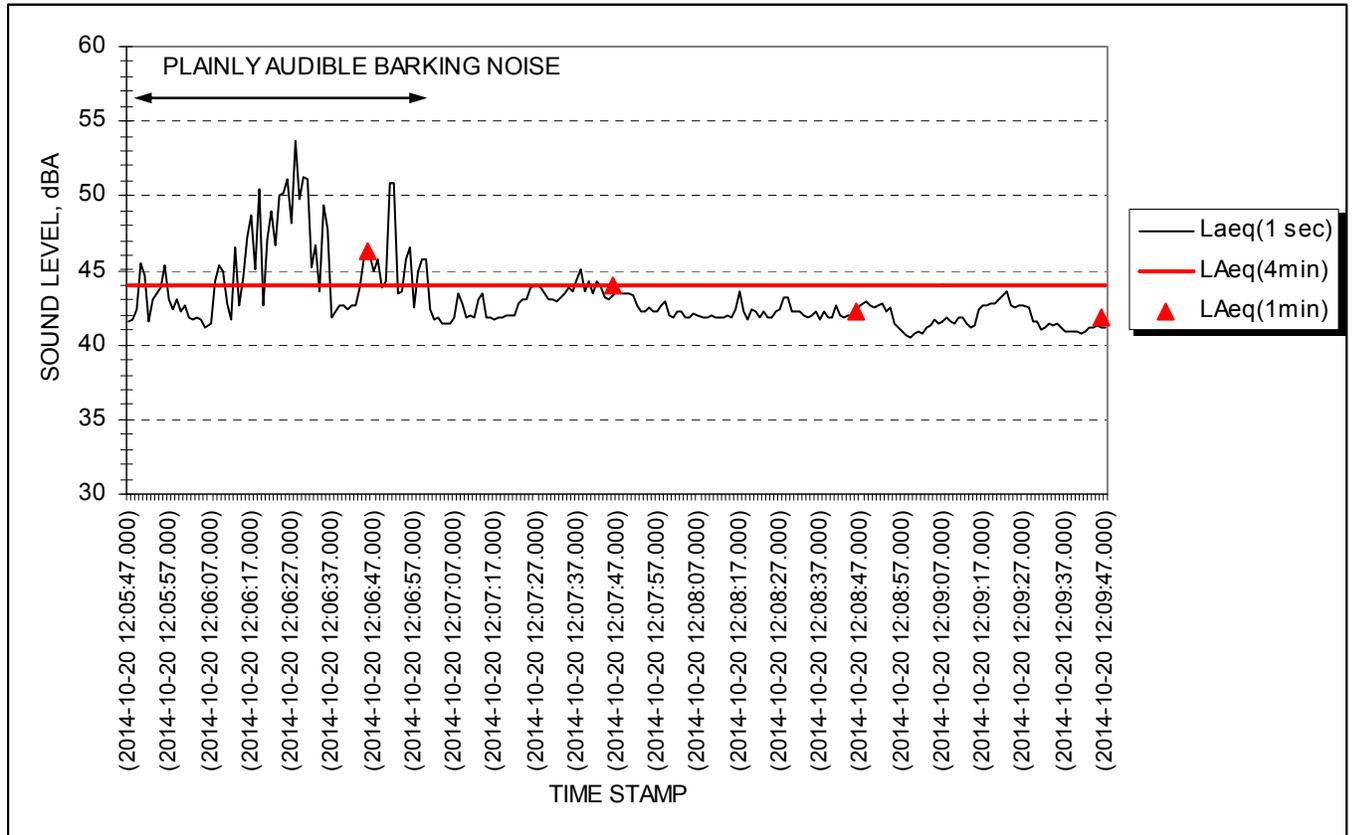
Attn. Ms. Theresa Stein, PM

Measurements were made at the closest residence to a kennel operation at 18631 Yellow Schoolhouse Road in Round Hill, VA on 10/20/14. Complaints claiming excessive noise from the kennel were received by the County from this residence. Measurements were carried out at the red marker shown below in an aerial view, the essential “back yard” of the residence.



According to the existing noise ordinance, measurements are specified at the PL of the emitter, the white marker shown. The sound level would be approximately 5 dBA higher at this location [20 log (R1/R2), inverse square law] compared to at the residence itself. Also, the ordinance specifies the “maximum permissible sound level of 55 dBA that is undefined in the ordinance.

Measurements were recorded every second for 10 minutes. There was kennel noise of barking dogs only for the first minute or so and then extraneous airplane noise after about four minutes. A plot of the first four minutes of data is given below. The first two spikes are from a single dog that initiated others of different breeds to bark but all was over in 75 seconds.



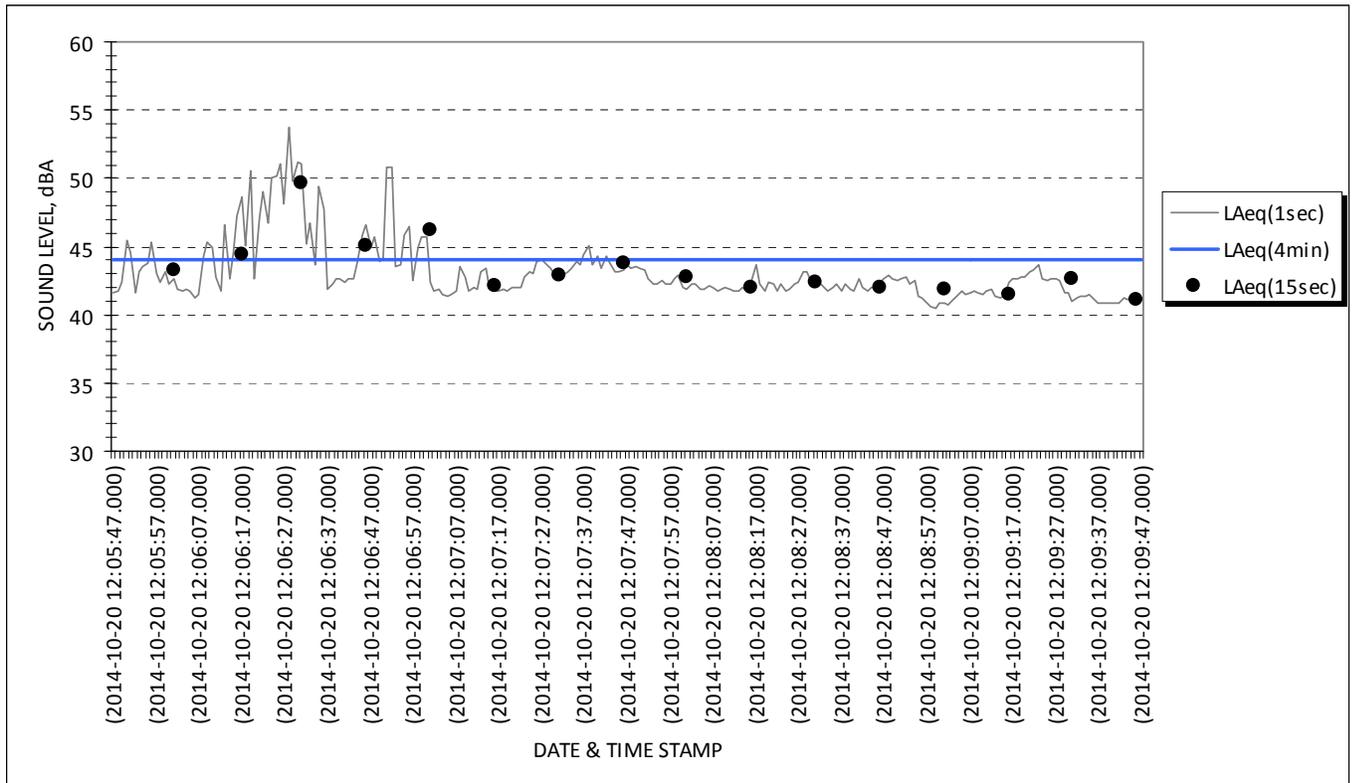
It becomes interesting on how to interpret these results with the existing code and for amending future codes. If one interprets the existing code literally, the kennel would be in violation because the peak instantaneous measured noise was 53.5 dBA at the residence but it would have been 58.5 dBA at the emitters PL. Is this fair, or were transient or sporadic sources of stationary noise ever intended to be covered by the original authors? I think the answer for both is NO. In the extreme, a single dog bark, shotgun blast or note from a trumpet for that matter would violate the existing ordinance.

So how would or should we handle such sources as dog kennels, gunfire, unplugged and/or amplified music/vocals as opposed to constant emitters? The first requirement may be selecting the proper measurement metric. All or mostly all environmental sound is now measured with an integrating sound level meter (SLM) because environmental sound is not a constant source and is ever changing on an instantaneous basis.

The EPA invented the *equivalent* sound level for this task abbreviated as Leq which is defined as the equivalent constant level that has the same or equivalent acoustic energy as the actual time varying signal. It is easier to think of Leq as an energy average that must be associated with a time period.

The plot above shows the computed Leq for 1 second (the instantaneous level), Leq for each of the four minutes (red triangles) and Leq for the total four minutes as the red line. Note the first two minutes are higher than the dog-free remaining minutes so the barking sound and time of barking is accounted for. If we should adapt Leq as the metric to measure it could be the maximum 1 minute sample for the period that is approximately 46 dBA at the residence. At the emitter PL it would be 51 dBA. This could still be a violation if the level we adopt for the amendment is reduced for rural quiet areas.

The graphic below re-plots the above data using a 15 second interval for the Leq time history.



A 15 second interval has many practical advantages for field measurement and data handling. Firstly, it better represents what is happening as shown by the maximum peak just under 50 dBA when the barking was most prominent. This is opposed to the 46 dBA above using a 1-minute interval. Readily available handheld or tripod mounted inexpensive SLM units can be set-up to store the time history of both 1 and 15 seconds. The store function could be automatic or manual. Both are useful. In manual mode, the operator pushes a button to start (or stop) a measurement. This is useful in a difficult environment where there is a lot of intermittent road of air traffic or other sources that are extraneous to the measurement purpose. Conversely, in auto mode the operator can manually pause the data storage during such events.

Notice there are only 16 data sets to report versus 240 seconds on time in the above example..

I think this metric of Leq (15 sec) may work well for all potential sources including steady sources such as data centers. The ordinance would specify and define this metric including say a minimum of three or more runs. For a steady source the result would repeat all day or night long and be convincing at just three runs, but for kennels and entertainment sources many more than three would be needed. The advantage is the same methodology and instrument is used everywhere.

David plans on monitoring the sound level at the Mandileigh Lane B&B this weekend to see how the auto Leq (15-sec) metric works out for entertainment sounds. I anticipate the band breaks and rapid drop in sound level will show the impact at the neighbors.

*George F. Hessler Jr.*

George F. Hessler Jr., Bd. Cert. INCE

## TECHNICAL MEMORANDUM

**Title:** DATA CENTER NOISE ANALYSIS  
**Project:** LOUDOUN COUNTY ZONING ORDINANCE AMENDMENT  
**Location:** LOUDOUN STATION & REGENCY RESIDENTIAL  
**Prepared For:** LOUDOUN COUNTY  
**Prepared By:** George F. Hessler, P.E.  
**Revision:** 0  
**Issue Date:** October 28, 2014  
**HAI Reference No:** TM-102814-1  
**Reference:**  
**Attachments:**

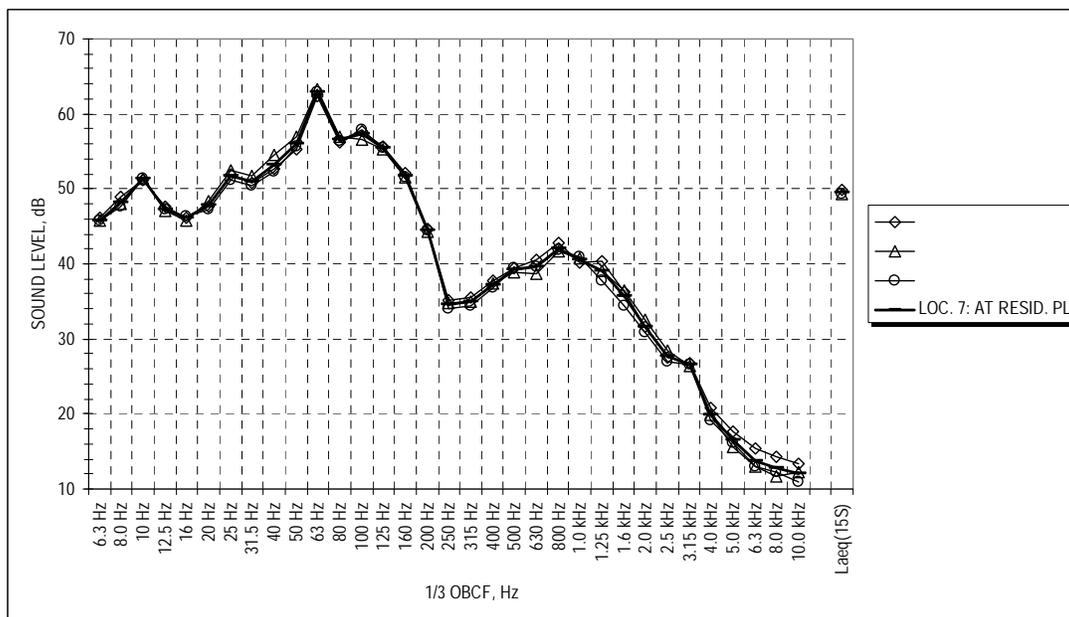
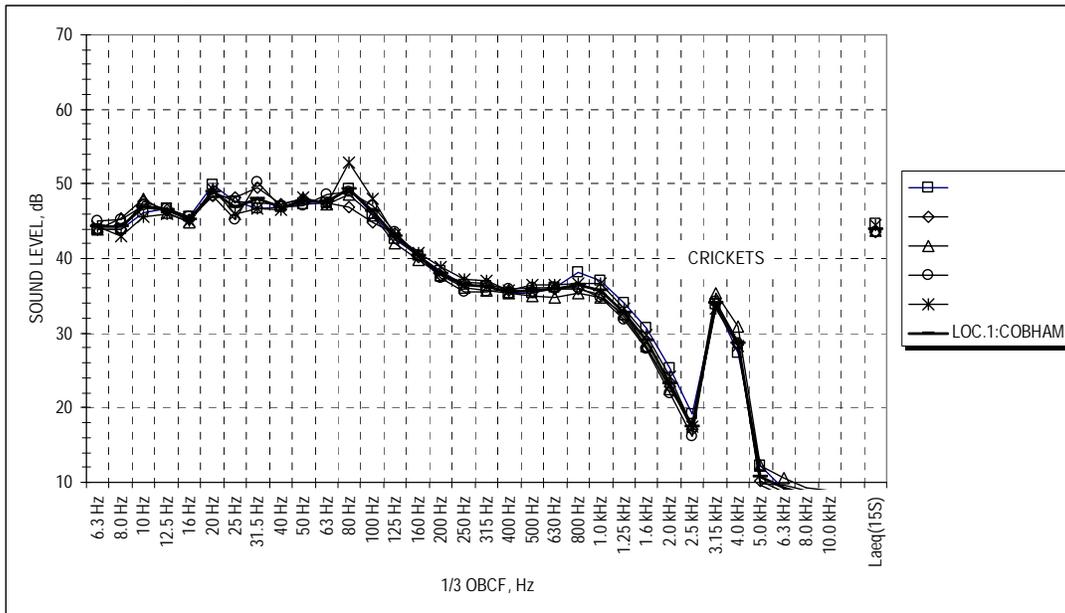
Attn. Ms. Theresa Stein, PM

Measurements were made at the Loudoun Station mixed use development and in the adjacent Regency residential development on the night of Friday, October 24, 2014 at the seven locations shown on the aerial view below.



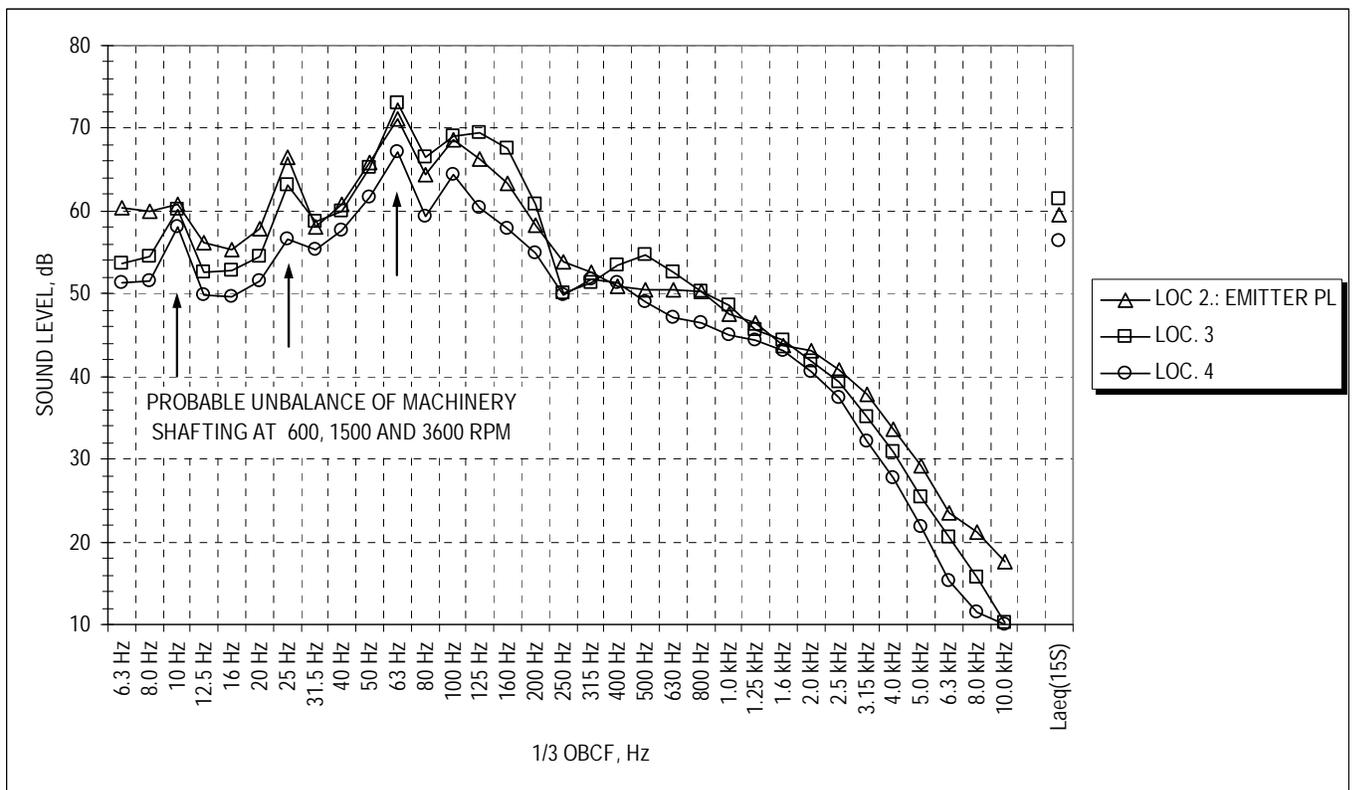
The measurement technique used was acquiring multiple “clean” samples of 15-sec Leq integrations. By clean it is meant that no extraneous noise was heard during the 15-sec measurement duration. In the cases with a passing auto the data was discarded and repeated so that no extraneous noise was included. The reported spectra is the average of at least three “clean” samples. See the raw data Table attached to this TM.

At location 1, one could only hear obvious cricket sources and far off steady traffic even past 10 p.m. but on a Friday night. At location 7 and ALL locations from locations 2 thru 7, one could easily or plainly state the obvious source of noise is emitted from the adjacent data center roof top HVAC equipment. The measurements within the residential communities are plotted below and it is clearly shown that multiple 15 second samples is an accurate method to record emission sources. The standard deviation was equal or less than 0.5 dBA using this method.



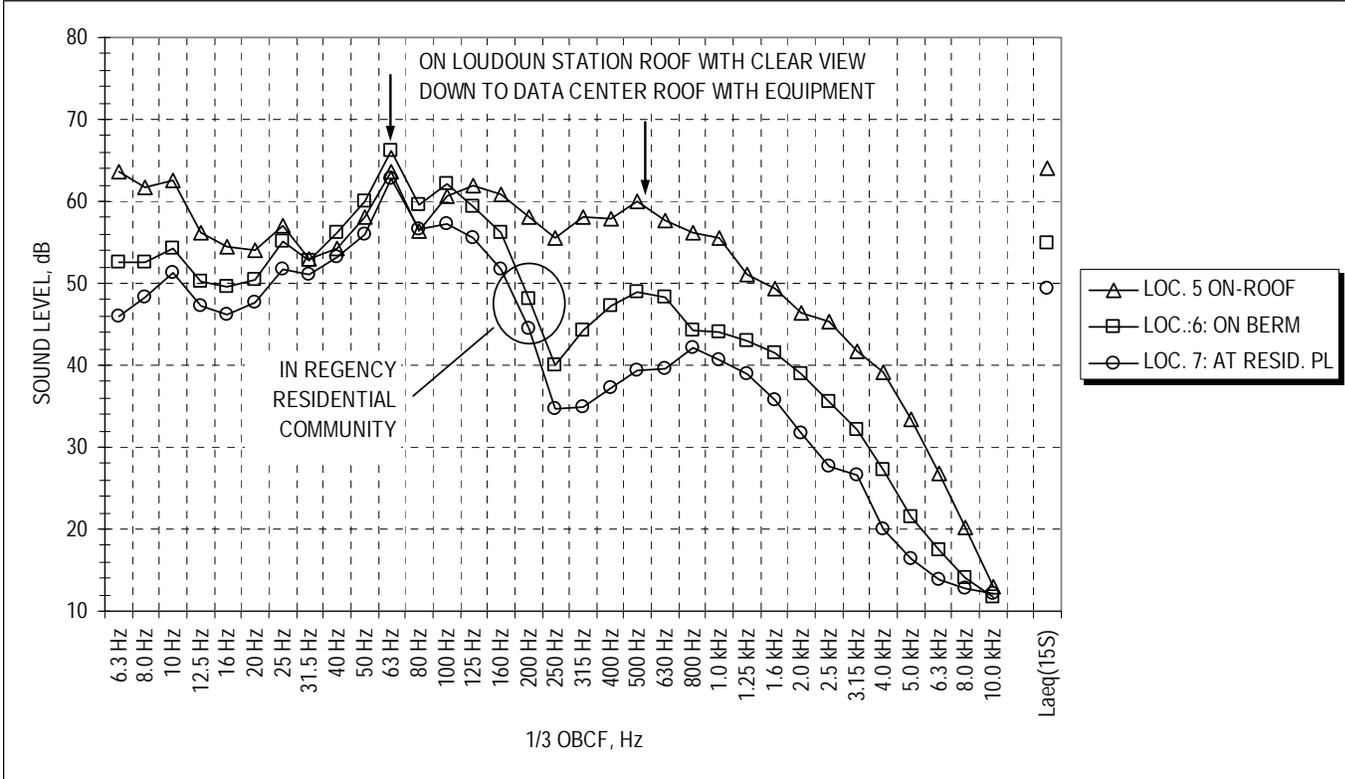
The 15-sec metric is the same used at the previous kennel location where it was shown the metric worked well for capturing transient sources such as barking dogs and hopefully music and other new sources developing in the County. For data centers the problem is the complete opposite, i.e. to screen out transient sources rather than capturing transients. Yet the multiple-sample Leq (15-sec) metric works quite well.

The plot below shows the average of at least three clean samples at three locations progressively farther from the data center. Location 2 is at the emitter PL (property line) and locations 3 and 4 are farther away at the face of the mixed use apartment units above the first floor commercial use. Note the spectra are repeatable and show machinery tones at 10, 25 and 60 Hz. This is plainly perceived as data center noise. The existing county code permits a level of 55 dBA measured at the emitter PL if adjacent to residential land-use such as the apartment units above the commercial first floor. It can only be concluded that the data center is in non-compliance with the ordinance.



The next plot below shows a measurement on the roof of the Loudoun Station building closest to the data center. Clearly, the tonal noise from the data center, particularly in the 62.5 1/3 octave band carries over to the residences in the Regency development. Location 6 is on top of an earthen berm that is in place to shield road noise from the community. The measured spectra at location 7 shows the berm is effective in reducing data center noise by 5 dBA from approximately 55 to 50 dBA. I should note that data center noise is plainly identifiable and audible at both locations.

Note also that the level on the roof of the apartment building is approximately 64 dBA that is higher than the levels at ground level. This demonstrates that machinery noise on the roof of the data center becomes louder at the elevated floors of the apartments as the emissions are no longer attenuated by the data center building acoustic shielding.



**Summary**

This test showed that consecutive 15-second samples that exclude extraneous sources of noise not relevant to the task at hand is an accurate easy and efficient method for steady sources such as data centers, power plants and other facilities. The same technique can be used for measuring transient or unsteady sources such as music and dog kennel sources.

*George F. Hessler Jr.*

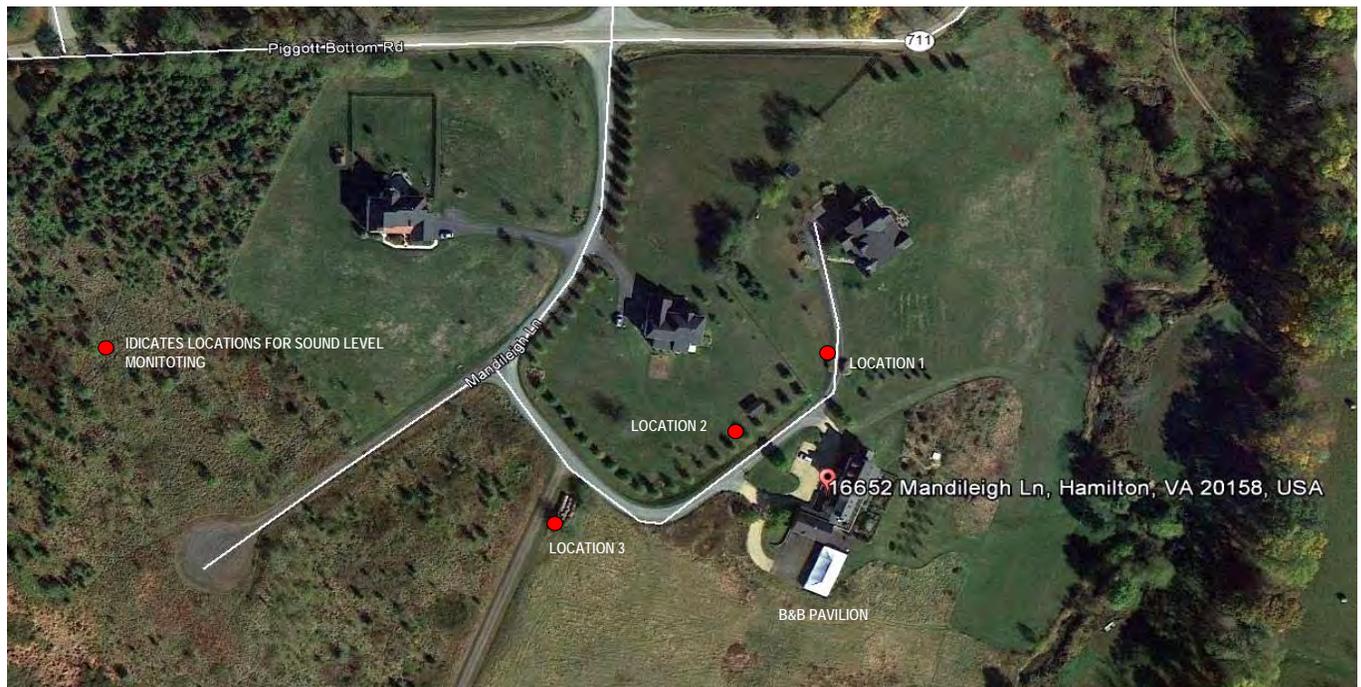
George F. Hessler Jr., Bd. Cert. INCE

## TECHNICAL MEMORANDUM

**Title:** B&B ENTERTAINMENT SOUND  
**Project:** LOUDOUN COUNTY ZONING ORDINANCE AMENDMENT  
**Location:** LOUDOUN COUNTY, VIRGINIA  
**Prepared For:** LOUDOUN COUNTY  
**Prepared By:** George F. Hessler, P.E.  
**Revision:** 0  
**Issue Date:** November 4, 2014  
**HAI Reference No:** TM-110414-1  
**Reference:**  
**Attachments:**

Attn. Ms. Theresa Stein, PM

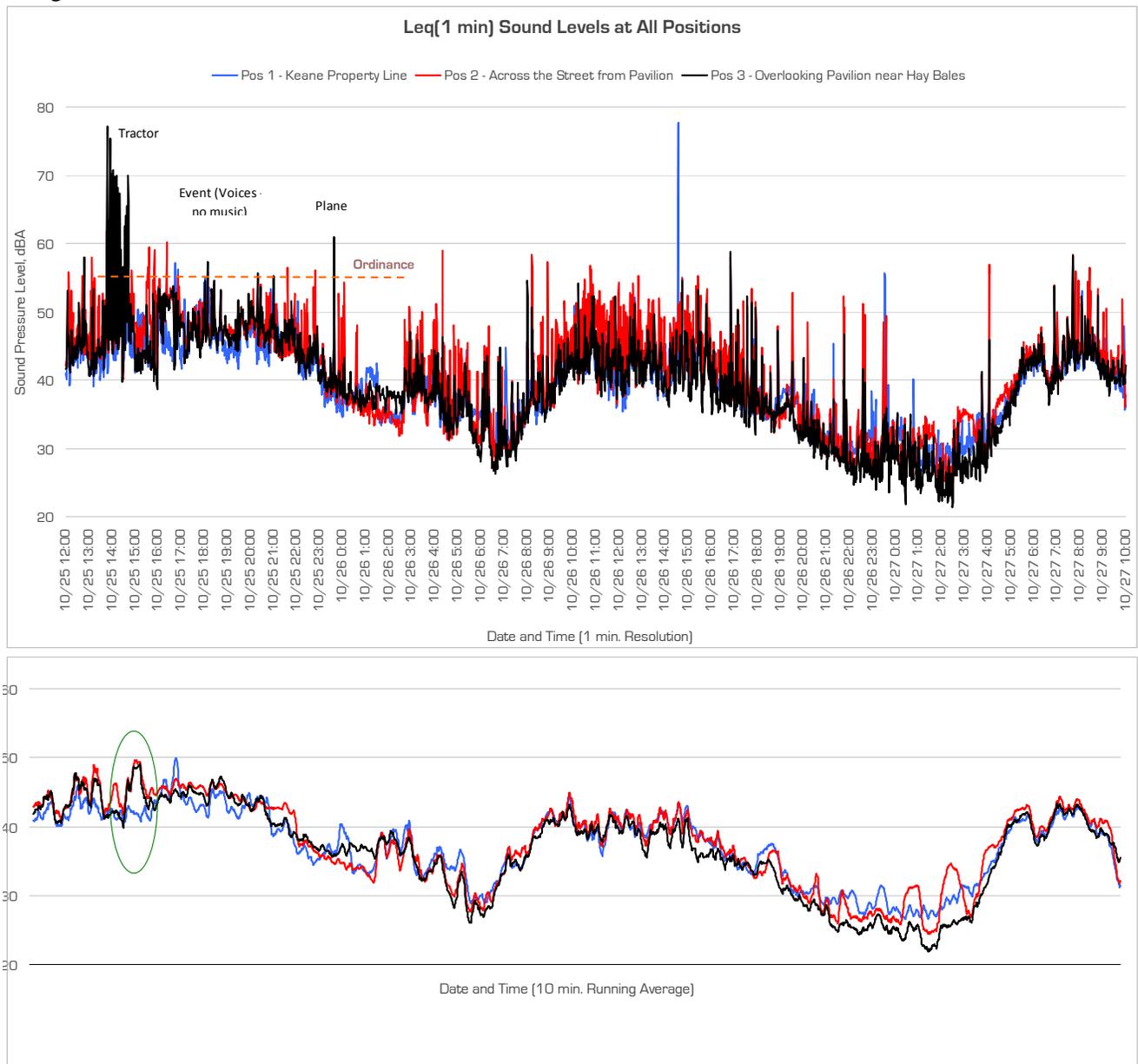
Continuous sound level measurements were made at the three locations shown below in an aerial view of a Bed & Breakfast operation at the address shown in Hamilton, VA from 12 noon on Saturday 10/25 thru 10 a.m. Monday on 10/27. The intent was to record sound from a wedding celebration held on Saturday at the B&B pavilion (white tent on aerial) for comparison to the existing Loudoun County noise ordinance.



Location 1 is approximately 280 feet north and the residence on this property is 380 feet from the pavilion (center of tent). Location 2 is 205 feet and 320 feet from the center of the pavilion for the PL and residence, respectively. Location 3 is 325 feet from the pavilion. If the pavilion sound emissions are dominant, i.e. well above the area background sound level, one would expect maximum levels at location 2, and minimum levels at location 1 that is both the farthest away and sound emissions are blocked or attenuated by some degree from the intervening residence structure of the B&B.

## Results

The monitor results are plotted as a function of time in 1 minute intervals in the upper plot. Data recorded for a full minute usually always contains some high transient or sporadic events such as auto passes, aircraft flyovers, dog barking or other things causing high peaks in the levels. During very early morning hours it remains quiet without transient events and the three plots merge together to show the large area background sound and minimum levels.



The lower plot is a 10-minute running average that smoothes out the 1-minute data to see the trends more clearly. Observe that for about two hours from 2:30 thru 4:30 on Saturday afternoon (circled in green) the sound level is highest at locations 2 and 3 that have a clear line of sight to the pavilion and lowest at location 1 that is farther away and the line of sight is blocked. Listening to sound recordings, no music was heard, just speech, chairs moving, etc.

In addition the levels on Saturday afternoon and evening were not significantly higher than Sunday and the levels are well below the existing ordinance of 55 dBA.

## Conclusions

Based on this one particular Saturday event, one could predict annoyance as the general definition for 'noise' is 'unwanted sound'. If there was music, unplugged or amplified, the level of complaint would increase.

I fear we may be too late in the year to test at a good outdoor site (B&B or Brewery) to capture entertainment sounds.

*George F. Hessler Jr.*

George F. Hessler Jr., Bd. Cert. INCE

## TECHNICAL MEMORANDUM

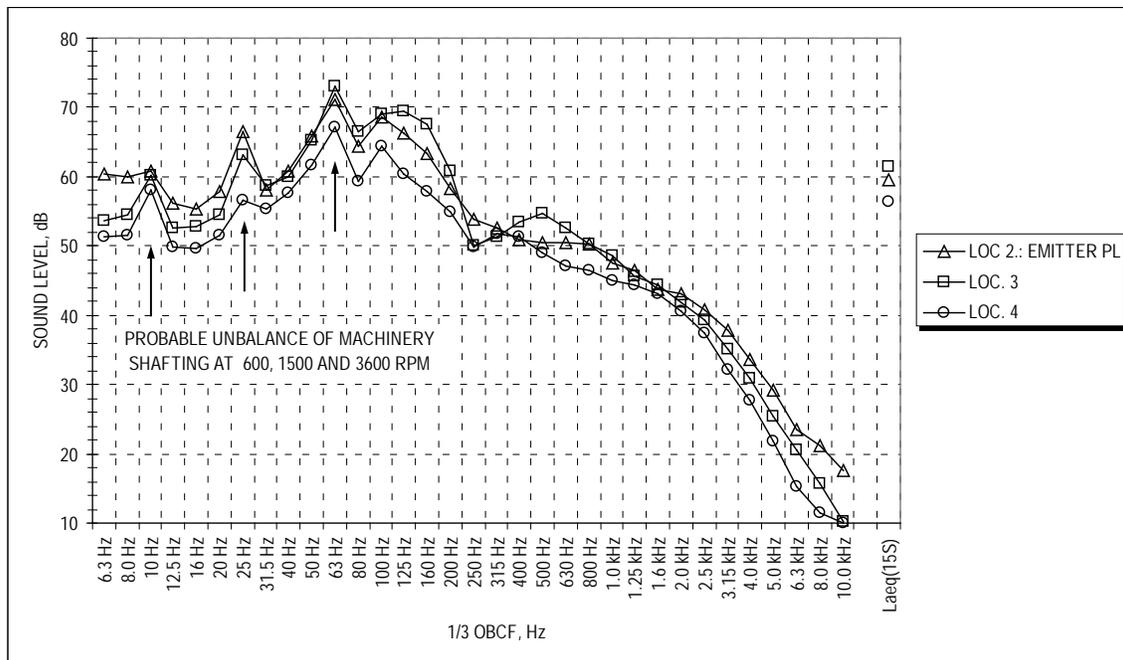
**Title:** ADDENDUM 1 TO DATA CENTER NOISE ANALYSIS  
**Project:** LOUDOUN COUNTY ZONING ORDINANCE AMENDMENT  
**Location:** LOUDOUN STATION & REGENCY RESIDENTIAL  
**Prepared For:** LOUDOUN COUNTY  
**Prepared By:** George F. Hessler, P.E.  
**Revision:** 0  
**Issue Date:** October 28, 2014 Amended APRIL 29, 2016  
**HAI Reference No:** TM-102814-1  
**Reference:**  
**Attachments:**

Attn. Ms. Theresa Stein, PM

The referenced TM-102814-1 has a paragraph and graphic plot that is duplicated below.

### Existing TM-102814-1

The plot below shows the average of at least three clean samples at three locations progressively farther from the data center. Location 2 is at the emitter PL (property line) and locations 3 and 4 are farther away at the face of the mixed use apartment units above the first floor commercial use. Note the spectra are repeatable and show machinery tones at 10, 25 and 60 Hz. This is plainly perceived as data center noise. The existing county code permits a level of 55 dBA measured at the emitter PL if adjacent to residential land-use such as the apartment units above the commercial first floor. It can only be concluded that the data center is in non-compliance with the ordinance.



The paragraph requires some clarification.

**Amended TM-102814-1**

The plot below shows the average of at least three clean samples at three locations progressively farther from the data center. Location 2 is at the emitter PL (property line) and locations 3 and 4 are farther away with location 3 at the face of the mixed use apartment units above the first floor commercial use. Note the spectra are repeatable and show machinery tones at 10, 25 and 60 Hz. This is plainly perceived as data center noise. The existing county code permits a level of 55 dBA measured at the emitter PL if abutting a Residential Zoning District and 60 dBA if abutting Commercial Zoning, or the more restrictive if both zoning districts occur along the property line. The actual zoning is a Mixed-Use District and the existing noise ordinance does not specify a specific noise limit for this zoning so it is unclear how to interpret the existing ordinance. ~~It can only be concluded that the data center is in non-compliance with the existing ordinance.~~ Compliance is achieved if Commercial District zoning is used (59 dBA vs. 60 dBA allowed), but non-compliance if Residential is determined (59 dBA versus 55 dBA allowed). I should also add the purpose of our measurements are not to determine compliance or non-compliance of this data center, but to understand how data center sound emissions could impact both the mixed-use and the residential community across the roadway. Had we been focused on determining compliance we would have made many more property line measurements around the large data center on intervals along the NE and NW property lines of the center.

Lastly, the measurement locations were not clearly labeled on the aerial, corrected below:



I hope this clarification is helpful.

Hessler Associates, Inc.

*George F. Hessler Jr.*

George F. Hessler Jr., Bd. Cert. INCE

# **Zoning Ordinance Noise Standards Community Outreach Meetings Summary**

## **Questions -**

### Enforcement:

- Who enforces the Zoning Ordinance noise standards? What's the difference in what the LCSO does?
- Does Zoning Enforcement inform emitters of violations?
- Is there an administrative process for a waiver or appeal?
- What are the penalties for a noise violation?
- When does Zoning Enforcement investigate noise complaints?
- What is going to change from what we currently have? How is this better?

### Exemptions:

- What is considered an emergency situation? Loss of power? Utility outage? Loss of coolers/AC?
- How does grandfathering work?
- Why is there an exemption for aircraft noise; what is changing? Are helicopters exempt from the standards?
- Gas pipelines/federal projects exempt?
- Are existing utility infrastructure subject to the new ordinance?

### Measurement:

- Do you have to be an adjacent property or a resident to make a noise complaint?
- How do you determine the source of noise if the uses are similar in the area?
- Where is sound measured?
- Why is there a discrepancy between the consultant's recommendation and the County's proposal?

### Data Centers:

- How do the standards apply to required generator testing (DEQ) during the day? Will they be allowed to test during the day/night?
- How will the new noise standards apply to data centers and why so hard on them if they are such a benefit?
- How will enforcement change for data centers?

### Other:

- Why is the Codified Ordinance and Zoning Ordinance complaint driven? Couldn't maximum noise level be determined prior to complaint in order to be pro-active? Could noise be reviewed at site plan?
- Who wrote the draft text?
- Was the kennel noise example in the report in the rural area of the County?
- Are limited breweries exempt?
- Who regulates animal noise? Music from cars?

### Sheriff's Office/Codified Ordinance:

- Will the LCSO use the same equipment to measure sound as Zoning Enforcement?
- Are LCSO noise complaints referred to Zoning Enforcement?
- Does the draft Zoning Ordinance text alter enforcement of nuisance standards in Codified Ordinance?

## **Zoning Ordinance Noise Standards Community Outreach Meetings Summary**

### **Comments/Recommendations:**

1. Fines for noise violations need to be significant enough to penalize data centers for exceeding the standards. At what point is the fine greater than the cost of compliance?
2. Better define what constitutes an emergency situation.
3. Create standards for different days of the week/weekend. Concerned about not implementing daytime and nighttime limits. Other jurisdictions have different day/night standards (data centers don't sleep and there is a new type of continuous noise environment).
4. Concerned with pet noise and how to regulate.
5. Concerned about continuous music, outdoor parties, and live music from venues and events.
6. Create clear procedures to register noise complaints and address enforcement more clearly.
7. Centralize the process or provide contact information for complaints to Codified Ordinance and Zoning Ordinance. Provide guide on who to call. There should be collaboration between the Sheriff's Office and Zoning.
8. Provide a comparison of local jurisdictions and jurisdictions that are under review. Proposal seems more stringent than local jurisdictions.
9. Need to have consideration of impact noise.
10. From a residential perspective, there is no difference in residential and industrial noise.
11. Consider revising regulations to measure noise at the business owner's property line because there is a concern that measuring at the noise recipient permits noise emitter to be louder.
12. Revisions should consider residential uses in mix-use districts and the noise at night.
13. Statement by staff that few complaints exceed the maximum levels or that noise violations have occurred is untrue; Regency has made reports and emitter is in violation, but the county has not done anything.
14. Recommend that the draft text not exempt existing uses from the new standards.
15. Draft text is a step in right direction to clarify sound measurement and definition, but enforcement still needs to be more firmly addressed.
16. Dump trucks a problem. "Jake brakes" are abused and begins as early as 4AM.
17. Appears to be conflict of interest between consultant's recommendations and outcome of zoning ordinance change – he will get more business.
18. Mistake to give agriculture uses a blanket exemption.
19. Provide an exemption for existing acoustic conditions/existing ambient noise.
20. Provide standards for limited breweries.
21. Provide noise direction specification interior to property.
22. Permit qualified 3<sup>rd</sup> party to measure noise for enforcement.
23. Provide an explanation of Codified vs. Zoning Ordinance in the FAQ and provide a "cliff note" version for general audience.
24. Create a modification to the noise standards or waiver to exceed the noise ordinance standards.
25. Recommend regulating regular or frequent gunshots and recreational shooting.

## CHRONOLOGY OF ZOAM 2014-0006, NOISE PROCESS

Significant actions and/or events associated with the Noise ZOAM are summarized as follows:

- **January 10, 2014:** The firm of Miller, Beam & Paganelli, Inc. provided a presentation regarding data center noise to the Transportation and Land Use Committee (TLUC) as part of its review of the Data Center ZOAM (ZOAM 2013-0003). Said presentation included a question and answer period that included discussion about noise regulation in general, and it was explained that the noise standards in the Revised 1993 Loudoun County Zoning Ordinance (Zoning Ordinance) could be revised to clarify and specify certain noise elements, such as the location from which sound is measured.
- **February 18, 2014:** The Zoning Ordinance Action Group (ZOAG) issued its report regarding the Data Center ZOAM, which included a recommendation that the noise standards be reviewed to determine if changes are necessary to assure noise is adequately addressed for all uses, and that certain elements be reviewed such as the height of adjoining structures, adequate enforcement of the noise standards, and the appropriate location for measuring sound.
- **July 16, 2014:** Board adopted (8-0-1, Higgins absent) Scope of Work and Work Plan at its Business Meeting authorizing staff to procure a consultant for the purpose of reviewing and revising the Noise Standards in the Zoning Ordinance, if necessary.
- **September 2014:** Contract awarded to Hessler and Associates (Consultant). Staff and the Consultant began research of noise standards in various local jurisdictions and federal agencies.
- **December 2014:** Consultant issued "Research In Support of Amending the Current Loudoun County Zoning Ordinance Section 5-1507 Noise Standards" and an Addendum, dated April 18, 2016 (collectively "Research Report"), attached hereto as Attachment 1A. The results are the basis for the recommended revisions to the Zoning Ordinance text.
- **April 1, 2015:** Board voted (9-0-0) to adopt a Resolution of Intent to Amend the Zoning Ordinance Noise Standards.
- **April 10, 2015:** Research Report and the draft text circulated to County referral agents and ZOAG.
- **May 1, 2015:** Staff and Consultant met with the ZOAG subcommittee to discuss the draft text, answer questions, and to review comments/concerns from the subcommittee.
- **May 6, 2015:** The ZOAG subcommittee presented its findings and recommendations to the full ZOAG, where the subcommittee's recommendations were approved to go forward to the Planning Commission with a single change to the subcommittee's referral.
- **April/May 2015:** Staff received referral comments from the Department of Economic Development (DED), Community Planning, and Zoning Administration, and revisions were made to address many of the comments.

- **August 5, 6, and 20, 2015:** Three public outreach sessions held at a variety of locations throughout the County in order to receive comments, suggestions, and concerns from citizens and businesses after DED and the Loudoun County Chamber of Commerce (LCCC) expressed concerns about the speed at which the amendment was proceeding. The public expressed concerns about the proposed draft text and made comments/suggestions, which have been compiled and summarized in **Attachment 1B**. In addition to the three public outreach sessions, staff established an email address for the public to forward their comments. Since July 2015, there have been approximately two dozen emails sent which have centered on the regulation of animal noises, loud parties/excessive outdoor music, passing vehicle noise, excessive aircraft/airport noise, and noise associated with the discharging of firearms.
- **September 1 and November 3, 2015:** Staff met with the Compliance and the Entertainment Subcommittees of the Nighttime Economy Ad-Hoc Committee (EDAC Subcommittees), under the Economic Development Advisory Commission (EDAC), respectively, to present the draft text amendment and a summary of outreach comments. The EDAC Subcommittees inquired as to whether the County would propose requirements for noise attenuation for uses and questioned whether the County should consider revising building standards. In addition, they were unsure if the proposed noise standards provided for special events. Staff informed the EDAC Subcommittees that there are no noise attenuation requirements proposed, and that no revisions to the building code standards are proposed or anticipated. Staff clarified that the Zoning Ordinance proposal does not provide for specific special event noise standard, although in the course of applying for a Special Events permit, noise could be a consideration when issuing a permit. On May 13, 2016, the Nighttime Economy Ad-Hoc Committee will present their recommendations for noise to the EDAC.
- **September 15, 2015:** Staff met with data center representatives, a representative from DED, and members of the LCCC, as well as other related industry representatives (Representatives) to answer questions and to hear their views and concerns about the draft text. Representatives stated that the noise from generators were not problematic, but that the rooftop condensers created the volume of noise. Staff noted that the tonal quality of data centers is typically the objectionable sound, but the proposed noise standards do not address tonal quality, which is a difficult and complicated issue to resolve. Representatives also discussed the need to run all generators during required testing period and during emergency situations. The draft was revised to define emergency situations and to exempt testing and emergencies from the noise standards. There were also concerns about sounds originating from public utilities that, although such sound may be objectionable, are necessary. Staff revised the draft text to include an exemption for public uses and utilities.
- **November 19 and 20, 2015:** ZOAG, Representatives, and EDAC Subcommittee members were invited to a follow-up meeting to discuss changes that had been made to the draft text since the earlier meeting. Comments received requested more clarity on where sound is measured along the property line, exempting

generators upon request from utility companies, and provide more clarity on expansion of existing uses. Staff incorporated those comments into the draft text.

- **December 15, 2015:** Planning Commission public hearing conducted. Noise ZOAM forwarded to subsequent work session. A summary of the public hearing is provided in **Attachment 2**.
- **March 10, 2016:** Planning Commission work session conducted, with Planning Commission voting (8-1-0, Scheel opposed) to forward proposed text to Board of Supervisors with recommendation of approval, to include change to Section 5-1507(B), Applicability.
- **April 5, 2016:** At the Board business meeting, the Board passed a motion (8-0-1, Buona absent) to send the Noise ZOAM to the May 13, 2016, Transportation and Land Use Committee (TLUC) meeting, along with the amendments to the Codified Ordinances, in order to provide the Sheriff's Office an opportunity to respond to questions and to continue to process the two items together.
- **April 6 and 13, 2016:** Staff met with ZOAG and with the Loudoun County Subcommittee of the Legislative Affairs Committee of the Northern Virginia Chapter of National Association of Industrial and Office Parks (NAIOP) on the respective dates to provide updates on the status of the Noise ZOAM. The ZOAG stated that they would provide any follow-up comments at the Board public hearing.
- **May 13, 2016:** TLUC voted 4-0-1 (Randall absent) to forward the Noise ZOAM to the June 7, 2016 Board business meeting with a recommendation to direct Staff to advertise the item for the Board's July 13, 2016 Public Hearing.
- **June 7, 2016:** The Board forwarded the Noise ZOAM to the July 13, 2016 Public Hearing meeting.

## NOISE STANDARDS FOR WINERIES, BREWERIES AND B&Bs

USE	APPLICABLE ORDINANCE SECTION	NOISE STANDARD - CURRENT	NOISE STANDARD – PROPOSED**
VA Farm Winery	5-1507	55 dba at <i>emitter</i> property line	55 dba at <i>receiving</i> property line
Commercial Winery (Sec 5-625)	5-652(B)(2)	55 dba impulsive sound at any adjacent residential/SFD principal use property line ----- No outdoor music after 11:00 PM.	delete to allow 5-1507 to apply per TLUC ----- no change
Limited (aka Farm) Brewery (Sec 5-667)	5-1507	55 dba at <i>emitter</i> property line	55 dba at <i>receiving</i> property line
Craft Beverage Manufacturing (Sec 5-668 PROPOSED)	5-1507	55 dba at <i>emitter</i> property line	55 dba at <i>receiving</i> property line
B&B Homestay (Sec 5-601(A))	5-601(A)(5)(a) and (b)	55 dba impulsive sound at <i>emitter</i> property line ----- No outdoor music between 11 PM to 10 AM Fri, Sat, and any evening preceding a holiday recognized by Loudoun County, and between 10 PM and 10 AM on any other day	delete to allow 5-1507 to apply per TLUC ----- no change
B&B Inn (Sec 5-601(B))	5-601(B)(5)(a) and (b)	55 dba impulsive sound at <i>emitter</i> property line ----- No outdoor music between 11 PM to 10 AM on Fri, Sat, and any evening preceding a holiday recognized by Loudoun County, and between 10 PM and 10 AM on any other day. (proposed to be amended per TLUC)	delete to allow 5-1507 to apply per TLUC ----- no change
County Inn (Sec 5-601(C))	5-601(C)(5)(a) and (b)	55 dba impulsive sound at <i>emitter</i> property line ----- No outdoor music between midnight and 7 AM	delete to allow 5-1507 to apply per TLUC ----- no change
Rural Resort/Retreat (Sec 5-601(D))	5-601(D)(8)(h)	55 dba impulsive sound at <i>emitter</i> property line ----- No outdoor music after 11:00 PM.	delete to allow 5-1507 to apply per TLUC ----- no change

\*\* EXISTING USES WILL CONTINUE TO BE SUBJECT TO STANDARDS IN EFFECT AT THE TIME ESTABLISHED\*\*

## Comparison of Maximum Decibel Level of Area Jurisdictions Land Use Related Noise

	Loudoun County	Loudoun County	Arlington County	Fairfax County	Prince William County	Town of Leesburg
	<b>EXISTING</b>	<b>PROPOSED</b>				
<b>Point of Measurement:</b>	Emitter property line	Receiving property line	From street, edge of pavement, or any location on receiving property, unless mixed use	Emitter property line or at any point within any other affected property	Emitter property line or at any point within any other affected property	
<b>Maximum Db (day/night):</b>						
<b>Residential</b>	55	55	60/55	60/55	60/55	Plainly audible using unaided hearing faculties
<b>Commercial</b>	60	65	n/a	65	65/60	
<b>Industrial</b>	70	70	70	72/65	79/72	
<b>Mixed Use</b>	n/a	60	65	65/60	60/55	

## ZOAG Referral Comments

Prepared by ZOAG Noise Ord. Subcommittee – April 30, 2015; Updated May 6, 2015

(Joe Paciulli, Chair; Lou Canonico; Pat Quante)

## ZOAM 2014-0006 Noise Standards

The ZOAG Noise Ordinance Subcommittee met on April 28, 2015 and prepared the following comments for the full ZOAG review at their meeting on May 6, 2015. The comments on the proposed Zoning Ordinance language are as follows:

- It appears that impulsive sounds are now considered the same as all other sounds. We recommend that impulsive sounds be listed in Section 5-1507 (D) as an Exemption or that a higher threshold be established for impulsive sounds.
- Table 5-1507 (C-1) should be clarified that the “Development Type” listed in the table is the development type of the receiving property and not the emitter.
- We question if it would be prudent to list industrial (at a higher specific number) in Table 5-1507 (C-1).
- The inclusion of a separate non-suburban residential category in Table 5-1507 (C-1) that is measured at a residence creates several difficulties in implementation, including: if no residence exists, differing standards for an emitter based on variable distances, questions of trespassing, etc. We recommend this column be eliminated and all residential be listed under 55 dBA at the receiving property line. However, if this category stays in, we recommend the definition of Around Residence Area (5-1507 (A) (2)) be changed to state ..... *a point of measurement approximately 35 feet from the vertical* ....
- All aircraft noise (not just in the Airport Overlay) should be listed in Section 5-1507 (D) as an Exemption.
- Because of the many issues the data center industry brought up during the data center ZOAM; we recommend the Department of Economic Development reach out to those data center reps offering an opportunity to review this new Ordinance. Specifically, the wording in Section 5-5017 (D) (3) is confusing; and they should be made aware and consulted on the actual operation of this equipment.
- Emergency equipment, or remediating emergency situations, should be listed in Section 5-1507 (D) as an Exemption.
- Because of varying setbacks and yards within the many zoning districts, there are many situations that air conditioner units are permitted closer to a property line than only permitted under Section 5-200 (B) (4). To eliminate these discrepancies, Section 5-1507 (D) (5) should be changed to exempt all air conditioner condensers for single family residential and light commercial.

- We understand the proposed Ordinance will be updated to include wording for Methods of Measurement when a multi-story mixed use building is the subject of a noise source. We request this wording once completed be forwarded to the ZOAG Subcommittee for comment and their response for inclusion in the Planning Commission data. In addition we point out that there are other receivers of noise besides multi-family housing that are affected by height, topography, etc. and if or how they are or are not dealt with in the ordinance may be important.
- By changing the ordinance to be at the receiving end of either an actual dwelling or property line - there may be issues of trespassing that the ordinance now “requires” to prove or rectify a possible complaint. For example, if a residential parcel is separated from the emitter by an intervening commercial or industrial parcel, how does the emitter get on the residential parcel to check measurements?
- Should night time noise be weighted differently than day time?

**COUNTY OF LOUDOUN, VIRGINIA**  
**DEPARTMENT OF ECONOMIC DEVELOPMENT**  
**MEMORANDUM**

**DATE:** May 12, 2015

**TO:** Theresa M. Stein, Planner, Zoning Administration

**FROM:** Buddy Rizer, Director, Department of Economic Development

**THRU:** J. Katie McConnell, Manager of Strategic Initiatives, Department of Economic Development

**SUBJECT: ZOAM-2014-0006, Noise Standards**

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**Background:**

The Department of Economic Development (DED) is responding to a request from the Department of Planning and Zoning to provide written comments on ZOAM-2014-0006, Noise Standards.

An overview of the changes proposed in ZOAM-2014-0006 are as follows:

Section 5-1503:

- Added additional language on the applicability of the proposed performance standards on agricultural uses.

Section 5-1507:

- Added new definitions.
- Added specifications on the type of sound meter and the manner in which the operators take a sound sample.
- Revised the location of the sound measurement to be from the receiving property line for certain types of residential districts and from around the residential dwelling in non-suburban zoning districts under particular circumstances.
- Reduced the maximum permitted sound levels in non-suburban zoning districts under particular circumstances.
- Added exemptions from the maximum permitted sound levels, including limits on testing standby generator sets.

Article 8:

- Revised the existing definition of “decibel” to reflect the Environmental Protection Agency’s (EPA) Model Community Noise Control Ordinance.

- Added a definition of “impulsive” based on the EPA Model Ordinance.

### **Analysis:**

DED has concerns about the significant rewriting of the noise standards as proposed in ZOAM 2014-0006. DED feels that any changes to the noise standards must be based on sound-science, minimize any financial burden imposed on both businesses and residents, have a measurable and positive impact that outweighs the cost, and be achievable. The proposed regulations would be challenging, if not impossible for our business community to meet.

Our concerns run from the general, business friendly nature of the regulations, to negative impacts on important sectors of Loudoun’s economy, to the specific challenges involved in tracking and meeting these standards.

### **INPUT NEEDED FROM BUSINESS COMMUNITY**

DED believes that the business community has a central role in the discussion and development of any proposed new or amended law, policy, regulation or other type of local rule that would impact the cost, operations or growth of business in Loudoun. DED has not had time to fully vet these changes with our business community, in particular the data center cluster, rural businesses, and industrial businesses – three groups who would seem to be most impacted by proposed changes. We feel that much more time is needed to examine the changes to ensure there are no unintended consequences that could negatively impact job growth and commercial investment in Loudoun.

DED is happy to work with our business community to discuss these issues. Their participation will be vital to ensure that there isn’t an over-correction to perceived problems.

### **IMPACT ON DATA CENTERS**

Section 5-1507 (D-2) of the proposed ordinance puts forth a noise standards exemption for the “maintenance and testing of standby generator sets if operated one set a time between the hours of 9:00 a.m. until 3:00 p.m.” Based on feedback from Loudoun’s data center cluster, DED finds that the restriction to test-operate one generator at a time between 9 a.m. and 3 p.m. as impractical because it does not take into account how the majority of data centers function. Nearly all data centers utilize multiple generators in a paralleling system in which all engines must run to support building load. Testing generators one-at-a-time does not test the system as a whole, virtually invalidating the test. Further, for many data center companies, operational standards dictate generator runs that occur during ‘Safetime’ (12 a.m. – 6 a.m.). The restriction for daytime operation for testing between 9 a.m. – 3 p.m. is not allowed with many pre-determined standards and customer Service Level Agreements (SLAs).

There are also likely technical limits on how quiet data center and electrical equipment can be. These limits are particularly concerning with the proposed new non-suburban residential development type and the potential effect on the supply of parcels for data center construction. Section 5-1507 (A-5) of the proposed standards describes non-suburban residential as a residential dwelling unit located in a zoning district listed in Article 2, on a parcel that is 15 acres or greater in size, and is a minimum distance of 400 feet from the property line of the parcel from which the sound source is emitted.

DED would like to know how many large parcels of land in Loudoun County, where the Comprehensive Plan would allow for uses like data centers or where the current zoning allows for data centers, would effectively be eliminated from possible development because of the regulations related to the non-suburban residential development type? For example, does this proposed Ordinance have the net effect of eliminating ¼ of the large data-center appropriate parcels remaining in the County? Does it have the effect of shrinking the market supply? DED also questions the origin of the 400' minimum distance requirement of exterior property line to the closest non-suburban residential dwelling unit. How was the distance of 400' chosen? What specifically happens to the noise attenuation of a typical transformer at 65dB over a 400' distance when you account for a typical berm/buffer of trees? The 45 dBA maximum is much lower than Loudoun's neighboring jurisdictions and DED feels that this is a potential red flag not only for data centers, but for our energy partners as the regulations will likely have negative impacts on substation transformers.

### **IMPACTS ON RURAL BUSINESSES**

The proposed non-suburban residential development type could also pose problems to Loudoun's growing rural business base. Under the proposed changes, a number of rural business types could be subjected to the lower 45 dBA maximum if they locate next to a non-residential suburban development type. These business types include farm markets, restaurants, teahouses or coffeehouse, and rural corporate retreats. DED questions how many parcels of land in Loudoun's rural and transition areas will be affected from the proposed noise standards related to the non-suburban development type? Further, DED wonders if the new ordinance will create a burden on rural prospects that will now need to verify if their future business location is next to a parcel subject to the lower dBA? Will the County have a method to help potential new business owners identify if their location is subject to the non-suburban residential standard?

In addition, DED finds the term "lawful agricultural operation" in section 5-1503 (B) confusing and problematic. DED understands that agricultural production falls into exemptions from additional regulation by state code. The question remains on the applicability of the proposed new standards on activities occurring at an exempt agricultural operation? For example, the noise generated from a sprayer operated in a vineyard is exempt from the standards as it falls under agricultural production. However, is a wedding occurring at a vineyard exempt from the standards? Are auxiliary uses like tasting rooms/space at limited license breweries exempt from the new standards?

To avoid confusion and to fully understand the implications of the new ordinance, DED believes that it would be helpful to specify which uses in the allowed uses table in each of the AR districts would be subject to the proposed noise standards.

### **IMPACT ON INDUSTRIAL BUSINESSES**

Section 5-1507 (B-1) of Loudoun's current noise ordinance has an "industrial" development type category with a higher dBA than the other development type categories (70 dBA for continuous

noise). This current industrial limit is already lower than Loudoun's surrounding jurisdictions of Fairfax (72 dBA<sup>1</sup>) and Prince William (79 dBA).

Under the new development types proposed in Table 5-1507 (C-1), there is no specified "industrial" development type. DED wonders whether the industrial development will now fall under the "commercial, civic, or institutional uses" development type, with a 65 dBA limit? If so, DED believes this will impact Loudoun's ability to maintain a thriving industrial sector. Additionally, a number of Loudoun's flex/industrial developments are also home to businesses that would fall under the Zoning Ordinance's "commercial" definition. DED believes the lack of specificity about industrial development in the proposed ordinance will result in confusion in expectations and enforcement of the noise ordinance in these developments.

### **IMPULSIVE SOUNDS**

Finally, DED requests clarification on impulsive sounds. As proposed in Article 8 an "impulsive sound" is a "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 firearms, and explosive blasting." In the current ordinance, Section 5-1507 (C-2) list higher dBA maximums for "impact" noise. Under the proposed ordinance, maximum dBA levels are not specified for impulsive sound. DED would like clarification if impulsive sounds are now subject to the maximum sound levels in Table 5-1507 (C-1)? If this is the case, DED has concerns that this puts Loudoun at a disadvantage to neighboring jurisdictions. For example, Fairfax County's proposed sound ordinance has impulse sound ranges from 100 dBA for commercial to 120 dBA for industrial.

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<sup>1</sup> Proposed

**County of Loudoun**

**Department of Planning and Zoning**

**MEMORANDUM**

**TO:** Theresa Stein, Zoning Division (#62)

**FROM:** Larr Kelly, Zoning Division (#62)



**DATE:** April 29, 2015

**RE:** ZOAM 2014-0006: Noise Standards

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As requested, I have reviewed the above referenced proposal for revising the noise standards found in Section 5-1507 of the Revised 1993 Loudoun County Zoning Ordinance. Pursuant to this review, I offer the following comments:

1. In regard to the preamble to Section 5-1507, in the third line thereof, I note that there is a reference to a "typical sound source". In subsection (A)(7) this term is defined. However, this term is not used anywhere else in the draft. However, the terms "subject sound source" and "extraneous sound source" and "construction sounds", and "unique sound source of interest" are used. I find it confusing to use and define the term "typical sound source" but then to use other, undefined terms, throughout the draft. I suggest that the word "typical" be deleted and the definition be changed to define "Sound Source".
2. In further regard to the preamble, I note that the last sentence indicates that these standards are not to apply where the performance standards in Section 5-600 specify different regulations for a specific use. However, I also note that the proposed standards establish the "Methods of Measurement". I would think that we would want the methods of measurement to be standardized, even if the sound levels are different for different uses. I suggest that this be considered.
3. In regard to Section 5-1507(A)(1), I note that there is a reference to the "sound pressure level in decibels". However the proposed definition of "decibel" refers to the measuring of the "volume of sound". This suggests two different measures, one of volume and one of pressure. I suggest that this inconsistency be eliminated. I also note that Section 5-1507(A)(3), in the definition of "L equivalent", there is a reference to the "sound energy". It is not clear how the "sound energy", the "sound pressure" and the "volume of sound" are related, but

as used in this proposed draft they appear to be interchangeable. It is not clear if this is accurate or whether I simply do not understand sound.

4. In regard to Section 5-1507(A)(2), I note that the definition of “Around Residence Area” is a point of measurement between 20 and 50 feet from the vertical surfaces of a residential dwelling. It is not clear why the point of measurement is to vary by 30 feet in any given situation. I suggest that a more uniform point of measurement be defined. If a deviation from such a point is necessary, I suggest that it be clarified when the deviation from the given standard is to apply.
5. In regard to Section 5-1507(A)(5), I note that the proposal would exclude significant numbers of residential units located within the AR-1, AR-2, A-10, A-3, and JLMA-20 zoning districts, and the other zoning districts identified in Article 2 as well. I believe that the individuals and families that reside in dwellings on lots of less than 15 acres perceive themselves to be in rural areas and entitled to the lesser noise limits proposed for the rural areas. I suggest that the proposed standards of this section be changed to incorporate more of the residences in those zoning districts, perhaps by changing the minimum lot size from 15 acres to five acres.
6. In regard to Section 5-1507(A)(7), concerning the definition of “Typical Sound Source”, I cannot make sense out of what is written here. I again suggest that the term be changed to “Sound Source”, but more importantly, I suggest that a clearer definition be provided. I believe that the definition, as written, will be very difficult to administer. At a minimum, in the fourth line of the section, the word “causes” should be changed to “cause”.
7. In regard to Section 5-1507(B)(1), I note that the proposed standard includes a time period of 15 seconds “unless the operator determines that another time period is more appropriate”, in which case “supplemental measurements may be made and reported”. This makes it unclear whether the operator is still required to perform tests with 15 second time periods, and may add other time interval readings, or whether the 15 second time period standard can be dismissed at the operator’s discretion in favor of other time period readings. I suggest that this be clarified.
8. In further regard to Section 5-1507(B)(1), in the tenth line of the section, the phrase “the unique sound source of interest” is used. It is not clear if this is the same or different than a “typical sound source” or a “subject sound source”. I suggest that this phrase be changed to be consistent with the other terminology used in the revisions.
9. In regard to Section 5-1507(B)(2), concerning the taking of sound samples, I question whether any outside measurement can be taken for a fifteen second

interval and have no extraneous sounds, such as bird song or passing traffic, affect the reading, and so I question the practicality of the proposed standard.

10. In regard to Section 5-1507(B)(3), in the last sentence thereof, the term “impact assessment” is used. I do not know what this term means, and therefore, I do not know what meaning this sentence is intended to convey. I suggest that the meaning be clarified and/or that the term be defined.
11. In regard to Section 5-1507(B)(5)(b), I can understand the need to calibrate the measuring devices the County uses, but I do not see the need to include such requirement in the ordinance. I suggest that this be deleted.
12. In regard to Section 5-1507(C), I note that this section refers to “Maximum Sound Levels”, while Section 5-1507(A)(1) refers to, and defines, “A-Weighted Sound Levels”. It is not clear that these are the same. I recommend that consistent terminology be used throughout the section.
13. In regard to Table 5-1507(C-1), I note that there is a column for “Commercial, Civic and Institutional Uses”. I also note that there is no definition provided for this term, while a definition has been provided for all other categories specified in the other columns of the table. I question whether something like a continuing care facility is to be considered a residential use or an institutional or commercial use for purposes of this table. It may be advisable to provide a definition.
14. In further regard to Table 5-1507(C-1) I note that the preamble states that the purpose of the proposed standards is to protect residential properties from excessive sound, so it is unclear why a standard for commercial uses is also included, or why the preamble only refers to residential properties. I suggest that this inconsistency be eliminated.
15. In regard to Section 5-1507(D)(4), there is a reference to “construction sounds”, but there is no definition of what constitutes a “construction sound”. I suggest that the meaning of this term be clarified. I also note that the section contains a cross-reference to exceptions found in the Code of Virginia and the Codified Ordinances of Loudoun County. I suggest that it be clarified as to what exceptions are being referenced.
16. In regard to the definition of “Decibel” I note that the term is expressed as “Decibel (dB)” but in the definition it states that decibel is expressed as “dB(A), dBA, dba, or db(A)”. I question why there is a difference between the way the term appears and the way the definition says it is to be expressed.
17. I note that there is a definition proposed for an “impulsive sound”. I question whether there is a need to define sounds that are other than “impulsive”.

**County of Loudoun**  
**Department of Planning and Zoning**

**MEMORANDUM**

**DATE:** April 30, 2015

**TO:** Theresa M. Stein, Planner, Zoning Administration  
Community Planning

**FROM:** Kelly Williams, <sup>KW</sup>Planner, Community Planning  
Community Planning

**SUBJECT: ZOAM-2014-0006 Amendments to the Zoning Ordinance – Noise Standards**

**BACKGROUND**

The Board of Supervisors has initiated an amendment to the Revised 1993 Loudoun County Zoning Ordinance to review the current noise standards of the Zoning Ordinance and revise them if necessary, to clarify and establish noise impact measurements between different land uses. To assist the Zoning Division on the proposed text amendments, the Community Planning Division offers the following information related to the Comprehensive Plan.

**COMPLIANCE WITH THE COMPREHENSIVE PLAN**

The Revised General Plan (the Plan) and other supporting documents and ordinances together comprise the Loudoun County Comprehensive Plan (*Revised General Plan, Preface, text*). The policies and methods of implementation of the Revised General Plan are intended to ensure the long-term fiscal balance of the County, to protect its environment and natural resources, to create high-quality communities, and to provide adequate levels of public services and facilities (*Revised General Plan, Preface, Principles 1, 2, 4, 4, 5, 6, & 8*). The Revised General Plan is the foundation for amendments to County ordinances to ensure that the County's goals are implemented through the regulatory process.

While the Plan has specific airport and highway noise polices, it does not include specific language pertaining to noise emissions of other uses. Therefore, no specific conflicts with the Revised General Plan have been identified. The Revised General Plan envisions a, "peaceful character suitable for private domestic life" (*Revised General Plan, Chapter 11, Implementation, Design Guidelines, Residential Neighborhoods, 1.a*) To provide a suitable quality of life, the Plan would support the identification of noise impacts between different land uses as outlined in the Zoning Ordinance Amendment.

cc: John Merrithew, AICP, Acting Director (via email)  
Cindy Keegan, AICP, Program Manager, Community Planning (via email)