

**Proposed Amendment Lacks Necessary Development Standards<sup>1</sup>  
(Opposition to PA 2020-CW-3CP)**

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If you want to go fast, go alone.  
If you want to go far, go together.  
African Proverb

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<sup>1</sup> This paper has been distributed to the Board of Supervisors and the Planning Commission. It is available as Paper Two at <https://holmesrun.org/2022/04/01/westfields-issues/>.

## 1. Introduction

Subject plan amendment, PA 2020- CW- 3CP, is proposed as a next step in the Board's three-year campaign to foster residential development in the close vicinity of Dulles airport, in particular between the 60 and 65 DNL contours. During the 21 July 2020 meeting of the Board's Land Use Policy Committee, staff's consultant, Mr. Nick Johnson of Johnson Aviation Consulting, made two recommendations concerning land use policies at Dulles. The first was to adopt the 2019 contours. The second was to carefully establish appropriate conditions for any residential development between the 60 and 65 DNL contours. The consultant warned that, without appropriate restrictions on such developments, there would be "impacts."

Neither staff nor the Board has heeded either recommendation. Now, in subject plan amendment, staff proposes residential uses between 60 and 65 DNL having given little apparent thought to the restrictions Mr. Johnson said would be so important.

Aircraft noise easily can affect the health and welfare of residents. [Ref1]. Before the Board recommends more residential development adjacent to Dulles airport, it is essential that it establishes standards adequately protecting future occupants of these homes from adverse effects of aircraft noise. The principal purpose of this paper is to demonstrate that subject plan amendment utterly lacks the necessary standards and therefore should not be adopted.

## 2. Background

On 7 May 2019, the Board adopted the controversial Westfields amendment (PA 2018-III-DS1), which recommended 4250 additional dwelling units in Land Unit J of the Dulles Suburban Center as well as residential development there between the 60 and 65 DNL contours. Prior to adoption, the Comp Plan had protected the airport from encroaching residential development by explicitly discouraging residential use inside the 60 DNL contour. In response to concerns that the new homes would be subjected to exceptionally high levels of aircraft noise, the plan amendment provided *guidance* that developers should make commitments during the development review process to construction standards that would mitigate exterior noise impacts to interior levels not exceeding 45 dBA. In addition, mitigation to 65 dBA was encouraged for private recreation uses such as children's playgrounds by placing the facilities indoors.

During the Board's 7 May 2019 meeting, Supervisor Smith made a motion and the Board agreed that staff should collect information and make recommendations regarding next steps in consideration of the 2019 contours MWA had provided the previous month. In the 21 July 2020 meeting of the Land Use Policy Committee, Mr. Nick Johnson briefed supervisors on his report [Ref4], which included the recommendation that the Board *should adopt the contours*. In a short briefing following Mr. Johnson's, staff briefed supervisors recommending that the Board *should not adopt the contours*. At the same time, staff recommended that the Board amend the Comp Plan to allow residential development between the 60 and 65 DNL contours in all residential districts surrounding the airport. On 9 Mar this year, I sent a paper to supervisors and planning commissioners protesting the falsity of the material staff presented in the July 2020 meeting. The misinformation, the lack of relevant considerations, and the omission of expert opinions that disagreed strongly with staff's unfounded recommendations were offensive. I felt that the material could not have been more deceptive had it been intentional, and something should be said. [See Paper One at Ref2].

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In the Board meeting on 28 Jul 2020, Supervisor Smith made a motion and the Board agreed to authorize subject plan amendment, which would allow residential uses between the 60 and 65 DNL contours in all residential districts surrounding Dulles. The motion cited “information” that had been presented one week earlier in the offensive LUPC meeting and misrepresented Mr. Johnson’s recommendations on the 60/65 question. [See Sect. 13.2 of Paper One at [Ref2](#)].

Subject plan amendment draft [[Ref3](#)] recommends residential uses between the 60 and 65 DNL contours under conditions for noise surveys, noise mitigation, occupant notification, and aviation agreements nearly identical to those introduced by the Westfields amendment. The principal difference is the 65 dBA guidance for private recreation uses has been dropped. The sole requirement in the amendment for noise mitigation is the 45 dBA guidance for interior noise levels introduced by the Westfields amendment.

Since adopting the Westfields amendment, the Board has approved four residential developments in Land Unit J at Dulles Suburban Center. *Remarkably, not one of the four developers adopted (proffered) the 45 dBA interior noise guidance or anything close to it.* In three of the four cases, the developer adopted instead a standard that readily would result in homes subjected to interior noise levels as high as 67 dBA, 4325 times per month (that is, 160 times louder than 45 dBA, 144 times per day).

This paper examines the differences between the 45 dBA guidance and the noise standards that the four developers adopted in its stead. The paper concludes that the 45 dBA guidance, in the intense Westfields aircraft noise environment, likely would require more building sound insulation than is affordable. The guidance seems unrealistic and therefore ineffective. It can be written out in the Comp Plan, but experience indicates developers will not adopt it.

*Subject plan amendment provides no assurance aircraft noise can be reduced to healthy interior noise levels. It establishes no reliable standard adequately protecting occupants from adverse effects of aircraft noise and should not be adopted.*

The Table of Contents is a guide to the contents of the paper and provides links to sections.

### **3. Current Aircraft Noise Regulations and Guidance**

As mentioned above, PA 2018 III-DS1 (the Westfields amendment) adopted by the Board on 7 May 2019 *recommends* residential development in Land Unit J (Westfields) of the Dulles Suburban Center between the 60 and 65 DNL contours. The amendment further recommends a commitment during the development review process to ensuring interior noise levels within living spaces will not exceed 45 dBA and mitigation of noise in private recreation spaces to 65 dBA, for example, by enclosing them in structures.

A second standard, this one in the Environment section of the Policy Plan, *recommends* interior noise levels in new developments should not exceed 45 DNL and noise in outdoor recreation areas should not exceed 65 DNL. It further recommends new residential development should not occur in areas with projected aircraft noise exposures exceeding 60 DNL.

Section 3103.2, *Airport Noise Impact Overlay District*, of the Zoning Ordinance provides *regulations (requirements)* for noise mitigation within the area bounded by the 65 DNL noise contour at Dulles airport. Within the 65-70 DNL noise impact area, new construction is required to provide interior noise levels no higher than 45 DNL.

The draft of subject plan amendment [Ref3] retains the Westfields recommendation to limit interior noise levels to 45 dBA but places no limit whatsoever on noise levels in recreation areas.

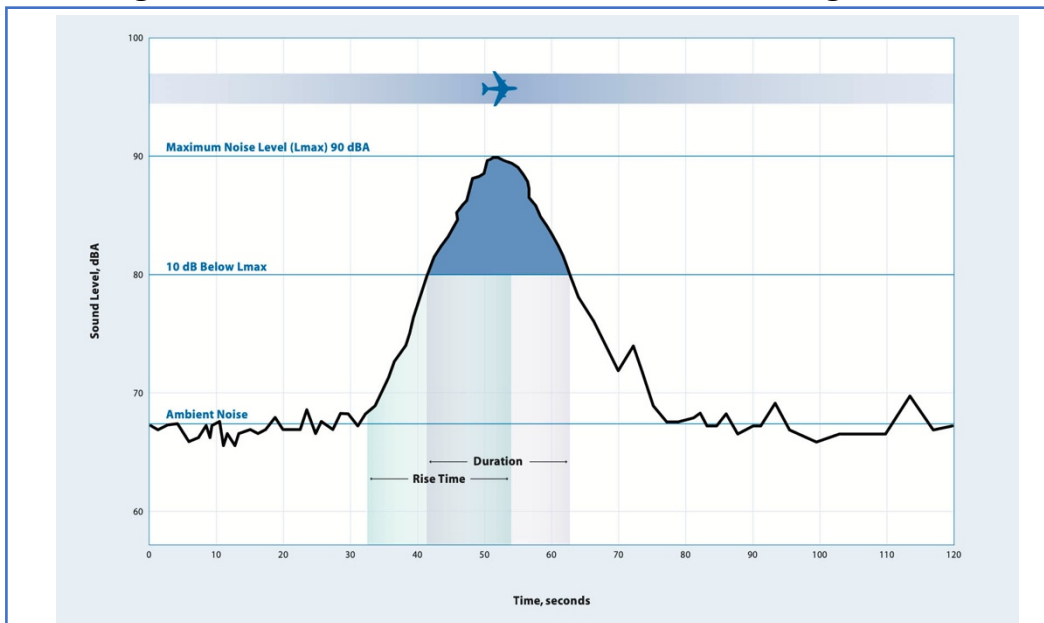
Currently no *regulation requires* noise mitigation between 60 and 65 DNL. Apparently, subject amendment has no intention of establishing such a requirement; all compliance would be voluntary.

#### 4. Two Kinds of Decibels, dBA and DNL

**dBA:** The human ear is more sensitive to frequencies in the midrange and less sensitive to low and high frequencies. Consequently, noise in the midrange is perceived as louder. Measurements expressed in dBA (e.g., 65 dBA) take this into account by amplifying midrange noise and attenuating noise at low and high frequencies. This process “weights” measurements to reflect the sensation the noise would create in the human ear. The “A” does *not* mean average; it's just the moniker given the weighting process. Measurements in dBA represent here-and-now, real-time noise as though one were standing there holding the meter.

**L<sub>max</sub>:** As shown in Figure 1, L<sub>max</sub> is simply the maximum noise level recorded over an interval of time, for example, the time it takes for an aircraft to pass overhead. L<sub>max</sub> is expressed in dBA, e.g., 62 dBA.

**Figure 1. L<sub>max</sub> Is the Maximum Sound Level During an Event**



**Modal L<sub>max</sub>:** If one made a list of L<sub>max</sub> values for 100 aircraft passing overhead, the Modal L<sub>max</sub> for the group would be the value that occurs most frequently in the list. For example, if the list had only five L<sub>max</sub> measurements: 64 dBA, 84 dBA, 58 dBA, 64 dBA, and 82 dBA, the Modal L<sub>max</sub> measurement would be 64 dBA because it occurs the greatest number of times.

DNL: DNL values are averages over one or more 24-hr periods: a day, a week, a month, etc. Dulles noise contours show averages over a full year under the assumption that the airport is operating at its full capacity. To calculate a DNL average, one first records the noise in dBA and then multiplies all measurements taken between 10 PM and 7 AM by a factor of 10 because night-time noise is considered more disruptive. Lastly, the adjusted noise measurements are averaged over the period of the recording, e.g., one week, to arrive at the DNL value. This paper uses the notation 60 DNL (as an example) for noise levels expressed in terms of DNL. Elsewhere 60 DNL might be written as DNL 60 dBA and  $L_{dn}$  60 dBA - just different notations, the noise level is the same in all three cases.

Figure 2 summarizes month-long samples of aircraft noise data from Dulles and Washington National. While the DNL values are modest (58 to 62 DNL), 35 to 50% of the noise events exceeded the Modal L Max values of 68 and 70 dBA, 10 to 15% of the traffic generated noise ( $L_{max}$  values) exceeding 75 dBA, and a few events exceeded 80 dBA. NMT #25 at Dulles is directly under the approach path to Runway 01R approximately one-half mile closer to the airport than the Stonebrook site. At National, aircraft follow the river and are laterally displaced from NMT #8 in Old Town. Even with this difference, as one would expect, the  $L_{max}$  data, which describes individual aircraft noise events, is consistent between the two monitors. The DNL value is higher at NMT #8 because the number of noise events recorded there during May 2019 was nearly twice the number recorded at NMT #25.<sup>2</sup>

**Figure 2. Examples of Dulles and Washington National Aircraft Noise**

<b>Airport</b>	<b>Dulles</b>	<b>National</b>
<b>MWAA Noise Monitoring Terminal</b>	NMT #25 on Final Approach to Runway 01R	NMT #8 in Founder's Park, Old Town
<b>Time Period</b>	Month of May 2019	Month of May 2019
<b>Noise Events</b>	6287	11,476
<b>DNL</b>	58.1	61.6
<b>Modal Lmax</b>	70 dBA	68 dBA
<b>Events Exceeding Modal Lmax</b>	2251 (35.8%)	5955 (51.9%)
<b>Events Exceeding Lmax 75 dBA</b>	690 (11.0%)	1691 (14.7%)
<b>Events Exceeding Lmax 80 dBA</b>	48 (0.8%)	50 (0.4%)
<b>Loudest Event</b>	87 dBA	85 dBA

The MWAA analysis supporting the 2019 contours concluded that fleet mix will change little over the foreseeable future. If Dulles traffic doubled with little change in fleet mix, the percentage of noise events exceeding 75 dBA would remain at 11 %, and the 690 events above 75 dBA (1 per hour) would increase to 1380 (2 per hour). Doubling traffic would double the average value of noise for the month, and the DNL value would increase 3 dBA to 61.1 DNL. Going forward, aircraft are not going to become more noisy; the noise made by the typical aircraft overhead it's not likely to increase. But as air traffic increases, the number of overflights in an hour and in a day will increase. It's the increase in traffic that will cause the DNL values to rise. *The 2019 contours identify the areas where Lmax values*

<sup>2</sup> NMT #21 on the approach path to Runway 01C at Dulles recorded 5923 noise events during May 2019. Taken with the 6287 events at NMT #25, the two monitors at Dulles recorded 12,200 events.

are high today and will be high in the future. The DNL values on the contours describe the average noise levels likely to be attained when traffic volumes correspond to the airport operating at capacity.

**5. Interior Noise Standards: 45 dBA vs. 45 DNL**

Standard home construction standards generally will provide 20 dBA of building shell noise attenuation. Current policy discussions regarding aircraft noise are limited to areas exposed to 65 DNL or less. It follows that an interior noise standard of 45 DNL, absent significant roadway and other noise sources, would require no more than ordinary home construction practices. If standard homes are compatible with aircraft noise in the vicinity of busy airports, one would *not* expect Washington National airport, with its river approaches, to generate a significant number of noise complaints. Yet in 2018 it was the source of 76,000 complaints. Given the angst that surrounds noise issues at National, it seems likely that accepting 45 DNL as the standard for maximum interior noise in residences between the 60 and 65 DNL contours at Dulles would risk the welfare of occupants.

Figure 3 shows interior noise levels that would have occurred during May 2019 inside a building at Stonebrook that provided the listed values of building attenuation. The middle column shows the maximum interior noise level that would have occurred over all 6287 noise events recorded that month, and the right-hand column shows the number of interior noise events that would have exceeded 45 dBA.

**Figure 3. Building Shell Attenuations and Interior Noise Levels**  
(Based on May 2019 NMT #25 Noise Measurements at Dulles)

<b>Building Shell Attenuation (dBA)</b>	<b>Max Interior Noise Level (dBA)</b>	<b>Number of Events with Interior Noise Levels Exceeding 45 dBA</b>
20	67	4325
27	60	1476
34	53	93
42	45	0

The first row of the table shows the result of a 45 DNL interior noise standard, which would require only 20 dBA attenuation. The interior would experience noise levels as high as 67 dBA and 4325 noise events during May 2019 would have exceeded the desired maximum interior level of 45 dBA. In order to fully achieve the 45 dBA interior noise standard, the building would need to provide 42 dBA attenuation. Alternatively, 34 dBA attenuation would provide a maximum interior noise level of 53 dBA with 93 events during the month exceeding 45 dBA.

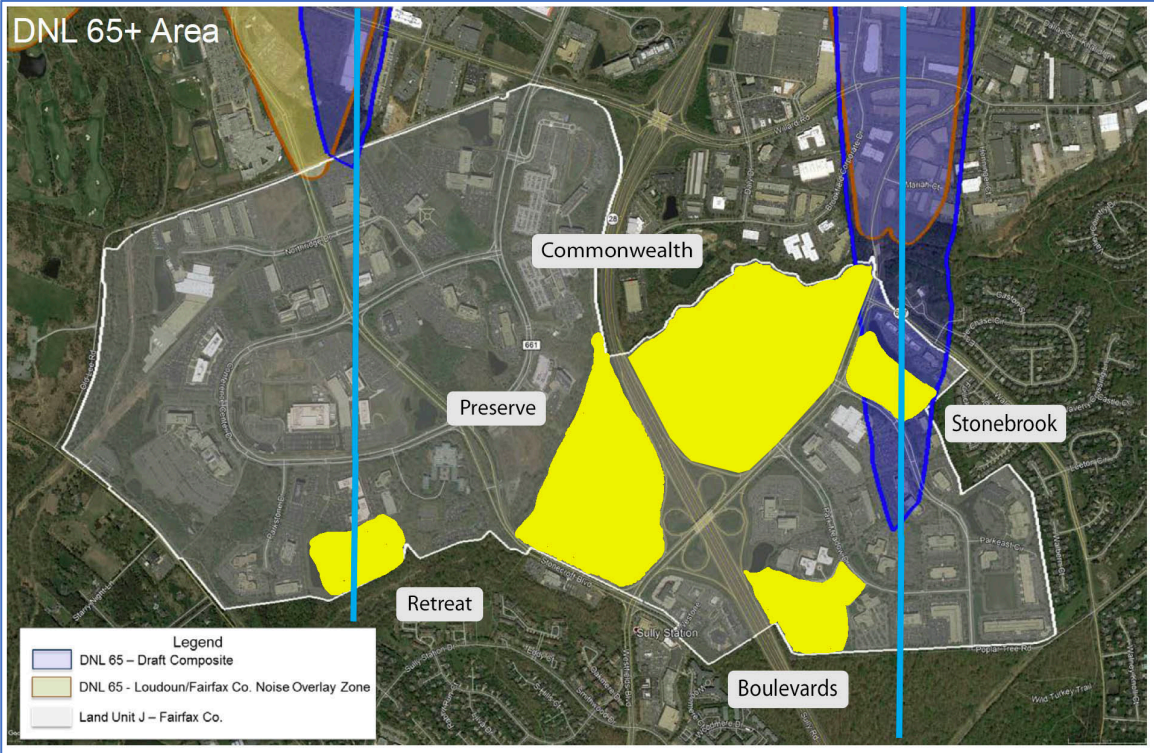
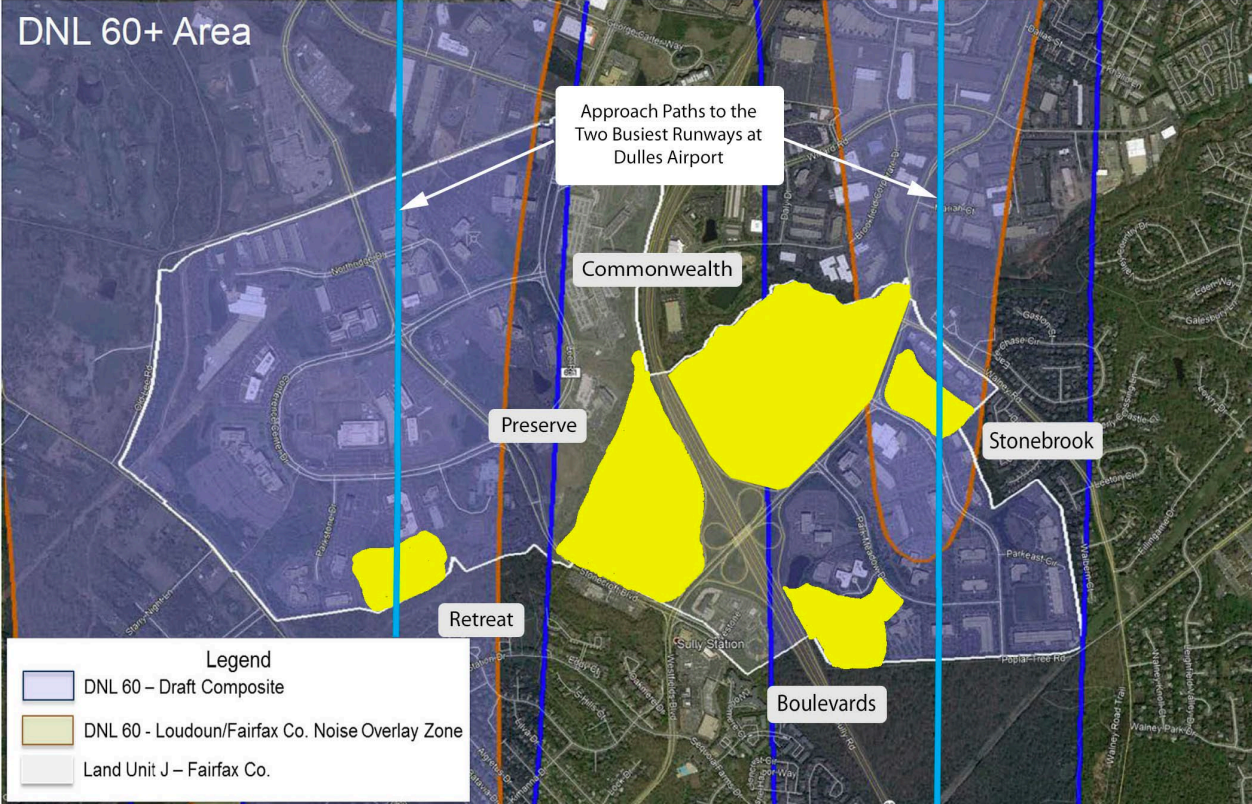
It's a question of cost. As described in Sect. 6.1 below, Stonebrook offered to provide upgraded building materials in order to achieve 25 dBA building attenuation. To provide 34 dBA attenuation, the building would need to be eight times more effective than the Stonebrook proffer. It would need to deflect or absorb 99.94% of the exterior noise energy. *It seems likely the reason none of the four Westfields developers offered to meet the 45 dBA interior noise standard was the necessary 42 dBA building shell attenuation is not affordable for the type of housing developers envision for the area.*

**6. The Four Recent Westfields Developments**

This section summarizes the noise mitigation strategies proffered by the four developments approved since adoption of the Westfields amendment. (See Figure 4.)



**Figure 4. Land Unit J Developments.**  
**(1993 Orange Contours and 2019 Blue Contours) [Based on Ref9, pg 369 & 373]**



**6.1. Stonebrook**

Stanley Martin Homes proposed to build 14 single family attached (SFA) and 120 stacked multifamily dwellings on 12 acres at Westfields. The Board approved the rezoning application, [RZ 2019-SU-005](#), on 7 Nov 2020. In Appendix 9, *Airport Noise Analysis - Modal Lmax*, on pg 201 of the staff report, SMH described the results of an analysis requested by the county to determine whether the proposed building construction would mitigate Modal Lmax 70 dBA noise to an interior level not exceeding 45 dBA. Mitigation of 70 dBA to 45 dBA would require building shell attenuation of 25 dBA.

The Stonebrook site is three miles south of Runway 01R directly below the approach course. As shown in Figure 4, it is inside the 60 DNL contour of the 1993 noise exposure map and inside the 65 DNL contour of the 2019 map.

The degree to which building materials attenuate exterior noise is stated in terms of Sound Transmission Class (STC) ratings that are expressed in decibels. SMH analyzed one of their model homes to determine whether standard materials would provide the necessary 25 dBA attenuation with the results shown in Figure 5.

**Figure 5. STC Ratings Required for 25 dBA Attenuation**

<b>Building Element</b>	<b>STC Rating of Standard Product</b>	<b>Minimum STC Rating Required</b>
Operating and Fixed Windows	26	33
Sliding Glass Doors	26	31
Foyer Entry Doors	22	30

Providing 25 dBA noise attenuation. would require building products providing 5 to 8 dBA additional attenuation above and beyond the capabilities of standard products. In Proffer #30 SMH agreed to provide 25 dBA building attenuation.

**6.1.1. Limiting Interior Noise to 45 dBA**

But the 25 dBA building attenuation is insufficient to assure that interior noise will not exceed 45 dBA. It is sufficient to reduce Modal Lmax 70 dBA to 45 dBA, but as pointed out in Sect. 4, a significant percentage of overflights generate noise well above the Modal Lmax.

Figure 6 (attached) summarizes Lmax values for 6287 aircraft noise events recorded by NMT #25 in May 2019. Each row shows the number of events that recorded the corresponding Lmax value, the cumulative number of events that recorded that value or a lower value, the number of events that recorded a higher value, and finally the percentage of total events that recorded a higher value. A total of 2251 events (36% of the total and 75 per day) exceeded the Modal Lmax value, which by coincidence was 70 dBA. *With 25 dBA building shell attenuation, 75 flyovers per day would exceed the 45 dBA interior noise limit.*

As a second Stonebrook example, May 2021 data recorded mid-pandemic at NMT #25 again showed a Modal Lmax of 70 dBA. Of the 4627 aircraft noise events recorded that month, 2143 (46% of the total and 69 per day) exceeded Modal Lmax.



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*SMH's proffer to provide 25 dBA of building attenuation is the most generous among the four recent developments, but it fails to meet the 45 dBA interior noise guidance.*

### **6.1.2. Noise in Recreation Areas**

On page 12 of Appendix 10, *Transportation Noise Analysis*, in the staff report SMH states that *they did not include aircraft noise in estimates of noise impacts on outdoor recreation areas*. SMH proposed three small outdoor areas for residents. They elected to not cover them with structures. Having made that decision, they declared that no further analysis or mitigation of outdoor noise is required because roadway noise was not expected to exceed 65 DNL.

However, the 65 dBA guidance for noise in recreation areas introduced by the Westfields amendment it's not limited to aircraft noise. It applies as well to roadway noise, and, as illustrated by the 45 DNL example in Sect. 5, 65 DNL noise will exceed 65 dBA more or less frequently.

*SMH did not proffer to meet the 45 dBA interior noise guidance nor did they proffer to meet the 65 dBA guidance.*

### **6.2. The Retreat**

On 14 Apr 2020, the Board approved an Elm Street Communities rezoning application, [RZ 2019-SU-009](#), to construct 120 SFA dwellings on 20 acres at Westfields. The Retreat site is located directly under the approach course to Dulles Runway 01C inside the 60 DNL contours of both the 1993 and 2019 noise exposure maps. On pg 210 of Appendix 7 in the staff report, the ESC application stated that the two MWAA NMTs nearby (#21 and #34) had reported Modal Lmax values of 70 and 72 dBA. ESC used the 70 dBA value and STC ratings of 26 for their windows and doors in an analysis of one of their model homes and concluded that interior noise levels would not exceed 44 dBA for any noise event generating outdoor noise of 70 dBA or less. As explained in Sect. 6.1.1 above, mitigating Modal Lmax 70 dBA noise to 45 dBA is not sufficient to meet the 45 dBA interior noise guidance. In particular, during the month of May 2019, NMT #21 nearby The Retreat site recorded 5923 aircraft noise events of which 1497 exceeded 70 dBA. These 1497 events would have generated interior noise exceeding 45 dBA.

In their Appendix 7, ESC noted that there is no requirement limiting interior noise levels for individual aircraft flyover events. Their proffer (#42, pg 84) is limited to mitigating interior noise to *an average value* not exceeding 45 DNL.

On pg 18, the staff report concluded that the 65 dBA noise limitation for recreation areas had been met because the applicant's noise analysis had estimated a maximum of 63 DNL noise outdoors. The error is in confusing DNL and dBA. Aircraft noise events recorded at NMT #21 in May 2019 averaged 55.4 DNL. Yet, 3255 of these events generated noise on the ground exceeding 65 dBA.

*ESC did not proffer to meet the 45 dBA interior noise guidance nor did they proffer to meet the 65 dBA guidance for recreation areas.*

### **6.3. Boulevards**

On 29 Sep 2020, the Board approved a K. Hovnanian rezoning application, [RZ 2019-SU-010](#), to construct up to 330 multifamily dwelling units on 22 acres at Westfields. The site is just to the west of the approach course to Runway 01R a short distance outside the 1993 60 DNL contour and inside the 60 DNL contour of MWAA's 2019 noise exposure map. In order to provide consistency among the new developments in Land Unit J, K.H. was asked to provide noise studies and make commitments to noise mitigation as had the other Land Unit J developments.

Staff report stated that K.H. had submitted a noise study though none was found in the report. In Proffer #46, K.H. agreed to submit an acoustical analysis with the second submission of the first site plan to determine whether noise mitigation measures are required to reduce interior noise levels *to an average value* not exceeding 45 DNL taking into consideration all noise sources.

Nothing in the Boulevards application included in the staff report indicates that the applicant intends to meet either the 45 dBA interior noise guidance or the 65 dBA guidance for recreation areas.

### **6.4. Commonwealth Centre, Land Bay A**

On 14 Jul 2021, the Planning Commission recommended approval of [PCA 2006-SU-025-05](#) submitted by Toll Mid-Atlantic and JLB Realty to construct 436 dwelling units at the southern extremity of the Commonwealth site adjacent to the cloverleaf interchange, 335 units in a 70-ft-tall high rise and 81 units in six 55-ft-tall midrise structures. A decision by the Board is pending. Like the Boulevard development, this site is inside the 2019 60 DNL contour but was not inside the 1993 60 DNL contour. Like K.H. (The Retreat), Commonwealth was asked to provide noise studies and make commitments to noise mitigation.

Again, like the K.H. application, the staff report states that a noise study had been submitted though none was found in the staff report. In Proffer #15, the applicant agreed to submit an acoustical analysis with the second submission of the first site plan to determine whether noise mitigation measures are required to reduce interior noise levels *to an average value* not exceeding 45 DNL taking into consideration all transportation noise sources.

Nothing in the application indicates that Commonwealth intends to meet either the 45 dBA interior noise guidance or the 65 dBA guidance for recreation areas.

## **7. Summary of Developers' Mitigation Strategies**

Figure 7 compares guidance in the Comp Plan (limit interior noise to 45 dBA) with the two strategies proffered by developers, namely limit noise to 45 DNL and mitigate exterior noise at or below Modal Lmax to 45 dBA. None of the approaches seems satisfactory.

*No developer proffered to adopt the 45 dBA noise mitigation guidance in the Westfields amendment. Nonetheless, subject plan amendment draft retains the 45 dBA guidance. It has dropped entirely guidance for noise in recreation areas leaving only the guidance in the Environment section of the Policy Plan that outdoor noise in rec areas should not exceed 65 DNL.*

**Figure 7. Comparison of Three Strategies for Limiting Interior Noise**  
 (Based on May 2019 Aircraft Noise Sample from MWAAs NMT #25)

Standard	Building Attenuation Required	Interior Noise Level	Issues
Mitigate Exterior Noise to 45 dBA	42 dBA	No event exceeding 45 dBA	Required 42 dBA building attenuation may not be affordable at Westfields.
Mitigate Exterior Noise to 45 DNL	20 dBA	4325 noise events exceeding 45 dBA every month (144/day). Some events as loud as 67 dBA.	Noisy.
Mitigate Exterior Noise at and below Modal Lmax 70 dBA to 45 dBA	25 dBA	2251 noise events exceeding 45 dBA every month (73/day). Some events as loud as 62 dBA.	Noisy.

**8. Earlier Westfields Developments**

Two developments approved at Westfields within the past 5-7 years were approved before the Westfields amendment introduced the 45 dBA and 65 dBA noise standards. They are included here only to complete the picture illustrated in Figure 4.

**8.1. Commonwealth Centre, Land Bay D**

On 11 July 2017, the Board approved PCA 2006-SU-025-03 submitted by Regency and Toll VA allowing construction of 120 SFA and 112 multifamily stacked dwelling units plus 100,000 square feet of retail uses in Land Bay D at Commonwealth. The retail uses are located inside the 60 DNL contour of the 1993 map, and the entire development is inside the 60 DNL contour of the 2019 map.

At staff’s request, Commonwealth specified in Proffer #37 that *initial purchasers* shall be provided a disclosure statement regarding the proximity to Dulles airport and the associated 60 DNL aircraft noise contour as well as the potential for future changes in these noise levels. The staff report makes no mention of an applicant commitment to noise mitigation.

**8.2. The Preserve**

On 28 July 2015, the Board approved RZ 2014-SU-016 submitted by Westfields Venture LP allowing construction of 155 SFA and 650 multifamily dwelling units at The Preserve. The site is outside the 60 DNL contours of both the 1993 and the 2019 noise maps. In Proffer #40, the applicant agreed to reduced interior noise from all sources to *approximately* 45 DNL.

**9. Veracity of Staff**

As mentioned in Sect. 2, on 9 Mar, I distributed a paper protesting the misinformation staff had provided supervisors in the 21 July 2020 LUPC meeting. Now I raise the issue of staff veracity a second time.

Staff’s Misleading Support of the 45 dBA Guidance: From the Westfields experience we learned that the 45 dBA standard was entirely ineffective in mitigating interior noise. No developer among the four proffered conformance with the guidance or any standard remotely close. *In spite of this experience, in the recent 15 March meeting of the LUPC, staff, responding to a question from Supervisor Foust,*

*spoke of her confidence that the 45 dBA interior noise guidance in subject plan amendment would be met by developers. Remarkably, staff cited the Westfield experience as the basis for her confidence. Clearly, something is broken. Without misleading supervisors, about all staff could have said about experience with the 45 dBA guidance at Westfields is that the guidance was totally ineffective. But staff said the other thing. (See 1hr:38min:30sec on the [meeting video](#).)*

Staff's Misrepresentation of the 2019 Contours: The same LUPC meeting discussed the apparent progress Loudoun County is making toward adopting the 2019 contours. In response to a question from Supervisor Alcon, staff stated that in Loudoun County the difference between the 2019 and 1993 contours is substantially less than in Fairfax County, only seven acres or so. This would say adoption in Loudoun is a small matter as compared to Fairfax.

Figure 8 shows the 2019 and 1993 contours for the two counties. The purple areas denote land newly included within contours, that is, land inside the 2019 but not inside the 1993 contours. The green areas are turned loose, inside the 1993 but not inside the 2019 contours. Loudoun has more purple area than Fairfax; it's more affected by the change than Fairfax, and the area affected in Loudoun certainly is larger than seven acres. Broken again. ([Meeting video](#) at 1hr:11min.)

Misleading Staff Reports: LUPC meetings have been one source of concern about staff veracity. A second is the accuracy of staff reports regarding the four most recent Westfields developments. *While none of the developers complied with the 45 dBA interior noise guidance, every one of the four staff reports leaves a clear impression the standard had been met (proffered).*

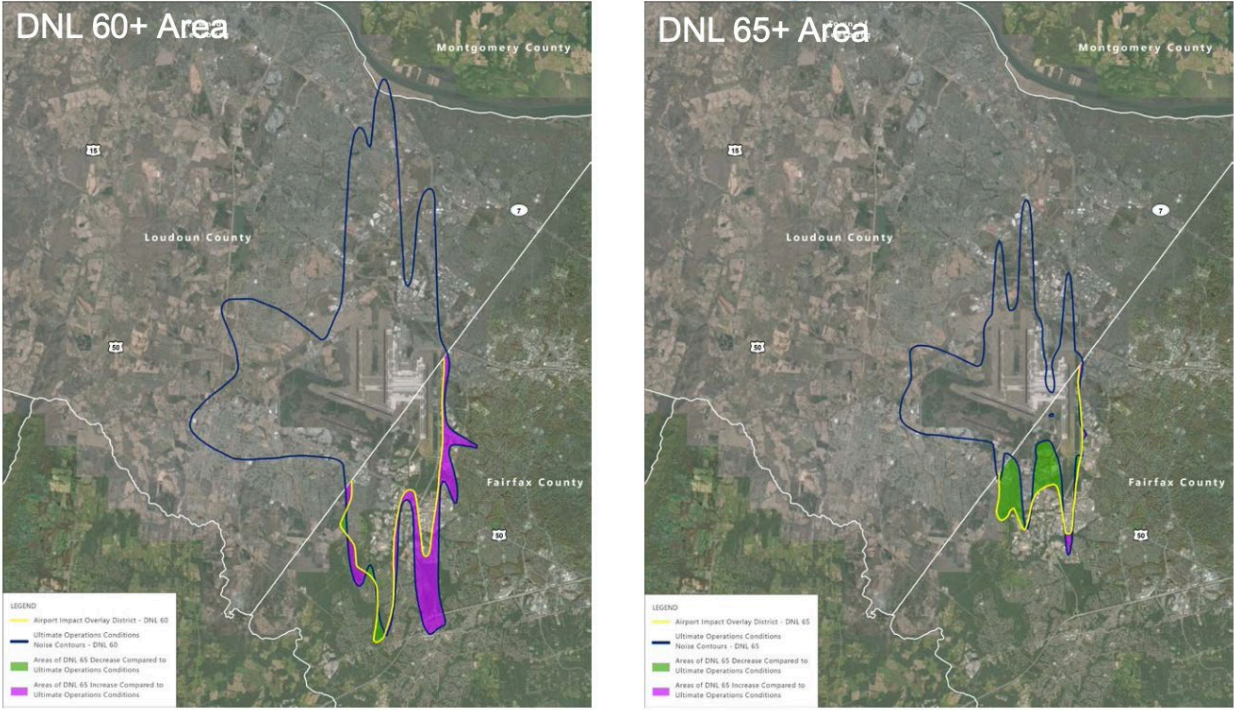
Figure 9 summarizes the staff report comments. In three of the four cases, applicants resorted to the 45 DNL standard. In two of these three cases, staff stated that applicants had met plan guidance. In one of the three cases, the staff report said the applicant was proceeding as expected to address noise policy. In the fourth case, the applicant substituted the Modal Lmax standard, which, in the May 2019 data set allowed noise up to 17 dBA (50 times) louder than the 45 dBA guidance and allowed it 75 times per day. Notwithstanding, staff expressed satisfaction with the applicant's commitment. *Applicants utterly failed to adopt the 45 dBA guidance and, in every case, failed to proffer equivalent noise mitigation. Yet reading the staff report, any reader would be misled to conclude that all was according to plan. Not acceptable.*

**Figure 9. Staff's Response to Developers' Noncompliance with 45 dBA Interior Noise Guidance**

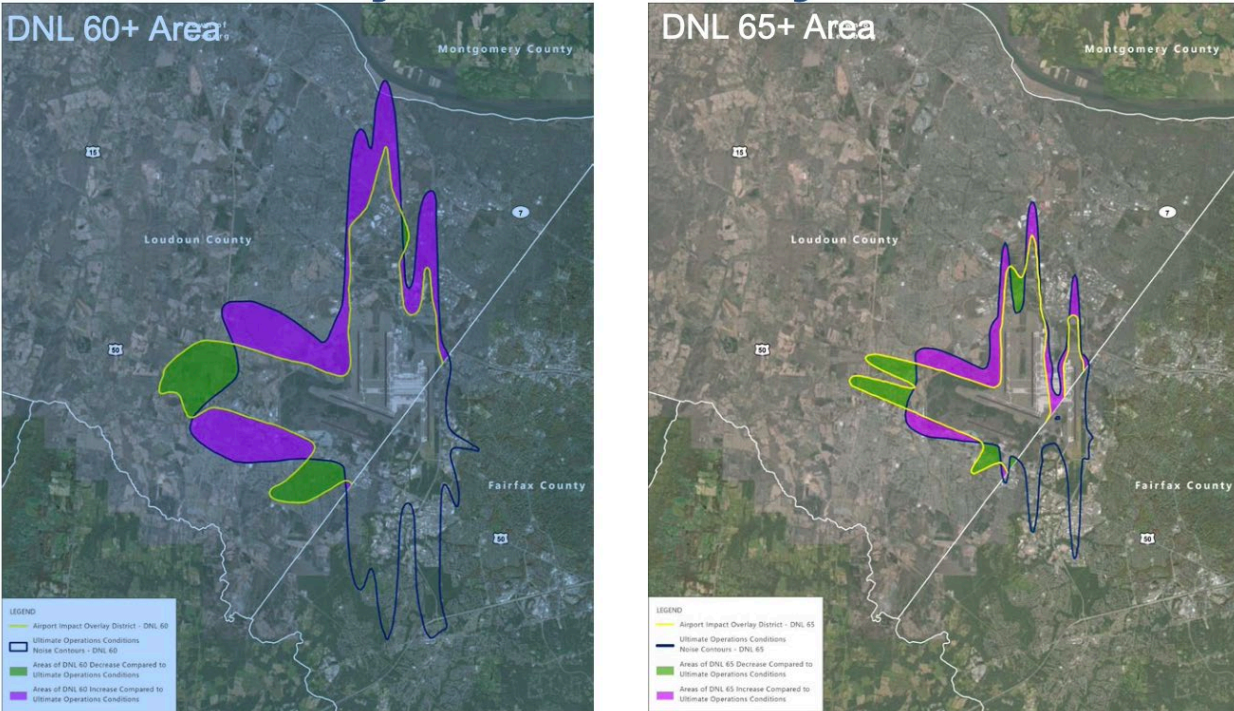
<b>Development</b>	<b>Developer's Proffer to Mitigate Interior Noise</b>	<b>Meets 45 dBA Guidance?</b>	<b>Staff's Response to Developer's Proffer</b>
Stonebrook	Provide 25 dBA building attenuation	No	Satisfied with applicant's commitment (Staff report pg 18)
The Retreat	Limit to 45 DNL	No	Meets plan guidance (pg 17)
Boulevards	Limit to 45 DNL	No	Meets plan guidance (pg 26)
Commonwealth, Land Bay A	Limit to 45 DNL	No	Applicant has proffered to ...mitigation, testing, and notification which address the noise policy (pg 18)



**Figure 8. Comparison of 1993 and 2019 Contours in Fairfax County**  
1993 (Yellow) and 2019 (Blue). [Ref9, pgs 364 and 365]



**Comparison in Loudoun County**



## **10. Recommendations**

The Board is on-course to turn Dulles into the next Washington National swamp of aircraft noise, outraged residents, and 76,000 noise complaints:

- The controversial Westfields plan amendment was adopted over strenuous objections in letters and testimony from local aviation industry experts as well as the better judgment of the Planning Commission,
- Since the Westfields amendment was adopted, four developments, all proffering interior noise levels substantially higher than the 45 dBA Comp Plan guidance, have been approved,
- Two of these developments are located directly under approach paths to the two busiest runways at Dulles with aircraft passing 1000 ft directly overhead 200 times per day,
- In the one instance in which a knowledgeable aviation planner was consulted, staff and too many supervisors have totally disregarded his recommendations,
- None of the four developers adopted the 65 dBA recreation area guidance,
- Staff and staff reports cannot be expected to provide accurate information and an objective perspective, and now
- Staff recommends residential uses in all residential districts between the 60 and 65 DNL contours with no requirement whatsoever for noise mitigation save standard 45 DNL guidance in the current Policy Plan and the 45 dBA pseudo-guidance that has proven useless at Westfields four times out of four.

The Board seems unaware that the deficiencies of the current situation present serious risks. They threaten the health and welfare of future residents of the new developments, risk the county inheriting and having to repair a bevy of developments overwhelmed by aircraft noise, and threaten the 24x7 efficiency and growth potential of the airport as it copes with legions of residents fuming about aircraft noise. The Board needs to change course.

### **10.1. Go Together**

The Board should recognize that they have a responsibility to actively support the future of Dulles airport, and they are members of a community that shares that responsibility with them, including MWAA, the aviation industry that depends upon the airport, and Loudoun County. When MWAA and the industry strenuously objected to the Board's Westfields amendment, the Board should have listened and worked with its partners towards an agreeable solution. The Board now should engage with MWAA and Loudoun County to develop the standards for residential uses between the 60 and 65 DNL contours that Johnson Aviation recommended nearly two years ago. Go together and make a professional job of it.

### **10.2. Don't Adopt Subject Plan Amendment at This Time.**

Goes without saying. Don't propose adoption until appropriate conditions for residential uses between 60/65 contours have been established.

### **10.3. Establish Effective Standards Limiting Interior Noise Level**

The current 45 dBA guidance is proven ineffective and must be replaced. The replacement may be expressed in dBA or building shell attenuation. As illustrated by the example in the paragraph following Figure 2 in Sect. 4, the guidance should explicitly address the higher-level noise events and the frequency with which they occur. Guidance in terms of DNL, Modal Lmax, or any other metric that does not meet this criterion would not be effective. The issue that needs to be understood is the tradeoff between the cost of sound insulation (building attenuation) and peoples' tolerance for repetitive interior noise events (200/day, then higher as traffic grows). Professional help will be required and practices in other

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jurisdictions should be evaluated (e.g., experience at Minneapolis-St. Paul Int'l Airport per Section 3.2 of the Johnson Aviation report).

Put the Standard in the Zoning Ordinance: In order to assure that occupants are adequately protected from excessive aircraft noise, the standard agreed upon should be adopted as a requirement (regulation) in the Zoning Ordinance for developments between the 60 and 65 DNL contours. Voluntary compliance is not sufficient.

The Standard Should Be a Prerequisite: No Comp Plan amendment or development plan application for Land Unit J should be approved until the county is able to elucidate a viable interior noise standard and provide confidence that the standard will support the health and welfare of occupants.

#### **10.4. Revisit the Four Developments Recently Approved re Noise**

As summarized in Figure 7, noise standards proffered by the four recent developments allow high interior noise levels. The county should understand the interior noise levels that will prevail in these developments and do what can be done to assure that they are healthy.

#### **10.5. Adopt the 2019 Contours**

In the terms of Section 3103.2 of the Zoning Ordinance, the contours define the Airport Noise Impact Area, which is established to control conflicts between land uses and noise generated by aircraft in order to protect public health and safety from excessive noise. *The 2019 contours define the area where aircraft noise impacts occur today and are expected to occur in the future.* The 1993 contours describe the area where noise impacts occurred 29 years ago, when aircraft made more noise and air traffic control procedures were quite different. Land use planning should be based on where the noise impacts occur today and will occur in the future. For that purpose, one needs to use the 2019 contours.

New residential development should not be allowed inside the 65 DNL contour because it is expected that, overtime, noise will increase to the point that the area will be incompatible with human habitation. It makes little difference whether noise grows to exceed 65 DNL sooner or later, because whatever is built inside the contour today will still be there (and engulfed in noise) when the time comes. It follows from the discussion following Figure 2 in Sect. 4 that aircraft noise event Lmax values *today* are high inside 65 DNL contour and always will be particularly high there. It's best to stay outside the contour.

Residential uses should be allowed between the 60 and 65 DNL contours under appropriate conditions, in particular limitations that assure the health and safety of residents.

The county should move ahead exactly as recommended in the Johnson Aviation report now two years old: adopt the contours and establish effective limitations for residential uses between 60 and 65 DNL.

It was surprising to hear staff tell the Board in the March LUPC meeting that they, the Board, had made the decision to *not* adopt the 2019 contours. Presumably, the decision was made based on the material staff briefed during the thoroughly discredited 21 Jul 2020 LUPC meeting. ([Meeting video](#) at 1hr:01min.)

#### **10.6. Staff and Supervisors**

Staff members have been the foot soldiers in the Board's campaign to populate the buffer area that has protected Dulles airport from encroaching residential development. Presumably, their actions, including actions that clearly exceed the bounds of propriety, reflect the priorities and values of the Board of Supervisors. Experience begs supervisors to think about the county we want to be and the ethics that should guide our working together as a community.

**Figure 6. Lmax for 6287 Aircraft Events Recorded at Dulles NMT #25 in May 2019.**  
 (The noise monitor is directly under the approach path to Runway 01 R.)

<b>Lmax</b>	<b>Events</b>	<b>Cumulative Events</b>	<b>Events Exceeding Lmax</b>	<b>Percent Exceeding Lmax</b>
51	3	3	6284	100.0
52	23	26	6261	99.6
53	57	83	6204	98.7
54	88	171	6116	97.3
55	142	313	5974	95.0
56	171	484	5803	92.3
57	205	689	5598	89.0
58	216	905	5382	85.6
59	177	1082	5205	82.8
60	165	1247	5040	80.2
61	142	1389	4898	77.9
62	123	1512	4775	76.0
63	118	1630	4657	74.1
64	154	1784	4503	71.6
65	178	1962	4325	68.8
66	227	2189	4098	65.2
67	279	2468	3819	60.7
68	366	2834	3453	54.9
69	570	3404	2883	45.9
70	632	4036	2251	35.8
71	481	4517	1770	28.2
72	294	4811	1476	23.5
73	229	5040	1247	19.8
74	277	5317	970	15.4
75	280	5597	690	11.0
76	257	5854	433	6.9
77	158	6012	275	4.4
78	106	6118	169	2.7
79	76	6194	93	1.5
80	45	6239	48	0.8
81	26	6265	22	0.3
82	11	6276	11	0.2
83	4	6280	7	0.1
84	3	6283	4	0.1
85	2	6285	2	0.0
86	1	6286	1	0.0
87	1	6287	0	0.0



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3. Draft Airport Policy Amendment, PA 2020-CW-3CP. No Date. ([Link](#))
4. Johnson, Nick. Review and Assessment – Dulles International Airport Aircraft Noise Contour Map Update. Johnson Aviation Consulting, Oak Park, CA. 15 Mar 2020. ([Link](#))
5. Staff Report, RZ 2019-SU-005 (Stonebrook). 2 Sep 2020. ([Link](#))
6. Staff Report, RZ 2019-SU-009 (The Retreat). 31 Dec 2019. ([Link](#))
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9. Aircraft Noise Contour Update. Ricondo and Harris Miller Miller & Hanson. May 2019.<sup>3</sup> ([Link](#))

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<sup>3</sup> To the best of my knowledge, I am not related to anyone at Harris Miller Miller and Hanson.