Washington Dulles International Airport
Noise Contours - Issues Paper
July 14, 2020

The Metropolitan Washington Airports Authority (MWAA) released revised noise contours for the Washington Dulles International Airport (Dulles) in January 2019. An associated report was transferred to Fairfax County in June 2019.

This issues paper was written in response to the Board's direction following the adoption of Plan Amendment (PA) 2018-III-DS1 (Land Unit J of the Dulles Suburban Center) on May 7, 2019, in the form of a follow-on motion which directed staff to present to the Board's Development Process Committee (now the Land Use Policy Committee) information and possible next steps related to the revised MWAA noise contours for Dulles.

BACKGROUND

On May 7, 2019, the Board approved Plan Amendment (PA) 2018-III-DS1, Land Unit J of the Dulles Suburban Center, which supports the consideration of residential and other noise sensitive uses in that portion of the County, provided that commitments were received for the following:

- A noise study documenting the expected noise impacts;
- Construction standards and materials that would mitigate interior auditory impacts;
- Adequate assurances that residential development would not conflict with, or pose any threat to, the long-term viability of the Dulles Airport;
- Recorded avigation easements;
- Mitigation to 65 dBA as appropriate for private active recreation uses; and
- Disclosure statements for perspective residents.

In the follow-on motion after the adoption of the plan amendment, the Board directed staff to:

- Gather relevant information and report with recommendations for next steps for the possible consideration of new noise contours for Dulles;

- Request that MWAA provide:

    - a final report that outlines the methodology, operational assumptions, and findings associated with its updated airport noise contour map; and

    - copies of all relevant noise contour maps in an electronic file format that could be used as a Geographic Information System (GIS) layer to compare new and existing noise contours;

- Contact Loudoun County to determine what, if any, actions that county was contemplating with respect to these new MWAA noise contours;

- Consider hiring a consultant to provide an external independent review of the assumptions and findings associated with the new MWAA noise contours; and

- Report to the Board's Development Process Committee (now the Land Use Policy Committee) to present this information and discuss possible next steps, including any changes to the Comprehensive Plan and/or Zoning Ordinance, that may be appropriate for consideration.

A presentation on these items is scheduled before the Land Use Policy Committee on July 21, 2020.

Attachments to this issues paper include noise contour maps, Comprehensive Plan and Zoning Ordinance excerpts from both Fairfax County and Loudoun County, and information regarding Part 150 Studies.

RESPONSE TO BOARD'S MAY 7, 2019, FOLLOW-ON MOTIONS

MWAA Report:

MWAA formed a Local Jurisdictional Stakeholder Working Group in January 2018 for this project and held Working Group briefings during the course of the study. The group was comprised of MWAA interdisciplinary staff, professional technical staff from local jurisdictions (including Fairfax County), airline partners and key Federal Aviation Administration (FAA) officials. Revised contours based on the projected ultimate capacity of the airport were generated for MWAA using current technology, modeling, surveys, and accepted methodologies and were based on Ultimate Buildout Scenarios under 4 and 5-runway configurations. MWAA produced an update to the noise contours map on January 7, 2019, to address the projected ultimate operational capacity (full build-out) at Dulles and the full MWAA report was provided to the County on June 21, 2019. The new MWAA contours were provided to local jurisdictions with the request that they be used to inform land planning and zoning decisions related to compatibility between the airport and surrounding lands.

MWAA stated several reasons for a review of the noise contours, as summarized below.

- The aviation environment has experienced significant changes since the 1990s when the noise contours were last developed. These changes relate to the evolution of flight tracks, the overall utility of the airfield, newer generations of aircraft and subsequent land acquisitions at the airport.

- Airport operational forecasts have changed for both domestic and international operations, including freight. Consistent with the previous 1993 airport noise contour modeling effort (current contours), the 2019 contour modeling was based on the most current aviation

activity forecasts available with consideration of existing operations and projected operations at the ultimate buildout of the airport. Under a four-runway scenario, the airport is projected to reach its ultimate operational capacity in approximately 60-75 years; under a five-runway scenario, capacity is projected to be reached in approximately 80-90 years. The methodology also made use of a complete census of flight operations at Dulles for the entirety of 2017.

- The FAA is modifying flight procedures to allow for triple simultaneous north-south runway operations during low visibility conditions (or Instrument Meteorological Conditions (IMC)) operating under Instrument Flight Rules (IFR), which would increase the utility and capacity of Dulles.

- The FAA is modernizing its air traffic management system under the NextGen program. This includes new technologies aboard aircraft, on land-based systems, and in air traffic control facilities. These changes are intended to improve system efficiency and capacity through trajectory-based operations (knowing where an aircraft will be at designated points along a projected flight path) and to be able to recover more quickly to system disruptions, such as those resulting from severe weather conditions. Flight tracks and the overall utility of the airfield at Dulles are expected to continue to evolve with the implementation of the modernization program.

Fairfax County Zoning Ordinance and Comprehensive Plan Provisions

Fairfax County provides guidance for permitted uses within areas impacted by airport noise in both in its Comprehensive Plan and Zoning Ordinance. In the Airport Noise Impact Overlay District (ANIOD), the Zoning Ordinance text and map regulate land uses within the 65-70 DNL noise contour and greater. Residential uses are allowed within the 65-70 DNL contour provided that acoustical treatments are used in the construction process to regulate interior noise down to DNL 45 dBA. The Zoning Ordinance does not restrict residential use in the 60-65 DNL contour.

Unlike the Zoning Ordinance, the Fairfax County Comprehensive Plan recommends that residential uses not be allowed in areas impacted by airport noise within the 60-65 DNL and greater contours, except in the land area covered by the recently adopted Plan Amendment for Land Unit J of the Dulles Suburban Center. In that area, residential and other noise sensitive uses could be contemplated in the 60-65 DNL contour, provided that conditions relating to disclosures and noise mitigation techniques are met.

Loudoun County:

Per the Board's directive, staff contacted Loudoun County staff to determine the actions undertaken or being contemplated by Loudoun County related to the 2019 MWAA noise contours. The following table highlights the key components of Fairfax County and Loudoun County policies and ordinance requirements. It should be noted that Loudoun County permits residential uses within the 60-65 DNL contours, provided that Zoning Ordinance requirements related to disclosure, acoustical treatments, and avigation easements are addressed.

	FAIRFAX COUNTY	LOUDOUN COUNTY
COMPREHENSIVE PLAN		
Noise Contour Ranges	• DNL 75+ dBA • DNL 70-75 dBA • DNL 65-70 dBA • DNL 60-65 dBA	• DNL 65+ dBA • DNL 60-65 dBA • Outside of but within one mile of DNL 60 dBA
Mitigation Measures	• Dulles Suburban Center, Land Unit J o Full Disclosure Statements o Acoustical Treatments o Avigation Easements	None in Comprehensive Plan (see Zoning Ordinance requirements)

ZONING ORDINANCE		
Noise Contour Ranges	• 75+ DNL • 70-75 DNL • 65-70 DNL	• DNL 65+ dBA • DNL 60-65 dBA • Outside of but within one mile of DNL 60 dBA
Mitigation Measures	• Interior Noise Level standards (and acoustical treatments) defined for various uses within various contour ranges	• Full Disclosure Statements • Acoustical Treatments • Avigation Easements

As part of a recent update to the Loudoun County General Plan, approximately three-mile extensions of Dulles runway centerlines have been superimposed on several General Plan maps to indicate areas with the greatest potential for aircraft overflights. Additionally, the Loudoun County General Plan states the following: *(Loudoun County General Plan, Pages 3-29 – 3-30)*

A. *Continue to support the Dulles and Leesburg Executive Airports by continued and complete prohibition of new residential and other noise-sensitive land uses from the areas located within the Ldn 65 and higher aircraft noise contour for both airports and by allowing only non-noise-sensitive land uses within this contour.*

   The Airport Noise Impact Area (ANIA) consists of three (3) components or aircraft noise contours:
   (i) Within the Ldn 65 or higher;
   (ii) Between the Ldn 60-65; and
   (iii)Outside of but within one mile of the Ldn 60

B. *Continue to work with MWAA to understand and minimize the effects of airport operations and routes on existing noise-sensitive areas within the 60 to 65 Ldn noise contour at Washington Dulles International Airport and minimize residential and noise-sensitive development in noise sensitive areas.*

C. *Prohibit residential encroachment into the existing areas designated as within the Ldn 65 or higher aircraft noise contour to ensure that residential development will not create pressure for reductions in the intensity of service or prohibit the expansion of service at the airport.*

D. *Continue to enforce and update with the most current information, as appropriate, the Airport Impact Overlay District included as part of the Loudoun County Zoning Ordinance.*

E. *Consider the 2019 Washington Dulles International Noise Contour Map Update when reviewing land development applications surrounding the airport.*

F. *Consider replacing the existing noise contours for Dulles Airport to reflect the noise contours in the 2019 Washington Dulles International Noise Contour Map Update.*

On March 5, 2019, Loudoun County staff briefed their Board of Supervisors about airport noise and the 2019 contours. Loudoun did not anticipate any significant changes to their policies, except to cite the new contours as part of the ongoing Comprehensive Plan update. At the time, Loudoun staff wrote the following:

> *"Staff does not support revising the County's AIOD through a Zoning Ordinance Amendment at this time. As indicated previously, the forecasted noise contours rely on conditions that are not anticipated to occur for many years. Specifically, current annual operations are approximately 15 percent* of the forecasted capacity of the Airport. The Airport also needs major improvements, including the fifth runway and southern terminal, in order to reach the forecasted capacity. Staff supports including language in the Loudoun 2040 Comprehensive Plan that references the Study and would allow the forecasted contours to be considered in the evaluation of residential and other noise sensitive projects that require legislative approval."*
>
> *Fairfax staff believes this number to be a miscalculation. In 2017, the number of operations were 294,066. The 2019 ultimate operational capacity was 1,004,000. The 2017 value is therefore ~29.3 percent, or approximately 30 percent, of the 2019 ultimate capacity.

Loudoun staff noted that the Metrorail area most impacted by the 2019 65-70 DNL noise contours is designated for Non-Residential Urban Employment. A second Metrorail area has portions that are affected by the new 65-70 DNL contours. Loudoun County anticipated negotiating with developers as part of the rezoning process generally to avoid the placement of residential uses within the newly identified area of 65-70 DNL. Additionally, Loudoun staff noted the use of easement agreements between MWAA and the developer which may help protect MWAA against noise complaints.

Recent correspondence with Loudoun staff indicated that Loudoun continues to use the 2019 study's contours when reviewing legislative applications for compliance with the 2019 General Plan's policies. The Loudoun Community Planning Division staff has been determining whether any of the land subject to an application is located in an area where the noise levels differ

between the adopted Airport Impact Overlay District (AIOD) and the 2019 study's contours. When the level of noise would increase to LDN 65 or higher under the 2019 study, it is generally recommended that applicants relocate any proposed residential out of that area consistent with Loudoun's long-standing policy and the AIOD. When the level of noise would be between LDN 60 to 65 under the 2019 study, Loudoun staff have generally recommended noise attenuation for residential and other noise-sensitive uses which is also consistent with Loudoun policy and the AIOD.

To date, no further action has been taken by Loudoun County regarding the new MWAA noise contours.

SUMMARY OF CONSULTANT PEER REVIEW FINDINGS

In 2019, Fairfax County hired an aviation consultant (Johnson Aviation, Inc.) to provide a peer review of the assumptions and findings associated with the new MWAA noise contours and the associated report. The peer review has been completed and was delivered to the county in March 2020. Mr. Nick Johnson, of Johnson Aviation, is scheduled to present the peer review findings to the Board at the July 21, 2020, Land Use Policy Committee meeting.

The following quotes summarize the major findings of the Johnson Aviation, Inc. peer review of the MWAA noise contours report; staff comments are also included for each of the findings.

- *The approach, methodology and assumptions used in developing the inputs for the Aviation Environmental Design Tool (AEDT) noise model and the generation of the Annual Service Volume (ASV) contours for Dulles International Airport appear to be well-documented and consistent with FAA regulatory guidance.*

  Staff Comment

  The approach, methodology, and assumptions used for the 2019 MWAA noise contour update were developed in consultation with the FAA and the Virginia Department of Aviation. Input was solicited throughout the update process from the Local Jurisdictional Stakeholder Working Group.

- *The current development of Ultimate ASV noise contours is intended to be generally consistent with the original methodology used to set the land use planning boundaries for Dulles International while accounting for changes in key noise factors including aircraft fleet mix and GPS navigation procedures.*

Staff Comment

The methodology used for the 2019 MWAA noise contour update, including the use of Ultimate ASV[1] noise contours, is consistent with previous planning efforts and accounts for changes in key noise factors, including aircraft fleet mix, the FAA modernization program (NextGen), and Global Positioning System (GPS) navigation procedures. However, this methodology is not widely used throughout the United States, as discussed in more detail below.

- *The development and use of ASV contours, based on the ultimate operational capacity of an airport's master-planned runways, is an exception in the U.S. that is followed by only two Large Hub airports built on green field sites, like Dulles International.*

Staff Comment

The use of the long range ultimate operational capacity to determine the contours is consistent with previous planning efforts for Dulles, which were accomplished in 1977, 1983, and 1993. The previous use of this operational capacity metric was done based on the then lack of noise-sensitive encroachments surrounding the airport. Dulles and Denver International Airport are the only two major international airports in the country that were planned and developed in "greenfield" locations, without significant preexisting encroachments. However, it is noted that neither Dulles nor Denver are now located in "greenfields" as was the case when they were originally planned and established. As a practical matter, other international airports in the county do not use this metric but use a much shorter planning horizon (either via the Part 150 Study or through an Environmental Impact Statement/Master Plan process) that acknowledges existing noise-sensitive encroachments while allowing for increases in flight activity. In order to expand operations, other airports rely on mitigation methods including: (i) purchasing homes; (ii) funding noise mitigation; and (iii) adjusting approach and departure procedures for noise sensitive uses in the 65+ DNL noise contours.

The FAA also completed an Environmental Impact Statement (EIS) for Dulles in 2005 to identify the potential environmental effects of the construction and operation of several proposed improvements including a new parallel north-south runway; a new parallel east-west runway; taxiways; navigational aids; property acquisition; Tier 3 concourse development; relocation of the Sterling National Oceanic and Atmospheric Administration/National Weather Service facilities; and, the extension of the Automated

[1] *"ASV of an airfield represents a reasonable estimate of the runway capacity, accounting for the overall usage patterns over a year; it considers differences in forecast activity levels, runway use, aircraft mix, weather conditions, and other factors that may vary within a single year. ASV represents the approximate number of total operations that the Airport can support in a year, as well as the theoretical capacity or limit of operations that the Airport can safely accommodate at an acceptable level of delay. The methodology to calculate ASV is contained in FAA Advisory Circular 150/5060, Airport Capacity and Delay." (Washington Dulles International Airport: Aircraft Noise Contour Map Update, May 2019, Page 2-2).*

People Mover. 2010 was established as the threshold year for the implementation of the alternatives considered and all environmental impacts were evaluated for that study year. Analyses of future noise conditions were prepared for the year of anticipated project implementation (2010) and for 2025 (a 20-year horizon). The overall purpose of the EIS was to minimize impacts to existing noise sensitive uses that might require FAA mitigation in the future.

Generally, noise impact contours associated with both of the preferred alternatives considered in the EIS indicated smaller noise impact contours than the 2019 contours which are based on ultimate capacity and changing navigational technology. This type of analysis is consistent with that used for other major airports in the country. (See Attachment 10)

- *Most Large Hub airports use the FAA's Part 150 Noise Study process, which is a much shorter planning horizon and based on operational demand for an airport's runways, to identify affected communities and land uses for the application of aircraft noise mitigation measures.*

  Staff Comment

  While using a short-term Part 150 planning process (5-year forecast period) for long-term land use planning surrounding Dulles may not be appropriate, it is also problematic to use a planning horizon of as long as 90 years for such purposes, as the variables that went into the creation of these contours may well change within that lengthy period of time. (See Attachment 9 for additional information regarding Part 150 Studies). A more appropriate period for land use planning purposes would typically consider a 20 to 30-year forecast.

- *We know of five large hub airports, including IAD, that actively pursue land use planning and/or residential notifications to the 60 DNL noise contour level. These airports include Dulles International Airport, Denver International Airport, Minneapolis-St. Paul International Airport, Orlando International Airport, and Portland International Airport. It is important to note that Denver is the only other known large hub airport that uses an ASV contour for land use planning.*

  Staff Comment

  Most jurisdictions around other international airports permit residential uses within the 60-65 DNL and focus on noise abatement measures for noise-sensitive uses located within that area. As previously noted, the Fairfax County Zoning Ordinance also permits residential development within the 60-65 DNL contour, whereas the Comprehensive Plan discourages new residential development in that zone except for the area in Land Unit J.

- *The ultimate operational capacity of the existing four runways at Dulles International is well beyond the reasonably foreseeable projected demand for aircraft operations for the next 60 to 75 years.*

The ultimate operational capacity of the planned addition of a fifth runway at Dulles International is well beyond the reasonably foreseeable projected demand for aircraft operations over the next 80 to 90 years.

Staff Comment

The updated MWAA noise contours are based on a capacity analysis, not a demand analysis, and reflect possible conditions up to 90 years into the future, While a capacity based analysis and projection may be useful for airport planning, it is problematic for land use planning purposes. Such long-term projections cannot predict as yet unknown technological, operational, economic, and other unknown variables, and therefore is likely to be inaccurate over time. In addition, except for Denver, it is not the typical methodology used for other international airports in the country.

Also, of note is the fact that in 2017 the Airport was operating at approximately 30 percent of the projected capacity under the 2019 noise contour update and at 40 percent capacity under the adopted 1993 contours. Both the 1993 adopted contours and the 2019 MWAA updated noise contours exceed current airport operations and impacts. It is further noted that airport operational capacity peaked in 2005 and to date has not returned to those levels. Even more telling is the fact that utilization of the 2008 runway (01L/19R) was between 0 and 3.2% of all operations in 2017.

- *GPS navigation accuracy and air traffic control procedures used for aircraft arrivals and departures have the potential to reduce flight path dispersion over Fairfax County and could increase perceived impacts by some people and reduce perceived impacts by other people. This may be of particular interest to communities south and east of the Airport where it is anticipated that arrival flight path dispersion will decrease with the increased use of GPS.*

  Staff Comment

  The NextGen modernization program, which includes upgrades to aircraft avionics, radar, satellite, and control systems, and adopted terminal flight procedures in the Washington, D.C. area, have resulted in more consistent and precise flight paths for aircraft operating into and out of Dulles and concentrated flight activity. Concentrated flight activities may lead to an increase in perceived noise impacts in certain areas, a small amount of which currently contain residential development. According to the FAA, while aircraft have generally become quieter over time based on legislatively-mandated noise reductions for aircraft engines, most of the gains from quieter aircraft were achieved by 2000, with only incremental improvements since that time. Going forward, while future reductions will be gained from additional advances in noise reduction technologies and fleet evolution, the remaining noise issues must be addressed through operational procedures and airport-specific noise compatibility programs.

CONSULTANT RECOMMENDATIONS and STAFF COMMENTS

The Johnson Aviation report contained four recommendations, as described below. Staff comments follow each of the recommendations.

Recommendation 1 *– "Using the ultimate ASV contours as a guide for land use planning, concentrate on the Ultimate 65 DNL contour and apply the County's existing Noise Level Reduction (NLR) criteria for new residential construction to that area. While the ASV contours are based on an operational capacity projection far into the future and would not likely be achieved in the typical 20-30 year planning time frame, the ultimate 65 DNL contour could be used as guidance since it accounts for any potential increase in the actual 65 DNL noise contour up to and beyond a 30-year timeframe in projected aircraft operations growth at Dulles International."*

Staff Comment

Operational data for Dulles showed peak activity levels in 2005, followed by a significant drop in activity levels. The consultant noted that, as jet fuel prices continued to increase significantly after 2005, air carriers changed their business practices, opting for fewer flights and higher passenger occupancy levels. Due to these changes and a move away from the hub business model, the 2005 operational level is not forecast to be reached again until approximately 2070, followed by continued gradual increases. Under a four-runway scenario, the airport is projected to reach its ultimate operational capacity in approximately 60-75 years; under a five-runway scenario, capacity is projected to be reached in approximately 80-90 years.

The use of ASV represents an estimate of the runway capacity based on information available today. This forecast can be expected to continue to evolve during and long after the forecast period has passed. In this instance, factors that result in the projected new contours include fleet mix, aircraft modernization, and air traffic control technologies, all of which are likely to evolve over time, with such evolution likely to modify the contours.

Under the 1993 study, the ultimate operational capacity of the airport was projected to be 740,000 annual aircraft operations, including both departures and arrivals. Under the 2019 study, the ultimate operational capacity of the airport was projected to be 900,000 under a 4-runway scenario and 1,004,000 annual aircraft operations under a 5-runway scenario. The basis of the growth projections was the FAA's Terminal Area Forecast (TAF), a demand forecast which is updated by the FAA on an annual basis and which extends to 2045. A TAF assumes a demand driven forecast for aviation services based upon local and national economic conditions as well as conditions within the aviation industry, e.g., an airport's forecast is developed independent of the ability of the airport and air traffic control system to furnish the capacity required to meet demand. To determine the ultimate operational levels, the 2019 study extended the forecast using the growth rate from the final five years of the TAF (2041-2045) until the ultimate operational capacity was achieved.

While both the 1993 and 2019 studies calculated an operational capacity, the operational growth rate is often impacted by external forces, including market demand and changes in the air carrier industry. The 2017 actual annual operations were 294,066, or approximately 30 percent of the ultimate capacity under the 5-runway scenario, demonstrating that the full utilization of the Airport capacity has not yet been achieved and isn't expected to be achieved for several decades.

The capacity projection model far exceeds the current actual demand and reflects potential or aspirational flight volumes as demonstrated by the consultant's table 4.1. The 2017 actual total operations, 294,066 is far less (39.7%) than the 740,000 annual service volume projection for the 1993 adopted contours or the 900,000 (32.7%) and 1,004,000 (29.3%) annual service volumes projections for the 4-runway and 5-runway scenarios. This raises concerns with the timeframes for the build-out to be achieved and the shorter planning timeframes used for other major airports, not to mention typical timeframes (20-30 years) used for land-use planning purposes.

Recommendation 2 *– "Undertake a GIS-based analysis using the Ultimate ASV area between the 60 DNL and 65 DNL contours to assess the amount of potential residential land uses that would be newly impacted and those areas which may no longer be located within the 60-65 DNL impact areas and consider changes to land use policies that permit residential uses in those areas, balancing potential noise impacts with other county goals such as economic development and placemaking."*

Staff Comment

GIS information regarding the areas potentially impacted by the differences between the currently adopted and revised 2019 contours is included below. Maps comparing the currently adopted contours with the 2019 contours are attached.

Contour Areas (Off-Airport, by Land Area)

	60-65 DNL	65-70 DNL	70-75 DNL	75+ DNL
Current Noise Contours	2,709.80 acres	1,715.50 acres	0.23 acres	0 acres
Revised 2019 MWAA Contours	6,100.95 acres	875.53 acres	37.45 acres	0 acres
Difference	+3,391.15 acres	-839.97 acres	+37.22 acres	0 acres

Land Uses (Off-Airport, by Parcel Area)

	60-65 DNL		65-70 DNL	
	Residential	**Non-Residential**	**Residential**	**Non-Residential**
Current Noise Contours	706.37	5,923.49	203.22	4,374.81
Revised 2019 MWAA Contours	1,302.01	8,191.36	83.65	3,795.73
Difference	**+595.64**	**+2,267.87**	**-119.57**	**-579.08**
Total Difference	**+2,863.51**		**-698.65**	

Data reflects information drawn from the DTA database. Data may not precisely match land use data derived from GIS spatial queries due to differences in how land areas are assigned to land uses within the DTA database.

Noise contours associated with Dulles Airport operations have contracted dramatically since the 1970s. The 2019 study depicts a reduction in the 65-70 DNL area, particularly between the eastern and central runways, and an expansion of the 60-65 DNL area, particularly south of the eastern runway.

While current Comprehensive Plan guidance for areas impacted by airport noise contours discourage residential and other noise-sensitive uses in the 60-65 DNL range, an allowance for such uses in this area would be consistent with the Zoning Ordinance as well as how uses in that range are treated by other jurisdictions around the country and should be considered. Furthermore, the FAA concentrates its noise abatement efforts and funding on the most significant noise impacts, i.e., those of 65 DNL and greater. While the FAA recognizes that noise impacts may occur at lower levels, it does not fund noise mitigation for those areas.

Recommendation 3 – *"Consider establishing noise notification guidelines for concentrated overflight areas within the Ultimate 60 to 65 DNL noise contours to ensure the County has adequately provided notice to future residents that they are moving into an area located in close proximity to a major international airport and may be impacted by aircraft noise and overflights. The guidance provided for residential development in Land Unit J is consistent with guidelines adopted by other jurisdictions and can be used as a model as it has largely addressed the issue."*

Staff Comment

The recent changes to land use guidance for Land Unit J included recommendations regarding disclosure, noise mitigation for *"expected noise impacts,"* and the recordation of avigation easements for noise-impacted properties. The applicability of such guidance to other areas within the 60-65 DNL noise contour should be considered.

Recommendation 4 *– "Work with MWAA to study and recommend nighttime (10 p.m. through 6:59 a.m.) noise abatement procedures and a preferential runway use program should MWAA move forward with increased nighttime cargo activity and/or increased scheduling of nighttime passenger flights at IAD as discussed in the MWAA report."*

Staff Comment

While the MWAA report and contours predict an increase in nighttime cargo operations, it is uncertain whether Dulles will ultimately transition into a significant cargo destination. In addition, while preferential runway procedures may be established, runway selection is ultimately at the discretion of air traffic controllers and pilots. Decisions are made in response to various factors, including safety, weather, and air traffic controller workload.

The County should continue to work with MWAA on this issue to monitor and evaluate the growth for cargo flight operations, especially for nighttime activity, and what measures should be considered to mitigate additional noise impacts due to increased cargo air traffic.

TOPICS FOR BOARD CONSIDERATION

1. Consider whether to update the Adopted Airport Noise Contours to reflect the 2019 Airport Noise Contours provided by MWAA

The following are considerations provided to assist the Board in addressing this issue:

- The current contours were developed in 1993 and the airport has not yet reached the capacity predicted in the analysis that went into those contours.

- While the revised 2019 MWAA contours are based on current assumptions and data, are responsive to the evolving aviation environment, and provide the best available information regarding the ultimate operational capacity of Dulles, they result from an analysis that is are based on an exceptionally long planning horizon (60–90 years) and the factors that went into generating them, including new generations of aircraft, noise abatement technologies, etc., are likely to evolve before Dulles reaches its operational capacity predictions.

- The 2019 Contours are based on an operational capacity model that far exceeds current operational demand. As noted, the 2017 average annual daily operations are far below the capacity projections for both the 4 and 5 runway scenarios, and peak levels documented in 2005 are not expected to be reached again until 2070. The consultant's report indicates that the existing airfield is 'unconstrained from future growth with the existing four runways' that are to date not close to the projected capacity.

- Given the disparity between the projected capacity and the known 2017 average daily operations, adopting updated 2019 contours may be problematic as a basis for future land use decisions.

- The methodology used to develop the contours is not the methodology used typically for other major airports in the country, which use demand forecasts with much more realistic horizon years.

- As discussed earlier, the new MWAA contours include a significant amount of additional land that would be located within the 60-65 DNL noise contour and, in general, shrink the land that would be within the 65-70 DNL contour. A significant amount of land that would be added to the new 60-65 contour contains existing residential development. Some of the non-residential land in this area may be ripe for economic development opportunities that include the addition of residential uses. Precluding residential uses or placing new restrictions on such use in this area may negatively affect redevelopment opportunities.

The following are options available to address this issue:

1. Maintain the 1993 adopted contours
2. Employ the Loudoun County approach of keeping the currently adopted contours but consulting the 2019 contours in the evaluation of land use proposals
3. Adopt the 2019 contours

2. Consider revisions to Comprehensive Plan policies that could allow for residential and other noise-sensitive uses within the 60-65 DNL contour.

With or without an update to the Airport Noise Contours, a review of Comprehensive Plan policies to consider the appropriateness of various noise-sensitive land uses within the 60-65 DNL noise contour in a manner that would balance economic growth and land use objectives with potential impacts to the airport is appropriate It is a widely accepted standard to allow residential uses in this noise contour provided interior noise levels can be mitigated if necessary. Consideration of a policy update which would anticipate residential and other noise sensitive uses in the 60-65 DNL contour would be consistent with Loudoun County and many other localities around the country. The Fairfax County Zoning Ordinances currently allow residential uses in the 60-65 DNL contour. Consideration of changes to the Comprehensive Plan to permit residential uses in the 60-65 DNL noise contour would not require changes to the Zoning Ordinance.

The review could evaluate differences in policies related to airport noise between Land Unit J and other airport noise affected areas. Such an approach would help ensure consistency in the application of land use policies while providing for flexibility in the consideration of land use changes. Such a review could address issues such as when noise studies are required, average versus peak noise impacts, and the appropriateness of various building types.

3. **Consider requesting additional information from MWAA on actual and anticipated growth in nighttime cargo flights and what noise impacts may be anticipated as a result.**

   Mechanisms to monitor nighttime cargo flights should be considered to inform potential mitigation measures such as preferred runways and hours of operation and/or avoidance of certain runways to minimize impacts from nighttime hours for cargo flights.

ATTACHMENTS

1. Map – MWAA 2019 Revised Airport Noise Contours
2. Map – Contours Comparison (all contours)
3. Map – 60 DNL Comparison
4. Map – 60 DNL Comparison with changes
5. Map – 65 DNL Comparison
6. Map – 65 DNL Comparison with changes
7. Fairfax County Comprehensive Plan and Zoning Ordinance Excerpts
8. Loudoun County Comprehensive Plan and Zoning Ordinance Excerpts
9. Part 150 Guidance
10. 2005 EIS Noise Contour Maps

AirportNoise Contour Map

MWAA 2019 Revised Noise Contours

(Washington Dulles International Airport)

Created by: Fairfax County Department of Planning & Development
June 2020

Source: Metropolitan Washington Airport Authority
& Fairfax County Geographic Information System

N

0 0.25 0.5 1 Miles

ATTACHMENT 1

Town of Herndon

Loudoun County

267

28

50

I-66

MWAA 2019 Revised Noise Contours in Decibels (DNL)

60

65

Document Path: G:\projects\ocp\pd\avprojects\2019\NoiseContourComparisonMap\NewMWAANoiseContour_Regional.mxd

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Fairfax County, Virginia

ATTACHMENT 2

Airport Noise Contour Map

Fairfax County Current Noise Contours &
MWAA 2019 Revised Noise Contours

Created by: Fairfax County Department of Planning & Development
June 2020

Source: Fairfax County Geographic Information System
& Metropolitan Washington Airport Authority

Legend

Fairfax County Current Noise Contours

Decibels (DNL)

- 60
- 65
- 70
- 75

MWAA 2019 Revised Noise Contours

Decibels (DNL)

- 60
- 65
- 70
- 75

N

0 0.25 0.5 1 Miles

Loudoun County

267

50

28

66

Document Path: G:\projects\ocp\pd\avprojects\2020\DullesNoiseContourComparison\NoiseContourComparisonMap_Regional_All.mxd

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Fairfax County, Virginia

ATTACHMENT 3

Airport Noise Contour Map

Fairfax County Current Noise Contours &
MWAA 2019 Revised Noise Contours

Created by: Fairfax County Department of Planning & Development
June 2020

Source: Fairfax County Geographic Information System
& Metropolitan Washington Airport Authority

Legend

Fairfax County Current Noise Contours
Decibels (DNL)
60

MWAA 2019 Revised Noise Contours
Decibels (DNL)
60

N

0 0.25 0.5 1 Miles

Loudoun County

267

50

28

66

Document Path: G:\projects\ocp\pd\avprojects\2020\DullesNoiseContourComparison\NoiseContourComparisonMap_Regional_60.mxd

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Fairfax County, Virginia

ATTACHMENT 4

Airport Noise Contour Map

Fairfax County Current Noise Contours &
MWAA 2019 Revised Noise Contours

Created by: Fairfax County Department of Planning & Development
June 2020

Source: Fairfax County Geographic Information System
& Metropolitan Washington Airport Authority

Legend

Fairfax County Current Noise Contours

Decibels (DNL)

60

MWAA 2019 Revised Noise Contours

Decibels (DNL)

60

Change Status

Added

Removed

N

0 0.25 0.5 1 Miles

Loudoun County

267

50

28

66

29

Document Path: G:\projects\ocp\pd\avprojects\2020\DullesNoiseContourComparison\NoiseContourComparisonMap_Regional_60.mxd

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Fairfax County, Virginia

ATTACHMENT 5

Airport Noise Contour Map

Fairfax County Current Noise Contours &
MWAA 2019 Revised Noise Contours

Created by: Fairfax County Department of Planning & Development
June 2020

Source: Fairfax County Geographic Information System
& Metropolitan Washington Airport Authority

Legend

Fairfax County Current Noise Contours Decibels (DNL)

65

MWAA 2019 Revised Noise Contours Decibels (DNL)

65

N

0 0.25 0.5 1 Miles

Loudoun County

267

50

28

66

29

Document Path: G:\projects\ocp\pd\avprojects\2020\DullesNoiseContourComparison\NoiseContourComparisonMap_Regional_65.mxd

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Fairfax County, Virginia

ATTACHMENT 6

Airport Noise Contour Map

Fairfax County Current Noise Contours &
MWAA 2019 Revised Noise Contours

Created by: Fairfax County Department of Planning & Development
June 2020

Source: Fairfax County Geographic Information System
& Metropolitan Washington Airport Authority

Legend

Fairfax County Current Noise Contours Decibels (DNL)

65

MWAA 2019 Revised Noise Contours Decibels (DNL)

65

Change Status

Added

Removed (Back to 60 Decibels)

N

0 0.25 0.5 1 Miles

267

Loudoun County

28

66

29

Document Path: G:\projects\ocp\pd\avprojects\2020\DullesNoiseContourComparison\NoiseContourComparisonMap_Regional_65.mxd

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Fairfax County, Virginia

FAIRFAX COUNTY COMPREHENSIVE PLAN & ZONING ORDINANCE CITATIONS
July 14, 2020

COMPREHENSIVE PLAN CITATIONS

Fairfax County Comprehensive Plan, 2017 Edition, Policy Plan, Environment, Amended through 12-3-2019, Pages 1-12.

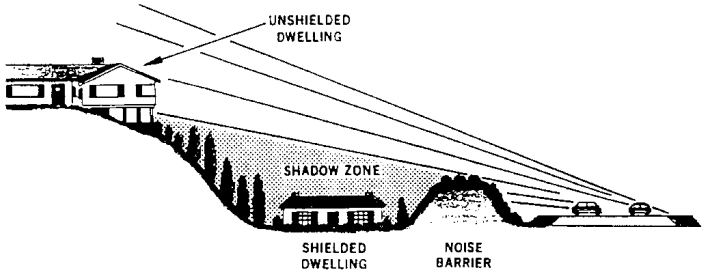
"Noise

Transportation generated noise impacts the lives of many who live in the county. Some county residents are subjected to unhealthful levels of noise from highway traffic, aircraft operations and railroads, including WMATA's Metrorail (See Figure 3). Federal agencies with noise mitigation planning responsibilities have worked with the health community to establish maximum acceptable levels of exposure (Guidelines for Considering Noise in Land Use Planning and Control). These guidelines expressed in terms of sound pressure levels are; DNL 65 dBA for outdoor activity areas, DNL 50 dBA for office environments, and DNL 45 dBA for residences, schools, theaters and other noise sensitive uses. While the federal guidelines consider all land uses to be compatible with noise levels below DNL 65 dBA, they are not proscriptive as they relate to local land use decisions. Further, it is known that adverse noise impacts can occur at levels below DNL 65 dBA and that there may be variability among communities in responses to such noise.

Objective 4: Minimize human exposure to unhealthful levels of transportation generated noise.

Policy a: Regulate new development to ensure that people are protected from unhealthful levels of transportation noise.

Policy b: Reduce noise impacts in areas of existing development.



EFFECT OF ACOUSTIC BARRIER

Explanatory Note: This figure illustrates the function of an accoustical barrier. The shadow zone indicates a mitigated area that is sheltered by a noise barrier and is therefore relatively quiet.

Source: American Association of State Highway and Transportation Officials, 1965, Guide on the Evaluation and Attenuation of Traffic Noise, p. 2.

FIGURE 3

New development should not expose people in their homes, or other noise sensitive environments, to noise in excess of DNL 45 dBA, or to noise in excess of DNL 65 dBA in the outdoor recreation areas of homes. To achieve these standards new residential development in areas impacted by highway noise between DNL 65 and 75 dBA will require mitigation. New residential development should not occur in areas with projected highway noise exposures exceeding DNL 75 dBA. Because recreation areas cannot be screened from aircraft noise and because adverse noise impacts can occur at levels below DNL 65 dBA, in order to avoid exacerbating noise and land use conflicts and to further the public health, safety and welfare, new residential development should not occur in areas with projected aircraft noise exposures exceeding DNL 60 dBA. Where new residential development does occur near Washington Dulles International Airport, disclosure measures should be provided."

Fairfax County Comprehensive Plan, 2017 Edition, Area III, Area Plan Overview, Amended through 10-16-2018, Introduction, Page 2.

"Recognizing that the objective of the county is to minimize to the fullest extent the potential for adverse aircraft noise impacts upon its citizens, the county has selected noise contours which consider both existing conditions, near-term future projected conditions, as well as ultimate "potential" conditions which reflect the long-term potential Dulles Airport activity level. As new appropriate noise contours become available, this information will be brought before the Board of Supervisors so that appropriate modifications can be made, if necessary, to the Comprehensive Plan to reflect the most recent and most appropriate delineation of the Dulles Airport Noise Impact Area to which land use compatibility policies will be applied.

… In general, the basis for the land use compatibility guidelines outlined in Table 2 can be found in existing federal guidelines. The Department of Housing and Urban Development (HUD) in Noise Abatement and Control Standards (Circular 1390.2, August 4, 1971), and the Federal Interagency Committee on Urban Noise in Guidelines for Considering Noise in Land Use Planning and Control (1980) have published noise compatibility guidelines to encourage land utilization patterns for housing and other municipal needs in noise-impacted areas. These guidelines have been applied within Federal Aviation Regulations and have been affirmed within a 1992 report issued by the Federal Interagency Committee on Noise. They are intended to separate uncontrollable noise sources from residential and other noise-sensitive areas. While the federal guidelines consider all land uses to be compatible with noise levels below DNL 65 dBA, they have been developed to guide federal noise compatibility efforts and are not proscriptive as they relate to local land use decisions. Further, it is known that adverse noise impacts can occur at levels below DNL 65 dBA and that there may be variability among communities in responses to such noise. As a result, and because recreation areas cannot be screened from aircraft noise, in order to avoid exacerbating noise and land use conflicts and to further the public health, safety and welfare, new residential development is not recommended in areas with projected aircraft noise exposures exceeding DNL 60 dBA. Where new residential development does occur near Washington Dulles International Airport, disclosure measures should be provided."

Fairfax County Comprehensive Plan, 2017 Edition, Area III, Area Plan Overview, Amended through 10-16-2018, Introduction, Page 32.

"TABLE 2
Land Use Compatibility Guidelines Within The Dulles Airport Noise Impact Area

Activities and/or Land Uses	***Greater than DNL 75 dBA***	***DNL 70-75 dBA***	***DNL 65-70 dBA***	***DNL 60-65***	***Less than DNL 60 dBA***
Residential	*Not Recommended*	*Not Recommended*	*Not Recommended*	*Not Recommended*	*Compatible"*

Fairfax County Comprehensive Plan, 2017 Edition, Area III, Dulles Suburban Center, Amended through 9-24-2019, Dulles Suburban Center Land Unit Recommendations, Page 125.

LAND UNIT J

"Noise

- *While Comprehensive Plan policy discourages certain uses within the DNL 60-65 dBA aircraft noise contour, other planning goals support residential and other noise sensitive uses under the following conditions:*
  - *A noise study that documents the expected noise impacts is submitted during the development review process for all noise sensitive uses.*
  - *Commitments are provided during the development review process to construction standards and materials that mitigate interior auditory impacts to ensure that interior noise levels within living spaces do not exceed 45 dBA. Post-development noise studies should be conducted if requested in order to help staff evaluate the effectiveness of noise mitigation measures.*
  - *Adequate assurances are voluntarily provided by the property owner at the time of rezoning to ensure that residential development in this area will not conflict with, or pose any threat to the long-term viability of, Dulles Airport. These assurances may include such things as recorded avigation easements, hold harmless agreements, and the like.*
  - *Mitigation to 65 dBA is encouraged for private active recreation uses, such as placement of facilities indoors, and/or enclosing facilities with a flexible or rigid structure, such as a dome.*
  - *Disclosure statements, as well as a map of Dulles Airport, the DNL 60 dBA noise contour line, and general locations of residential units and private active recreation spaces, are included in all promotional and marketing materials and leasing and purchase agreements for residential and noise-sensitive uses, and are recorded in the land records, that state that a property is located within an area that will be impacted by aircraft noise. Notice should be made to all initial and subsequent lessors and purchasers."*

FAIRFAX COUNTY ZONING ORDINANCE CITATIONS

PART 4 7-400 AIRPORT NOISE IMPACT OVERLAY DISTRICT

7-401 Purpose and Intent

The Airport Noise Impact Overlay District is established for the general purpose of controlling conflicts between land uses and noise generated by aircraft and to protect the public health, safety and welfare from the adverse impacts associated with excessive noise.

This district shall be in addition to and shall overlay all other zoning districts where it is applied so that any parcel of land lying in the Airport Noise Impact Overlay District shall also lie in one or more of the other zoning districts provided for by this Ordinance. The effect is to create a new district which has the characteristics and limitations of the underlying district, together with the characteristics and limitations of the overlying district.

It is the intent of this overlay district to regulate land uses within designated existing or projected airport noise impact areas by requiring acoustical performance standards. Nothing herein shall be construed as altering building materials or construction methods from those which are specified in the Virginia Uniform Statewide Building Code.

7-402 District Boundaries

The Airport Noise Impact Overlay District boundaries shall be based on the potential post-year 2000 noise impact contours which shall be adopted by the Board and which are subject to periodic updating and amendment.

7-403 Establishment of Districts

1. The Airport Noise Impact Overlay District shall be established in like manner as any other zoning district permitted by this Ordinance. The boundaries of this district may be subject to periodic updating and may be amended in accordance with the provisions of Part 2 of Article 18.

2. For purposes of administering these regulations there shall be three (3) Airport Noise Impact Areas:

A. Greater than DNL 75 dBA (A-weighted day-night average sound level)

B. DNL 70-75 dBA

C. DNL 65-70 dBA

3. The boundaries of such noise impact areas shall be established in accordance with the provisions of Par. 1 above. The purpose of the establishment of three (3) Airport Noise Impact Areas is to distinguish between the severity of the levels of noise impact so that appropriate uses

and acoustical performance standards can be established to mitigate the adverse impacts of aircraft noise to protect the public health, safety and welfare.

7-404 Administration

1. The Director shall be responsible for reviewing site plans, subdivision plats and Building Permits to determine if the property to be developed is located in the Airport Noise Impact Overlay District.

2. If any site plan, subdivision plat or Building Permit is so located, then such plan, plat or permit shall be so noted. Thereafter, before any Building Permit shall be approved in the district, it shall be subject to the provisions of Sections 408 and 409 below.

7-405 Permitted Uses

All uses permitted by right in the underlying zoning district(s), except as qualified by Sections 408 and 409 below.

7-406 Special Permit Uses

All uses permitted by special permit in the underlying zoning district(s), except as qualified by Sections 408 and 409 below.

7-407 Special Exception Uses

All uses permitted by special exception in the underlying zoning district(s), except as qualified by Sections 408 and 409 below.

7-408 Use Limitations

In addition to the use limitations presented for the zoning district(s) in which an Airport Noise Impact Overlay District is located, the following use limitations shall apply:

1. Uses within this district shall be permitted only in accordance with the Noise Compatibility Table presented at the end of this Part.

2. In those instances where a proposed use is not listed in the table, the Director, using the table as a guide, shall determine which use is most similar and which provisions of the table are applicable.

3. Where a structure contains different occupants or tenants, the more stringent requirements of the table shall apply, except where it is architecturally possible to achieve the interior noise levels specified in Sect. 409 below for the area occupied by each occupant or tenant.

4. The table identifies the uses, the Airport Noise Impact Areas and, where applicable, the respective interior noise level standards and acoustical treatment measures for each use in a

given Impact Area. If a use is permitted in a given Impact Area without any interior noise level standard, it is represented on the table with a P. If a given use is not permitted, it is represented with a NP.

Many uses are permitted in a given Impact Area but only if acoustical treatment measures are provided to achieve a specified interior noise level standard for the entire structure. Such uses are represented on the table with a designation of P1, P2 or P3 which corresponds with the three (3) interior noise level standards presented in Sect. 409 below.

Many uses are represented on the table with a designation of P1, P2 or P3 and are qualified with an asterisk (*). Such uses are permitted but only if acoustical treatment measures are provided for those portions of the building which contain offices or other noise sensitive uses in accordance with one of three interior noise level standards presented in Sect. 409 below.

5. In the greater than DNL 75 dBA Impact Area, dwellings shall not be permitted, except that new dwelling units and additions to existing dwelling units may be permitted provided that: (a) the lot is located in an R district, (b) the lot had final plat approval prior to July 26, 1982 and (c) the new dwelling unit or addition complies with the Interior Noise Level Standard P1 set forth in Sect. 409 below.

7-409 Interior Noise Level Standards

1. The acoustical treatment requirements of this Section are to achieve the interior noise levels set forth below and shall apply to the construction of new structures and the alteration or repair of existing structures with enclosed interior space as established under the Virginia Uniform Statewide Building Code (VUSBC).

2. Nothing herein shall be construed as altering building materials, construction methods, plan submission requirements or inspection practices from those which are specified in VUSBC, and the acoustical treatments required shall comply with the provisions of VUSBC.

3. There shall be three (3) different interior noise level standards as identified on the table. These standards are described as follows:

A. Interior Noise Level P1: In the greater than DNL 75 dBA Impact Area, all structures or portions of structures as applicable shall provide acoustical treatment measures which achieve an interior noise level not to exceed DNL 45 dBA. This standard shall be met by one of the following:

(1) The use of roof and exterior wall assemblies which have a laboratory sound transmission class (STC) of at least 50, and doors and windows which have a laboratory STC of at least 42. The STC of construction assemblies shall be determined by a certified sound testing laboratory, or

(2) A certification by an acoustical engineer that the construction practices and/or materials of the structure will achieve the specified interior noise level. The acoustical

professional shall submit relevant information to permit the Director to verify that the proposed measures will achieve the interior noise level standard.

B. Interior Noise Level Standard P2: In the greater than DNL 75 dBA Impact Area, all structures or portions of structures as applicable shall provide acoustical treatment measures which achieve an interior noise level not to exceed DNL 50 dBA. In the DNL 70-75 dBA Impact Area, all structures shall provide acoustical treatment measures which achieve an interior noise level not to exceed DNL 45 dBA. This standard shall be met by one of the following:

(1) The use of roof and exterior wall assemblies which have a laboratory sound transmission class (STC) of at least 45, and doors and windows which have a laboratory STC of at least 37. The STC of construction assemblies shall be determined by a certified sound testing laboratory, or

(2) A certification by an acoustical engineer that the construction practices and/or materials of the structure will achieve the specified interior noise level. The acoustical professional shall submit relevant information to permit the Director to verify that the proposed measures will achieve the interior noise level standard, or

(3) A determination by the Director that the interior noise level standard is met based on the exterior and/or interior wall and roof assemblies and the location of the use in the structure.

C. Interior Noise Level Standard P3: In the DNL 70-75 dBA Impact Area, all structures or portions of structures as applicable shall provide acoustical treatment measures which achieve an interior noise level not to exceed DNL 50 dBA. In the DNL 65-70 dBA Impact Area, all structures shall provide acoustical treatment measures which achieve an interior noise level not to exceed DNL 45 dBA. This standard shall be met by one of the following:

(1) The use of roof and exterior wall assemblies which have a laboratory sound transmission class (STC) of at least 39 and doors and windows which have a laboratory STC of at least 28. The STC of construction assemblies shall be determined by a certified sound testing laboratory, or

(2) A certification by an acoustical engineer that the construction practices and/or materials of the structure will achieve the specified interior noise level. The acoustical professional shall submit relevant information to permit the Director to verify that the proposed measures will achieve the interior noise level standard, or

(3) A determination by the Director that the interior noise level standard is met based on the exterior and/or interior wall and roof assemblies and the location of the use in the structure.

7-410 Lot Size Requirements

As specified in the underlying zoning district(s)

7-411 Bulk Regulations

As specified in the underlying zoning district(s)

7-412 Open Space

As specified in the underlying zoning district(s)

7-413 Additional Regulations

As specified in the underlying zoning district(s)

Loudoun County 2019 General Plan & Zoning Ordinance Excerpts
July 14, 2020

LOUDOUN COUNTY GENERAL PLAN

Page 2-25
Strategy
1.7. Ensure that projects proposed for eastern Loudoun's legacy village cores – including Ashburn, Arcola, and Old Sterling – complement the scale, form, and historic land use patterns of these areas (see Legacy Village Cores Map).

Actions …
B. Develop zoning regulations and design standards that promote a mix of land uses including residential, retail, office, institutional, public facilities, parks, playgrounds and other uses in the village cores where such uses do not otherwise conflict with existing uses or anticipated noise impacts from Washington Dulles International Airport. …

F. Where compatible with surrounding land uses, allow residential or mixed-use development in areas of the Arcola village core that fall outside the 65-Ldn noise contours of Washington Dulles International Airport, applying the standards of the Suburban Neighborhood Place Type.

Page 2-28
The County's ongoing collaboration with the Metropolitan Washington Airports Authority (MWAA) regarding future land use planning around Washington Dulles International Airport's northern border is essential to the success and economic viability of the Loudoun Gateway Metrorail Station. The County will continue its partnership with MWAA and explore mutually beneficial land use alternatives that realize greater tax revenue while supporting current and planned airport operations. This collaborative planning will ensure that the Loudoun Gateway Metrorail Station develops as a walkable place with job opportunities, amenities, pocket parks, transit options, and nearby housing without compromising Washington Dulles International Airport's long-term viability.

Page 2-35
**Buildings must not adversely affect airport operations. Maximum building heights must not create flight obstructions or otherwise impede flight operations at Dulles Airport.*

Page 3-12

Aural Environment Efforts to protect existing and future residents from increased levels of environmental noise have focused primarily on airport noise surrounding Washington Dulles International Airport (IAD) and Leesburg Executive Airport (see Airport Impact Overlay District Map). The Airport Impact Overlay District imposes development restrictions within specified areas to protect existing and future residents as well as maintains the economic viability of these important transportation and economic development resources. Future Airport Noise Corridor studies could lead to updates to the noise contours surrounding IAD.

Pages 3-29 – 3-30

Strategy

7.2. Protect noise-sensitive uses.

Actions

A. Continue to support the Washington Dulles International and Leesburg Executive Airports by continued and complete prohibition of new residential and other noise-sensitive land uses from the areas located within the Ldn 65 and higher aircraft noise contours for both airports and by allowing only non-noise sensitive land uses within these contours.

The Airport Noise Impact Area (ANIA) consists of three (3) components or aircraft noise contours:

(i) Within the Ldn 65 or higher;
(ii) Between the Ldn 60-65 ; and
(iii)Outside of but within one mile of the Ldn 60

B. Continue to work with the Metropolitan Washington Airports Authority to understand and minimize the effects of airport operations and routes on existing noise-sensitive areas within the 60 to 65 Ldn noise contour at Washington Dulles International Airport and minimize residential and noise-sensitive development in noise sensitive areas.

C. Prohibit residential encroachment into the existing areas designated as within the Ldn 65 or higher aircraft noise contours to ensure that residential development will not create pressure for reductions in the intensity of service or prohibit the expansion of service at the airport.

D. Continue to enforce and update with the most current information, as appropriate, the Airport Impact Overlay District included as part of the Loudoun County Zoning Ordinance.

E. Consider the 2019 Washington Dulles International Noise Contour Map Update when reviewing land development applications surrounding the airport.

F. Consider replacing the existing noise contours for Washington Dulles International Airport to reflect the noise contours in the 2019 Washington Dulles International Noise Contour Map Update.

Page 5-10
Policy 1: Diversify the economy by strengthening targeted industry clusters.

Strategies …
1.4. Continue to sustain economic growth at and around the Washington Dulles International Airport and the Leesburg Executive Airport, including support of land use restrictions in noise-sensitive areas located within the Ldn 65 or higher noise contours. …

Actions …
H. Ensure new development does not create flight obstructions, or otherwise impede flight operations at Washington Dulles International Airport and Leesburg Executive Airport, notwithstanding building and height standards recommended elsewhere in the Comprehensive Plan.

Pages 7-3 – 7-4
Other priority implementation actions are as follows: …
• Provide a resolution of intent to amend the Zoning Ordinance to the Board to consider replacing the existing noise contours for Washington Dulles International Airport and consider adopting the noise contours in the 2019 Washington Dulles International Noise Contour Map Update.

Actions

Infill and Redevelopment …
1.7.B. Develop zoning regulations and design standards that promote a mix of land uses including residential, retail, office, institutional, public facilities, parks, playgrounds and other uses in the village cores where such uses do not otherwise conflict with existing uses or anticipated noise impacts from Washington Dulles International Airport.

Towns and JLMAs …
1.4.H. Protect the viability of the Leesburg Airport by ensuring development in the JLMA does not impede Airport operations by continuing to prohibit residential development inside the 65 Ldn noise contour.

Initial Board-Directed Amendments to the Zoning Ordinance

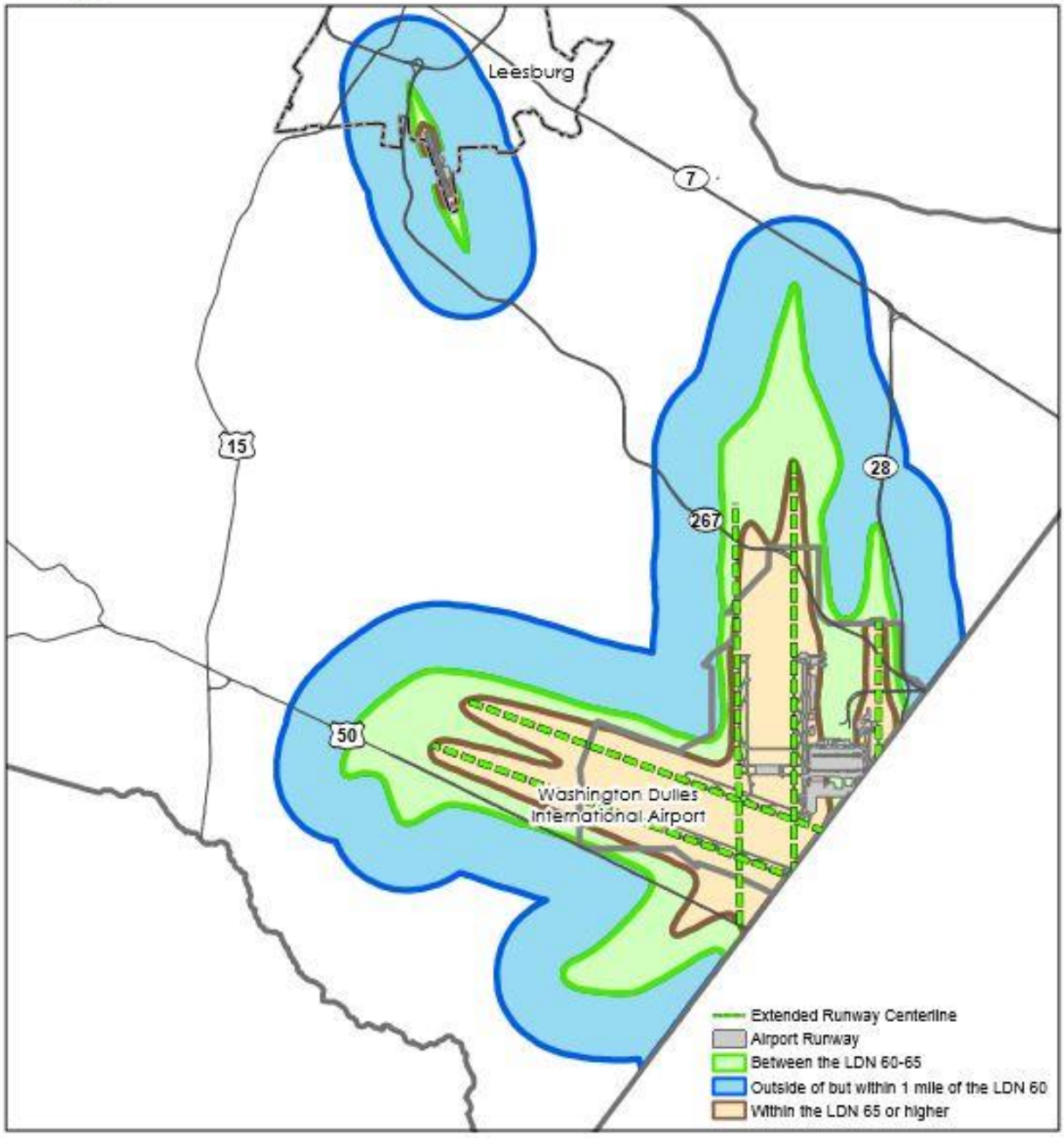
Action
Provide a resolution of intent to amend the Zoning Ordinance to the Board to consider replacing the existing noise contours for Washington Dulles International Airport and consider adopting the noise contours in the 2019 Washington Dulles International Noise Contour Map Update.

Glossary
Airport Noise Impact Area: *Areas within one mile of the Ldn 60 and greater aircraft noise contour.*

Loudoun County

Airport Impact Overlay District

2019 General Plan



0 0.5 1 2 3 4 Miles

Map Number 2019-165

CHAPTER 3-38

DIVISION C: ENVIRONMENTAL IMPACT DISTRICTS
Section 4-1400 AI-Airport Impact Overlay District

4-1401 Purpose. This district is established to acknowledge the unique land use impacts of airports, regulate the siting of noise sensitive uses, ensure that the heights of structures are compatible with airport operations, and complement Federal Aviation Administration regulations regarding noise and height.

4-1402 District Boundaries.

(A) The Airport Impact (AI) Overlay District boundaries shall be based on the 60 and 65 Ldn noise contours and an area that extends one (1) mile beyond the 60 Ldn contours. The Board shall use as a basis for delineating the Ldn noise contour the following sources:

(1) Washington Dulles International Airport: The FAA Part 150 Noise Compatibility Programs, Washington Dulles International Airport, August, 1992, and

(2) Leesburg Municipal Airport: Environmental Assessment Report. October, 1985.

(B) For the purpose of administering these regulations the Airport Impact Overlay District shall have three (3) components:

(1) Ldn - 65 or higher.

(2) Ldn 60 - Ldn 65.

(3) Within the A-I overlay district, but outside the Ldn 60 contour.

4-1403 Overlay District Established. The Airport Impact (AI) Overlay District is hereby established as an overlay district, meaning that it is a district overlaid upon other districts. Land within the Airport Impact (AI) Overlay District may be used as permitted in the underlying district, subject to the additional regulations of this district.

4-1404 Use Limitations. In addition to the use limitations and regulations for the zoning district over which an Airport Impact (AI) Overlay District is located, the following use limitations shall apply:

(A) For areas outside of, but within one (1) mile of the Ldn 60.

(1) Full Disclosure Statement. For all residential dwelling units to be constructed outside of, but within one (1) mile of the Ldn 60. The applicant shall disclose in writing to all prospective purchasers that they are located within an area that will be impacted by aircraft overflights and aircraft noise. Such notification will be accomplished by inclusion of this information in all sales contracts, brochures and promotional documents,

including the Illustrative Site Plan(s) on display within any sales related office(s), as well as in Homeowner Association Documents, and by inclusion on all subdivision and site plans, and within all Deeds of Conveyance.

(B) For areas between the Ldn 60-65 aircraft noise contours:

(1) Full Disclosure Statement. For all residential dwelling units to be constructed between the Ldn 60-65 aircraft noise contours, the applicant shall disclose in writing to all prospective purchasers that they are located within an area that will be impacted by aircraft overflights and aircraft noise. Such notification will be accomplished by inclusion of this information in all sales contracts, brochures and promotional documents, including the Illustrative Site Plan(s) on display within any sales related office(s), as well as in Homeowner Association Documents, and by inclusion on all subdivision and site plans, and within all Deeds of Conveyance.

(2) Acoustical Treatment. For all residential units located between the Ldn 60-65 aircraft noise contours, the applicant shall incorporate acoustical treatment into all dwelling units to insure that interior noise levels within living spaces (not including garages, sunrooms, or porches) do not exceed an average sound level of 45 db(A) Ldn. Compliance with this standard shall be based upon a certification from an acoustical engineer licensed in the Commonwealth of Virginia, submitted at the time of zoning permit issuance, that the design and construction methods and materials to be used in the construction of the dwelling are such that the foregoing standard will be met, assuming exterior noise levels between 60-65 Ldn.

(3) Avigation Easements. For all residential dwelling units to be constructed between the Ldn 60-65 aircraft noise contours. Prior to the approval of a Record Plat creating residential lots or for existing lots of record, prior to the issuance of a zoning permit, the owner(s) of such parcel or parcels shall dedicate an avigation easement to the Metropolitan Washington Airports Authority, indicating the right of flight to pass over the property, as a means to securing the long-term economic viability of Washington Dulles International Airport.

(C) In Airport Noise Impact areas of Ldn 65 or higher, residential dwellings shall not be permitted. However, new dwelling units and additions to existing dwellings may be permitted, provided that:

(1) The lot was recorded or had record plat approval prior to the effective date of adoption of this Ordinance.
(2) The new dwelling unit or addition complies with the acoustical treatment requirements for residential districts set forth in the Virginia Uniform Statewide Building Code.

(D) No building or other structure shall be located in a manner or built to a height which constitutes a hazard to aerial navigation. Where a structure is proposed in a location or to be built to a height which may be hazardous to air traffic such structure shall not be erected

without certification from the Federal Aviation Administration that it will not constitute a hazard to air traffic.

4-1405 Disclosure. A disclosure statement shall be placed on all subdivision plats, site plans, and deeds to any parcel or development within the AI District, clearly identifying any lot which is located within the AI District and identifying the component of the AI District (i.e., Section 4-1402(B)(1), 4-1402(B)(2), or 41402(B)(3)) in which the lot is located.

4-1406 Definitions. Unless otherwise specially provided, or unless clearly required by the context, the words and phrases defined in this subsection shall have the following meanings when used in Section 4-1400.

(A) Ldn: The symbol for "yearly day-night average sound level", which means the 365-day average, in decibels, for the period from midnight to midnight, obtained after the addition of ten decibels to sound levels for the periods between 10 p.m. and 7 a.m., local time.

(B) 45 db(A) Ldn: The symbol for the required level of noise attenuation in residential structures constructed within the area between airport noise contour 60 and airport noise contour 65, expressing a required yearly interior day-night average sound level of 45 decibels or less.

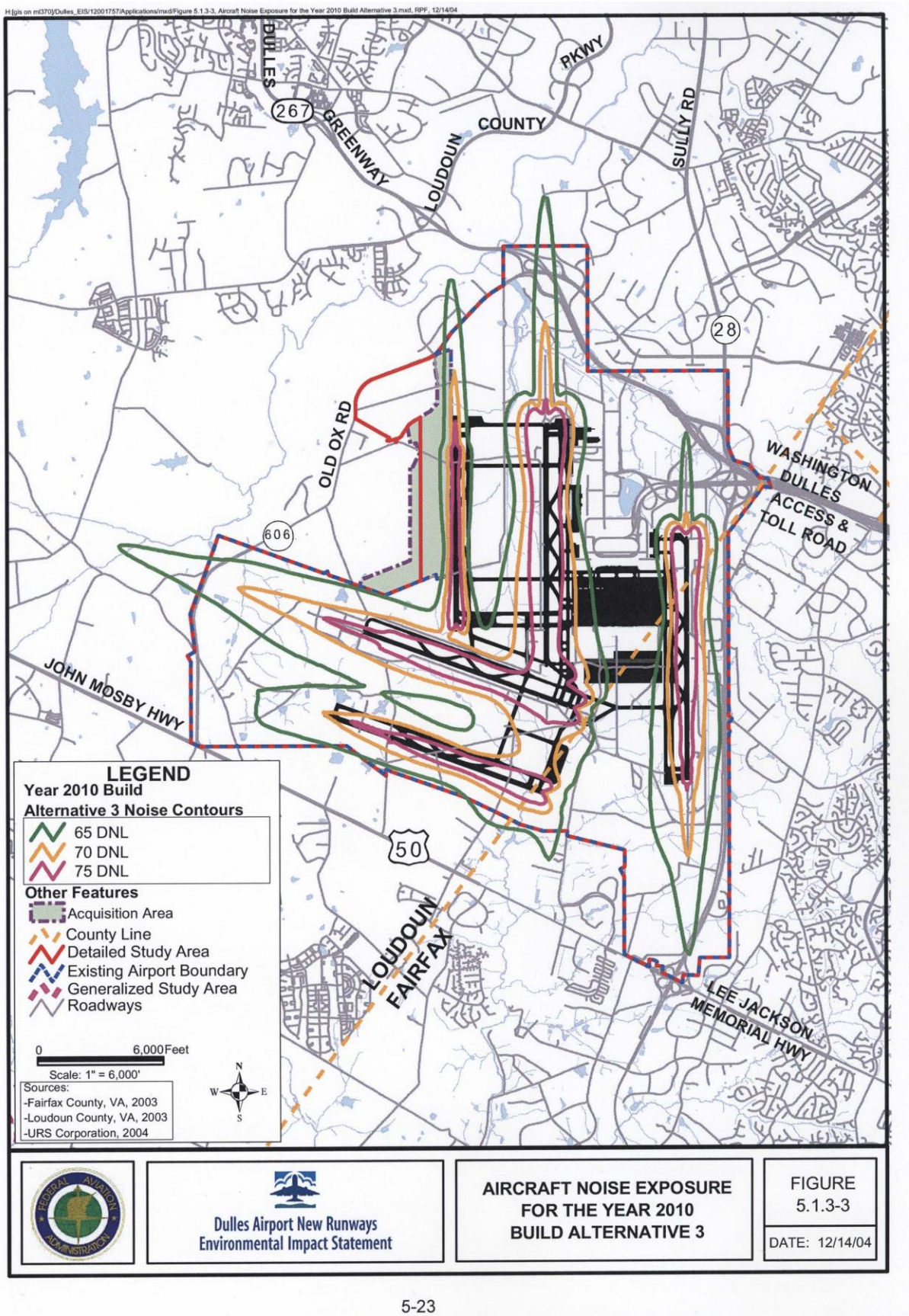
Washington Dulles International Airport
FAA Part 150 Guidance
July 14, 2020

- While the MWAA 2019 noise contour update used some similar techniques as a Part 150 Study, it was not an official Part 150 Study. The Aviation Safety and Noise Abatement Act of 1979 created the Part 150 program under 14 CFR Part 150 and requires specific methodology and FAA involvement. The program began in 1981. It provides a structured approach for airport operators, airlines, pilots, neighboring communities and the FAA to work together to reduce the number of people who live in significantly noise-impacted areas. Operators of public use airports, including heliports, are eligible to participate.
- Completion of a Part 150 Study is a prerequisite for federal funding. Part 150 studies are a means of determining airport noise impacts of 65 DNL or greater, and significant changes to noise impacts, particularly for noise sensitive land uses, to surrounding areas so that eligibility for funded noise mitigation solutions (federal grants) can be determined. Federal funding cannot be used for impacts below 65 DNL but local airport funding sources can be used for land uses impacted at lower noise levels.
- While Part 150 Studies examine only a short-term timeframe (5 years), these may be appropriate for those airports with little opportunity to reduce the aircraft noise impacts. Short-term studies may therefore be appropriate to assess noise impacts due to changes in operations.
- The completion of a Part 150 Study would be appropriate in the following situations:
  - A significant change in the type or frequency of aircraft operations at the airport; or
  - A significant change in the airport layout; or
  - A significant change in the flight patterns; or
  - A significant increase in nighttime operations.
- Given the short-term (5-year) forecast period of a Part 150 Study, a noise study with a longer forecast period would be more appropriate for land use planning purposes, which would typically consider a minimum 20 to 30-year forecast, and to determine the ultimate operational capacity of an airport facility, which may take decades to reach. Under a four-runway scenario, Dulles is projected by MWAA to reach its ultimate operational capacity in approximately 70 years. Under a five-runway scenario, capacity is projected to be reached in approximately 80 years.
- A noise study can also be conducted voluntarily without federal funding or for implementation of study recommendations. When a noise study is conducted outside of the formal requirements of a Part 150 Study, the airport has some leeway with regard to the scope and detail of the plan and can be tailored to airport and community needs. Additionally, at noise levels below 65 DNL, localities must decide how to address land use issues, as the FAA will not fund noise abatement projects for impacts below 65 DNL.

Washington Dulles International Airport
2005 Final Environmental Impact Statement
July 14, 2020

Attached are maps associated with the 2005 Final Environmental Impact Statement (FEIS) for the Washington Dulles International Airport. The FAA completed the Environmental Impact Statement to identify the potential environmental effects of the construction and operation of several proposed improvements including a new parallel north-south runway; a new parallel east-west runway; taxiways; navigational aids; property acquisition; Tier 3 concourse development; relocation of the Sterling National Oceanic and Atmospheric Administration/National Weather Service facilities; and, the extension of the Automated People Mover. 2010 was established as the threshold year for the implementation of the alternatives considered and all environmental impacts were evaluated for that study year. Analyses of future noise conditions were prepared for the year of anticipated project implementation (2010) and for 2025 (a 20-year horizon). The overall purpose of the EIS was to minimize impacts to existing noise sensitive uses that might require FAA mitigation in the future.

Record of Decision (October 14, 2005):
https://www.faa.gov/airports/environmental/records_decision/media/rod_dulles_runways.pdf


H:[gis on ml370]\Dulles_EIS\12001757\Applications\mxd\Figure 5.1.3-3, Aircraft Noise Exposure for the Year 2010 Build Alternative 3.mxd, RPF, 12/14/04
DULLES
267
GREENWAY
LOUDOUN
COUNTY
PKWY
SULLY RD
28
OLD OX RD
606
WASHINGTON
DULLES
ACCESS &
TOLL ROAD
JOHN MOSBY HWY
50
LOUDOUN
FAIRFAX
LEE JACKSON
MEMORIAL HWY
LEGEND
Year 2010 Build
Alternative 3 Noise Contours
65 DNL
70 DNL
75 DNL
Other Features
Acquisition Area
County Line
Detailed Study Area
Existing Airport Boundary
Generalized Study Area
Roadways
0
6,000 Feet
Scale: 1" = 6,000'
Sources:
-Fairfax County, VA, 2003
-Loudoun County, VA, 2003
-URS Corporation, 2004
N
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E
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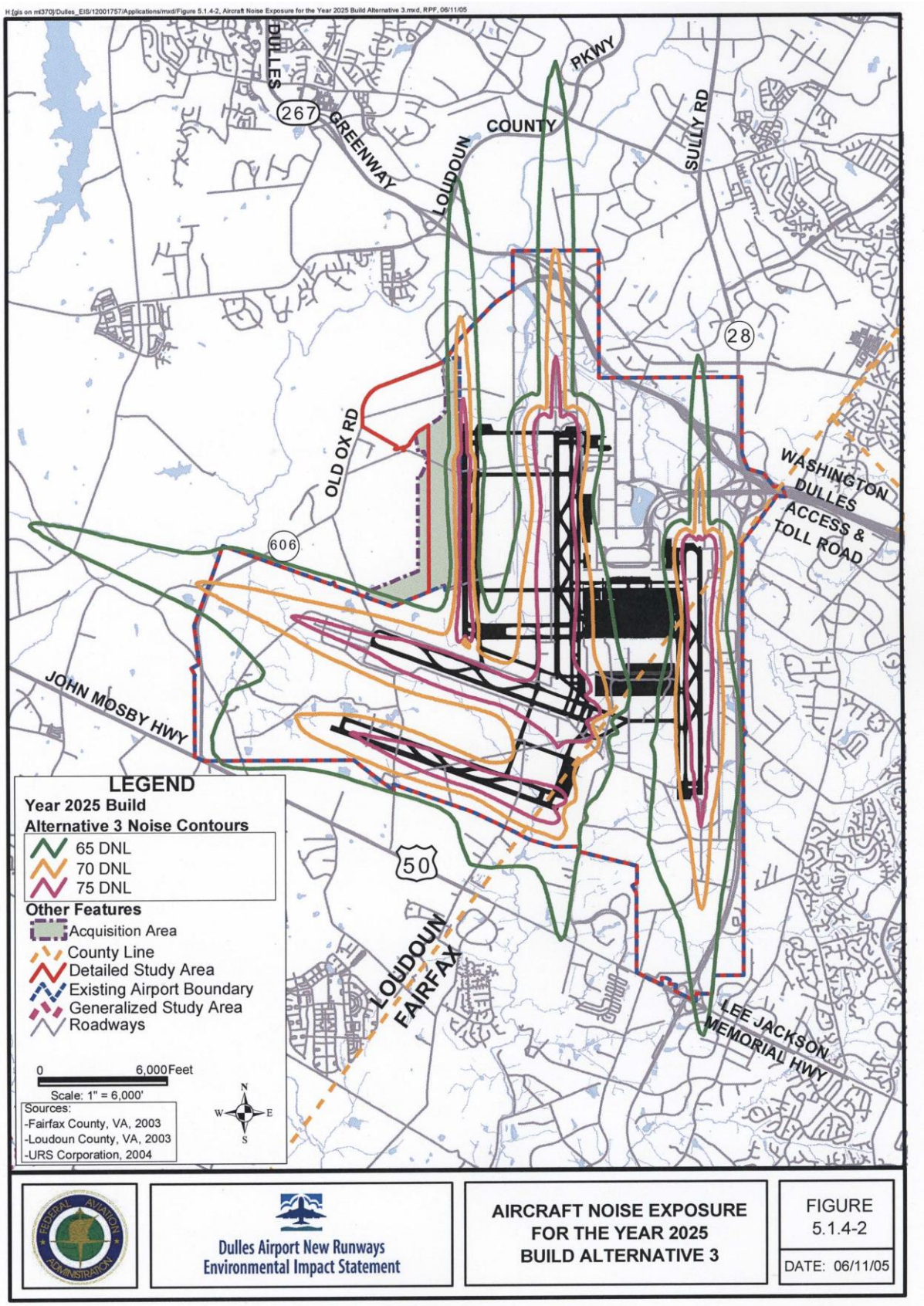
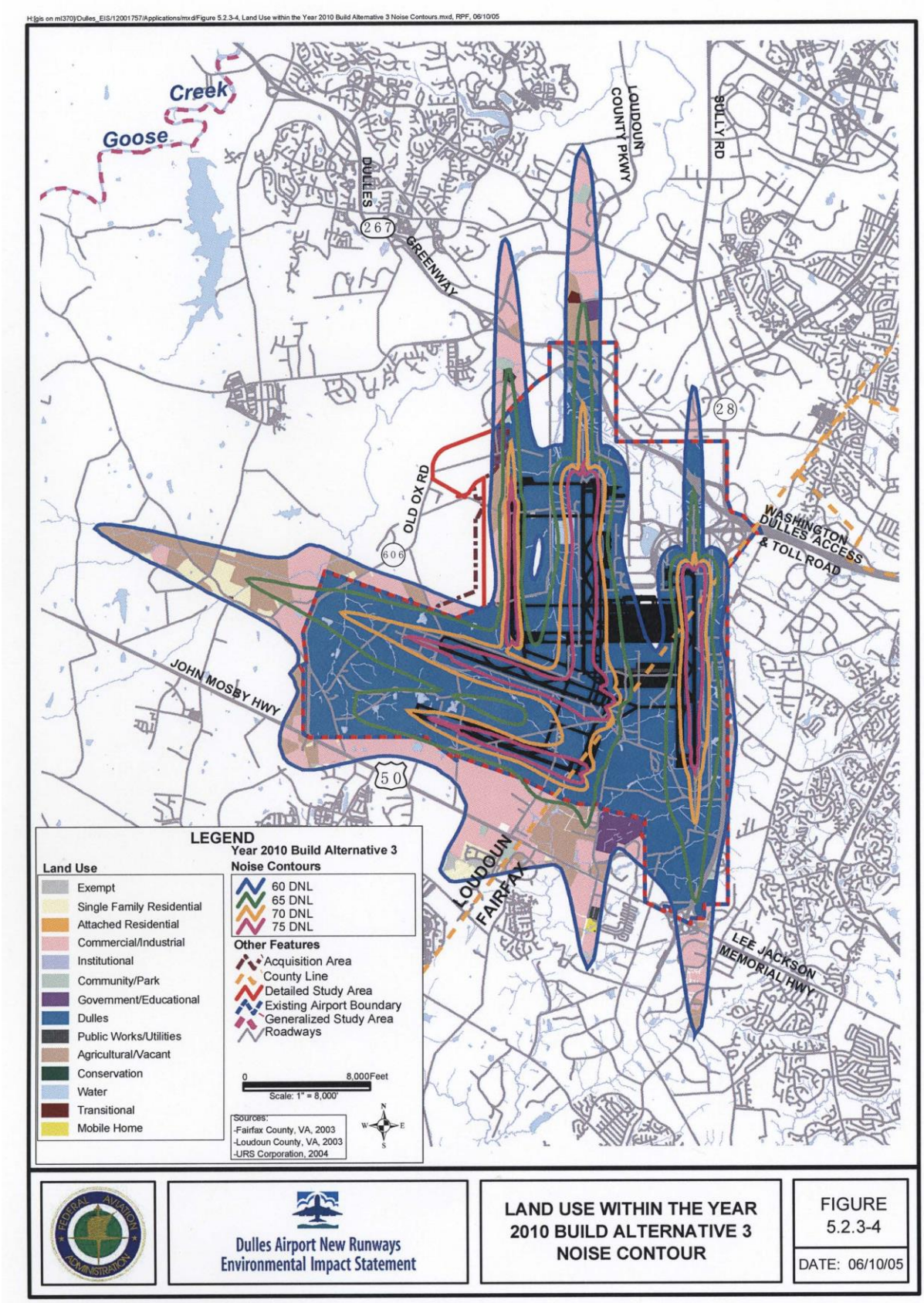
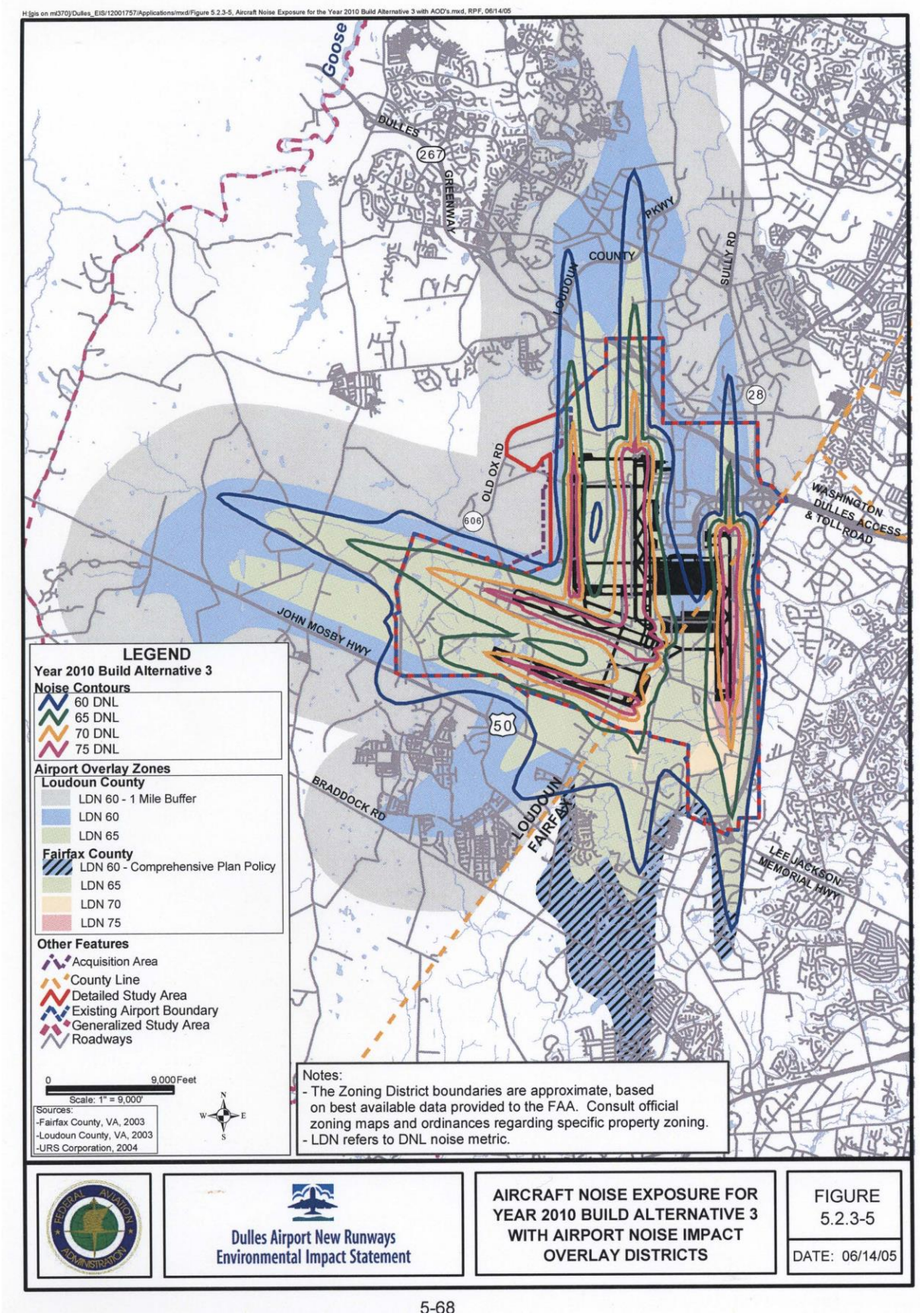
FEDERAL AVIATION ADMINISTRATION
Dulles Airport New Runways
Environmental Impact Statement
AIRCRAFT NOISE EXPOSURE
FOR THE YEAR 2010
BUILD ALTERNATIVE 3
FIGURE
5.1.3-3
DATE: 12/14/04


H:[gis on mt370]Dulles_EIS\12001757\Applications\mxd\Figure 5.1.4-2, Aircraft Noise Exposure for the Year 2025 Build Alternative 3.mxd, RPF, 06/11/05
DULLES
267
GREENWAY
LOUDOUN
COUNTY
PKWY
SULLY RD
28
OLD OX RD
606
WASHINGTON
DULLES
ACCESS &
TOLL ROAD
JOHN MOSBY HWY
50
LOUDOUN
FAIRFAX
LEE JACKSON
MEMORIAL HWY
LEGEND
Year 2025 Build
Alternative 3 Noise Contours
65 DNL
70 DNL
75 DNL
Other Features
Acquisition Area
County Line
Detailed Study Area
Existing Airport Boundary
Generalized Study Area
Roadways
0
6,000 Feet
Scale: 1" = 6,000'
Sources:
-Fairfax County, VA, 2003
-Loudoun County, VA, 2003
-URS Corporation, 2004
N
W
E
S
FEDERAL AVIATION ADMINISTRATION
Dulles Airport New Runways
Environmental Impact Statement
AIRCRAFT NOISE EXPOSURE
FOR THE YEAR 2025
BUILD ALTERNATIVE 3
FIGURE
5.1.4-2
DATE: 06/11/05


H:\gis on ml370\Dulles_EIS\12001757\Applications\mxd\Figure 5.2.3-4, Land Use within the Year 2010 Build Alternative 3 Noise Contours.mxd, RPF, 06/10/05
Goose Creek
DULLES GREENWAY
267
LOUDOUN COUNTY PKWY
BULLY RD
28
OLD OX RD
606
WASHINGTON DULLES ACCESS & TOLL ROAD
JOHN MOSBY HWY
50
LOUDOUN
FAIRFAX
LEE JACKSON MEMORIAL HWY
LEGEND
Year 2010 Build Alternative 3
Land Use
Exempt
Single Family Residential
Attached Residential
Commercial/Industrial
Institutional
Community/Park
Government/Educational
Dulles
Public Works/Utilities
Agricultural/Vacant
Conservation
Water
Transitional
Mobile Home
Noise Contours
60 DNL
65 DNL
70 DNL
75 DNL
Other Features
Acquisition Area
County Line
Detailed Study Area
Existing Airport Boundary
Generalized Study Area
Roadways
0
8,000Feet
Scale: 1" = 8,000'
Sources:
-Fairfax County, VA, 2003
-Loudoun County, VA, 2003
-URS Corporation, 2004
N
W
E
S
FEDERAL AVIATION ADMINISTRATION
Dulles Airport New Runways
Environmental Impact Statement
LAND USE WITHIN THE YEAR 2010 BUILD ALTERNATIVE 3 NOISE CONTOUR
FIGURE 5.2.3-4
DATE: 06/10/05

5-65


H:\gis on ml370\Dulles_EIS\12001757\Applications\mxd\Figure 5.2.3-5, Aircraft Noise Exposure for the Year 2010 Build Alternative 3 with AOD's.mxd, RPF, 06/14/05
Goose
DULLES
267
GREENWAY
PKWY
COUNTY
LOUDOUN
SULLY RD
28
OLD OX RD
606
WASHINGTON DULLES ACCESS & TOLL ROAD
JOHN MOSBY HWY
50
BRADDOCK RD
LOUDOUN
FAIRFAX
LEE JACKSON MEMORIAL HWY
LEGEND
Year 2010 Build Alternative 3
Noise Contours
60 DNL
65 DNL
70 DNL
75 DNL
Airport Overlay Zones
Loudoun County
LDN 60 - 1 Mile Buffer
LDN 60
LDN 65
Fairfax County
LDN 60 - Comprehensive Plan Policy
LDN 65
LDN 70
LDN 75
Other Features
Acquisition Area
County Line
Detailed Study Area
Existing Airport Boundary
Generalized Study Area
Roadways
0
9,000 Feet
Scale: 1" = 9,000'
Sources:
-Fairfax County, VA, 2003
-Loudoun County, VA, 2003
-URS Corporation, 2004
N
W
E
S
Notes:
- The Zoning District boundaries are approximate, based on best available data provided to the FAA. Consult official zoning maps and ordinances regarding specific property zoning.
- LDN refers to DNL noise metric.
FEDERAL AVIATION ADMINISTRATION
Dulles Airport New Runways
Environmental Impact Statement
AIRCRAFT NOISE EXPOSURE FOR YEAR 2010 BUILD ALTERNATIVE 3 WITH AIRPORT NOISE IMPACT OVERLAY DISTRICTS
FIGURE 5.2.3-5
DATE: 06/14/05