Land Use Analysis

Introduction

This section of the Noise Exposure Map Update for Boca Raton Airport summarizes the compatibility of various land uses with the baseline (2008) and future (2018) noise exposure contours. One of the first steps in evaluating land use compatibility is to identify the existing and future noise exposure associated with the operation of Boca Raton Airport.

Methodology

The land use and population analysis for both baseline 2008 and future 2018 noise contours were derived from a variety of sources. The existing land use maps provided in the *Inventory* Chapter were used to determine the number of acres of different land use types. The noise contours were overlaid on these maps and a Geographical Information System (GIS) computer program was used to determine the number of acres for each land use type located within each contour. Housing units and population numbers were determined from the 2000 Census (and most recent updates) using the same GIS program and aerial counts. Census data (2005-2007) indicates that in Boca Raton, the average household size is approximately 2.33 people. Additionally, information about the first phase of the home insulation program initiated through the previous FAR Part 150 Study was collected to identify insulated homes within the 2008 and 2018 contours.

Existing Population Analysis/Existing Noise Contours, 2008

This section discusses the housing units and population found within the existing noise exposure contours generated by aircraft at Boca Raton Airport. The existing noise exposure is represented by contour bands, including the 60 DNL, 65 DNL, 70 DNL, and 75 DNL contours. FAA's compatibility guidelines for a Part 150 Study use the 65 DNL contour as the threshold for determining affected areas in land use analysis.

The FAR Part 150 Land Use Guidelines (as presented in the *Noise Methodology* Chapter) state that residential uses, as well as other noise sensitive uses, are not compatible within the 65 or greater DNL noise contours. However, noise sensitive uses can be made compatible within the 65 DNL noise contour through sound attenuation programs, such as sound insulation, noise easements or land acquisition.

The baseline 2008 65 DNL and greater contour contains approximately 364 acres. There are no residential units within the 65 DNL and greater contour in 2008. Table E1 summarizes the population and housing units within the existing 2008 noise contours. Part of Florida Atlantic University is located within the 65 DNL noise contour. There are no churches or historical sites listed on the National Register of Historic Places within the 65 DNL and greater contour. The 70 DNL noise contour contains approximately 177 acres, with no housing units and only a small portion of the FAU property. The 75 DNL noise contour contains approximately 92 acres, and contains no incompatible land uses.

Existing Land Use Incompatibilities

The FAA has developed generalized guidelines for land use compatibility to assist with land use planning. These guidelines were presented in the *Noise Methodology* Chapter. As stated above, for purposes of this study, the FAA guidelines are used; namely, noise sensitive uses, such as residential structures within the 65 DNL or greater contours are considered by the FAA guidelines to be incompatible without sound attenuation or avigation easements.

A Federal Aviation Regulation (FAR) Part 150 Noise and Land Use Compatibility Study was completed for the Airport with a Noise Compatibility Program (NCP) and Noise Exposure Maps (NEM's) initially adopted in 1991. In 2001, the Airport updated the NCP and NEM's. The 2001 update made several recommendations for the Airport, such as sound insulation. Based on this Study, the Boca Raton Airport initiated a residential sound insulation program. The pilot phase of the recommended sound insulation program was completed in April and May of 2008. This pilot phase insulated 10 homes within the 65 DNL and greater noise contour based on the 2001 approved NEM's. The insulated homes were identified during this analysis in comparison to the new 2008 and 2018 contours.

Based on FAA guidelines, residential land uses within the existing 65 DNL or greater noise contours are not compatible with the aircraft noise exposure unless the residence has sound attenuation features that reduce interior noise to requisite levels.

Without such attenuation, the property would be considered incompatible with the noise exposure. There are no homes or residents living within the baseline 2008 65 DNL and greater contour that would be considered incompatible with the level of noise produced from the Airport.

Table E1
EXISTING LAND USE WITHIN EXISTING NOISE CONTOURS, 2008
Boca Raton Airport FAR Part 150 NEM Update

Land Use	60 DNL Contour*	65 DNL Contour	70 DNL Contour	75 DNL Contour
People	245	0	0	0
Residential Units	120	0	0	0
Schools	1	1	0	0
Total Acres	**826 Ac**	**364 Ac**	**177 Ac**	**92 Ac**

Sources: *Aerial Photography, Land Use Base Map.*
2000 Census Data, BDC Analysis.
The total figures for each contour are cumulative. The contours contain the area within all smaller contours.
Population and housing units rounded to the nearest five. 5 units per building were estimated for the Vistazo Townhome complex
*Housing counts for the 60 DNL contour were estimated using 2000 Census block data and should be used for estimation purposes only.

Existing Population Analysis and Future (2018) Noise Contours

A review was conducted of the existing population and housing units that could be affected 10 years into the future. The Baseline *(Existing)* and *Future Noise Conditions* Chapter discusses the noise exposure contour prepared for the year 2018. This 2018 contour assumes that no operational or facility modifications would occur at the Airport, and is reflective of the growth forecasted in aircraft operations and aircraft types explained previously.

The future 2018 noise contours are larger than the baseline 2008 noise contours as a result of an increase in aircraft operations forecast to be operating in the future. The future 65 DNL and greater contour is expected to increase in size from approximately 364 acres (2008) to 606 acres by 2018.

Approximately 55 residential units with about 130 residents would be within the 65 DNL and greater noise contour in 2018. In addition, part of Florida Atlantic University is located within the 65 DNL noise contour. There are no Historic sites or additional noise sensitive uses within the 65 DNL noise contour. The 2018 70 DNL noise contour contains approximately 275 acres with no housing units. The 75 DNL noise contour contains approximately 139 acres and does not contain any non-compatible land uses. Table E2 lists the various housing units and the population that would be expected to be within the future 2018 noise contour.

Future (2018) Land Use Incompatibilities

There are approximately 55 homes with about 130 people within the future 2018 65 DNL and greater contour. As noted previously, through the previous Part 150 Study, Boca Raton Airport initiated a residential sound insulation program which insulated a portion of the homes within the future 2018 65 DNL contour in Phase 1 and is set to insulate additional homes for Phase 2 in 2009. Of the 10 homes insulated during the Pilot Study (Phase 1), two of these insulated homes are located within the 2018 contours. Approximately an additional six homes will be insulated in Phase 2. Additionally, approximately 45 units within the 2018 baseline 65 DNL contour, are contained within the Vistazo Townhome development that were built with acoustical windows and doors to provide a sound level reduction of approximately 30 dB and have recorded avigation easements.

Due to the insulation of the Vistazo Townhomes, the homes insulated during Phase 1 and the homes set to be insulated in 2009 for Phase 2 of the sound insulation program, all these residential units would be considered compatible with noise produced in the 2018 65 DNL contour. Because all of the homes within the 65 DNL contour will have sound insulation, all of the 55 homes within the future 2018 contour will be considered by the FAA to be compatible with the level of noise produced from the Airport within the future 65 DNL contour. Table E2 illustrates the residential and other noise sensitive land uses within each contour.

Table E2
LAND USE WITHIN FUTURE NOISE CONTOURS, 2018
Boca Raton Airport FAR Part 150 NEM Update

Land Use	60 DNL Contour	65 DNL Contour	70 DNL Contour	75 DNL Contour
People	1,193	130	0	0
Residential Units	610*	55	0	0
Insulated Units (Including Phase 2)	---	55	---	---
Insulated- Single Family Units	---	8	---	---
Insulated- Single Family Units (Phase 1)	---	2	---	---
Future Insulated- Single Family Units (Phase 2)	---	6	---	---
Insulated- Multi-Family Units	---	45	---	---
Un-insulated/Un-attenuated Units	---	0	---	---
Schools	1	1	0	0
Total Acres	**1,415 Ac**	**606 Ac**	**275 Ac**	**139 Ac**

Sources: *Aerial Photography, Land Use Base Map.*
2000 Census Data, BDC Analysis.
The total figures for each contour are cumulative. The contours contain the area within all smaller contours.
Total population and housing units are generally rounded to the nearest five. 5 units per building were estimated for the Vistazo Townhome complex.
*Housing counts for the 60 DNL contour were estimated using 2000 Census block data and should be used for estimation purposes only.
--- Insulated homes are only shown for the 65 DNL contour since only homes within the 65 DNL contour are eligible for Federal funding.