FAR PART 150 NOISE COMPATIBILITY STUDY

MILWAUKEE COUNTY'S

GENERAL MITCHELL INTERNATIONAL AIRPORT

H. LAND USE AND ADMINISTRATIVE ALTERNATIVES

Land Use and Administrative Alternatives

Introduction

The previous two Chapters presented the evaluation and analysis of Airport operational noise abatement procedures. Included in those documents were the evaluation of various approach and departure procedures, runway use, aircraft operational procedures, and Airport facilities modifications. Those two papers addressed measures that could reduce the number of people affected by noise through changes in the operational characteristics of aircraft operating at Milwaukee County's General Mitchell International Airport (MKE). Stated another way, the aircraft procedures and Airport facilities alternatives examined various methods for ensuring the minimization of noise over sensitive land uses. While many of the alternatives have the potential to reduce the number of people and homes affected by noise, there will continue to be people and homes within affected areas that receive noise above 65 DNL (Day-Night Average Noise Levels).

This chapter presents the identification and evaluation of alternatives that could assist the remaining noise-sensitive areas surrounding the Airport to become more compatible with aircraft noise. This document includes the analysis of both land use–related alternatives and administrative alternatives, followed by recommended measures for implementation. The land use alternatives will be addressed first.

The land use alternatives in this chapter include several measures that arose from the public outreach process and discussions that have taken place during the Study Advisory Committee (SAC) meetings. This chapter only addresses those land use and administrative alternatives that are either new measures or amendments to existing measures that are currently in place. All measures approved in the 1995 Record of Approval, as attached to this document, and not specifically amended are to remain in effect as approved. The generalized remedial land use alternatives evaluated within this study and document include:

- Land Use Alternative One: Sound Insulation
- Land Use Alternative Two: Fee Simple Land Acquisition
- Land Use Alternative Three: Easement-Only Acquisition
- Land Use Alternative Four: Sales Assistance

This chapter presents the potential noise mitigation benefits of each measure. For purposes of evaluation, the largest noise contour, which is the existing (2004) noise exposure contour, was used to analyze the effectiveness of each land use alternative. A short explanation of various land use alternatives is presented in the next section. Following that discussion is a presentation of the land use recommendations.

Land Use Alternatives

The land use alternatives analysis focuses on the evaluation of measures designed to reduce incompatible land use within the designated Noise Exposure Map (NEM) eligibility boundaries. Federal guidelines contained in FAR Part 150 indicate that residential development, along with other noise-sensitive uses—such as schools, religious facilities, hospitals, rest homes, etc.—should be prohibited from developing within areas exposed to 65 DNL-and-greater sound levels. These guidelines are recognized by the Federal Aviation Administration (FAA), as well as the Department of Housing and Urban Development (HUD), Department of Defense (DOD), Environmental Protection Agency (EPA), and numerous state and local agencies.

There are certain *remedial* measures that can be implemented to make existing, normally non-compatible land uses compatible, within certain guidelines. Preventive measures include zoning, comprehensive planning, and building code/subdivision regulations provisions. Remedial measures include sound attenuation, purchase of non-compatible land uses and purchase of avigation (noise) easements, along with sales assistance programs. Remedial measures are within the authority of the FAA to fund and are measures of most interest to citizens with existing homes inside the 65 DNL noise contour. Preventive measures are within the authority of the local jurisdiction and are usually of lesser concern to citizens living near the Airport because they apply to new construction. Land use recommendations were evaluated in consideration of both remedial and preventive measures.

Potential remedial measures include sound insulation of single-family structures, multifamily structures, schools, religious facilities, libraries, and sleeping portions of fire

stations; purchase of non-compatible land uses within high noise contours, purchase of avigation easements, and sales assistance programs.

Potential preventive measures include traditional land use zoning, granting of avigation easements, sound attenuation requirements for new construction, buyer disclosure statements, and comprehensive plan amendments.

The proposed new or amended measures are described in greater detail on the following pages. As previously noted, the land use measures that were recommended and approved in the 1995 Record of Approval remain as recommendations. See the Record of Approval in the Appendix.

Evaluation Method

The existing noise contour (2004) is larger than the forecast contours at Milwaukee County's General Mitchell International Airport and, accordingly, affects more housing units and residents. Additionally, because there is no guarantee that FAA will implement all of the proposed Part 150 operational measures, it is important to address current conditions. For these reasons, the 2004 contour is used to quantify the number of structures and people eligible for participation for each of the land use measures.

For remedial land use measures (those eligible for federal funding), the 65 DNL contour is used for evaluation. It is important to note that federal policy precludes homes constructed after October 1998 within an FAA-approved and -published noise contour from being eligible for federal remedial land use funding associated with the recommendations. This is why it is important for local jurisdictions to enact preventive land use measures to avoid new construction in noise-impacted areas. As previously noted, residential land use is considered compatible by federal and state standards up to 65 DNL and sometimes in higher contours, such as 70 DNL, if specific measures, such as additional sound insulation, are taken.

Land Use Alternative One
Voluntary Sound Insulation of Noise-Sensitive Structures, Such as Single-Family Homes, Multifamily Homes, Assisted-Care Facilities, Schools, and Religious Facilities

Goal

The goal of Land Use Alternative One is to reduce aircraft-generated noise intrusion levels inside habitable rooms within noise-sensitive uses.

Description

Land Use Alternative One continues the 1993 program, amended to include structures within the updated 65 DNL noise contour that were outside the eligibility area of the original program. This program would allow the Airport to offer owners of noise-sensitive structures sound insulation for the habitable rooms in eligible structures in order to achieve an inside noise level of DNL 45 dBA or less, with a minimum outdoor-to-indoor noise level reduction (NLR) of 5 dBA. Eligible structures include single-family residences, multifamily residences, schools, and religious facilities. The sound attenuation costs would be borne by the FAA with Airport matching funds and would be similar to the 1993 Home Owner Protection Program (HOPP) recently completed by the Airport. To be eligible, the habitable rooms must currently be experiencing inside noise levels of DNL 45 dBA or higher, and the house must have been constructed prior to 1998 if located within a published 65 DNL noise contour.

Based on the existing Noise Exposure Map and "squaring off" the eligibility boundary, there are approximately 560 housing units that could be eligible for sound insulation. There are no schools, hospitals, or known religious facilities within the 65 DNL noise contour.

If sound insulation is accepted as a recommendation, then the feasible boundaries of the program must be identified. These boundaries are not necessarily required to follow the 65 DNL contour exactly, but they can be determined by the closest *reasonable* physical boundary (street, railroad track, highway, stream, etc.) beyond the contour so that neighborhood integrity is preserved, to the most reasonable extent possible.

Discussion

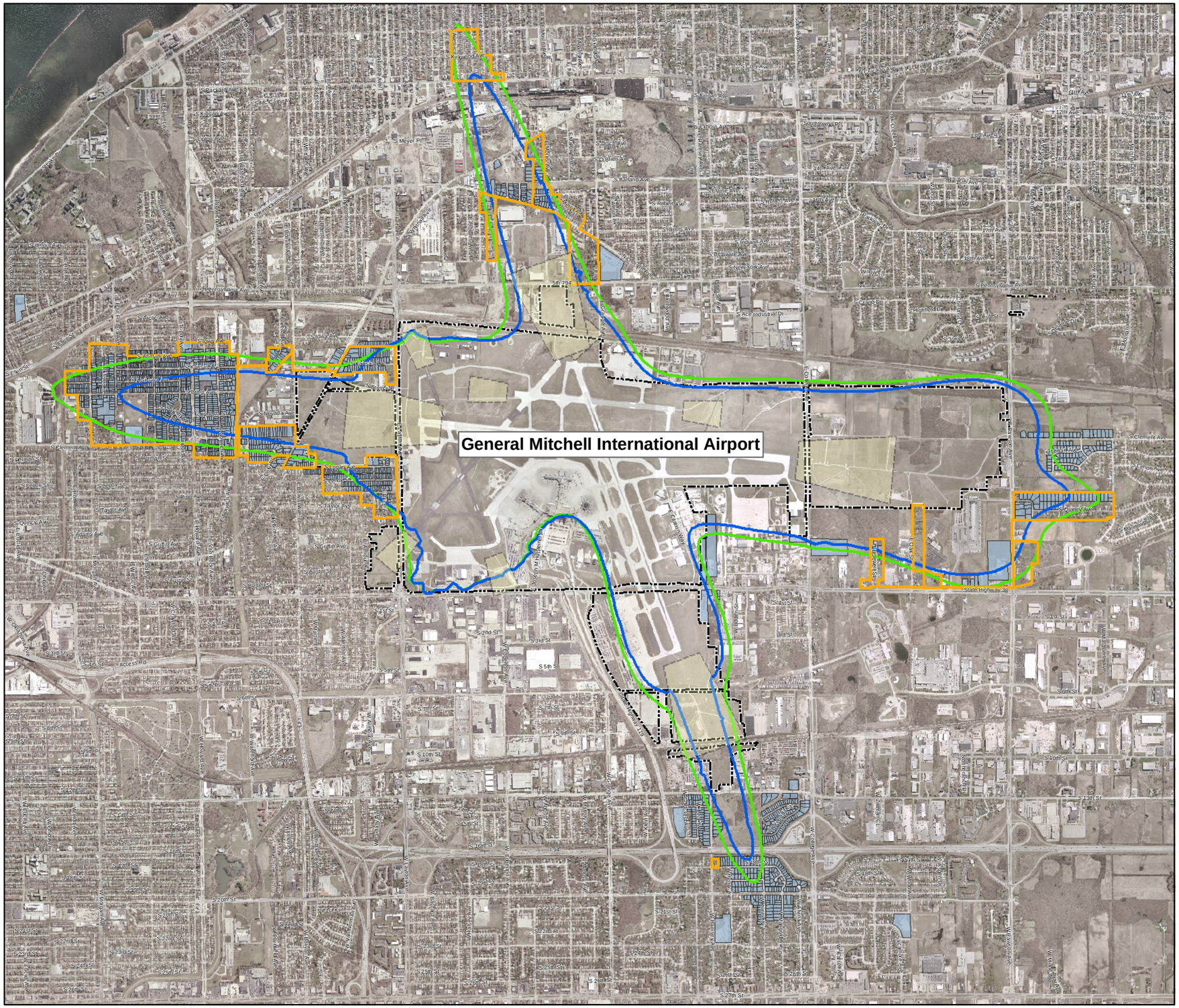
Sound insulation is eligible for federal funding. However, the structure must be "brought up to code" prior to initiating sound insulation. Any structural changes or improvements required to bring the structure into compliance with existing building codes are not eligible for federal funding and must be borne by the home owner.

The implementation of this alternative continues the 1993 sound insulation program that has been recently completed. Based on the revised noise contours, there are additional homes within the existing 65 DNL noise contour that are in need of sound insulation. However, new eligibility boundaries must be identified prior to implementation.

Conclusions

Land Use Alternative One continues and expands the previous measures LU-14, LU-15, and LU-16 approved in the 1995 Record of Approval issued for the 1993 Study. The existing noise contours encompass additional homes that would now be eligible for sound insulation that were not within the previous program boundaries. Additional homes are recommended for sound insulation based on a squaring off of the area generally representative of the contour premised on reasonable physical boundaries. Based on the proposed Sound Insulation Boundary Map, shown in Figure H1, there are approximately 560 residences that *could* be eligible for sound insulation. The approximate cost to insulate all of these homes would be $28 million, based on an average cost of $50,000 per residence. This alternative is recommended for continued implementation based on the largest noise contour, the existing Noise Exposure Map, and the revised eligibility boundary.

Figure H1 **Proposed Sound Insulation Eligibility Boundary**



2009 - 65 dnl Contour
2004 - 65 dnl Contour

Airport Property
Runway Protection Zone

Property Eligible for Sound Attenuation 1993 Program data verified as of: July 17, 2005
Proposed Sound Insulation Eligibility Boundary

NORTH

0.5 0.25 0 0.5

Miles

MILWAUKEE COUNTY'S
GENERAL MITCHELL INTERNATIONAL AIRPORT

Land Use Alternative Two
Acquisition of Non-Compatible Land Uses or Undeveloped Land Zoned for Residential Use

Goal

The goal of Land Use Alternative Two is to reduce existing and potential future non-compatible land uses within the 65 DNL-and-greater noise contour.

Description

Land Use Alternative Two would allow the Airport to voluntarily purchase from landowners who are willing sellers any non-compatible land uses within the 65 DNL contour, that are not part of a contiguous neighborhood, or to purchase undeveloped properties that are zoned (either existing or rezoned in the future) for residential development within the 65 DNL contour. This would be a continuation of the 1993 program at the Airport, amended to include any additional areas within the new noise contours. There are several isolated residential structures that are not part of a neighborhood that would be eligible for voluntary acquisition. If the owner does not want to be acquired, the property would then be eligible for sound insulation.

Discussion

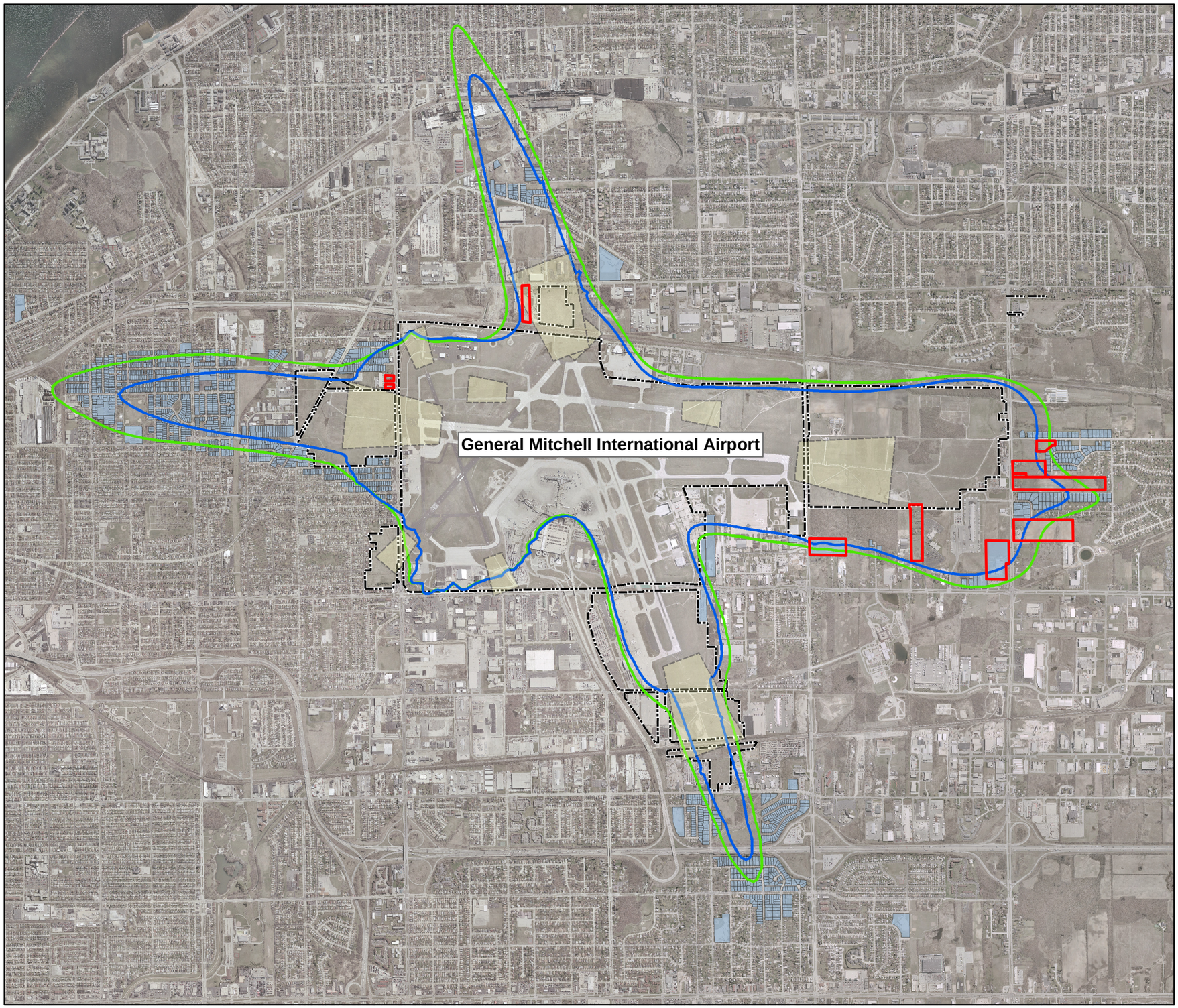
There are no known noise-sensitive land uses within the 70 DNL noise contour. All such properties have been purchased based on the recommendations and approvals of the previous FAR Part 150 Study. There are, however, vacant parcels that are within the 65 DNL noise contour that could be developed into non-compatible land uses and there are some isolated residences that would be eligible for voluntary acquisition.

Conclusions

There are no known non-compatible land uses within the 70 DNL noise contour. However, there are undeveloped properties zoned or platted for development for non-compatible land uses within the 65 DNL and isolated residences. Specific properties are shown in Figure H2, Voluntary Property Acquisition Areas. However, other properties

may be eligible that are not identified in the illustration. This alternative is recommended for continuation based on the revised eligibility boundary.

Figure H2 **Isolated Parcels Identified for Acquisition**



Parcels Identified for Voluntary Acquisition

2009 - 65 dnl Contour

2004 - 65 dnl Contour

Airport Property

Runway Protection Zone

Property Eligible for Sound Attenuation 1993 Program

NORTH

0.5 0.25 0 0.5

Miles

MILWAUKEE COUNTY'S GENERAL MITCHELL INTERNATIONAL AIRPORT

Land Use Alternative Three
Voluntary Acquisition of Avigation or Noise Easements over Non-Compatible Land Uses

Goal

The goal of Land Use Alternative Three is to reduce the number of non-compatible land uses for property owners wishing to remain on their property but not participate in a sound attenuation program.

Description

This alternative would allow the Airport to purchase from willing landowners an avigation easement (that is, the right to fly over a property and make noise). This would be offered to owners of noise-sensitive uses that do not desire to participate in the sound insulation process. This is a continuation of the 1993 program at the Airport, including measures LU-14 and LU-15, as described in the previous Part 150 Study.

Discussion

The avigation easement does not reduce or mitigate noise levels; it does, however, make it an official matter of record that the Airport has the right to have aircraft fly over a particular piece of property and create noise or vibration. The purchase of an easement could be one of the options offered to the owner of a noise-sensitive property in lieu of sound attenuation. The easement would be attached to the deed and would transfer with the property to any future owner. Some people do not feel comfortable with sound insulation, which places construction contractors inside their homes, replacing doors, replacing windows, and similar activities. Sometimes, these residents prefer selling an easement to the Airport. The cost of the easement is usually in the range of $2,500 to $4,000 and is determined based on fair market value as ascertained by standard rules of appraisal.

Conclusions

The value of the avigation easement is based on the fair market value of the easement, which has been in the range of $2,500 to $4,000 per structure at other Airports. The easement would be attached to the property title if the owner sells the property in the future. The previous program implemented at the Airport had approximately 10% or less of those eligible for sound attenuation who decided to accept the option of selling an avigation easement. As there are approximately 560 units within the proposed eligibility boundary, if 10% of the units accepted (as has been the case previously at the Airport), about 56 units may be expected to participate in an avigation easement acquisition program. Assuming an average cost of $4,000 per unit, with 10% participation, this program could cost approximately $224,000. This alternative is a continuation of an existing program, and all of the requirements of the 1993 program would apply to the continuation with one clarification: If a home owner sells an easement to the county and then sells the home, the new purchaser would have the option of buying back the easement at the current fair market value plus applicable administrative costs. The home would then be eligible to receive sound insulation provided that the airport still had an active sound insulation program that had not been closed out. This alternative is recommended for continuation based on the revised eligibility boundary.

Land Use Alternative Four
Voluntary Sales Assistance (Assurance Program)

Goal

The goal of Land Use Alternative Four is to provide a means for home owners to sell their homes for fair market value without the Airport taking ownership.

Description

This *voluntary* alternative would provide a Sales Assistance Program as an option for owners of residential uses if they are eligible for sound insulation. In some cases, home owners desire to sell their homes and feel that they cannot receive fair market value for a home due to its proximity to the Airport. This option helps alleviate that situation, but it does not require the Airport to actually purchase the home. As a result, if fair market could not be obtained, the Airport would compensate the current owner for a sale that is verified to be less than the current fair market or appraised value.

Discussion

Under the Sales Assistance Program, the home owner is guaranteed fair market value for the property. In this type of program, the Airport operator does not take title to the property, but rather compensates the property seller for the difference between fair market and the value offered by a purchaser. Should the property sell for less than the appraised value, the Airport operator would compensate the selling owner for the shortfall. Property is appraised at its current fair market value of the home owner's interest "as is," subject to Airport noise. The property is listed and sold subject to the Airport's easement that is conveyed to the Airport at the sale of the property.

Simply stated, the home is placed on the market for fair market value. If the home does not sell within the average time that it takes a home to sell in the area, then the price is reduced. This continues until the home sells. At the time of the sale, the Airport would pay the home owner the difference between the selling price and the appraised value, with an avigation (noise) easement granted to the Airport at the time of sale. This option is most successful with single-family, as opposed to multifamily, structures

because the sale prices of most owner-occupied multifamily structures are not sensitive to aircraft noise levels.

Conclusions

Participation in a Sales Assistance Program is usually accepted by a relatively small percentage of eligible home owners, usually in the range of 3%. This alternative is recommended for continuation based on the revised eligibility boundary.

Administrative Alternatives

Administrative alternatives and measures are options that the Airport can implement, with or without FAA funding, based solely on the Airport's discretion. These measures would not result in noise reduction, but they would enable the Airport to monitor the success of the program and to provide enhanced community response to issues of concern. These options are not dependent upon other measures being implemented prior to their execution. They are intended to assist in monitoring the success of the noise abatement recommendations, improve citizen liaison activities, and promote citizen awareness.

Each of these alternatives is described in more detail on the following pages. As with the land use alternatives, administrative measures recommended and approved in the previous FAR Part 150 Study remain as recommendations, unless specifically amended.

The general administrative alternatives that are evaluated include:

- Administrative Alternative One: Upgrade Noise Monitoring and Flight Track Monitoring System, including Web-Based Technology, and purchase of a Dedicated Noise Monitoring Vehicle.
- Administrative Alternative Two: Use of Remote Cameras to Monitor Engine Run-ups, APU use, and electrification of some ramps.
- Administrative Alternative Three: Review and Update Part 150 Study.

Administrative Alternative One
Upgrade Noise Monitoring and Flight Track Monitoring System

Goal

The goal of Administrative Alternative One is to assist in monitoring the success of the noise abatement recommendations, improve citizen liaison, and promote citizen awareness. It will provide more accurate, reliable aircraft noise and flight track information. More-modern systems also allow for automatic tracking of the noise abatement procedures and provide web-based noise information to the community.

Description

This alternative proposes to upgrade (improve) the existing noise-monitoring system to provide new features in the measurement and analysis of aircraft noise levels and real-time flight track information. This is a continuation, update, and improvement of approved measure CP-5 contained in the previous Part 150 Study.

Discussion

The Airport purchased and installed its current noise management system in 1997 from Tracor, Inc., now ERA Corporation. A Total Airport Monitoring and Information System (TAMIS) system, the software incorporates flight, noise, complaint, and weather data in a stored database. The current TAMIS database includes data collected since the original installation. The data provided by the system can be used to evaluate changes over time, to identify specific problem operations, to respond to citizen inquiries, and to keep a long-term record of overall noise levels in neighborhoods surrounding the Airport.

Flight data are captured via a STARS (Standard Terminal Automation Replacement System) direct connection from the FAA radar located at the Airport. Prior to the implementation of STARS, in 2003/2004, radar data were gathered via direct connection to the FAA ARTS-IIIA radar system. While the source of the data, the ASR-9 radar, has remained the same over this period, the STARS data processing provided to the Airport Noise Office is of a lower precision compared to the previous ARTS-IIIA system. The

STARS data processing will occasionally generate radar tracks that are shifted from their correct positions. This limits the usefulness of the system during those time periods. Noise data are captured through the use of seven permanent noise-monitoring stations located around the Airport and one portable monitor. The units collect data throughout each day with a nightly download to the main server. Data captured include noise events, hourly averages, and one-half-second dBA samples for the duration of each noise event. The noise data files are processed each day into the TAMIS database for reporting the next morning.

Weather data are also collected. These data provide hourly surface observations of temperature, humidity, barometric pressure, wind speed, and wind direction. These items are processed into the TAMIS database on a daily basis for reporting and data filtering.

The existing TAMIS also includes a Community Complaint System interface allowing the noise staff to enter information either in real time or from phone recordings. Each complaint includes the individual complainant's information, the complaint's location, geo-coding, the start and end times of the disturbance, the nature of the disturbance, and general comments. Complaints concerning specific events can be correlated to flight events manually.

The current noise management system does not possess modern features that would be of use to the Airport Noise Office. Features currently unavailable in the existing system include the ability for the Airport to accurately track long-term compliance with noise abatement procedures, including runway use and refined flight corridors. The noise monitors deployed around the Airport do not have the ability to precisely separate aircraft noise from other noise sources in a high-background-noise environment. Additionally, the existing monitors cannot specifically measure ground noise emanating from aircraft on the airfield. Another useful feature of modern systems is to make the noise and flight track data more readily available through the Airport's Web site.

This alternative proposes to upgrade the noise management system with new hardware and software features. The primary features of the upgrade would be (1) to improve the measurement and analysis of aircraft noise, (2) to improve the analysis of short- and long-term trends in the data and flight track information for use by the Airport and (3) to provide noise and flight track information on the Airport Web site.

Conclusions

The Airport's existing noise management system lacks key modern functionality. There are many new options available that can be incorporated into an aircraft noise- and flight track–monitoring system. The Airport may desire to hire a consultant to help formulate the needs of the Airport and to assist in writing the specifications. The estimated cost to implement this alternative is approximately $1.4 million.

Administrative Alternative Two
Use of Remote Cameras to Monitor Engine Run-ups and use of APUs

Goal

The goal of Administrative Alternative Two is to monitor compliance with run-up restrictions and recommendations and APU use in remote apron locations.

Description

This alternative proposes to provide cameras with sound capability and motion detection software to monitor specific run-up and parking requirements, as well as the use of APUs in locations not easily observed by Airport personnel. The apron locations and run-up/parking plans presented in Operational Alternatives 9, 13, 14, and 15 all occur at locations remote from Airport personnel offices, and there is no other method available to monitor compliance and success of the recommendations. The cameras would be placed in locations that are capable of observing the entire area and could correlate noise events with run-ups to determine if the run-ups were conducted consistently, as required. Sophisticated vision systems can be programmed to detect certain types of activity that are of interest. In addition, heat-sensitive cameras can be used to identify when APUs are in use. This is a new measure to be implemented as a result of the Part 150 Study.

Discussion

Operational Alternatives 9, 13, 14, and 15 make recommendations for placement of different aircraft types at specific apron locations. The only way to monitor the compliance and success of these recommendations is through the use of cameras/vision software due to the remote locations of the aprons and the sporadic nature of the run-ups. Citizen complaints can be correlated with actual activity to determine the success of the recommended placement of specific aircraft, with adjustments made accordingly. The cost to implement this alternative is estimated to be approximately $30,000 per camera, depending upon optics, analog versus digital, wireless versus wired, distance from the terminal, software, and other factors. Assuming the placement of six cameras, the cost could be $180,000 to $200,000, depending upon cost variables.

Conclusions

In order to reduce employee costs and interruptions, correlate run-up noise events with activity, and monitor success of the noise abatement recommendations, this alternative is recommended for implementation in this Part 150 Study.

Administrative Alternative Three
Review and Update of the Part 150 Study

Goal

The goal of Administrative Alternative Three is to maintain an active, current noise abatement program responsive to changes in aircraft operations and fleet mix and to update aircraft noise contours and recommendations as conditions change.

Description

This Part 150 Study should be reviewed and updated as appropriate. The general guideline is that whenever the actual operations are approximately 15% different from the forecast operations, or when there is an increase of 1.5 DNL over a noise-sensitive use, the Noise Exposure Maps should be reviewed. This is a continuation of an existing program at the Airport: CP-6, contained in the Record of Approval for the previous Part 150 Study.

Discussion

A FAR Part 150 Study is intended to be a "living document," to be used as a tool to monitor and guide program development and to evaluate aircraft types and operations. Anytime there are significant new non-compatible land uses within the 65 DNL contour or if there are Airport facility changes that may affect the contours, consideration should be given to reviewing the maps. At the end of the five-year study period (after the date of the Noise Compatibility Program approval), the operations and mix should be reevaluated to determine the extent to which they have changed and should be updated as appropriate. The cost to implement this alternative (update of the Noise Exposure Maps) could range from $30,000 to $100,000 for consultant time. In addition, the Noise Compatibility Program should be updated when the contours it is based on are approximately ten years old or if there are significant facility changes on the Airport (new runway, major extension, etc.). The cost to update the entire Part 150 Study is estimated to range from $800,000 to over $1 million.

Conclusions

Airport management should undertake a yearly review of aircraft types and numbers, along with the actual number of operations occurring at the Airport, and determine if they are consistent with the projections contained in the Part 150 Study. At the end of the five-year period, all of the forecasts and aircraft mix should be reevaluated to

determine the extent to which they have changed from those projected in this study. If necessary, new mitigation measures should be evaluated. This alternative is recommended for continuation.

Summary of Recommended Land Use and Administrative Alternatives

The Land Use and Administrative Alternatives recommended for inclusion in the Noise Compatibility Program are summarized below:

- Land Use Alternative One: Sound Insulation (Within New Eligibility Boundaries)
- Land Use Alternative Two: Land Acquisition (Fee Simple Acquisition)
- Land Use Alternative Three: Easement Acquisition
- Land Use Alternative Four: Sales Assistance
- Administrative Alternative One: Upgrade Noise-Monitoring and Flight Track– Monitoring System, with a Dedicated Noise-Monitoring Vehicle and Web-Based Technology
- Administrative Alternative Two: Use of Remote Cameras to Monitor Engine Run-ups, APU use and Electrification of some ramps
- Administrative Alternative Three: Review and Update Part 150 Study

In addition to the Land Use and Administrative Alternatives, there are additional recommendations concerning personnel additions and staff training:

- Provide another technical staff person to the Noise Office, along with a vehicle that allows Noise Office staff easier access to the community and to observe activities on the Airport.
- Provide yearly or recurrent training for Noise Office staff on new technology, advances in the industry, and changes in FAA policy
- Provide staff attendance at noise conferences, environmental conferences, and sound mitigation conferences to enhance professional education and understanding of industry trends and government policy.