AICUZ HANDBOOK

A Guidance Document for Air Installation Compatible Use Zone (AICUZ) Program

VOLUME III
Appendices

WORKING DRAFT

HQ U.S. Air Force
Pentagon
Washington, D.C. 20330-5130

January 1992

DISTRIBUTION STATEMENT A
Approved for public release
Distribution Unlimited

19970228 099

DTIC QUALITY INSPECTED 3

PLEASE CHECK THE APPROPRIATE BLOCK BELOW:

-AQ #497-03-1902 V III

☒ ONE copies are being forwarded. Indicate whether Statement A, B, C, D, E, F, or X applies.

☒ DISTRIBUTION STATEMENT A:
APPROVED FOR PUBLIC RELEASE: DISTRIBUTION IS UNLIMITED

☐ DISTRIBUTION STATEMENT B:
DISTRIBUTION AUTHORIZED TO U.S. GOVERNMENT AGENCIES ONLY; (Indicate Reason and Date). OTHER REQUESTS FOR THIS DOCUMENT SHALL BE REFERRED TO (Indicate Controlling DoD Office).

☐ DISTRIBUTION STATEMENT C:
DISTRIBUTION AUTHORIZED TO U.S. GOVERNMENT AGENCIES AND THEIR CONTRACTORS; (Indicate Reason and Date). OTHER REQUESTS FOR THIS DOCUMENT SHALL BE REFERRED TO (Indicate Controlling DoD Office).

☐ DISTRIBUTION STATEMENT D:
DISTRIBUTION AUTHORIZED TO DoD AND U.S. DoD CONTRACTORS ONLY; (Indicate Reason and Date). OTHER REQUESTS SHALL BE REFERRED TO (Indicate Controlling DoD Office).

☐ DISTRIBUTION STATEMENT E:
DISTRIBUTION AUTHORIZED TO DoD COMPONENTS ONLY; (Indicate Reason and Date). OTHER REQUESTS SHALL BE REFERRED TO (Indicate Controlling DoD Office).

☐ DISTRIBUTION STATEMENT F:
FURTHER DISSEMINATION ONLY AS DIRECTED BY (Indicate Controlling DoD Office and Date) or HIGHER DoD AUTHORITY.

☐ DISTRIBUTION STATEMENT X:
DISTRIBUTION AUTHORIZED TO U.S. GOVERNMENT AGENCIES AND PRIVATE INDIVIDUALS OR ENTERPRISES ELIGIBLE TO OBTAIN EXPORT-CONTROLLED TECHNICAL DATA IN ACCORDANCE WITH DoD DIRECTIVE 5230.25, WITHHOLDING OF UNCLASSIFIED TECHNICAL DATA FROM PUBLIC DISCLOSURE, 6 Nov 1984 (Indicate date of determination). CONTROLLING DoD OFFICE IS (Indicate Controlling DoD Office).

☐ This document was previously forwarded to DTIC on _____ (date) and the AD number is _____.

☐ In accordance with provisions of DoD instructions, the document requested is not supplied because:

☐ It will be published at a later date. (Enter approximate date, if known).

☐ Other. (Give Reason)

DoD Directive 5230.24, "Distribution Statements on Technical Documents," 18 Mar 87, contains seven distribution statements, as described briefly above. Technical Documents must be assigned distribution statements.

Burton R. Lester 2/24/97
Authorized Signature/Date

Burton R. Lester Jr.
Print or Type Name
AICUZ Program Manager
(210) 536-3564
Telephone Number

INTRODUCTION TO VOLUME III

This volume is divided into two sections. Section 1 provides a generic AICUZ study which a Planner can use as a skeleton from which to build his own site-specific AICUZ. Included in the section are the Volumes I and II of the AICUZ study along with the generic Implementation/ Maintenance Plan and a sample citizens brochure, as well as a generic AICUZ amendment.

Section 2 provides an example zoning ordinance and a sample avigation easement. The sample zoning ordinance may be used as a basis for discussion with the local community planners. That sample zoning ordinance came from Midwest City, a local community in the vicinity of Tinker Air Force Base in Oklahoma. The sample avigation easement is from Midwest City as well. Sample AICUZ maps are located at the end of Section 2.

VOLUME III

TABLE OF CONTENTS

	Page
SECTION 1	III-5
GENERIC AICUZ STUDY, VOLUME I	III-5
GENERIC AICUZ STUDY (APPENDICES), VOLUME II	III-29
GENERIC IMPLEMENTATION AND MAINTENANCE PLAN	III-57
GENERIC CITIZENS BROCHURE	III-67
GENERIC AICUZ AMENDMENT	III-75
SECTION 2	III-95
SAMPLE ZONING ORDINANCE/AVIGATION EASEMENT	III-95
SAMPLE AICUZ MAPS	III-107

Section 1

GENERIC AICUZ STUDY

VOLUME I

To: Area Governments:

Subject: Air Installation Compatible Use Zone (AICUZ) Study

1. This Air Installation Compatible Use Zone (AICUZ) Study for _____ Air Force Base is an update of the original AICUZ study dated _____ ___. The update was initiated because of _____ (at this point specify reasons: mission change, assignment of additional aircraft, flight track changes, etc.). It is a reevaluation of aircraft noise and accident potential related to Air Force flying operations. It is designed to aid in the development of land use planning controls which will protect the public safety and health as well as preserve the operational capabilities of _____ Air Force Base. (If applicable: The enclosed pamphlet contains a summary description of the impacted area around the base.) The report outlines the location of runway clear zones, aircraft accident potential zones and noise contours, and recommends compatible land uses for areas in the vicinity of the base. It is our hope that this information will be incorporated into your community plans, zoning ordinances, subdivision regulations, building codes, and other related documents.

2. The basic objective of the AICUZ program is to achieve compatible uses of public and private lands in the vicinity of military airfields by controlling incompatible development through local actions. This update provides noise contours based upon (both) the day-night average noise level (DNL) methodology (used by the Air Force, and the community noise equivalent level (CNEL) methodology used by the state of California for Airport Land Use Commission planning activities.). This report provides the information necessary to maximize beneficial use of the land surrounding _____ Air Force Base while minimizing the potential for degradation of the health and safety of the affected public.

3. We greatly value the positive relationship _____ AFB has experienced with its neighbors over the years. As a partner in the process, we have attempted to minimize noise disturbances through such actions as _____ (at this point specify actions already taken: minimizing night flying, avoiding flights over heavily populated areas, installing a jet engine hush house for aircraft maintenance activities, etc.). We solicit your cooperation in implementing the recommendations and guidelines presented in this AICUZ report.

Commander

AIR INSTALLATION COMPATIBLE USE ZONE STUDY
_____ AIR FORCE BASE
(STATE)
19__
VOLUME I

COVER LETTER

TABLE OF CONTENTS

	Page
1.1 Introduction	III-11
1.1.1 Purpose and Need	III-11
1.1.2 Process and Procedure	III-12
1.2 Installation Description	III-12
1.2.1 Mission	III-12
1.2.2 Economic Impact	III-12
1.2.3 Flying Activity	III-13
1.3 Land Use Compatability Guidelines	III-13
1.3.1 Introduction	III-13
1.3.2 Land Use Compatibility	III-16
1.3.3 Participation in the Planning Process	III-16
1.4 Land Use Analysis	III-19
1.5 Implementation	III-19
1.5.1 Air Force Responsibilities	III-19
1.5.2 Local Community Responsibilities	III-28

LIST OF FIGURES

	Page
Figure 1. Vicinity Map	III-14
Figure 2. Flight Tracks	III-15
Figure 3. Noise Zones/Accident Potential Zones (DNL)	III-17
Figure 4. Noise Zones/Accident Potential Zones (CNEL)	III-18
Figure 5. Existing Land Use	III-20
Figure 6. Zoning	III-21
Figure 7. Future Land Use	III-22
Figure 8. Land Use Compatibility Guidelines	III-23
Notes for Figure 8	III-26

1. Air Installation Compatible Use Zone Study

1.1 Introduction

This study is an amendment to the _____ AFB Air Installation Compatible Use Zone (AICUZ) Study. The amendment presents and documents the changes to the AICUZ for the period of 19__ to 19__. It reaffirms Air Force policy of promoting public health, safety and general welfare in areas surrounding _____ AFB. The report presents changes in flight operations since the last study and provides current noise contours and compatible use guidelines for land areas surrounding the base. It is hoped this information will assist the local communities and serve as a tool for future planning and zoning activities. The changes in the AICUZ are attributed to:

a. Addition, elimination or alteration of flight tracks for mission purposes or to avoid overflying populated areas (describe).

b. Reassignment of _____ aircraft from/to _____.

c. More aircraft simulator training (reduced flying training).

d. Technical improvements to the NOISEMAP program.

e. Addition/removal of the _____ mission.

f. Etc.

1.1.1 Purpose and Need

As stated in the previous _____ AFB AICUZ study, the purpose of the AICUZ program is to promote compatible land development in areas subject to aircraft noise and accident potential. Community cooperation regarding recommendations made in the earlier AICUZ Study have been outstanding. The cities of _____ and _____ are preparing land use development plans as is _____ County. (In California) The newly formed Airport Land Use Commission is in the process of documenting an airport/land use compatibility plan for the area surrounding the base. Accident potential and aircraft noise are major considerations in their planning processes. Air Force AICUZ Land Use Guidelines reflect land use recommendations for clear zones, accident potential zones I and II as well as applicable noise zones. These guidelines have been established on the basis of studies prepared and sponsored by several federal agencies, including the Department of Housing and Urban Development, Environmental Protection Agency, Federal Aviation Administration, Air Force, and state and local agencies. The guidelines recommend land uses which are compatible with airfield operations while allowing maximum beneficial use of adjacent properties. The Air Force has no desire to recommend land use regulations which render property economically useless. It does, however, have an obligation to the inhabitants in the _____ AFB environs and the citizens of the United States to point out ways to protect the people in adjacent areas as well as the public investment in the installation itself.

The AICUZ program uses the latest technology to define noise levels in areas near Air Force installations. An analysis of _____ AFB's flying operations was performed, including types of aircraft, flight patterns utilized, variations in altitude, power settings, number of operations, and hours of operation. This information was used to develop the noise zones contained in this study. (Both) the Day-night average sound level (DNL) (and the Community Noise Equivalent Level (CNEL) for California only) methodology(ies) was(were) used to define the noise zones for _____ AFB.

1.1.2 Process and Procedure

Preparation and presentation of this amendment to _____ AFB's AICUZ report is part of the continuing Air Force participation in the local planning process. It is recognized that, as local communities prepare land use plans and zoning ordinances, the Air Force has the responsibility to provide inputs on their activities relating to the community. This study is presented in the spirit of mutual cooperation and assistance by _____ AFB to aid in the local land use planning process. This study updates information on base flying activities since 19__. Noise contours and AICUZ maps in this study are based on current (and (if applicable) future) mission plans. Data collection was conducted during _____ and _____ 19__. Aircraft operational and maintenance data was obtained to derive average daily operations, by runway and type of aircraft. Data is supplemented by flight track information (where they fly), flight profile information (how they fly), and ground runup information. After verification for accuracy, data was input into the NOISEMAP software program and converted into average day-night (DNL) (and Community Noise Equivalent Level (CNEL) if in California) noise contours. Contours were plotted and overlayed on an area map with clear zones and accident potential zone areas. Appendix A of Volume II contains detailed information on the development of the AICUZ program.

1.2 Installation Description

1.2.1 Mission

Add a description of Air Force mission for this base.

The following is an example:

Pope AFB is home to the 317 Tactical Airlift Wing and 15 tenant organizations. The wing belongs to the Military Airlift Command, the executive agent for all Department of Defense airlift and part of the US Transportation Command. There are three squadrons of C-130E Hercules aircraft assigned to the base. The mission of the wing is to command tactical airlift squadrons and assigned support units engaged in providing airlift support for airborne forces and other personnel, equipment, supplies, and aeromedical evacuation of patients within the theater of operations.

The XVIII Airborne Corps and the 82nd Airborne Division, both located at Fort Bragg, are charged with maintaining a quick reaction force for contingency purposes. Pope AFB supports their outloadings for actual contingencies as well as numerous training maneuvers and exercises.

Pope AFB is the busiest base in the Military Airlift Command and together with Fort Bragg contributes significantly to the economic and social welfare of the community.

1.2.2 Economic Impact

Describe the economic impact of the base on the community.

The following is an example:

McConnell AFB plays a substantial role in the economic picture of south central Kansas. The total economic impact on this region totals approximately $275 million, with an estimated 5,700 military and civilian jobs created by McConnell activities. The following table shows a breakdown of the economic impact:

Active Military Pay	$ 96,832,503
Active Civilian Pay	$ 27,551,362
Other (Services, construction, retiree, etc)	$ 150,631,704
Total	$ 275,015,569

These dollar figures represent the total economic impact within a fifty mile radius on McConnell AFB for the 1990 fiscal year. All of the civilian employees and over half of the military personnel live off base, and thereby contribute greatly to the local area economy.

1.2.3 Flying Activity

Explain the types of aircraft that are used and their flying frequency.

The following is an example:

Langley AFB accounts for over 20% of all traffic handled by Norfolk Approach Control. The majority of this flying activity takes place northeast of the base. Although numerous types of aircraft use Langley's runway, the principal operations affecting the noise contours are from the 90 F-15, 4 EC-135, and 6 C-21 aircraft assigned to the base. Also, flight manual procedures allow for reduced power takeoffs for the F-15 aircraft unless safety considerations from gross weight and weather dictates otherwise. As a result, approximately 95% of the F-15 takeoffs are performed without afterburner.

Average daily operations are summarized below:

Total Daily Operations

	Day 0700-2200	Night 2200-0700
F-15	207	3
EC-135	11	1
C-21	4	0

As shown above, less than 2% of the operations are at night in an effort to minimize noise levels and to reduce community disturbances. Flight corridors have been developed to avoid all known areas of concern to the greatest extent possible.

Operations are coordinated with FAA and flight paths are integrated to minimize conflict with civilian aircraft operations at Patrick Henry Municipal Airport and other private, commercial, and government flying activities. Efforts are continually expended to control and schedule flying to keep noise levels to an absolute minimum, especially at night. Flight corridors have been selected with community disturbances and public reactions taken as primary considerations. Flight patterns are illustrated in Figure 2.

1.3 Land Use Compatibility Guidelines

1.3.1 Introduction

The Department of Defense (DOD) developed the Air Installation Compatible Use Zone (AICUZ) program for military airfields. Using this program, DOD works to protect aircraft

(See sample map at the end of this volume.)

Figure 1. Vicinity Map

(See sample map at the end of this volume.)

Figure 2. Flight Tracks

operational capabilities at its installations and to assist local government officials in protecting and promoting the public health, safety, and quality of life. The goal is to promote compatible land use development around military airfields by providing information on aircraft noise exposure and accident potential. AICUZ reports describe three basic types of constraints that affect, or result, from flight operations.

The first constraint involves areas which the Federal Aviation Administration (FAA) and DOD have identified for height limitations (see Height and Obstruction Criteria in Appendix D of Volume II). Air Force obstruction criteria are based upon those contained in Federal Aviation Regulation (FAR) Part 77 under Subpart C.

The second constraint involves noise zones replicated by the computerized Day-Night Average Sound Level (DNL) (or Community Noise Equivalent Level (CNEL) (in California only)) methodology called NOISEMAP. Using the NOISEMAP computer program which is similar to FAA's Integrated Noise Model, DOD produces noise contours showing the noise exposure of current aircraft operations. The AICUZ report contains noise contours plotted at increments of 5 dB, ranging from DNL 65 to DNL 80 (and CNEL 60 To CNEL 80). Figure(s) 3 (and 4) shows DNL (and CNEL) noise contours. Additional information on noise methodology is contained in Appendix C of Volume II of this report.

The third constraint involves accident potential zones based on statistical analysis of past DOD aircraft accidents. DOD analysis has determined that the areas immediately beyond the ends of runways and along the approach and departure flight paths have significant potential for aircraft accidents. Based on this analysis, DOD developed three zones which have high relative potential for accidents. The Clear Zone, the area closest to the runway end, is the most hazardous. The overall risk is so high that DOD generally acquires the land through purchase or easement to prevent development. Accident Potential Zone I (APZ I) is an area beyond the Clear Zone which possesses a significant potential for accidents. APZ II is an area beyond APZ I having measurable potential for accidents. While aircraft accident potential in APZs I and II does not warrant acquisition by the Air Force, land use planning and controls are strongly encouraged in these areas for the protection of the public. A sample population density standard for use in APZs is provided in Volume III, Appendix F. _____ AFB Clear Zones encompass areas 3,000 feet wide by 3,000 feet. APZ I is 3,000 feet wide by 5,000 feet long and APZ II is 3,000 feet wide by 7,000 feet long. Additional information on accident potential is contained in Appendix B of Volume II of this report.

1.3.2 Land Use Compatibility

Each AICUZ report contains land use guidelines. Figure 8 lists land uses versus all possible combinations of noise exposure and accident potential at _____ AFB, showing land uses that are compatible or incompatible. Noise guidelines are essentially the same as those published by the Federal Interagency Committee on Urban Noise in the June 1980 publication, "Guidelines for Considering Noise in Land Use Planning and Control". The U.S. Department of Transportation, Federal Highway Administration publication, "Standard Land Use Coding Manual" (SLUCM) has been used for identifying and coding land use activities.

1.3.3 Participation In the Planning Process

As local communities prepare their land use plans, the Air Force must be ready to provide additional inputs. The Base Civil Engineer has been designated as the official liaison with the local community on all planning matters. This office is prepared to participate in the continuing discussion of zoning and other land use matters as they may affect, or may be affected by, _____ AFB.

(See sample map at the end of this volume.)

Figure 3. Noise Zones/Accident Potential Zones - DNL

(See sample map at the end of this volume.)

Figure 4. Noise Zones/Accident Potential Zones - CNEL

1.4 Land Use Analysis

Land use planning and control is a dynamic, rather than a "static" process. The specific characteristics of land use determinants will always reflect, to some degree, the changing conditions of the economic, social, and physical environment of a community, as well as changing public concern. The planning process accommodates this fluidity in that decisions are normally not based on boundary lines but rather on more generalized area designations.

_____ AFB, though originally built in an outlying, largely underdeveloped area, is now being encroached upon by suburban, commercial and industrial development approaching from the ___, ____ and ____. It is physically located within the (jurisdiction); however, its sphere or region of influence extends beyond the (jurisdiction) to the (other jurisdictions). Computer technology has enabled _____ AFB to more precisely display its flight tracks and noise contours for land use planning purposes. This same technology has revealed the extent of _____ AFB's region of influence which extends from (describe geographic area or jurisdiction) to (describe geographic area or jurisdiction). Incompatible development currently exists at (geographic areas or jurisdictions - provide description(See Figure 5)).(If applicable) Current zoning regulations (see Figure 6) are consistent (or inconsistent) with the AICUZ land use compatability guidelines (provide description). The potential for future incompatible development is greatest within (geographic areas and/or political jurisdictions - provide description (See Figure 7)). Areas immediately around the base are (still being farmed/grazed or are under development pressures - provide description). The (jurisdiction) has recently -or- will soon complete its land use plan including _____ AFB environs (describe plan aspects helpful, etc to the base). The (jurisdiction) has recently or will soon implement land use controls around _____ AFB (describe helpful, etc aspects). (If applicable) The (jurisdiction) has recently or will soon apply for participation in the Office of the Secretary of Defense/Office of Economic Adjustment's Joint Land Use Study (JLUS) program. This program provides matching funds and assistance to local jurisdictions for developing plans for more effectively implementing the AICUZ program. _____ AFB fully supports these activities and is prepared to participate in the these land use planning and control processes. AICUZ boundaries and noise contours describe the impact of a specific operational environment, and as such, will change if a significant functional change is made. If the local communities that make up the _____ AFB environs attempt to use AICUZ boundaries as boundary lines for zoning districts, it is conceivable that problems will result. Should a new mission be established at _____ AFB adding a larger number of airplanes, or additional model types, the AICUZ could be amended. Additionally, the Air Force is recommending that AICUZ data be utilized with all other planning data. Therefore, specific land use control decisions should not be based solely on AICUZ boundaries. With these thoughts in mind, _____ AFB has revised the -(date)- Study and provides flight track and noise contour maps in this report that reflect the most current and accurate picture of aircraft activities.

1.5 Implementation

The implementation of the AICUZ study must be a joint effort between the Air Force and the adjacent communities. The Air Force role is to minimize the impact on the local communities by _____ AFB operations. The role of the communities is to ensure that development in the environs is compatible with accepted planning and development principles and practices.

1.5.1 Air Force Responsibilities

In general, the Air Force perceives its AICUZ responsibilities as encompassing the areas of flying safety, noise abatement, and participation in the land use planning process.

(See sample map at the end of this volume.)

Figure 5. Existing Land Use

(See sample map at the end of this volume.)

Figure 6. Zoning

(See sample map at the end of this volume.)

Figure 7. Future Land Use

Figure 8. Air Force AICUZ Land Use Compatibility
with respect to Noise and Accident Potential

LAND USE		ACCIDENT POTENTIAL ZONES			NOISE ZONES			
SLUCM NO.	NAME	CLEAR ZONE	APZ I	APZ II	65-70	70-75	75-80	80+
10	Residential							
11	Household units							
11.11	Single units; detached	N	N	Y^{1}	A^{11}	B^{11}	N	N
11.12	Single units; semidetached	N	N	N	A^{11}	B^{11}	N	N
11.13	Single units; attached row	N	N	N	A^{11}	B^{11}	N	N
11.21	Two units; side—by-side	N	N	N	A^{11}	B^{11}	N	N
11.22	Two units; one above the other	N	N	N	A^{11}	B^{11}	N	N
11.31	Apartments; walk up	N	N	N	A^{11}	B^{11}	N	N
11.32	Apartments; elevator	N	N	N	A^{11}	B^{11}	N	N
12	Group quarters	N	N	N	A^{11}	B^{11}	N	N
13	Residential hotels	N	N	N	A^{11}	B^{11}	N	N
14	Mobile home parks or courts	N	N	N	N	N	N	N
15	Transient lodgings	N	N	N	A^{11}	B^{11}	C^{11}	N
16	Other residential	N	N	N^{1}	A^{11}	B^{11}	N	N
20	Manufacturing							
21	Food & kindred products; manufacturing	N	N^{2}	Y	Y	Y^{12}	Y^{13}	Y^{14}
22	Textile mill products; manufacturing	N	N^{2}	Y	Y	Y^{12}	Y^{13}	Y^{14}
23	Apparel and other finished products made from fabrics, leather, and similar materials; manufacturing	N	N	N^{2}	Y	Y^{12}	Y^{13}	Y^{14}
24	Lumber and wood products (except furniture); manufacturing	N	Y^{2}	Y	Y	Y^{12}	Y^{13}	Y^{14}
A	Furniture and fixtures; manufacturing	N	Y^{2}	Y	Y	Y^{12}	Y^{13}	Y^{14}
26	Paper & allied products; manufacturing	N	Y^{2}	Y	Y	Y^{12}	Y^{13}	Y^{14}

LEGEND

SLUCM -Standard Land Use Coding Manual
Y(Yes) - Land use and related structures compatible without restriction
N(No) - Land use and related structures are not compatible and should be prohibited
NLR (Noise Level Reduction) - Noise level reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure (see Appendix E in Volume III for additional NLR information)
Y^{X} (Yes with Restrictions) - Land use and related structures generally compatible; see notes 1 through 21
Nx (No with exceptions) - See notes 1 through 21
A, B, or C - Land use and related structures generally compatible; measures to achieve NLR for 66-70, 71-75, or 76-80 DNL/CNEL must be incorporated into design and construction of structure.
A*, B*, or C* - Land use generally compatible with NLR: However, measures to achieve an overall noise level reduction do not necessarily solve noise difficulties and additional evaluation is warranted
Ax, Bx - NLR: See footnotes

Figure 8 (continued)

LAND USE		ACCIDENT POTENTIAL ZONES			NOISE ZONES			
SLUCM NO	NAME	CLEAR ZONE	APZ I	APZ II	65-70	70-75	75-80	80+
27	Printing, publishing, and allied industries	N	Y[2]	Y	Y	Y[12]	Y[13]	Y[14]
28	Chemicals and allied products manufacturing.	N	N	N[2]	Y	Y[12]	Y[13]	Y[14]
29	Petroleum refining and related industries	N	N	Y	Y	Y[12]	Y[13]	Y[14]
B	Manufacturing							
31	Rubber and misc. plastic products, manufacturing	N	N[2]	N[2]	Y	Y[12]	Y[13]	Y[14]
32	Stone, clay and glass products manufacturing	N	N[2]	Y	Y	Y[12]	Y[13]	Y[14]
33	Primary metal industries				Y	Y[12]	Y[13]	Y[14]
34	Fabricated metal products; manufacturing	N	N[2]	Y	Y	Y[12]	Y[13]	Y[14]
C	Professional, scientific, and controlling instruments; photographic and optical goods; watches and clocks manufacturing .	N	N	N[2]	Y	A	B	N
39	Miscellaneous manufacturing	N	Y[2]	Y[2]	Y	Y[12]	Y[13]	Y[14]
40	Transportation, communications and utilities							
41	Railroad, rapid rail transit and street railroad transportation	N[3]	Y[4]	Y	Y	Y[12]	Y[13]	Y[14]
42	Motor vehicle transportation	N[3]	Y	Y	Y	Y[12]	Y[13]	Y[14]
43	Aircraft transportation	N[3]	Y[4]	Y	Y	Y[12]	Y[13]	Y[14]
44	Marine craft transportation	N[3]	Y[4]	Y	Y	Y[12]	Y[13]	Y[14]
45	Highway & street right-of-way	N[3]	Y	Y	Y	Y[12]	Y[13]	Y[14]
46	Automobile parking	N[3]	Y[4]	Y	Y	Y[12]	Y[13]	Y[14]
47	Communication	N[3]	Y[4]	Y	Y	A[15]	B[15]	N
48	Utilities	N[3]	Y[4]	Y	Y	Y	Y[12]	Y[13]
49	Other transportation communication and utilities	N[3]	Y[4]	Y	Y	A[15]	B[15]	N
50	Trade							
51	Wholesale trade	N	Y[2]	Y	Y	Y[12]	Y[13]	Y[14]
52	Retail trade—building materials, hardware and farm equipment	N	Y[2]	Y	Y	Y[12]	Y[13]	Y[14]
53	Retail trade—general merchandise	N	N[2]	Y[2]	Y	A	B	N
54	Retail trade—food	N	N[2]	Y[2]	Y	A	B	N

Figure 8 (continued)

LAND USE		ACCIDENT POTENTIAL ZONES			NOISE ZONES			
SLUCM NO.	NAME	CLEAR ZONE	APZ I	APZ II	65-70	70-75	75-80	80+
55	Retail trade—automotive, marine craft, aircraft and accessories	N	Y[2]	Y[2]	Y	A	B	N
56	Retails trade—apparel and accessories	N	N[2]	Y[2]	Y	A	B	N
57	Retail trade—furniture, home furnishings and equipment	N	N[2]	Y[2]	Y	A	B	N
58	Retail trade-eating and drinking establishments	N	N	N[2]	Y	A	B	N
59	Other retail trade	N	N[2]	Y[2]	Y	A	B	N
60	Services							
61	Finance, insurance and real estate services	N	N	Y[6]	Y	A	B	N
62	Personal services	N	N	Y[6]	Y	A	B	N
62.4	Cemeteries	N	Y[7]	Y[7]	Y	A	Y[13]	Y[14,21]
63	Business Services	N	Y[8]	Y[8]	Y	A	B	N
64	Repair Services	N	Y[2]	Y	Y	Y[12]	Y[13]	Y[14]
65	Professional services	N	N	Y[6]	Y	A	B	N
65.13	Hospitals, nursing homes	N	N	N	A*	B*	N	N
65.19	Other medical facilities	N	N	N	Y	A	B	N
66	Contract construction services	N	Y[6]	Y	Y	A	B	N
67	Governmental services	N	N	Y[6]	Y*	A*	B*	N
68	Educational services	N	N	N	A*	B*	N	N
69	Miscellaneous services	N	N[2]	Y[2]	Y	A	B	N
70	Cultural, entertainment and recreational							
71	Cultural activities (including churches)	N	N	N[2]	A*	B*	N	N
71.2	Nature exhibits	N	Y[2]	Y	Y*	N	N	N
72	Public assembly	N	N	N	Y	N	N	N
72.1	Auditoriums, concert halls	N	N	N	A	B	N	N
72.11	Outdoor music shells, amphitheaters	N	N	N	N	N	N	N
72.2	Outdoor sports arenas, spectator sports	N	N	N	Y[17]	Y[17]	N	N
73	Amusements	N	N	Y[8]	Y	Y	N	N
74	Recreational activities (including golf courses, riding stables, water recreation)	N	Y[8,9,10]	Y	Y*	A*	B*	N
75	Resorts and group camps	N	N	N	Y*	Y*	N	N
76	Parks	N	Y[8]	Y[8]	Y*	Y*	N	N

Figure 8 (continued)

LAND USE		ACCIDENT POTENTIAL ZONES			NOISE ZONES			
SLUCM NO.	NAME	CLEAR ZONE	APZ I	APZ II	65-70	70-75	75-80	80+
79	Other cultural, entertainment and recreation	N	Y[9]	Y[9]	Y*	Y*	N	N
80	Resource production and extraction							
81	Agriculture (except livestock)	Y	Y	Y	Y[18]	Y[19]	Y[20]	Y[20,21]
81.5	Livestock farming and animal							
81.7	Breeding	N	Y	Y	Y[18]	Y[19]	Y[20]	Y[20,21]
82	Agricultural related activities	N	Y[5]	Y	Y[18]	Y[19]	N	N
83	Forestry activities and related services	N[5]	Y	Y	Y[18]	Y[19]	Y[20]	Y[20,21]
84	Fishing activities and related services	N[5]	Y[5]	Y	Y	Y	Y	Y
85	Mining activities and related services	N	Y[5]	Y	Y	Y	Y	Y
89	Other resource production and extraction	N	Y[5]	Y	Y	Y	Y	Y

*The designation of these uses as "compatible" in this zone reflects individual Federal agencies, and program consideration of general cost and feasibility factors as well as past community experiences and program objectives. Localities, when evaluating the application of these guidelines to specific situations, may have different concerns or goals to consider.

Figure 8 (Notes)

1. Suggested maximum density 1-2 dwelling units per acre, possibly increased under a Planned Unit Development (PUD) where maximum lot coverage is less than 20 percent.

2. Within each land use category, uses exist where further definition may be needed due to the variation of densities in people and structures.

3. The placing of structures, buildings, or above-ground utility lines in the clear zone is subject to severe restrictions. In a majority of the clear zones, these items are prohibited. See AFR 19-9 for specific guidance.

4. No passenger terminals and no major above-ground transmission lines in APZ I.

5. Factors to be considered: labor intensity, structural coverage, explosive characteristics, air pollution.

6. Low-intensity office uses only. Meeting places, auditoriums, etc., not recommended.

7. Excludes chapels.

Figure 8 (notes continued)

8. Facilities must be low intensity.

9. Clubhouse not recommended.

10. Small areas for people gathering places are not recommended.

11.

a. Although local conditions may require residential use, it is discouraged in DNL/CNEL 65-70 and strongly discouraged in DNL/CNEL 70-75. The absence of viable alternative development options should be determined and an evaluation indicating that a demonstrated community need for residential use would not be met if development were prohibited in these zones should be conducted prior to approvals.

b. Where the community determines that residential uses must be allowed, measures to achieve outdoor to indoor Noise Level Reduction (NLR) for DNL/CNEL 66-70 and DNL/CNEL 71-75 should be incorporated into building codes and be considered in individual approvals. See Appendix E of Volume III for a reference to updated NLR procedures.

c. NLR criteria will not eliminate outdoor noise problems. However, building location and site planning, design and use of berms and barriers can help mitigate outdoor exposure particularly from level sources. Measures that reduce noise at a site should be used whenever practical in preference to measures which only protect interior spaces.

12. Measures to achieve the NLR for 66-70 DNL/CNEL must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.

13. Measures to achieve the NLR for 71-75 DNL/CNEL must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.

14. Measures to achieve the NLR for 76-80 DNL/CNEL must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.

15. If noise sensitive use indicated NLR; if not, use is compatible

16. No buildings.

17. Land use compatible provided special sound reinforcement systems are installed.

18. Residential buildings require the NLR for 66-70 DNL/CNEL.

19. Residential buildings require the NLR for 71-75 DNL/CNEL.

20. Residential buildings not permitted.

21. Land use not recommended; built if community decides use is necessary; hearing protection devices should be worn by personnel.

Well maintained aircraft and well trained aircrews do much to assure that aircraft accidents are avoided. However, despite the best training of aircrews and maintenance of aircraft, history makes it clear that accidents do occur. It is imperative that flights be routed over sparsely populated areas as much as possible to reduce the exposure of lives and property to a potential accident. Noise is generated from aircraft both in the air and on the ground.

By Air Force regulation, commanders are required to periodically "review existing traffic patterns, instrument approaches, weather minima, and operating practices and evaluate these factors in relationship to populated areas and other local situations." This requirement is a direct result and expression of the Air Force policy that all AICUZ plans must include an analysis of flying and flying related activities designed to reduce and control the effects of such operations on surrounding land areas. --- (Add discussion here on what operating practices have been changed at _____ AFB to mitigate noise, etc. (track changes, restricted overflights, quiet hours, hush houses, etc.))--- The preparation and presentation of this _____ AFB AICUZ amendment is one phase of the continuing Air Force participation in the local planning process. It is recognized that as the local community updates its land use plans, the Air Force must be ready to provide additional inputs.

It is also recognized that the AICUZ program will be an ongoing activity even after compatible development plans are adopted and implemented. Base personnel are prepared to participate in the continuing discussion of zoning and other land use matters as they may affect, or may be affected by _____ AFB and will be available to provide information, criteria and guidelines to state, regional and local planning bodies, civic associations and similar groups. (If applicable: The existing Memoranda of Understanding (MOU) between the Base, the Cities of _____, _____, _____, and _____, and _____ County, provides the Air Force an input on off-base project and zoning proposals that might conflict with these AICUZ recommendations.

1.5.2 Local Community Responsibilities

The residents of the cities of _____, _____, _____, _____, and _____ County and _____ AFB have a long history of working together for our mutual benefit. We feel that adoption of the following recommendations will strengthen this relationship, increase the health and safety of the public, and help protect the integrity of the base's flying mission:

a. Incorporate AICUZ policies and guidelines into the comprehensive plans of the cities of _____, _____, _____, and _____ and _____ County. Use overlay maps of the AICUZ noise contours and Air Force Land Use Compatibility Guidelines to evaluate existing and future land use proposals.

b. Modify existing zoning ordinances to support the compatible land uses outlined in this study.

c. Ensure height and obstruction ordinances reflect current Air Force and Federal Aviation Administration (FAA) Part 77 requirements.

d. Modify building codes to ensure that new construction within the AICUZ area has the recommended noise level reductions incorporated into the design and construction of these facilities.

e. Continue to inform _____ AFB of planning and zoning actions that have the potential of affecting base operations. Develop a working group representing city planners, county planners and base planners to meet at least quarterly to discuss AICUZ concerns and major development proposals that could affect airfield operations.

f. Etc.

GENERIC AICUZ STUDY

VOLUME II

_____ AFB AICUZ
VOLUME II

This is the companion document to Volume I of the following on Air Installation Compatible Use Zone (AICUZ) study prepared for _____ AFB, _____, in _____ 199_. It contains the following supplemental AICUZ information:

		Page
APPENDIX A	THE AICUZ CONCEPT, PROGRAM METHOD AND POLICIES	III-33
APPENDIX B	ACCIDENT POTENTIAL ZONES	III-39
APPENDIX C	DESCRIPTION OF THE NOISE ENVIRONMENT	III-45
APPENDIX D	HEIGHT AND OBSTRUCTION CRITERIA	III-49
APPENDIX E	NOISE LEVEL REDUCTION GUIDELINES	III-53
APPENDIX F	SAMPLE POPULATION DENSITY GUIDELINES	III-55

Appendix A

The AICUZ Concept, Program, Methodology, and Policies

A.1 Concept

Federal legislation, national sentiment and other external forces which directly affect the United States Air Force mission have served to greatly increase the Air Force's role in environmental and planning issues. Problems of airfield encroachment from incompatible land uses surrounding installations, as well as air and water pollution, and socio-economic impact require continued and intensified USAF involvement. The nature of these problems dictates direct USAF participation in comprehensive community and land-use planning. Effective, coordinated planning, which bridges the gap between the federal government and the community, requires the establishment of good working relationships with local citizens, local planning officials, and state and federal officials. This all depends upon creating an atmosphere of mutual trust and helpfulness. The Air Installation Compatible Use Zone (AICUZ) concept has been developed in an effort to:

1. protect local citizens from the noise exposure and accident potentials associated with flying activities; and

2. to prevent degradation of the Air Force's capability to achieve its mission by promoting compatible land use planning. The land use guidelines developed herein are a composite of a number of other land use compatibility studies which have been refined to fit the _____ AFB aviation environment.

A.2 Program

Base Commanders establish and maintain active programs to achieve the maximum feasible land-use compatibility between air installations and neighboring communities. The program requires that all appropriate governmental bodies and citizens are fully informed whenever AICUZ or other planning matters affecting the installation are under consideration. This includes positive and continuous programs designed to:

1. Provide information, criteria, and guidelines to Federal, State, regional, and local planning bodies, civic associations, and similar groups.

2. Inform such groups of the requirements of the flying activity, noise exposure, aircraft accident potential, and AICUZ plans.

3. Describe the noise reduction measures which are being used.

4. Insure that all reasonable, economical, and practical measures are taken to reduce or control the impact of noise-producing activities. These measures include such considerations as proper location of engine test facilities, provision of sound suppressors where necessary, and adjustment of flight patterns and/or techniques to minimize the noise impact on populated areas. This must be done without jeopardizing safety or operational effectiveness.

A.3 Methodology

The AICUZ consists of land areas upon which certain land uses may obstruct the airspace or otherwise be hazardous to aircraft operations, and land areas which are exposed to the health, safety, or welfare hazards of aircraft operations. In other words the AICUZ includes:

1. Accident Potential Zones (APZ) based on past Air Force aircraft accidents and installation operational data (Appendix B).

2. Noise Zones (NZ) produced by the computerized Day-Night Average Sound Level (DNL) (and, in California, Community Noise Equivalent Level (CNEL)) methodology(ies) (Appendix C).

3. The area designated by the Federal Aviation Administration and the Air Force for purposes of height limitations in the approach and departure zones of the base (Appendix D).

The APZ and NZ are the basic building blocks for land use planning with AICUZ data. Compatible land uses are specified for these zones and recommendations on building materials and standards to reduce interior noise levels inside structures are provided in Appendix E. As part of the Air Installation Compatible Use Zone program, the only real property acquisition for which _____ AFB has requested and received Congressional authorization and appropriation are the areas designated as the Clear Zone (CZ). Real Property interests are acquired by fee or easement giving _____ AFB control over the use of the property. Fee land so acquired may be made available for outleasing for agricultural or grazing purposes. Compatible land-use controls for the remaining airfield environs should be accomplished through the community land-use planning processes.

A.4 AICUZ Land-use Development Policies

The basis for any effective land-use control system is the development of, and subsequent adherence to policies which serve as the standard by which all land-use planning and control actions are evaluated. _____ AFB recommends the following policies be considered for incorporation into the comprehensive plans of agencies in the vicinity of the base environs:

Policy #1: In order to promote the public health, safety, peace, comfort, convenience, and general welfare of the inhabitants of airfield environs, it is necessary to:

1. Guide, control, and regulate future growth and development.
2. Promote orderly and appropriate use of land.
3. Protect the character and stability of existing land uses.
4. Prevent the destruction or impairment of the airfield and the public investment therein.
5. Enhance the quality of living in the areas affected.
6. Protect the general economic welfare by restricting incompatible land use.

Policy #2: In furtherance of policy #1, it is appropriate to:

1. Establish guidelines of land-use compatibility.
2. Restrict or prohibit incompatible land use.
3. Prevent establishment of any land use which would unreasonably endanger aircraft operations and the continued use of the airfield.

4. Incorporate the Air Installation Compatible Use Zone concept into community land-use plans, modifying them when necessary.

5. Adopt appropriate ordinances to implement airfield environs land-use plans.

Policy #3 : Within the boundaries of the AICUZ, certain land uses are inherently incompatible. The following land uses are not in the public interest and must be restricted or prohibited:

1. Uses that release into the air any substance such as steam, dust, and smoke, which would impair visibility or otherwise interfere with the operation of aircraft.

2. Uses that produce light emissions, either direct or indirect (reflective), which would interfere with pilot vision.

3. Uses that produce electrical emissions which would interfere with aircraft communication systems or navigation equipment.

4. Uses that attract birds or waterfowl, such as operation of sanitary landfills, maintenance or feeding stations, or growth of certain vegetation.

5. Uses that provide for structures within ten feet of aircraft approach-departure and/or transitional surfaces.

Policy #4: Certain noise levels of varying duration and frequency create hazards to both physical and mental health. A limited though definite danger to life exists in certain areas adjacent to airfields. Where these conditions are sufficiently severe, it is not consistent with the public health, safety, and welfare to allow the following land uses:

1. Residential.
2. Retail business.
3. Office buildings.
4. Public buildings (schools, churches, etc.).
5. Recreation buildings and structures.

Policy #5: Land areas below take-off and final approach flight paths are exposed to significant danger of aircraft accidents. The density of development and intensity of use must be limited in such areas.

Policy #6: Different land uses have different sensitivities to noise. Standards of land-use acceptability should be adopted, based on these noise sensitivities. In addition, a system of Noise Level Reduction guidelines (Appendix E) for new construction should be implemented to permit certain uses where they would otherwise be prohibited.

Policy #7: Land-use planning and zoning in the airfield environs cannot be based solely on aircraft-generated effects. Allocation of land used within the AICUZ should be further refined by consideration of:

1. Physiographic factors.
2. Climate and hydrology.
3. Vegetation.
4. Surface geology.
5. Soil characteristics.

6. Intrinsic land-use suitabilities and constraints.
7. Existing land use.
8. Land-ownership patterns and values.
9. Economic and social demands.
10. Cost and availability of public utilities, transportation, and community facilities.
11. Other noise sources.

Each runway end at _____ AFB has a 3000 ft x 3000 ft Clear Zone and two accident potential zones (Appendix B). Accident potential "on or adjacent to the runway" or within the clear zone is so high that the necessary land use restrictions would prohibit reasonable economic use of land. As stated previously, it is Air Force policy to request Congress to authorize and appropriate funds for the necessary real property interests in this area to prevent incompatible land uses. Clear zones/clear zone easements (have/have not) been acquired for _____ AFB. accident potential zone I is less critical than the clear zone, but still possesses a significant risk factor. This 3,000 ft by 5,000 ft area has land-use compatibility guidelines which are sufficiently flexible to allow reasonable economic use of the land, such as industrial/ manufacturing, transportation, communication/utilities, wholesale trade, open space, recreation, and agricultural. However, uses that concentrate people in small areas are not acceptable. Accident potential zone II is less critical than accident potential zone I, but still possesses potential for accidents. Accident potential zone II, also 3,000 feet wide, is 7,000 feet long extending to 15,000 feet from the runway threshold. Acceptable uses include those of accident potential zone I, as well as, low density single family residential, and those personal and business services and commercial/retail trade uses of low intensity or scale of operation. High density functions such as multi-story buildings, places of assembly (theaters, churches, schools, restaurants, etc.), and high density office uses are not considered appropriate. High people densities should be limited to the maximum extent possible. The optimum density recommended for residential usage (where it does not conflict with noise criteria) in APZ II is one dwelling per acre. For most non-residential usage, buildings should be limited to one story and the lot coverage should not exceed 20%.

A.5 Basic Land-use Compatibility

Research on aircraft accident potential, noise, and land-use compatibility is ongoing at a number of federal and other agencies. One such effort is the Concentrations of Persons per Acre Standard developed by the Sacramento Area Council of Governments for incorporation into the land-use planning process (Appendix F). These and all other compatibility guidelines must not be considered inflexible standards. They are the framework within which land use compatibility questions can be addressed and resolved. In each case, full consideration must be given to local conditions such as:

1. previous community experience with aircraft accidents and noise,
2. local building construction and development practices,
3. existing noise environment due to other urban or transportation noise sources,
4. time period of aircraft operations and land use activities,
5. specific site analysis, and
6. noise buffers, including topography.

These basic guidelines cannot resolve all land-use compatibility questions, but they do offer a reasonable framework within which to work.

A.6 Accident Potential

Land use guidelines for the two APZs are based on a hazard index system which compares the relationship of accident occurrence for five areas:

1. On or adjacent to the runway.
2. Within the Clear Zone.
3. In APZ I.
4. In APZ II.
5. In all other areas within a ten nautical mile radius of the runway.

Accident potential "on or adjacent to the runway" or within the Clear Zone is so high that few uses are acceptable. The risk outside APZ I and APZ II but within the ten-nautical-mile-radius area, is significant, but can be lived with, if sound engineering and planning are followed. Land-use guidelines for APZs I and II have been developed. The main objective has been to restrict all people-intensive uses because there is greater risk in these areas. The basic guidelines aim at prevention of uses which:

1. Have high residential density characteristics.
2. Have high labor intensity.
3. Involve above ground explosive, fire, toxic, corrosion, or other hazardous characteristics.
4. Promote population concentrations.
5. Involve utilities and services required for area-wide population, where disruption would have an adverse impact (telephone, gas, etc.).
6. Concentrate people who are unable to respond to emergency situations such as children, elderly, handicapped, etc.
7. Pose hazards to aircraft operations.

There is no question that these guidelines are relative. Ideally, there should be no people-intensive uses in either of these APZs. The free market and private property systems prevent this where there is land development demand. To go beyond these guidelines, however, increases risk substantially by placing more people in areas where there may ultimately be an aircraft accident.

A.7 Noise

Nearly all studies on residential aircraft noise compatibility recommend no residential uses in noise zones above either CNEL or DNL 75. Usually no restrictions are recommended below noise zone 65. However, the state of California does have land use recommendations for areas in CNEL 60 to 65. Between noise zones 65-75 there is currently no consensus. These areas may not qualify for Federal mortgage insurance in residential categories according to the Department of Housing and Urban Development (HUD) Regulation 24CFR 51B. In many cases, HUD approval requires noise attenuation measures, the Regional Administrator's concurrence, and an Environmental Impact Statement. The Department of Veterans Affairs also has airfield noise and accident restrictions which apply to their home loan guarantee program. Whenever possible, residential land use should be located below DNL 65 according to Air Force land use recommendations. Most industrial/manufacturing uses are compatible in the airfield environs. Exceptions are uses such as research or scientific activities which require lower noise levels.

Noise attenuation measures are recommended for portions of buildings devoted to office use, receiving the public, or where the normal background noise level is low. The transportation, communications and utilities categories have a high noise level compatibility because they generally are not people-intensive. When people use land for these purposes, the use is generally very short in duration. Where buildings are required for these uses, additional evaluation is warranted. The use of commercial/retail trade and personal and business services categories are compatible without restriction up to noise zone 70; however, they are generally incompatible above noise zone 80. Between noise zone 70-80, noise level reduction measures should be included in the design and construction of buildings.

The nature of most uses in the public and quasi-public services category requires a quieter environment, and attempts should be made to locate these uses below DNL 65 (Air Force land use recommendation), or else provide adequate noise level reduction. Although recreational use has often been recommended as compatible with high noise levels, recent research has resulted in a more conservative view. Above noise zone 75, noise becomes a factor which limits the ability to enjoy such uses. Where the requirement to hear is a function of the use (music shell, etc.), compatibility is limited. Buildings associated with golf courses and similar uses should be noise attenuated. With the exception of forestry activities and livestock farming, uses in the resources production, extraction, and open space category are compatible almost without restrictions.

Appendix B

Accident Potential Zones

B.1 Guidelines For Accident Potential

Urban areas around airports are exposed to the possibility of aircraft accidents even with well-maintained aircraft and highly trained aircraft crews. Despite stringent maintenance requirements and countless hours of training, past history makes it clear that accidents are going to occur.

When AICUZ first began, there were no current comprehensive studies on accident potential. In support of the program, the Air Force completed a study of Air Force accidents that occurred between 1968 and 1972 within 10 nautical miles of airfields. The study of 369 accidents revealed that 75 percent of aircraft accidents occurred on or adjacent to the runway (1000 feet to each side of the runway centerline) and in a corridor 3000 (1500' either side of runway centerline) feet wide, extending from the runway threshold along the extended runway centerline for a distance of 15,000 feet.

Three zones were established based on crash patterns: The clear zone, Accident Potential Zone I (APZ I) and Accident Potential Zone II (APZ II). The clear zone starts at the end of the runway and extends outward 3000 feet. It has the highest accident potential of the three zones. The Air Force has adopted a policy of acquiring property rights to areas designated as clear zones because of the high accident potential. APZ I extends from the clear zone an additional 5000 feet. It includes an area of reduced accident potential. APZ II extends from APZ I an additional 7000 feet in an area of further reduced accident potential.

The Air Force work in accident potential was the first significant effort in this subject area since 1952 when the President's Airport Commission published "The Airport and Its Neighbors", better known as the "Doolittle Report". The recommendations of this earlier report were influential in the formulation of the accident potential zone concept.

The risk of people on the ground being killed or injured by aircraft accidents is small. However, an aircraft accident is a high consequence event and when a crash does occur, the result is often catastrophic. Because of this, the Air Force does not attempt to base its safety standards on accident probabilities. Instead the Air Force approaches this safety issue from a land use planning perspective, given that aircraft accidents do occur.

B.2 Accident Potential Analyses

Military aircraft accidents differ from commercial air carrier and general aviation accidents because of the variety of aircraft used, the type of missions, and the number of training flights. In 1973, the U.S. Air Force (USAF) performed a service-wide aircraft accident hazard study in order to identify land near airfields with significant accident potential. Accidents studied occurred within ten nautical miles of airfields and were related airfield-associated in-flight mishaps.

The study reviewed 369 major USAF accidents during 1968-1972, and found that 61 percent of the accidents were related to landing operations and 30 percent were takeoff-related. It also found that 70 percent occurred in daylight and that fighter and training aircraft accounted for 80 percent of the accidents.

Because the purpose of the study was to identify accident hazards, the study plotted each of the 369 accidents in relation to the airfield. This plotting found that the accidents were clustered along the runway and its extended centerline. To further refine this clustering, a tabulation was prepared which described the cumulative frequency of accidents as a function of distance from the runway centerline along the extended centerline. This analysis was done for widths of 2,000, 3,000 and 4,000 total feet.

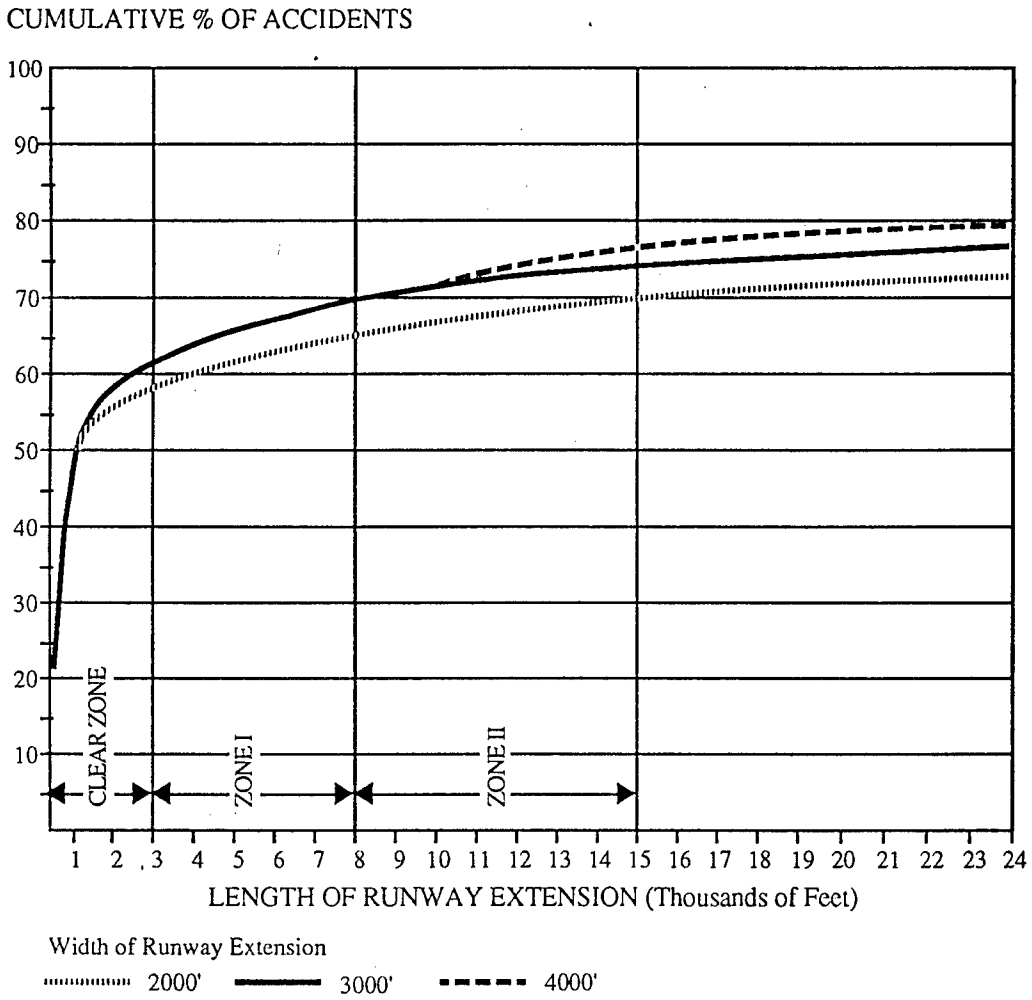
The location analysis found the following:

Length From Both Ends of Runway (Feet)	Width of Runway Extension (Feet)		
	2,000*	3,000**	4,000***
Percent of Accidents			
On or adjacent to runway (1000 feet to each side of runway centerline)	23	23	23
0 to 3,000	35	39	39
3,000 to 8,000	8	8	8
8,000 to 15,000	5	5	7
Cumulative Percent of Accidents			
On or adjacent to runway (1000 feet to each side of runway centerline)	23	23	23
0 to 3,000	58	62	62
3,000 to 8,000	66	70	70
8,000 to 15,000	71	75	77

* 1000' to each side of runway centerline
** 1500' to each side of runway centerline
*** 2000' to each side of runway centerline

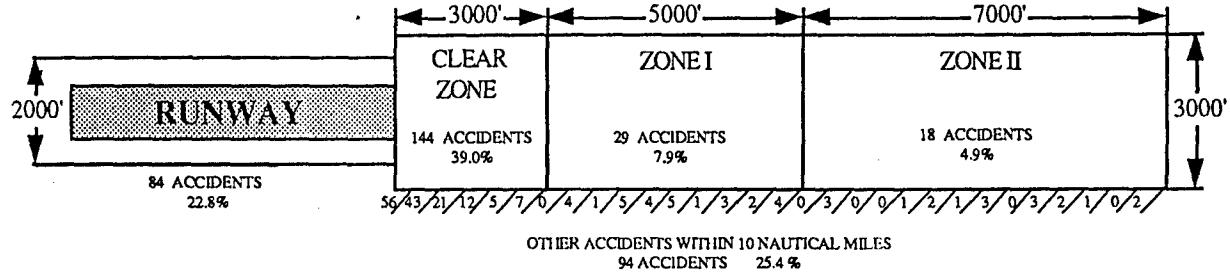
Figure B-1, Distribution of Air Force Aircraft Accidents (1968-72), indicates that the cumulative number of accidents rises rapidly from the end of the runway to 3,000 feet, rises more gradually to 8,000 feet, then continues at about the same increase to 15,000 feet, where it levels off rapidly. The location analysis also indicates that the optimum width of the runway extension, which would include the maximum percentage of accidents in the smallest area, is 3,000 feet.

Figure B-1
Distribution of Air Force Aircraft Accidents



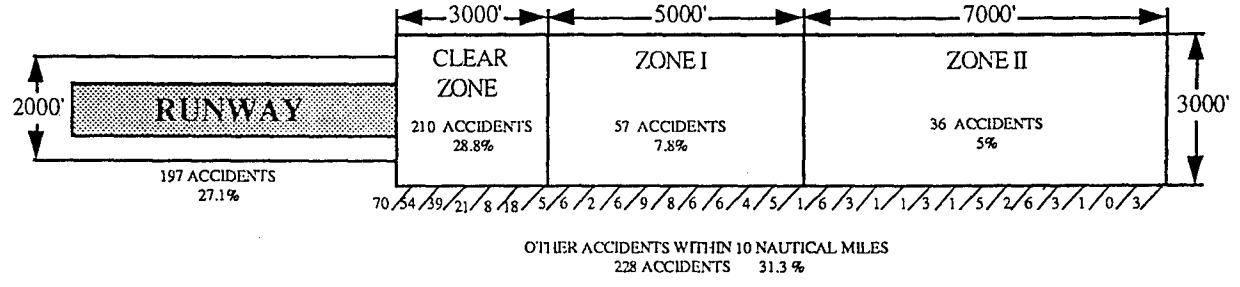
Using the optimum runway extension width, 3,000 feet, and the cumulative distribution of accidents from the end of the runway, zones were established which minimized the land area included and maximized the percentage of accidents included. The zone dimensions and accident statistics for the 1968-1972 study are shown in Figure B-2.

Figure B-2
Air Force Accident Data
(369 Accidents - 1968-1972)



The original study was updated to include accidents through 1985. The updated study now includes 728 accidents during the 1968-1985 period. Using the optimum runway extension width, 3,000 feet, the accident statistics of the updated study are shown below.

Figure B-3
Air Force Accident Data
(728 Accidents - 1968-1985)



Using the designated zones and the accident data, it is possible to calculate a ratio of percentage of accidents to percentage of area size. The ratios on the following page indicate that the clear zone, with the smallest area size and the highest number of accidents, has the highest ratio, followed by the runway and adjacent area, Zone I and then Zone II.

Ratio of Percentage of Accidents to Percentage of Area
(Air Force Accident Data 1968 - 1985)

	Area[1] (Acres)	Number of[2] Accidents	Accidents Per Acre	Percent of Total Area	Percent of Total Accidents	Ratio:[3] % Accidents to % Area
Runway and Adjacent	487	197	1 per 2.5 acres	0.165	27.1	164
Clear Zone	413	210	1 per 1.9 acres	0.140	28.8	206
Zone I	689	57	1 per 12.1 acres	0.233	7.8	33
Zone II	964	36	1 per 26.7 acres	0.327	5.0	15
Other Area	292,483	228	1 per 1282.8 acres	99.135	31.3	0.3

1. Area includes land within ten nautical miles of runway.
2. Total number of accidents is 728.
3. Percent total accidents divided by percent total area.

Additional accident data for 1986 through July 1990 has been analyzed. Specific locational data for some of the 1986 - 1990 accidents was not available; so these were not included in the analysis. The following is a comparison of data through 1985 and data through July 1990:

ZONE	1968-1985 *	1968-1990 *
On Runway	197 - 27.1%	199 - 24.7%
Clear Zone	210 - 28.8%	226 - 28.1%
APZ I	57 - 7.8%	84 - 10.4%
APZ II	36 - 5.0%	45 - 5.6%
Other (within 10nm)	228 - 31.3%	251 - 31.2%

Analysis has shown that the cumulative changes evident in accident location through July 1990, reconfirm the dimensions of the clear zone and accident zones.

B.3 Definable Debris Impact Areas

The Air Force also determined which accidents had definable debris impact areas and in what phase of flight the accident occurred. Overall, 75 percent of the accidents had definable debris impact areas, although they vary in size by type of accident.

The Air Force used weighted averages of impact areas, for accidents occurring only in the approach and departure phase, to determine the following average impact areas:

Average impact areas for approach and departure accidents

Overall average impact area	5.06 acres
Trainer and misc aircraft	2.73 acres
Heavy bomber and tanker	8.73 acres

Findings

a. Designation of safety zones around the airfield and restriction of incompatible land uses can reduce the public's exposure to safety hazards.

b. Air Force accident studies have found that aircraft accidents near Air Force installations occurred in the following patterns:

(1) 61% were related to landing operations;

(2) 39% were related to takeoff operations;

(3) 70% occurred in daylight;

(4) 80% were related to fighter and training aircraft operations;

(5) 27% occurred on the runway or within an area extending 1,000 feet out from each side of the runway;

(6) 29% occurred in an area extending from the end of the runway to 3,000 feet along the extended centerline and 3,000 feet wide, centered on the extended centerline; and,

(7) 13% occurred in an area between 3,000 and 15,000 feet along the extended runway centerline and 3,000 feet wide, centered on the extended centerline.

c. U.S. Air Force aircraft accident statistics found that 75% of aircraft accidents resulted in definable impact areas. The size of the impact areas were:

(1) 5.1 acres overall average;

(2) 2.7 acres for fighters and trainers;

(3) 8.7 acres for heavy bombers and tankers.

Appendix C

Description of the Noise Environment

C.1 Noise Contours

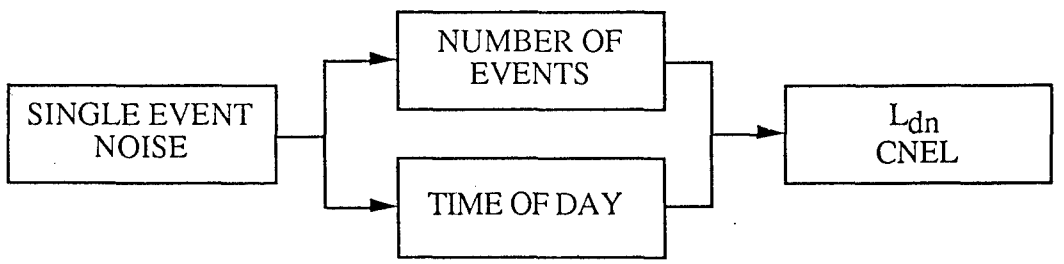
The following paragraphs describe the methodologies used to produce the noise contours contained in this AICUZ study.

C.2 Noise Environment Descriptor

The noise contour methodologies used herein are the Day-Night Average Sound Level (DNL) (and, for the state of California, the Community Noise Equivalent Level (CNEL)) system(s) of describing the noise environment. Efforts to provide a national uniform standard for noise assessment have resulted in adoption by the Environmental Protection Agency of DNL as the standard noise prediction model for this procedure. (The state of California uses the CNEL system for describing noise exposure.) The Air Force uses the DNL descriptor as the method of assessing the amount of exposure to aircraft noise and predicting the community response to the various levels of exposure. The DNL(/CNEL) values used for planning purposes are 65, 70, 75, and 80 (The state of California employs a 60 DNL value in addition to the others.). Land-use guidelines are based on the compatibility of various land uses with these noise exposure levels. CNEL was developed for the state of California and is almost identical to DNL, except that it introduces an intermediate weighting for the evening hours (7:00 to 10:00 pm). CNEL, like DNL, is a measurable quantity and can be measured directly. The DNL values are approximately equal to CNEL values in almost all situations.

It is generally recognized that a noise environment descriptor should consider, in addition to the annoyance of a single event, the effect of repetition of such events and the time of day in which these events occur. DNL (and CNEL) begins with a single event descriptor and adds corrections for the number of events and the time of day. Since the primary development concern is residential, night-time events are considered more annoying than daytime events and are weighted accordingly.

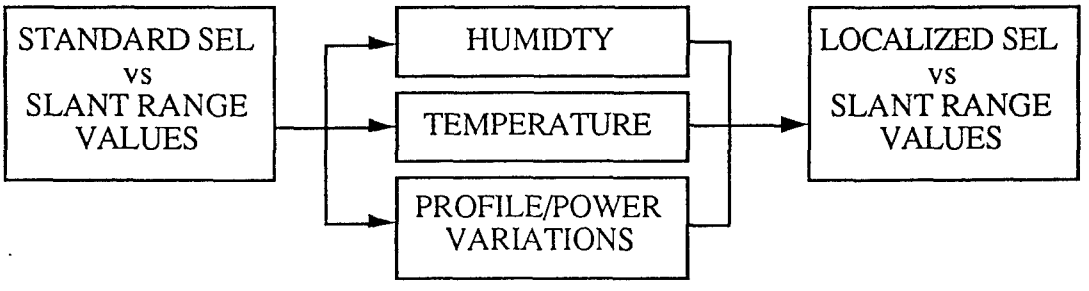
DNL values are computed from the single event noise descriptor, plus corrections for number of flights and time of day. As part of an extensive data collection process, detailed information is gathered on the type of aircraft, number and time of day of flying operations for each flight track during an average busy day. This information is used in conjunction with the single event noise descriptor to produce (both) DNL (and CNEL) values. These values are combined on an energy summation basis to provide single DNL (and CNEL) values for the mix of aircraft operations at the base. Equal value points are connected to form the contour lines.



C.3 Noise Event Descriptor

The single event noise descriptor used in (both) the DNL (and CNEL) system(s) is the Sound Exposure Level (SEL). The SEL measure is an integration of the "A" weighted noise level over the period of a single event such as an aircraft flyover, in dB. Frequency, magnitude, and duration vary according to aircraft type, engine type, and power setting. Therefore, individual aircraft noise data are collected for various types of aircraft/engines at different power settings and phases of flight. The following diagram shows the relationship of the single event noise descriptor (SEL) to the source sound energy.

SEL vs. slant range values are derived from noise measurements made according to a source noise data acquisition plan developed by Bolt, Beranek, and Newman, Inc. in conjunction with the Air Force's Armstrong Aerospace Medical Research Laboratory (AAMRL) and carried out by AAMRL. These standard day, sea level values form the basis for the individual event noise descriptors at any location and are adjusted to the location by applying appropriate corrections for temperature, humidity, and variations from standard profiles and power settings.



Ground-to-ground sound propagation characteristics are used for altitudes up to 500 feet absolute with a linear transition between 500 and 700 feet and air-to-ground propagation characteristics above 700 feet.

In addition to the assessment of aircraft flight operations, the DNL (and CNEL) system(s) also incorporates noise resulting from engine/aircraft maintenance checks on the ground. Data concerning the orientation of the noise source, type of aircraft or engine, number of test runs on a "typical" day, the power settings used and their duration, and use of suppression devices are collected for each ground run up or test position. This information is processed and the noise contribution added (on an energy summation basis) to the noise generated by flying operations to produce noise contours reflecting the overall noise environment with respect to aircraft air and ground operations.

C.4 Noise Contour Production

Data describing flight track distances and turns, altitudes, airspeeds, power settings, flight track operational utilization, maintenance locations, ground maintenance runup engine power settings, number and duration of runs by type of aircraft/engine is assembled by each individual AFB. The data is screened by the MAJCOM and AFCESA/DMPO. Trained personnel process the data for input into a central computer. Flight track maps are generated for verification and approval by the base/MAJCOM. After any required changes have been incorporated, DNL (and CNEL) contours are generated by the computer using the supplied data and standard source noise data corrected to local weather conditions. These contours are plotted and prepared for photographic reproduction. A set of these contours are provided in the body of the report.

Additional technical information on the DNL (and CNEL) procedures are available in the following publications:

1. Community Noise Exposure Resulting from Aircraft Operations: Applications Guide for Predictive Procedure, AMRL-TR-73-105, November 1974 from National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22151.

2. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with Adequate Margin of Safety, EPA Report 550/9-74-004, March 1974, from Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

3. Adopted Noise Regulations for California Airports, Title 4, Register 70, No. 48-11-28-70, Subchapter 6, Noise Standards.

Appendix D

Height and Obstructions Criteria

D.1 Height and Obstruction Criteria

a. General. This appendix section establishes criteria for determining whether an object or structure is an obstruction to air navigation. Obstructions to air navigation are consideration to be:

(1) Natural objects or man-made structures that protrude above the planes or surfaces as defined in the following paragraphs, and/or

(2) Man-made objects that extend more than 500 feet above the ground at the site of the structure.

b. Explanation of Terms. The following will apply (See Figure D-1).

(1) Controlling Elevation. Whenever surfaces or planes within the obstructions criteria overlap, the controlling (or governing) elevation becomes that of the lowest surface or plane.

(2) Runway Length. _____ AFB has _____ runways, ___ feet of pavement designed and built for sustained aircraft landings and takeoffs.

(3) Established Airfield Elevation. The elevation, in feet above mean sea level for _____ AFB is ___ feet.

(4) Dimensions. All dimensions are measured horizontally unless otherwise noted.

c. Planes and Surfaces. Definitions are as follows:

(1) Primary Surface. This surface defines the limits of the obstruction clearance requirements in the immediate vicinity of the landing area. The Primary surface comprises surfaces of the runways, runway shoulders, and lateral safety zones. The length of the primary surface is the same as the runway lengths __,___ feet and __,___ feet respectively. The width of the primary surface for a single runway is 2,000 feet or 1,000 feet on each side of the runway centerline.

(2) Clear Zone Surface. This surface defines the limits of the obstruction clearance requirements in the vicinity contiguous to the end of the primary surface. The length and width (for a single runway) of the clear zone surface is 3,000 and 3,000 feet.

(3) Approach-Departure Clearance Surface. This surface is symmetrical about the runway centerline extended, begins as an inclined plane (glide angle) 200 feet beyond each end of the primary surface of the centerline elevation of the runway end, and extends for 50,000 feet. The slope of the approach-departure clearance surface is 50:1 along the extended runway (glide angle) centerline until it reaches an elevation of 500 feet above the established airfield elevation. It then continues horizontally at this elevation to a point 50,000 feet from the start of the glide angle. The width of this surface at the runway end is 2,000 feet; it flares uniformly, and the width at 50,000 is 16,000 feet.

(4) Inner Horizontal Surface. This surface is a plane, oval in shape at a height of 150 feet above the established airfield elevation. It is constructed by scribing an arc with a radius of 7,500 feet above the centerline at the end of the runway and interconnecting these arcs with tangents.

(5) Conical Surface. This is an inclined surface extending outward and upward from the outer periphery of the inner horizontal surface for a horizontal distance of 7,000 feet to height of 500 feet above the established airfield elevation. The slope of the conical surface is 20:1.

(6) Outer Horizontal Surface. This surface is a plane located 500 feet above the established airfield elevation. It extends for a horizontal distance of 30,000 feet from the outer periphery of the conical surface.

(7) Transitional Surfaces. These surfaces connect the primary surfaces, clear zone surfaces, and approach-departure clearance surfaces to the outer horizontal surface, conical surface, other horizontal surface, or other transitional surfaces. The slope of the transitional surface is 7:1 outward and upward at right angles to the runway centerline. To determine the elevation for the beginning of the transitional surface slope at any point along the lateral boundary of the primary surface, including the clear zone, draw a line from this point to the runway centerline. This line will be at right angles to the runway axis. The elevation at the runway centerline is the elevation for the beginning of the 7 to 1 slope.

The land areas outlined by this criteria should be regulated to prevent uses which might otherwise be hazardous to aircraft operations. The following uses should be restricted and/or prohibited.

1. Uses which release into the air any substance which would impair visibility or otherwise interfere with the operation of aircraft (i.e. steam dust, and smoke).

2. Uses which produce light emissions, either direct or indirect (reflective), which would interfere with pilot vision.

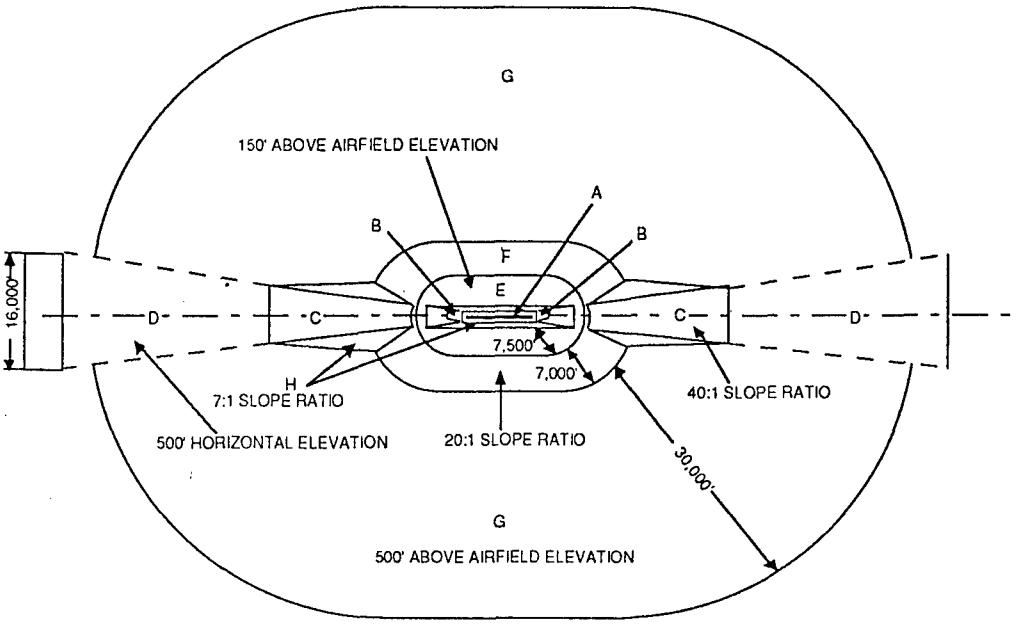
3. Uses which produce emissions which would interfere with aircraft communications systems or navigational equipment.

4. Uses which would attract birds or waterfowl, such as but not limited to, operation of sanitary landfills, maintenance of feeding stations, or the growing of certain vegetation.

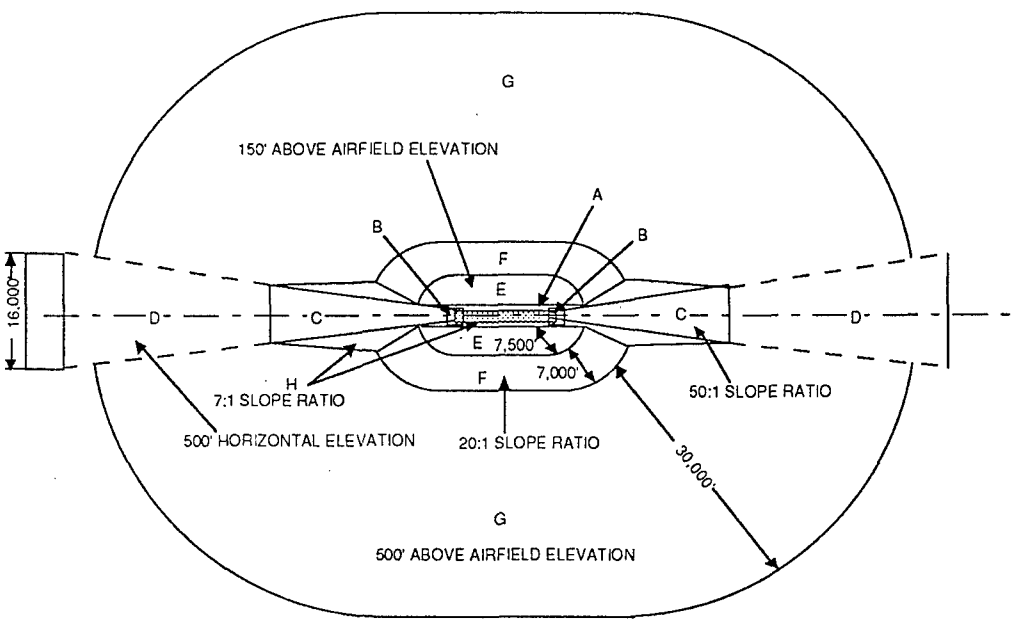
D.2 Height Restrictions

City/County agencies involved with approvals of permits for construction should require developers to submit calculations which show that projects meet the height restriction criteria of FAA Part 77 as described, in part, by the information contained in this Appendix.

Figure D-1 Air Space Control Surface Plan



CLASS A IFR RUNWAY



CLASS B IFR RUNWAY

LEGEND

A Primary Surface
B Clear Zone Surface
C Approach/Departure Clearance Surface (Glide Angle)
D Approach/Departure Clearance Surface (Horizontal)
E Inner Horizontal Surface
F Conical Surface
G Outer Horizontal Surface
H Transitional Surface

Figure D-1 (continued)

NOTES

1. Datum elevation for:
   a. surface D, E, F and G is the established airfield elevation.
   b. surface C is the runway centerline elevation at the threshold.
   c. surface H varies at each point along the runway centerline.
2. The intersections shown on the plan are for the case of a level runway.

_____ AFB, __

COORDINATES AND ELEVATIONS

Average Field Elevation - ___' MSL

Coordinates __L - Lat __o __' __.__" N

- Long ___o __' __.___" W

__R - Lat __o __' __.__" N

- Long ___o __' __" W

Coordinates __R - Lat __o __' __" N

- Long ___o __' __" W

__L - Lat __o __' __" N

- Long ___o __' __" W

Appendix E

Noise Level Reduction Guidelines

A study which provides in-depth, state-of-the-art noise level reduction guidelines was completed for the Naval Facilities Engineering Command and the Federal Aviation Administration, by Wyle Laboratories in November 1989. The study title is "Guidelines for the Sound Insulation of Residences Exposed to Aircraft Operations" (Wyle Research Report WR 89-7). Copies of this study are available, upon request, from HQ USAF/CEVP, Pentagon, Washington, DC, 20330-5130.

Appendix F

Sample Population Density Guidelines

Uses are compatible if they do not result in a gathering of individuals in an area that would result in an average density of greater than 25 persons per acre per hour during a 24 hour period, not to exceed 50 persons per acre at any time.

1. Average densities of persons per hour during a 24-hour period are determined by calculating the number of persons per acre expected on a site, multiplying by the number of hours they will be on the site, and dividing the total by 24.

Example #1: One 8 hour shift of 30 workers on a one acre site

30 persons expected x 8 hours on site = 240

$\frac{240}{24 \text{ hours}}$ = average density of 10 persons per acre per hour a 24 hour period

Example #2: Two 8 hour shifts of 30 workers on a one acre site

30 persons expected x 16 hours on site = 480

$\frac{480}{24 \text{ hours}}$ = average density of 20 persons per acre per hour a 24 hour period

2. The maximum number of persons allowed per acre per hour is calculated by dividing the number of hours persons will be on the site by 24 hours, and then dividing 25 persons per acre per hour by the result. The resulting number is the maximum number of persons allowed per acre per hour, provided it does not exceed 50. 50 persons per acre at any one time is the maximum number of persons allowed under the standard.

Example: A use on a one acre site has two 8 hour shifts.

$$25 \Big/ \left(\frac{16 \text{ hours}}{24 \text{ hours}}\right) = 37.5 \text{ maximum persons per acre per hour allowed}$$

Application of this formula results in the following table which specifies the maximum persons per acre per hour for the duration of time that persons are expected to be on site during a 24 hour period.

Hours of Operation Per Day	Maximum Persons Allowed Per Acre/During Each Hour
24	25
23	26
22	27
21	28
20	30
19	31
18	33
17	35
16	37
15	40
14	42
13	46
12 or less	50*

Note: Fractions in the maximum persons allowed column are rounded to the lowest whole number.

* Concentrations of persons per acre should not exceed 50 persons per acre at any time.

(Please note that population density guidelines for accident potential zones are currently under study within the Department of Defense. A report containing additional population density guidance is being prepared under contract and will be distributed once finalized and approved.)

IMPLEMENTATION / MAINTENANCE PLAN

IMPLEMENTATION AND MAINTENANCE PLAN

Table of Contents

	Page
1 Introduction	61
2 Concept/Actions	61
3 Organization	62
4 Individuals/Organizations to be Given AICUZ Presentation	63
5 Schedule of Events	63
6 Format for Announcement of Public Release Meeting	64
7 Example AICUZ Public Release Invitation	65
8 Implementation Strategies	65
9 AICUZ Review Strategies	65

Air Installation Compatible Use Zone (AICUZ) Program Public Release and Implementation Plan

1 Introduction

Considerable effort has been expended by HQ USAF, HQ ___, and _____ AFB in developing compatible land use guidelines for the land surrounding the Base. An effective procedure for public release of the information contained within the AICUZ Study is essential for encouraging local governments to use that information in their planning efforts. _____ AFB is responsible for informing local citizens of the need for taking positive action to prevent incompatible land uses around the base. It is important to involve local officials and private citizens from all adjacent communities in the AICUZ program. Participants in this effort should be aware that the AICUZ program is designed to protect the health and safety of community residents, as well as to protect the airfield from encroachment. Within the past few years some local governmental jurisdictions have restricted construction along flood plains, on steep slopes, in potential earthquake hazard areas and in areas with high water tables. In terms of safety and health, airfield operations should be of equal concern to local planning agencies and should be included as a factor in land use planning. The regulation of land use has traditionally been exercised by the state through delegation to local governments. Action needs to be taken now to advise local governments that corrective measures are essential to protect the health, safety and welfare of the public from aircraft noise and accident hazards, and, in turn, to protect the military installation from the adverse impacts of random urbanization of nearby lands.

2 Concepts/Actions

This AICUZ Public Release and Implementation Plan is designed to assist the base in its efforts to acquaint local communities and their officials with the _____ AICUZ. In addition, a well executed public release process will give the base community planner a strong foundation for follow-on efforts.

The first step in providing AICUZ information is to initiate informal discussions with key officials and planning staffs of the affected governmental units. These meetings are used to set forth the basic principles of the AICUZ program, i.e., that it is a planning tool, that the program is based upon cooperative effort between the Air Force and local communities and that the role of the Air Force is to provide information for use in land use planning within the vicinity of _____ AFB. (It is important to stress that it is not the intent of the AICUZ program to preempt the land use control prerogative of local governments.) This initial step is accomplished through an AICUZ concept briefing which will be prepared by representatives from Civil Engineering and Public Affairs. The informal briefing will be conducted by representatives from the Civil Engineering, Public Affairs, or the Command Section. The briefing should contain examples of AICUZ programs at other bases and an update on the existing AICUZ at _____ AFB. The date, setting, attendees, and procedures for the public release of the study should also be discussed and established at this time. Specific AICUZ data including noise contour maps for _____ should NOT be made available to anyone outside the Air Force prior to full public release. It is imperative that there is no possibility for any group to be given a special advantage by receiving prior knowledge. Prior to public release, the AICUZ study is considered an internal working paper and under the provisions of AFR 12-30 is exempt from the Freedom of Information Act. Prior to the actual public release, base personnel designated to attend the public release should conduct a thorough review of the impacts the AICUZ could have on local communities and landowners. These individuals, in their review, should answer the following questions:

(a) What is the existing land use?

(b) What is the future planned land use?

(c) What factors determine future land use?

(d) What are alternatives for future land use?

(e) Who decides what the future land uses are?

(f) What property owners are involved?

This review should also include possible effects upon municipalities, counties, regional councils, water districts, utility companies, highway/transportation planning agencies, etc. A determination should also be made as to the extent the recommended AICUZ criteria is in agreement with current local land use planning and zoning ordinances. This "brainstorming" will assist in answering questions which may be asked during the public release process.

The basic forum for full release of the AICUZ is a public presentation meeting. Attenders should include appropriate governmental officials, the general public and the media. This meeting will also be the occasion for the first distribution of the actual AICUZ study. The official release at this time will ensure that no one is excluded from the process, and that no one single interested or impacted group is provided with information prior to others. A follow-on meeting to respond to questions, if necessary, should also be arranged. The Air Force Regional Compliance Office (AFCEE/ESA, ESD, or ESS) (the former AFRCE/ROV) will arrange for appropriate federal agency representation at the initial public meeting. This is accomplished in accordance with AFR 19-9. Following the initial public meeting, the AICUZ study is forwarded to local and state clearinghouses as part of the Executive Order 12372 process.

3 Organization

The installation commander releases the AICUZ study or amendment during the public meeting; however, the briefer selected to explain the AICUZ process and the appropriate information contained within the documents should be thoroughly familiar with the base-specific data gathering and current base area compatible and incompatible land uses. The DE, DO, PA, JA, and AFCEE/ESA, ESD, or ESS assist the commander by developing and implementing the public release and by participating at the public meeting. Complete awareness of the recommended AICUZ criteria is essential because public misinformation or lack of information can be detrimental to objectives desired. The Public Affairs Office (PAO) is responsible for all public news releases and responses to public inquiries. The PAO should work with the media to ensure timely notice to the public of the date, location, and purpose of the AICUZ public meeting. Remember that presentations on AICUZ are given to inform and enlist the cooperation and support of local political officials, special interest groups, and others. Groups which are formally briefed on the AICUZ are reflected in Section 4. A general schedule for presentations of the AICUZ study is included in Section 5. Those presenting the AICUZ report must be well acquainted with the information contained within the AICUZ. They should be able to deal knowledgeably with the questions of laymen and professionals alike.

The Air Force should state its views and recommendations with respect to what should be done to establish compatible land use within the vicinity of the airfield, but this is expressed in a low key manner and without any pressure brought to bear on local governmental officials. Use of information contained within the AICUZ is the responsibility of local officials.

4 Individuals/Organizations To Be Given AICUZ Presentations

The following persons/organizations play key roles in the land development process in areas surrounding _____ AFB. Many of them will be consulted in informal briefings and presentations and all will be invited to the AICUZ Public Release.

LOCAL GOVERNMENT
- List Elected City Officials
- List Appointed City Officials

COUNTY GOVERNMENT
- List Elected County Officials
- List Appointed County Officials

STATE GOVERNMENT
- List Elected State Officials
- List Appointed State Officials

FEDERAL GOVERNMENT
- List Elected Federal Officials
- List Appointed Federal Officials

LIST CHAMBER OF COMMERCE (CoC) AND MILITARY AFFAIRS COMMITTEES (MAC)

LIST INTEREST GROUPS

LIST KEY LANDOWNERS/DEVELOPERS

MEDIA
- List Newspapers
- List Television
- List Radio

5 Schedule of Events

The following is a suggested schedule for the presentation of the AICUZ report to the community:

DATE	EVENT
Day X	Final maps from AFCESA/DMPO. (*AFCESA/DMPO provides 250 copies of the AICUZ maps, unless requested otherwise. Be sure to request additional copies early, if deemed necessary.)
X+5 Days	Forward final draft Brochure, Study, Technical Support Document, and Public Release and Implementation Plan to MAJCOM/DE, AFCEE/ESA, ESD, or ESS and HQ USAF/CEVP for review. Indicate proposed release date.
X+30 Days	Incorporate revisions and finalize document. Print final documents. Citizen's Brochure, ___ copies, AICUZ Report (Vol. I), ___ copies, Appendices A-F (Vol. II), ___ copies.

X+60 Days	Internal Distribution of final documents: Insure that 10 final copies of the study are sent to HQ USAF/CEVP via commercial express courier to facilitate advance Congressional notification. Also send 17 additional copies, each, to CEVP and AFCEE/ESA, ESD, or ESS via regular mail for federal agency notification.
X+65 Days	Pre-brief local officials and Airport Land Use Commissions (if appropriate).
X+65 Days	Send out invitations for public meeting and make public announcement for meeting (news release).
X+75 Days	Hold initial public meeting, distribute AICUZ report. Respond to news media queries. Distribute additional copies of AICUZ documents per the IICEP process, etc. per AFR 19-9.

The Public Affairs Office will ensure that appropriate news releases are made. Many people may be affected by the AICUZ and it is important that local governmental leaders and planning bodies be the center of focus rather than the Air Force. It is also imperative that this information be communicated in a low key manner as being one way of enhancing the future development of _____ County (or etc.). All AICUZ briefings are coordinated with the Public Affairs Office. Only speakers who are knowledgeable of the AICUZ program and its intent, and are adept at public presentations, should be asked to speak.

6 Proposed Schedule of Events/Format for AICUZ Public Release Meeting

DATE/TIME	
LOCATION	
FORMAT	
BRIEFING OFFICER	
KEY PERSONNEL	
SUPPORT PANEL	Provide support to speaker during question and answer period. Panel members should include: /CC /SE /CC /JA /DO /DE /PA /EM
MEETING ATTENDEES	Local governmental officials' media, landowners in AICUZ area, Homeowners Associations, etc.,

7 · AICUZ Public Release Invitation

Dear (See Lists at Section 4),

_____ AFB's Air Installation Compatible Use Zone (AICUZ) study has been updated and will be released in a public meeting at (time) on (date) 199 , at (building address) . The AICUZ study addresses aircraft noise and accident potential zones created by current flying operations at _____ AFB. The study contains information on building height restrictions and provides data for use in establishing land uses which are compatible with the current flying mission. AICUZ data is intended for use by local citizens and governmental officials involved in land use planning and facility development. The purpose of the AICUZ program is to help ensure the health, safety, and welfare of the citizens in the surrounding communities while preserving the operational capabilities of _____ AFB. The presentation will outline the overall AICUZ program, its methodology, potential uses of the study, and Air Force and community responsibilities for compatible land use. A question and answer period will follow the formal presentation. As _____ and _____ (political jurisdictions) continue to grow and prosper, we believe it is important that we join with government and business leaders in a cooperative effort to implement mutually beneficial planning for the future. I hope you will be able to attend this very important and informative meeting. In the event you are not able to attend, copies of the AICUZ Report are available upon request by calling the _____ Public Affairs Office at _____.

Sincerely

Colonel, USAF Commander

8 Implementation Strategies

Write transmittal letter to local government officials advising that the 19__ AICUZ Report has been revised. Brief the AICUZ slide show to county commissioners, county planners, city commissioners and planners, before onset of the Joint Land Use Study (JLUS) if applicable, and prior to adoption of any local Comprehensive Plan. Work closely with _____ County and local community planners in developing the JLUS (if applicable). Follow development of Comprehensive Planning efforts within the area and encourage use of the information provided in the AICUZ in decision-making wherever possible. Add _____ AFB to the list of both Local and Regional, State and Federal Intergovernmental Coordination participants and continue to keep _____ AFB "in the loop." (Use AFCEE/ESA, ESD, or ESS to assist in your IICEP efforts). Keep AFCEE/ESA, ESD, or ESS "in the loop" by providing information copies of correspondence concerning ongoing AICUZ activities at _____ AFB. Under the IICEP program, the AFCEE/ESA, ESD, or ESS will coordinate with and distribute AICUZ information to federal agency regional offices (HUD, VA, FmHA, etc.) per their responsibilities to the AICUZ program as specified by FMC 75-2.

9 AICUZ Review Strategies

(Ongoing) AICUZ data should be reviewed and revalidated every 2 years (including re-run of an AICUZ noise map) unless required sooner in conjunction with an EIAP action. Every two years, conduct an analysis of land use compatibilities within the vicinity of _____. Maintain a working relationship with surrounding communities to re-establish compatible land-use

designations as incompatible designations are identified. The base should conduct and submit to MAJCOM a brief AICUZ survey on a biennial basis. This survey should summarize the status of the AICUZ program emphasizing foreseeable changes in the program including any issues involving civilian development which could impact on the mission (This survey is called by HQ USAF/CEVP). The base should attend all zoning hearings which can potentially effect _____ AFB. The base should provide information to communities on modification of flight procedures that may affect noise in the area. The base should maintain constant positive contact with key public officials. Keep senior base leaders fully informed on the AICUZ program. Closely monitor _____ County, _____ City, _____, and _____ Comprehensive planning processes to ensure that _____ AFB's interests continue to be represented.

AICUZ Citizen's Brochure

AICUZ Citizen's Brochure

Table of Contents — Page

What is AICUZ? III-71

Is there a problem? III-71

What has been done? III-71

What are the benefits? III-71

Why AICUZ now? III-71

How can I help? III-72

What does AICUZ mean to me? III-72

Who prepared the AICUZ study? III-73

AICUZ Citizen's Brochure

What is AICUZ?

Air Installation Compatible Use Zone (AICUZ) is a program concerning people, their comfort, safety and protection. This pamphlet briefly summarizes the AICUZ study - an extensive analysis of the effects of noise, aircraft accident potential and compatible land use and development upon present and future neighbors of _____ Air Force Base. AICUZ seeks a cooperative understanding and a reasonable solution to this intricate problem.

Is there a problem?

Military airfields attract development to immediate surrounding areas. In the absence of compatible land use controls, inappropriate uses may be made of properties near or adjacent to the installation causing eventual conflicts between flight operations and surrounding landowners. Because land close to _____ AFB is subject to high noise levels and aircraft accident potentials, certain types of development are not suitable.

What has been done?

_____ AFB has attempted to be a good neighbor by restricting flying activities that could adversely affect its neighbors. For example, flying operations are normally conducted between the hours of __:_0AM and __:_0PM. Any operations conducted during other hours must be pre-approved by the base commander. Practice approach and departure operations are normally conducted during daylight hours when expected noise disruptions are less than they would be during evening hours. _____ AFB has spent over $__ million in sound suppression equipment to muffle the noise of ground engine runups and $__ million more is programmed over the next ___ years for noise abatement facilities. Flight pattern altitudes and the runway approach angles have been adjusted over the years in an effort to reduce noise impacts while maintaining safe operations. The base has demonstrated a spirit of cooperation by participating with surrounding communities in the area-wide planning process. Continued cooperation by _____ AFB, local governments and the local populace will further reduce the potential for land use conflicts. This action will help insure that future land use will be compatible and beneficial.

What are the benefits?

In addition to protecting the public safety and health, primary benefits include protecting the taxpayer's investment in national defense provided by _____ AFB, and protecting economic benefits to the surrounding communities generated by base activities and employment. The local economy is enhanced by _____ AFB's expenditures for salaries, contracts, construction, retirement pay, tuition, aid to schools, health insurance payments, and off-base accommodations for travelers. _____ AFB employs over __,000 people with an annual payroll of $__ million. Through service and construction contracts, an additional $__ millions enter the local economy. While shrinking budgets challenge the leadership at _____ AFB, the base continues to be a strong partner in the economic future of the local communities and _____ County.

Why AICUZ now?

(_____ County is growing at a rapid pace.) Land use development in the vicinity of the Base is ongoing. Modifications to flight operations at _____ AFB have resulted in changes to the noise contours outlined in the 19__ AICUZ report. Information provided in the AICUZ report is intended to offer assistance to those planning the future of _____ County and its

communities. By using the updated noise map and information provided, neighboring communities are better equipped to make land use decisions and adopt land use controls which are compatible with _____ AFB, yet able to accommodate growth.

What does AICUZ mean to me?

AICUZ means protection of the public safety and health as well as protection of the Air Force's national defense mission. The AICUZ itself is a composite of many factors: average noise levels, aircraft flight paths and altitudes, and accident potential. The noise and accident potential zones have been combined and displayed on the contour map. The numbers 65 (60 in Calif.) through 80 indicate the average sound levels in decibels for a particular area using the Day-Night Average Sound Level (DNL) system for describing the noise environment (in California, the Community Noise Equivalent Level (CNEL) scale is used.). The accompanying Land Use Compatibility Chart provides a quick reference of compatible land uses for the various noise and accident potential zones around _____ AFB. More detailed information can be found in the _____ AFB 19__ AICUZ Study, Volume I.

How can I help?

Historically, the citizens of _____ County and the personnel of _____ AFB have worked together in cooperative and harmonious efforts to better serve the needs and desires of all concerned. We have collectively found solutions which have maximized the benefits of _____ AFB while minimizing annoyances. If the future of _____ AFB is to be as bright as its past, you, the citizens of _____ County, need to participate in the solution of our mutual concerns. We request your careful and considered review of the recommendations contained in _____ AFB's AICUZ report. In brief, these recommendations include:

(a) The AICUZ report should be adopted as an official guideline for future planning.

(b) Zoning ordinances should be adopted, or modified, to reflect the compatible land uses outlined in the AFB AICUZ report.

(c) Fair disclosure ordinances should be enacted to specify disclosure to the public of those AICUZ items directly related to operations at AFB.

(d) Height control of structures near flight paths should be regulated by incorporation into zoning ordinances.

(e) Comprehensive plans should include the land use recommendations of the AICUZ report.

(f) Subdivision regulations should provide for rejection of new subdivisions not compatible with AICUZ land use objectives and provide controls for continued development in existing subdivisions.

(g) Building Codes should be amended to require noise level reduction efforts for structures to be located in noise zones, where alternative locations are not an option.

(h) Capital improvement programs should be carefully reviewed to discourage incompatible land use patterns, with particular emphasis on utility extension planning.

(i) (If applicable) The Joint Land Use Study (JLUS) should be completed, approved, and applied in all future land use decisions within areas affected by operations at _____ AFB.

Who prepared the AICUZ study?

The AICUZ report was developed by many concerned people at _____ AFB under the supervision of Headquarters United States Air Force and Headquarters _____ _____ Command. The complete report is available at _____ AFB from the Public Affairs Office, and copies have been placed in local public libraries and are on file with the _____ County Recorder. Only the major points of the complete AICUZ report are included in this pamphlet.

(This Brochure should also include an AICUZ map[noise and accident potential zones] and land use compatibility tables [in summary format if desired. See example below].)

Compatibility Land Use/Aircraft Noise

	DNL NOISE CONTOURS			
Generalized Land Use	65-70	70-75	75-80	80-85
Residential	No[1]	No[1]	No	No
Manufacturing	Yes	Yes	Yes	Yes
Transportation, communications and utilities	Yes	Yes	Yes	No
Trade, business, and offices	Yes	Yes	Yes	No
Shopping districts	Yes	Yes	Yes	No
Public and quasi-public services	No	No	No	No
Recreation	Yes	Yes	No	No
Public Assembly	No	No	No	No
Agriculture and mining	Yes	Yes	Yes	Yes

[1] UNLESS SOUND ATTENUATION MATERIALS ARE INSTALLED

Amendment to the Air Installation Compatible Use Zone (AICUZ) Study

Amendment to the
Air Installation Compatible Use Zone (AICUZ) Study

Area Governments :

1. This Amendment to the Air Installation Compatible Use Zone (AICUZ) Study for _____ Air Force Base updates the AICUZ study dated _____ ___. You should install this amendment package in your copy of the AICUZ report dated _____ ___ and remove or mark through superseded pages.

2. The purpose of this Amendment is to provide you with the latest AICUZ information to assist in the protection of the public safety and health as well as help protect the operational capabilities of _____ Air Force Base. It represents our reevaluation of aircraft noise and accident potential, taking into account recent changes in flying operations.

3. The Amendment outlines the location of the runway clear zones, aircraft accident potential zones and noise contours, and recommends compatible land uses for areas in the vicinity of the base. It is our hope that this information will be considered in your land use planning and control process. However, land use planning and control decisions should not be based solely upon the noise contours contained in this AICUZ Amendment.

4. We greatly value the positive relationship _____ Air Force Base has experienced with its neighbors over the years. As a partner in the process, we have attempted to minimize noise disturbances through such actions as _____ (at this point specify actions already taken : minimizing night flying, avoiding flights over heavily populated areas, installing a jet engine hush house for aircraft maintenance activities, etc.). We request your continuing support of this program designed to protect the public safety and health as well as the significant taxpayers' investment represented by _____ Air Force Base.

Commander

Amendment to the
Air Installation Compatible Use Zone Study

INTRODUCTION

This study is an amendment to the _____ AFB Air Installation Compatible Use Zone (AICUZ) Study. The amendment presents and documents the changes to the AICUZ for the period of 19__ to 19__. It reaffirms Air Force policy of promoting public health, safety and general welfare in areas surrounding _____ AFB. The report presents changes in flight operations since the last study and provides current noise contours and compatible use guidelines for land areas surrounding the base. It is hoped this information will assist the local communities and serve as a tool for future planning and zoning activities. The changes in the AICUZ are attributed to:

a. Addition, elimination or alteration of flight tracks for mission purposes or to avoid overflying populated areas (describe).

b. Reassignment of _____ aircraft from/to _____.

c. More aircraft simulator training (reduced flying training).

d. Technical improvements to the NOISEMAP program.

e. Addition/removal of the _____ mission.

f. Etc.

Purpose and Need

As stated in the previous _____ AFB AICUZ study, the purpose of the AICUZ program is to promote compatible land development in areas subject to aircraft noise and accident potential. Community cooperation regarding recommendations made in the earlier AICUZ Study have been outstanding. The cities of _____ and _____ are preparing land use development plans as is _____ County. (In California) The newly formed Airport Land Use Commission is in the process of documenting an airport/land use compatibility plan for the area surrounding the base. Accident potential and aircraft noise are major considerations in their planning processes. Air Force AICUZ Land Use Guidelines reflect land use recommendations for clear zones, accident potential zones I and II and four (five in Calif.) noise zones. These guidelines have been established on the basis of studies prepared and sponsored by several federal agencies, including the Department of Housing and Urban Development, Environmental Protection Agency, Air Force, and state and local agencies. The guidelines recommend land uses which are compatible with airfield operations while allowing maximum beneficial use of adjacent properties. The Air Force has no desire to recommend land use regulations which render property economically useless. It does, however, have an obligation to the inhabitants in the _____ AFB environs and the citizens of the United States to point out ways to protect the people in adjacent areas as well as the public investment in the installation itself.

The AICUZ program uses the latest technology to define noise levels in areas near Air Force installations. An analysis of _____ AFB's flying operations was performed, including types of aircraft, flight patterns utilized, variations in altitude, power settings, number of operations, and hours of operation. This information was used to develop the noise zones contained in this study. (Both) the Day-night average sound level (DNL) (and the Community Noise Equivalent Level (CNEL) (for California only)) methodology(ies) was(were) used to define the noise zones for _____ AFB.

Process and Procedure

Preparation and presentation of this amendment to _____ AFB's AICUZ report is part of the continuing Air Force participation in the local planning process. It is recognized that, as local communities prepare land use plans and zoning ordinances, the Air Force has the responsibility to provide inputs on their activities relating to the community. This study is presented in the spirit of mutual cooperation and assistance by _____ AFB to aid in the local land use planning process. This study updates information on base flying activities since 19__. Noise contours and AICUZ maps in this study are based on current (and (if applicable) future) mission plans. Data collection was conducted during _____ and _____ 19__. Aircraft operational and maintenance data was obtained to derive average daily operations, by runway and type of aircraft. Data is supplemented by flight track information (where they fly), flight profile information (how they fly), and ground runup information. After verification for accuracy, data was input into the NOISEMAP software program at the Air Force Civil Engineering Support Agency, where it was converted to average day-night (DNL) (and Community Noise Equivalent Level (CNEL) if in California) noise contours. Contours were plotted and overlayed on an area map with clear zones and accident potential zone areas. The appendices of the AICUZ study which this updates, contains detailed information on the development of the AICUZ program.

INSTALLATION DESCRIPTION

Mission

Add a description of Air Force mission for this base.

The following is an example:

Pope AFB is home to the 317 Tactical Airlift Wing and 15 tenant organizations. The wing belongs to the Military Airlift Command, the executive agent for all Department of Defense airlift and part of the US Transportation Command. There are three squadrons of C-130E Hercules aircraft assigned to the base. The mission of the wing is to command tactical airlift squadrons and assigned support units engaged in providing airlift support for airborne forces and other personnel, equipment, supplies, and aeromedical evacuation of patients within the theater of operations.

The XVIII Airborne Corps and the 82nd Airborne Division, both located at Fort Bragg, are charged with maintaining a quick reaction force for contingency purposes. Pope AFB supports their outloadings for actual contingencies as well as numerous training maneuvers and exercises.

Pope AFB is the busiest base in the Military Airlift Command and together with Fort Bragg contributes significantly to the economic and social welfare of the community.

Economic Impact

Describe the economic impact of the base on the community.

The following is an example:

McConnell AFB plays a substantial role in the economic picture of south central Kansas. The total economic impact on this region totals approximately $275 million, with an estimated 5,700 military and civilian jobs created by McConnell activities. The following table shows a breakdown of the economic impact:

Active Military Pay	$ 96,832,503
Active Civilian Pay	$ 27,551,362
Other (Services, construction, retiree, etc)	$ 150,631,704
Total	$ 275,015,569

These dollar figures represent the total economic impact within a fifty mile radius on McConnell AFB for the 1990 fiscal year. All of the civilian employees and over half of the military personnel live off base, and thereby contribute greatly to the local area economy.

Flying Activity

Explain the types of aircraft that are used and their flying frequency.

The following is an example:

Langley AFB accounts for over 20% of all traffic handled by Norfolk Approach Control. The majority of this flying activity takes place northeast of the base. Although numerous types of aircraft use Langley's runway, the principal operations affecting the noise contours are from the 90 F-15, 4 EC-135, and 6 C-21 aircraft assigned to the base. Also, flight manual procedures allow for reduced power takeoffs for the F-15 aircraft unless safety considerations from gross weight and weather dictates otherwise. As a result, approximately 95% of the F-15 takeoffs are performed without afterburner.

Average daily operations are summarized below:

Total Daily Operations

	Day 0700-2200	Night 2200-0700
F-15	207	3
EC-135	11	1
C-21	4	0

As shown above, less than 2% of the operations are at night in an effort to minimize noise levels and to reduce community disturbances. Flight corridors have been developed to avoid all known areas of concern to the greatest extent possible.

Operations are coordinated with FAA and flight paths are integrated to minimize conflict with civilian aircraft operations at Patrick Henry Municipal Airport and other private, commercial, and government flying activities. Efforts are continually expended to control and schedule flying to keep noise levels to an absolute minimum, especially at night. Flight corridors have been selected with community disturbances and public reactions taken as primary considerations. Flight patterns are illustrated in Figure 2.

(See sample map at the end of this volume.)

Figure 1. Vicinity Map

(See sample map at the end of this volume.)

Figure 2. Flight Tracks

Land Use Compatibility Guidelines

Introduction

The Department of Defense (DOD) developed the Air Installation Compatible Use Zone (AICUZ) program for military airfields. Using this program, DOD works to protect aircraft operational capabilities at its installations and to assist local government officials in protecting and promoting the public health, safety, and quality of life. The goal is to promote compatible land use development around military airfields by providing information on aircraft noise exposure and accident potential. AICUZ reports describe three basic types of constraints that affect, or result, from flight operations.

The first constraint involves areas which the Federal Aviation Administration (FAA) and DOD have identified for height limitations (see Height and Obstruction Criteria in Appendix D of Volume II). Air Force obstruction criteria are based upon those contained in Federal Aviation Regulation (FAR) Part 77 under Subpart C.

The second constraint involves noise zones replicated by the computerized Day-Night Average Sound Level (DNL) (or Community Noise Equivalent Level (CNEL) (in California only)) methodology called NOISEMAP. Using the NOISEMAP computer program which is similar to FAA's Integrated Noise Model, DOD produces noise contours showing the noise exposure of current aircraft operations. The AICUZ report contains noise contours plotted at increments of 5 dB, ranging from DNL 65 to DNL 80 (and CNEL 60 To CNEL 80). Figure(s) 3 (and 4) shows DNL (and CNEL) noise contours. Additional information on noise methodology is contained in Appendix C of Volume II of this report.

The third constraint involves accident potential zones based on statistical analysis of past DOD aircraft accidents. DOD analysis has determined that the areas immediately beyond the ends of runways and along the approach and departure flight paths have significant potential for aircraft accidents. Based on this analysis, DOD developed three zones which have high relative potential for accidents. The Clear Zone, the area closest to the runway end, is the most hazardous. The overall risk is so high that DOD generally acquires the land through purchase or easement to prevent development. Accident Potential Zone I (APZ I) is an area beyond the Clear Zone which possesses a significant potential for accidents. APZ II is an area beyond APZ I having measurable potential for accidents. While aircraft accident potential in APZs I and II does not warrant acquisition by the Air Force, land use planning and controls are strongly encouraged in these areas for the protection of the public. A sample population density standard for use in APZs is provided in Volume III, Appendix F. _____ AFB Clear Zones encompass areas 3,000 feet wide by 3,000 feet. APZ I is 3,000 feet wide by 5,000 feet long and APZ II is 3,000 feet wide by 7,000 feet long. Additional information on accident potential is contained in Appendix B of Volume II of this report.

Land Use Compatibility

Each AICUZ report contains land use guidelines. Figure 8 lists land uses versus all possible combinations of noise exposure and accident potential at _____ AFB, showing land uses that are compatible or incompatible. Noise guidelines are essentially the same as those published by the Federal Interagency Committee on Urban Noise in the June 1980 publication, "Guidelines for Considering Noise in Land Use Planning and Control". The U.S. Department of Transportation, Federal Highway Administration publication, "Standard Land Use Coding Manual" (SLUCM) has been used for identifying and coding land use activities.

(See sample map at the end of this volume.)

Figure 3. Noise Zones/Accident Potential Zones - DNL

(See sample map at the end of this volume.)

Figure 4. Noise Zones/Accident Potential Zones - CNEL

Participation In the Planning Process

As local communities prepare their land use plans, the Air Force must be ready to provide additional inputs. The Base Civil Engineer has been designated as the official liaison with the local community on all planning matters. This office is prepared to participate in the continuing discussion of zoning and other land use matters as they may affect, or may be affected by, _____ AFB.

LAND USE ANALYSIS

Land use planning and control is a dynamic, rather than a "static" process. The specific characteristics of land use determinants will always reflect, to some degree, the changing conditions of the economic, social, and physical environment of a community, as well as changing public concern. The planning process accommodates this fluidity in that decisions are normally not based on boundary lines but rather on more generalized area designations.

_____ AFB, though originally built in an outlying, largely underdeveloped area, is now being encroached upon by suburban, commercial and industrial development approaching from the ____, ____ and ____. It is physically located within the (jurisdiction); however, its sphere or region of influence extends beyond the (jurisdiction) to the (other jurisdictions).

Computer technology has enabled _____ AFB to more precisely display its flight tracks and noise contours for land use planning purposes. This same technology has revealed the extent of _____ AFB's region of influence which extends from (describe geographic area or jurisdiction) to (describe geographic area or jurisdiction).

Incompatible development currently (see Figure 5, Existing Land Use) exists at (geographic areas or jurisdictions - provide description). (If applicable) Current zoning regulations (see Firure 6, Zoning) are consistent (or inconsistent) with the AICUZ land use compatability guidelines (provide description). The potential for future incompatible development (see Figure 7, Future Land Use) is greatest within (geographic areas and/or political jurisdictions - provide description). Areas immediately around the base are (still being farmed/grazed or are under development pressures - provide description).

The (jurisdiction) has recently -or- will soon implement land use including _____ AFB environs (describe plan aspects helpful, etc to the base). The (jurisdiction) has recently or will soon implement its land use controls around _____ AFB environs (describe helpful, etc aspects). (If applicable) The (jurisdiction) has recently or will soon apply for participation in the Office of the Secretary of Defense/Office of Economic Adjustment's Joint Land Use Study (JLUS) program. This program provides matching funds and assistance to local jurisdictions for developing plans for more effectively implementing the AICUZ program. _____ AFB fully supports these activities and is prepared to participate in the these land use planning and control processes.

AICUZ boundaries and noise contours describe the impact of a specific operational environment, and as such, will change when a significant change in flying operations occurs. Consequently, the Air Force recommends that AICUZ data be utilized with all other community planning criteria. Specific land use control decisions should never be based solely on AICUZ boundaries. With these thoughts in mind, _____ AFB has revised the -(date)- Study and provides flight track and noise contour maps in this amendment which reflect current aircraft operations.

(See sample map at the end of this volume.)

Figure 5. Existing Land Use

(See sample map at the end of this volume.)

Figure 6. Zoning

(See sample map at the end of this volume.)

Figure 7. Future Land Use

Figure 8. Air Force AICUZ Land Use Compatibility with respect to Noise and Accident Potential

LAND USE		ACCIDENT POTENTIAL ZONES			NOISE ZONES			
SLUCM NO.	NAME	CLEAR ZONE	APZ I	APZ II	65-70	70-75	75-80	80+
10	Residential							
11	Household units							
11.11	Single units; detached	N	N	Y[1]	A[11]	B[11]	N	N
11.12	Single units; semidetached	N	N	N	A[11]	B[11]	N	N
11.13	Single units; attached row	N	N	N	A[11]	B[11]	N	N
11.21	Two units; side—by-side	N	N	N	A[11]	B[11]	N	N
11.22	Two units; one above the other	N	N	N	A[11]	B[11]	N	N
11.31	Apartments; walk up	N	N	N	A[11]	B[11]	N	N
11.32	Apartments; elevator	N	N	N	A[11]	B[11]	N	N
12	Group quarters	N	N	N	A[11]	B[11]	N	N
13	Residential hotels	N	N	N	A[11]	B[11]	N	N
14	Mobile home parks or courts	N	N	N	N	N	N	N
15	Transient lodgings	N	N	N	A[11]	B[11]	C[11]	N
16	Other residential	N	N	N[1]	A[11]	B[11]	N	N
20	Manufacturing							
21	Food & kindred products; manufacturing	N	N[2]	Y	Y	Y[12]	Y[13]	Y[14]
22	Textile mill products; manufacturing	N	N[2]	Y	Y	Y[12]	Y[13]	Y[14]
23	Apparel and other finished products made from fabrics, leather, and similar materials; manufacturing	N	N	N[2]	Y	Y[12]	Y[13]	Y[14]
24	Lumber and wood products (except furniture); manufacturing	N	Y[2]	Y	Y	Y[12]	Y[13]	Y[14]
A	Furniture and fixtures; manufacturing	N	Y[2]	Y	Y	Y[12]	Y[13]	Y[14]
26	Paper & allied products; manufacturing	N	Y[2]	Y	Y	Y[12]	Y[13]	Y[14]

LEGEND

SLUCM -Standard Land Use Coding Manual

Y(Yes) - Land use and related structures compatible without restriction

N(No) - Land use and related structures are not compatible and should be prohibited

NLR (Noise Level Reduction) - Noise level reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure (see Appendix E in Volume III for additional NLR information)

Y^X (Yes with Restrictions) - Land use and related structures generally compatible; see notes 1 through 21

Nx (No with exceptions) - See notes 1 through 21

A, B, or C - Land use and related structures generally compatible; measures to achieve NLR for 66-70, 71-75, or 76-80 DNL/CNEL must be incorporated into design and construction of structure.

A*, B*, or C* - Land use generally compatible with NLR: However, measures to achieve an overall noise level reduction do not necessarily solve noise difficulties and additional evaluation is warranted

Ax, Bx - NLR: See footnotes

Figure 8 (continued)

LAND USE		ACCIDENT POTENTIAL ZONES			NOISE ZONES			
SLUCM NO	NAME	CLEAR ZONE	APZ I	APZ II	65-70	70-75	75-80	80+
27	Printing, publishing, and allied industries	N	Y[2]	Y	Y	Y[12]	Y[13]	Y[14]
28	Chemicals and allied products manufacturing.	N	N	N[2]	Y	Y[12]	Y[13]	Y[14]
29	Petroleum refining and related industries	N	N	Y	Y	Y[12]	Y[13]	Y[14]
B	Manufacturing							
31	Rubber and misc. plastic products, manufacturing	N	N[2]	N[2]	Y	Y[12]	Y[13]	Y[14]
32	Stone, clay and glass products manufacturing	N	N[2]	Y	Y	Y[12]	Y[13]	Y[14]
33	Primary metal industries				Y	Y[12]	Y[13]	Y[14]
34	Fabricated metal products; manufacturing	N	N[2]	Y	Y	Y[12]	Y[13]	Y[14]
C	Professional, scientific, and controlling instruments; photographic and optical goods; watches and clocks manufacturing	N	N	N[2]	Y	A	B	N
39	Miscellaneous manufacturing	N	Y[2]	Y[2]	Y	Y[12]	Y[13]	Y[14]
40	Transportation, communications and utilities							
41	Railroad, rapid rail transit and street railroad transportation	N[3]	Y[4]	Y	Y	Y[12]	Y[13]	Y[14]
42	Motor vehicle transportation	N[3]	Y	Y	Y	Y[12]	Y[13]	Y[14]
43	Aircraft transportation	N[3]	Y[4]	Y	Y	Y[12]	Y[13]	Y[14]
44	Marine craft transportation	N[3]	Y[4]	Y	Y	Y[12]	Y[13]	Y[14]
45	Highway & street right-of-way	N[3]	Y	Y	Y	Y[12]	Y[13]	Y[14]
46	Automobile parking	N[3]	Y[4]	Y	Y	Y[12]	Y[13]	Y[14]
47	Communication	N[3]	Y[4]	Y	Y	A[15]	B[15]	N
48	Utilities	N[3]	Y[4]	Y	Y	Y	Y[12]	Y[13]
49	Other transportation communication and utilities	N[3]	Y[4]	Y	Y	A[15]	B[15]	N
50	Trade							
51	Wholesale trade	N	Y[2]	Y	Y	Y[12]	Y[13]	Y[14]
52	Retail trade—building materials, hardware and farm equipment	N	Y[2]	Y	Y	Y[12]	Y[13]	Y[14]
53	Retail trade—general merchandise	N	N[2]	Y[2]	Y	A	B	N
54	Retail trade—food	N	N[2]	Y[2]	Y	A	B	N

Figure 8 (continued)

LAND USE		ACCIDENT POTENTIAL ZONES			NOISE ZONES			
SLUCM NO.	NAME	CLEAR ZONE	APZ I	APZ II	65-70	70-75	75-80	80+
55	Retail trade—automotive, marine craft, aircraft and accessories	N	Y[2]	Y[2]	Y	A	B	N
56	Retails trade—apparel and accessories	N	N[2]	Y[2]	Y	A	B	N
57	Retail trade—furniture, home furnishings and equipment	N	N[2]	Y[2]	Y	A	B	N
58	Retail trade-eating and drinking establishments	N	N	N[2]	Y	A	B	N
59	Other retail trade	N	N[2]	Y[2]	Y	A	B	N
60	Services							
61	Finance, insurance and real estate services	N	N	Y[6]	Y	A	B	N
62	Personal services	N	N	Y[6]	Y	A	B	N
62.4	Cemeteries	N	Y[7]	Y[7]	Y	A	Y[13]	Y[14,21]
63	Business Services	N	Y[8]	Y[8]	Y	A	B	N
64	Repair Services	N	Y[2]	Y	Y	Y[12]	Y[13]	Y[14]
65	Professional services	N	N	Y[6]	Y	A	B	N
65.13	Hospitals, nursing homes	N	N	N	A*	B*	N	N
65.19	Other medical facilities	N	N	N	Y	A	B	N
66	Contract construction services	N	Y[6]	Y	Y	A	B	N
67	Governmental services	N	N	Y[6]	Y*	A*	B*	N
68	Educational services	N	N	N	A*	B*	N	N
69	Miscellaneous services	N	N[2]	Y[2]	Y	A	B	N
70	Cultural, entertainment and recreational							
71	Cultural activities (including churches)	N	N	N[2]	A*	B*	N	N
71.2	Nature exhibits	N	Y[2]	Y	Y*	N	N	N
72	Public assembly	N	N	N	Y	N	N	N
72.1	Auditoriums, concert halls	N	N	N	A	B	N	N
72.11	Outdoor music shells, amphitheaters	N	N	N	N	N	N	N
72.2	Outdoor sports arenas, spectator sports	N	N	N	Y[17]	Y[17]	N	N
73	Amusements	N	N	Y[8]	Y	Y	N	N
74	Recreational activities (including golf courses, riding stables, water recreation)	N	Y[8,9,10]	Y	Y*	A*	B*	N
75	Resorts and group camps	N	N	N	Y*	Y*	N	N
76	Parks	N	Y[8]	Y[8]	Y*	Y*	N	N

Figure 8 (continued)

LAND USE		ACCIDENT POTENTIAL ZONES			NOISE ZONES			
SLUCM NO.	NAME	CLEAR ZONE	APZ I	APZ II	65-70	70-75	75-80	80+
79	Other cultural, entertainment and recreation	N	Y[9]	Y[9]	Y*	Y*	N	N
80	Resource production and extraction							
81	Agriculture (except livestock)	Y	Y	Y	Y[18]	Y[19]	Y[20]	Y[20,21]
81.5	Livestock farming and animal							
81.7	Breeding	N	Y	Y	Y[18]	Y[19]	Y[20]	Y[20,21]
82	Agricultural related activities	N	Y[5]	Y	Y[18]	Y[19]	N	N
83	Forestry activities and related services	N[5]	Y	Y	Y[18]	Y[19]	Y[20]	Y[20,21]
84	Fishing activities and related services	N[5]	Y[5]	Y	Y	Y	Y	Y
85	Mining activities and related services	N	Y[5]	Y	Y	Y	Y	Y
89	Other resource production and extraction	N	Y[5]	Y	Y	Y	Y	Y

*The designation of these uses as "compatible" in this zone reflects individual Federal agencies, and program consideration of general cost and feasibility factors as well as past community experiences and program objectives. Localities, when evaluating the application of these guidelines to specific situations, may have different concerns or goals to consider.

Figure 8 (Notes)

1. Suggested maximum density 1-2 dwelling units per acre, possibly increased under a Planned Unit Development (PUD) where maximum lot coverage is less than 20 percent.

2. Within each land use category, uses exist where further definition may be needed due to the variation of densities in people and structures.

3. The placing of structures, buildings, or above-ground utility lines in the clear zone is subject to severe restrictions. In a majority of the clear zones, these items are prohibited. See AFR 19-9 for specific guidance.

4. No passenger terminals and no major above-ground transmission lines in APZ I.

5. Factors to be considered: labor intensity, structural coverage, explosive characteristics, air pollution.

6. Low-intensity office uses only. Meeting places, auditoriums, etc., not recommended.

7. Excludes chapels.

Figure 8 (notes continued)

8. Facilities must be low intensity.

9. Clubhouse not recommended.

10. Small areas for people gathering places are not recommended.

11.

a. Although local conditions may require residential use, it is discouraged in DNL/CNEL 65-70 and strongly discouraged in DNL/CNEL 70-75. The absence of viable alternative development options should be determined and an evaluation indicating that a demonstrated community need for residential use would not be met if development were prohibited in these zones should be conducted prior to approvals.

b. Where the community determines that residential uses must be allowed, measures to achieve outdoor to indoor Noise Level Reduction (NLR) for DNL/CNEL 66-70 and DNL/CNEL 71-75 should be incorporated into building codes and be considered in individual approvals. See Appendix E of Volume III for a reference to updated NLR procedures.

c. NLR criteria will not eliminate outdoor noise problems. However, building location and site planning, design and use of berms and barriers can help mitigate outdoor exposure particularly from level sources. Measures that reduce noise at a site should be used whenever practical in preference to measures which only protect interior spaces.

12. Measures to achieve the NLR for 66-70 DNL/CNEL must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.

13. Measures to achieve the NLR for 71-75 DNL/CNEL must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.

14. Measures to achieve the NLR for 76-80 DNL/CNEL must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.

15. If noise sensitive use indicated NLR; if not, use is compatible

16. No buildings.

17. Land use compatible provided special sound reinforcement systems are installed.

18. Residential buildings require the NLR for 66-70 DNL/CNEL.

19. Residential buildings require the NLR for 71-75 DNL/CNEL.

20. Residential buildings not permitted.

21. Land use not recommended; built if community decides use is necessary; hearing protection devices should be worn by personnel.

Section 2

SAMPLE ZONING ORDINANCE / AVIGATION EASEMENT

(Note: The enclosed ordinances are examples only, and have no U.S. Air Force endorsement or recommendation for replication elsewhere.)

ORDINANCE NO. 2385

AN ORDINANCE AMENDING APPENDIX B, AIRPORT ZONING, OF THE MIDWEST CITY CODE, TABLE 1 LAND USE COMPATIBILITY GUIDELINES; PROVIDING FOR REPEALER, SEVERABILITY, AND DECLARING AN EMERGENCY.

EMERGENCY ORDINANCE

BE IT ORDAINED BY THE COUNCIL OF THE CITY OF MIDWEST CITY:

SECTION 1. That Appendix B, Airport Zoning, of the Midwest City Code, is hereby amended by amending Table 1 Land Use Compatibility Guidelines to read as follows:

"TABLE 1 LAND USE COMPATIBILITY GUIDELINES

All rezoning requests shall be made pursuant to Section 5.0 et seq, Planned Unit Development. This ordinance shall not apply to any Planned Unit Developments approved prior to the effective date of this ordinance.

All uses and structures shall conform with the provisions contained in Footnotes 8, 9 and 10.

All subdivision, zoning or building permit requests within the Accident Potential Zone One for Runways Number 12/30 and 17/35 of Tinker Air Force Base shall grant an avigation easement to the City of Midwest City as a condition of subdivision, zoning or building permit approval. This easement shall hold the City, public and Tinker Air Force Base harmless from any damages caused by noise, vibration, fumes, dust, fuel, fuel particles, or other effects that may be caused by the operation of aircraft taking off, landing, or operating on or near Tinker Air Force Base, not including the physical impact of aircraft or parts thereof. Avigation easements shall be submitted on easement forms provided by the City of Midwest City.

COMPATIBLE USE DISTRICTS [1]

LAND USE CATEGORY	2 APZ-1 Ldn 80-85	3 APZ-1 Ldn 75-80	4 APZ-1 Ldn 70-75	5 APZ-1 Ldn 65-70
Residential				
Single-family detached	Y[2]	Y[2]	Y[2]	Y[2]
Two-family dwelling	N	N	N	N
Multi-family dwelling	N	N	N	N
Group quarters	N	N	N	N
Mobile home parks or courts	N	N	N	N
Manufacturing				
Food and kindred product	Y[3,4]	Y[3,5]	Y[3,6]	Y[3]
Textiles and apparel	Y[3,4]	Y[3,5]	Y[3,6]	Y[3]
Transportation equipment	Y[3,4]	Y[3,5]	Y[3,6]	Y[3]
Lumber and wood products	Y[3,4]	Y[3,5]	Y[3,6]	Y[3]
Furniture and fixtures	Y[3,4]	Y[3,5]	Y[3,6]	Y[3]
Paper and allied products	Y[3,4]	Y[3,5]	Y[3,6]	Y[3]
Printing and publishing	Y[3,4]	Y[3,5]	Y[3,6]	Y[3]
Chemical and allied products	N	N	N	N
Petroleum refining	N	N	N	N
Rubber and plastic	N	N	N	N
Stone, clay & glass	Y[3,4]	Y[3,5]	Y[3,6]	Y[3]
Primary and fabricated metal	Y[3,4]	Y[3,5]	Y[3,6]	Y[3]
Electrical and electronics	Y[3,4]	Y[3,5]	Y[3,6]	Y[3]

Miscellaneous manufacturing	Y[3,4]	Y[3,5]	Y[3,6]	Y[3]
Industrial and commercial machinery and computer equipment	Y[3,4]	Y[3,5]	Y[3,6]	Y[3]
Measuring, analyzing, controlling instruments; photographic, medical and optical goods; watches & clocks	Y[3,4]	Y[3,5]	Y[3,6]	Y[3]
Transportation, Communication and Utilities				
Local and suburban transit and interurban highway passenger transportation, excluding passenger terminal	Y[3,4]	Y[3,5]	Y[3,6]	Y[3]
Motor freight transportation and warehousing	Y[3,4]	Y[3,5]	Y[3,6]	Y[3]
Transportation services	Y[3,4]	Y[3,5]	Y[3,6]	Y[3]
Communication	Y[3,4]	Y[3,5]	Y[3,6]	Y[3]
Landfills & hazardous waste	N	N	N	N
Electric, gas, water & sewer plants	N	N	N	N
Parking lots	Y[3,4]	Y[3,5]	Y[3,6]	Y[3]
Trade, Business, Office and Service				
Wholesale trade and distribution	Y[3,4]	Y[3,5]	Y[3,6]	Y[3]
Warehousing and storage	Y[3,4]	Y[3,5]	Y[3,6]	Y[3]
Retail trade - general	N	N	N	N
Service station	N	N	N	N
Eating and drinking	N	N	N	N
Hotels, motels, campgrounds	N	N	N	N
Repair services	Y[3,4]	Y[3,5]	Y[3,6]	Y[3]
Personal services	Y[3,4]	Y[3,5]	Y[3,6]	Y[3]
Business services	Y[3,4]	Y[3,5]	Y[3,6]	Y[3]
Depository Institutions	N	N	N	N
Business parks[12]	Y[3,4]	Y[3,5]	Y[3,6]	Y[3]
Office buildings	Y[3,4]	Y[3,5]	Y[3,6]	Y[3]
Automotive, marine sales	Y[3,4]	Y[3,5]	Y[3,6]	Y[3]
Real estate, legal, insurance, investment services, and non-depository credit institutions	Y[3,4]	Y[3,5]	Y[3,6]	Y[3]
Building, heavy trade & special trade contractors	Y[3,4]	Y[3,5]	Y[3,6]	Y[3]
Engineering, accounting, research, management & related services	Y[3,4]	Y[3,5]	Y[3,6]	Y[3]
Member organizations, office uses only	Y[3,4]	Y[3,5]	Y[3,6]	Y[3]
Shopping Center[11]				
Neighborhood	N	N	N	N
Community	N	N	N	N
Regional	N	N	N	N
Public and Quasi-Public Services				
Government services	Y[3,4]	Y[3,5]	Y[3,6]	Y[3]
Educational services	N	N	N	N
Social services	N	N	N	N
Health services	N	N	N	N
Libraries, museums and art galleries	N	N	N	N
Churches	N	N	N	N
Cemeteries	Y[3,4]	Y[3,5]	Y[3,6]	Y[3]
Jails and detention centers	N	N	N	N
Child care centers (6 or more children)	N	N	N	N

Recreation				
Neighborhood Parks	N	N	N	N
Community-wide and regional park	N	N	N	N
Riding stables	Y[3,4]	Y[3,5]	Y[3,6]	Y[3]
Golf courses	Y[3,4]	Y[3,5]	Y[3,6]	Y[3]
Open space and natural areas	Y[7]	Y[7]	Y[7]	Y[7]
Water areas	Y[7]	Y[7]	Y[7]	Y[7]
Indoor amusement and recreation services	N	N	N	N
Public Assembly				
Motion picture theater, single or double	N	N	N	N
Motion picture theaters, complex, 3 or more	N	N	N	N
Stadiums and arenas	N	N	N	N
Auditoriums, concert halls, amphitheaters	N	N	N	N
Fairgrounds, amusement parks	N	N	N	N
Agriculture and Mining				
Agriculture - row crops	Y[7]	Y[7]	Y[7]	Y[7]
Agriculture - tree crops	Y[7]	Y[7]	Y[7]	Y[7]
Agriculture - intensive livestock	Y[7]	Y[7]	Y[7]	Y[7]
Pasture and grazing	Y	Y	Y	Y
Agriculture services	Y[3,4]	Y[3,5]	Y[3,6]	Y[3]
Mining and quarrying	Y[3,7]	Y[3,7]	Y[3,7]	Y[3,7]

FOOTNOTES

1. A "Y" meaning yes and "N" meaning no for compatible land use is to be used only for gross comparison. The Compatible Land Use Districts Table is composed for the most part of general land use categories. The Development Services Director shall be responsible for deciding in which general land use category a specific land use should be assigned. The Development Services Director may use the 1987 Standard Industrial Classification Code in assisting in this determination. Appeals to a decision by the Director shall be made pursuant to Section 12 of Appendix B of the Midwest City Municipal Code.

2. Single-family residential is a compatible land use only if the density is five acres or more per single-family residence.

3. It is the purpose of this footnote to regulate the concentration of people. Through the Planned Unit Development process for all new zoning, the city will guide and regulate the development so as to avoid a concentration of buildings and persons within a building. To accomplish this the city will:

   1) Require the scattering of buildings across the development site when multiple buildings are planned;

   2) Utilize the following density standards for Runways 17/35 and 12/30 as the maximum number of persons allowed in a building, however, work towards having fewer than those permitted under the density standards; and

   In addition, where reasonably appropriate, the city may require the planting of trees, earth berms or other landscaping techniques to minimize the crash hazard to people on the ground from aircraft.

   For the Accident Potential Zone One (APZ-1) for runway number 17/35, uses are compatible only if they do not

result in a gathering of individuals on a site that would result in a density greater than 25 people per gross acre. The site which is shown on the building permit application in gross acres (which includes building areas, parking, open space, easements and rights-of-way immediately abutting) shall be used to calculate the maximum occupant load for the building. Occupant load shall include both employees and visitors. The maximum occupant load shall be shown on the approved building permit. In determining the maximum occupant load, the following formulas shall be used:

(1) Square footage of the proposed building divided by 528 square feet.

(2) The gross area in acres of the application multiplied by 25.

The resulting products of (1) and (2) will be compared. The smaller of the products will establish the occupant load. In no event will an occupant load of greater than 125 be approved for any one building on the site.

Each building permit application shall designate the building site. No building may occupy more than 40% of the site. No building may occupy a site greater than 11.1 acres. In no case shall any building, with the exception of accessory structures or building add-ons, be less than 10,000 square feet, nor shall any building exceed 150,000 square feet in total area. With the exception of building permits for expansion to existing buildings, no land area used in a building permit may be used in another building permit application. A building shall be located on a site to create the maximum separation possible from other existing or permitted buildings by the use of greenbelts and parking lots and other open space. The allowed 25 persons per gross acre density cap may not be cumulative from one building site to another.

For the Accident Potential Zone One (APZ-1) for runway number 12/30, uses are compatible only if they do not result in a gathering of individuals on a site that would result in an average density greater than 25 persons per gross acre per hour during a 24-hour period, not to exceed 50 persons per gross acre at any time (see Exhibit 1). The site which is shown on the building permit application in gross acres (which includes building areas, parking, open space, easements and rights-of-way immediately abutting) shall be used to calculate the maximum occupant load for the building. Occupant load shall include both employees and visitors. The maximum occupant load shall be shown on the approved building permit. In the event there may be multiple building tenants with multiple shifts in a building, the maximum building occupant load shall be calculated by prorating each tenant space against the land area shown on the building permit and applying the percentage derived therefrom to the table found in Exhibit 1. In determining the maximum occupant load, the following formulas shall be used:

(1) Square footage of the proposed building divided by 265 square feet.

(2) The gross area in acres of the building application multiplied by the maximum persons

allowed per acre/during each hour based upon hours of operation as set forth in the table found in Exhibit 1.

The resulting products of (1) and (2) will be compared. The smaller of the products will establish the occupant load.

Each building permit application shall designate the building site. No building may occupy more than 40% of the site. No building may occupy a site greater than 11.1 acres. In no case shall any building, with the exception of accessory structures or building add-ons, be less than 10,000 square feet, nor shall any building exceed 150,000 square feet in total area. With the exception of building permits for expansion to existing buildings, no land area used in a building permit may be used in another building permit application. A building shall be located on a site to create the maximum separation possible from other existing or permitted buildings by the use of greenbelts and parking lots and other open space. The allowed 50 persons per gross acre density cap may not be cumulative from one building site to another.

The occupancy provisions contained herein for Runways 17/35 and 12/30 shall apply except in the following situations:

a) Buildings existing prior to the adoption of this footnote may be expanded and uses continued so long as the total expansion of the building does not exceed 25% of the original structure as existed at the adoption of this footnote.

b) Structures being reconstructed under Section 10 Subparagraph (D) of this appendix existing prior to the adoption of this footnote.

c) Uses or structures existing prior to the adoption of this footnote that have been abandoned for less than two years if the use has not changed.

No changes in the allowed densities may be made during the Planned Unit Development application process or at any later time unless this appendix is first amended to allow a greater occupancy.

All applications for certificates of occupancy shall be submitted by the owner of the affected building. For the APZ-1 of Runway 12/30, if there is a change in the hours of occupancy by the owner of a building or tenant, then the building owner must submit occupancy information for the entire building and a new maximum building occupant load will be issued by the city. The fee for establishing the new maximum building occupancy load is $10.00. Any violations of the maximum building occupant load requirement is a responsibility of the building owner. Citations may be issued without notice to correct violations. Inspections to assure compliance with this ordinance shall be undertaken by the city.

4. A Noise Level Reduction (NLR) of 35 dBL shall be incorporated into the design and construction of portions of these buildings where the public is received, office areas or where the normal noise level is low.

5. A Noise Level Reduction (NLR) of 30 dBL shall be incorporated into the design and construction of portions of these buildings where the public is received, office areas or where normal noise level is low.

6. A Noise Level Reduction (NLR) of 25 dBL shall be incorporated into the design and construction of portions of these buildings where the public is received, office areas or where the normal noise level is low.

7. Uses compatible only if they do not result in a possibility that a water area may cause ground fog or result in a bird hazard.

8. No structure located within the areas of Midwest City regulated by Appendix B of the Midwest City Municipal Code shall exceed one story in height. Any structure that exceeds one story at the time of adoption of this footnote shall be allowed to remain. If said structure should be damaged by 50% or more of its then fair market value, said structure may not be repaired but shall be removed. Reconstruction must be in conformance with Appendix B.

9. The following provisions dealing with storage of flammables shall apply to all new certificates of occupancy and shall apply to additions or enlargements only of existing structures located within areas regulated by Appendix B of the Midwest City Municipal Code. Solid Materials. (1) The storage or manufacture of flammable solid materials or products is permitted only if the flammable material or products are stored or manufactured within completely enclosed buildings having noncombustible exterior walls and protected throughout by an automatic fire extinguishing system. (2) The storage or manufacture of explosive materials and of materials or products which decompose by detonation is prohibited. Liquid Materials. (1) The manufacture of flammable or combustible liquids or materials which produce flammable or combustible vapors or gases is prohibited. (2) All above ground storage of flammable or combustible liquids or materials which produce flammable or combustible vapors or gases shall be in enclosed fireproof vaults. This requirement does not apply to liquids or materials used for single-family residences. (3) The storage of flammable and combustible liquids, or of materials that produce flammable or combustible vapors or gases, shall be permitted only in accordance with the Life Safety Code (NFPA No. 101-81) and the BOCA Basic Fire Prevention Code, 1987, as amended by the City of Midwest City.

10. The following provisions dealing with visual and electrical interference shall apply to all new certificates of occupancy and shall apply to additions or enlargements only of existing structures located within areas regulated by Appendix B of the Midwest City Municipal Code: (a) The release into the air of any substance which would impair visibility or otherwise interfere with the operation of aircraft; e.g., steam, dust, smoke, etc. is prohibited. (b) The production of light emissions, either direct or indirect (reflective) which would interfere with pilot vision is prohibited. (c) The production of electrical emissions which would interfere with aircraft communications systems or navigational equipment is prohibited.

11. Shopping center shall mean a group of five or more architecturally unified commercial establishments, managed as a unit, and with common off-street parking and vehicular access points. A neighborhood shopping center is less than 8 acres. A community shopping center is 8 to 15 acres. A regional shopping center is greater than 15 acres.

12. Business park is a development on a tract of land that contains a number of separate buildings, open space and supporting uses (may include research laboratories; prototype development, assembly, and fabrication; light manufacturing and assembly space; office; and warehouse distribution facilities) all of which are planned, designed, built and managed on an integrated and coordinated basis. Uses contained in the business park must be consistent with Table 1 Land Use Compatibility Guidelines."

SECTION 2. REPEALER. All ordinances or parts of ordinances in conflict herewith are hereby repealed.

SECTION 3. SEVERABILITY. If any section, sentence, clause or portion of this ordinance is for any reason held to be invalid, such decision shall not affect the validity of the remaining portions of the ordinance.

SECTION 4. EMERGENCY. Whereas, it being immediately necessary for the preservation of the peace, health and safety of Midwest City and the inhabitants thereof that the provisions of this ordinance be put into full force and effect, an emergency is hereby declared to exist by reasons whereof this ordinance shall take effect and be in full force from and after its passage as provided by law.

PASSED AND APPROVED by the Mayor and Council of the City of Midwest City, Oklahoma, this 23 day of January, 1990.

CITY OF MIDWEST CITY, OKLAHOMA

Charles G. Price
MAYOR

ATTEST:

Tammy Kalb
CITY CLERK

APPROVED as to form and legality this 23 day of January, 1990.

John H. Williams
CITY ATTORNEY

CITY OF MIDWEST CITY AVIGATION EASEMENT

KNOW ALL MEN BY THESE PRESENTS:

That Tinker Industrial Developers, an Oklahoma Partnership, as Grantor for and in consideration of the sum of One Dollar ($1.00) in hand paid and for other good and valuable consideration, the receipt of which is hereby acknowledged, does hereby grant and convey to the United States of America and the City of Midwest City, a municipal corporation, as Grantees, a perpetual easement for the following described property situated in Midwest City for the purpose of the passage of all aircraft ("aircraft" being defined for the purpose of this instrument as any device now known or hereafter invented, used or designated for navigation of, or flight in, the air) by the United States of America, or authorized by it, and operated in the air space no less than three hundred (300) feet above ground level (AGL) to an infinite height above the surface of the Grantor's property, together with the right to cause in said air space noise, vibration and all other effects that may be caused by the operation of aircraft landing or taking off from, or operated at, or on, Tinker Air Force Base:

Being a part of the West Half (W/2) of the Southwest Quarter (SW/4) of Section 9, T11N-R2W I.M., Oklahoma County, Oklahoma, and being more particularly described as follows: Commencing at the SW corner of said Section 9, thence N00°12'47"W along the West line of said W/2 a distance of 400.00 feet to the Point of Beginning:
Thence N00°12'47"W along the West line of said W/2 a distance of 2231.86 feet to the NW corner of said W/2; thence N89°55'02"E along the North line of said W/2 a distance of 561.76 feet; thence S36°11'13"E, leaving said North line, a distance of 684.42 feet; thence S16°43'38"E a distance of 29.29 feet to the NW corner of Lot 6, Block 1 of Hudiburg Industrial District (now vacated) as recorded at Book 49, Page 83 of the Oklahoma County Plat Records; thence continuing S16°43'38"E along the Westerly boundary of said Block 1, Hudiburg Industrial District (now vacated) a distance of 767.83 feet; thence S89°57'14"W continuing along the Westerly boundary of said Block 1 a distance of 69.17 feet; thence S06°39'52"E continuing along the Westerly boundary of said Block 1 a distance of 200.34 feet; thence N70°05'38"E continuing along the Westerly boundary of said Block 1 a distance of 177.07 feet to a point where said Westerly boundary intersects the East line of said W/2 of the SW/4; thence S00°07'22"E along said East line a distance of 702.91 feet; thence S89°59'26"W, leaving said East line, and

parallel with the South line of said W/2, a distance of 431.52 feet; thence S00°12'47"E a distance of 475.00 feet to a point on the South line of said W/2; thence S89°59'26"W along the South line of said W/2 a distance of 349.80 feet; thence N00°12'47"W a distance of 400.00 feet; thence S89°59'26"W a distance of 528.00 feet to the Point of Beginning and containing 57.8839 Acres.

The Grantor hereby waives, remises and releases any right or cause of action which Grantor has now, or which Grantor may have in the future, against the Grantees, their successors and assigns, due to such noise, vibration and other effects that may be caused by the operation of aircraft landing and taking off from, or operating at or on Tinker Air Force Base, not including the physical impact of aircraft or parts thereof.

To have and to hold said easement and all rights appertaining hereto unto the Grantees, their successors and assigns, until Tinker Air Force Base shall be abandoned and shall cease to be used for an airport or air base. It is specifically understood and agreed that the Grantor, on behalf of itself, its successors and assigns, further acknowledges that the easement herein granted contemplates and includes all existing and future operations at Tinker Air Force Base, acknowledging that future aircraft numbers and types will most likely increase and noise patterns may also increase, and that the rights, obligations, and covenants herein set forth shall not terminate or vary in the event of changes in the flight volume or noise, traffic patterns, runway lengths or locations, terminal locations or characteristics or type or category of aircraft using Tinker Air Force Base.

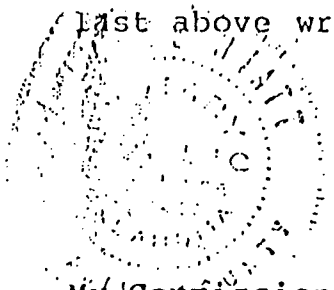
Signed and delivered this 16th day of May, 1990.

GRANTOR: Tinker Industrial Developers, an Oklahoma Partnership

STATE OF OKLAHOMA)
) SS:
COUNTY OF OKLAHOMA)

Before me, the undersigned, a Notary Public in and for said County and State, on this 16th day of May, 1990, personally appeared Warren Thomas, to me known to be the identical person who executed the within and foregoing instrument and acknowledged to me that he executed the same as his free and voluntary act and deed for the uses and purposes therein set forth.

Given under my hand and seal of office the day and year last above written.



A. LaRee Thatt
NOTARY PUBLIC

My Commission Expires:

July 11, 1991

ACCEPTED by the City Council this 25th day of September, 1990.

John G. Turner
Mayor

Tommy Engelke
City Clerk

APPROVED as to form this 25th day of September, 1990.

Municipal Counselor

SAMPLE MAPS

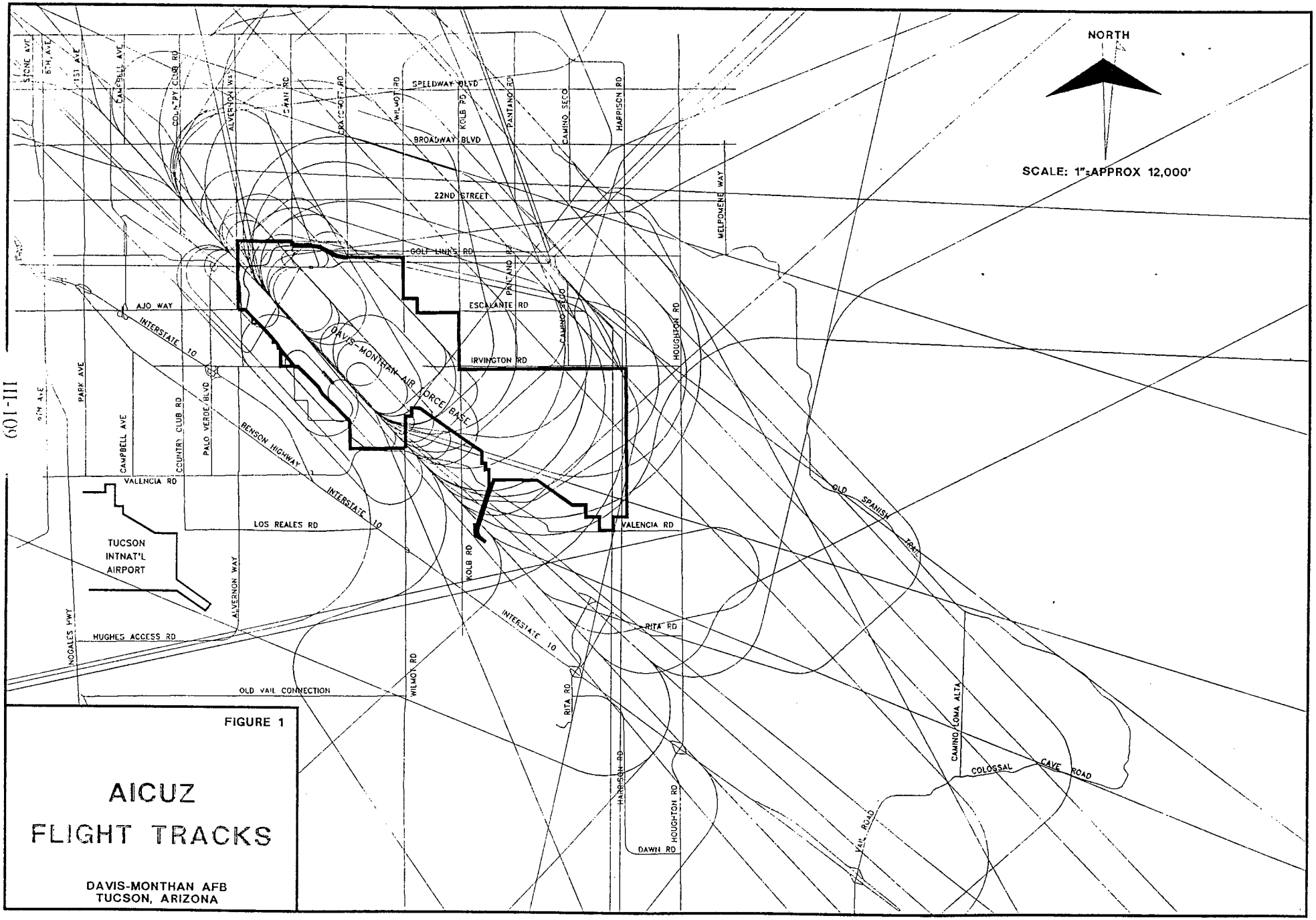
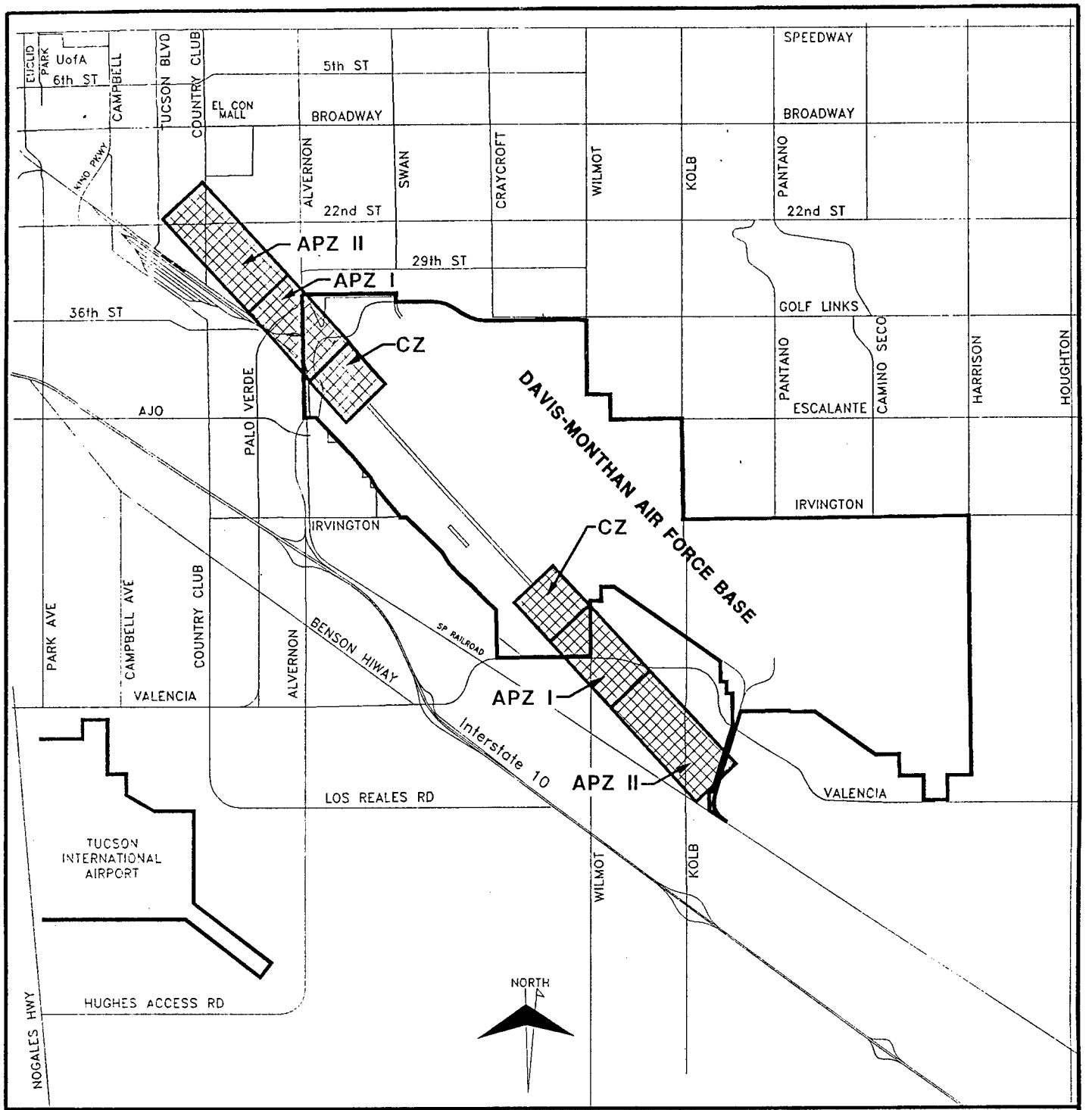


FIGURE 1

AICUZ
FLIGHT TRACKS

DAVIS-MONTHAN AFB
TUCSON, ARIZONA

III-109



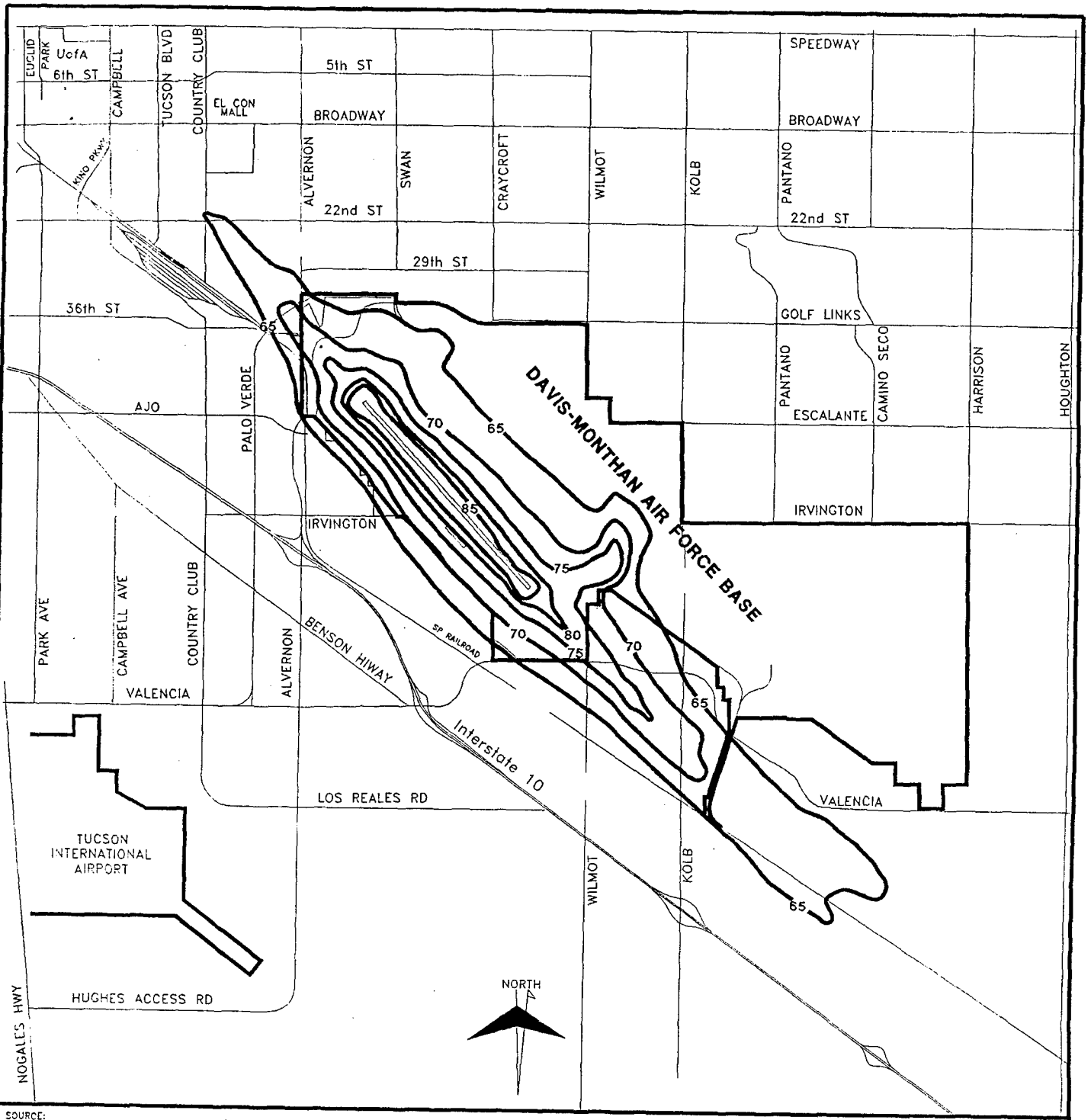
SOURCE:
The Imagine Project

FIGURE 2

AICUZ
ACCIDENT POTENTIAL ZONES

LEGEND

CZ - CLEAR ZONE **APZ - ACCIDENT POTENTIAL ZONE**



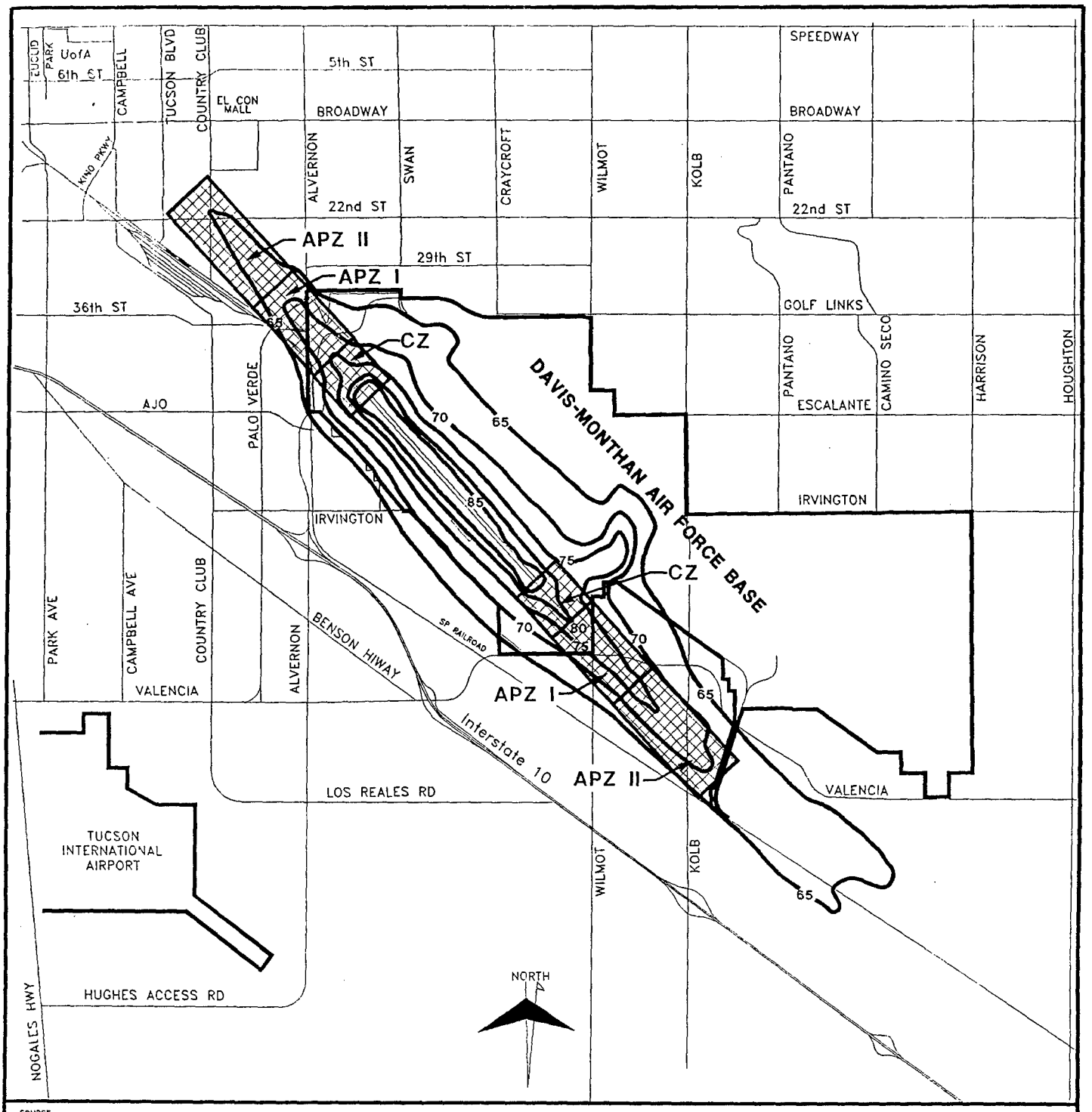
SOURCE:
The Imagine Project

FIGURE 3

AICUZ
NOISE CONTOURS

LEGEND

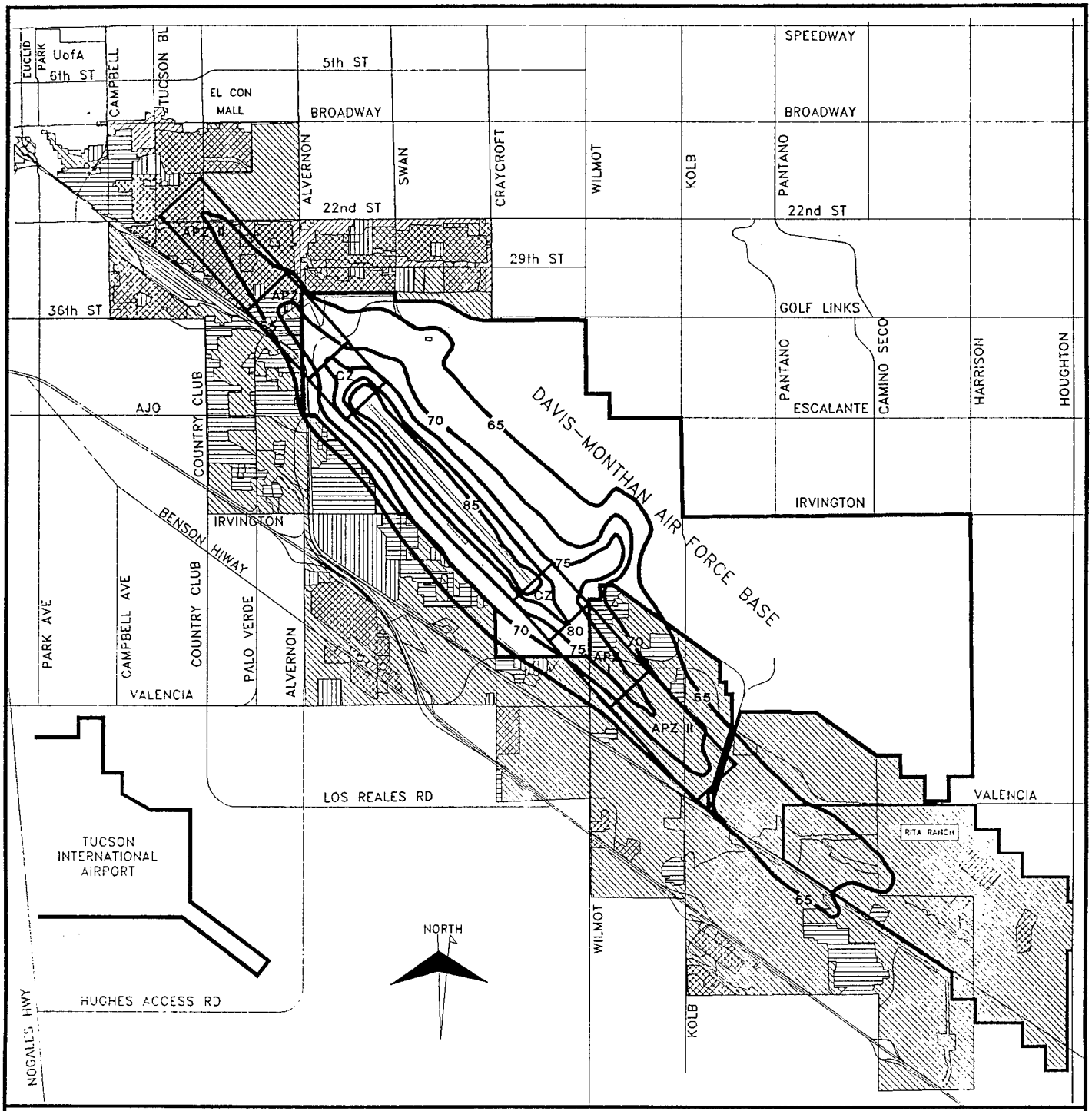
65 — NOISE CONTOUR



SOURCE:
The Imagine Project

FIGURE 5

DAVIS-MONTHAN
AICUZ ENVIRONS



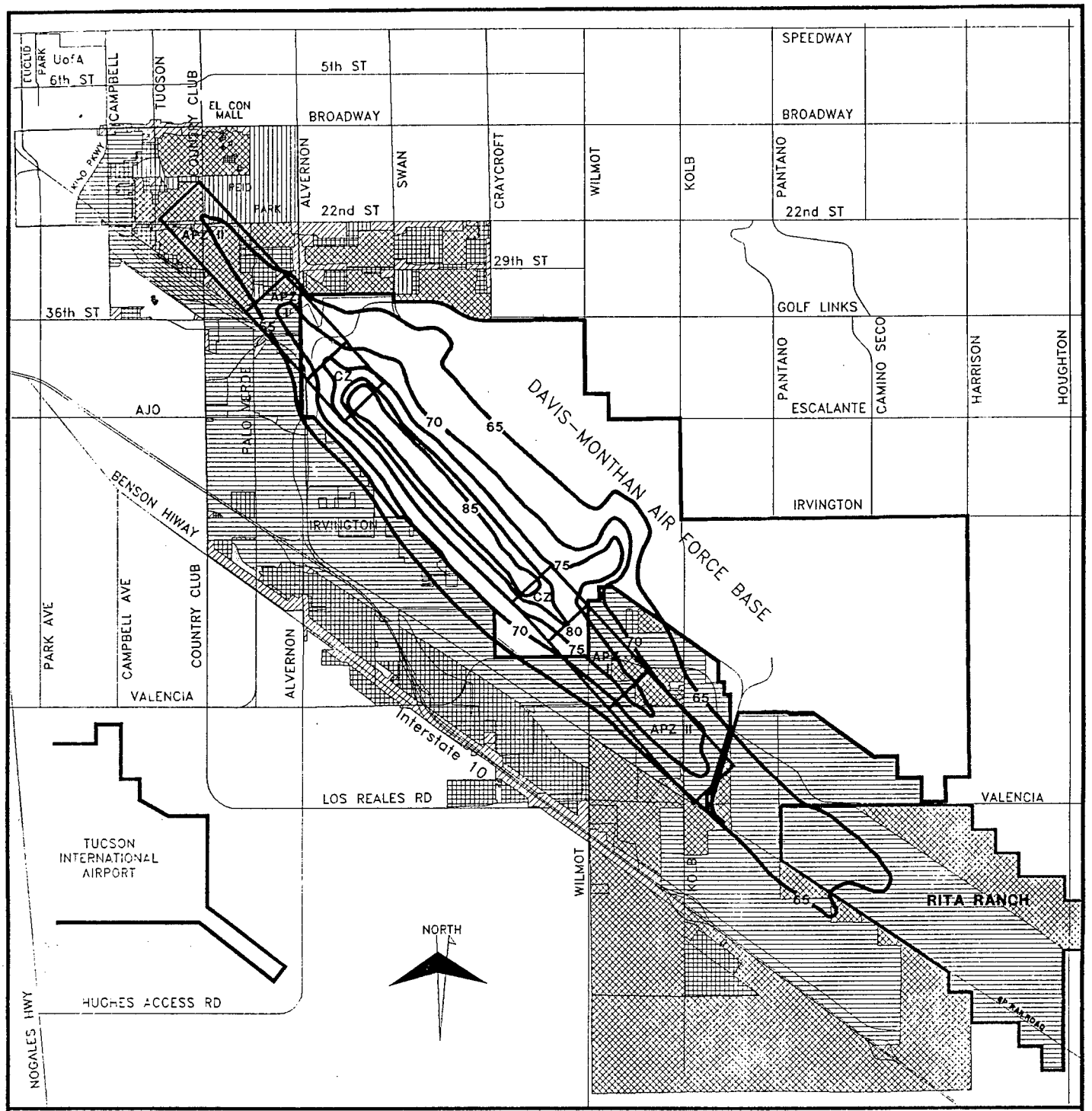
SOURCES:

1. The Imagine Project
2. Pima County Planning and Development Services
3. City of Tucson Planning Dept.

FIGURE 7

EXISTING LAND USE
(GENERALIZED)
LEGEND

- RESIDENTIAL
- COMMERCIAL
- INSTITUTIONA
- INDUSTRIAL
- PARK/OPEN SPACE OR VACANT



SOURCES:

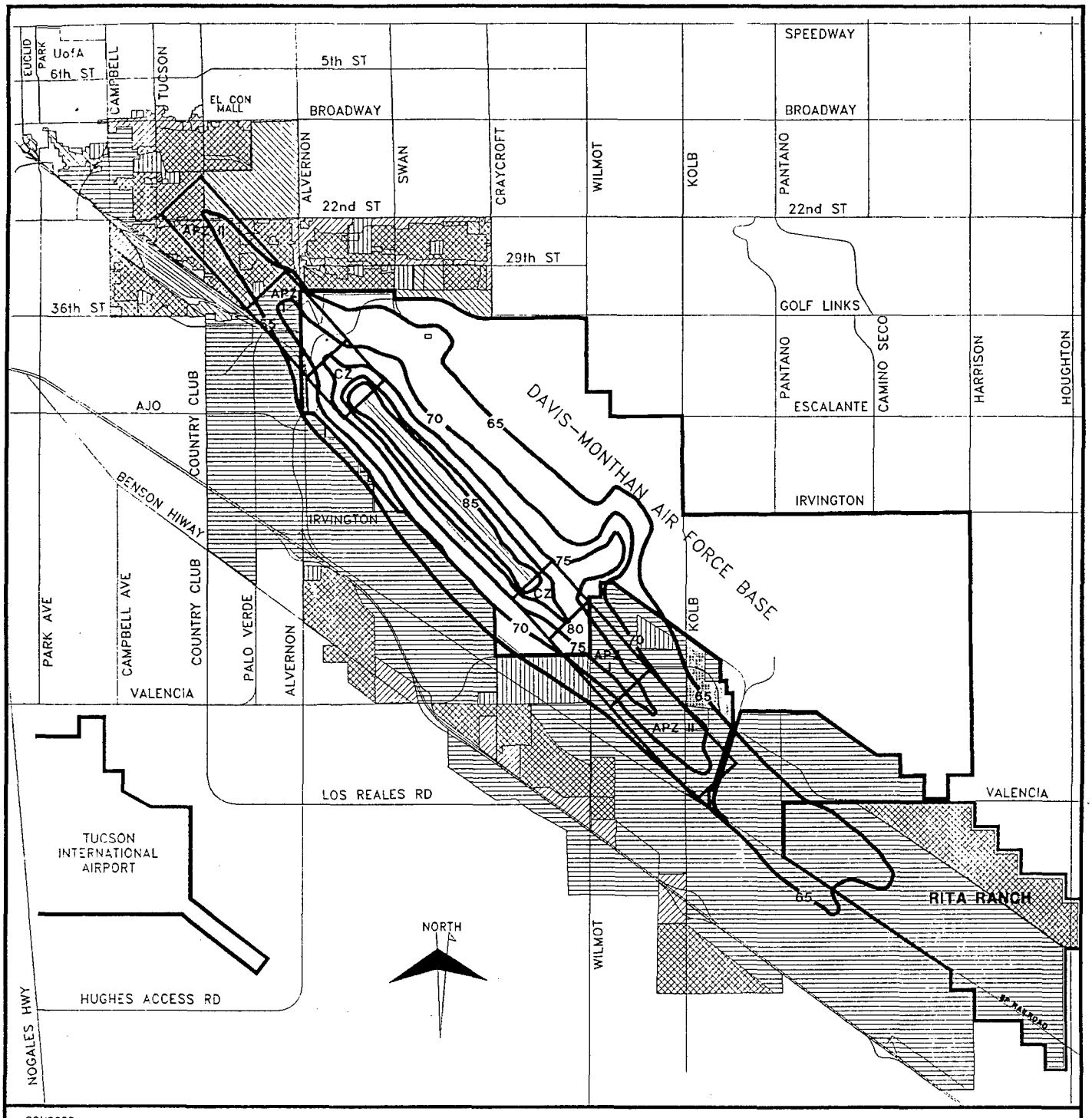
1. The Imagine Project
2. Pima County Planning and Development Services
3. City of Tucson Planning Dept.

FIGURE 8

EXISTING ZONING

LEGEND

- SINGLE-FAMILY RESIDENTIAL
- MULTI-FAMILY RESIDENTIAL
- COMMERCIAL
- INDUSTRIAL
- INSTITUTIONAL
- MULTI-USE



SOURCES:

1. The Imagine Project
2. Pima County Planning and Development Services
3. City of Tucson Planning Dept.

FUTURE LAND USE

(GENERALIZED)

FIGURE 9

LEGEND

- RESIDENTIAL
- COMMERCIAL
- INSTITUTIONAL
- INDUSTRIAL
- PARK OR OPEN SPACE
- MULTI– USE