



# ARIZONA MILITARY REGIONAL COMPATIBILITY PROJECT



**DAVIS - MONTHAN AIR FORCE BASE /  
TUCSON / PIMA COUNTY**

## **JOINT LAND USE STUDY**

**FEBRUARY 2004**



**ARIZONA DEPARTMENT OF COMMERCE**  
*Our Job is JOBS!*

This study was prepared under contract with the Arizona Department of Commerce with financial support from the Office of Economic Adjustment, Department of Defense. The content reflects the views of the City of Tucson, Pima County, Davis-Monthan AFB, the JLUS Policy Advisory Committee, interested stakeholders, and the State of Arizona, and does not necessarily reflect the views of the Office of Economic Adjustment.

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PREPARED FOR:



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PREPARED BY:



IN ASSOCIATION WITH:

The Maguire Company  
S'relli Consulting, LLC

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# 1. INTRODUCTION

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In March 2003, the Davis-Monthan Air Force Base Joint Land Use Study (JLUS) began under the sponsorship of the Arizona Department of Commerce (ADOC). Partially funded by a grant from the Department of Defense Office of Economic Adjustment, the JLUS primarily affects the jurisdictions of the City of Tucson and Pima County.

The Davis-Monthan Air Force Base JLUS is part of the Arizona Military Regional Compatibility Project, which was conceived as a proactive statewide endeavor to convene the stakeholders around each base — the relevant jurisdictions, base personnel, landowners, and other interested parties — to address land use compatibility issues. Arizona is home to a network of United States military airports and installations that in addition to Davis-Monthan Air Force Base include Luke Air Force Base, Yuma Proving Ground and Yuma Marine Air Corps Station, Fort Huachuca, and the Barry M. Goldwater Range (BMGR) Complex (see Figure 1-1). As issues of growth and development have moved to the forefront in many parts of Arizona, the bases and jurisdictions where the bases are located play key roles in addressing compatibility. Through the statewide Compatibility Project, the State is endeavoring to provide the tools to address land use conflicts that might impact the ability of each base to conduct its mission, and to ensure land use compatibility around active military airports, as required under Title 28, Article 7 of the Arizona Revised Statutes (ARS). Appendix A summarizes the applicable ARS land use compatibility legislation.

Development of incompatible land uses in the vicinity of Arizona's military facilities constrains their ability to perform current and future missions. These incompatible uses expose people to safety and noise effects ranging from nuisance to physical harm. In response to these issues, State legislation amending Title 28, Article 7, Airport Zoning & Regulation (ARS §28-8480, §28-8481, and §28-8482) mandated that areas within high-noise or accident potential zones be addressed in municipal general plans and county comprehensive plans and required that land development within the high-noise or accident potential zones be compatible with military airport operations.

The State of Arizona, through amendments to existing law, including ARS §9-461.05, §9-461.06, §9-462.04, §11-806, §11-821, §11-824 and §11-826 enacted Growing Smarter and Growing Smarter Plus measures that address growth and land development issues through changes in community planning and rezoning processes. These measures require political jurisdictions with property within territory in the vicinity of a military airport, as defined in ARS §28-8461, to include consideration of military airport operations in their General Plans and Comprehensive Plans and to allow an opportunity for official comment by the military airport officials on the General Plans. The Growing Smarter statute requires that plans provide for a rational pattern of land development and an extensive public participation program. Compliance with these Growing Smarter and Growing Smarter Plus objectives serves as a key guiding principle for the overall Arizona Military Regional Compatibility Project as well as in the preparation of this JLUS.

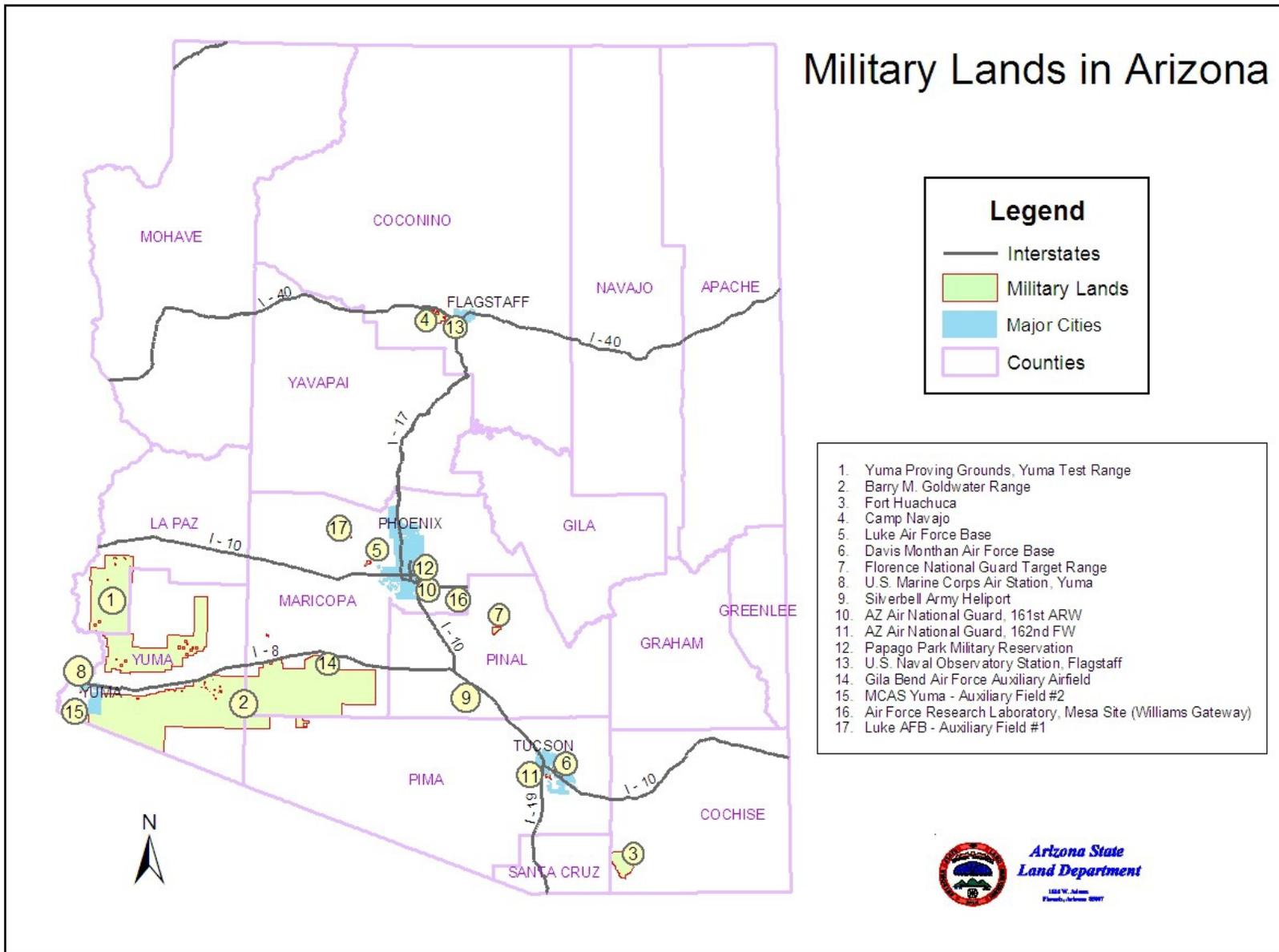


Figure 1-1: Military Lands in Arizona

The U.S. Department of Defense has created the Air Installation Compatible Use Zone (AICUZ) Program to assist communities around military airports in planning for compatible land use. Elements from this national program were also considered in developing the recommendations of this Study.

This JLUS was developed through a collaborative effort that included two public informational meetings, participation of a Policy Advisory Committee (PAC) and Working Group, individual meetings, and correspondence.

## 1.1 PROJECT PURPOSE

The purpose of the Davis-Monthan Air Force Base JLUS is to facilitate the implementation of compatible land uses around the Base through a cooperative program that includes the City of Tucson and Pima County, who have the authority and responsibility to implement compatible land use planning and regulation, Davis-Monthan Air Force Base, and other interested and affected parties, including institutions, corporations, and individuals. The purpose of this JLUS and a challenge for the Tucson community is to protect Davis-Monthan's mission and its economic benefits while increasing the economic diversity and viability of the community through facilitating development in ways that are compatible with the Base's mission. To accomplish this, the JLUS Program uses existing data to understand issues of land use compatibility and proposes specific and achievable implementation strategies based upon sound compatibility criteria.

## 1.2 PROJECT GOALS

To accomplish the purpose, the primary goals of this JLUS are:

- Compile and analyze existing plans and studies to identify existing data, data needs, and points of consistency and conflict among the existing documentation in the area of encroachment prevention.
- Identify land uses that are compatible, acceptable, and feasible in the high-noise zones, accident potential zones, and the Approach-Departure Corridor that surround Davis-Monthan Air Force Base.
- Provide opportunities for meaningful input by landowners, county and municipal governmental agencies, educational institutions, and other stakeholders.
- Develop an implementation plan based on defined compatibility criteria that recommends actions to prevent encroachment by urban development and its resulting impacts on military missions and sustainability.
- Identify existing and develop new land use planning and zoning tools, strategies, and techniques and develop new tools, strategies, and techniques that fairly allocate impacts of achieving land use compatibility with respect to federal, State, and local governments, private landowners, and the military.

As the Project Team met with local jurisdictions, the Base, residents, landowners, and other stakeholders, additional goals were identified:

- Develop strategies for land acquisition that provide the ability to acquire interests (including acquisition of development rights and land trades, as well as outright purchase) for land that is critical to preserving the Base's mission.
- Develop compatibility criteria that recognize the differences in risk and impacts from aircraft operations within the high-noise zones, accident potential zones, and the Approach-Departure Corridor.
- Endeavor to maintain and, where possible, enhance the quality of life for Tucson area residents.

### 1.3 GUIDING PRINCIPLES

The Arizona Military Regional Compatibility Project defined the following guiding principles for the compatibility planning process. These principles became a foundation of the JLUS and apply to each element and phase of the process.

- Create feasible and sustainable solutions that are consistent with Title 28, Article 7, Airport Zoning and Regulation and the Growing Smarter and Growing Smarter Plus legislation
- Address areas within the vicinity of military airports in municipal general plans and county comprehensive plans to ensure development is compatible with the high-noise or accident potential generated by military airport operations, as defined under ARS §28-8481
- Ensure openness to varying viewpoints throughout the process
- Focus on fair and equitable solutions for all affected parties
- Establish, maintain, and enhance consistency and continuity in the decision-making process
- Achieve consent among the stakeholders on the means to control encroachment
- Devise compatible land use solutions that accommodate urban development while preserving the military mission of Davis-Monthan Air Force Base

### 1.4 PUBLIC PARTICIPATION

The public participation program provided meaningful opportunities for interested parties to contribute to shaping the outcome of the Joint Land Use Study through the public outreach process. The vision for public participation was that no one interest dominated the public process, but that all stakeholders in the affected area and all other interested parties had access to frequent and timely progress reports, meaningful and convenient methods of participation, and timely access to draft documents in advance of public meetings.

To achieve this vision, the public participation program consisted of a variety of communication opportunities:

- Posting project information on the Arizona Department of Commerce web site (<http://www.azcommerce.com>)
- Distributing project information to a mailing list of more than 450 community organizations, agencies, and individuals via monthly bulletins, e-mail notices, and direct mailings
- Encouraging local media coverage of Military Compatibility Project achievements, milestones, and events through distribution of press releases and public service announcements
- Providing for participation in the Davis-Monthan Air Force Base JLUS Policy Advisory Committee by key constituent groups, community organizations, Davis-Monthan Air Force Base representatives, and local political jurisdictions to provide input and policy direction
- Conducting two Public Informational Meetings to provide residents and stakeholders an opportunity to receive information on issues and to provide input and comments in a comfortable environment
- Distributing documents in hard copy, web, email, and data disc formats

## 1.5 PLAN IMPLEMENTATION

The JLUS recommendations are the foundation for future action by a variety of public and private entities as it relates to compatible land use around the Base. The JLUS is designed to be implemented at several levels, including the State of Arizona and local political jurisdictions, and by cooperative efforts among local jurisdictions, Davis-Monthan Air Force Base, and public/private partnerships. The implementation program for the JLUS is contained in Chapter 6.



## 2. STUDY AREA OVERVIEW

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The Joint Land Use Study (JLUS) Area includes land within the “vicinity of a Military Airport” as defined in Arizona Revised Statute §28-8461 for Davis-Monthan Air Force Base, and is shown in Figure 2-1. This statutorily defined area, known as the Vicinity Boundary, extends from the Catalina foothills at its most northerly point to the Pima County Fairgrounds at the most southerly point, encompasses approximately 90,500 acres potentially affected by overflights by aircraft operating from Davis-Monthan Air Force Base, as shown in Figure 2-2. Within the overall Vicinity Boundary, the JLUS focuses on areas within the Clear Zone (CZ), Accident Potential Zones (APZs), Approach-Departure Corridor (ADC) and Noise Zones that have been defined for Davis-Monthan Air Force Base. These areas, as shown on Figure 2-1, are the areas most affected by the Base’s operation, and generally correspond to the City of Tucson Airport Environs Zone and Pima County’s Airport Environs and Facilities Zone.

This chapter of the JLUS report provides background for the study through an overview of several key elements that affect future development and compatible land use in the vicinity of the Base. The first section of the chapter presents a summary of information about Davis-Monthan Air Force Base, including its history and its organizations, facilities, and operations. The second section provides a brief history of growth and development in the two jurisdictions—the City of Tucson and Pima County—that surround the Base. The third section identifies current planning programs and documents that address development around the Base. The final two sections present information about land use and ownership patterns in the vicinity of the Base.

### 2.1 DAVIS-MONTHAN AIR FORCE BASE

Davis-Monthan Air Force Base, an Air Combat Command (ACC) installation, is located in the southern part of Tucson, Arizona, and occupies 10,633 acres, or about sixteen and a half square miles of land. The Base was incorporated into the City in 1986 and is presently Tucson’s second largest employer. Approximately 6,200 military and 2,000 civilian employees work at Davis-Monthan, and nearly 9,000 military dependents and 14,000 military retirees reside in the Tucson area. The 355<sup>th</sup> Wing is the Base’s host unit and provides medical, logistical, and operational support to all Davis-Monthan units. The Wing’s missions are to train A-10 and OA-10 pilots and to provide A-10 and OA-10 close support and forward air control to ground forces worldwide. The Wing is also tasked to provide command, control, and communications countermeasures in support of tactical forces with its EC-130H aircraft.

The 355<sup>th</sup> Wing comprises the 355<sup>th</sup> Operations Group, the 355<sup>th</sup> Maintenance Group, the 355<sup>th</sup> Medical Group, and the 355<sup>th</sup> Mission Support Group. Nearly every major air command, the Air Force Reserve, and the Air National Guard are represented among the associate units at Davis-Monthan. Among the Base’s associate units are the Headquarters 12<sup>th</sup> Air Force, Aerospace Maintenance and Regeneration Center, and the 305<sup>th</sup> Rescue Squadron.

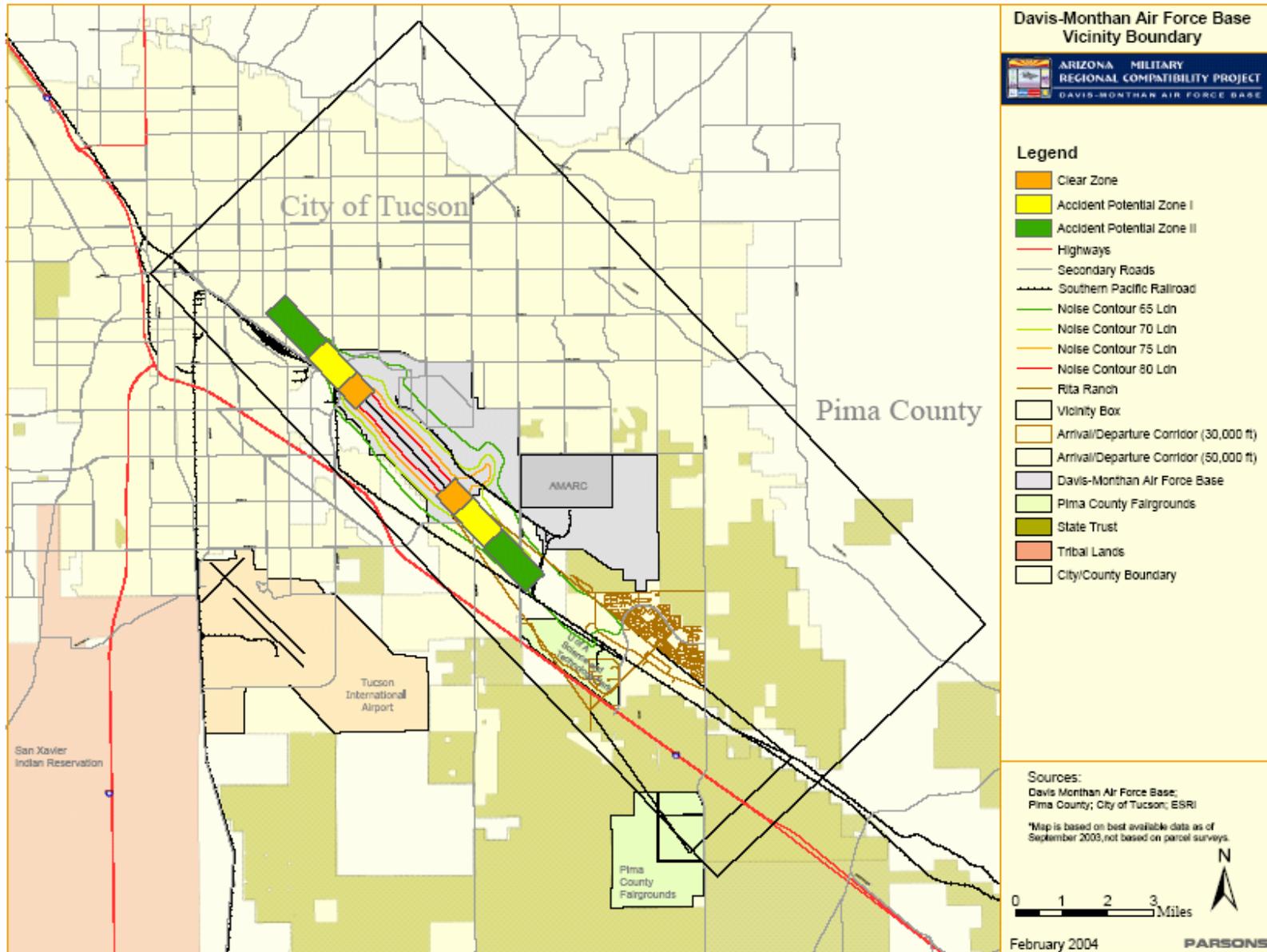


Figure 2-1: Davis-Monthan Air Force Base Vicinity Boundary

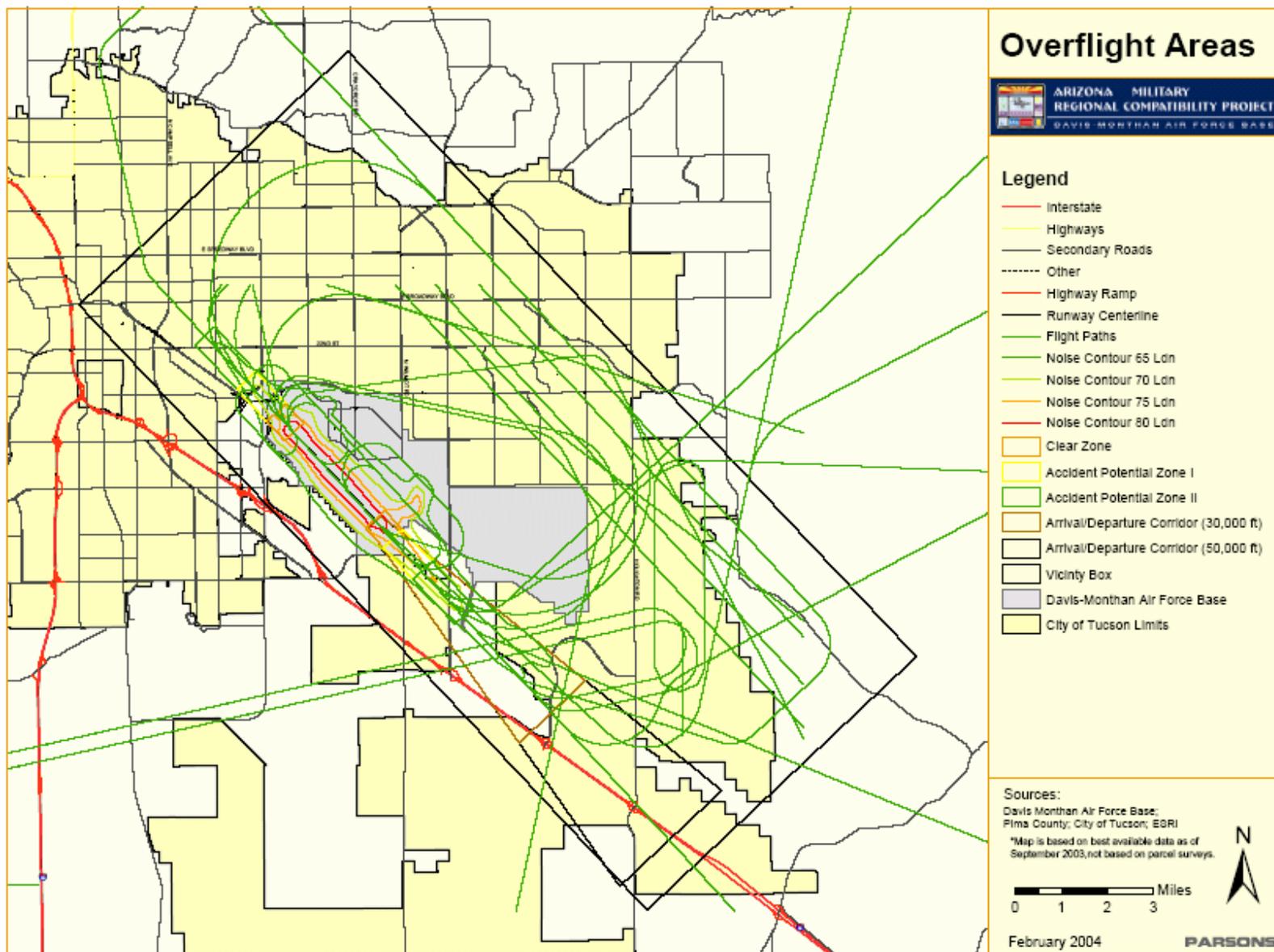


Figure 2-2: Overflight Areas

## 2.1.2 History<sup>1</sup>

Davis-Monthan's history as a military base began in 1925 when Sergeant Dewey Simpson established a refueling stop for Army pilots and other aviators at Tucson's municipal airport, which was then located on South 6<sup>th</sup> Avenue at the present site of the County Rodeo Grounds. That year, the City purchased 1,280 acres of land for its new airport situated just east of the Southern Pacific Railroad tracks. This is where today's Davis-Monthan Air Force Base began. At the same time, the Army Air Corps was drawing up plans for a new air base to be located in Tucson, and therefore construction began on the new municipal airport in 1927 with guidelines specified by the Army Air Corps in anticipation of its being used as an air base. Later that year, Charles Lindbergh flew his "Spirit of St. Louis" to Tucson to dedicate the new airfield that, at the time, was the largest municipal airport in the United States.

The following year, the airport was officially named Davis-Monthan Air Field. It was dedicated in honor of early aviators; Lieutenant Samuel H. Davis and Lieutenant Oscar Monthan. Both men moved to Tucson at an early age with their families. Davis died in 1921 in an aircraft crash at Carlstrom Field, Florida. In March 1924, Lieutenant Monthan and four other men were killed in the crash of a Martin bomber near Honolulu, Hawaii.

During World War II, the Base served as an operational training base for various types of bombers. With the end of the war in 1945, operations at the Base came to a virtual standstill. It was then that Davis-Monthan was selected as a storage site for decommissioned aircraft. Tucson's dry climate and alkali soil made it ideal for aircraft storage and preservation, a mission that continues today through the operations of the Aerospace Maintenance and Regeneration Center.

In October 1976, the Base was transferred to Tactical Air Command after 30 years under Strategic Air Command (SAC). That year also marked the 355<sup>th</sup> Fighter Wing's receipt of its first group of A-10A "Thunderbolts." Since 1979, Davis-Monthan has been the only training location for A-10 pilots.

## 2.1.2 Organizations

The Air Force 355<sup>th</sup> Wing is the Davis-Monthan Air Force Base host unit and provides medical, logistical, and operational support to all Davis-Monthan Air Force Base units. The principal tenant units at the Base include the 12<sup>th</sup> Air Force; the Aerospace Maintenance and Regeneration Center (AMARC); the 55<sup>th</sup> Electronic Combat Group; the 162<sup>nd</sup> Fighter Wing; the 305<sup>th</sup> Rescue Squadron; Detachment 1 of the 120<sup>th</sup> Fighter Group; and the Combat Search and Rescue Squadron. Other federal agencies using the Base include the Federal Aviation Administration (FAA), the U.S. Customs Service Air Service Branch, the U.S. Army Corps of Engineers, and the U.S. Border Patrol.

### 355<sup>th</sup> Wing

The 355<sup>th</sup> Wing is one of the largest wings in the Air Force, with more than 6,100 personnel and six flying squadrons. The wing provides initial qualification and recurrency training for A-10 close air support, OA-10 forward air controllers, and air liaison officers. It also

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<sup>1</sup>Adapted from the Davis-Monthan Air Force Base Air Installation Compatible Use Zone (AICUZ) Report (1992) and materials from the Davis-Monthan Air Force Base website at <http://www.dm.af.mil>.

provides operational A-10/OA-10 close air support and forward air control, air liaison officers to U.S. Army units, and air control radar support to Unified Commands. In addition, members of the wing serve as executive agents for the Intermediate Range Nuclear Forces and Strategic Arms Reduction Treaty compliance.

The 355<sup>th</sup> Wing Commander at Davis-Monthan Air Force Base is selected through a formal process that considers a variety of qualifications to ensure only the “best qualified” officer is selected to fill this critical position. This process includes a formal Command Selection Board, mandatory training, and a directed duty tour length to help ensure continuity.

Wing command is normally a two-year assignment, but may be longer. Because continuity is so important, these assignments are rarely shortened, but can be depending on other pressing mission requirements. The entire selection and assignment process provides Davis-Monthan the best-qualified commander with the appropriate functional expertise, leadership skills, and superior input to be successful.

Units of the 355<sup>th</sup> Wing include:

- The 355<sup>th</sup> Mission Support Group provides for the operation, maintenance, and security of Davis-Monthan and facilities in support of assigned, attached, dispersed or en route, and alert units. It also provides support for associate units as directed by specific agreement, and trains and postures for immediate worldwide deployment of combat support elements in support of higher headquarters tasking.
- The 355<sup>th</sup> Operations Group is composed of over 500 personnel and nearly 80 aircraft. It is divided into five flying squadrons, one pararescue squadron, one air control squadron, one operations support squadron, and one training squadron. The squadrons are dedicated to the combat employment of the HC-130P King aircraft, HH-60G Pavehawk helicopters, the A-10 close air support aircraft, the OA-10 forward air control aircraft, and to radar control of theater air assets.
- The 355<sup>th</sup> Maintenance Group is responsible for equipment maintenance support for the 355<sup>th</sup> Wing and tenant organizations through a 1,600-person organization. The group supports three flying squadrons’ authorized 72 A/OA-10 aircraft. The 355<sup>th</sup> Maintenance Group also provides quality aircraft maintenance for the 355<sup>th</sup> Wing and executes an annual \$23 million budget.
- The 355<sup>th</sup> Medical Group supports medically ready forces and provides ready medical forces that shape the global environment by providing civic assistance and responding to human disasters. The Group also provides or arranges comprehensive, timely, and cost-effective health care for the non-active duty beneficiaries who sustain the warriors and/or already contributed to the defense of the nation.

## 12<sup>th</sup> Air Force

The 12<sup>th</sup> Air Force, headquartered at Davis-Monthan Air Force Base, is charged with commanding, administering, and supervising tactical air forces west of the Mississippi River and in the Southern Command. As one of ACC’s numbered air forces, 12<sup>th</sup> Air Force operates combat-ready forces and equipment for air superiority, interdiction, and close air support and directs seven combat wings, five direct reporting units in the Midwestern and Western U.S., as well as numerous Air Force Reserve and Air National Guard units.

## Aerospace Maintenance and Regeneration Center (AMARC)

The Aerospace Maintenance and Regeneration Center (AMARC), which occupies an area of 2,597 acres, is responsible for more than 5,000 aircraft stored at Davis-Monthan Air Force Base. An Air Force Material Command unit, AMARC is responsible for the storage of excess Department of Defense and Coast Guard aircraft. The center annually in-processes about 400 aircraft for storage and out-processes about the same number for return to active service, either as remotely controlled drones or sold to friendly foreign governments. Almost 70 different types of aircraft are currently stored at AMARC, ranging from U.S. Army and Navy helicopters to the Air Force's Vietnam War era F-4s.

## 55<sup>th</sup> Electronic Combat Group

The 55<sup>th</sup> Electronic Combat Group, a unit assigned to the 55<sup>th</sup> Electronic Wing, Offut Air Force Base Nebraska, is one of eight tenant units on Davis-Monthan Air Force Base. The 55<sup>th</sup> ECG flies the EC-130 H "Compass Call" aircraft, which provides electronic countermeasures support to unified commands.

## 162<sup>nd</sup> Fighter Wing

Ten personnel from the 162<sup>nd</sup> Fighter Wing located at Tucson International Airport are assigned to the Base to support "Operation Snowbird," which is a National Guard Bureau program located at Davis-Monthan. "Operation Snowbird" deploys six to twelve squadrons for two weeks of training each between the months of November and April each year. Each deployment package consists of 24 pilots and 116 support personnel.

## 305<sup>th</sup> Rescue Squadron

The 305<sup>th</sup> Rescue Squadron, which flies HH-60G "Pavehawk" helicopters, trains personnel to achieve and maintain the capability to perform day/night combat rescue missions; search for, locate, and recover United States Air Force (USAFB) and other Department of Defense personnel involved with United States defense activities; provide search and rescue support of civilians as directed by the Air Force Rescue Coordination Center; and provide humanitarian and disaster relief operations at the request of foreign governments and the International Civil Aviation Organization (ICAO).

## Detachment 1, 120<sup>th</sup> Fighter Group

Detachment 1, 120<sup>th</sup> Fighter Group, a Montana Air National Guard unit, flies the F-16 "Fighting Falcon." Each week, two F-16s rotate to the Base from their home base in Great Falls, Montana. These aircraft can scramble in less than five minutes to identify, intercept, and, if necessary, destroy any airborne threat to U.S. security.

## Combat Search and Rescue Group

The most recent addition to Davis-Monthan's tenant units is the Combat Search and Rescue Group. The three squadrons in the Group are an HH-60G helicopter unit, an HC-130 aerial refueling unit, and a squadron of pararescue forces. The Group rapidly deploys highly survivable combat rescue forces to theater combatant commands and employs pararescue forces in hostile threat environments during day, night, and marginal weather. When not performing operations in war, other operations are conducted, including disaster relief, counter-drug operations, and noncombatant or medical evacuation. The squadron

also provides close air support to assigned pararescue/ground forces. The Combat Search and Rescue (CSAR) Squadron is assigned to the Air Force Special Operation Command (AFSOC).

### 2.1.3 Facilities

There are over 600 working facilities at the Base, including operational, maintenance and community facilities. There are also 1,250 occupied military family homes on the Base, in which approximately 4,000 persons reside. The Base has significantly expanded its facilities over the past ten years constructing over 700,000 square feet of new or replacement facilities, along with 184 housing units.

The total replacement value of the Base's facilities is over \$8.0 billion, not including the real estate value. The primary runway at the Base is Runway 12-30, which is 13,645 feet long, 200 feet wide, with 1,000 foot overruns at each end of the runway, and is one of the longest runways at a U.S. Air Force base.

The authorized personnel strength at the Base for 2003 is 8,281, including 845 officers, 5,142 enlisted and 2,294 civilians. The authorized personnel strength at the Base increased by over 25 percent since 1993, and is projected to increase by over 10 percent between 2003 and 2008.

### 2.1.4 Operations

Davis-Monthan Air Force Base normally conducts takeoffs, up to a 10-knot tail wind, in a southeasterly direction over the desert. These southeasterly takeoffs account for the majority of all takeoffs. Currently, aircraft permanently assigned to Davis-Monthan do not have afterburning engines, which significantly minimizes ground-level noise. However, transient aircraft, national defense alert aircraft, and fighter/trainer aircraft on temporary duty to Davis-Monthan generally conduct takeoffs utilizing afterburning engines that are considerably louder than non-afterburning engines. Afterburners are usually de-selected by the pilot at the Base boundary only if flight parameters and safety permit. Future fighter aircraft at Davis-Monthan should be assumed to have afterburning engines and use them for takeoff.

The predominant altitude for patterns at Davis-Monthan is 1,500 feet above ground level (AGL). Visual routes and holding points for aircraft in the Tucson basin are at 3,000 feet. However, one route, the "fairgrounds visual departure route" to the southeast is flown at 1,000 AGL. This departure is flown over the Houghton Road area in the vicinity of the Pima County Fairgrounds to Pantano Wash and southeast towards the town of Vail. The major flight paths are shown on Figure 2-3. Figure 2-3A shows only the helicopter flight tracks, Figure 2-3B shows only the C-130 flight tracks, and Figure 2-3C shows only the A-10 flight tracks.

Each Air Force base that supports live ordnance training has specific procedures for aviators to follow on training missions to minimize impacts on the surrounding community, as safety is of paramount importance. At Davis-Monthan Air Force Base, current live-ordnance procedures require departure to the southeast from Runway 12. Although there are no dedicated routes for live ordnance departures, most departures are along specified routes to the Barry M. Goldwater Range (BMGR), avoiding current population centers to the maximum extent possible. After take-off, aircraft flying these routes turn to the

southeast to avoid Rita Ranch and avoiding the Houghton corridor. Avoiding the Sahuarita Road housing developments, they cross Interstate-19 north of Green Valley, then proceeding west to the BMGR continuing to avoid any developed area.

In addition to missions flown by Davis-Monthan aircraft, Air National Guard units, other active duty units, and many foreign nations deploy to Davis-Monthan to accomplish their annual live-ordnance training requirements. Davis-Monthan's Operation Snowbird supports this needed training for the Air National Guard, nationwide.

Climatic conditions in southern Arizona allow Davis-Monthan Air Force Base to operate 365 days per year with little weather interference or stand-down days. The combination of a climate that is favorable for training operations, proximity to training ranges, and access to low-level training routes and high-performance-maneuvering airspace provides an ideal environment for integrated-force training. The 2.7 million-acre BMGR, with its live-fire ranges, is an important asset for the Base's training mission as is the 15,000 square miles of restricted airspace in Southern Arizona. The Base uses Libby Army Airfield, which is located at Fort Huachuca 50 miles to the southeast for training operations, and A-10s from the base routinely use Gila Bend Air Force Auxiliary Field adjacent to BMGR for practicing traffic pattern and emergency simulated engine-flameout procedures. The Gila Bend airfield also is equipped with a simulated laser target (SLT) transmitter used by A-10 aircrews to practice identifying laser-illuminated targets. Davis-Monthan pilots have access to more than 5,000 miles of designated Military Training Routes (MTRs) in the southern half of the State, which allow for high-speed, low-level training in visual or instrument flight over terrain that varies from 300 to 9,000 feet above sea level.

## 2.2 CITY OF TUCSON AND PIMA COUNTY

The Tucson metropolitan area, which includes Tucson, Marana, Oro Valley, Sahuarita, and South Tucson, is located in Pima County in southern Arizona. In the Sonoran Desert at an elevation of around 2,500 feet, the metropolitan area is surrounded by the Santa Catalina Mountains on the north, the Santa Rita and Sierrita Mountains to the south, the Rincon Mountains to the east, and the Tucson Mountains to the west.

The Tucson metropolitan area has a unique blend of Native American, Latino, Anglo, African American, and Asian heritages. In 2003, the University of Arizona was the largest single employer in the metropolitan area with over 11,000 employees, while Raytheon had over 10,000 employees and Davis-Monthan Air Force Base was the third largest, with just under 10,000 employees.

Over 910,000 people lived in the Tucson metropolitan area in 2003, and the civilian labor force is 408,400. The median age of Tucson residents is 35.7, and the average annual earnings per worker is \$32,300. The total population of Pima County for 2025<sup>2</sup> is projected to be 1.4 million, an increase of about 490,000 (54 percent) from the 2003 population.

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<sup>2</sup>Source: Metro Tucson Population: 1870-2050; City of Tucson, Comprehensive Planning Task Force, 2002.

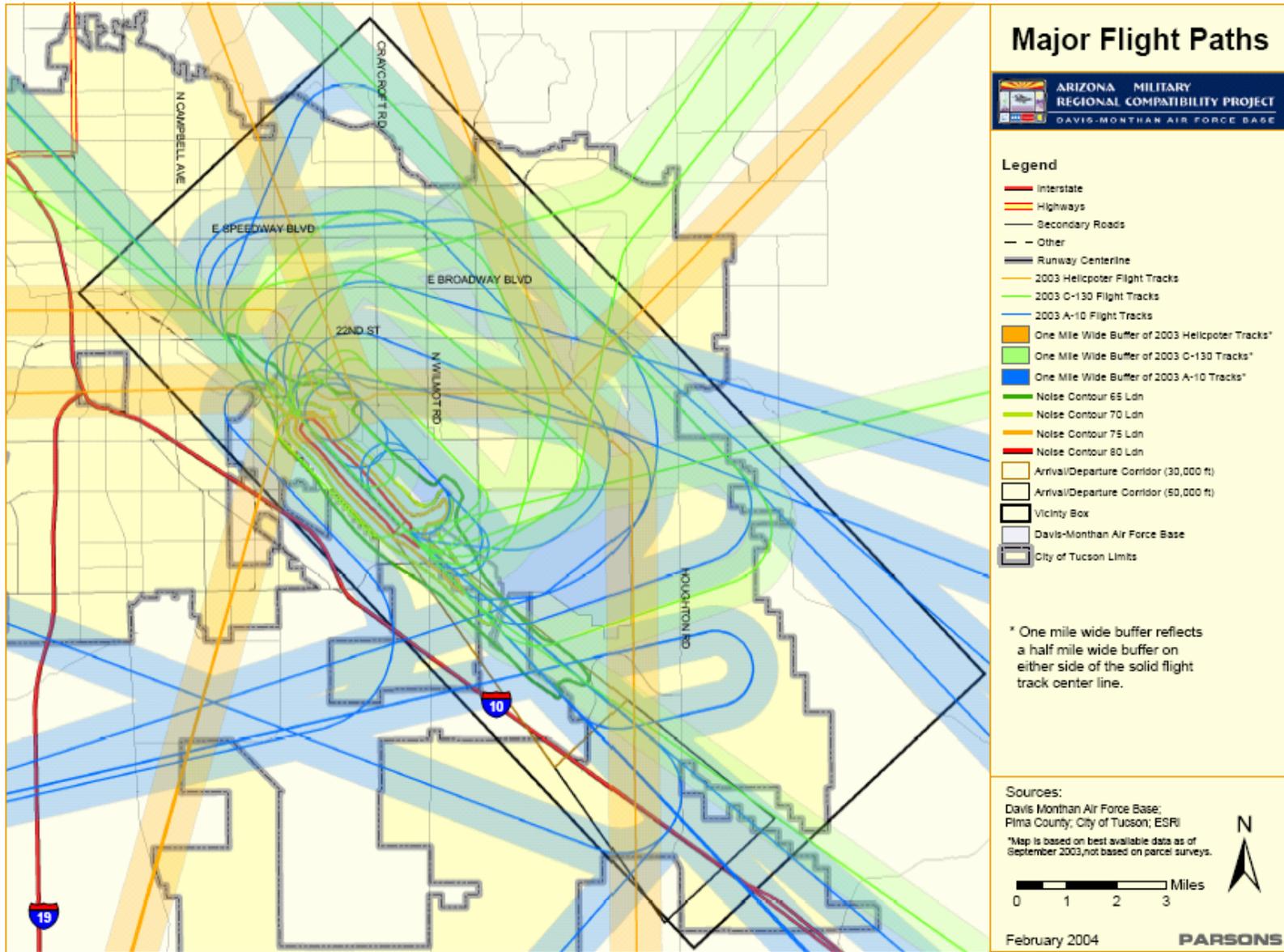


Figure 2-3: Major Flight Paths

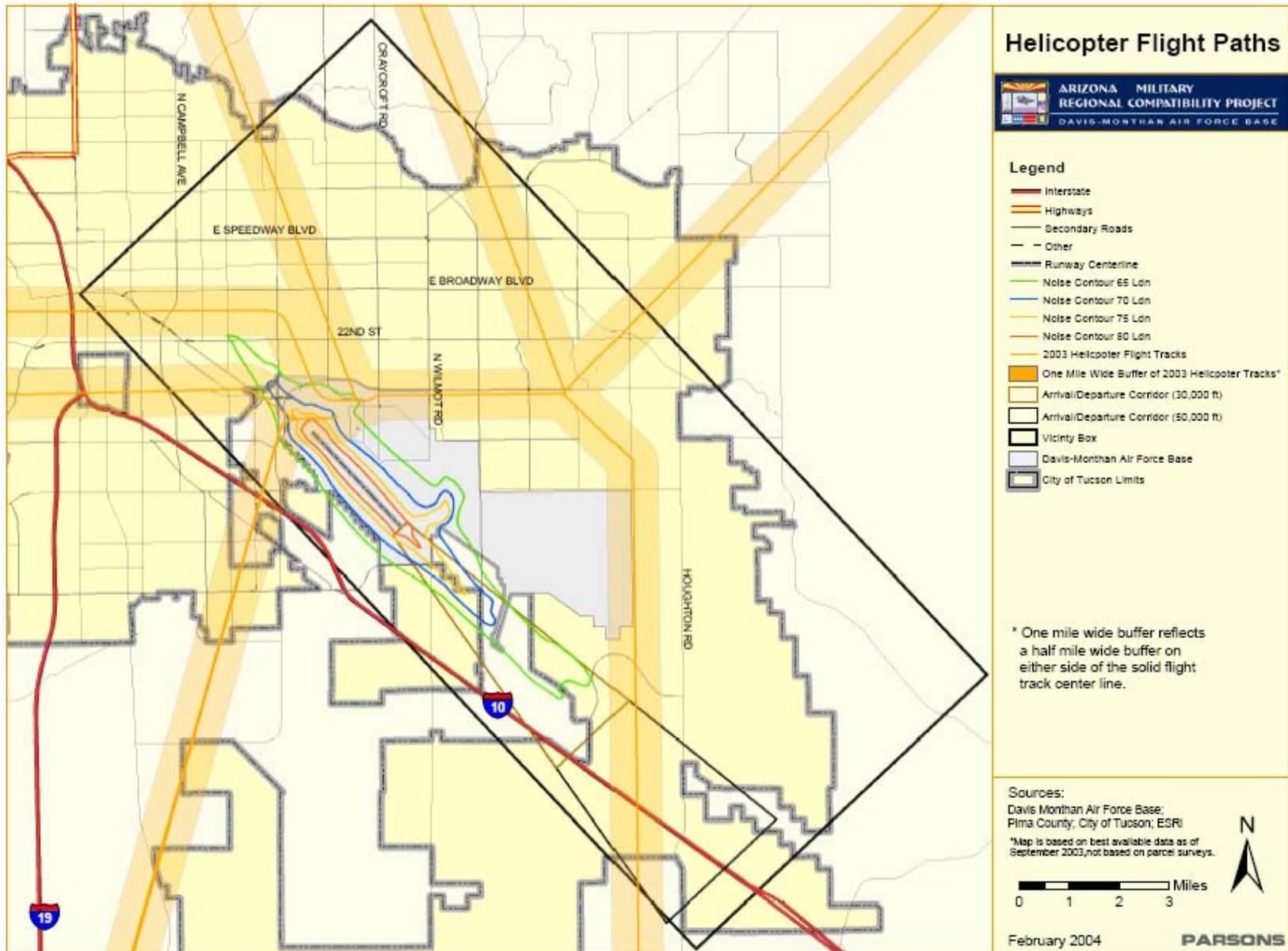


Figure 2-3A: Helicopter Flight Paths

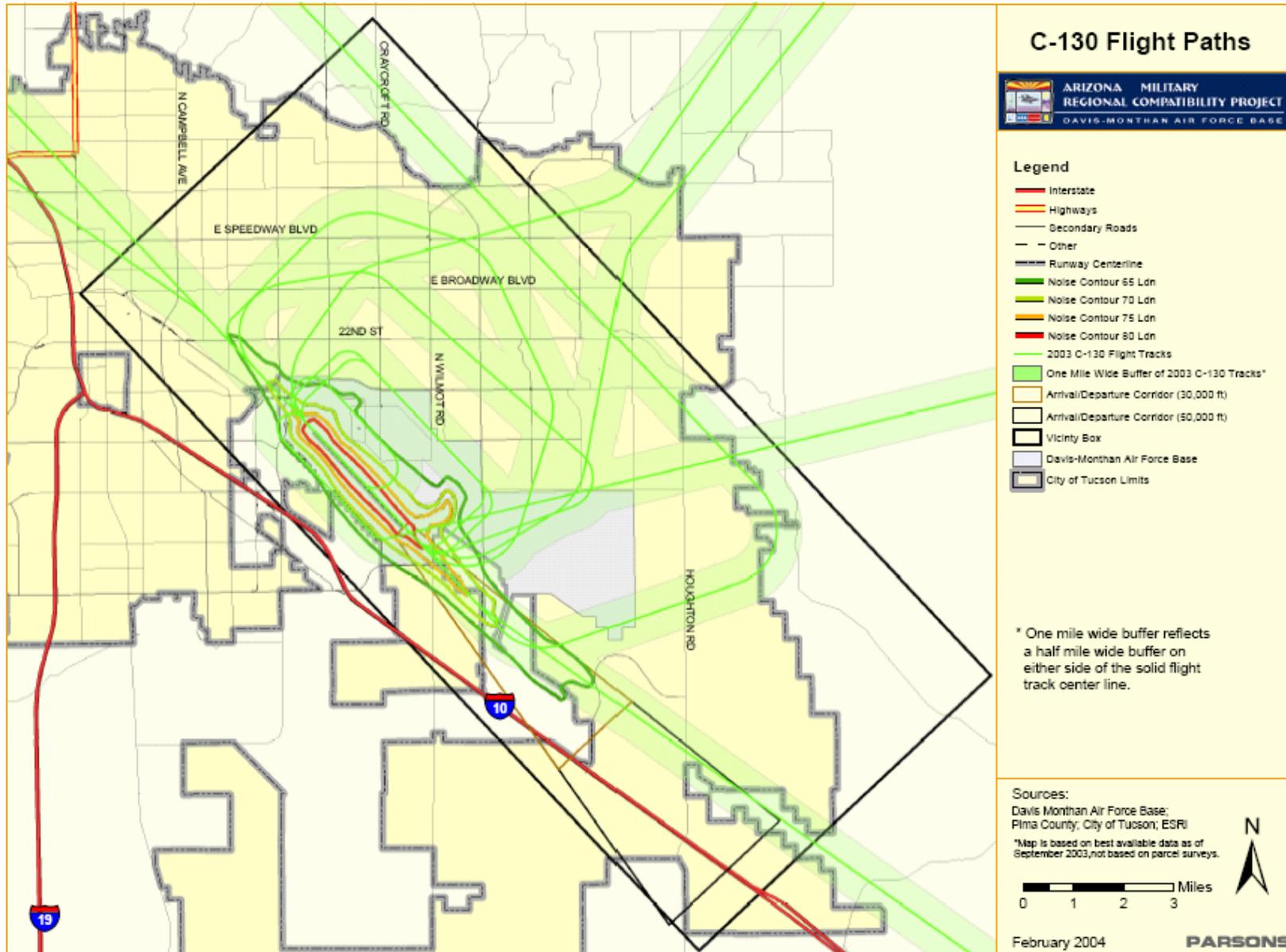


Figure 2-3B: C-130 Flight Paths

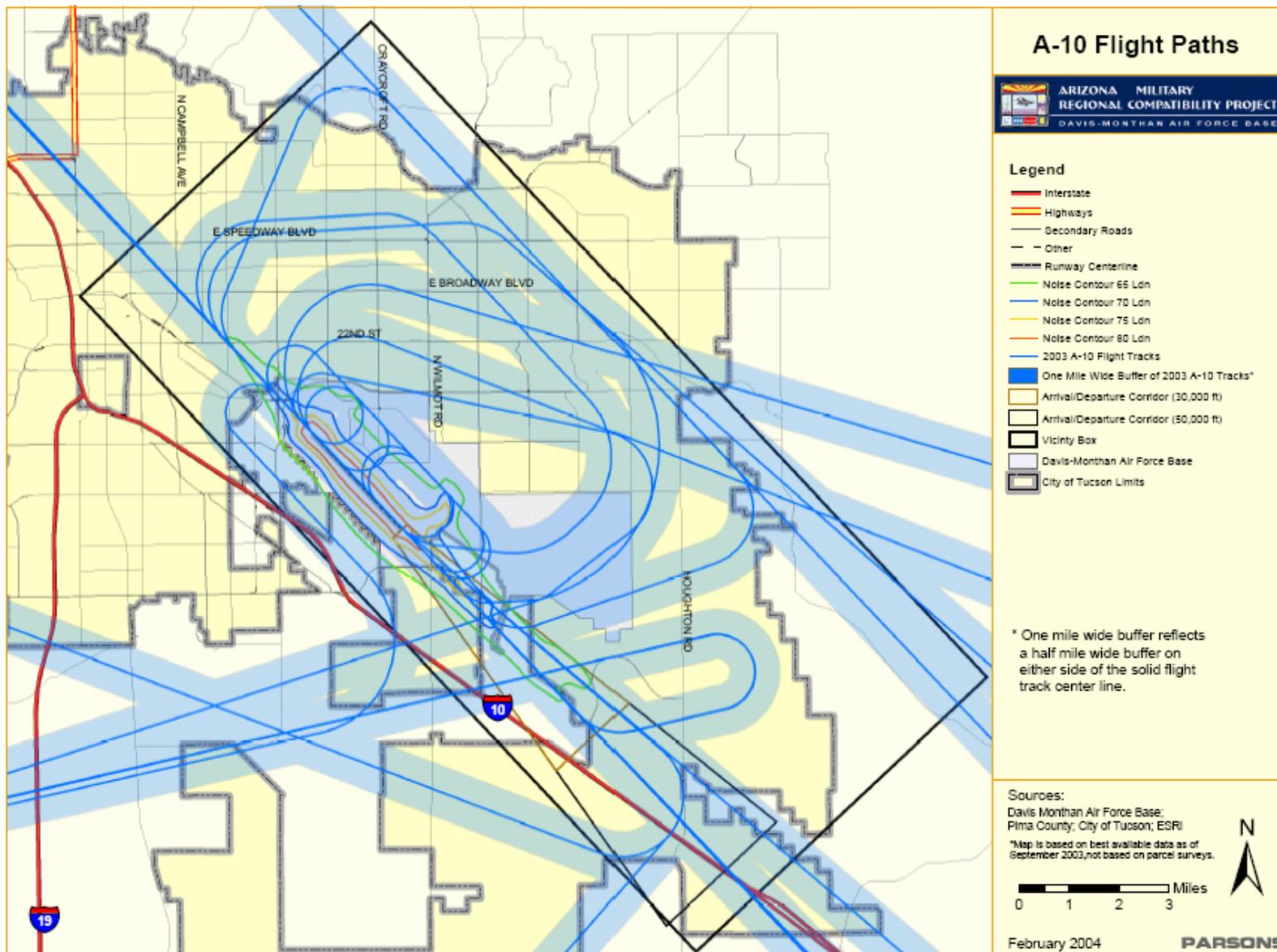


Figure 2-3C: A-10 Flight Paths

According to the City Planning Department, the total population for the area in the Vicinity Boundary (see Figure 2-1) is 265,445. About 7,650 people live in the Airport Environs Zone (AEZ) northwest of Davis-Monthan and 1,935 in the AEZ to the southeast of the base.

Today, growth and development in the Tucson area has been generated by a myriad of new sources. Close proximity to Mexico makes Tucson a popular location for companies importing and exporting goods across the border. Advanced technology firms have become a large part of Tucson's industrial base. Major types of industrial concerns include aerospace, bio-industry, environmental technology, information technology, optics, and telecommunications services. Many of the advanced technology ventures are directly and indirectly related to research at the University of Arizona.

With more than 1,200 companies employing over 50,000 people in the high-tech industries of southern Arizona, Tucson has become a leader in the expanding knowledge-based economy. Numerous advanced technology companies have made Tucson their home, including AlliedSignal, Raytheon Missile Systems, Texas Instruments, IBM, America Online, Universal Avionics, Sunquest Information Systems, Bombardier, and many others.

Tourism also forms an increasingly important source of economic activity. In 2002, tourism contributed over \$1.8 billion to the Pima County economy and will continue to be a growing part of the economic base. Currently, about 10 percent of all jobs in the Tucson metropolitan area are generated by the tourism industry.

With the dynamic growth in the Tucson metropolitan area, construction, both residential and non-residential, is also a major contributor to the economy. In 2003, the City of Tucson issued over 2,000 residential building permits, and over 200 commercial building permits. Pima County issued over 800 single-family residential building permits in the first quarter of the current fiscal year and the total value of all residential permits for that period was \$184 million.

## 2.3 PLANNING WITHIN THE JOINT LAND USE STUDY AREA

The City of Tucson's General Plan and Pima County's Comprehensive Plan, along with the zoning regulations of both jurisdictions define the expected future land use in the JLUS study area. The land use plans are shown in Figure 2-4 and existing zoning is shown in Figure 2-5. The City, County, and other entities have prepared or are in the process of preparing other plans that address land use, housing, transportation, economic development, environmental, and related planning issues within or adjacent to their boundaries. These plans are briefly summarized in the following sections.

### 2.3.1 Pima Association of Governments

#### *Regional Aviation System Plan Technical Report and Executive Summary (2002)*

The Regional Aviation System Plan (RASP) calls for Tucson International Airport (TIA) to continue to plan for a new parallel runway east of the airport's existing landside development complex. The Plan notes that both TIA and the Ajo Municipal Airport have airspace overlaps with military airspace that result in restrictions to their operations, and recommends that those airports to coordinate planning efforts with the military and that actions should be taken to prevent or mitigate future airspace operating restrictions.





### *Southeast Area Arterial Study*

The Southeast Area Arterial Study is being undertaken by The Pima Association of Governments (PAG) in cooperation with the City of Tucson, Pima County, the Town of Sahuarita, and the Tucson Airport Authority. The Study area is generally bounded by Interstate-19, Interstate-10, State Route-83, and the Santa Rita Experimental Range. The purpose of the Study is to identify a future roadway network that will serve this rapidly developing area so that appropriate rights-of-way can be reserved. The study began in March 2003 and is expected to be completed in August 2004.

The scope of work includes assessing growth forecasts (through 2030 and at buildout) and associated transportation needs, evaluating physical features and other conditions that might shape or influence future transportation system needs and infrastructure in the study area, preparing recommendations regarding the future development of an arterial transportation system in the study area, and a report of findings and recommendations. The study will also target access needs to the developing freight and cargo handling activity at TIA and the City's Puerto Nuevo area.

### *Regional Transportation Plan*

The Regional Transportation Plan (RTP) is the long-range plan that guides improvements to bus, roadway, bicycle, pedestrian, aviation, and rail transportation systems in the eastern Pima County region. The plan must look into the future a minimum of 20 years, demonstrate financial feasibility, meet federal air quality requirements, and comply with various other federal requirements. The first such long-range plan for the PAG region was completed in 1981 and the current version of the plan, adopted in 2001, extends the planning horizon the year 2025. This 2025 RTP included adjustments to projected costs, revenue sources, and proposed projects, and was limited in scope to meet the federal requirement that the Plan maintain a minimum 20-year planning horizon. An Amendment to 2025 RTP addressing new data since its adoption in 2001 is expected to be completed and adopted by the PAG Regional Council in January 2004. Preparation of the 2025 update was the first step in a larger effort to perform a major, comprehensive update which will extend the planning horizon to 2030 or beyond. This major update (known as the 2030 RTP) began in 2001 and will include extensive public involvement and further technical analysis.

### **2.3.2 City of Tucson**

#### *Land Use Code (Revised October 28, 2002), Article II Zones, Division 8, Overlay Zones, Airport Environs Zone (AEZ)*

Promotes public health, welfare, and safety in the vicinity of TIA and Davis-Monthan Air Force Base; reduces the noise and safety hazards associated with aircraft operation; preserves the operational stability of airports, etc. The October 28, 2002 revisions established a new Approach-Departure Corridor (ADC) district, together with interim regulations for the ADC in the Airport Environs Zone (AEZ).

The AEZ ordinance and map, as revised in October 2002, define eleven zones and districts with respect to Davis-Monthan Air Force Base as listed below.

- Accident Potential Zone-One (APZ-1)

- Accident Potential Zone-Two (APZ-2)
- Accident Potential Zone-Three (APZ-3)
- Accident Potential Zone-Four (APZ-4)
- Noise Control District-65 (NCD-65)
- Noise Control District-70 (NCD-70)
- Airport Hazard Districts (AHD)
- Approach-Departure Corridor (ADC)

### *Airport Environs Plan (Amended January 28, 1991)*

In 1980, the City of Tucson and Pima County conducted a joint airport noise control and land use compatibility study to provide guidance to local jurisdictions in establishing policies to achieve land use compatibility in areas exposed to high noise. In 1982 the City and County adopted the *Airport Environs Plan* for the area adjacent to Tucson International Airport in an effort to prevent severe noise problems from occurring. That plan was amended in 1991 and uses day-night average sound levels (Ldn) to determine the areas most impacted by high noise occurrences.

The Plan created a number of overall and special policies and implementation techniques in the high-noise areas.

- Prohibit any new or redeveloped noise sensitive uses in the 70 Ldn to 75 Ldn contours
- Discourage any new or redeveloped noise sensitive uses in the 65 Ldn to 70 Ldn contours
- Require acoustical treatment for all new or redeveloped structures of noise-sensitive land uses in the 65+ Ldn contour area
- Require acoustical treatment, if necessary, for all new or redeveloped structures that could contain noise-sensitive land uses in the 65+ Ldn contour area
- Investigate methods by which the City may assist Tucson Airport Authority in acquiring avigation easements for all new or redeveloped noise-sensitive areas in the 65+ Ldn contour area
- Revise the existing Airport Approach Zones to include noise and land use considerations in the 65+ Ldn contour area
- Enact a truth-in-sales ordinance in the 65+ Ldn contour area
- The Tucson Airport Authority should continue to implement the noise reduction measures recommended in the 1999 Master Plan for TIA
- The Tucson Airport Authority should establish a purchase assurance program for all existing single-family dwellings, subject to the availability of funds, in the 70+ Ldn area
- The Tucson Airport Authority should establish a cost-sharing acoustical treatment program, subject to the availability of funds, in the 65 Ldn to 70 Ldn area

- Discourage the development of capital improvements in areas exposed to high levels of aircraft noise in the 65+ Ldn area
- Prohibit development that would create a hazard to aircraft
- Update area and neighborhood plans to reflect the recommendations in the Airport Environs Plan

#### *Arroyo Chico Plan (Adopted March 24, 1986)*

The City adopted a plan for the Arroyo Chico area, a 4.3-square-mile area northwest of Davis-Monthan Air Force Base. Because of increasing pressures to re-develop and infill existing vacant properties, these new land uses may have compatibility conflicts with long-established uses, especially in existing residential neighborhoods. Although Davis-Monthan Air Force Base is mentioned in the Plan and a substantial part of the Arroyo Chico area lies within APZ-I and APZ-II, as well as within the 65 Ldn and 70 Ldn noise contours, the Plan provides guidance for compatibility of land uses with the Base's mission.

#### *Broadway-Craycroft Plan (Adopted September 26, 1988)*

The Broadway-Craycroft area is located in the central part of the City of Tucson, north of Davis-Monthan Air Force Base. It has a land area of about 1,920 acres, with arterial streets creating square-mile blocks dominated by single-family residential uses, with retail-office uses on the east-west streets. The policies provided in the Plan ensure that new residential and non-residential development and infill would be compatible with existing neighborhoods. Although Davis-Monthan Air Force Base is mentioned, the Plan provides no specific guidelines in terms of compatibility with the Base's mission. This area lies outside the high-noise and hazard zones but within the Vicinity Boundary.

#### *Alvernon-Broadway Area Plan (Adopted 1995)*

The Plan was prepared in order to provide land-use policy direction and design guidelines for an area of central Tucson largely characterized by low-density, single-family residences mixed with retail-office uses along the major streets and intersections. This area lies outside the high-noise and hazard zones but within the Vicinity Boundary. Davis-Monthan Air Force Base is not mentioned in the Plan and no specific guidelines in terms of compatibility with the Base's mission are provided.

#### *Esmond Station Plan (Adopted March 24, 1986)*

When the Plan was adopted in 1986, the Esmond Station area, which is located immediately adjacent to and southeast of Davis-Monthan Air Force Base, included 8.7 square miles under City of Tucson jurisdiction and 19.3 square miles under Pima County jurisdiction. The greater majority of the land is now within the City limits. The City prepared the Plan because the area it represents has some of the most buildable property in the Tucson area in terms of accessibility and lack of geological constraints. The primary goal of the Plan was to create conditions wherein livable communities would be developed without conflict with existing uses. The first sub-goal was to encourage the development of a variety of housing opportunities, ranging from single-family subdivisions to multi-family facilities. The Plan prohibited residential development in areas where the noise exceeded the 70 Ldn noise contour. State Trust Land comprises about 50 percent of the total land area in Esmond Station. The Plan stipulates that land use compatibility with the Davis-

Monthan Air Force Base “operations is a critical consideration in protecting not only adjacent future development but also existing or planned mission requirements.” Specific policies with respect to compatibility of new development with the Base include the following:

- “Ensure compatibility of new development with existing and future operation of Davis-Monthan Air Force Base”
- “Ensure compatibility of Base operations with existing and potential adjacent development”

The entire Esmond Station area lies within the Davis-Monthan Vicinity Boundary and a substantial portion is within the Approach-Departure Corridor.

#### *Rincon-Southeast Sub-Regional Plan (Adopted December 12, 1995)*

The Rincon-Southeast Sub-Regional Plan was based on the Pima County Comprehensive Plan, as adopted in 1992. The Rincon-Southeast Area covers about 400 square miles of the southern part of Tucson and surrounds Davis-Monthan Air Force Base on all sides but the north. Although much of the land is relatively undeveloped, especially those areas abutting the Saguaro National Park–East and the Coronado National Forest, portions of the area are highly developable and are the subject of considerable pressures to enter the real estate market. The Plan establishes future land use and development direction for areas adjacent to the City and that have the potential for being annexed into the city. As an example, the Esmond Station Area was formerly part of the Rincon-Southeast Planning Area until it was annexed into the City. Much of the Rincon-Southeast Sub-Regional Plan area lies within the Davis-Monthan Vicinity Boundary, and a substantial portion is within the Approach-Departure Corridor.

#### *South Pantano Area Plan (Adopted December 12, 1984)*

The South Pantano Area contains about 26 square miles and is located immediately adjacent to Davis-Monthan Air Force Base along Irvington Road. The majority of the Area lies outside the Approach-Departure Corridor but within the Vicinity Boundary. Approximately nine square miles of the Area lie within the Gunnery Range section of the Base. The Plan supercedes two previous County Plans for the Area. This Area, as well as the Houghton Road Corridor that bisects it, is under considerable pressure to be developed. Consequently, the Plan’s goals include providing guidelines for future development, protecting existing development, and creating a sense of community. The main sub-goal that addresses Davis-Monthan Air Force Base encourages a mix of uses compatible with the military operations and the protection of existing development adjacent to the Base.

#### *Groves Neighborhood Plan (Adopted December 13, 1976)*

The Groves Neighborhood lies immediately north of the South Pantano Area and consists of one square mile of largely residential uses. The neighborhood lies outside the Approach-Departure Corridor and the high-noise or accident potential zones but within the Vicinity Boundary. Davis-Monthan Air Force Base is not mentioned in the Plan and no specific guidelines in terms of compatibility with the Base’s mission are provided.

*Lincoln Park Neighborhood Plan (Adopted February 25, 1980)*

The Lincoln Park Neighborhood lies immediately north of the South Pantano Area and adjacent to the Groves Neighborhood. It consists of one square mile of largely park/open space uses (Lincoln Regional Park and Fred Enke Municipal Golf Course) and educational uses (Pima Community College East Campus) with some low-density residential and industrial park uses. The neighborhood lies outside the Approach-Departure Corridor and the high-noise and hazard zones but within the Vicinity Boundary. Davis-Monthan Air Force Base is not mentioned in the Plan and no specific guidelines in terms of compatibility with the Base's mission are provided.

*Tucson General Plan (Adopted December 6, 2001)*

The Tucson General Plan identifies several areas around Davis-Monthan Air Force Base subject to population growth and development pressure. A number of policies and strategies are provided in the Plan to provide for a rational pattern of population growth and land development. Overall, the population of Tucson is projected to increase from 485,790 in 2000 to about 771,440 in 2025. The Plan addresses the need to provide infrastructure and services to meet the needs of that increased population.

**Growth Areas Element**

Portions of three of the four Growth Areas established in the Plan are contained within the Davis-Monthan Vicinity Boundary, namely, Mid-City, the Evolving Edge, and the Future City. The Mid-City Area is contiguous to the Base on its northern border. The Evolving Edge Area is contiguous to the Base on its southeastern border, and the Future City is largely south of the Base.

Although the Mid-City Growth Area has sufficient vacant land for near-term growth, the Area is largely built-up. Re-development of existing neighborhoods and infill will constitute major components of future needs. The overall policies for the Area address neighborhood preservation, transportation efficiencies, and commercial revitalization.

From 1990 to 2000, the Evolving Edge Area experienced a population growth rate of about 45 percent, an increase of 28,000 people. New residential subdivisions and industrial parks characterize much of the Area. The area of the Evolving Edge adjacent to the Base contains large tracts of undeveloped or partially developed land, a significant portion of which are State Trust Lands. The Plan states, "much of the projected growth in the Evolving Edge Growth Area would occur in the southeastern portion of the City," which is located adjacent to or in the vicinity of the Base.

The Future Growth Area consists of more than 50 square miles of largely undeveloped property, much of which is State Trust Land. The Plan identifies this Area as holding "the long-term growth potential of the City."

Davis-Monthan Air Force Base is not identified or listed as a development issue or consideration in any of the Growth Areas or in the overall Growth Area Element.

**Land Use Element**

Davis-Monthan Air Force Base is identified in the Plan's Land Use Element, under the category of Other Designation, as "a land use of regional significance and a key

factor in Tucson's economy." No further specific references to the Base and the land use compatibility issue appear in this Element or in the remaining Elements of the General Plan.

### *Houghton Area Master Plan (scheduled to be completed in 2004)*

The City of Tucson is undertaking the Houghton Area Master Plan (HAMP) for 9,000 acres of land on the City's eastern edge, extending along Houghton Road from Tanque Verde Road in the north to Old Vail Road. Much of the HAMP area is within the Davis-Monthan Vicinity Boundary, and the portions between Old Vail Road and Interstate-10 are within the Davis-Monthan Approach-Departure Corridor. Most of the undeveloped land in the HAMP is located in the southern part of the planning area and includes 7,500 acres of State Trust Land.

The Tucson General Plan identifies the Houghton Road area between Irvington Road and Interstate-10 as part of the Evolving Edge Growth Area. Both the Tucson General Plan and Arizona State law require that State land located in the Evolving Edge be master planned prior to development. The City's General Plan established the Desert Village Model for large tracts of State Trust Land. This Model consists of neighborhoods grouped into Master Planned Communities with a mixed-use Desert Village Center as an intensive urban hub. The way in which the Desert Village Model is implemented for the State Lands to the east and south of the Base will have a substantial effect on future land use compatibility in the Davis-Monthan Approach-Departure Corridor.

### **2.3.3 Pima County**

#### *Pima County Zoning Code Chapter 18.57 – Airport Environs and Facilities*

The Pima County Zoning Code, Chapter 18.57, Airport Environs and Facilities establishes height, noise, and land use overlay zones for Davis-Monthan Air Force Base (as well as for other airfields in the County) to protect persons and property, provide for aircraft safety, and regulate land use to ensure compatibility with airports. For Davis-Monthan Air Force Base, the Pima County Airport Environs and Facilities Zone includes Land Use Overlay Zones, which address both noise and safety that consists of:

- A Military Clear Zone (MCZ) at each end of the runway.
- Compatible Use Zones (CUZ) 1 and 2 at each end of the runway (equivalent to Accident Potential Zones I and II).
- Compatible Use Zones 3 and 4, which consist respectively of areas between the 70 and 75 Ldn contours, and the 65 and 70 Ldn contours.

In 1963, Pima County initiated a process for an "airport approach zone" for Davis-Monthan Air Force Base. In 1969, the County adopted an ordinance for this approach zone ("paddle") from the southeast end of the runway out to 50,200 feet and 16,000 feet at its widest.

#### *The Sonoran Desert Conservation Plan (SDCP)*

The Sonoran Desert Conservation Plan proposes to conserve and preserve the natural and cultural resources in Pima County. The six elements of the plan are habitat, corridors, riparian areas, cultural resources, mountain parks, and ranching. The Plan encompasses

approximately 5.9 million acres, which includes two major eco-regions known as the Sky Islands and the Sonoran Desert, and the second largest Native American nation.

Since the Plan's inception in 1998, the process has involved, among others, 1) the creation and publication of over 205 studies and reports; 2) a partnership between several government land managers and regulators; 3) a working relationship with 40 community groups; 4) 400 academicians and experts; 5) 40 members of technical teams; and, 6) 84 members of the plan's steering committee. In addition, over 600 public meetings, open houses, and workshops have been held to-date.

In September 2000, the Pima County Board of Supervisors directed planning staff to incorporate the preliminary Sonoran Desert Conservation Plan into the Pima County Comprehensive Plan Update to serve as the Environmental Element. This resulted in the creation of the Conservation Lands System (CLS), which has eight designations for the conservation of plants, animals, and biological resources. The Conservation Lands System functions as the nexus between development and conservation as described in the following discussion of the Pima County Comprehensive Plan.

### *Pima County Comprehensive Plan*

The Pima County Comprehensive Plan Update was adopted by the Board of Supervisors in December 2001 as part of the Growing Smarter Plus legislation. It consists of the Land Use Plan and Regional and Special Area Plan Policies. The Comprehensive Plan was originally adopted on September 13, 1992 and went into effect on October 13, 1992. It was created from the 35 or so area and neighborhood plans.

#### **Growth Areas Element**

The Pima County Comprehensive Plan Update contains three growth areas—portions of two of which lie within the Vicinity Boundary of the JLUS: the Airport Growth Area and the City of Tucson.

The Airport Growth Area, located to the south and southeast of Davis-Monthan Air Force Base, measures approximately 10,500 acres, roughly 5,550 acres of which lie within the Davis-Monthan Air Force Base Vicinity Boundary. This growth area has been identified primarily as a business and employment center, given its location between Davis-Monthan Air Force Base to its north and northeast, and the Tucson International Airport (TIA) to its south and southwest.

The Airport Growth Area is key to the future development anticipated on Pima County and Tucson lands to the southeast (please also see “Southeast Area Arterial Study” above).

In addition to the Airport Growth Area, which includes lands within the City of Tucson and in unincorporated Pima County, the Pima County Comprehensive Plan, in its **Growth Area Element Regional Plan Policies**, states that, “The City of Tucson shall be designated as a growth area of Pima County.”

#### **Conservation Lands System**

The purpose of the Conservation Lands System (CLS) is to ensure the long-term survival of the entire range of plants, animals, and biological resources indigenous to Pima County. It identifies areas within the County that are essential for accomplishing this goal. These identified areas are placed in eight land categories:

1) Important Riparian Areas 2) Biological Core Management Areas 3) Scientific Research Areas 4) Multiple Use Management Areas 5) Special Species Management Areas 6) Agriculture In-holdings Within Conservation Lands System 7) Critical Landscape Connections, and 8) Existing Development Within Conservation Lands System.

Of the approximately 91,200 acres comprising the Davis-Monthan Air Force Base Vicinity Boundary, approximately 12,300 acres lie within the CLS and are comprised of the following designations.

CLS Designation <sup>1</sup>	Resource Conservation (Percent)	Acreage
Important Riparian Areas	95 percent	3,459
Biological Core Management Areas	80 percent	2,954
Multiple Use	75 percent	5,317
Existing Development within CLS		612
<b>Total</b>		<b>12,342</b>

<sup>1</sup>CLS designations include area within Tucson and designation names are as they appear on the latest iteration of CLS GIS coverage PCDOT MARS file-server, as modified by STAT and proposed for policy revision for fall 2003. GIS-based Davis-Monthan Air Force Base vicinity boundary is 91,206 acres – Davis-Monthan Air Force Base vicinity boundary over the CLS by designations is 91,200 acres (rounding tolerance).

### 2.3.4 Arizona Department of Transportation

#### *Houghton Road Corridor Study – Existing Conditions Working Paper (January 2003)*

The Arizona Department of Transportation (ADOT) is working in conjunction with the City of Tucson to study future transportation needs for the Houghton Road Corridor and to develop an Access Management Plan to be implemented by local jurisdictions. The goal is to prepare a long-range transportation plan that will meet the interim and long-term needs of the area. The Working Paper documents improvements and other existing conditions in the area bordering Houghton Road.

The Study divides the Corridor into four segments. The two segments of most importance to Davis-Monthan Air Force Base are the portion of Houghton Road extending from Interstate-10 to Golf Links Road, and Alvernon Way from Interstate-10 to Golf Links Road, continuing eastward along Golf Links Road to Houghton Road.

### 2.3.5 University of Arizona Science and Technology Park

#### *Development Guidelines, Draft Number 11 (June 15, 2003)*

The Development Guidelines for the Science and Technology Park are in the process of being prepared by the University. This document will establish design guidelines and development standards for the 1,345-acre Science and Technology Park located southeast of Davis-Monthan Air Force Base. The Park is located in Pima County adjacent to Interstate-10, between Kolb and Rita Roads. The Park area lies completely within the Davis-Monthan Vicinity Boundary, and the majority of the Park is located within the 0–30,000 Approach-

Departure Corridor (ADC). Approximately 345 acres are currently developed, with 13 primary buildings and several smaller buildings totaling 2 million square feet of developed space and 1.9 million square feet of leasable space.

The following information is from Draft Number 11 of the Development Guidelines, dated June 15, 2003. The Park Master Plan identifies seven land uses as appropriate for development within the Park:

- Davis-Monthan Air Force Base Dedicated Open Space
- Residential
- Commercial/Hospitality
- Assembly/Manufacturing
- Commercial
- Business Development
- Research Park

The 24.7-acre Davis-Monthan Air Force Base Dedicated Open Space corridor is located in the northwest section of the Park within the 0-30,000 ADC and supports DMAFB's flight operation. Multi-family and detached and attached single-family residential uses are permitted and are located in the southwest section of the Park outside of the ADC. Childcare facilities are also allowed within the Residential land use designation. The Plan designates two areas for Commercial/Hospitality development, one at the intersection of Kolb Road and Interstate-10, and the other at the intersection of Rita Road and Interstate-10. Both locations are within the Vicinity Boundary and the majority of the Rita Road site is within the 30-50,000 ADC. Commercial/Hospitality uses allow for the development of a hotel, conference center, and retail facilities. Assembly/Manufacturing uses are located within the northern area of the Park and support research activities. Commercial land uses include things such as restaurants and convenience retail and are located at the north end of the Park along Kolb Road partially inside the 0-30,000 ADC. Business Development uses are designated in two areas of the Park; one along Interstate-10 to the south and one in the interior northwest area of the Park. Finally, the Research Park land use areas are located in the southeast and central areas of the Park and include suitable uses such as offices, science and laboratory space, educational facilities, and research facilities.

### **2.3.6 Tucson Airport Authority**

#### *Tucson International Airport Master Plan Update (2003-2004)*

The TIA Master Plan update, in addition to addressing the future physical development of the Airport, includes a benefit-cost analysis of the proposed new parallel runway, and an airport-wide drainage study. Other related work includes a detailed study of the airport's terminal capacity and projected needs.

### 2.3.7 Davis-Monthan Air Force Base

#### *Air Installation Compatible Use Zone Report, Volumes I and II (February 1992)*

This Report is part of the Base's official Department of Defense program to reduce the noise and safety hazards associated with its military mission. The Report provides land use compatibility criteria and guidelines to surrounding local political jurisdictions, civic associations, and organizations. It provides information concerning noise exposure and aircraft accident potential, as well as noise reduction measures.

#### *Davis-Monthan Air Force Base General Plan (1998)*

The Davis-Monthan Air Force Base General Plan is a summary document for use by Base decision-makers. It provides the detail necessary for military officials to understand the character and structure of the Base in terms of composite constraints and opportunities, infrastructure, land use, transportation, and capital improvements.

#### *Airfield Compatibility Study (2001)*

The Base identified the need to conduct this Study in order to initiate close coordination among federal, State, and local political jurisdictions to identify current and future development patterns that may impact flight operations. The Study includes baseline data related to land compatibility issues that may impact the Base's military mission, and special attention was paid to the area southeast of the runway. The Study identified issues, past and existing development trends, land use plans that affect the Base, a detailed site analysis was conducted, and opportunities and constraints were identified.

## 2.4 LAND USE

Land use patterns within the JLUS Study Area vary in character. The most intensely developed areas are to the north and west of the Base, and the areas to the south and east of the Base are characterized by a mix of developed and open land (see Figure 2-6). Saguaro National Park East lies immediately to the east of the Vicinity Boundary, and the southwestern part of the Boundary includes the northeastern section of the Pima County Fairgrounds.

The area north of the Base is generally suburban-residential in character with a variety of mixed uses, especially office, retail, and business services at intersections and fronting major transportation corridors. Other uses in the area are public, and include parks and open space, and institutional (primarily schools and churches). Portions of the areas dedicated to residential use contain higher density multi-family uses that frequently exceed 14 units per acre.

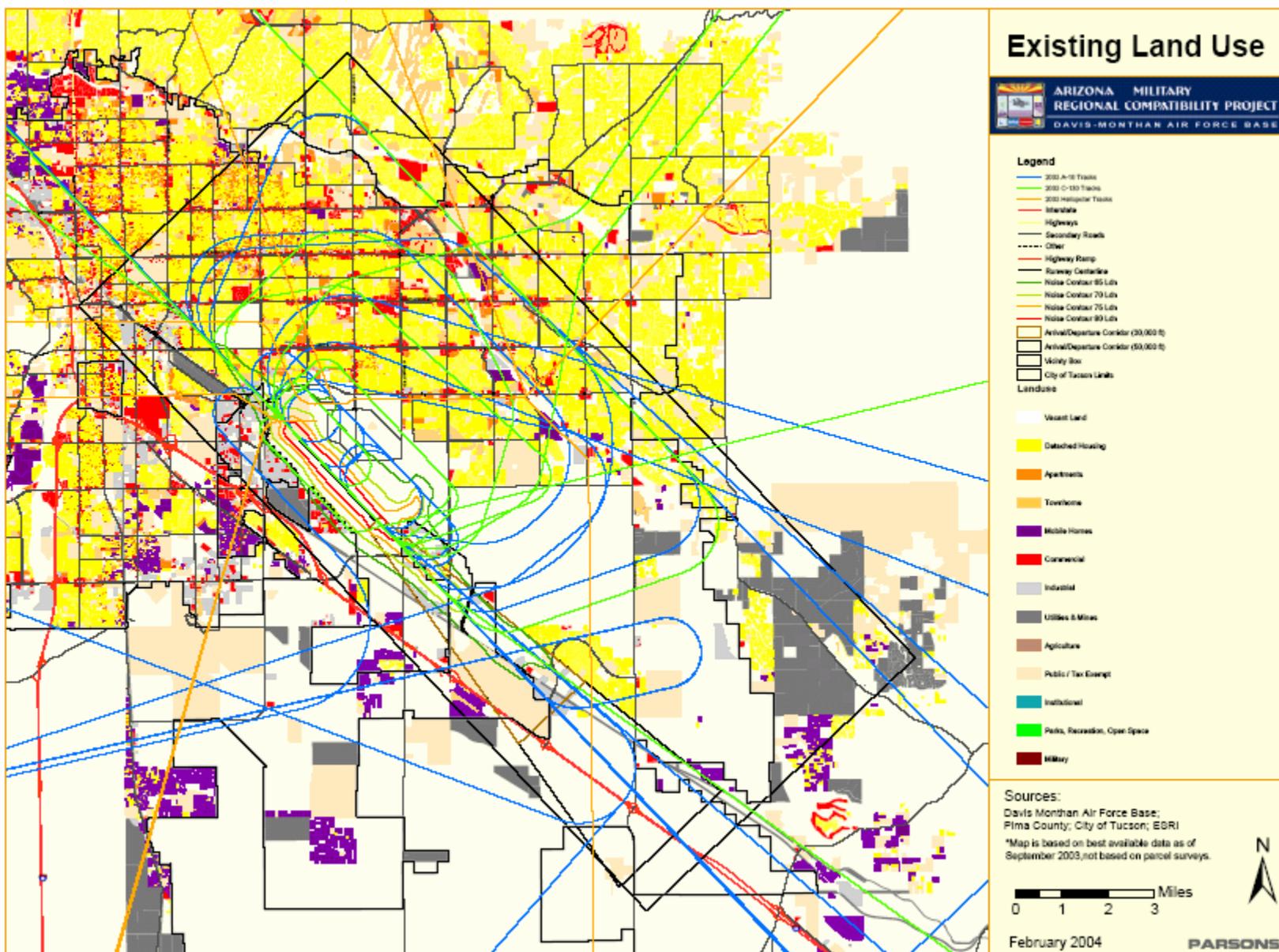


Figure 2-6: Existing Land Use

Several major activity centers are located in the northern third, with higher density non-residential uses concentrated at key intersections. The primary use in these activity centers may be categorized as retail, educational, and medical. Planned residential developments with scattered open space amenities are located in the northern third of the Vicinity Boundary. Just north of the Base, bordering Golf Links Road, is an area largely devoted to multi-family complexes and retail centers. This portion of the Vicinity Boundary is nearing a “built-out” condition.

Land uses to the west of the Base are characterized by a variety of uses including residential, office-retail, business services, and some light industrial. Light industrial-commercial uses dominate the Alvernon Way Corridor from Interstate-10 to slightly north of its split with Golf Links Road.

To the east and south of the Base, employment-oriented, planned mixed-uses, including light industrial, scientific and research uses, and single-family residential subdivisions constitute the principal land uses in the Vicinity Boundary. Large tracts of undeveloped properties controlled and managed by the State Land Department are a dominant feature of this part of the Vicinity Boundary. State Lands in this area are planned to be sold and developed for uses ranging from light industrial to residential. Much of the Houghton Road Corridor consists of large tracts of undeveloped properties in State and private ownership. The majority of land in that Corridor is being planned for suburban-residential uses.

## 2.5 JURISDICTIONAL AND LAND OWNERSHIP PATTERNS

Land ownership in the Davis-Monthan Vicinity Boundary can be divided into four principal classifications: federal, State, county/municipal, and private. The ownership patterns across the Vicinity Boundary, briefly described below, are shown on the accompanying Figure 2.7: Land Ownership.

With the exception of several parks, private ownership characterizes the majority of land north, northeast, west, and northwest of Davis-Monthan Air Force Base. Southwest of the Base, land is held in private ownership by Tucson International Airport (TIA); the U.S. government; State Trust Lands, which are managed to maximize revenues for the designated Trust beneficiaries; and the Tohono O’odham Reservation. South and southeast of the Base are large tracts of land owned by the City of Tucson, the State of Arizona, the University of Arizona, and private parties. The Saguaro National Park East lies at the eastern edge of the Vicinity Boundary. The majority of the land south of the Base, within and outside the Vicinity Boundary, is owned and managed by the State. Most of the land in the Vicinity Boundary is within the City of Tucson. Portions of the Boundary primarily in the Catalina Foothills, south of the Base along Interstate-10, and in the southeastern portion of the Boundary are under the jurisdiction of Pima County.

APZs are defined at each end of the Davis-Monthan main runway under State law (ARS §28-8481 and ARS §28-8461); Clear Zones, and APZs are also defined under the Department of Defense Air Installation Compatible Use Zone (AICUZ) Guidelines (see Appendix B).

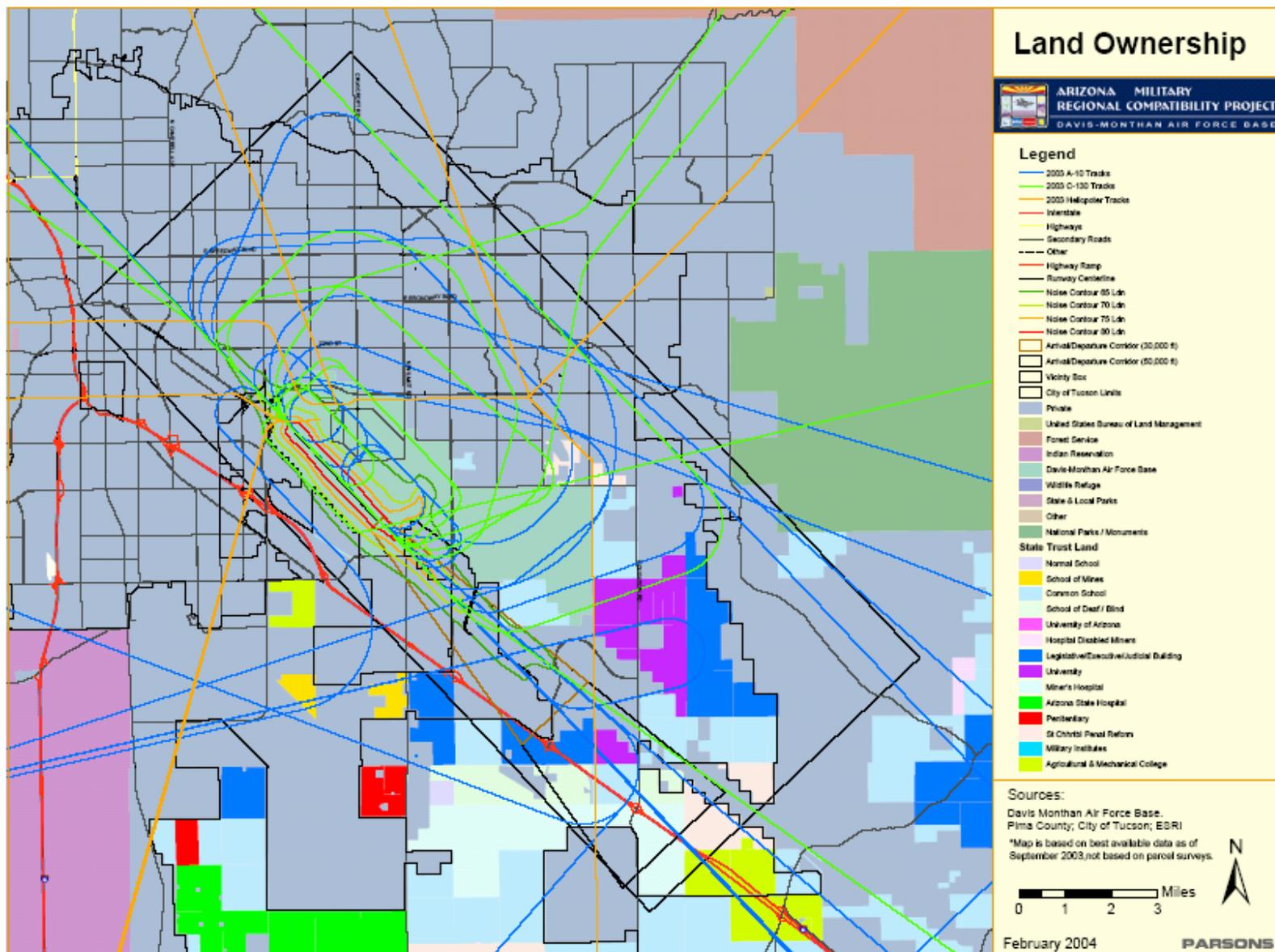


Figure 2-7: Land Ownership

The land areas encompassed by these Zones are:

Northwest:

- Clear Zone – 207 acres
- APZ I – 345 acres
- APZ II – 482 acres

Southeast:

- Clear Zone – 207 acres
- APZ I – 345 acres
- APZ II – 482 acres

The Clear Zones (CZs) are located within Base boundaries. The northern APZ-I is approximately 40 percent on-Base and 60 percent off-Base. The southern APZ-I is approximately 20 percent on-Base and 80 percent off-Base. Both the northern and southern APZs-II are almost entirely off-Base.

At the southeast end of the main runway, ARS §28-8481 and ARS §28-8461 define an Approach-Departure Corridor (ADC) that extends from the end of the main runway out to a distance of 30,000 feet from the main runway. The ADC has a total area of approximately 2,850 acres (not including areas within the CZs and APZs).

Approximately 2,300 acres of private land, with 76 recorded property owners, is located within the southern APZs and ADC, although the University of Arizona's Science and Technology Park has almost 1,100 of its total 1,345 acres located in the ADC. Jurisdiction for acreage within the southern APZs and ADC is almost evenly divided between the City of Tucson and Pima County. However, most of the ADC outside the APZs, including the Science and Technology Park is located in unincorporated Pima County, although small portions of the ADC (south of Interstate-10, along Kolb Road and along Rita Road) are within the City of Tucson.

Beyond the ADC defined in ARS §28-8481 and ARS §28-8461, the City of Tucson's Airport Environs Zone also defines an extended approach-departure corridor from 30,000 feet out to 50,200 feet from the end of the main runway. Most of this area, which totals approximately 6,000 acres, is within the City of Tucson, although the Pima County Fairgrounds south of Interstate-10 and some smaller tracts north of Interstate-10 and east of Houghton Road are located within unincorporated Pima County. In the extended approach departure corridor there are approximately 1,400 acres of private land, with 67 property owners. Much of the remaining acreage is State Trust Lands.



## 3. REVIEW OF EXISTING LEGISLATION

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### 3.1 EXISTING LAND-USE COMPATIBILITY LEGISLATION, ORDINANCES, AND GUIDELINES

#### 3.1.1 State of Arizona

In the 1990s through 2003, the State of Arizona passed legislation to address the issue of residential and other compatibility issues around Arizona's military airports. The major statutes, including ARS §28-8481 and ARS §28-8461, require political subdivisions in the vicinity of a military airport to adopt land use plans and enforce zoning regulations that assure development compatible with the high-noise and accident potential generated by military airport operations. State legislation, specifically ARS §28-8481, also regulates land uses in hazard zones and high-noise areas, but allows a landowner to undertake development of property for which a development plan was approved before December 31, 2000, even though the uses may not be compatible with the regulations under ARS §28-8481. It is the responsibility of the local jurisdiction and landowner to work cooperatively on these "grandfathered" plans to mitigate potential future development conflicts where possible.

#### 3.1.2 City of Tucson

In the same time period, the City of Tucson addressed similar issues of land use compatibility around commercial and military airports by passing ordinances that focused on regulating development in what is known as the Airport Environs Zone (AEZ). That legislation was originally adopted in 1990 and amended in 2002 to conform to the revised requirements in Title 28 of the ARS. The AEZ is part of the City's Land Use Code and defines allowed and prohibited uses in the various zones and districts defined within the ordinance; the 2002 revisions included interim regulations for the Approach-Departure Corridor (ADC). The Ordinance promotes public health, welfare, and safety in the vicinity of Tucson International Airport and Davis-Monthan Air Force Base, reduces the noise and safety hazards associated with aircraft operation, and preserves the operational stability of airports, among other measures.

The City's AEZ Ordinance and map defines eleven zones and districts. The eight zones and districts defined with respect to Davis-Monthan Air Force Base are as follows:

- Accident Potential Zone-One (APZ-1)
- Accident Potential Zone-Two (APZ-2)
- Accident Potential Zone-Three (APZ-3)
- Accident Potential Zone-Four (APZ-4)
- Noise Control District-65 (NCD-65)

- Noise Control District-70 (NCD-70)
- Airport Hazard Districts (AHD)
- Approach-Departure Corridor (ADC)

### 3.1.3 Pima County

Chapter 18.57 of the Pima County Zoning Code, originally adopted in 1985 and amended since that time, specifically addresses civilian and military airport environs and facilities. Its purpose is to protect persons and property within the environs of airports, provide for aircraft safety in the use of airports, and regulate land use to ensure compatibility with airports. This chapter of the County Code is the most pertinent to this review of local regulations, as it establishes height, high-noise, and land use overlay zones for the environs of Davis-Monthan Air Force Base. The zones related to safety and noise compatibility are:

- Military Clear Zone (MCZ)
- Compatible Use Zone-One (CUZ-1)
- Compatible Use Zone-Two (CUZ-2)
- Compatible Use Zone-Three (CUZ-3)
- Compatible Use Zone-Four (CUZ-4)

Compatible Use Zones 1 and 2 are the equivalent of the Accident Potential Zones I and II defined in the Department of Defense AICUZ Program. Compatible Use Zones 3 and 4 are equivalent respectively to the 65–70 Ldn Noise Zone and the 70 to 75 Ldn Noise Zone as defined in the AICUZ Program.

### 3.1.4 U.S. Department of Defense

The Air Installation Compatible Use Zone (AICUZ) Program<sup>3</sup> was implemented in 1973 by the U.S. Department of Defense to promote compatible land use development around military airfields. The AICUZ Program creates standard land-use guidelines for areas affected by possible noise exposure and accident potential combinations and provides local government jurisdictions with information that can be used to regulate land use and development. Included in the AICUZ program is a table of accident potential zones, noise zones, and guidance concerning the compatibility of various uses.

The Air Force adopted the NOISEMAP computer model to describe noise impacts created by aircraft operations. NOISEMAP is one of two Environmental Protection Agency (EPA) approved models. The other is the Integrated Noise Model (INM), which is used by the Federal Aviation Administration (FAA) for civilian airports. In 1974, EPA designated the noise descriptor “Ldn,” or Day-Night Average Sound Level as the standard measurement for noise impacts. Ldn refers to the average sound level exposure, measured in decibels, over a 24-hour period, with a 10-decibel penalty added to sound levels for operations occurring during the hours of 10 p.m. to 7 a.m. This penalty is applied due to the increased

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<sup>3</sup>Guidance for the United States Air Force AICUZ program is contained in Air Force Instruction 32-7063, *Air Installation Compatible Use Zone Program*, which implements Department of Defense Instruction 4165.57, *Air Installations Compatible Use Zones*.

annoyance created by noise events that occur during this time. Ldn is a quantity that can be calculated directly at a specific location.

Accident Potential Zones (APZs) are one aspect of the AICUZ program where military application differs from civilian airfields. An analysis of aircraft accidents worldwide within 10 nautical miles of a military airfield for the period of 1968–1972 led to defining areas of high accident potential known as the Clear Zone (CZ), Accident Potential Zone I (APZ-I), and Accident Potential Zone II (APZ-II). The majority of these accidents (62 percent) occurred either on or adjacent to the airfield or within the CZ, while about 8 percent occurred in APZ-I and 5 percent in APZ-II. It was concluded that the Clear Zone warranted special attention due to the high incident of accident potential that severely limited acceptable land uses. The Air Force has spent approximately \$65 million to acquire real property interests within the clear zones at bases nationwide. The percentages of accidents within the two APZs are such that some land use control is essential. The Air Force recommendation for the APZs is to limit the number of people exposed to noise and safety hazards through appropriate land use planning.

### 3.2 COMPARISON OF EXISTING REGULATIONS AND GUIDANCE

Although all of the above regulations and guidance share the common objective of achieving compatible land use and also take a similar approach to establishing compatible use zones and defining appropriate uses within the zones, there are also important differences in specific regulations or guidance among them. The following sections compare the noise and safety land use criteria under AICUZ Guidance, ARS §28-8481, the City of Tucson's Airport Environs Zone, and Section 18.57 of Pima County's Zoning Ordinance.

ARS §28-8481 and the AICUZ Program are based on differing sets of variables, in that they do not address the same hazard zones and they organize noise zones a different manner. For example, ARS §28-8481 does not recognize, identify, or define a Clear Zone as defined by the Department of Defense, nor does it regulate uses in that zone. ARS §28-8481 defines a much larger area as constituting APZ-II. An additional noise zone, 85+ decibels, is included in ARS §28-8481 that is not identified in the AICUZ Program.

There are 64 land use categories defined in ARS §28-8481 and 75 land use categories defined in the AICUZ Program. However not all of those categories are the same nor are they entirely consistent when compared to each other. Certain uses allowed in the AICUZ Guidance are not permitted under Arizona law; conversely, some uses not allowed in the AICUZ Guidance are allowed under Arizona law. Another point of difference is that specific land use categories addressed in the AICUZ Program are not addressed in ARS §28-8481. For example, Schools and Public Assembly uses are not defined in ARS §28-8481.

Like ARS §28-8481, but unlike the AICUZ Program, the City of Tucson's AEZ ordinance does not define Clear Zones at the ends of the Davis-Monthan runway. This is because the Clear Zones are located entirely within the Davis-Monthan boundaries, where the City does not have jurisdictional authority. The City's Ordinance identifies the APZs extending from the end of the northwest end of the runway as APZ-1 and APZ-2 while the zones at the southeast end of the runway are designated as APZ-3 and APZ-4, rather than conforming to AICUZ or ARS §28-8481 nomenclature that would identify the areas at either end of the runway as APZ-I and APZ-II. This reflects the City's desire to differentiate between the northwest and southeast ends of the runway due to differences in existing land use and

zoning patterns, with purposefully more restrictive regulations adopted for APZ-3 and APZ-4. In addition, the Ordinance does not identify noise hazard areas other than NCD-65 and NCD-70, while ARS §28-8481 and the AICUZ guidelines identify noise zones for at least 75 Ldn. However, as is true for the Clear Zones, the noise zones for 75 Ldn and above are located within the Davis-Monthan boundaries and the City of Tucson does not have jurisdictional authority over the Base.

Chapter 18.57 of the Pima County Zoning Code defines the Military Clear Zone (MCZ) and Compatible Use Zones (CUZ) 1 through 4 by their permitted uses and safety requirements. The MCZ is the equivalent of the AICUZ Clear Zone while CUZ-1 and CUZ-2 are equivalent to APZ I and II as defined in the AICUZ Program and ARS §28-8481. CUZ-3 and CUZ-4 are equivalent respectively to the 65–69 Ldn Noise Zone and the 70–74 Ldn Noise Zone as defined in the AICUZ Program and ARS §28-8481.

Given that the four sets of criteria differ in the specific definition of land use categories, a set of eight land uses were chosen to represent the totality of land uses in order to analyze the significant differences in criteria for noise and accident potential zones. These eight representative land uses were selected based on their safety and noise sensitive characteristics and include the following: single-family residential, schools, churches, hospitals, public assembly, outdoor amphitheaters, retail-food establishments, and business services. Tables 3-1 and 3-2 show how these uses are treated in terms of noise and safety compatibility by the AICUZ Guidelines, ARS §28-8481, the City of Tucson Airport Environs Zone, and the Pima County Airport Environs and Facilities Zone.

Comparisons of the different sets of criteria based upon the representative land uses in Tables 3-1 and 3-2 indicate the following.

Comparison of AICUZ Guidelines and ARS §28-8481:

- The AICUZ Guidelines allow single-family residential, schools, churches, hospitals and retail-food uses in the 65–74 decibel category. Public assembly uses are allowed in the 65–69-decibel category.
- The AICUZ Program also allows single-family residential use in APZ-II and the noise zones 65 Ldn and 70 Ldn. Business services are allowed in all hazard areas except the Clear Zone and the 80 Ldn noise zone.
- Although ARS §28-8481 does not permit single-family residential uses in any of the hazard or noise zones, it is silent about all types of uses in the Clear Zone, since the law does not define such a zone.
- Uses that permit the concentration and congregation of population are permitted in APZ-II and in Ldn noise zones 65–74, specifically schools, areas of public assembly, and business services.
- In addition, churches and hospitals are permitted in noise zones 65–74. Outdoor amphitheaters and retail-food uses are also allowed in noise zones 65–79.

**Table 3-1: Comparison of Safety Compatibility Criteria**

USE	Clear Zone				APZ – 1 <sup>1</sup>				APZ – 2 <sup>2</sup>			
	AICUZ	ARS §28-8481 <sup>3</sup>	Tucson AEZ <sup>3</sup>	Pima County AEZ	AICUZ	ARS §28-8481	Tucson AEZ	Pima County AEZ	AICUZ	ARS §28-8481	Tucson AEZ	Pima County AEZ
<b>Residential</b>	N	n/a	n/a	N	N	N	N <sup>4</sup>	N	Y	N	N <sup>4</sup>	N
<b>Schools</b>	N	n/a	n/a	N	N	N	N	N	N	Y	N	N
<b>Churches</b>	N	n/a	n/a	N	N	N	N	N	N	N	N	N
<b>Hospitals</b>	N	n/a	n/a	N	N	N	N	N	N	N	N	N
<b>Public Assembly</b>	N	n/a	n/a	N	N	N	N	N	N	Y	N	N
<b>Outdoor Amphitheatre</b>	N	n/a	n/a	N	N	N	Y/N <sup>5</sup>	N	N	N	Y/N <sup>5</sup>	N
<b>Retail-Food</b>	N	n/a	n/a	N	N	N	Y/N <sup>5</sup>	N	Y	N	Y/N <sup>5</sup>	Y <sup>6</sup>
<b>Business Services</b>	N	n/a	n/a	N	Y	N	Y/N <sup>5</sup>	N	Y	Y	Y/N <sup>5</sup>	Y <sup>6</sup>

**NOTES:**

“Y” means that the use is considered generally compatible.

“N” means that the use is considered generally not compatible.

<sup>1</sup>The City of Tucson AEZ designates the equivalent of APZ-1 as APZ-1 at the northwest end of the Davis-Monthan main runway and APZ-3 at the southeast end of the runway. The Pima County Zoning Code designates the equivalent of APZ-1 as CUZ-1 (Compatible Use Zone 1).

<sup>2</sup>The City of Tucson AEZ designates the equivalent of APZ-2 as APZ-2 at the northwest end of the Davis-Monthan main runway and APZ-4 at the southeast end of the runway. The Pima County Zoning Code designates the equivalent of APZ-2 as CUZ-2 (Compatible Use Zone 2).

<sup>3</sup>ARS 28-8481 and The City of Tucson AEZ do not designate a Clear Zone.

<sup>4</sup>Residential uses are allowed only on existing residential lots.

<sup>5</sup>These uses are permitted in the City of Tucson APZs at the northwest end of the Davis-Monthan main runway but are not allowed in APZs at the southeast end of the runway.

<sup>6</sup>These uses are not allowed within the first 1,000 feet closest to the runway, and grocery stores area not allowed anywhere in CUZ-2.

**Table 3-2 : Comparison of Noise Compatibility Criteria**

USE	65 – 69 <sup>Ldn</sup> Noise Zone <sup>1</sup>				70 – 74 <sup>Ldn</sup> Noise Zone <sup>2</sup>				75 – 79 <sup>Ldn</sup> Noise Zone				80+ <sup>Ldn</sup> Noise Zone			
	AICUZ	ARS §28-8481	Tucson AEZ	Pima County AEZ	AICUZ	ARS §28-8481	Tucson AEZ	Pima County AEZ	AICUZ	ARS §28-8481	Tucson AEZ <sup>3</sup>	Pima County AEZ <sup>3</sup>	AICUZ	ARS §28-8481	Tucson AEZ <sup>3</sup>	Pima County AEZ <sup>3</sup>
<b>Residential</b>	Y	N	N <sup>4</sup>	N <sup>4</sup>	Y	N	N <sup>4</sup>	N <sup>4</sup>	N	N	n/a	n/a	N	N	n/a	n/a
<b>Schools</b>	Y	Y	Y	Y	Y	Y	N	Y	N	N	n/a	n/a	N	N	n/a	n/a
<b>Churches</b>	Y	Y	Y	Y	Y	Y	SE	Y	N	N	n/a	n/a	N	N	n/a	n/a
<b>Hospitals</b>	Y	Y	Y	Y	Y	Y	SE	Y	N	N	n/a	n/a	N	N	n/a	n/a
<b>Public Assembly</b>	Y	Y	Y	Y	N	Y	SE	Y	N	N	n/a	n/a	N	N	n/a	n/a
<b>Outdoor Amphitheatre</b>	N	Y	Y	Y	N	Y	SE	N	N	Y	n/a	n/a	N	N	n/a	n/a
<b>Retail-Food</b>	Y	Y	Y	Y	Y	Y	SE	Y	Y	Y	n/a	n/a	N	N	n/a	n/a
<b>Business Services</b>	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	n/a	n/a	N	N	n/a	n/a

**NOTES:**

“Y” means that the use is considered generally compatible.

“N” means that the use is considered generally not compatible.

“SE” means that the use is generally considered inappropriate but may be approved if granted a Special Exception.

<sup>1</sup>This zone is designated by the AICUZ Guidelines and ARS §28-8481. The City of Tucson AEZ designates the equivalent of the 65–69 Ldn Noise Zone as NCD-65. The Pima County Zoning Code designates the equivalent of the 65–69 Ldn Noise Zone as CUZ-4 (Compatible Use Zone 4).

<sup>2</sup> This zone is designated by the AICUZ Guidelines and ARS §28-8481. The City of Tucson AEZ designates the equivalent of the 70–74 Ldn Noise Zone as NCD-70. The Pima County Zoning Code designates the equivalent of the 65–69 Ldn Noise Zone as CUZ-3 (Compatible Use Zone 3).

<sup>3</sup>The City of Tucson AEZ and the Pima County Zoning Code do not designate Noise Zones above 75 Ldn.

<sup>4</sup>Residential Uses in this zone are limited to existing residential lots only.

Comparison of City of Tucson AEZ Ordinance and AICUZ Guidelines:

- The AEZ provides for two Noise Control Districts NCD-65 and NCD-70 and includes all noise greater than 70 Ldn in the latter category.
- Use restrictions in the Noise Zones (CUZ-3 and CUZ-4) under Chapter 18.57 are consistent with equivalent zones under ARS §28-8461, except that CUZ-3 does not allow outdoor amphitheatres.
- Uses permitted by the AEZ ordinance in the Approach-Departure Corridor are also permitted in the AICUZ Program.<sup>4</sup> However, the majority of the uses prohibited by the AEZ ordinance in the Approach-Departure Corridor are allowed in the AICUZ Program. Consequently, the AEZ ordinance is more restrictive than the AICUZ Program.
- Various uses permitted by the Tucson Land Use Code in certain zones are prohibited in the AICUZ Program. Examples include retail-food establishments and business services.
- Various other uses prohibited by the Tucson Land Use Code in certain zones are permitted in the AICUZ Program. Examples include schools, hospitals, public assembly, outdoor amphitheatres, and retail-food establishments.

Comparison of City of Tucson AEZ Ordinance and ARS §28-8461:

- When the AEZ Ordinance is compared to the table of uses created in ARS §28-8481 in terms of land uses identified as compatible with military airports, a number of differences become apparent. Various other uses permitted in certain zones by the Tucson Land Use Code are prohibited in State legislation, with recognition of the existing development and zoning patterns to the northwest of the Base (ARS §28-8481, Subsection E). Examples include single-family residential, churches, outdoor amphitheatres, retail-food establishments, and business services. Various other uses prohibited by the Tucson Land Use Code in certain zones are permitted in the State legislation. Examples include schools, hospitals, and business services. The City of Tucson complies with ARS §28-8481 based on an agreement between the City and Davis-Monthan Air Force Base (per ARS §28-8481, Subsection K) that the City's regulations meet the requirements of State law.

Comparison of Chapter 18.57, Pima County Zoning Code and AICUZ Guidelines:

- Restrictions on uses in the Military Clear Zone under Chapter 18.57 are consistent with the AICUZ Guidelines for Clear Zones.
- CUZ-1 and CUZ-2, as defined in Chapter 18.57, are more restrictive than the AICUZ Guidelines for retail uses in AICUZ APZ-1, and APZ-2, CUZ-2 is also more restrictive than AICUZ Guidelines for business services. CUZ-1 and CUZ-2 are generally as restrictive as the equivalent AICUZ APZs with respect to other uses.
- CUZ-3 and CUZ-4 (the 70–75 Ldn and 65–70 Ldn Noise Zones) as defined in Chapter 18.57 allow residential uses only on existing residential lots; this is more restrictive than the AICUZ Guidelines, which allow residential uses on new lots. CUZ-3 and CUZ-4 are consistent with the AICUZ Guidelines with respect to the

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<sup>4</sup>Since the AICUZ Program does not contain an Approach-Departure Corridor, the comparison is to uses allowed in the 65 Ldn noise zone.

other evaluated uses, except that CUZ-3 allows Public Assembly uses and CUZ-4 allows Outdoor Amphitheatres.

Comparison of Chapter 18.57, Pima County Zoning Code and ARS §28-8461:

- Chapter 18.57 defines a Military Clear Zone that allows only crop raising, while ARS §28-8461 does not define a clear zone.
- CUZ-2 allows certain retail food stores (delicatessens and convenience stores), while no food stores are allowed in the equivalent zone (APZ-II) under ARS §28-8461. Otherwise CUZ is consistent with or more restrictive than APZ-II under ARS §28-8461. CUZ-1 is consistent with the equivalent zone (APZ-I) under ARS §28-8461.

### 3.3 REVIEW OF LEGISLATION/REGULATIONS RELATED TO THE OPERATION OF MILITARY FACILITIES IN OTHER STATES<sup>5</sup>

#### 3.3.1 Overview

Military installations in the United States provide significant contributions to political jurisdictions at all levels, from federal to municipal. These installations create thousands of jobs and generate billions of dollars in direct and indirect economic activities as well as tax revenues. Because of the widening awareness of the importance of military installations to state and local economies and to our national defense, many states and local political jurisdictions are taking steps to deal with land use compatibility issues that frequently arise in the vicinity of these facilities.

In recent years, a number of steps have been taken to ensure the missions of these military installations remain uncompromised. These steps include the following:

- States, including Arizona, California, Colorado, and Oklahoma have passed legislation that regulates land use compatibility around military installations.
- Local political jurisdictions in Arizona, California, Colorado, and Florida, as well as other states, have established zoning, planning, density of use, and interior noise reduction requirements in territories adjacent to military bases.
- Several states are considering use of existing statutory language to designate military installations as protected “Areas of Critical State Concern.” The advantages of this approach are an existing legal framework that many states have previously adopted and that it formally recognizes land surrounding military installations as requiring regulation owing to special circumstances of national security, public health (noise impacts) and public safety (in terms of hazards generated by normal military operations). Among the disadvantages are that not all states have appropriate statutory language in place and amending an existing statute requires legislative action and executive approval. Among the states considering use of the “Areas of Critical State Concern” legislation are California, Florida, Maine, Maryland, Massachusetts, Minnesota, Nevada, New Jersey, North Carolina, South Carolina, Vermont, Virginia, and Wyoming.

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<sup>5</sup>Sources: National Governors Association Center for Best Practices, *State Strategies to Address Encroachment at Military Installations*; March 2003; and numerous State Government web sites.

- Political jurisdictions at various levels and in many states have initiated programs to acquire property surrounding a military installation through fee-simple purchase, transfer of development rights, purchase of development rights, and density transfers. Political jurisdictions that have initiated these programs include Arizona, Florida, Oklahoma, Nevada, and North Carolina. As an example, Florida has instituted a grant program to support military installations. The Defense Infrastructure Grant Program was established in 1999 to improve military base infrastructure and to provide dual-use benefits to local communities throughout the State. In recognition of the importance of military facilities to Florida's economy, the program has received steady support from the Legislature, which has joined with the Governor to address the needs of the State's military facilities.
- Arizona, California, Georgia, North Carolina, Texas, and Virginia have created state military advisory commissions or have added offices of military affairs to the duties of existing agencies.

### 3.3.2 Review of Specific Legislation

Specific legislation created by the States of California, Oklahoma, and Colorado with respect to planning/real estate and the impacts generated by military facilities are briefly reviewed below.

#### California

In California, Aviation Noise Disclosure legislation (AB 2776) which passed in the 2002–2003 regular legislative session and was signed by the Governor, amends the real estate transfer disclosure statute (California Civil Code, Division 2 – Property, Part 4 – Acquisition of Property, Title 4, Chapter 2 – Transfer of Real Property) to require sellers/lessors to disclose the fact that a house for sale or lease is “near” an airport if the house falls within an airport influence area (that could be several miles from an existing or proposed airport). An airport influence area is defined as the area in which current or future airport-related noise, overflight, safety, or airspace protection factors may significantly affect land uses or necessitate restrictions on those uses. The intent of the legislation is to notify buyers that they could experience airport noise, vibration, odor, annoyances, or other inconveniences at some time in the future as a result of the normal operation of an existing or proposed airport. This legislation is similar in intent to Arizona's requirements under ARS §28-8484 and ARS §28-8485 for notification of owners or potential buyers of property that the area is currently subject to aircraft noise and overflights.

California passed legislation in 2002 (amending Section 1; Section 65302 of the Government Code) that required the land use element of General Plans prepared by cities and counties to consider the importance of military facilities to national defense when proposing zoning ordinances or designating land uses covered by the General Plan for land or other territory near or around military facilities. In addition, the legislation required the land use element to contain a noise element that appraises noise problems in the community from a variety of sources, including military airport operations. The noise is required to be measured and contours prepared and used as a guide for establishing land use patterns that minimize the exposure of community residents to excessive noise.

## Oklahoma

Oklahoma has passed legislation (Title 11: Cities and Towns; Section 43-101.1 – Municipalities with Active Duty United States Air Force Military Installation) in 2002 based in large part on the compatible land use guidelines contained in the U.S. Air Force Air Installation Compatible Zone Program. The act restricts use of property within five miles from the corporate boundary of a military installation that may constitute hazards in terms of aircraft operations. Under provisions of the statute, prohibited or restricted land uses include airborne releases of substances that impair visibility, light emissions that interfere with pilot vision, activities that attract birds or waterfowl, and structures located within 10 feet of aircraft approach or departure surfaces. Minimal residential development is allowed and is limited to single-family use on lots of one acre or more. The statute does not require that local political jurisdictions enact an ordinance enforcing these provisions.

## Colorado

The Colorado Land Use Act (Colorado Revised Statutes Title 24, Article 65) encourages local governments to designate “areas and activities of State interest” which include “areas around key facilities in which development may have a material effect upon the key facility or the surrounding community.” The act defines the term “key facility” to include airports or major public utility facilities, such as central office buildings of telephone facilities, power plants, natural gas storage areas, etc.

The following provisions of the Act [Part 2; §65-202, (4)] apply to areas around key facilities:

- If the operation of a key facility may cause a danger to public health and safety or to property, as determined by local government, the area around the key facility shall be designated and administered so as to minimize such danger; and
- Areas around key facilities shall be developed in a manner that will discourage traffic congestion, incompatible uses, and expansion of the demand for government services beyond the reasonable capacity of the community or region to provide such services as determined by local government. Compatibility with non-motorized traffic shall be encouraged. A development that imposes burdens or deprivation on the communities of a region cannot be justified on the basis of local benefit alone.

In addition, the following provisions are applicable to areas around particular airports:

(a) Areas around airports shall be administered so as to:

- (I) Encourage land use patterns for housing and other local government needs that will separate uncontrollable noise sources from residential and other noise-sensitive areas; and
- (II) Avoid danger to public safety and health or to property due to aircraft crashes.



## 4. TRENDS AND ISSUES

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A number of trends and issues in the vicinity of Davis-Monthan Air Force Base, as well as in the greater Tucson area, including population growth, development of the southeastern part of the Tucson metropolitan area, and the compatibility of existing and future land uses, may directly or indirectly affect the Base's present and future ability to carry out its mission, and also affect the ability to realize the area's future economic development potential.

The following is a summary of the principal trends, issues, opportunities, and constraints related to maintaining the Base's mission and achieving compatible land use in the vicinity of Davis-Monthan Air Force Base.

- As many as 50,000 acres of vacant, developable property lie east, south, and southeast of the Base, including over 10,000 acres of State Trust Lands. This acreage is within the Tucson metropolitan area that is realizing the fastest population growth; therefore, with the installation of the necessary infrastructure and a strong housing market in the southeast Tucson area, there is a strong opportunity to develop these properties for a wide range of uses. However, there are also environmental concerns including drainage, special status species, and desert habitat that affect development in this area. The Sonoran Desert Conservation Plan encompasses part of this area and applies to County lands.
- Tucson International Airport (TIA) is considering the development of a parallel runway as part of its ongoing Master Plan process. Because operations at Davis-Monthan are constrained by development to the north of the Base, it is important that future development at TIA does not further restrict the Base's options for the southeast approach and departure. The Base has an opportunity to further its close relationship with the Tucson Airport Authority using TIA's Master Plan to facilitate dialogue and plan facilities that minimize airspace conflicts between the airfields.
- The Arizona Department of Transportation's Houghton Corridor Study looks at long-range transportation needs. The Study is an opportunity for the Base to contribute information about its operations and about necessity of developing land uses that are compatible with its mission. This Study is also an opportunity for the Base to re-examine the adequacy of its existing internal land use and its access and egress vis-à-vis the local transportation system.
- After the upcoming 2005 Base Realignment and Closure (BRAC) round, the remaining bases will be candidates for additional investment to maximize their capability. This would create an opportunity to solidify Davis-Monthan's position by acquiring adjacent vacant land to enhance the long-term sustainability of the Base's mission. In addition, the proximity of Davis-Monthan Air Force Base to the Barry M. Goldwater Range presents an opportunity for the Air Force to select Davis-Monthan for a variety of different military missions in the future.
- Much of the area northwest of the Base, including properties within APZ-I and APZ-II, has been built up in incompatible urban uses, including single- and multi-family

residential, commercial, and other uses that result in the gathering and concentration of people in significant numbers. Much of this area is also located within noise contours 65 and 70 Ldn, which affects the existing residential uses; unlike similarly situated areas around TIA, there is no program available to retrofit these residences for noise attenuation.

- The City has an opportunity to address the various incompatible uses in the area north of the Base and to utilize the JLUS recommendation as the basis for its long-range planning so that the area can become more compatible in the future. At the same time, the City has the opportunity to utilize the site of the Julia Keen School (which the School Board determined would close due to concerns about its location in a defined Accident Potential Zone) for uses that would be compatible with and enhance the character of the surrounding neighborhood.
- The southeastern portion of the Tucson metropolitan area is poised to become the predominant area for economic and population growth through the next decade. While other portions of the metropolitan area are becoming increasingly constrained in terms of available land, the southeastern portion has large tracts of land available for development, and could accommodate much of the region's population and economic growth well into the next decade and provide a strong impetus for economic development in the greater Tucson area.
- Development of incompatible land uses in the area east, south and southeast of the Base could result in additional constraints on the Base's operations, and ultimately could lead to loss of part of the Base's mission or even its closure, with the resulting loss of significant economic benefits to the community. Through the JLUS process, there is an opportunity to develop sound long-range plans for the area, which will protect the Base and its economic benefits while allowing other complementary development to expand the economy. Such development would also expand the property tax base and employment opportunities.
- Current residents of the area southeast of the base, including Rita Ranch and the Houghton Road Corridor, have a limited range of services available in their community and therefore must travel to other areas for many services. As part of the overall development of the southeastern part of the Tucson area, there is an opportunity to improve the availability of services for residents of the area, including Base personnel.
- With large tracts of available land and good transportation access (rail and Interstate-10) in the areas between the Base and Houghton Road, there is an opportunity to develop a major employment center that would expand employment opportunities for the region. The University of Arizona Science and Technology Park could be a key element in development of this area.
- One of the unique elements at Davis-Monthan is the Aerospace Maintenance and Regeneration Center (AMARC), which is responsible for more than 5,000 aircraft stored at the facility. Expansion of the AMARC operations would have the dual benefit of expanding the area's economic base through the additional jobs, payroll, and local expenditures, as well as expanding a use that is compatible with the operations and mission of the Base.

- Funding for implementation of programs to improve land use compatibility, including acquisition of property or development rights for critical parcels, is constrained at the federal, State, and local levels by economic conditions and competing priorities for scarce funds. However, the JLUS does provide a basis from which to organize an intensive effort to obtain federal funding (as has occurred to obtain nearly \$28 million in appropriation for land acquisition around Luke Air Force Base). In addition, there are opportunities to use innovative mechanisms such as land trades and conservations easements to overcome the limitations of traditional funding sources.



## 5. LAND USE COMPATIBILITY

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The ability of Davis-Monthan Air Force Base to perform its critical mission today and into the future is related in large part to the compatibility of the land uses in the vicinity with the Base's operations. Recognizing that the areas to the east and south of the Base are a major focus for expansion of urban development in metropolitan Tucson, it is essential to define land uses for those areas that are compatible with the operations of the Base. and While the area to the northwest of the Base is highly developed, it is also important that no additional uses are developed that are incompatible with the Base's operations.

Protection of the public health and safety has been a concern of the City of Tucson, Pima County, and Davis-Monthan Air Force Base for over 50 years, and the following summary of events and actions illustrate the efforts that have been made since the 1940s to maintain compatible land use around Davis-Monthan.

- 1942 – A report on concerns about noise and danger to life and property associated with airports is prepared for the Tucson Regional Plan. Also in the 1940s, Davis-Monthan Air Force Base became solely a military air base.
- 1952 – Arizona State law provides for local authority to adopt military airport zoning.
- 1952 – First proposed airport zoning ordinance to apply to Tucson Municipal Airport and Davis-Monthan Air Force Base introduced through County Planning and Zoning Commission. The ordinance was considered in several forms until being tabled indefinitely in 1957.
- As early as 1954 public concerns were raised about Julia Keen elementary school.
- 1963 – County initiates process to establish Airport Approach Zone for Davis-Monthan; ordinance adopted in 1969. The ordinance establishes Davis-Monthan approach zones out to 50,200 from end of runway (to a width of 16,000).
- 1963 – City and County adopt Airport Approach Zone for Tucson International Airport.
- 1972 – County report recommends closing Julia Keen School and relocating students to other schools.
- 1972 – Air Force requests City consideration of adopting Davis-Monthan Airport Approach Zone similar to County ordinance, resulting in considerable debate.
- November 1983 – Pima County adopted Southeast Area Plan amendment, which prohibits rezoning to residential uses within the 50,200-foot southeast Davis-Monthan Approach-Departure Corridor. The Plan established industrial zoning within the Corridor and required that any rezoning to another use must be compatible with the operation of Davis-Monthan.
- June 1982 – Airport Environs Plan (AEP) adopted by City. AEP does not apply to the Davis-Monthan environs, but provides a history of adopted plan policy discouraging or prohibiting new noise-sensitive land uses in high-noise areas. The

Plan also supported the implementation of an acoustical treatment program, notice to future property owners, and acquisition of land buffers for Tucson International Airport.

- January 1985 – City annexed the Rita Ranch development. Original City zoning was adopted based on the County’s Southeast Area Plan. This prohibited residential zoning within that portion of the development within the Approach-Departure Corridor.
- 1986 Arroyo Chico Area Plan adopted (applies to area northwest of runway) – recognized Davis-Monthan land use compatibility issues; consistency with AICUZ; and restricted noise sensitive land uses.
- 1986 Esmond Station Area Plan adopted (applies to area southeast of runway) – policies recommended compatibility of new development with existing and future operation of Davis-Monthan Air Force Base; the “paddle” was mapped consistent with the Approach-Departure Corridor out to the City limits (Rita Ranch area).
- April 1990 – City of Tucson adopted the Airport Environs Zone (AEZ) which established land use restrictions for Accident Potential Zones, High Noise Contours, and Airport Hazard Districts, applied to both Davis-Monthan Air Force Base and Tucson International Airport. The new AEZ also provided for matching County regulations within the southeast section of the Approach-Departure Corridor as additional County land is annexed into the City.
- 1992 – County Comprehensive Plan adopted, consolidating 35 Area, Neighborhood, and Community Plans into single plan for Eastern Pima County. Policies specific to Davis-Monthan Air Force Base were not carried forward from the prior plans. The Comprehensive Plan was updated in 2001.
- January 2001 – Davis-Monthan Perimeter Study, funded by the federal government, was undertaken to better define compatible land uses in the areas surrounding the Base, including the southeast section of the Approach-Departure Corridor. The study did not result in recommendations for compatible land uses in the Davis-Monthan environs.
- May 2001 – State adopted SB1525, which required local adoption of tighter regulations within the southeast section of the Approach-Departure Corridor as well as the northwest AEZ by December 31, 2001. The City received concurrence from Davis-Monthan that allowed existing City regulations to continue in force until SB1525 could be amended.
- May 2002 – State adopted SB1393, which corrected problems in SB1525. The new law corrected the Approach-Departure Corridor dimensions (to exclude the area within Rita Ranch north of the drainage way that defines the Approach-Departure Corridor boundary), excluded Davis-Monthan’s northwest AEZ from State oversight, and amended certain land use regulations within the southeast section of the Approach-Departure Corridor.
- March, 2003 – The Department of Defense-funded and Arizona Department of Commerce-managed Joint Land Use Study of the Davis-Monthan environs begins. The study, by more specifically defining appropriate land uses for recommendation

to the City of Tucson and Pima County, is expected to assist in preserving Davis-Monthan operations and better address the safety and security of Tucson citizens.

## 5.1 NOISE AND SAFETY CONSIDERATIONS

### 5.1.1 Noise

Noise at unacceptable levels is a nuisance that disturbs our routine activities or our peace, and at louder levels can have negative psychological impacts and cause permanent hearing loss. Noise frequently causes feelings of mounting annoyance, irritation, or anger. The loudness of sounds is dependent upon many factors, including sound pressure level and frequency content, and within the usual range of environmental noise levels, perception of loudness is relatively predictable. Which sounds are perceived as noise may vary among listeners and what is not objectionable to some can be bothersome to others.

Aircraft noise may be experienced as particularly annoying because its sudden onset may startle people, cause windows to rattle and houses to shake, or cause people to fear a crash. Under such circumstances, even relatively moderate noises increases can be perceived as an annoyance.

In addition to varying levels of annoyance, adverse impacts associated with exposure to moderate and/or high noise levels include mental and physiological stress, increased blood pressure, temporary and permanent hearing loss, sleep interruption and deprivation, decreased ability to concentrate, decreased ability to communicate, decreased ability to learn, and behavioral problems in school-age children. Studies determined that at least 75 percent of sleeping people will be awakened if exposed to single-event noises over 74 decibels.

Some common terms used in assessing the effects of noise are:

- The Decibel (dB) is the unit used to measure the magnitude or intensity of sound. Decibel means 1/10 of Bel (named after Alexander Graham Bell). The decibel uses a logarithmic scale to cover the very large range of sound pressures that can be heard by the human ear. Under the decibel unit of measure, a 10 dB increase will be perceived by most people to be a doubling in loudness (80 dB seems twice as loud as 70 dB).
- The A-weighted Decibel (dBA) is the most common unit used for measuring environmental sound levels. It adjusts, or weights, the frequency components of sound to conform with the normal response of the human ear at conversational levels. dBA is an international metric that is used for assessing environmental noise exposure of all noise sources.
- The Day-night Average Sound Level (Ldn) is the level of noise expressed (in decibels) as a 24-hour average. Nighttime noise, between the hours of 10:00 p.m. and 7:00 a.m. is weighted; that is, given an additional 10 decibels to compensate for sleep interference and other disruptions caused by nighttime noise. Ldn is used by all Federal agencies (Environmental Protection Agency, Department of Housing and Urban Development, Department of Energy, Department of Defense, etc.) and internationally in the assessment of potential noise impacts.

To address noise problems in a logical manner, it is necessary to measure sound levels. Sound levels are plotted in units of A-weighted decibels (abbreviated dB, or sometimes dBA), a logarithmic measure of the magnitude of a sound as the average person hears it. The “A-weighting” accounts for the fact that humans do not hear low frequencies and high frequencies as well as they hear middle frequencies. The weighting corrects for the relative efficiency of the human ear at the different frequencies.

One obvious way of describing the sound environment is to measure maximum sound levels. For example, a nearby motorcycle may generate 73 dB. But an aircraft engine sound, although perhaps not perceived as loud as the motorcycle owing to the distance of the observer from the aircraft, tends to last much longer. Since studies have shown that human response to noise involves both the maximum level and its duration, the maximum sound level alone is not sufficient to evaluate the effects of noise on people.

An additional important factor in measuring a sound environment is the occurrence of sound events at night. People are normally more sensitive to intrusive sound events at night and background sound levels are normally lower at night because of decreased human activity. Therefore, a “penalty” may be added to sound levels that occur during night hours. By accepted scientific convention, a 10 decibel penalty is added to sound levels occurring between 10:00 p.m. and 7:00 a.m. the following morning. This 10 dB penalty means that one nighttime sound event is equivalent to 10 daytime events of the same level. The 24-hour average sound level, including the 10 dB penalty, is known as the day-night average sound level (Ldn). Extensive research has found that the day-night average sound level correlates very well with community annoyance from most environmental noise sources.

A measure of noise impact, such as the day-night average sound level, provides a reliable indicator of overall community response but does not indicate how any single individual will respond. As a result, there is probably no minimum level of transportation-related noise at which no one is annoyed.

Relying on a considerable body of scientific research on noise impacts, federal agencies have adopted guidelines for compatible land uses and environmental sound levels. Compatible land uses are normally determined by planning and zoning regulations that segregate types of activities, such as residential, industrial, or commercial. Noise levels that are unacceptable for homes may be quite acceptable for other uses, such as agriculture or certain industries.

General guidelines for noise compatibility identify sound levels between 55 and 60 dB as “moderate exposure” and as generally acceptable for residential uses. Both the Department of Defense’s Air Installation Compatible Use Zone (AICUZ) guidance and the Federal Aviation Administration’s Airport Noise Compatibility Planning Toolkit identify residential use as incompatible in the 65 Ldn contour and higher.

Noise contours for current operations at Davis-Monthan are defined by the Base’s AICUZ Study. The most recent adopted AICUZ study was prepared in 2002 and reflected the level of operations at the Base at that time. More recently, noise contours were prepared in 2003 to reflect the additional operations the Combat Rescue Group, which is now located at the Base. These contours are based upon current operational levels at the Base, and while they provide a basis for determining the noise exposure for the current operations, they do not provide any prediction of future noise levels resulting from new missions or new aircraft at the Base. This is of particular importance for Davis-Monthan, as the A-10 currently assigned to the Base is one of the quietest aircraft in the Air Force inventory. The

successor aircraft to the A-10 is expected to be a single engine fighter that will be noisier than the A-10.

Recognizing that the area affected by future noise contours would therefore be larger than under the current AICUZ contours, Davis-Monthan initiated a study in 2002 to define noise contours based upon operations with an existing aircraft that would be closer to a new single engine fighter in noise impacts. These “notional” contours were developed using AICUZ noise methodology and based upon the operation of five squadrons of F-16 aircraft at Davis-Monthan using the current flight paths. The area contained within these notional contours is shown in Figure 5-1. This area is larger than the area contained within the current 2002 AICUZ contours, which are the basis for the City of Tucson’s Airport Environs Zone, and also larger than the earlier AICUZ contours that were the basis for Pima County’s Airport Environs and Facilities Zone. Because the notional contours provide a better representation of noise impacts from future operations at the Base, the JLUS recommends that they be used to define the noise zones for applying noise compatibility criteria.

### 5.1.2 Safety

Areas around airports are exposed to the possibility of aircraft accidents even with well-maintained aircraft and highly specialized flight crews. Despite stringent maintenance requirements and intense pilot and crew training programs, history demonstrates that aircraft related accidents will occur around airports. Risk may be defined as:

The potential for realization of unwanted, adverse consequences to human life, health, property, or the environment; estimation of risk is usually based on the expected value of the conditional probability of the event occurring times the consequence of the event given that it has occurred.<sup>6</sup>

Although the risk to people on the ground of being killed or injured by a military aircraft accident is very small, such an event is by its nature of high consequence and may be catastrophic in the range and extent of its impact.

In order to address the problem of aircraft accidents, the Department of Defense and the Air Force established three planning zones for military airports: Clear Zone, APZ-I, and APZ-II. The Department of Defense also identified APZs as a tool to assist local planning agencies in regulating development. Although APZs are areas where an aircraft mishap is most likely to occur if one does occur, these zones do not reflect the totality of the locations where accidents may happen. APZs are based on take-off and landing patterns and were formulated upon analysis of historical data. Approximately 67 percent of the 834 major accidents at U.S. Air Force bases from 1968 through 1995 occurred in one of these three zones. The remaining 33 percent occurred outside those zones but within ten miles of the associated airfield.

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<sup>6</sup>*The Society for Risk Analysis, Risk Glossary*, accessed at <http://www.sra.org>, July 16, 2003.

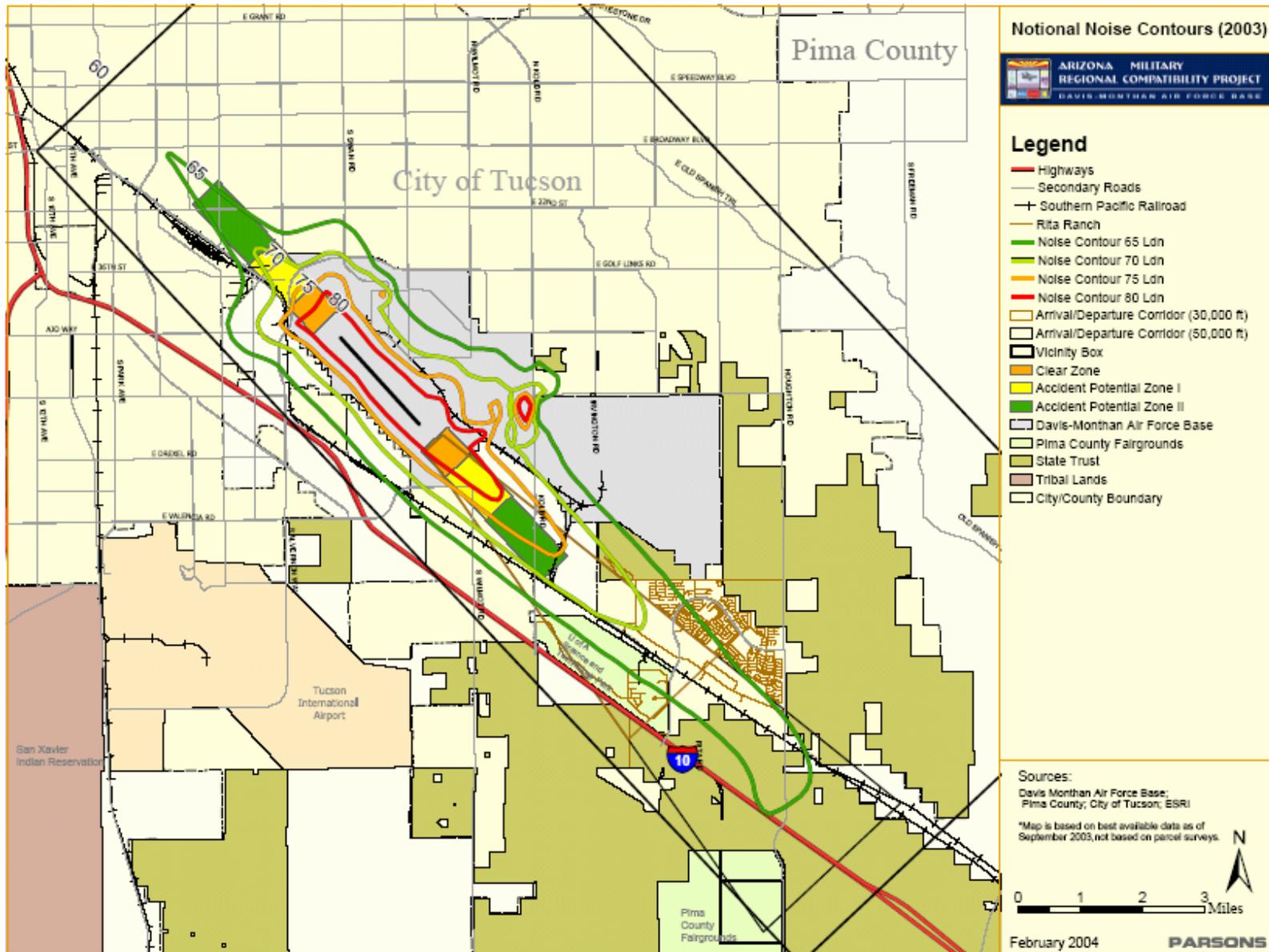


Figure 5-1: Notional Noise Contours

Air Force-wide accident data available for class A accidents within 40,000 feet of the end of runway indicates a clear pattern of accidents centered along major flight tracks. This data indicates potential for an aircraft mishap within the Approach-Departure Corridor (ADC) along the line of flight beyond 30,000 feet. Although the likelihood of an occurrence is less within the portion of the ADC between 30,000 and 50,200 feet of the end of the runway, it is statistically more likely in this area than outside the ADC.

A review of high performance aircraft characteristics, similar to those expected to be assigned to Davis-Monthan Air Force Base in the future, shows a potential area of risk out to approximately 30,000 feet from the end of the runway, regardless of time of year and aircraft load configuration. However, with the normal high temperature in spring, summer and early fall, and with forecast aircraft training load configurations, this area of risk extends out to 50,000 feet most of the year. Over 85 percent of Davis-Monthan departures and 100 percent of the live-ordnance training mission departures occur to the southeast. The most critical live-ordnance missions are those whose area of risk extends out to 50,000 feet (approximately 600 aircraft operations per year, today, and expected to grow to at least 800 operations per year in this decade.) Current operations are approximately 60 percent daytime and 40 percent nighttime. In the future not only will the number of daily flight operations likely increase by over 100 percent, but the day-night mix will also move closer to 50/50 due to trends in Air Force training that show a growing percentage of nighttime operations because this more closely reflects the actual combat situation.

Given that 80–90 percent of all departures and 100 percent of departures with live ordnance from Davis-Monthan are to the Southeast, and although accidents within this area would be infrequent, any one crash could be catastrophic, due to potential engine failures and major problems at take-off, which could lead to jettisoning attached fuel tanks and armaments together with aircraft crashes.

It is possible that beyond 2005, Davis-Monthan Air Force Base may be identified to absorb more missions. Combat Search and Rescue HC-130 aircraft and HH-60 helicopters are already scheduled to be added to the Base as a result of new or expanded missions. With a new fighter aircraft, additional fighter squadrons could be added, since Davis-Monthan has the growth capacity and the Department of Defense is working to realign units to obtain the most efficient use of the installations that remain after the 2005 BRAC.

## 5.2 LAND USE COMPATIBILITY CRITERIA

Two critical issues define compatibility of uses: safety and noise. A fundamental principle of compatibility criteria is to avoid concentrations of people exposed to noise and safety hazards, and more specifically to:

- limit exposure of people and noise-sensitive activities to high noise levels, and
- limit concentrations of people and safety-sensitive activities in areas of highest probable accident impact.

Each of these critical issues can be translated into geographic areas that are affected by flight operations from Davis-Monthan Air Force Base.

- Land uses that are noise-sensitive are incompatible with high noise levels, particularly within the high-noise zones defined as the 65 Ldn contour and higher. Noise-sensitive uses include:

- Residences and places where people normally sleep such as hotels, hospitals, and nursing homes.
- Uses such as schools, libraries, churches, museums, cultural centers, theaters, hotels, outdoor auditoriums, and concert halls, where it is important to avoid interference with such activities as speech, music, meditation, and concentration on reading or visual material.
- Noise attenuation may mitigate the effects of the average noise exposure (as expressed in Ldn), on these uses; however, it is important to note that single-event noise levels at significantly higher decibels would not be fully mitigated.
- Land uses that result in concentrations of people or that have special safety considerations are generally incompatible with high hazard zones, which are defined as the Clear Zones, APZ-I, APZ-II, and the portion of the Approach-Departure Corridor up to 30,000 feet from the southeastern end of the runway. Those uses that result in concentrations of people include the following.
  - Residences and similar uses where people reside, such as hotels and nursing homes.
  - Employment uses with a high density of employees such as offices and labor-intensive industrial use.
  - Uses where people may gather in large numbers such as churches, schools, shopping centers, retail establishments, bars and restaurants, auditoriums, sports arenas, and spectator sports.
- Land uses that have special safety considerations include the following.
  - Uses involving significant quantities of hazardous materials or explosives.
  - Critical public health and safety uses, such as hospitals, fire stations, and police communications facilities.
  - Landfills and agricultural row crops that are attractive to large flocks of birds.

### 5.2.1 Compatibility Criteria

Tables 5-1 and 5-2 identify the recommended compatible land use criteria for areas within the high hazard zones, the Approach-Departure Corridor, and the 65 Ldn noise contour and higher. Uses that result in concentrations of people are restricted in the high hazard Clear Zones, APZ-I, APZ-II and the portion of the Approach-Departure Corridor up to 30,000 feet from the southeastern end of the runway, while in the portion of the Approach-Departure Corridor beyond 30,000 feet, performance standards for non-residential uses are designed to create a “checkerboard” pattern of development in which performance standards for density and land coverage provide appropriate separation between buildings. Noise-sensitive uses are restricted in noise zones of 65 Ldn noise contour and higher.

**Table 5-1: Noise Compatibility Criteria**

Use <sup>1</sup>	Over 80 Ldn	75 – 80 Ldn	70 – 74 Ldn	65 – 69 Ldn
Residential	N	N	N	N
Outdoor Public Assembly, including stadiums, and amphitheaters	N	N	N	N
Hospitals, Clinics, Extended Care Facilities, and Nursing Homes	N	N	N	N
Elementary and Secondary Schools	N	N	N	N
Other Educational Facilities, including Colleges and Trade Schools	N	N	N	N
Cultural Activities (including Libraries, Museums, Auditoriums, and Concert Halls) and Religious Facilities	N	N	N	N
Cemeteries	N	N	N	Y
Arenas and other similar places of Indoor Public Assembly	N	Y <sup>2</sup>	Y <sup>2</sup>	Y <sup>2</sup>
Indoor Recreation (including clubhouses, swimming pools, etc.)	N	Y <sup>2</sup>	Y <sup>2</sup>	Y <sup>2</sup>
Retail Sales	N	Y <sup>2</sup>	Y <sup>2</sup>	Y <sup>2</sup>
Restaurants, Eating and Drinking Establishments	N	Y <sup>2</sup>	Y <sup>2</sup>	Y <sup>2</sup>
Hotels, Resorts, and other Lodging Facilities	N	Y <sup>2</sup>	Y <sup>2</sup>	Y <sup>2</sup>
Business, Personal, and Professional Services, including General Offices and Clinics	N	Y <sup>2</sup>	Y <sup>2</sup>	Y <sup>2</sup>
Government Services	N	Y <sup>2</sup>	Y <sup>2</sup>	Y <sup>2</sup>
Professional and Scientific Equipment Manufacturing	N	Y <sup>2,3</sup>	Y <sup>2,3</sup>	Y <sup>2,3</sup>
Agricultural Processing and Services	Y <sup>2</sup>	Y <sup>2</sup>	Y <sup>2</sup>	Y <sup>2</sup>
Wholesale Trade and Distribution	Y <sup>2</sup>	Y <sup>2</sup>	Y <sup>2</sup>	Y <sup>2</sup>
Manufacturing and Industrial Processing	Y <sup>2</sup>	Y <sup>2</sup>	Y <sup>2</sup>	Y <sup>2</sup>
Rail Lines, Roadways, and Vehicle Parking	Y	Y	Y	Y
Communications Facilities and Utilities	Y	Y	Y	Y
Outdoor Recreation	Y	Y	Y	Y
Agriculture (not including processing and services)	Y	Y	Y	Y

**Notes to Table 5-1:**

<sup>1</sup>Except as expressly identified in Table 5-1, compatibility of accessory or secondary uses shall be determined based on the primary use, and not based on the primary use (e.g., restaurants accessory to Lodging shall be considered as lodging uses).

<sup>2</sup>With appropriate sound attenuation in conformance with the noise-attenuation standards contained in ARS §28-8481 (K) and §28-8482.

<sup>3</sup>Uses involving highly sensitive processes or equipment may not be suitable.

**Table 5-2: Safety Compatibility Criteria**

Use <sup>1</sup>	Clear Zone	APZ I	APZ II	Approach-Departure Corridor to 30,000 feet	Approach-Departure 30,000 to 50,200 feet
Agriculture (not including direct retail sales or processing and services)	Y <sup>2</sup>	Y	Y	Y	Y
Communications Facilities and Utilities	Y <sup>3</sup>	Y <sup>4,5</sup>	Y <sup>4,5</sup>	Y <sup>5,6</sup>	Y <sup>7</sup>
Rail Lines, Roadways and Vehicle Parking	N	Y	Y	Y	Y
Cemeteries	N	Y	Y	Y	Y
Outdoor Recreation (such as golf courses, hiking, riding, nature areas, etc.) not providing places for people to gather	N	Y	Y	Y	Y
Agricultural processing and services	N	Y <sup>4</sup>	Y <sup>4</sup>	Y <sup>6</sup>	Y <sup>7</sup>
Wholesale Trade and Distribution (not including chemical, petroleum, and rubber products or other hazardous or highly flammable materials)	N	Y <sup>4</sup>	Y <sup>4</sup>	Y <sup>6</sup>	Y <sup>7</sup>
Wholesale Trade and Distribution (chemical, petroleum, and rubber products or other hazardous or highly flammable materials)	N	N	N	N	Y <sup>7</sup>
Manufacturing and Industrial Processing, except Chemical, Petroleum, Rubber and other processes involving the use of hazardous or highly flammable materials	N	Y <sup>4</sup>	Y <sup>4</sup>	Y <sup>6</sup>	Y <sup>7</sup>
Manufacturing and Processing of Chemical, Petroleum, Rubber, or other hazardous or highly flammable materials	N	N	N	N	Y <sup>7</sup>
Government Services	N	Y <sup>4,5</sup>	Y <sup>4,5</sup>	Y <sup>5,6</sup>	Y <sup>7,8</sup>
Arenas and other similar places of Indoor Public Assembly	N	N	N	N	Y <sup>7</sup>
Retail Sales	N	N	N	N	Y <sup>7</sup>
Restaurants, Eating and Drinking Establishments	N	N	N	N	Y <sup>7</sup>
Lodging Facilities including Resorts and Group Camps	N	N	N	N	Y <sup>7</sup>
Business, Personal and Professional Services, including General Offices and Clinics	N	N	N	N	Y <sup>7</sup>
Indoor Recreation (including clubhouses, swimming pools, etc.)	N	N	N	N	Y <sup>7</sup>
Residential	N	N	N	N	N
Elementary and Secondary Schools and Day Care Facilities	N	N	N	N	N
Other Educational Facilities including Colleges and Trade Schools	N	N	N	N	Y <sup>7</sup>
Cultural Activities (including Libraries, Museums, and Concert Halls) and Religious Facilities	N	N	N	N	Y <sup>7</sup>

Use <sup>1</sup>	Clear Zone	APZ I	APZ II	Approach-Departure Corridor to 30,000 feet	Approach-Departure 30,000 to 50,200 feet
Hospitals, Extended Care Facilities and Nursing Homes	N	N	N	N	N
Outdoor Public Assembly, including stadiums and amphitheatres	N	N	N	N	Y
Outdoor Recreation (such as picnic areas, swimming pools, playgrounds, etc.) providing places for people to gather	N	N	N	N	Y

**Notes to Table 5-2:**

<sup>1</sup>Except as expressly identified in Table 5-2, compatibility of accessory or secondary uses shall be determined based on the primary use (e.g., a chapel accessory to a cemetery shall be considered as a cemetery use).

<sup>2</sup>Below-ground facilities only.

<sup>3</sup>Limited to row crops only, with no structures or live stock.

<sup>4</sup>Subject to limitations on density / intensity of use as follows:

- Intensity of Use: Maximum occupancy not to exceed thirty (30) employees per acre in the APZs northwest of the Davis-Monthan AFB main runway; and twenty (20) employees per acre of net lot area in the APZs southeast of the main runway.<sup>1</sup>
- Planned Development Area: Minimum planned development area shall be not less than three (3) acres in the APZs northwest of the Davis-Monthan AFB main runway; and shall be not less than five (5) acres in the APZs southeast of the main runway.
- Floor Area Ratio: Maximum floor area ratio shall be:
  - In the APZs northwest of the Davis-Monthan AFB main runway: fifty (50) percent of the gross site area;
  - In the APZs southeast of the Davis-Monthan AFB main runway: thirty percent (30 percent) of the gross site area.

<sup>5</sup>Not including landfills or facilities that provide services directly to the public or places of public assembly; and not including facilities providing services that are critical for public health and safety (such as fire protection, police communications, sewage or water treatment, water storage, etc.).

<sup>6</sup>Subject to limitations on density / intensity of use as follows:

- Intensity of Use: Maximum occupancy not to exceed twenty (20) employees per acre of net lot area.<sup>1</sup>
- Planned Development Area: Minimum planned development area shall be not less than five (5) acres.
- Floor Area Ratio: Maximum floor area ratio shall be thirty percent (30 percent) of the gross site area.

<sup>7</sup>Subject to limitations on density / intensity of use as follows:

- Planned Development Area: Minimum planned development area shall be not less than five (5) acres.
- Floor Area Ratio: Maximum floor area ratio shall be forty percent (40 percent) of the gross site area for industrial, wholesaling and manufacturing uses, and twenty percent (20 percent) of the gross site area for other non-residential uses.
- Building Height: Maximum of 62 feet.
- Meeting Space: Any meeting space and function areas where people gather, in excess of 5,000 square feet in area shall be located underground.

<sup>8</sup>Not including landfills or facilities providing services that are critical for public health and safety (such as fire protection, police communications, sewage or water treatment, water storage, etc.).

As the risk of accidents is greater in the 30,000- to 50,200-foot portion of the Approach-Departure Corridor than in areas outside the Corridor (although less than in areas closer to the end of the runway), the following criteria have been defined for the southeastern Approach-Departure Corridor from 30,000 to 50,200 feet that are intended to allow a wide range of non-residential uses while maintaining space between structures. Within this portion of the Corridor:

- All non-residential uses (except elementary and secondary schools, day care facilities, hospitals, and uses involving significant quantities of flammable materials) are considered compatible.
- Residential uses (including extended care facilities and nursing homes) are not considered compatible.
- Maximum floor area ratio shall be 40 percent of gross site area for industrial, wholesaling and manufacturing uses, and 20 percent of gross site area for other non-residential uses.
- Minimum planned development area shall be five acres.
- Maximum building height shall be 62 feet.
- Any meeting space or function areas over 5,000 square feet in area shall be underground.

### 5.3 COMPATIBLE LAND USE PLAN

The Compatible Land Use Plan is structured in five separate zones, as listed below.<sup>7</sup>

- Zone I, consisting of the Accident Potential Zones at the northwestern end of the main Davis-Monthan runway.
- Zone II, consisting of the Accident Potential Zones and the first 30,000 feet of the Approach-Departure Corridor at the southeastern end of the main Davis-Monthan runway.
- Zone III, consisting of the Approach-Departure Corridor from 30,000 to 50,200 feet at the southeastern end of the main Davis-Monthan runway.
- Zone IV, consisting of those portions of the 70 to 74 Ldn Noise Zone outside the APZs and Approach-Departure Corridor.
- Zone V, consisting of those portions of the 65 to 69 Ldn Noise Zone outside the APZs and Approach-Departure Corridor.

The Compatible Land Use Plan for these zones, as shown in Figure 5-2, is a guide and a tool to be applied by local political jurisdictions to protect and promote the health, welfare, and safety of the public. Integration of these land uses into general and comprehensive plans during the Growing Smarter major amendment process is appropriate implementation. Given that Arizona is a local control State, it is the obligation of each community to determine which of the uses in the Compatible Land Use Plan are

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<sup>7</sup>Table 5-1 defines compatibility criteria for Noise Zones above 74 Ldn and Clear Zones at each end of the main runway. However, land within those zones falls entirely within the boundaries of Davis-Monthan Air Force Base. Compatible land uses for the Base are defined within the Base's General Plan and AICUZ Study.

appropriate for each jurisdiction and to implement those decisions through development regulations, land use plan policies and development reviews. The following sections identify the uses considered compatible for each of the zones within the Compatible Land Use Plan. The JLUS also recognizes that some existing uses and zoned parcels in the zones may not be compatible with the criteria, and therefore defines criteria for these existing uses as “Permitted but Not Compatible Uses.” It is also appropriate for each jurisdiction to determine how to implement criteria for the non-compatible uses.

### **5.3.1 Zone I – Accident Potential Zones (Northwest)**

In Zone I, recommended compatible uses are those non-residential uses that have relatively low employment density (number of persons per acre). These are primarily industrial uses, along with other uses that have low concentrations of persons, such as certain types of outdoor recreation. This area has extensive residential uses and properties in the area, as well as existing commercial and industrial areas, and therefore, while these uses are not considered compatible with the safety criteria, the Compatible Land Use Plan recognizes these existing uses and zoned parcels as permitted uses under the Plan. Recommended use standards for this area also reflect the predominantly built-up character of the area, with somewhat smaller lot sizes and greater building coverage than for Zone II.

#### **Compatible Uses – Zone I**

- General Agriculture/Livestock (excluding accessory retail sales)
- Cemeteries
- Rail Lines, Roadways, and Vehicle Parking
- Agricultural processing and services, subject to recommended Use Standards below
- Wholesale Trade and Distribution, subject to recommended Use Standards below
- Manufacturing and Industrial Processing, and Wholesale Trade and Distribution, except Chemical, Petroleum, subject to recommended Use Standards below
- Communications Facilities and Utilities, subject to recommended Use Standards below
- Outdoor Recreation (not including places for people to gather, such as picnic areas, swimming pools, playgrounds, etc.): examples of permitted uses include golf courses without club houses and parks/nature trails without museums or exhibits
- Government Services, but not including landfills or facilities that provide services directly to the public or places of public assembly; and not including facilities providing services that are critical for public health and safety (such as fire protection, police communications, sewage or water treatment, water storage, etc.)

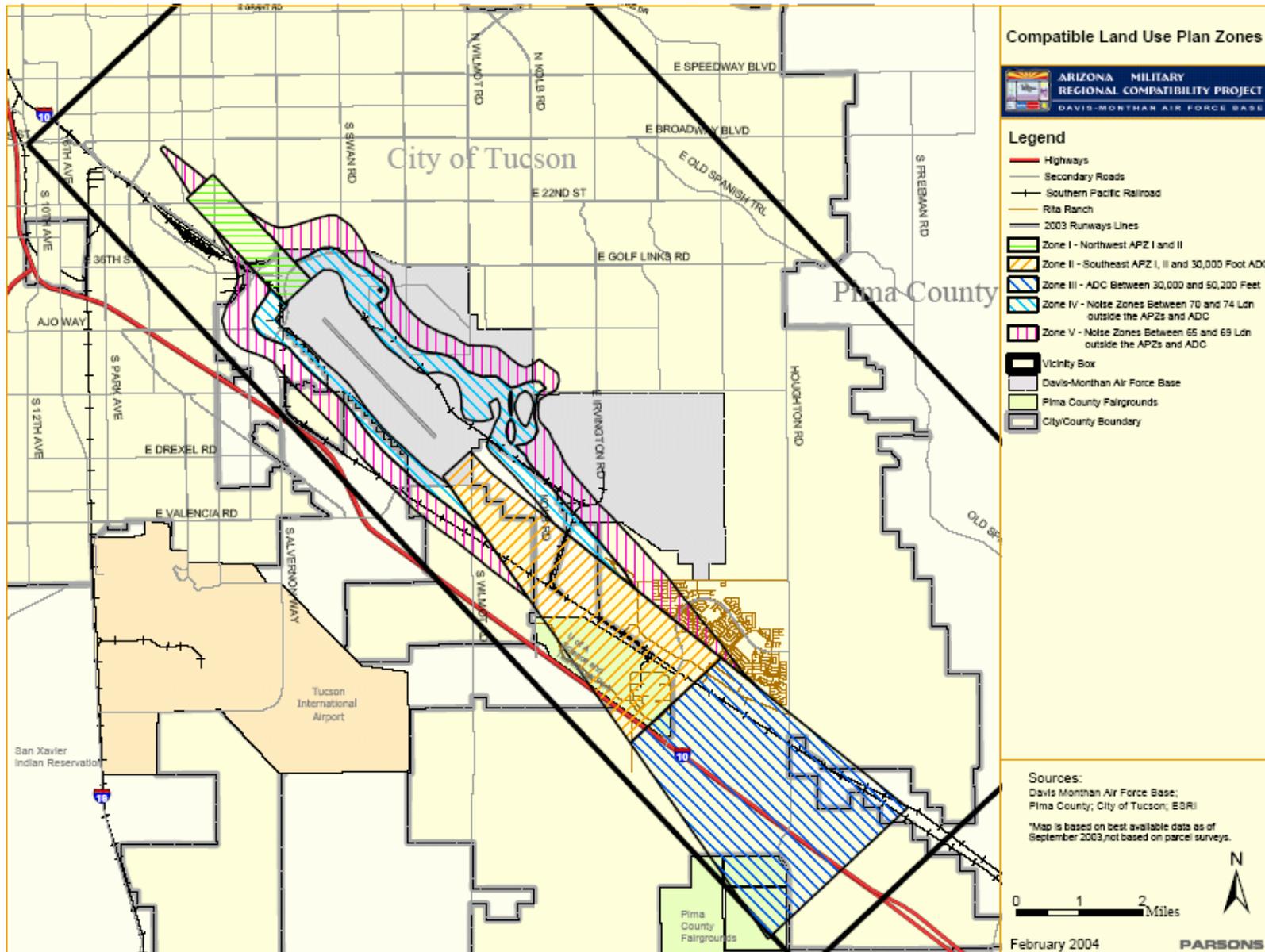


Figure 5-2: Compatible Land Use Plan Zones

### Recommended Use Standards for Compatible Uses – Zone I

- Intensity of Use: Not to exceed thirty (30) employees per acre of net lot area<sup>8</sup>
- Planned Development Area: Minimum planned development area shall be not less than three (3) acres
- Floor Area Ratio: Maximum floor area ratio shall be fifty (50) percent of the gross site area
- Sound Attenuation: Uses within a Noise Zone of 65 Ldn or higher shall comply with the noise reduction standards contained in the table of uses in ARS §28-8481 and sound attenuation standards contained in ARS §28-8482 (see Appendix A for a description of applicable revised statutes)

### Additional Permitted Uses – Zone I

While not considered compatible uses, the following uses should be permitted based on existing development and zoning.

- Residential use of properties zoned for residential use prior to May 16, 1990
- Commercial use of properties zoned for commercial use prior to December 1, 2003
- Office, retail commercial, and industrial (manufacturing, processing, and distribution) uses as allowed under a Development Agreement approved prior to January 1, 2001

Such additional permitted uses within a Noise Zone of 65 Ldn or higher shall also comply with the noise-reduction standards contained in the table of uses in ARS §28-8481 and sound attenuation standards contained in ARS §28-8482.

### 5.3.2 Zone II – Accident Potential Zones and Approach-Departure Corridor (up to 30,000 feet) (Southeast)

In Zone II, recommended compatible uses are also those non-residential uses that have relatively low employment density (number of persons per acre). These are primarily industrial uses, along with other uses that have low concentrations of persons, such as certain types of outdoor recreation. Although this area has relatively few residential uses and properties in the area, the Compatible Land Use Plan recognizes these existing uses and zoned parcels as permitted uses under the Plan. In addition, use standards for this area reflect the predominant character of the area, with larger lot sizes and lower building coverage than for Zone I.

The Plan also recognizes that the University of Arizona Science and Technology Park, which occupies a large portion of the Approach-Departure Corridor in this Zone, is under the jurisdiction of the University of Arizona and has operated under its own Development Guidelines since the Park's inception. It is the recommendation of the JLUS that development in the Science and Technology Park proceed under the Park's adopted Development Guidelines, provided that density transfers are used within the Park to shift employee density from the northern part of the park to the southern part; and that development of the Park within Zone II be limited to employment-generating uses, and

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<sup>8</sup>Defined as the total lot area minus that part of the property dedicated to public right-of-way.

specifically that a hotel and child care facilities not be developed within this Zone and that the existing high school use be relocated outside this Zone.

### **Compatible Uses – Zone II**

- General Agriculture/Livestock (excluding accessory retail sales)
- Cemeteries
- Rail Lines, Roadways, and Vehicle Parking
- Agricultural processing and services, subject to recommended Use Standards below
- Wholesale Trade and Distribution, subject to recommended Use Standards below
- Manufacturing and Industrial Processing, and Wholesale Trade and Distribution, except Chemical, Petroleum, subject to recommended Use Standards below
- Communications Facilities and Utilities, subject to recommended Use Standards below
- Outdoor Recreation (not including places for people to gather, such as picnic areas, swimming pools, playgrounds, etc.): examples of permitted uses include golf courses without club houses and parks / nature trails without museums or exhibits
- Government Services, but not including landfills; facilities that provide services directly to the public or places of public assembly; or facilities providing services that are critical for public health and safety (such as fire protection, police communications, sewage or water treatment, water storage, etc.)

### **Recommended Use Standards for Compatible Uses – Zone II**

- Intensity of Use: Not to exceed twenty (20) employees per acre of net lot area<sup>9</sup>
- Planned Development Area: Minimum planned development area shall be not less than five (5) acres
- Floor Area Ratio: Maximum floor area ratio shall be thirty (30) percent of the gross site area
- Sound Attenuation: Uses within a Noise Zone of 65 Ldn or higher shall comply with the noise reduction standards contained in the table of uses in ARS §28-8481 and sound attenuation standards contained in ARS §28-8482

### **Additional Permitted Uses – Zone II**

While not considered compatible uses, the following uses should be permitted based on existing development and zoning.

- Residential use of properties zoned for residential use prior to May 16, 1990
- Commercial use of properties zoned for commercial use prior to December 1, 2003
- Office and retail commercial uses as allowed under a Development Agreement approved prior to January 1, 2001

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<sup>9</sup>Defined as the total lot area minus that part of the property dedicated to public right-of-way.

Such additional permitted uses within a Noise Zone of 65 Ldn or higher shall also comply with the noise reduction standards contained in the table of uses in ARS §28-8481 and sound attenuation standards contained in ARS §28-8482.

### **5.3.3 Zone III – Approach-Departure Corridor (30,000 to 50,200 feet) (Southeast)**

In Zone III, all non-residential uses (except elementary and secondary schools, day care facilities, hospitals, and uses involving significant quantities of hazardous or flammable materials) would be considered compatible; residential uses (including extended care facilities and nursing homes) would not be considered compatible. Performance standards would apply to the non-residential uses, so that a “checkerboard” pattern of development is created, with buildings separated by areas devoted to parking or open space. This “checkerboard” pattern would provide relatively low overall building coverage, while also accommodating the development opportunities in the area.

#### **Compatible Uses – Zone III**

- General Agriculture/Livestock (including accessory retail sales)
- Cemeteries
- Rail Lines, Roadways, and Vehicle Parking
- Agricultural processing and services, subject to recommended Use Standards below
- Wholesale Trade and Distribution, subject to recommended Use Standards below
- Manufacturing and Industrial Processing, and Wholesale Trade and Distribution, except Chemical, Petroleum Manufacturing, Processing and Distribution, subject to recommended Use Standards below
- Communications Facilities and Utilities, subject to recommended Use Standards below
- Retail Sales, subject to recommended Use Standards below
- Lodging Facilities, subject to recommended Use Standards below
- Restaurants, Eating and Drinking Establishments, subject to recommended Use Standards below
- Business, Personal and Professional Services, including General Offices and Clinics, subject to recommended Use Standards below
- Outdoor and Indoor Recreation subject to recommended Use Standards below
- Government Services, but not including landfills or facilities providing services that are critical for public health and safety (such as fire protection, police communications, sewage or water treatment, water storage, etc.) and subject to recommended Use Standards below

#### **Recommended Use Standards for Compatible Uses – Zone III**

- Planned Development Area: Minimum planned development area shall be not less than five (5) acres

- Floor Area Ratio: Maximum floor area ratio shall be forty percent (40 percent) of the gross site area for industrial, wholesaling and manufacturing uses, and twenty percent (20 percent) of gross site area for other non-residential uses
- Sound Attenuation: Uses within a Noise Zone of 65 Ldn or higher shall comply with the noise reduction standards contained in the table of uses in ARS §28-8481 and sound attenuation standards contained in ARS §28-8482

#### **5.3.4 Zone IV — 70–74 Ldn Contour Zone**

##### **Compatible Uses – Zone IV**

- Arenas and other similar places of Indoor Public Assembly
- Indoor Recreation (including clubhouses, swimming pools, etc.)
- Retail Sales
- Restaurants, Eating and Drinking Establishments
- Hotels, Resorts, and other Lodging Facilities
- Business, Personal and Professional Services, including General Offices and Clinics
- Government Services
- Professional and Scientific Equipment Manufacturing
- Wholesale Trade and Distribution
- Manufacturing and Industrial Processing
- Rail Lines, Roadways and Vehicle Parking
- Communications Facilities and Utilities
- Outdoor Recreation
- Agriculture (including processing and services)

##### **Recommended Use Standards for Compatible Uses – Zone IV**

- Sound Attenuation: Uses within a Noise Zone of 65 Ldn or higher shall comply with the noise reduction standards contained in the table of uses in ARS §28-8481 and sound attenuation standards contained in ARS §28-8482

#### **5.3.5 Zone V — 65– 69 Ldn Contour Zone**

##### **Compatible Uses – Zone V**

- Educational Facilities, including Colleges and Trade Schools but excluding Elementary and Secondary Schools and Day Care Facilities
- Cultural Activities (including Libraries, Museums, Auditoriums and Concert Halls) and Religious Facilities
- Cemeteries
- Arenas and other similar places of Indoor Public Assembly

- Indoor Recreation (including clubhouses, swimming pools, etc.)
- Retail Sales
- Restaurants, Eating and Drinking Establishments
- Hotels, Resorts, and other Lodging Facilities
- Business, Personal and Professional Services, including General Offices and Clinics
- Government Services
- Professional and Scientific Equipment Manufacturing
- Wholesale Trade and Distribution
- Manufacturing and Industrial Processing
- Rail Lines, Roadways, and Vehicle Parking
- Communications Facilities and Utilities
- Outdoor Recreation
- Agriculture (including processing and services)

**Recommended Use Standards for Compatible Uses – Zone V**

- Sound Attenuation: Uses within a Noise Zone of 65 Ldn or higher shall comply with the noise reduction standards contained in the table of uses in ARS §28-8481 and sound attenuation standards contained in ARS §28-8482



## 6. IMPLEMENTATION PROGRAM

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### 6.1 INTRODUCTION

The Joint Land Use Study (JLUS) for Davis-Monthan Air Force Base is intended to guide the decisions made by a variety of public and private entities in relation to compatible land use around the Base. In addition to the State of Arizona and its agencies, the Base, local jurisdictions, and private interests within the area can contribute to the implementation of the recommendations of the JLUS.

The Compatible Land Use Plan presented in Chapter 5 of this JLUS defines recommended compatible uses and performance standards that are intended to be used by the City of Tucson and Pima County to guide development in order to protect Davis-Monthan's mission and its economic benefits, while increasing the economic diversity and viability of the community by facilitating the development of other key sectors in ways that are compatible with the Base's mission. Implementation of the Compatible Use Plan is fundamental to achieving these goals and integration of land use recommendations into general and comprehensive plans and zoning ordinances is a key element in implementing the JLUS. However, successful implementation requires that other tools be utilized to achieve the JLUS goals. These tools are contained in the implementation program presented in the following sections.

The implementation program has been developed in recognition of the ongoing planning by the Base and jurisdictions, as well as considering the divergent viewpoints expressed through the public participation process, and the need to present strategies that realistically accomplish the goal of preserving Davis-Monthan Air Force Base and its mission. While the changing nature of economics and politics may change the scope and timing of the implementation strategies, these recommendations provide the framework and guidance for achieving long-term compatibility of development with the Base and its mission.

The following sections present the recommended Implementation Strategies. Three aspects of implementation that are integral to the process follow a brief description of each strategy. The first aspect of implementation, **Priority/Timing**, establishes the importance of the action and the time frame within which the Strategy is to be effected, as follows:

- High — by January, 2005,
- Moderate — within 2–3 years, that is by January 2007, or
- Low — 4–5 years, that is by January 2009.

The second aspect of implementation, **Responsible Party(s)**, indicates the governmental agency, local political jurisdiction, and other parties responsible for implementing the Strategy. The third aspect of implementation, **Evaluation Measures**, presents recommendations concerning review and monitoring to facilitate adjustments if the strategy is not meeting its desired results. One of the appropriate functions for the State

would be to monitor the implementation and effectiveness of the recommended measures through the Arizona Department of Commerce or other State agency.

## 6.2 IMPLEMENTATION STRATEGIES

### 6.2.1 Joint Land Use Study Recognition

While the JLUS is not adopted in the traditional sense by local jurisdictions and is not a legal document, the completion of the JLUS and its status as guidance for land use decisions in the vicinity of Davis-Monthan Air Force Base should be recognized by the City of Tucson, Pima County and the Base. Appendix C contains a model resolution for consideration by the City and County.

- Priority/Timing – High
- Responsible Party(s) – City of Tucson, Pima County and Davis-Monthan AFB
- Evaluation Measures – Resolution or similar official acknowledgement adopted in 2004

### 6.2.2 Revision of Airport Environs Zone Plans and Ordinances

The Compatible Land Use Plan of the JLUS study defines compatible land uses for APZ-I, APZ-II, the Approach-Departure Corridor and high-noise zones around Davis-Monthan Air Force Base. The Airport Environs Zone plans and ordinances of the City of Tucson and Pima County are the primary means of implementing the recommended compatible uses. Both the City and County should review their respective plans and ordinances to identify changes that are necessary to implement the recommended compatible uses and prepare necessary amendments to the plans and ordinances for consideration and adoption by their respective governing bodies. The City and County should also utilize the notional noise contours, as recommended in the JLUS, as the basis for defining high-noise zones.

- Priority/Timing – High
- Responsible Party(s) – City of Tucson and Pima County
- Evaluation Measures – Plan and Zoning Ordinance amendments adopted in 2004

### 6.2.3 Support for Recommendations of the Governor's Military Facilities Task Force

The Governor's Military Facilities Task Force has made recommendations to the Governor relating to actions needed at the federal, State and local levels to ensure the long-term viability of military installations and resources. A number of these recommendations, including the designation of dedicated funding to assist military installation preservation and expansion projects, and the expansion of county planning and zoning authority (equivalent to current municipal authority) to enable them to better manage growth and development in areas impacted by military airports, involve legislative action and are of particular interest for implementing the JLUS recommendations for Davis-Monthan Air Force Base. The City and County, along with the DM-50 and other interested groups should actively support the implementation of the recommendations of the Governor's Military Facilities Task Force at the State level.

- Priority/Timing – High

- Responsible Party(s) – City of Tucson, Pima County, DM-50, and other organizations
- Evaluation Measures – Enactment of the legislative recommendations of the Governor’s Task Force

#### **6.2.4 Support for Recommendations of the State Trust Land Reform Group**

The State Trust Land Reform group is considering a recommendation that a mechanism be developed to allow for the exchange of land in support of planning and disposition of State Trust land in support of the long-term preservation of Arizona’s military installations. The ability for the State Trust to engage in land exchanges and the ability to transfer densities and land uses between various State Trust lands is potentially an important element for achieving compatibility in the development of State Trust lands in the Approach-Departure Corridor. As the mechanism to allow this will likely require legislative action and/or a vote of the electorate to modify the State Constitution, the City of Tucson, Pima County, DM-50, and other interested organizations should actively support the recommendations of the State Trust Land Reform Group.

- Priority/Timing – High
- Responsible Party(s) – City of Tucson, Pima County, DM-50 and other organizations
- Evaluation Measures – Enactment of the legislative recommendations of the State Lands Reform Group

#### **6.2.5 Ongoing Organization for JLUS Implementation**

Efficient and effective communication between the City of Tucson, Pima County, area landowners, other local organizations and Davis-Monthan AFB is critical to the successful implementation of the JLUS. To provide a means to maintain communication and coordination as the JLUS recommendations are carried out, the City, County and Base should consider the formation of an ongoing coordinating committee. This committee, in addition to representatives from the City, County and Base, should include representatives from area landowners and other local organizations that have an interest in compatible land use around the Base. This committee could also serve as the interface with the State Military Affairs Commission proposed by the Governor’s Military Facilities Task Force.

- Priority / Timing – High
- Responsible Party(s) – City of Tucson, Pima County, Davis-Monthan AFB, area landowners and other local organizations
- Evaluation Measures – Formation of committee by end of 2004; Operation of committee - Ongoing

#### **6.2.6 Davis-Monthan AFB Community Initiatives Team**

As a means of maintaining effective liaison between with the surrounding community, the Base should consider the formation of a dedicated “Community Initiatives Team.” Made up of individuals with an understanding of base operations as well development issues, this team, working as part of the base’s command structure, would focus on land use compatibility issues, and would serve as a consistent mechanism for outreach and input by surrounding communities on environmental and growth issues. The team would also be

tasked with working at the staff level with other implementing organizations during the JLUS implementation process.

- Priority / Timing – High
- Responsible Party(s) – Davis-Monthan AFB
- Evaluation Measures – Formation of Team by end of 2004; Operation of Team - Ongoing

### **6.2.7 Department of Defense Land Acquisition**

The City of Tucson, Pima County, and other interested groups such as DM-50 should work with the State's Congressional delegation to obtain appropriations in the Department of Defense budget dedicated to the purchase of critical parcels around the Base, especially under the primary flight paths in the APZs and Approach-Departure Corridor. In addition to working for an appropriation in the next budget year (2005), efforts should be made for additional appropriations in the years following the 2005 BRAC round.

- Priority/Timing – High for the initial appropriation; moderate for subsequent appropriations
- Responsible Party(s) – City of Tucson, Pima County, DM-50, and other organizations, Arizona Congressional delegation
- Evaluation Measures – Appropriated funding in the Department of Defense budget

### **6.2.8 Department of Defense Purchase of Conservation Easements**

The Department of Defense (DOD) is implementing a program of purchase of conservation easements around military installations in order to address environmental and encroachment issues.

The “Bob Stump National Defense Authorization Act” for Fiscal Year 2003 (P.L. 107-314) provided new statutory authority that permits the Department of Defense enter into agreements with eligible entities to address the use or development of real property near a military installation, and to accept on behalf of the United States Government any property or interest acquired pursuant to such agreements. The Department of Defense is working to determine how this new authority will be used, and each of the Military Departments are developing specific program guidance.

In general terms the new authority includes the following specific elements.

- Eligible entities are States, political subdivisions or private conservation organizations.
- The amendment provides for the acquisition by an eligible entity of all right, title, interest in and to any real property, and sharing by the Government and the entity in acquisition costs. The amendment also requires the entity, upon request of the DOD, to transfer to the Government the minimum property or interests necessary to avoid encroachment from the use or management of the property.
- Department of Defense funds may be used for such agreements for purchase from willing sellers. It is important to note that the amendment does not provide specific

funding for these purchases. The Department of Defense will determine if, and how much funding will be available for this initiative.

- The amendment also permits Department of Defense to convey surplus real property to states or other eligible entities for conservation of natural resources.

The City of Tucson and Pima County should work with Davis-Monthan Air Force Base and the Department of Defense to acquire conservation easements in appropriate locations within the Approach-Departure Corridor and APZs.

- Priority/Timing – High to Moderate
- Responsible Party(s) – City of Tucson, Pima County, Davis-Monthan Air Force Base, Department of Defense and private landowners
- Evaluation Measures – Completed purchase of conservation easements

### **6.2.9 Aerospace Maintenance and Regeneration Center (AMARC) Expansion**

The City of Tucson and Pima County should continue to facilitate the land acquisition that has been proposed involving private landowners and Davis-Monthan Air Force Base for the expansion of the AMARC. This would result in approximately 600 acres of land in one of the APZs being secured for a compatible land use.

- Priority/Timing – High
- Responsible Party(s) – City of Tucson, Pima County, Davis-Monthan Air Force Base, and private landowners
- Evaluation Measures – Completed transfer of title of land for AMARC expansion

#### **6.2.10 University of Arizona Science and Technology Park Development**

Pima County should continue to work with the University of Arizona to develop the Science and Technology Park in a way that provides compatibility with the Base, while achieving the objective of developing the Park as a major economic driver for the Tucson area. Key elements to achieve compatibility include use of density transfers within the Park to shift employee density from the northern part of the park to the southern part; and limiting development of the Park to employment-generating uses within the first 30,000 feet of the Approach-Departure Corridor (specifically that a hotel not be developed within this area and that the existing high school use be relocated).

- Priority/Timing – High to Moderate
- Responsible Party(s) – Pima County and University of Arizona
- Evaluation Measures – Compatible Development under the Science and Technology Park's Master Plan

#### **6.2.11 Land and Water Conservation Fund**

The Land and Water Conservation Fund (LWCF) was established by Congress in 1964 to create parks and open spaces, protect wilderness, wetlands, and refuges, preserve wildlife habitat, and enhance recreational opportunities. The LWCF has a matching grants program that provides funds to states for planning, developing and acquiring land and water areas for state and local parks and recreation areas. These funds could be used to

match state monies to purchase critical parcels of land around the Base for use as conservation/open space.

- Priority/Timing – High
- Responsible Party(s) – Federal and State governments
- Evaluation Measures – Use of land and water conservation funds as appropriate

### **6.2.12 Military Installation Fund**

One of the recommendations of the Governor’s Military Facilities Task Force is the creation of a Military Installation Fund (MIF), to be administered by the State and funded by dedicated revenue at the State level. The MIF, as envisioned by the Task Force, would provide grants to local governments for land acquisition or other activities to preserve or expand military installations. If this fund is established, the City and County should consider use of MIF funding to support acquisition of land or development rights in critical areas (most likely in combination with other funding), or for other activities that would support compatible land use.

- Priority/Timing – High to Moderate
- Responsible Party(s) – City of Tucson, Pima County and State of Arizona
- Evaluation Measures – Use of MIF funds as provided for in grant

### **6.2.13 Land Acquisition through Bonds**

The City of Tucson and Pima County should consider a bond issue for purchasing land in critical areas of the APZs and Approach-Departure Corridor. Priority for purchase should be given to lands under the primary flight paths Communities that pursue land purchase can save money by using the Greater Arizona Development Authority (GADA). GADA is empowered by state statute to sell bonds at a lower interest rate by subsidizing the costs of issuance. All of the municipalities surrounding the military installations/facilities are eligible for the program. Participation in the GADA program requires that there be an estimate of the total cost of the land to be purchased and a determination that GADA has enough capacity to loan.

- Priority/Timing – Moderate to Low
- Responsible Party(s) – City of Tucson and/or Pima County and Greater Arizona Development Authority
- Evaluation Measures – Issuance of bonds for acquisition of land

### **6.2.14 Purchase of Development Rights**

An alternative to the purchase of land is the purchase of development rights which would be negotiated with the owner of the development rights. Participation in the purchase of development rights would be voluntary on the part of the owner. This type of acquisition may be effective in appropriate situations and areas, particularly where the issue of compatibility involves density of development rather than the type of land use proposed. When development rights are purchased, a landowner is paid fair market value for the rights that are purchased. The value of the purchased rights is roughly equal to the value of the land without any special restriction less the value of the land with the land use

restrictions. The use of this strategy would be dependent on securing funding for the purchase through one of the other strategies identified in this chapter.

- Priority/Timing – High to Moderate
- Responsible Party(s) – Federal government, State government, and local jurisdictions
- Evaluation Measures – Development Rights are purchased

### **6.2.15 Transfer of Development Rights**

The use of Transfer of Development Rights (TDRs) can reduce the intensity and density of use in areas identified as significant to preserving the Base’s mission while increasing density in other areas by encouraging local political jurisdictions to create incentives for developers to use the density transfer technique in appropriate situations and areas in proximity to the Base. The transfer of development rights is similar to the purchase of development rights, except rather than a public agency buying development rights, which are then in effect “retired,” the landowner is compensated by having the permitted uses of other land expanded or intensified. The land to which the rights are transferred may be either owned by the landowner, or by someone else. In the latter case, compensation is paid to the “sending” landowner by the “receiving” landowner. Participation in TDR programs would be voluntary on the part of the landowner(s). Under the TDR scenario, the use of land currently zoned for lower intensity use outside the APZs could be modified to allow higher density development at the same time the use of land in the APZs currently zoned to permit higher density development would be restricted to lower density use.

- Priority/Timing – High to Moderate
- Responsible Party(s) – Local jurisdictions
- Evaluation Measures – TDR programs are adopted by the City of Tucson (and by Pima County, if State legislation is enacted to allow the County to use TDRs)

### **6.2.16 Partnerships with Non-Governmental Organizations to Facilitate Transfers of Development Rights**

Governmental or non-governmental entities such as the Trust for Public Land (TPL), may acquire development rights for land adjacent to a military installation or facility, especially for land in the high hazard and noise zones, and dedicating it to uses compatible with military missions or to transferring those lands to public ownership for conservation or open space uses. TPL also has a program to assist communities in pursuing a preservation ballot initiative, providing services that include political analysis and campaign strategy.

- Priority/Timing – High to Moderate
- Responsible Party(s) – Local jurisdictions and TPL or other entity
- Evaluation Measures – TDR programs are adopted by the City of Tucson (and by Pima County, if State legislation is enacted to allow the County to use TDRs)

### **6.2.17 Noise Attenuation Retrofit Program**

The City of Tucson should work with the State’s Congressional delegation to secure a Department of Defense funded and administered program for noise attenuation retrofitting

of homes in the high-noise zones that is similar to the program that Tucson International Airport has had in operation since 1992. Through grants from the Federal Aviation Administration and the Arizona Department of Transportation, the Tucson Airport Authority is providing acoustic treatment to approximately 1,400 homes within the highest noise areas. Permanent-structure residences in the 65 Ldn noise contour and the 70 Ldn noise contour are eligible for the program. At no cost to eligible homeowners, the residences are retrofitted with acoustic windows and doors, ventilation systems are modified, and other improvements are made to drastically reduce interior noise levels.

- Priority/Timing – High to Moderate
- Responsible Party(s) – City of Tucson, State Congressional delegation, Department of Defense, and Davis-Monthan Air Force Base.
- Evaluation Measures – Noise Attenuation Retrofit Program in place

### **6.2.18 Adaptive Reuse of Julia Keen School**

With the anticipated closure of Julia Keen School, which is located in one of the APZs northwest of the main Davis-Monthan runway, there is a need to find an adaptive reuse for the school that is compatible both with the operation of Davis-Monthan and with the surrounding neighborhood. The City of Tucson should work with the Tucson Unified School District and the Julia Keen neighborhood to bring an appropriate adaptive reuse to the school building so that it remains an asset for the neighborhood.

- Priority/Timing – High
- Responsible Party(s) – City of Tucson, Tucson Unified School District, local residents, and neighborhood organizations.
- Evaluation Measures – Implementation of adaptive reuse

### **6.2.19 Enhanced Local Notification and Disclosure**

The Governor’s Military Facilities Task Force is recommending that current notification and disclosure provisions in State law for military facilities be strengthened, including a recommendation that the Arizona Department of Real Estate develop a “rule” to strengthen and standardize the notification process for its licensees. Increasingly, communities have determined that there is value to their citizens in going beyond the minimum public notification and disclosure standards outlined in State law. Greater understanding of local military operations can also enhance the sustainability of the Base by building support for the Base’s mission. Specific mechanisms to enhance public notification and disclosure may include:

- Requiring notices and maps to be posted in real estate sales and leasing offices, including identification of noise contours
- Requiring notices placed in model home complexes and sales offices advising potential buyers that the area is subject to military aircraft overflight
- Requiring avigation easements and indemnification/release of liability language on all recorded subdivision plats
- Installing overflight signage at roadway intersections within the noise contour lines

The City of Tucson and Pima County should consider the need for adopting specific additional methods of notification and disclosure.

- Priority/Timing – High to Moderate
- Responsible Party(s) – City of Tucson and Pima County
- Evaluation Measures – Enhanced Notification and Disclosure procedures in place

### **6.2.20 Best Practice Techniques**

A process to assess the usefulness of various techniques used by other political jurisdictions with similar military air base encroachment issues is an effective means to ensure that the “best practices” are being used to guide development around Davis-Monthan Air Force Base and the State’s other military facilities. This evaluation of “best practice” techniques will need to determine their potential to be adapted to the needs of various political jurisdictions in the State, and the State will continue its role as convener and clearinghouse in these efforts. Other stakeholders are anticipated to participate in this data collection in support of the statewide effort. Results of the Best Practices research will be compiled into the State Policy Guide developed as part of the statewide effort by the Department of Commerce to address land use compatibility and encroachment issues under the Arizona Military Regional Compatibility Project.

- Priority/Timing – Development of State Policy Guide – High; continuing assessment is ongoing
- Responsible Party(s) – State government, local jurisdictions, and other stakeholder groups
- Evaluation Measures – Development of State Policy Guide and ongoing assessment



## APPENDIX A: ARIZONA LAND USE COMPATIBILITY LEGISLATION

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To view the full text of the Arizona Revised Statutes (ARS) discussed below visit the Arizona State Legislature's web site at <http://www.azleg.state.az.us/ArizonaRevisedStatutes.asp>.

### 1.0 TITLE 9

Title 9 of the ARS contains legislation governing cities and towns; the cited sections are especially concerned with municipal planning issues.

**ARS §9-461.05.** This section stipulates that the general plan prepared by municipalities within the territory in the vicinity of a military airport have a land use element that includes consideration of military airport operations.

**ARS §9-461.06.** This section requires that the governing body shall consult with, advise, and provide an opportunity for official comment by the military airport if the municipality has territory in the vicinity of a military airport as defined in ARS section 28-8461.

**ARS §9-462.04.** This section requires that in proceedings involving rezoning of land that is located within the territory in the vicinity of a military airport the municipality shall send copies of the notice of public hearing by first class mail to the military airport.

In municipalities with territory in the vicinity of a military airport, the governing body shall hold a public hearing if, after notice is transmitted to the military airport and before the public hearing, the military airport provides comments or analysis concerning the compatibility of the proposed rezoning with the high-noise or accident potential generated by military airport operations that may have an adverse impact on public health and safety, and the governing body shall consider and analyze the comments or analysis before making a final determination.

### 2.0 TITLE 11

Title 11 of the ARS contains legislation governing counties; the cited sections are especially concerned with county planning and zoning.

**ARS §11-806.** The section requires that counties with territory in the vicinity of a military airport must prepare a comprehensive plan that considers the operation of the military airport and allows the military airport the opportunity to consult with, advise, review, and comment on the plan.

**ARS §11-829.** In proceedings involving rezoning of land that is located within territory in the vicinity of a military airport the commission shall send copies of the notice of public hearing to the military airport. In counties with territory in the vicinity of a military airport the board is required to hold a public hearing if the

military airport provides comments or analysis concerning the compatibility of the proposed rezoning with the high-noise or accident potential generated by military airport operations the board shall consider and analyze the comments or analysis before making a final determination.

### 3.0 TITLE 15

Title 15 of the ARS contains legislation governing education; the cited sections are especially concerned with financing school development.

**ARS §15-2002.** The executive director of the school facilities board is required to establish procedures in compliance with the official notice and hearing requirements that, with respect to monies to fund the construction of new school facilities proposed to be located in the territory in the vicinity of a military airport, the military airport receive notification of the application for funding at least thirty days before any hearing.

**ARS §15-2041.** The section requires that, with respect to monies to fund the construction of new school facilities proposed to be located in the territory in the vicinity of a military airport the board shall consider and analyze the comments or analysis from military airport before making a decision.

### 4.0 TITLE 28

Title 28 of the ARS contains legislation governing transportation; the cited sections are especially concerned with airport zoning and regulation and joint powers airport authorities.

**ARS §28-8461.** This section is concerned with a number of definitions that directly relate to military airport operations. It defines Accident Potential Zone 1 and Accident Potential Zone 2, Clear Zone, high-noise or accident potential zones, military airport, territory in the vicinity of a military airport, etc.

**ARS §28-8480.** This section allows political subdivisions to acquire or lease land or interests in land for the continued operation of a military airport.

**ARS §28-8481.** This section requires a political subdivision that has territory in the vicinity of a military airport to adopt comprehensive and general plans for property in the hazard zone to assure development compatible with the high-noise and accident potential generated by military airport operations, which includes noise reduction standards for specific land uses within noise zones of 65 Ldn or higher.

Political subdivisions that have property in a high-noise or accident potential zone can not grant zoning variances without a specific finding that the purpose of military airport compatibility is preserved.

A political subdivision that has territory in a high-noise or accident potential zone is required to notify the owner or owners of property in that zone of any additions or changes to the general plan, comprehensive plan, zoning regulations applicable to property in those zones. The political subdivision shall provide a notice of such additions or changes including a statement that the property is located in a high-

noise or accident potential zone. Each political subdivision that has territory that includes property in a high-noise or accident potential zone is required to file with the attorney general a report that demonstrates compliance during the previous reporting period.

E. This section does not restrict, limit or modify, or authorize or require any political subdivision to restrict, limit or modify, the right of a landowner to undertake and complete development and use of any property under the terms and conditions of a development plan or school district development plan approved on or before December 31, 2000 by the political subdivision in whose territory the property is located, except that the development must comply with the sound attenuation standards and specifications incorporated into any building code adopted pursuant to section 28-8482 by the political subdivision in whose territory the development is located.

K. The attorney general shall determine compliance with this section in accordance with the following requirements applicable to zoning and development in a high noise or accident potential zone and to zoning and development in accident potential zone one and accident potential zone two. Compliance with respect to territory located in the arrival and departure corridor but outside the accident potential zone one, two and noise contour lines as described in section 28-8461, paragraph 8, subdivisions (b) and (c) shall be determined in accordance with the requirements applicable to territory located in the 65-69 day-night sound level as listed below. This subsection shall not preclude a determination of compliance if the political subdivision and the military airport mutually agree that an individual use is compatible and consistent with the high noise or accident potential of the military airport.

**ARS §28-8482.** This section requires political subdivisions in the vicinity of a military airport to incorporate sound attenuation standards in their building codes.

**ARS §28-8483.** The State Real Estate Department and political subdivisions that have territory in the vicinity of a military airport are required to request from the military airport a registry of certain information concerning flight operations and contact persons; this registry shall be available to the public on request.

**ARS §28-8484.** Any public report applicable to property located within territory in the vicinity of a military airport is required to include the statements that: the property is located within territory in the vicinity of a military airport; the maps of military flight operations provided by the military airport are available to the public on request. Each military airport may provide the State Real Estate Department and each political subdivision with territory in the vicinity of the military airport with a map that shows the boundaries of each territory in the vicinity of a military airport and the boundaries of each high-noise or accident potential zone.

**ARS §28-8485.** This section allows the state or a governing body of a political subdivision that operates an airport to designate an airport influence area of all property that is exposed to aircraft noise and overflights and has a 65 Ldn noise level or higher. If such an airport influence area is established it shall be recorded with the appropriate county recorder so as to be sufficient to notify owners or

potential buyers of property that the area is currently subject to aircraft noise and overflights.

**ARS §28-8486.** This section defines the terms, public airport and territory in the vicinity of a public airport and directs the State Real Estate Department to make available to the public a map showing the boundaries of each territory in the vicinity of a public airport.

**ARS §28-8521.** This section allows two or more political jurisdictions to enter into an agreement establishing a joint powers airport authority in connection with the closing of a military facility.

**ARS §28-8521.** This section defines a joint powers airport authority.

**ARS §28-8523.** The procedures for an annual operating budget for a joint powers airport authority are established in this section.

**ARS §28-8524.** This section establishes procedures for a joint powers airport authority to allocate funds, hold public hearings, adopt a development plan and a capital improvement plan, etc.

**ARS §28-8526.** The procedures for a joint powers airport authority to admit additional members established in this section.

**ARS §28-8527.** The official procedures for a joint powers airport authority to operate established in this section.

**ARS §28-8528.** If a joint powers airport authority is established under the statute, the President of the Senate and the Speaker of the House of Representatives shall establish a joint legislative military airport reuse committee and stipulates its membership and duties.

**ARS §28-2113.** This section establishes requirements for disclosure applicable to property that is located within territory in the vicinity of a military airport: “This property is located within territory in the vicinity of a military airport and may be subject to increased noise and accident potential.”

**ARS §28-2181.** This section establishes notification requirements of intentions to subdivide lands and requires a statement as to whether all or any portion of the property is located within territory in the vicinity of a military airport or a public airport, or a high-noise and accident potential zone.

## 5.0 TITLE 32

Title 32 of the ARS contains legislation governing professions and occupations; the cited sections are especially concerned with real estate transactions and land development.

**ARS §32-2181.01.** Permits the commissioner to exempt certain land subdivisions or fractional interests from one or more of the stipulations of the statute.

**ARS §32-2181.02.** Defines the exempt land transactions.

**ARS §32-2181.03.** Defines the requirements of a lot reservation.

**ARS §32-2183.** If any of the lots, parcels, or fractional interests within a subdivision are located within territory in the vicinity of a military airport the report shall include the statements required pursuant to applicable Arizona law and, if the department has been provided a map prepared pursuant to applicable Arizona law, the report shall include a copy of the map.

**ARS §32-2195.** This section requires the commissioner to be notified of the intent to offer unsubdivided lots or parcels for sale or lease; that notice shall include a statement as to whether the property is located within territory in the vicinity of a military airport or within territory in the vicinity of a public airport, or a high-noise and accident potential zone.

**ARS §32-2195.03.** Establishes the requirements for the commissioner to issue a report on unsubdivided lands and determines that if the unsubdivided land is located within territory in the vicinity of a military airport such a statement shall be included as shall be a map showing its location within the vicinity of a military airport.

## 6.0 TITLE 41

Title 41 of the ARS contains legislation regulating state government; the cited sections are especially concerned with the duties of the State Department of Commerce with respect to military facilities.

**ARS §41-1531.** This section determines the procedures to establish military reuse zones at closed military facilities.

**ARS §41-1532.** This section establishes the conditions for tax incentives with respect to activities in a military reuse zone.

**ARS §41-1533.** This section defines the duties of the State Department of Commerce with respect to military reuse zones.

## 7.0 TITLE 48

Title 48 of the ARS contains legislation regulating special taxing districts; the cited sections are especially concerned with agriculture preservation districts and military airports.

**ARS §48-5702.** This section establishes and defines an agriculture preservation district; requires these districts to take actions that are consistent with the continued use and operation of military airports.

**ARS §48-5703.** The procedures for the operation of an agriculture preservation district determined in this section and the district location with respect to an existing military airport or decommissioned military airport are defined.



## APPENDIX B: AIR INSTALLATION COMPATIBLE USE ZONE (AICUZ)

Table B-1: Air Installation Compatible Use Zone (AICUZ) Table

Land Use		Accident Potential Zones			Noise Zones			
SLUCM Number	Name	CLEAR ZONE	APZ I	APZ II	65-69	70-74	75-79	80+
10	Residential							
11	Household units							
11.11	Single units; detached	N	N	Y <sup>1</sup>	A <sup>11</sup>	B <sup>11</sup>	N	N
11.12	Single units; semidetached	N	N	N	A <sup>11</sup>	B <sup>11</sup>	N	N
11.13	Single units; attached row	N	N	N	A <sup>11</sup>	B <sup>11</sup>	N	N
11.21	Two units; side-by-side	N	N	N	A <sup>11</sup>	B <sup>11</sup>	N	N
11.22	Two units; one above the other	N	N	N	A <sup>11</sup>	B <sup>11</sup>	N	N
11.31	Apartments; walk up	N	N	N	A <sup>11</sup>	B <sup>11</sup>	N	N
11.32	Apartments; elevator	N	N	N	A <sup>11</sup>	B <sup>11</sup>	N	N
12	Group quarters	N	N	N	A <sup>11</sup>	B <sup>11</sup>	N	N
13	Residential hotels	N	N	N	A <sup>11</sup>	B <sup>11</sup>	N	N
14	Mobile home parks or courts	N	N	N	N	N	N	N
15	Transient lodgings	N	N	N	A <sup>11</sup>	B <sup>11</sup>	C <sup>11</sup>	N
16	Other residential	N	N	N <sup>1</sup>	A <sup>11</sup>	B <sup>11</sup>	N	N
20	Manufacturing							
21	Food and kindred products; manufacturing	N	N <sup>2</sup>	Y	Y	Y <sup>12</sup>	Y <sup>13</sup>	Y <sup>14</sup>
22	Textile mill products; manufacturing	N	N <sup>2</sup>	Y	Y	Y <sup>12</sup>	Y <sup>13</sup>	Y <sup>14</sup>
23	Apparel and other finished products made from fabrics, leather, and similar materials; manufacturing	N	N	N <sup>2</sup>	Y	Y <sup>12</sup>	Y <sup>13</sup>	Y <sup>14</sup>
24	Lumber and wood products (except furniture); manufacturing	N	Y <sup>2</sup>	Y	Y	Y <sup>12</sup>	Y <sup>13</sup>	Y <sup>14</sup>
25	Furniture and fixtures; manufacturing	N	Y <sup>2</sup>	Y	Y	Y <sup>12</sup>	Y <sup>13</sup>	Y <sup>14</sup>
26	Paper and allied products; manufacturing	N	Y <sup>2</sup>	Y	Y	Y <sup>12</sup>	Y <sup>13</sup>	Y <sup>14</sup>

**Table B-1: Air Installation Compatible Use Zone (AICUZ) Table**

Land Use		Accident Potential Zones			Noise Zones			
SLUCM Number	Name	CLEAR ZONE	APZ I	APZ II	65-69	70-74	75-79	80+
27	Printing, publishing, and allied industries	N	Y <sup>2</sup>	Y	Y	Y <sup>12</sup>	Y <sup>13</sup>	Y <sup>14</sup>
28	Chemicals and allied products; manufacturing	N	N	N <sup>2</sup>	Y	Y <sup>12</sup>	Y <sup>13</sup>	Y <sup>14</sup>
29	Petroleum refining and related industries	N	N	Y	Y	Y <sup>12</sup>	Y <sup>13</sup>	Y <sup>14</sup>
30	Manufacturing							
31	Rubber and misc. plastic products, manufacturing	N	N <sup>2</sup>	N <sup>2</sup>	Y	Y <sup>12</sup>	Y <sup>13</sup>	Y <sup>14</sup>
32	Stone, clay and glass products manufacturing	N	N <sup>2</sup>	Y	Y	Y <sup>12</sup>	Y <sup>13</sup>	Y <sup>14</sup>
33	Primary metal industries	N	N <sup>2</sup>	Y	Y	Y <sup>12</sup>	Y <sup>13</sup>	Y <sup>14</sup>
34	Fabricated metal products; manufacturing	N	N <sup>2</sup>	Y	Y	Y <sup>12</sup>	Y <sup>13</sup>	Y <sup>14</sup>
35	Professional, scientific, and controlling instruments; photographic and optical goods; watches and clocks manufacturing	N	N	N <sup>2</sup>	Y	A	B	N
39	Miscellaneous manufacturing	N	Y <sup>2</sup>	Y <sup>2</sup>	Y	Y <sup>12</sup>	Y <sup>13</sup>	Y <sup>14</sup>
40	Transportation, communications and utilities							
41	Railroad, rapid rail transit and street railroad transportation	N <sup>3</sup>	Y <sup>4</sup>	Y	Y	Y <sup>12</sup>	Y <sup>13</sup>	Y <sup>14</sup>
42	Motor vehicle transportation	N <sup>3</sup>	Y	Y	Y	Y <sup>12</sup>	Y <sup>13</sup>	Y <sup>14</sup>
43	Aircraft transportation	N <sup>3</sup>	Y <sup>4</sup>	Y	Y	Y <sup>12</sup>	Y <sup>13</sup>	Y <sup>14</sup>
44	Marine craft transportation	N <sup>3</sup>	Y <sup>4</sup>	Y	Y	Y <sup>12</sup>	Y <sup>13</sup>	Y <sup>14</sup>
45	Highway & street right-of-way	N <sup>3</sup>	Y	Y	Y	Y <sup>12</sup>	Y <sup>13</sup>	Y <sup>14</sup>
46	Automobile parking	N <sup>3</sup>	Y <sup>4</sup>	Y	Y	Y <sup>12</sup>	Y <sup>13</sup>	Y <sup>14</sup>
47	Communications	N <sup>3</sup>	Y <sup>4</sup>	Y	Y	A <sup>15</sup>	B <sup>15</sup>	N
48	Utilities	N <sup>3</sup>	Y <sup>4</sup>	Y	Y	Y	Y <sup>12</sup>	Y <sup>13</sup>
49	Other transportation communications and utilities	N <sup>3</sup>	Y <sup>4</sup>	Y	Y	A <sup>15</sup>	B <sup>15</sup>	N
50	Trade							
51	Wholesale trade	N	Y <sup>2</sup>	Y	Y	Y <sup>12</sup>	Y <sup>13</sup>	Y <sup>14</sup>
52	Retail trade-building materials, hardware and farm equipment	N	Y <sup>2</sup>	Y	Y	Y <sup>12</sup>	Y <sup>13</sup>	Y <sup>14</sup>
53	Retail trade-general merchandise	N	N <sup>2</sup>	Y <sup>2</sup>	Y	A	B	N
54	Retail trade-food	N	N <sup>2</sup>	Y <sup>2</sup>	Y	A	B	N

**Table B-1: Air Installation Compatible Use Zone (AICUZ) Table**

Land Use		Accident Potential Zones			Noise Zones			
SLUCM Number	Name	CLEAR ZONE	APZ I	APZ II	65-69	70-74	75-79	80+
55	Retail trade-automotive, marine craft, aircraft and accessories	N	Y <sup>2</sup>	Y <sup>2</sup>	Y	A	B	N
56	Retail trade-apparel and accessories	N	N <sup>2</sup>	Y <sup>2</sup>	Y	A	B	N
57	Retail trade-furniture, home furnishings and equipment	N	N <sup>2</sup>	Y <sup>2</sup>	Y	A	B	N
58	Retail trade-eating and drinking establishments	N	N	N <sup>2</sup>	Y	A	B	N
59	Other retail trade	N	N <sup>2</sup>	Y <sup>2</sup>	Y	A	B	N
60	Services							
61	Finance, insurance and real estate services	N	N	Y <sup>6</sup>	Y	A	B	N
62	Personal services	N	N	Y <sup>6</sup>	Y	A	B	N
62.4	Cemeteries	N	Y <sup>7</sup>	Y <sup>7</sup>	Y	Y <sup>12</sup>	Y <sup>13</sup>	Y <sup>14,21</sup>
63	Business services	N	Y <sup>8</sup>	Y <sup>8</sup>	Y	A	B	N
64	Repair services	N	Y <sup>2</sup>	Y	Y	Y <sup>12</sup>	Y <sup>13</sup>	Y <sup>14</sup>
65	Professional services	N	N	Y <sup>6</sup>	Y	A	B	N
65.1	Hospitals, nursing homes	N	N	N	A*	B*	N	N
65.1	Other medical facilities	N	N	N	Y	A	B	N
66	Contract construction services	N	Y <sup>6</sup>	Y	Y	A	B	N
67	Governmental services	N	N	Y <sup>6</sup>	Y*	A*	B*	N
68	Educational services	N	N	N	A*	B*	N	N
69	Miscellaneous services	N	N <sup>2</sup>	Y <sup>2</sup>	Y	A	B	N
70	Cultural, entertainment and recreational							
71	Cultural activities (including churches)	N	N	N <sup>2</sup>	A*	B*	N	N
71.2	Nature exhibits	N	Y <sup>2</sup>	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 shell, amphitheaters	N	N	N	N	N	N	N
72.2	Outdoor sports arenas, spectator sports	N	N	N	Y <sup>17</sup>	Y <sup>17</sup>	N	N
73	Amusements	N	N	Y <sup>8</sup>	Y	Y	N	N
74	Recreational activities (including golf courses, riding stables, water recreation)	N	Y <sup>8,9,10</sup>	Y	Y*	A*	B*	N

**Table B-1: Air Installation Compatible Use Zone (AICUZ) Table**

Land Use		Accident Potential Zones			Noise Zones			
SLUCM Number	Name	CLEAR ZONE	APZ I	APZ II	65–69	70–74	75–79	80+
75	Resorts and group camps	N	N	N	Y*	Y*	N	N
76	Parks	N	Y <sup>8</sup>	Y <sup>8</sup>	Y*	Y*	N	N
79	Other cultural, entertainment and recreation	N	Y <sup>9</sup>	Y <sup>9</sup>	Y*	Y*	N	N
80	Resources production and extraction							
81	Agriculture (except livestock)	Y <sup>16</sup>	Y	Y	Y <sup>18</sup>	Y <sup>19</sup>	Y <sup>20</sup>	Y <sup>20,21</sup>
81.5 to 81.7	Livestock farming and animal breeding	N	Y	Y	Y <sup>18</sup>	Y <sup>19</sup>	Y <sup>20</sup>	Y <sup>20,21</sup>
82	Agricultural related activities	N	Y <sup>5</sup>	Y	Y <sup>18</sup>	Y <sup>19</sup>	N	N
83	Forestry activities and related services	N <sup>5</sup>	Y	Y	Y <sup>18</sup>	Y <sup>19</sup>	Y <sup>20</sup>	Y <sup>20,21</sup>
84	Fishing activities and related services	N <sup>5</sup>	Y <sup>5</sup>	Y	Y	Y	Y	Y
85	Mining activities and related services	N	Y <sup>5</sup>	Y	Y	Y	Y	Y
89	Other resources production and extraction	N	Y <sup>5</sup>	Y	Y	Y	Y	Y

Source: U.S. Air Force. HQ USAF/CEVP. 1994. AFI 32-7063, Air Installation Compatible Use Zone Program.

**Notes to Table A-1:**

SLUCM: Standard Land Use Coding Manual, U.S. Department of Transportation.

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

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

Y<sup>x</sup>: (yes with restrictions) - Land use and related structures generally compatible; see notes 1–21.

N<sup>x</sup>: (no with exceptions) - See notes 1–21.

NLR: (Noise Level Reduction) outdoor to indoor to be achieved through incorporation of noise attenuation measures into the design and construction of the structures.

A, B, or C: Land use and related structures generally compatible; measures to achieve NLR of A (25 dB), B (30 dB), or C (35 dB) need to be incorporated into the design and construction of structures.

A\*, B\*, and 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. See appropriate footnotes.

\*: The designation of these uses as “compatible” in this zone reflects individual federal agency 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.

<sup>1</sup>Suggested maximum density of 1–2 dwelling units per acre possibly increased under a Planned Unit Development (PUD) where maximum lot coverage is less than 20 percent.

<sup>2</sup>Within each land use category, uses exist where further definition may be needed due to the variation of densities in people and structures. Shopping malls and shopping centers are considered incompatible in any accident potential zone (CZ, APZ I, or APZ II).

<sup>3</sup>The placing of structures, buildings, or aboveground utility lines in the clear zone is subject to severe restrictions. In a majority of the clear zones, these items are prohibited. See AFI 32-7063 and AFMAN 32-1123 (I) for specific guidance.

<sup>4</sup>No passenger terminals and no major aboveground transmission lines in APZ I.

<sup>5</sup>Factors to be considered: labor intensity, structural coverage, explosive characteristics, and air pollution.

<sup>6</sup>Low-intensity office uses only. Meeting places, auditoriums, etc., are not recommended.

<sup>7</sup>Excludes chapels.

<sup>8</sup>Facilities must be low intensity.

<sup>9</sup>Clubhouse not recommended.

<sup>10</sup>Areas for gatherings of people are not recommended.

<sup>11a</sup>Although local conditions may require residential use, it is discouraged in DNL 65–69 dB and strongly discouraged in DNL 70–74 dB. An evaluation should be conducted prior to approvals, indicating a demonstrated community need for residential use would not be met if development were prohibited in these zones, and there are no viable alternative locations.

<sup>11b</sup>Where the community determines the residential uses must be allowed, measures to achieve outdoor to indoor Noise Level Reduction (NLR) for DNL 65–69 dB and DNL 70–74 dB should be incorporated into building codes and considered in individual approvals.

<sup>11c</sup>NLR criteria will not eliminate outdoor noise problems. However, building location and site planning, and design and use of berms and barriers can help mitigate outdoor exposure, particularly from near ground level sources. Measures that reduce outdoor noise should be used whenever practical in preference to measures that only protect interior spaces.

<sup>12</sup>Measures to achieve the same NLR as required for facilities in the DNL 65–69 dB range 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.

<sup>13</sup>Measures to achieve the same NLR as required for facilities in the DNL 70–74 dB range 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.

<sup>14</sup>Measures to achieve the same NLR as required for facilities in the DNL 75–79 dB range 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.

<sup>15</sup>If noise sensitive, use indicated NLR; if not, the use is compatible.

<sup>16</sup>No buildings.

<sup>17</sup>Land use is compatible provided special sound reinforcement systems are installed.

<sup>18</sup>Residential buildings require the same NLR required for facilities in the DNL 65–69 dB range.

<sup>19</sup>Residential buildings require the same NLR required for facilities in the DNL 70–74 dB range.

<sup>20</sup>Residential buildings are not permitted.

<sup>21</sup>Land use is not recommended. If the community decides the use is necessary, personnel should wear hearing protection devices.



## **APPENDIX C: ARIZONA REGIONAL COMPATIBILITY PROJECT MODEL RESOLUTION**

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The following is a model resolution for Council or Board adoption of standards to comply with ARS §28-8461. This should not be construed as legal advice, as it is advisable to consult with your jurisdiction’s legal advisor on specific language for adoption.

### **ARIZONA REGIONAL MILITARY COMPATIBILITY PROJECT – JOINT LAND USE STUDY MODEL RESOLUTION**

A resolution expressing the will of the Mayor and Council (Board of Supervisors) of \_\_\_\_\_ to protect the public health, safety, and welfare of citizens in the Tucson area and maintain a strong collaborative partnership with Davis-Monthan Air Force Base to maintain the operational viability of the base.

Whereas we, the Mayor and Council (Board of Supervisors) of the City (County) of \_\_\_\_\_ in our elected posts are charged with a responsibility to protect the public health safety and welfare of \_\_\_\_\_ citizens and

Whereas land within the jurisdiction of the City (County) of \_\_\_\_\_ falls within an area of Davis-Monthan Air Force Base operations and,

Whereas as growth occurs, the City (County) of \_\_\_\_\_ commits to working diligently towards ensuring the development of land uses compatible with the long-term sustainability of operations at Davis-Monthan Air Force Base and

Whereas citizens should be protected to a reasonable extent from the continued long term exposure to higher levels of noise, and

Whereas citizens should be protected to a reasonable extent from the higher level of risk associated with over-flights and the conveyance of live ordinance that are integral to Davis-Monthan Air Force Base operations and,

Whereas recommended land use compatibility zones have been defined by the Davis-Monthan Air Force Base Joint Land Use Study, therefore,

Be it resolved, that we the Mayor and City Council (Board of Supervisors) of \_\_\_\_\_ will protect the public health, safety and welfare by consideration of these aspects as decision-making components in all discretionary development decisions.

Be it also resolved therefore, that City (County) staff shall provide early and salient notification to Davis-Monthan Air Force Base on all discretionary development approval requests within the Vicinity Box for Davis-Monthan Air Force Base.

Be it also resolved that City (County) staff will incorporate the comments from the base for formal consideration by the Planning Commission and City Council (Board of Supervisors) in the approval process.

Be it finally resolved therefore, that we, the Mayor and Council (Board of Supervisors) of \_\_\_\_\_ shall work towards the implementation of recommendations contained within the Davis-Monthan Air Force Base Joint Land Use Study (JLUS), shall integrate the recommended JLUS Compatibility Plan into its General (Comprehensive) Plan, and shall consider this information in the deliberation of all discretionary development approval requests.

Resolved this day of \_\_\_\_\_, 200\_\_.



## **APPENDIX D: GLOSSARY OF ACRONYMS**

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### **A**

AB – Assembly Bill

ACC – Air Combat Command

ADC – Approach-Departure Corridor

ADOC – Arizona Department of Commerce

ADOT – Arizona Department of Transportation

AEP – Airport Environs Plan

AEZ – Airport Environs Zone

AFSOC – Air Force Special Operation Command

AGL – Above Ground Level

AHD – Airport Hazard District

AICUZ – Air Installation Compatible Use Zone

AMARC – Aerospace Maintenance and Regeneration Center

APZ – Accident Potential Zone

ARS – Arizona Revised Statutes

### **B**

BMGR – Barry M. Goldwater Range

BRAC – Base Realignment and Closure

### **C**

CLS – Conservation Lands System

CSAR – Combat Search and Rescue

CUZ – Compatible Use Zone

CZ – Clear Zone

### **D**

dB – Decibel

dBA – A-weighted Decibel

**E**

EPA – Environmental Protection Agency  
ESRI – Environmental Systems Research Institute

**F**

FAA – Federal Aviation Administration

**G**

GADA – Greater Arizona Development Authority  
GIS – Geographic Information System

**H**

HAMP – Houghton Area Master Plan

**I**

ICAO – International Civil Aviation Organization  
INM – Integrated Noise Model

**J**

JLUS – Joint Land Use Study

**L**

Ldn – Day-Night Average Sound Level  
LUC – Land Use Code  
LWCF – Land and Water Conservation Fund

**M**

MCZ – Military Clear Zone  
MIF – Military Installation Fund  
MTR – Military Training Route

**N**

NCD – Noise Control District  
NLR – Noise Level Reduction

**P**

PAC – Policy Advisory Committee  
PAG – Pima Association of Governments  
PUD – Planned Unit Development

**R**

RASP – Regional Aviation Systems Plan

**S**

SAC – Strategic Air Command

SDCP – Sonoran Desert Conservation Plan

SLT – Simulated Laser Target

**T**

TDR – Transfer of Development Rights

TIA – Tucson International Airport

TPL – Trust for Public Land

**U**

USAFB – United States Air Force Base

**V**

VFR – Visual Flight Rules



## APPENDIX E: RESOURCES CONSULTED

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- Davis-Monthan Airfield Compatibility Study – Planning Measures as Options for Local Government Decision Making.* November 2002. Davis-Monthan Air Force Base, The Planning Center/Carter and Burgess, Associates
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- University of Arizona Science & Technology Park Development Guidelines – Draft Number 11. June 15, 2003. University of Arizona
- Vail School District Capital Facilities Master Plan*. January 2003. Vail School District
- Draft Tucson Southlands – Conceptual Planning Report*. June 18, 2001. Arizona State Land Department
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### **Geographic Information System (GIS) Shape Files**

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