



Chapter One INVENTORY



INVENTORY



This chapter presents an overview of Phoenix Sky Harbor International Airport and its relationship to the surrounding communities. The background information in this chapter, which will be used in later stages of the noise compatibility planning process, is as follows:

- A description of the setting, local climate, and historical perspective of the airport.
- A description of airspace and air traffic control.
- A description of key airport facilities and navigational aids.
- A description of existing land uses in the study area.
- A discussion of the local land use planning and regulatory framework within the study area.

This noise study involves the preparation of two official documents: the Noise Exposure Maps (NEM) and the Noise Compatibility Program (NCP). The NEM document is a baseline analysis showing existing and potential future noise conditions at the airport. It will include Chapters One, Two, and Three of this Study. The NCP document, which will include Chapters Four, Five, and Six, presents a plan for effectively dealing with adverse noise impacts based on a three-part perspective. First, it addresses steps to abate or reduce aircraft noise. Second, it addresses noise mitigation techniques to reduce the impact of noise on sensitive land uses in the area. Third, it addresses land use planning to encourage future development that is compatible with the airport.

A glossary in the section titled "Technical Information Papers" at the back of this document provides a description of airport terms and acronyms.



JURISDICTIONS AND RESPONSIBILITIES

Reduction of aircraft noise impacts is a complex issue, with several parties sharing in the responsibility: the federal government, state and local governments and planning agencies, the airport proprietor, military and civilian airport users, shippers of cargo, and local residents. All interests must be considered in the noise compatibility planning process.

FEDERAL

Aviation plays a vital role in interstate commerce. Recognizing this, the federal government has assumed the role of coordinator and regulator of the nation's aviation system. Congress has assigned administrative authority to the Federal Aviation Administration (FAA). Specific responsibilities of the FAA include:

- The regulation of air commerce in order to promote its development, safety and to fulfill the requirements of national defense.
- The promotion, encouragement and development of civil aeronautics.
- The control of the use of navigable airspace and the regulation of civil and military aircraft operations to promote the safety and efficiency of both.
- The development and operation of a common system of air traffic control and navigation for both military and civil aircraft.

The FAA also administers a program of federal grants-in-aid for the development of airport master plans, the acquisition of land and for the planning, design and construction of eligible airport improvements. In addition, Congress has passed legislation and the FAA has established regulations governing the preparation of noise compatibility programs. They have also created laws and regulations requiring the conversion of the commercial aircraft fleet to quieter aircraft.

F.A.R. Part 150 Noise Compatibility Studies

The *Aviation Safety and Noise Abatement Act of 1979* (ASNA, P.L. 96-193), signed into law on February 18, 1980, was enacted, ". . . to provide and carry out noise compatibility programs, to provide assistance to assure continued safety in aviation, and for other purposes." The FAA was vested with the authority to implement and administer the Act.

Federal Aviation Regulation (F.A.R.) Part 150, the administrative rule promulgated to implement the Act, sets requirements for airport operators who choose to undertake an airport noise compatibility study with federal funding assistance. Part 150 provides for the development of two final documents: noise exposure maps and a noise compatibility program.

Noise Exposure Maps. The noise exposure maps document (NEM) shows existing and future noise conditions at the airport. It can be thought of as a

baseline analysis defining the scope of the noise situation at the airport. It includes maps of noise exposure for the current year and a five-year forecast. The noise contours are shown on a land use map to reveal areas of non-compatible land use. The document includes detailed supporting information explaining the methods used to develop the maps.

Part 150 requires the use of standard methodologies and metrics for analyzing and describing noise. It also establishes guidelines for the identification of land uses which are incompatible with noise of different levels. Airport proprietors are required to update noise exposure maps when changes in the operation of the airport would create any new, substantial non-compatible use. This is defined as an increase in the Yearly Day-Night Average Sound Level (DNL) of 1.5 decibels, over noncompatible land uses.

A limited degree of legal protection can be afforded to the airport proprietor through preparation and submission of noise exposure maps. Section 107(a) of the ASNA Act provides that:

No person who acquires property or an interest therein . . . in an area surrounding an airport with respect to which a noise exposure map has been submitted . . . shall be entitled to recover damages with respect to the noise attributable to such airport if such person had actual or constructive knowledge of the existence of such noise exposure map unless . . . such person can show --

(i) A significant change in the type or frequency of aircraft operations at the airport; or

(ii) A significant change in the airport layout; or

(iii) A significant change in the flight patterns; or

(iv) A significant increase in night-time operations occurred after the date of acquisition of such property

. . .

The ASNA Act provides that "constructive knowledge" shall be attributed to any person if a copy of the noise exposure map was provided to him at the time of property acquisition, or if notice of the existence of the noise exposure map was published three times in a newspaper of general circulation in the area. In addition, Part 150 defines "significant increase" as an increase of 1.5 DNL. For purposes of this provision, FAA officials consider the term "area surrounding an airport" to mean an area within the 65 DNL contour. (See F.A.R. Part 150, Section 150.21 (d), (f) and (g).)

Acceptance of the noise exposure maps by the FAA is required before it will approve a noise compatibility program for the airport.

Noise Compatibility Program. A noise compatibility program includes provisions for the abatement of aircraft noise through aircraft operating procedures, air traffic control procedures, airport regulations, or airport facility modifications. It also includes provisions for land use compatibility planning and may include actions to mitigate the impact of noise on noncompatible land uses. The program must contain provisions for updating and periodic revision.

F.A.R. Part 150 establishes procedures and criteria for FAA evaluation of noise compatibility programs. Among these, two criteria are of particular importance: the airport proprietor may take no action that imposes an undue burden on interstate or foreign commerce, nor may the proprietor unjustly discriminate between different categories of airport users.

With an approved noise compatibility program, an airport proprietor becomes eligible for funding through the Federal Airport Improvement Program to implement the eligible items of the program.

The FAA established a new policy in 1998 for Part 150 approval and funding of noise mitigation measures. This policy increases the incentives for airport operators to discourage the development of new noncompatible land uses around airports and to assure the most cost-effective use of Federal funds spent on noise mitigation measures.

The FAA will not approve measures in Noise Compatibility Programs proposing corrective noise mitigation actions for new noncompatible development that is allowed to occur in the vicinity of airports after October 1, 1998, the effective date of this policy. As of the same effective date, AIP funding under the noise set-aside will be determined using criteria consistent with this policy. Specifically, corrective noise mitigation measures for new noncompatible development that occurs after October 1, 1998 will not be eligible for AIP funding under the noise set-aside regardless of previous FAA approvals under Part 150. The new policy does not affect funding under the

Airport Improvement Program for noise mitigation projects that do not require Part 150 approval, that can be funded with Passenger Facility Charges (PFC) revenue, or that are included in FAA-approved environmental documents for airport development.

F.A.R. Parts 36 And 91 Federal Aircraft Noise Regulations

The FAA has required reduction of aircraft noise at the source through certification, modification of engines, or replacement of aircraft. F.A.R. Part 36 prohibits the further escalation of noise levels of subsonic civil turbojet and transport category aircraft. It also requires new airplane types to be markedly quieter than earlier models. Subsequent amendments have extended the noise standards to include small, propeller-driven airplanes and supersonic transport aircraft.

F.A.R. Part 36 has three stages of certification. Stage 3 is the most rigorous and applies to aircraft certificated since November 5, 1975. Stage 2 applies to aircraft certificated between December 1, 1969 and November 5, 1975. Stage 1 includes all previously certificated aircraft.

F.A.R. Part 91, Subpart I, known as the "Fleet Noise Rule," mandated a compliance schedule under which Stage 1 aircraft were to be retired or refitted with hush kits or quieter engines by January 1, 1988. A very limited number of exemptions have been granted by the U.S. Department of Transportation for foreign aircraft operating into specified international airports.

Pursuant to the Congressional mandate in the *Airport Noise and Capacity Act of 1990*, FAA has established amendments to F.A.R. Part 91 by setting December 31, 1999 as the date for discontinuing use of all Stage 2 aircraft exceeding 75,000 pounds. FAA may grant an airline an extension of the deadline to December 31, 2003 if, by July 1, 1999, their fleets include no more than 15 percent Stage 2 aircraft. The Part 91 amendments also provide for two alternative phase-out schedules through the 1990s. The first is described in terms of the phase-out of Stage 2 aircraft; the second in terms of the phase-in of Stage 3 aircraft.

Under the first alternative, an airline must have eliminated or retrofitted 25 percent of its Stage 2 fleet by the end of 1994, 50 percent by the end of 1996, and 75 percent by the end of 1998. Under the second alternative, an airline must have a fleet of no less than 55 percent Stage 3 aircraft by the end of 1994, 65 percent by the end of 1996, and 75 percent by the end of 1998.

Neither F.A.R. Part 36 nor Part 91 apply to military aircraft. Nevertheless, many of the advances in quiet engine technology are being used by the military as they upgrade aircraft to improve performance and fuel efficiency. At the present time the Arizona Air National Guard has no timetable for engine upgrades.

F.A.R. Part 161 Regulation Of Airport Noise And Access Restrictions

F.A.R. Part 161 sets forth requirements for notice and approval of local restrictions on aircraft noise levels and

airport access. Part 161 was developed in response to the *Airport Noise and Capacity Act of 1990*. It applies to local airport restrictions that would have the effect of limiting operations by Stage 2 or 3 aircraft. These include direct limits on maximum noise levels, nighttime curfews, and special fees intended to encourage changes in airport operations to lessen noise.

In order to implement noise or access restrictions on Stage 2 aircraft, the airport operator must provide public notice of the proposal and provide at least a 45-day comment period. This includes notification of FAA and publication of the proposed restriction in the *Federal Register*. An analysis must be prepared describing the proposal, alternatives to the proposal, and the costs and benefits of each.

Noise or access restrictions on Stage 3 aircraft can be implemented only after receiving FAA approval. Before granting approval, the FAA must find that six conditions specified in the statute, and listed below, are met.

- (1) The restriction is reasonable, non-arbitrary and nondiscriminatory.
- (2) The restriction does not create an undue burden on interstate or foreign commerce.
- (3) The proposed restriction maintains safe and efficient use of the navigable airspace.
- (4) The proposed restriction does not conflict with any existing federal statute or regulation.
- (5) The applicant has provided adequate opportunity for public

comment on the proposed restriction.

- (6) The proposed restriction does not create an undue burden on the national aviation system.

In its application for FAA review and approval of the restriction, the airport operator must include an environmental assessment of the proposal and a complete analysis addressing the six conditions. Within 30 days of the receipt of the application, the FAA must determine whether the application is complete. After a complete application has been filed, the FAA publishes a notice of the proposal in the Federal Register. It must approve or disapprove the restriction within 180 days of receipt of the completed application.

Airport operators that implement noise and access restrictions in violation of F.A.R. Part 161 are subject to termination of eligibility for airport grant funds and authority to impose and collect passenger facility charges.

Air Traffic Control

The FAA is responsible for the control of navigable airspace and the operation of air traffic control systems at the nation's airports. Airport proprietors have no direct control over airspace management and air traffic control, although they can propose changes in procedures.

The FAA reviews any proposed changes in flight procedures, such as flight tracks or runway use programs, proposed for noise abatement on the basis of safety of flight operations, safe

and efficient use of the navigable airspace, management and control of the national airspace and traffic control systems, effect on security and national defense, and compliance with applicable laws and regulations. Typically, FAA implements and regulates flight procedures pertaining to noise abatement through the local air traffic control manager.

STATE AND LOCAL

Control of land use in noise-impacted areas around airports is a key tool in limiting the number of citizens exposed to noise. The FAA encourages land use compatibility in the vicinity of airports, and F.A.R. Part 150 has guidelines relating to land use compatibility based on varying levels of noise exposure. Nevertheless, the federal government has no direct legal authority to regulate land use. That responsibility rests exclusively with state and local governments.

State

Although the State of Arizona does not directly implement and administer general purpose land use regulations, it has vested cities, towns, and counties with that power through enabling legislation. *Arizona Revised Statutes* do not mandate the establishment of planning commissions, agencies or departments in municipalities; however, where such appointments are made, the municipality is required to prepare and adopt a long-range general plan, and may regulate zoning, subdivision and land development, consistent with the plan.

The Arizona Department of Transportation (ADOT) is required by state law A.R.S. 28-1598 Section I to reassess the State's aviation needs every five years. ADOT adopted its first *Arizona State Aviation Needs Study* (SANS) in 1985, with subsequent updates in 1990 and 1995. The SANS serves as a guide for meeting the future air transportation needs of the region. The SANS provides state decision makers with a full assessment of the state's existing and future aviation needs, direction for meeting projected demand levels, and projected system costs for maintaining the State's aviation network. State officials can then budget state-allotted funds for projected systemwide expenditures.

City and County

In the Phoenix Sky Harbor International Airport Study Area, Maricopa County, the cities of Phoenix, Tempe, Scottsdale, Mesa, and the Salt River Pima-Maricopa Indian Community share responsibilities for land use regulation.

Maricopa County is administered by a County Board of Supervisors, made up of representatives of the five voting districts. The City of Phoenix operates under the council/manager form of government with a directly elected mayor. The Phoenix City Council is composed of nine members, including the mayor. The cities of Tempe, Scottsdale, and Mesa also have the council/manager form of government. The Council for each City is composed of six members plus the mayor who is elected directly by the voters.

In addition to regulating land use, local governments may acquire property to mitigate or prevent airport noise impacts or may sponsor sound insulation programs for this purpose. They are also eligible to apply for FAA grants under Part 150 if they are designated as a sponsor of a project in an approved noise compatibility program.

The Salt River Pima-Maricopa Indian Community has similar powers, but they are not derived from or limited by the State of Arizona. The Indian Reorganization Act of 1934 authorized Indian communities to establish constitutions and to include land use control ordinances among their constitutional powers, if desired. The Salt River Pima-Maricopa Indian Community included land use control powers in their constitution at that time. Land use control ordinances adopted by the Community are reviewed by the U.S. Secretary of Interior to insure compliance with Federal regulations (CFR 25). Other than that review, the Indian Community is totally independent in matters of control and development on their lands.

Maricopa Association of Governments

The Maricopa Association of Governments (MAG), serves as the designated Metropolitan Planning Organization (MPO) for all jurisdictions within Maricopa County, Arizona, including the Phoenix urbanized area. MAG is a regional planning agency consisting of 24 cities and towns,

Maricopa County, the Gila River Indian Community, and ADOT for transportation-related issues.

As the MPO, MAG is responsible for conducting regional transportation planning and preparing air and water quality plans. It is also responsible, in accordance with *FAA Order 5100.38*, for sponsoring regional aviation system planning studies. MAG adopted its first *Regional Aviation System Plan (RASP)* in 1979, with updates in 1986 and 1993. The RASP serves as a guide for meeting the future air transportation needs of the region.

AIRPORT PROPRIETOR

Phoenix Sky Harbor International Airport is owned and operated by the City of Phoenix. A seven-member Municipal Aeronautics Advisory Board, appointed by the Mayor and confirmed by City Council, acts on all staff recommendations that require council action, and if acceptable, forwards them to the Council. The Aviation Director, who manages Sky Harbor, reports to the Phoenix Transportation Services Manager who oversees all transportation departments and is answerable to the City Manager.

As airport proprietor, the City of Phoenix has limited power to control what types of civil aircraft use its airport and to impose curfews or other use restrictions. This power is limited by the rules of F.A.R. Part 161, described earlier. Airport proprietors may not take actions that (1) impose an undue burden on interstate or foreign commerce, (2) unjustly discriminate between different categories of airport users and (3) involve unilateral action

in matters preempted by the federal government.

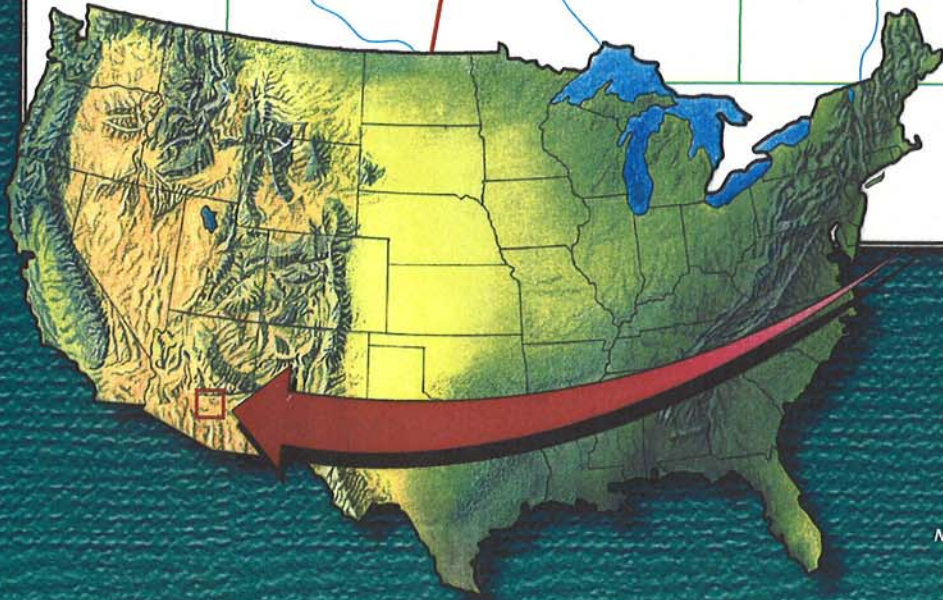
The City may take steps to control on-airport noise by installing sound barriers and acoustical shielding and by controlling the times when aircraft engine maintenance run-up operations may take place. Within the limits of the law and financial feasibility, airport proprietors may acquire land or partial interests in land, such as air rights, easements, and development rights, to assure the use of property for purposes which are compatible with airport operations.

AIRPORT SETTING

Phoenix Sky Harbor International Airport is classified in the *National Plan of Integrated Airport Systems (NPIAS)* as a primary commercial service large hub airport (FAA 1995c).. The airport is also classified as a large hub air passenger airport because it enplanes at least one percent of all certificated airline enplanements in the United States.

LOCALE

Phoenix Sky Harbor International Airport is located on approximately 3,130 acres of land in the southeastern portion of the incorporated City of Phoenix, Maricopa County (**Exhibit 1A**). The airport is bounded by the Hokokam Expressway (State Route 143) on the east, the Salt River and Interstate 10 on the south and west, and the Southern Pacific Railroad on the north. Primary access to the airport is via Interstate 10 from the west and



NOT TO SCALE



Exhibit 1A
VICINITY MAP

south and State Route 202 from the east.

CLIMATE

Weather plays an important role in the operational capabilities of an airport. Temperature is an important factor in determining runway length required for aircraft operations. The percentage of time that visibility is impaired due to cloud coverage is a major factor in determining the use of instrument approach aids. Wind speed and direction determine runway selection and operational flow.

Phoenix's warm, dry, desert climate is characterized by hot summers and mild winters. An average maximum daily high temperature of 105.0 degrees (F) is experienced in July, the hottest month of the year. The coolest month is January with an average daily low temperature of 41.0 degrees (F).

Annual precipitation averages 7.7 inches with most of this rainfall occurring in December and January. The late summer monsoon experienced in August and September can produce frequent periods of low visibility due to heavy rain and blowing dust associated with heavy thunderstorm activity.

AIRPORT HISTORY

On July 16, 1935, the City of Phoenix purchased Sky Harbor Airport, which consisted of 285 acres and a few buildings, from the Acme Investment Company for \$100,000. Phoenix Sky Harbor's emergence as one of the nation's major passenger airports began on October 13, 1952 with the dedication

of Terminal 1. Built for \$835,000, Terminal 1 was among the most convenient and efficient passenger terminals of its time. The same year Terminal 1 opened, 296,066 passengers used Sky Harbor. In less than 10 years, passenger usage tripled to 920,096 in 1961.

Terminal 2 was opened in the spring of 1962 to accommodate the growth. Sky Harbor broke the one million passenger mark the same year. Phoenix planners saw Terminal 2 serving airline traffic until the year 2000. Passenger usage, however, tripled again in less than 10 years to 3 million in 1971. That same year the Phoenix City Council approved the Sky Harbor Master Plan that called for the building of Terminal 3.

Construction of the \$35 million Terminal 3 building and adjacent aircraft ramp area began in 1976. In October 1979, Terminal 3 opened its doors.

In July of 1986, the Phoenix City Council authorized the design and construction of Sky Harbor's fourth terminal. Built for \$248 million, Terminal 4 broke ground in October 1989 and opened November 1990. Upon the opening of Terminal 4, Terminal 1 was closed.

Also in 1989, the FAA completed a capacity study that recommended an additional runway at Sky Harbor. In 1993, the City began land acquisition and design development to relocate the Arizona Air National Guard and numerous other projects necessary prior to constructing a third runway. Runway construction began in 1997 and will be completed in 2000.

AIRPORT FACILITIES

Airfield facilities influence the utilization of airspace and are important to the noise compatibility planning process. These facilities include the runway and taxiway systems and aircraft and terminal activity areas.

RUNWAYS

Phoenix Sky Harbor International Airport is served by two active parallel runways. Runway 8L-26R is 11,001 feet long, 150 wide and aligned in an east-west direction. Runway 8R-26L, 3,600 feet to the south, is 10,300 feet long and 150 feet wide.

Both runway surfaces are grooved asphalt. The current *Airport / Facility Directory* (National Ocean Service 1998a) listing for Phoenix Sky Harbor indicates the load bearing strength for Runway 8L-26R is 30,000 pounds single wheel loading, 170,000 pounds dual wheel loading, and 280,000 pounds dual-tandem wheel loading. The load bearing strength for Runway 8R-26L is 30,000 pounds single wheel loading, 200,000 pounds dual wheel loading, and 400,000 pounds dual-tandem wheel loading. Other runway data are summarized in **Table 1A**. **Exhibit 1B** shows the location of various airfield facilities on a recent aerial photo.

A third parallel runway, Runway 7-25 is currently under construction 800 feet

south of Runway 8R-26L. Runway 7-25 will be 7,800 feet long and 150 feet wide when completed. **Exhibit 1C** depicts Runway 7-25 in blue dashed lines.

TAXIWAYS

Exhibit 1C shows the existing taxiway system at Phoenix Sky Harbor International Airport. Each runway is served by three parallel taxiways. In addition, 32 connecting taxiways serve the airfield.

Parallel Taxiways A, B, and C are located on either side of Runway 8L-26R. Taxiway A has eight connecting taxiways and provides access from the general aviation area to Runway 8L-26R. Taxiway B and C have 12 connecting taxiways and provide airfield access to the commercial service terminal on the north side of the airport.

Parallel Taxiways D, E, and F are located on either side of Runway 8R-26L. Taxiway D and E have 13 connecting taxiways and provides access from the commercial terminal complex to Runway 8R-26L. Taxiway F has 13 connecting taxiways and provides airfield access to the current National Guard facilities on the south side of the airport. After the National Guard facilities are relocated, parallel Taxiways F and G (currently under construction) along with 13 connecting taxiways will provide access to Runway 7-25 when it is completed.

TABLE 1A Runway Data				
	RUNWAYS			
	8L	26R	8R	26L
Length (ft.)	11,001		10,300	
Width (ft.)	150		150	
Surface Material	Asphalt		Asphalt	
Pavement Strength (lbs.)				
Single Wheel	30,000		30,000	
Dual Wheel	170,000		200,000	
Dual Tandem Wheel	240,000		400,000	
Runway Gradient	-0.23%	0.23%	-0.23%	0.23%
Approach Slope Ratio	50:1	34:1	50:1	50:1
Approach Aids				
ILS	No	Yes	Yes	No
VASI	V4L	V4L	No	V6L
PAPI	No	No	No	No
REIL	Yes	Yes	No	Yes
MALSR	No	No	Yes	No
Lighting Marking	HIRL Precision		HIRL Precision	
<p>ILS- Instrument Landing System VASI- Visual Approach Slope Indicator lights PAPI- Precision Approach Path Indicator lights REIL- Runway End Identifier Lights MALSR- Medium Intensity Approach Light System with Runway Alignment Indicator lights HIRL - High Intensity Runway Lights</p>				
Source: <i>Airport/Facility Directory</i> , National Ocean Service 1998a				

Taxiways R, S, and T connect the north and south sides of the airfield. Taxiway R crosses the commercial terminal complex east of Terminal 4 and Taxi-

ways S and T cross the commercial terminal complex between Terminals 3 and 4.

PASSENGER TERMINAL COMPLEX

The Sky Harbor passenger terminal complex occupies almost all of the eastern half of the central terminal corridor. The terminal complex is comprised of Terminal 2, Terminal 3, and Terminal 4 buildings and concourses, together with the aircraft parking aprons, automobile parking facilities, and ground access.

Terminal 2, situated near the center of the airport, consists of a core building (passenger lobby, ticketing, and bag claim) plus two concourses that have a combined area of approximately 330,000 square feet. This terminal has 19 passenger gates and approximately 90,000 square yards of aircraft apron space.

Terminal 3 has a four-story core building and 2 two-story concourses with a total floor area of about 880,000 square feet. Terminal 3 has 23 gates and approximately 145,000 square yards of aircraft parking apron.

Terminal 4 contains four domestic and one international concourse with a total floor area of over 2.3 million square feet. Terminal 4 has 48 gates, with the potential to expand to 82 gates, and 215,000 square yards of aircraft parking apron.

AIR CARGO COMPLEX

The Sky Harbor air cargo complex consists of three cargo buildings, more than 125,000 square feet of aircraft parking apron and customized facilities

for truck loading and unloading activities. The three cargo buildings provide 197,760 square feet of covered space. They collectively serve nine all cargo carriers (Airborne, American International, Burlington, DHL, Emery, Evergreen, Express One, Federal Express, United Parcel Service, and the United States Postal Service), three commuter express airlines (Ameriflight, Empire, and Union), and three air carriers (American, TWA, and Northwest). A new south air cargo complex is under construction adding 171,900 square feet of cargo building.

GENERAL AVIATION COMPLEX

The City of Phoenix Aviation Department operates a variety of general aviation facilities at Sky Harbor, most of which are situated in the northwest part of the airfield with direct access to Runway 8L-26R. City-owned facilities include: a 9,350 square-foot executive building, 30 executive hangars, 11 corporate hangars, 108 T-hangars, 26 covered tiedowns, and 167 uncovered tiedowns.

Three major fixed based operators (FBOs) provide general aviation services at Sky Harbor: GTA, Sawyer Aviation, and Cutter Aviation. The GTA and Sawyer Aviation facilities are located on the south side of Runway 8L-26R and west of the Phoenix TRACON. The Cutter complex consists of two large hangars and a paved aircraft parking apron south of Runway 8R-26L and west of the Air National Guard Facilities. The existing north FBO area is planned for removal when their existing leases expire.

OTHER FACILITIES

America West operates a 384,300 square-foot maintenance center located on the north airfield at the eastern end of the terminal complex. The maintenance center consists of a hangar, shops and simulator. America West also has a ground support equipment facility east of Taxiway S.

Dyn Air owns and operates a 346,000 square-foot maintenance facility between Terminals 3 and 4. The facility is comprised of a hangar, shops, flight simulator, and offices.

Southwest Airlines built a 136,000 square-foot hangar and shop facility in 1994 to service large aircraft. It is located on Runway 8R-26L east of Taxiway R.

The 161st Air Refueling Group of the Arizona Air National Guard is located on a 50-acre site south of Runway 8R-26L. The Group's mission is to provide air refueling support to aircraft operating out of Luke, Davis-Monthan, Kirkland, and March Air Force bases, and Tucson International Airport. The existing National Guard complex is currently in the process of being moved to a more southerly location to permit construction of a third parallel runway.

AIRSPACE AND AIR TRAFFIC CONTROL

The Federal Aviation Administration (FAA) Act of 1958 established the FAA as the responsible agency for the control and use of navigable airspace within the United States. The FAA Western-Pacific Region, with offices in

Lawndale, CA, controls the airspace in southern California.

The FAA has established the National Airspace System (NAS) to protect persons and property on the ground and to establish a safe and efficient airspace environment for civil, commercial, and military aviation. The NAS covers the common network of U.S. airspace, including air navigation facilities; airports and landing areas; aeronautical charts; associated rules, regulations, and procedures; technical information; personnel and material. The system also includes components shared jointly with the military.

AIRSPACE STRUCTURE

Since the inception of aviation, nations have set up procedures within their territorial boundaries to regulate the use of airspace. Until recently, the system used to regulate airspace in the United States was different from other countries. The FAA has taken the lead role in international efforts to standardize airspace nomenclature and flight rules. In 1993, all airspace within the United States was reclassified to provide consistency with international standards. However, the basic premise of the use of airspace in the United States remains the same, and airspace is still broadly classified as either "controlled" or "uncontrolled."

The difference between controlled and uncontrolled airspace relates primarily to requirements for pilot qualifications, ground to air communications, navigation and air traffic services, and weather conditions. Six classes of airspace have been designated.

Exhibit 1D shows the airspace classifications and terminology. Airspace designated as Class A, B, C, D, or E is considered controlled airspace. Aircraft operating within controlled airspace are subject to varying requirements for positive air traffic control. Several types of controlled airspace exist in the Phoenix area:

- ▶ Class A, formerly known as the Positive Control Area.
- ▶ The Phoenix Sky Harbor International Airport Class B airspace, formerly known as the Terminal Control Area (TCA).
- ▶ Class D airspace, formerly known as control zones and airport traffic areas for airports with air traffic control towers.
- ▶ Class E airspace, formerly known as transition areas and control zones for airports without air traffic control towers.
- ▶ Class G airspace under the new system covers uncontrolled airspace.

Class C airspace is not present in the metropolitan area because the area reliever airports with air traffic control towers are within the Phoenix Sky Harbor Class B airspace. The airspace for the study area is depicted on **Exhibit 1E**.

Class A Airspace

Class A airspace is designated in F.A.R. Part 71.33 for positive control of aircraft. The area includes specified airspace within the coterminous United States from 18,000 feet above mean sea

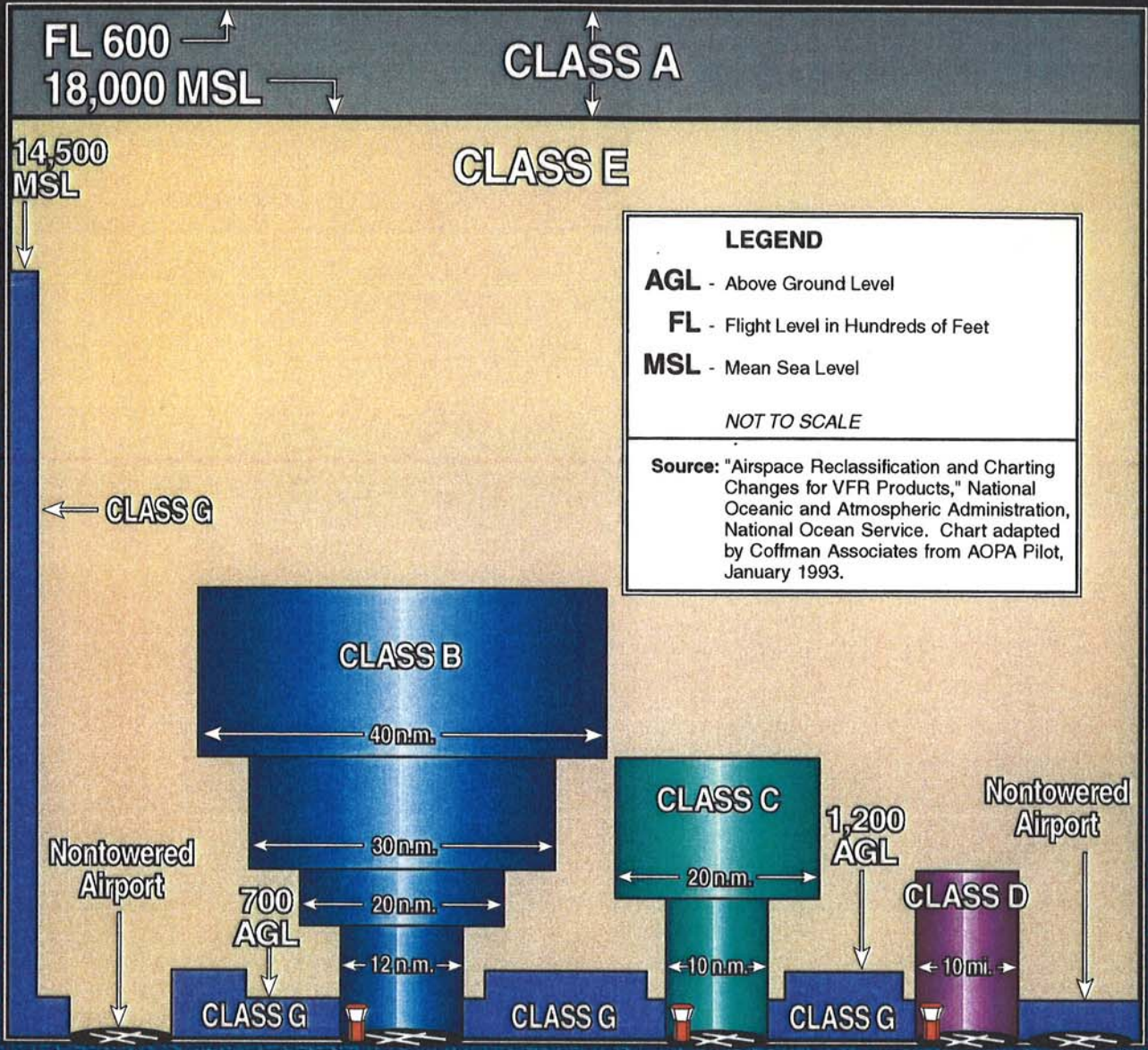
level (MSL) to and including Flight Level 600 (60,000 feet MSL). Within Class A airspace only Instrument Flight Rules (IFR) operations are allowed. The aircraft must have special radio and navigation equipment and the pilot must obtain an Air Traffic Control (ATC) clearance to enter Class A airspace. The pilot must have at least an instrument rating.

Class B Airspace

Class B airspace has been established at 29 high density airports in the United States as a means of regulating air traffic activity in those areas. They are established on the basis of a combination of enplaned passengers and volume of operations.

Class B airspace is designed to regulate the flow of uncontrolled traffic above, around and below the arrival and departure airspace required for high performance, passenger-carrying aircraft at major airports. Class B airspace is the most restrictive controlled airspace routinely encountered by pilots operating under visual flight rules in an uncontrolled environment.

In order to fly through Class B airspace, the aircraft must have special radio and navigation equipment and must obtain an air traffic control clearance. In order to operate within the Phoenix Class B Airspace, a pilot must have at least a private pilot's certificate or be a student pilot who has met the requirements of F.A.R. 61.95, requiring special ground and flight training for the Class B airspace. Helicopters do not need special navigation equipment or a transponder if they operate at or below

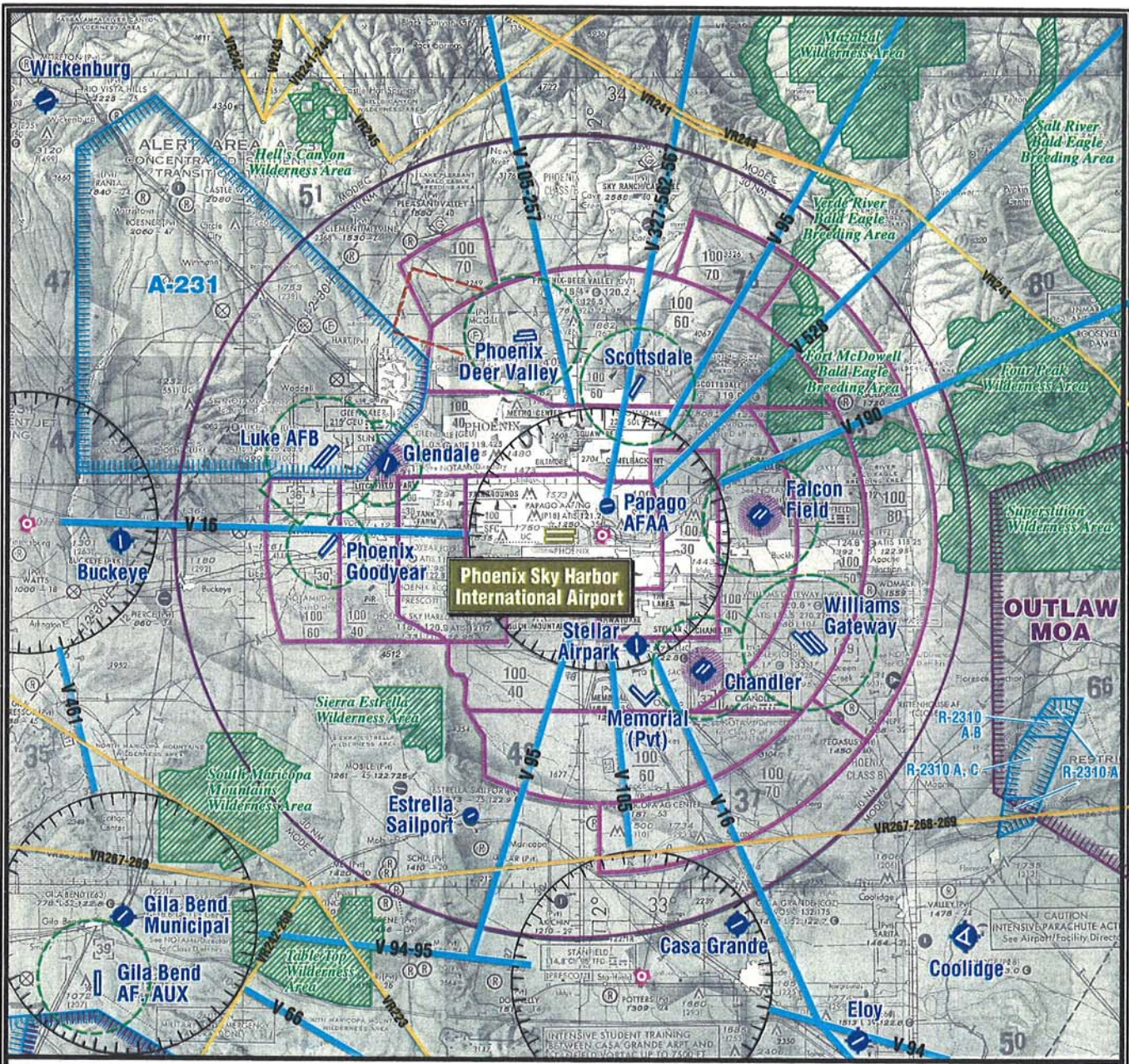


LEGEND
AGL - Above Ground Level
FL - Flight Level in Hundreds of Feet
MSL - Mean Sea Level
 NOT TO SCALE
 Source: "Airspace Reclassification and Charting Changes for VFR Products," National Oceanic and Atmospheric Administration, National Ocean Service. Chart adapted by Coffman Associates from AOPA Pilot, January 1993.














CLASSIFICATION	DEFINITION
CLASS A	Generally airspace above 18,000 feet MSL up to and including FL 600 .
CLASS B	Generally multi-layered airspace from the surface up to 10,000 feet MSL surrounding the nation's busiest airports.
CLASS C	Generally airspace from the surface to 4,000 feet AGL surrounding towered airports with service by radar approach control.
CLASS D	Generally airspace from the surface to 2,500 feet AGL surrounding towered airports.
CLASS E	Generally controlled airspace that is not Class A, Class B, Class C, or Class D.
CLASS G	Generally uncontrolled airspace that is not Class A, Class B, Class C, Class D, or Class E.



98SP14-1E-11/10/98



LEGEND

-  Hard-surfaced runways 1500 ft. to 8069 ft.
-  Hard-surfaced runways greater than 8069 ft. or some multiple runways less than 8069 ft.
-  VORTAC
-  Non-Directional Radiobeacon (NDB)
-  Compass
-  Victor Airways
-  Military Training Routes
-  Prohibited, Restricted, Warning and Alert Areas
-  Military Operations Area (MOA)
-  Class B Airspace
-  Class D Airspace
-  Class E Airspace
-  Mode C Veil



NOT TO SCALE

Source: Phoenix Sectional Chart, US Department of Commerce, National Oceanic and Atmospheric Administration, November 1998.



PHOENIX SKY HARBOR INTERNATIONAL AIRPORT
Exhibit 1E
AREA AIRSPACE

1,000 feet and have made prior arrangements in the form of a Letter of Agreement with the FAA controlling agency. Aircraft are also required to have and utilize a Mode C transponder within a 30 nautical mile (NM) range of the center of the Class B airspace.

Exhibit 1E, shows the Phoenix Class B Airspace extending a radius of 20 to 25 NM from the Phoenix VORTAC facility located at Sky Harbor International Airport. Phoenix has the only Class B airspace in the State of Arizona.

The Phoenix Class B Airspace consists of several airspace sectors defined by the upper and lower altitude boundaries. The upper boundaries are at 10,000 feet MSL with the lower varying from the surface in the immediate Sky Harbor International Airport area to 8,000 feet MSL in the outer parts of the Class B airspace.

The Phoenix Terminal Radar Approach Control Facility (TRACON) controls all aircraft operating within the Phoenix Class B Airspace. The TRACON operates continuously.

Class D Airspace

Class D airspace is normally a circular area with a radius of four to five miles around the primary airport and any extensions necessary to include instrument approach and departure paths. This controlled airspace extends upward from the surface to about 2,500 feet above the elevation of airports with operating control towers. Phoenix Deer Valley, Scottsdale, Mesa Falcon Field, Williams Gateway, Chandler, Luke Air Force Base, and Glendale airports all have Class D airspace.

Class E Airspace

The Class E category contains airspace formerly designated as control zones for non-towered airports and transition surfaces. The Class E airspace for a non-towered airport extends from the surface upward to overlying or adjacent controlled airspace. Otherwise, Class E airspace terminates at the base of Class A airspace. When Class E airspace is designated as a surface area, it is configured to contain all instrument approaches. When designated as an extension of Class B, Class C, or Class D airspace, the extension allows standard instrument approach procedures without communications requirements for VFR operations.

There are no airports in the study area that have airport-specific Class E airspace. Class E transition surfaces cover much of the Phoenix area. This controlled airspace has a floor of 700 feet above the surface.

Class G Airspace

Airspace not designated as Class A, B, C, D, or E is considered uncontrolled, or Class G, airspace. Air traffic control does not have the authority or responsibility to exercise control over air traffic within this airspace. Class G airspace lies between the surface and 700 feet above the surface underneath many of the Class E transition surfaces in the study area. Additional FAA rules regulate flight altitudes over congested residential areas, National Parks, and outdoor recreational areas. Therefore, practical access to uncontrolled airspace is very limited in the study area.

Special Use Airspace

Special Use Airspace is defined as airspace where activities must be confined because of their nature or where limitations are imposed on aircraft not taking part in those activities. While there are a number of Military Operations Areas (MOAs) in the Phoenix area, they are all outside the 30 nautical mile Mode C veil. An alert area for concentrated student jet transition training associated with Luke Air Force Base is northwest of Phoenix.

A number of wilderness areas and bald eagle breeding areas are in the vicinity of the airport. All aircraft are requested to maintain a minimum altitude of 2,000 feet above the surface of designated National Park Areas, the definition of which includes wilderness areas and bald eagle breeding areas. *FAA Advisory Circular 91-36C* defines the "surface" as the highest terrain within 2,000 feet laterally of the route of flight or the upper-most rim of a canyon or valley.

The Fort McDowell Bald Eagle Breeding Area is located approximately 16 nautical miles northeast of Phoenix Sky Harbor International Airport. The Verde River Bald Eagle Breeding Area is located approximately 30 nautical miles northeast, the Salt River Bald Eagle Breeding Area is located approximately 25 nautical miles northeast, and the Lake Pleasant Eagle Breeding Area is 28 nautical miles north of the airport. The Hells Canyon Wilderness Area is located approximately 32 nautical miles north of Sky Harbor. The Four Peaks Wilderness Area is located approximately 30 nautical miles

northeast, and the Superstition Wilderness Area is approximately 32 nautical miles east of the airport.

ENROUTE NAVIGATIONAL AIDS

Enroute navigational aids (NAVAIDS) are established for the purposes of accurate enroute air navigation. Various devices use ground-based transmission facilities and on-board receiving instruments. Enroute NAVAIDS often provide navigation to more than one airport as well as to aircraft traversing the area. Enroute NAVAIDS that operate in the study area are discussed below.

The VOR (Very High Frequency Omnidirectional Range) provides course guidance to aircraft by means of a VHF radio frequency. TACAN (Tactical Air Navigation), primarily a military-oriented facility, is often collocated with a VOR station. TACAN provides both course guidance and line-of-sight distance measurement from a UHF transmitter. A properly equipped aircraft translates the VORTAC signals into a visual display of both azimuth and distance. Distance measuring equipment (DME) is also sometimes collocated with VOR facilities. DME emits signals enabling pilots of properly equipped aircraft to determine their line-of-sight distance from the facility. There are five VORTAC facilities offering navigational assistance in the study area. These include Phoenix, Willie, Stanfield, Gila Bend, and Buckeye.

VORs define low-altitude (Victor) and high altitude airways (Jet Routes) through the area. Most aircraft enter the Phoenix area via one of these

numerous federal airways. Aircraft assigned to altitudes above 18,000 feet MSL use the Jet Route system. Other aircraft use the low altitude airways. Radials off VORs define the centerline of these flight corridors.

There are seven Victor Airways in the immediate vicinity of the airport. V105-257, V327-562-567, V528, V190, V16, V105, and V95 all originate from the Phoenix VORTAC.

The non-directional beacon (NDB) transmits non-directional signals whereby the pilot of an aircraft equipped with direction-finding instrument can determine a bearing to or from the radio beacon. There are four NDB facilities in the area, Scottsdale to the northeast, Falcon Field to the east, Chandler to the south east, and Glendale to the northwest. Each NDB transmits a continuous two-letter identifier code in international morse code.

AREA AIRPORTS

There are nine public-use airports, 17 private, and two military airports within 30 nautical miles of Phoenix Sky Harbor International Airport. The following nine airports are open to the public: **Scottsdale Airport**, (SDL) located 11 nautical miles northeast, is served by Runway 3-21 which is 8,251 feet long and an airport traffic control tower. **Chandler Municipal Airport** (CHD) 18 nautical miles southeast which is served by parallel runways with 4L-22R providing the greatest runway length (4,850 feet long by 75 feet wide); **Mesa Falcon Field** (FFZ),

15 nautical miles east, with a 5,100-foot paved runway and a 3,800-foot paved runway; **Glendale** (GEU), 13 nautical miles northwest, with a 5,350-foot paved runway; **Phoenix Goodyear** (GYR), 16 nautical miles northwest, with an 8,500-foot paved runway; **Stellar Airpark** (P19), nine nautical miles southeast, with a 4,000-foot paved runway; **Deer Valley** (DVT) 15 nautical miles north which is served by parallel runways with 7R-25L providing the greatest runway length (8,200 feet long by 100 feet wide); **Williams Gateway Airport** (IWA) 19 nautical miles southeast which is served by three parallel runways with 12R-30L providing the greatest runway length (10,401 feet long by 150 feet wide); **Estrella Sailport** is a privately owned public use airport situated 19 nautical miles southwest of Phoenix Sky Harbor International Airport which provides four unpaved runways (three of which are parallel runways). **Exhibit 1E**, illustrates the location of these and other area airports.

INSTRUMENT APPROACHES

Instrument approaches are defined using electronic and visual navigational aids to assist pilots in landing when visibility is reduced below specified minimums. While these are especially helpful during poor weather, they often are used by commercial pilots when visibility is good. Instrument approaches are classified as precision and nonprecision. Both provide runway alignment and course guidance, while precision approaches also provide glide slope information for the descent to the runway.

Precision Instrument Approaches

Most precision approaches in use in the United States today are instrument landing systems (ILS). An ILS provides an approach path for exact alignment and descent of an aircraft on final approach to a runway. The system provides three functions: guidance, provided vertically by a glide slope (GS) antenna and horizontally by a localizer (LOC); range, furnished by marker beacons or distance measuring equipment (DME); and visual alignment, supplied by the approach light systems and runway edge lights.

Phoenix Sky Harbor International Airport has two published precision approaches. Runway 8R and 26R are each equipped with an ILS consisting of a localizer and glide slope antenna. The Runway 8R ILS also has an outer marker beacon. These are indicated in **Exhibit 1F**.

The Runway 8R ILS uses a standard 3.0 degree glide slope. The Category I ILS approaches to Runway 8R can be flown when cloud ceilings are 1,313 feet MSL or greater and visibility is one half mile or greater. The Runway 26R ILS also uses a standard 3.0 degree glide slope. The Category I ILS approaches to Runway 26R can be flown when cloud ceilings are 1,383 feet MSL or greater and visibility is three-quarters of a mile or greater.

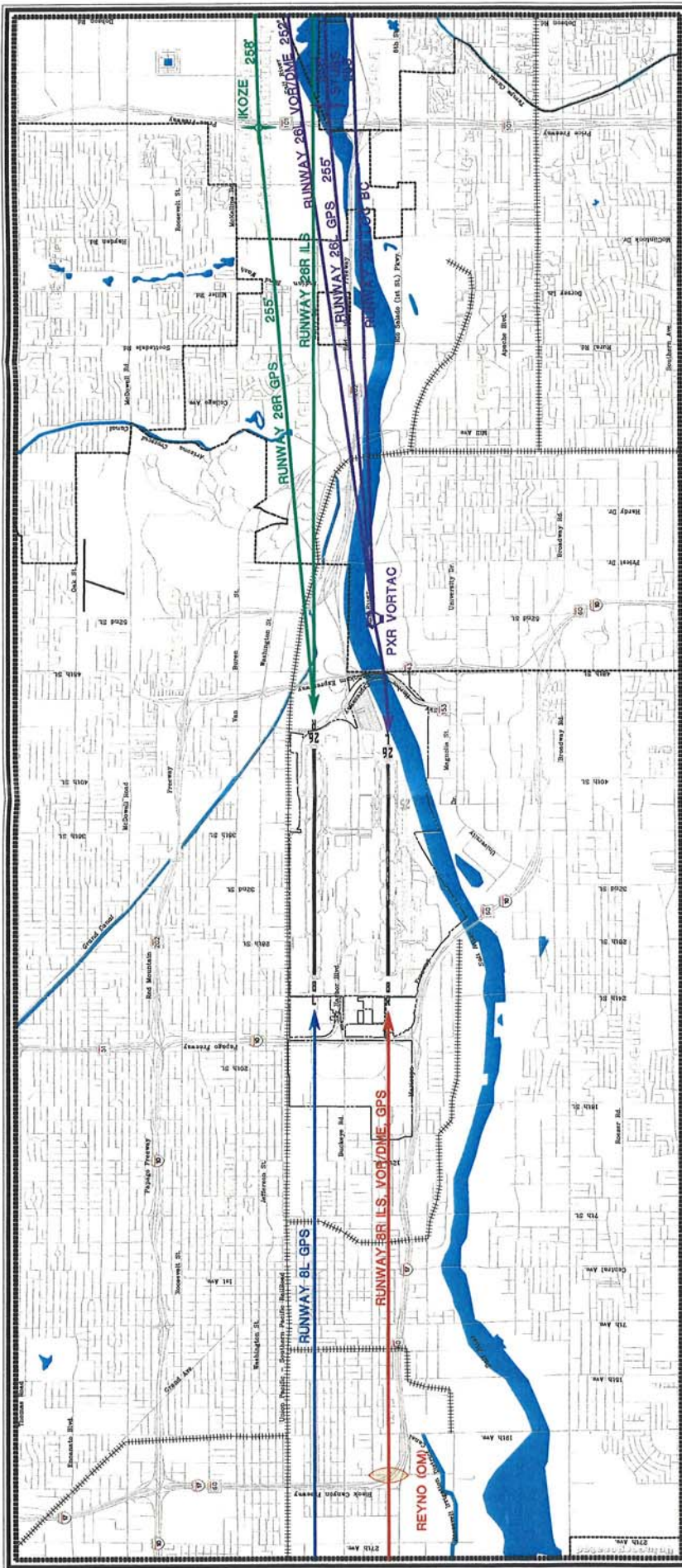
When the third runway is opened Phoenix Sky Harbor will have 4 precision approaches. The ILS currently on Runway 8R will be moved to Runway 8L and new ILS approaches will be developed for new Runways 7 and 25. The ILS approach to Runway 26R will remain unchanged.

Nonprecision Approaches

The localizer antenna used for the Runway 26R ILS approach can also be used for a nonprecision approach to Runway 26L. This can be flown when cloud ceilings are 1,800 feet MSL or greater and visibility is one mile for aircraft with approach speeds of up to 121 knots, 1-3/4 miles for aircraft with approach speeds up to 141 knots, and 2 miles for aircraft with approach speeds up to 166 knots.

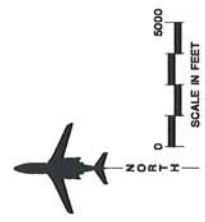
The VOR/DME approach to Runway 26L is the second published nonprecision approach at Phoenix Sky Harbor. VOR signals used with DME fixes ensure adequate terrain and obstruction clearance during final approach to the runway. The Phoenix (PXR) VORTAC is used to define the approach. The VOR/DME approach to Runway 26L can be flown when cloud ceilings are 1,740 feet MSL or greater and visibility is two mile for aircraft with approach speeds of up to 166 knots.

Global position system (GPS) nonprecision approaches are also available for all four runways at Phoenix Sky Harbor. GPS approaches are defined by a series of waypoints established by satellite signals. The Runway 8L GPS approach is a series of four waypoints five nautical miles apart ending at the end of Runway 8L. This GPS approach can be flown when cloud ceilings are 2,060 feet MSL or greater and visibility is 1-1/4 miles for aircraft with approach speeds of up to 121 knots, 2-3/4 miles for aircraft with approach speeds up to 141 knots, and three miles for aircraft with approach speeds up to 166 knots.



LEGEND

	Airport Property		GPS	Global Positioning System Approach
	Municipal Boundaries		VOR/DME	Nonprecision Approach using Radials and Distances from PXR VORTAC
	Study Area		LOC BC	Back Course Localizer Approach
	Outer Marker			
	Very High Frequency Omnidirectional Range Station with Tactical Air Navigation Equipment			
	Way Point			
	Marker Beacon			
	Instrument Landing System			



PHOENIX SKY HARBOR INTERNATIONAL AIRPORT
EXHIBIT 1F
NAVIGATIONAL AIDS DEFINING INSTRUMENT APPROACHES

The Runway 8R GPS approach is a series of four waypoints of varying distances ending at the end of Runway 8R. The Runway 8R GPS approach can be flown when cloud ceilings are 1,460 feet MSL or greater and visibility is ½ miles for aircraft with approach speeds of up to 141 knots, and one mile for aircraft with approach speeds up to 166 knots.

The Runway 26L GPS approach is a series of four waypoints of varying distances ending at the end of Runway 26L. This GPS approach can be flown when cloud ceilings are 1,520 feet MSL or greater and visibility is one mile for aircraft with approach speeds of up to 141 knots, and 1-1/4 miles for aircraft with approach speeds up to 166 knots.

The Runway 26R GPS approach is a series of four waypoints of varying distances ending at the end of Runway 26R. This GPS approach can be flown when cloud ceilings are 1,800 feet MSL or greater and visibility is one mile for aircraft with approach speeds of up to 121 knots, 1-3/4 miles for aircraft with approach speeds up to 141 knots, and two miles for aircraft with approach speeds up to 166 knots.

CHARTED VISUAL APPROACHES

Two published visual approaches are available at Phoenix Sky Harbor. The Freeway Visual Approach to Runway 8R follows the Maricopa Freeway (Interstate 17) at or above 3,100 feet MSL. Weather minimums for this approach are a 4,500-foot cloud ceiling and eight miles of visibility.

The Power Plant Visual to Runway 26L uses the power plant east of the Airport

as a reference point for turning on to the final approach. For noise abatement, aircraft are to intercept their final approach path east of the power plant at or above 3,100 feet MSL. Weather minimums for this approach are a 4,500-foot cloud ceiling and eight miles of visibility.

STANDARD INSTRUMENT DEPARTURES

All departures operating under instrument flight rules (IFR) are assigned a Standard Instrument Departure procedure (SID). Currently, seven SIDs are published for Phoenix Sky Harbor International Airport. These include the Buckeye Two, Drake Six, Dryheat One, Eagul Three, Mobie Three, Pusch One, and St. Johns Two departures.

The Buckeye Two SID handles westbound aircraft. Departures from Runway 8L on the Buckeye Two SID are directed to turn right to a heading of 85 degrees as soon as practical after takeoff, intercept the 75-degree radial from the Phoenix VORTAC, and proceed southeast along the radial to four DME east of the Phoenix VORTAC. At four DME, aircraft are directed to make a right turn to a 190-degree heading until intercepting a 93-degree radial from the Buckeye VORTAC. Departures from Runway 8R on the Buckeye Two SID are the same except for the initial turn. Because the Phoenix VORTAC is almost directly aligned with Runway 8R, aircraft can intercept the 75-degree radial from the Phoenix VORTAC without an initial turn.

Instrument departures from Runways 26L/R on the Buckeye Two SID are

directed to turn left to a heading of 240 degrees or a heading assigned by air traffic control as soon as practical after takeoff and cross four DME west of the Phoenix VORTAC at or below 3,000 feet MSL. At 13 DME west of the Phoenix VORTAC, aircraft are directed to turn right to a 280-degree heading to intercept the 77-degree radial from the Buckeye VORTAC.

The Drake Six SID handles northbound aircraft. Instrument departures from Runway 8L on the Drake Six SID are directed to turn right to a heading of 85 degrees as soon as practical after takeoff, intercept the 75-degree radial from the Phoenix VORTAC, and proceed east crossing the 350-degree radial at or below 3,000 feet MSL. Aircraft are then to continue along the 75-degree radial to four DME east of the Phoenix VORTAC. At four DME, aircraft are directed to turn left to a 20-degree heading until reaching 13 DME from the Phoenix VORTAC. At 13 DME, aircraft are requested to turn left to a 300-degree heading until intercepting the 336-degree radial from the Phoenix VORTAC. Instrument departures from Runway 8R on the Drake Six SID are directed over the Phoenix VORTAC from which they follow the same route as the Runway 8L departure.

Runways 26L/R on the Drake Six SID are directed to fly runway heading or to a heading assigned by air traffic control and cross four DME west of the Phoenix VORTAC at or below 3,000 feet MSL. At 9 DME west of the Phoenix VORTAC aircraft are directed to turn right to a 360-degree heading until intercepting the 336-degree radial from the Phoenix VORTAC.

The Dryheat One SID handles eastbound aircraft. Instrument departures from Runway 8L are directed to turn right to a heading of 85-degrees when practical after takeoff, intercept and follow the 75-degree radial from the Phoenix VORTAC, and proceed to four DME east of the Phoenix VORTAC. At four DME aircraft east of the Phoenix VORTAC aircraft are directed to turn right to a 190-degree heading and expect vectors from air traffic control to the Bayta Intersection. Instrument departures from Runway 8R on the Dryheat One SID are directed over the Phoenix VORTAC from which they follow the same route as the Runway 8L departure.

Instrument departures from Runways 26L/R are directed to fly a heading of 240-degrees or a heading assigned by air traffic control as soon as practical after takeoff. Aircraft are required to fly this heading until reaching 9 DME west of the Phoenix VORTAC. Upon reaching 9 DME aircraft are directed to turn left to a heading of 140-degrees and expect vectors from air traffic control to the Bayta Intersection.

The Eagul Three SID handles northeast bound aircraft. Instrument departures from Runway 8L on the Eagul Three SID are directed to turn right to a heading of 85 degrees as soon as practical after takeoff, intercept the 75-degree radial from the Phoenix VORTAC, and proceed east along the radial and cross the Phoenix VORTAC at or below 3,000 feet MSL. Then proceeding along the 75-degree radial to four DME east of the Phoenix VORTAC. At four DME, aircraft are directed to turn left to a 20-degree heading until

reaching the Eagul intersection which is defined by the Drake, Winslow, and Zuni VORTACs north of the Airport. Aircraft must cross this intersection at or above 14,500 feet MSL. Instrument departures from Runway 8R on the Eagul Three SID are directed over the Phoenix VORTAC from which they follow the same route as the Runway 8L departure.

Instrument departures from Runways 26L/R on the Eagul Three SID are directed to fly runway heading or to a heading assigned by air traffic control and cross four DME west of the Phoenix VORTAC at or below 3,000 feet MSL. At 9 DME west of the Phoenix VORTAC, aircraft are directed to turn right to a 360-degree heading until intercepting the 305-degree radial from the Phoenix VORTAC. After crossing the 305-degree radial, aircraft are directed to turn right to a 60-degree heading until intercepting the 34-degree radial from the Phoenix VORTAC then proceed to the Eagul intersection. Aircraft are required to cross the Eagul intersection at or above 14,500 feet MSL.

The Mobie Three SID handles southwest bound aircraft. Instrument departures from Runway 8L on the Mobie Three SID are directed to turn right to a heading of 85-degrees as soon as practical after takeoff, intercept the 75-degree radial from the Phoenix VORTAC, and proceed east and cross the 350-degree radial at or below 3,000 feet MSL. Aircraft are then to continue along the radial to four DME east of the Phoenix VORTAC. At four DME, aircraft are directed to turn right to a 190-degree heading until intercepting a 165-degree radial from the Phoenix VORTAC. Aircraft are then requested

to turn right until reaching a 55-degree radial from the Gila Bend VORTAC. Aircraft are to intercept and follow the 55-degree radial from the Gila Bend VORTAC to the Mobie Intersection. Aircraft must cross the Mobie intersection at or above 12,000 feet MSL. Instrument departures from Runway 8R on the Mobie Three SID are directed over the Phoenix VORTAC from which they follow the same route as Runway 8L departures.

Instrument departures from Runways 26L/R on the Mobie Three SID are directed to turn left to a heading of 240 degrees or a heading assigned by air traffic control as soon as practical after takeoff and cross four DME west of the Phoenix VORTAC at or below 3,000 feet MSL. At 9 DME west of the Phoenix VORTAC, aircraft are directed to turn left to a 155-degree heading until intercepting the 55-degree radial from the Gila Bend VORTAC. Aircraft are to intercept and follow the 55-degree radial from the Gila Bend VORTAC to the Mobie Intersection. Aircraft must cross the Mobie intersection at or above 12,000 feet MSL.

The Pusch One SID handles southeast bound aircraft. Instrument departures from Runway 8L on the Pusch One SID are directed to turn right to a heading of 85 degrees as soon as practical after takeoff, intercept the 75-degree radial from the Phoenix VORTAC, and cross the 350-degree radial from the Phoenix VORTAC at or above 3,000 feet MSL. Aircraft should then proceed east along the 75-degree radial to four DME east of the Phoenix VORTAC. At four DME, aircraft turn right to a 190-degree heading until intercepting a 340-degree radial from the Stanfield VORTAC. Instrument departures from Runway

8R on the Pusch One SID are directed over the Phoenix VORTAC from which they follow the same route as Runway 8L departures.

Instrument departures from Runways 26L/R on the Pusch One SID are directed to turn left to a heading of 240 degrees or a heading assigned by air traffic control as soon as practical after takeoff and cross four DME west of the Phoenix VORTAC at or below 3,000 feet MSL. At 9 DME west of the Phoenix VORTAC, aircraft are directed to turn left to a 140-degree heading until intercepting the 320-degree radial from the Stanfield VORTAC.

The St. Johns SID handles northeast bound aircraft. Instrument departures from Runway 8L on the St. Johns SID are directed to turn right to a heading of 85 degrees as soon as practical after takeoff and cross the 350-degree radial from the Phoenix VORTAC at or below 3,000 feet MSL. Aircraft are to intercept the 75-degree radial from the Phoenix VORTAC, and proceed northeast along the radial to four DME east of the Phoenix VORTAC. At four DME, aircraft are directed to turn left to a 20-degree heading until reaching the 054-degree radial from the Phoenix VORTAC. Instrument departures from Runway 8R on the St. Johns SID are directed over the Phoenix VORTAC from which they follow the same route as Runway 8L departures.

Instrument departures from Runways 26L/R on the St. Johns SID are directed fly runway heading or to a heading assigned by air traffic control and cross four DME west of the Phoenix VORTAC at or below 3,000 feet MSL. At 9 DME west of the Phoenix VORTAC, aircraft are directed to turn right to a 360-

degree heading until intercepting the 305-degree radial from the Phoenix VORTAC. After crossing the 305-degree radial, aircraft are directed to turn right to a 60-degree heading until intercepting the 350-degree radial from the Phoenix VORTAC. Aircraft are directed to turn right to a 80-degree heading and proceed to a 54-degree radial from the Phoenix VORTAC.

CUSTOMARY ATC AND FLIGHT PROCEDURES

Flights to and from Phoenix Sky Harbor International Airport are conducted using both Instrument Flight Rules (IFR) and Visual Flight Rules (VFR). Instrument Flight Rules are those that govern the procedures for conducting instrument flight. Visual Flight Rules govern the procedures for conducting flight under visual conditions (good weather). Most air carrier, military, and general aviation jet operations are conducted under IFR regardless of the weather conditions.

Visual Flight Rule Procedures

Under VFR conditions, the pilot is responsible for collision avoidance and will typically contact the tower when approximately 10 miles from the airport for sequencing into the traffic pattern. While VFR aircraft arriving and departing Phoenix Sky Harbor International Airport are not required to contact the Phoenix TRACON, they may do so to expedite their progress through the area.

Generally, VFR general aviation traffic stays clear of the more congested airspace and follows recommended VFR

flyways in the area. **Exhibit 1G** illustrates a view of Phoenix vicinity airspace with the recommended VFR routes. Typically, VFR aircraft departing the airport are directed to intercept the nearest VFR route.

Instrument Flight Rule Procedures

The Phoenix TRACON handles all IFR traffic to and from Phoenix Sky Harbor International Airport. IFR arrival traffic is transferred to the TRACON by the Air Route Traffic Control Center (ARTCC) as traffic enters TRACON airspace.

Four published Standard Terminal Arrival Routes (STAR) can be used to direct pilots to the Phoenix area. A STAR is a planned IFR arrival procedure which provides transition from the enroute structure to an outer fix or an instrument approach fix in the terminal area. ARLIN ONE, BLYTHE TWO, FOSSL FOUR, and KARLO SEVEN, are STARS which may be used for the Phoenix Sky Harbor International Airport. ARLIN ONE directs pilots arriving from the west over the ARLIN, AMBER, and ALEYS intersections, then via vectors to the airport. BLYTHE TWO directs pilots arriving from the west over the Blythe VORTAC and intersections SALOM, SADLL, HYDRR, PAYNT, and ARLIN then via radar vectors to the final approach course. FOSSL FOUR directs pilots arriving from the northeast over intersections FOSSL, PIINE, MAZAT, TONTO, FUBAR, and BASEN, then via radar vectors to the final approach course. KARLO SEVEN directs pilots arriving from the northwest over intersections KARLO, COOPR, PLSNT,

VADRR, and DARHF, then via radar vectors to the final approach course.

Other Customary ATC Procedures

The Biltmore Transition previously routed VFR aircraft over the middle of the Airport. The presence of these flight paths over the airfield requires that aircraft departing from PHX maintain adequate separation from the general aviation aircraft. As a result, departing aircraft were required to remain below an altitude of 3,000 feet in the immediate vicinity of the airport. This restriction affected some jet departures, which could otherwise climb out from the Airport at a greater rate.

After November 6, 1998, the Biltmore Transition was redefined as being an area crossing over the arrival end of the airport, which means that the route changes from one end of the airport to the other end, depending upon the direction of traffic flow. This moves the general aviation aircraft from mid-field to over the end of the airfield where aircraft arriving and departing at PHX are expected to be at or near airport elevation. As a result, the ceiling limitation for departures has been changed from 3,000 feet to 7,000 feet, however, the 3,000-foot restriction is still noted on the approach plates. Many of those jet aircraft which had been restricted by the former ceiling altitude from departing at a normal climb rate are not restricted by the new ceiling altitude, so that normal climb procedures may be followed.

The effects of this change on aircraft climb performance at PHX are not known at this time, but will be evaluated in this study by reviewing the flight profiles collected by the Noise and

Flight Track Monitoring System (NFTMS), as well as the single event and cumulative noise levels at selected monitoring sites, before and after movement of the Biltmore Transition. Any significant observed effects on aircraft departure flight profiles will be accounted for in noise modeling for future operational scenarios.

There are four letters of agreement with the Phoenix Sky Harbor International Airport Air Traffic Control Tower (ATCT) establishing procedures for general aviation fixed wing aircraft and helicopters in and around the Airport. The first letter of agreement specifies responsibilities, defines terminology, and establishes procedures to be used between the Phoenix ATCT and general aviation operators for issuing visual flight rule (VFR) coded departure clearances out of the Phoenix Class B airspace. Currently there are two VFR coded departures, Biltmore 1 and Sun Devil 1. The Biltmore 1 departure is for aircraft taking off to the west and cleared out of the Phoenix Class B airspace for straight-out or right turns up to 180 degrees to the east. Aircraft on the Biltmore 1 departure are to remain at or below 4000 feet MSL until advised by Departure Control.

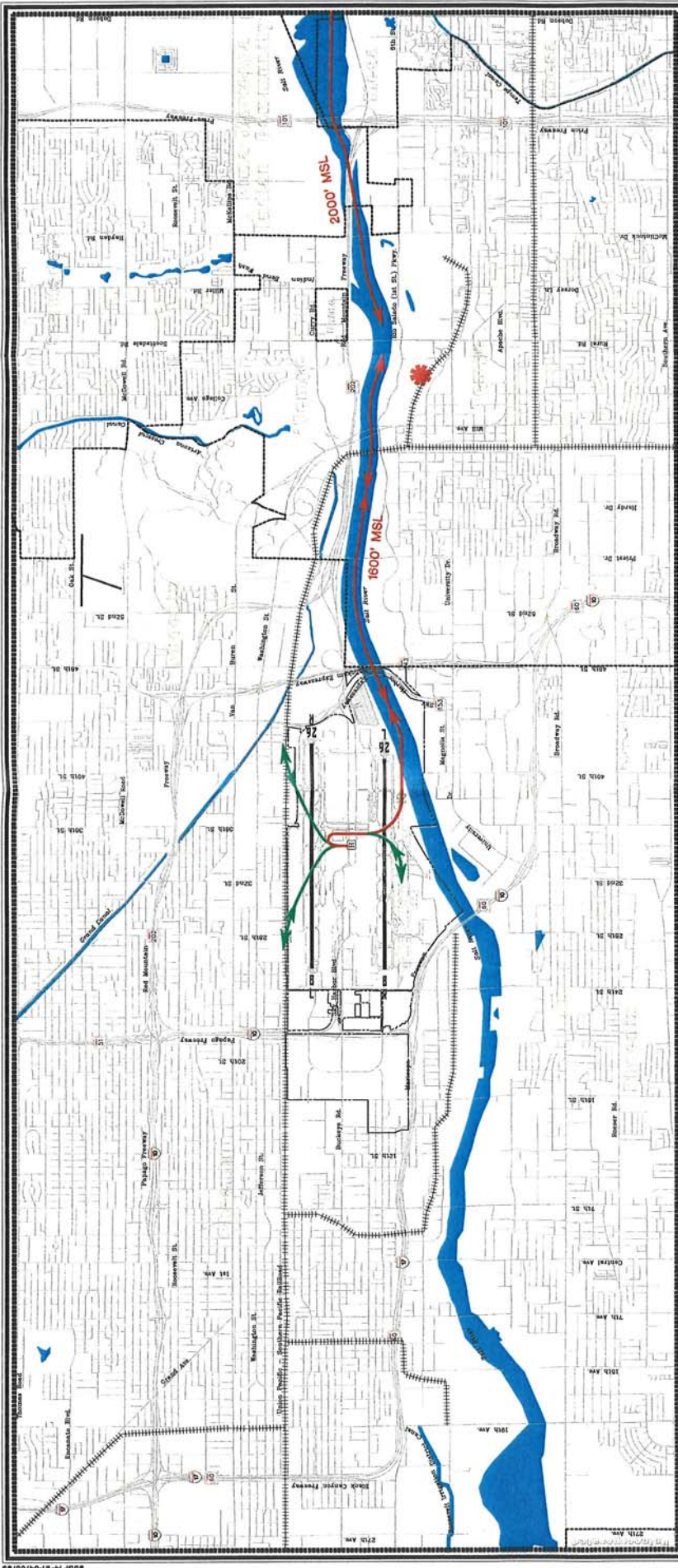
The Sun Devil 1 departure is for aircraft taking off to the east and cleared out of the Phoenix Class B airspace for straight-out or right turns up to 180 degrees to the west. Aircraft on the Sun Devil 1 departure are also to fly at or below 4,000 feet MSL until advised by Departure Control.

The remaining letters of agreement are for helicopters operating within the Class B airspace and arriving and departing routes from Sky Harbor. The

Letter of Agreement for the Coded Route to Downtown Phoenix specifies responsibilities and procedures for operating a helicopter in Class B airspace in downtown Phoenix.

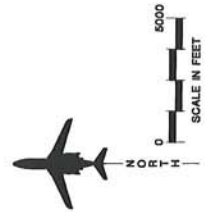
A second letter of agreement for helicopters defines specific responsibilities and procedures to be used between the Phoenix ATCT and the Salt River Project VFR helicopters in Class B airspace southeast of the Airport. The arrival/departure helicopter route is depicted in red on **Exhibit 1H**. Helicopters are to remain over the Salt River off of Airport property. Between the Airport and Sun Devil Stadium, helicopters are to maintain an altitude of 1,600 feet MSL and climb to 2,000 feet MSL east of the stadium.

The third letter of agreement for helicopters defines responsibilities and procedures between the Phoenix ATCT and VFR helicopters operating within the Class B airspace and routes to the helipad on the Airport. The first portion of the letter of agreement defines terminology for communicating with ATCT when entering and operating in the Phoenix Class B airspace. The second portion of the letter of agreement defines routes from the helipad on Terminal 3 of the Airport. As seen on **Exhibit 1H**, all helicopters arrive or depart to the north of the helipad before turning to their destination heading. Helicopter arrivals from the south are to cross Runway 8R-26L after receiving clearance and proceed northbound east of the helipad, turn west prior to Runway 8L-26R and then south to the helipad. Helicopter arrivals from the north are to cross Runway 8L-26R after receiving clearance and proceed directly



LEGEND

- Airport Property
- Municipal Boundaries
- Study Area
- Sun Devil Stadium
- Helicopter Arrival/Departure Routes
- Stadium Arrival/Departure Route
- Helipad Site



PHOENIX SKY HARBOR INTERNATIONAL AIRPORT
 Exhibit 1H
 PHOENIX SKY HARBOR INTERNATIONAL AIRPORT
 HELICOPTER ARRIVAL AND DEPARTURE ROUTES

to the helipad. Helicopter departures to the south are to exit the helipad to the north remaining south of Runway 8L-26R, proceed eastbound and then southbound until reaching Runway 8R-26L. When the helicopter is clear to cross Runway 8R-26L further instructions to the destination heading are given. Helicopter departures to the north are to exit the helipad to the north and hold short of Runway 8L-26R. After the helicopter is cleared to cross Runway 8L-26R, further instructions to the destination heading are given.

EXISTING NOISE ABATEMENT PROCEDURES

The issue of noise associated with operations at Phoenix Sky Harbor International Airport has been addressed for many years by the Phoenix Aviation Department. People living in the vicinity of the airport, most notably in Phoenix, Tempe and Mesa, have filed complaints with the Airport, and the City of Tempe entered into litigation with the Airport concerning specific noise issues. The City of Phoenix has responded to these issues in several ways.

In the early 1980s, the Aviation Department employed a noise abatement specialist, and established a regular quarterly aircraft noise monitoring and reporting program. Aviation Department staff received and responded to noise complaints using the best available information. The Aviation Department also prepared public information materials, assessed flight procedures to relocate flight corridors, arranged for the acquisition of large areas of severely impacted lands, and developed runway use programs to

equalize the distribution of air traffic east and west of the airport.

In 1986, the Cities of Tempe and Phoenix entered into an intergovernmental agreement (IGA) which provided an interim response to a variety of concerns relative to the frequency and level of aircraft noise events east of the airport. That agreement called for the preparation of the Part 150 Study which was prepared in 1987-89. The 1986 IGA also resulted in a joint request by the mayors of Phoenix and Tempe that the manager of the Phoenix TRACON (Terminal Radar Approach Control) implement the following four measures:

- Develop a procedure to ensure that jet aircraft departures from PHX would be equally divided east and west of the airport, during both daytime and nighttime hours.
- Develop a Runway 8 departure which would require jet aircraft to proceed to the Salt River VOR prior to a course transition.
- Relocate the Rio Salado NDB to the center of the Salt River bed.
- Require jet aircraft departing on Runway 8 with destinations north of Los Angeles to use the Drake SID rather than the Buckeye SID.

These requests prompted investigations into various methods for abating noise from departures east of the Airport. These investigations occurred within and outside of the 1987-89 Part 150 Study, and the measures which appeared to be practical and effective were adopted as parts of the Noise

Compatibility Program (NCP) of the 1987-89 Part 150 Study. Specifically, the NCP included the following short-term and long-term noise abatement procedures:

- Continue a runway use program calling for the equalization of departure operations to the east and west for both the daytime and nighttime periods.
- Request that airlines adopt the use of FAA Advisory Circular 91-53 or equivalent replacement departure noise abatement procedures by jet air carrier aircraft for all runways. Request that low bypass ratio aircraft reduce power to 1.7 EPR or less during the thrust reduction mode, and that high bypass ratio aircraft reduce power to normal climb thrust.
- Request the use of NBAA "close in" or comparable departure procedures by general aviation business jet aircraft for all runways.
- Implement a left turn by all jets and large propeller aircraft departing Runway 26L to a heading of 245 degrees upon crossing the middle marker, and maintain that heading to 13 DME. Assign Runway 26L departures to aircraft using left-turn or straight-out SIDs, and assign Runway 26R departures to aircraft using right-turn SIDs.
- Implement a departure route procedure which overflies the Salt River to a position one mile west of the SRP VORTAC for use by all jet and large propeller aircraft departing Runways 08R/L (The One DME procedure).
- Standardize initial departure and final approach routes for helicopter traffic using the Airport.
- Continue existing run-up policies, which prohibit run-ups between the hours of 2300 to 0500.
- Encourage airlines to use F.A.R. Part 36 Stage 3 aircraft, especially for late night departures.
- Encourage the use of established published visual approaches during VFR conditions, traffic permitting.
- After the new runway is completed, implement turns by all jets and large propeller aircraft departing the new Runway 25 to a heading of 245 degrees upon crossing the middle marker, maintaining that heading until 13 DME. If no middle marker is constructed, the turn location should be defined as 7.1 miles west of the SRP VORTAC.
- After the new runway is completed, implement a departure route which overflies the Salt River to a position one mile east of the SRP VORTAC for all jets and large propeller aircraft departing the new Runway 7 (Extended One DME Procedure).

In 1994, the Cities of Phoenix and Tempe and the FAA entered into another IGA which was intended to ensure implementation of specific noise abatement and mitigation objectives. The noise abatement procedures which were identified in the IGA were the implementation of the "4 DME" departure procedure, the "side-step" approach procedure, and the equalization of departures west and east of the airport.

The "4 DME" departure procedure requires all jet aircraft and all large turboprop aircraft (over 12,500 pounds) departing to the east on Runways 8L and 8R to fly 4 nautical miles from the distance measuring equipment (the relocated Phoenix VORTAC) before turning on any ATC assigned heading. (This procedure replaces the One DME procedure recommended by the NCP, since the VORTAC was relocated.) Compliance with the 4 DME procedure was clarified in June 1998 to require the aircraft to pass through a 5,555-foot wide gate, running north/south, 4 DME east of the PXR VORTAC. The resulting flight paths are concentrated over the Salt River bed.

The "side-step" approach procedure consists of a requirement that aircraft approaching from the east to the planned third runway, south of the existing runways, maintain alignment with Runway 26L until a point approximately three miles east of the runway end (approximately over Sun Devil Stadium and Mill Avenue), then turn to align with the new runway.

As noted above, equalization of runway use to the east and west has long been an objective of the City of Phoenix. The 1994 IGA established specific measures to determine the actual division of departures on each runway.

To accomplish the objectives of the 1994 IGA, the City of Phoenix agreed to:

- Make no requests of the FAA to abandon or modify the above noise abatement procedures.
- Affirmatively oppose any proposals for such abandonment or modification for reasons other than safety.

- Submit to the FAA an updated Part 150 Noise Compatibility Plan and Program prior to placing the third runway into service.
- Install and maintain a Noise and Flight Track Monitoring System (NFTMS) capable of identifying aircraft which fail to comply with the noise abatement procedures, identifying all non-military aircraft departing to or arriving from the east, and measuring single event noise levels from non-complying aircraft at predetermined locations within Tempe.
- Consult regularly with Tempe during procurement, development, installation, testing and operation of the NFTMS.
- Include in the NFTMS a direct computer link to Tempe to provide Tempe with the NFTMS data generated on a real-time basis.
- Provide Tempe with data and related information needed to assess compliance with the equalization of runway use.
- Monitor departures and use its best efforts to persuade the FAA to compensate for quarterly patterns which, if annualized, would not comply with the equalization.

In the 1994 IGA, the Cities of Phoenix and Tempe also agreed to take all actions necessary to implement the land use management strategies recommended in the 1987 Part 150 Noise Compatibility Plan and Program.

In September 1996, the NFTMS became fully operational, collecting operational data and flight tracks from the FAA radar system, and noise level data from twenty fixed noise monitoring sites in Phoenix, Tempe and Mesa. Since that date, the Aviation Department and Tempe have collected noise level and operational data on a nearly continuous basis. The flight track data collected for departures to the east have been used to develop the criteria for judging compliance with the 4DME procedure. Runway use data have also been used to regularly evaluate the equalization of runway use east and west of the airport.

The noise level and operational data collected by the NFTMS for the period from July 1, 1997, to June 30, 1998, have been used to prepare inputs and assumptions for the noise modeling for this Part 150 study. The measured cumulative noise level data at the noise monitoring sites were also used to validate the accuracy of the noise modeling for existing conditions.

STUDY AREA

Exhibit 1J shows an area of 87 square miles centered on the airport. It includes approximately 55 square miles of southern Phoenix, 19 square miles of Tempe, 6 square miles of Scottsdale, 2 square miles of Mesa, and 4 square miles of Pima-Maricopa Indian Community. The study area ranges from Southern Avenue on the south, to Dobson Road on the east, to Thomas Road on the north, and to 27th Avenue on the west.

The study area defines the area within which detailed existing land use information will be presented. It is

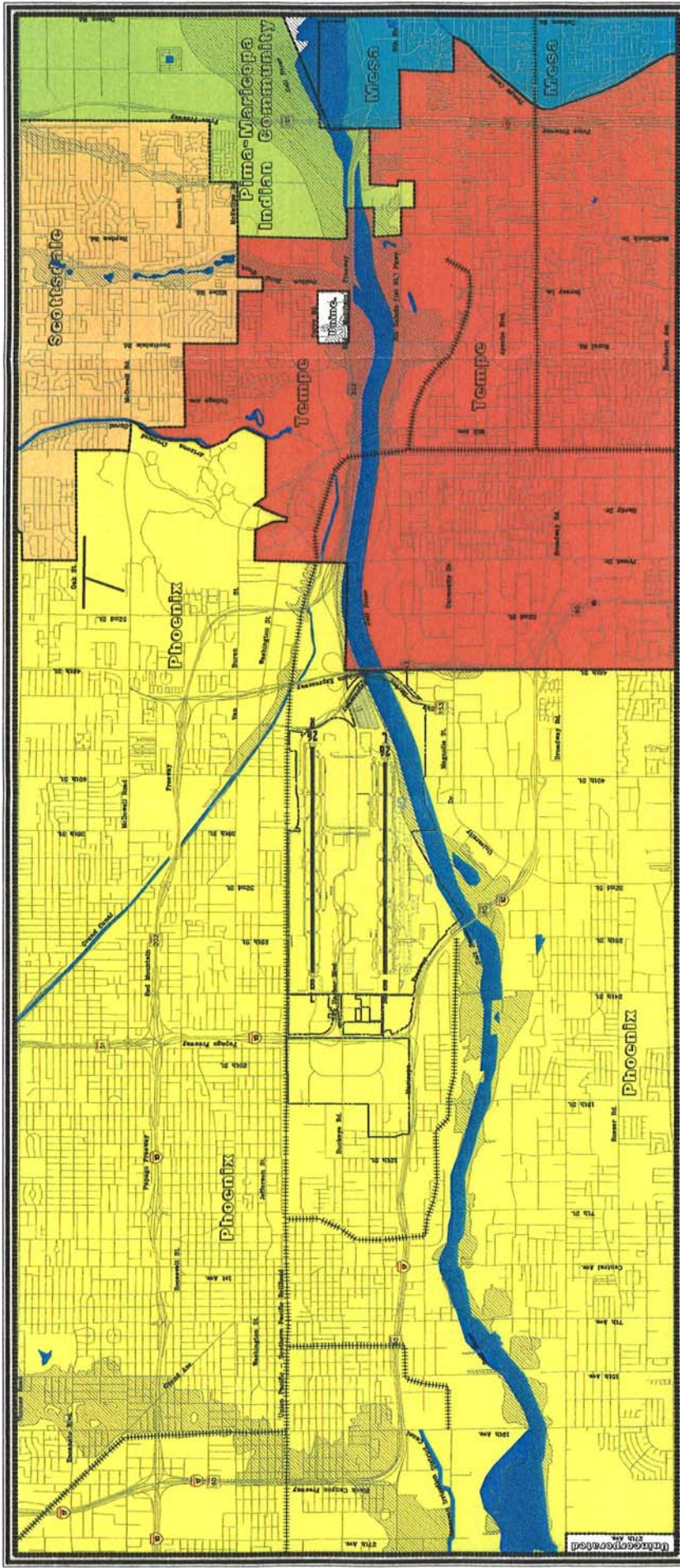
intended to contain the area expected to be impacted by present and future aircraft noise of 65 DNL or greater.

The study area is primarily for statistical convenience and can be modified later in the study if necessary. It should be emphasized that this area is for the presentation of detailed background data -- it is not a definition of the noise impact area. Areas adversely affected by aircraft noise will be defined in later analyses.

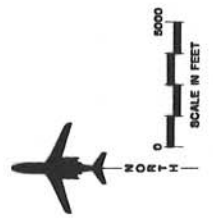
EXISTING LAND USE

Exhibit 1K shows existing land use in the study area. The map was developed by the Maricopa Association of Governments and verified by the Consultant through interpretation of aerial photos taken from September 30 to October 7, 1998. Other sources which were consulted included existing land use maps compiled by local jurisdictions, U.S. Geological Survey maps, published street maps, and consultant field surveys conducted in December 1998 and January 1999. The land use categories shown on the map were selected to conveniently fit the requirements of noise and land use compatibility planning. **Table 1B** lists the land use categories shown on the existing land use map.

Virtually the entire study area is developed. A band of commercial and industrial development is immediately north of the airport. Further north are large areas of single and multi-family residential intermingled with neighborhood commercial development. Eleven schools and a hospital are within the study area north of the Airport.



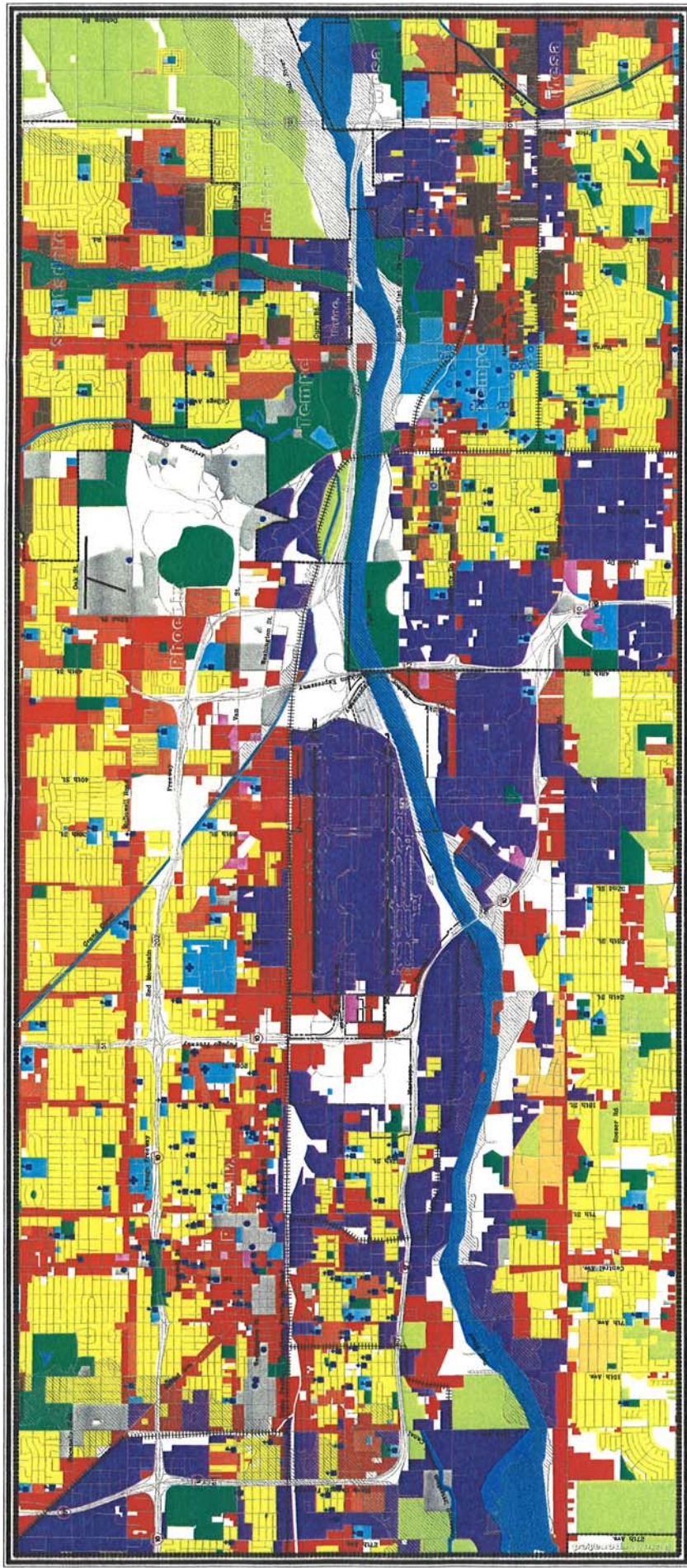
Source: Maricopa Association of Governments



- LEGEND**
- Airport Property
 - Municipal Boundaries
 - Study Area
 - City of Phoenix
 - City of Scottsdale
 - City of Tempe
 - City of Mesa
 - Salt River Pima-Maricopa Indian Community
 - Unincorporated Maricopa County
 - 100-Year Floodplain



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Source: Maricopa Association of Governments, Updated by Coffman Associates.

- LEGEND**
- Airport Property
 - Municipal Boundaries
 - Study Area
 - Agriculture
 - Rural Residential (0-1 du/ac)
 - Large Lot Residential (1.1-2 du/ac)
 - Small Lot Residential (2.1-5 du/ac)
 - Medium Density Residential (5.1-15 du/ac)
 - High Density Residential (15+ du/ac)
 - Hotels, Motels, & Resorts
 - Commercial / Office
 - Public
 - Park & Open Space
 - Water
 - Industrial
 - Vacant
 - 100-Year Floodplain
 - Noise-Sensitive Institutions
 - Place of Worship
 - School
 - Hospital
 - Museum
 - Library
 - Residence Halls
 - Community Center



**TABLE 1B
Land Use Categories Shown on Existing Land Use Map**

Category	Land Uses Included
Rural Residential	Single-Family <= 1 dwelling / acre
Large Lot Residential	Single-Family > 1 and<= 2 dwelling / acre
Small Lot Residential	Single-Family > 2 and<= 5 dwelling / acre
Medium Density Residential	Single-Family > 5 and<= 15 dwelling / acre, Duplexes, Townhouses, Apartment and condominium buildings
High Density Residential	Single-Family > 15 dwelling / acre, Duplexes, Townhouses, Apartment and condominium buildings
Hotels, Motels, Resorts	Hotels, Motels, Resorts
Commercial and Office	Businesses Parks Offices Neighborhood Retail Community Retail Regional Retail
Industrial	Airports Warehouses Distribution Centers Industrial Uses
Noise-Sensitive Institutions	Places of worship Schools Nursing homes Residential group quarters Hospitals Community centers
Parks and Open Space	Parks Golf courses Cemeteries Ponds Nature preserves
Undeveloped	Vacant lots Open parcels of land

Immediately east of the Airport consists primarily of compatible vacant, industrial, park, and open space areas. Beyond the compatible land uses to the east are large areas of residential within the Cities of Phoenix, Scottsdale, and Tempe. Concentrated commercial and industrial areas to the east are located along the major roadways and

the Salt River. Twenty-two schools and one hospital are within the study area to the east.

The Salt River runs the length of the study area and provides a development barrier along the southern boundary of the Airport. Two large airport noise-compatible areas are adjacent to the

Salt River to the south. The first area consists mostly of industrial/commercial development located between the Salt River to the north and northwest, Roeser Road and Interstate 10 to the south, and Priest Drive to the east. The second noise-compatible area is an industrial area located southwest of the airport south Interstate 10/17 and north of the Salt River. Large clusters of residential development are located south-southeast of the Salt River. Three schools are within the study area to the south.

Land use to the west of the Airport is highly mixed with the exception of the Phoenix downtown core to the northwest. Immediately west of the Airport is a mix of vacant and commercial land use. A combination of residential, commercial, industrial, and open space fills out the remaining portion of the study area. There are 27 schools, three hospitals, two museums, and a library located west of the airport within the study area.

SCHOOLS

There are 12 school districts within the Phoenix Sky Harbor International Airport Study Area: two high school, eight elementary, and two unified schools districts. In addition, the Study Area contains five college/university sites.

Phoenix Union and Tempe Union high school districts cover a majority of the study area. The Phoenix Union School District has three high schools in the study area: Carl Hayden Community High School, North High School, and South Mountain High School. One high school in the Phoenix Union district, East High School, has been closed, and no new schools are planned within the study area. Tempe Union has two high

schools in the study area: Tempe High School and McClintock High School. There are no new or planned high school closures in the Tempe Union district within the study area.

All or portions of Phoenix, Tempe Wilson, Osborn, Creighton, Murphy, Balsz, and Roosevelt elementary school districts are within the Phoenix Sky Harbor International Airport study area. Currently there are no plans for new or major expansion of existing elementary schools within the study area. The elementary school districts are also not planning to close any of the 42 elementary schools within the study area.

Scottsdale and Mesa are the two unified school districts within the study area, including both elementary and high schools. A small section of the Scottsdale Unified School District northeast of the airport has seven schools in the study area. There are no plans for new or major expansion of existing schools in this part of the Scottsdale Unified district. There are also no plans for school closures in this area.

The Mesa Unified School District is on the eastern edge of the Phoenix Sky Harbor International Airport study area. Only one school, southeast of the airport, is within the study area. There are no plans for new schools or major expansion of the existing school in this part of the Mesa Unified District. There are also no plans to close the school in the study area.

There are also several institutions of higher learning within the study area. These include the Arizona State University Main Campus, Phoenix University, and three campus sites operated by the Maricopa Community College District: Gateway Community

College, Rio Salado College, and the Maricopa Skills Center. Both Arizona State University and the campuses operated by the Maricopa Community College District are planning for additional development.

HISTORIC RESOURCES

The Arizona State Historic Preservation Office was contacted for information about any sites in the study area determined to be of historical significance. The study area has 123 sites listed on the National Register of Historic Places. A list of the historic structures can be found in **Appendix C**. Historic structures are shown on **Exhibit 1L**.

LAND USE PLANNING POLICIES AND REGULATIONS

In most cities and counties, the chief land use regulatory document is the zoning ordinance which regulates the types of uses, building height, bulk, and density permitted in various locations. Subdivision regulations are another important land use tool, regulating the platting of land. Local communities also regulate development through building codes. Non-regulatory policy documents which influence development include the general plan and the local capital improvements program. The general plan provides the basis for the zoning ordinance and sets forth guidelines for future development. The capital improvements program is typically a short-term schedule for constructing and improving public facilities, such as streets, sewers and water lines.

The following paragraphs describe each of the above areas as a means towards understanding the land use planning policies and regulations impacting the study area.

REGULATORY FRAMEWORK

In the Phoenix Sky Harbor Airport Study Area, the cities of Phoenix, Tempe, Scottsdale, and Mesa, the Salt River Indian Community, and Maricopa County share the responsibility for land use regulation. Each jurisdiction administers zoning ordinances, subdivision regulations, and building codes.

Arizona state law requires counties to prepare a comprehensive, generalized land use plan for development of their area of jurisdiction. The county plan shall also provide for zoning and the delineation of zoning districts. The county is also responsible for regulating the subdivision of all lands within its corporate limits, except subdivisions which are regulated by municipalities. Adoption of building codes are optional for those counties which have adopted zoning. Maricopa County does regulate land uses in two small areas within the Study Area.

Arizona state law permits cities and towns to prepare, adopt and implement comprehensive, long-range, generalized land use plans for land both under their current jurisdiction and for unincorporated sections of the county which are likely to be annexed by the city/town. Local governments are required to regulate the subdivision of all lands within their corporate limits and may also prepare and adopt zoning ordinances and building codes. Zoning must be consistent with the General

Plan, where one has been prepared. General land use plans include plans and policies explaining the community's goals, objectives, principles, and standards for overall growth and development.

Within the Phoenix Sky Harbor Airport Study Area, all the municipalities have prepared and adopted general plans, zoning ordinances, subdivision regulations and building codes. These planning and development tools are described below.

GENERAL PLANS

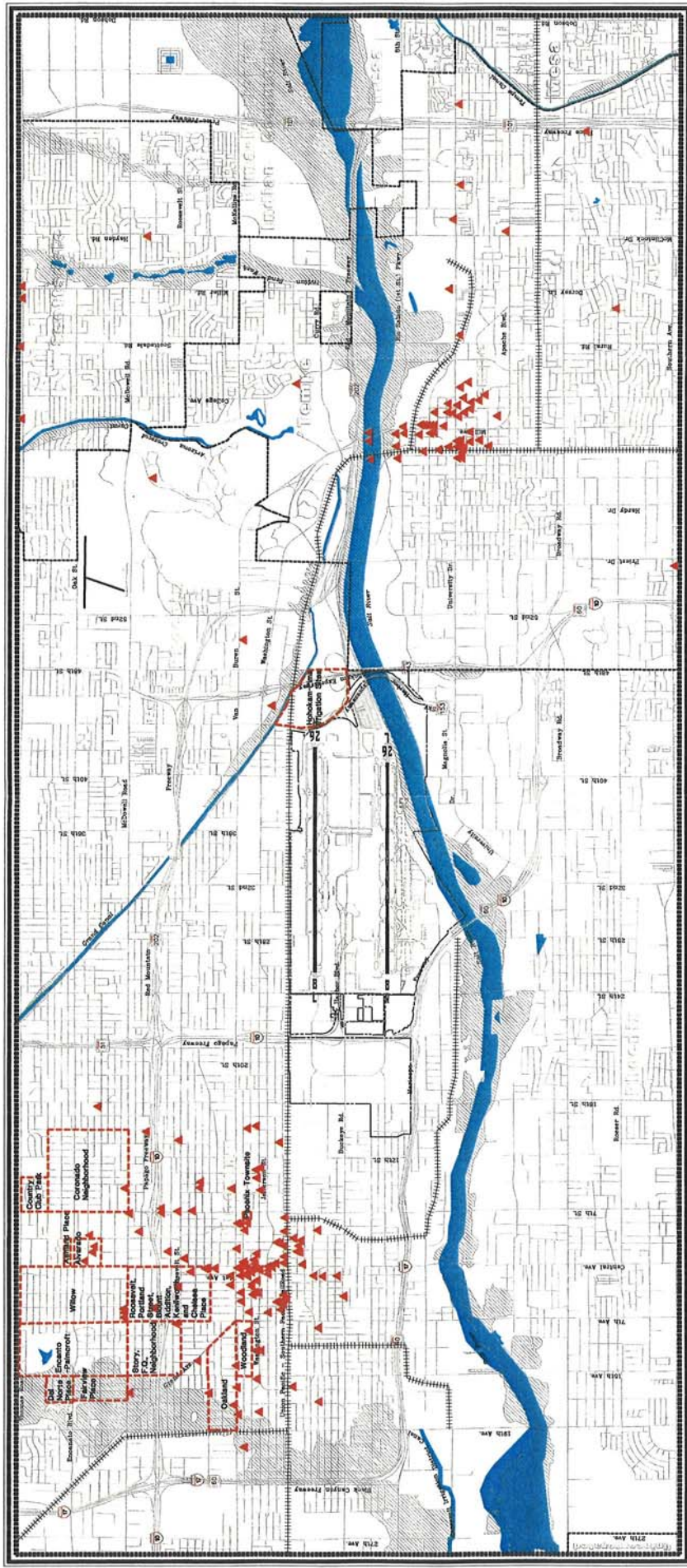
Comprehensive, long-range plans serve as a guide to individual communities and jurisdictions to provide quality growth and development. The plans represent a generalized guideline, as opposed to a precise blueprint, for locating future development. The plan generally consists of elements which examine existing land uses and designates proposed future land uses and facilities. By illustrating preferred land use patterns, including extraterritorial areas, a general plan can be used by community decision-makers and staff, developers, investors, and citizens to assist them in evaluating future development opportunities. **Exhibit 1M**, depicts the proposed future land uses for the study area, as contemplated by the individual jurisdictions in their general plans.

General Plan for Phoenix (1985-2000)

The General Plan for Phoenix 1985-2000 contains goals, policies and recommendations that serve as a general guide for the City Council, Planning Commission, City staff, and the public regarding development in the

City. Revised in 1994, the General Plan consists of 11 elements: land use, circulation, recreation, housing, rehabilitation and redevelopment, neighborhood policy, public buildings, public services, conservation, safety, and bicycling. The safety element of the General Plan is the only one element that addresses aircraft noise and land use compatibility. The following policies are listed in the safety element of the General Plan:

- Encourage new development to include noise attenuation in the project design.
- Encourage the use of quieter aircraft.
- Encourage safe and noise compatible land uses within airport noise zones as such uses may be described in the 1989 Part 150 Noise Compatibility Study for Sky Harbor International Airport within airport noise zones for Sky Harbor.
- Continue to protect the established airport height zones against encroachment by development.
- Continue to limit development within airport clear zones in accordance with Federal Aviation Administration rules and regulations.
- Future land uses within the Sky Harbor Center area will be compatible with the operation of Sky Harbor International Airport.
- Continually reevaluate the operational and development plans for all City-owned airports, as well as other airports within the Phoenix sphere of influence, to keep abreast of changing needs and demands, technological changes, and land use considerations.



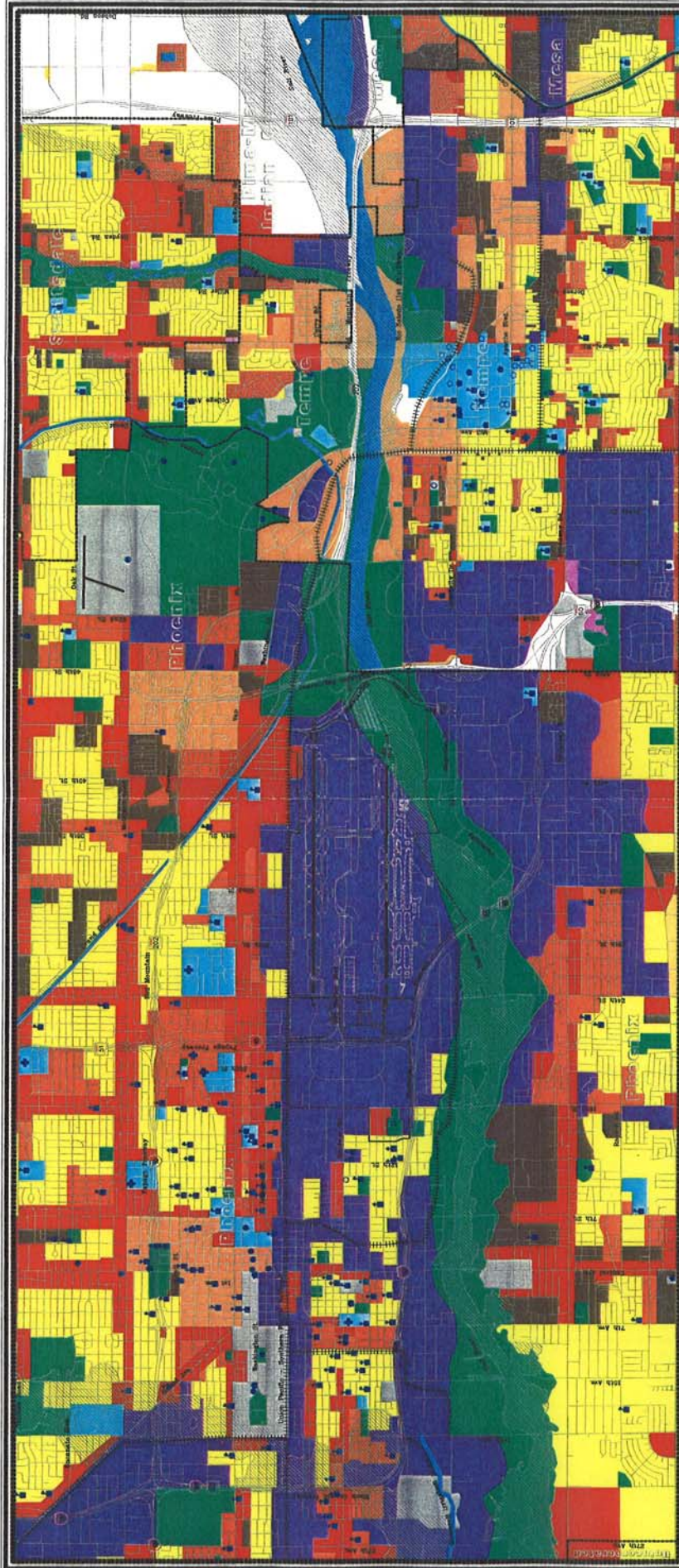
Source: Arizona State Historic Preservation Office,
Maricopa Association of Governments,
Updated by Coffman Associates.



- LEGEND**
- Airport Property
 - Municipal Boundaries
 - Study Area
 - Historic District Boundaries
 - Historic Structure
 - Water



06/09/09 14-19-14



Source: Maricopa Association of Governments,
Updated by Coffman Associates.

- LEGEND**
- Airport Property
 - Municipal Boundaries
 - Study Area
 - Agriculture
 - Rural Residential (0-1 du/ac)
 - Large Lot Residential (11-2 du/ac)
 - Small Lot Residential (2.1-5 du/ac)
 - Medium Density Residential (5.1-15 du/ac)
 - High Density Residential (15+ du/ac)
 - Mixed Use
 - Hotels, Motels, & Resorts
 - Commercial / Office
 - Public
 - Park & Open Space
 - Water
 - Industrial
 - Vacant
 - 100-Year Floodplain
 - Noise-Sensitive Institutions
 - Place of Worship
 - School
 - Hospital
 - Museum
 - Library
 - Residence Halls
 - Community Center



Phoenix Area Plans

There are also several area redevelopment plans that contain land use goals, policies and recommendations within the study area. These include: the Downtown Area Redevelopment and Improvement Plan (1979), Special Redevelopment Area Plan (1981), South Phoenix Village Redevelopment Area Plan (1989), 7th Street and Buckeye Road Redevelopment Plan (1989), East Lake Park Neighborhood Plan (1990), 44th Street Corridor Specific Plan (1991), Downtown Phoenix- A 25-Year Vision (1991), Capital District Development Guidelines (1997), Booker T. Washington Neighborhood Development Program, and A Plan for Nuestro Barrio. Of the nine area plans in the study area, only the 7th Street and Buckeye Road Redevelopment Plan and the Nuestro Barrio Plan make land use recommendations along the extended runway centerline of the Phoenix Sky Harbor International Airport.

The 7th Street and Buckeye Road Redevelopment Plan calls for the redevelopment of a small area west of the Airport on the extended runway centerline. Currently the 7th Street and Buckeye Road area is a mixture of residential, commercial, and industry. The plan calls for the cleanup and redevelopment of the area into an industrial area with a community commercial area along Buckeye Road.

The Nuestro Barrio Plan covers an area immediately west of the Sky Harbor Airport. Nuestro Barrio consist of the Quatro Milpas, Little Hollywood, Ann Ott, and Campito neighborhoods. It is impacted by the Airport and the Maricopa Freeway. Some residents feel that impacts from the Airport and freeway make Nuestro Barrio unsuitable for residential use. Other

residents want to stay in their homes. The plan provides six strategies and actions that support the gradual transition of residences to non-residential uses in a fashion which will not negatively impact those who choose to remain in the community: (1) create a transitional zone overlay on the General Plan Map that will permit the transition of Nuestro Barrio, over the long term to non-residential uses, (2) identify the conditions under which the community would support the transition of residential land use, (3) allow industrial zoning adjacent to residential sites based on the guidelines established by the community, (4) actively work with property owners on an ongoing basis to market their land for non-residential uses, (5) inform clients contacting the City about industrial land that sites are available in Nuestro Barrio, and (6) encourage development by allowing zoning and permit fee waivers in Nuestro Barrio.

Tempe General Plan

The Tempe General Plan 2020 (1997) is designed to guide Tempe as it transitions from development growth to a focus on land re-use and redevelopment. There are 16 elements in the Tempe General Plan: land use, transportation, economy, public buildings, urban design, art in the city, housing, conservation of the man-made environment, neighborhoods, conservation of the natural environment, recreation, public services, safety, downtown/Rio Salado, Arizona State University, and statistics/demographics.

The Land Use Element describes Tempe as a city that has developed over the years in three relatively distinct areas (North Tempe, Central Tempe, and South Tempe, reflecting its north to

south growth pattern. The North Tempe area covers most of Tempe within the study area. North Tempe is the oldest portion of the city and contains a majority of the historic properties, the Arizona State University campus, and downtown. Land use in North Tempe is characterized by strip commercial and office, an occasional corner shopping center, randomly placed industrial development, and randomly placed schools, a mix of residential. North Tempe has had the most visible patterns of disinvestment and deterioration. However, the downtown has been revitalized through redevelopment and intensification. The revitalization of the downtown and considerable investment in infrastructure for the Rio Salado project has inspired residents and property owners to re-invest in the surrounding areas. In general, there are opportunities for infill and land re-use in the North Tempe area.

Land Use Element Objective 4 within the Tempe General Plan is the only objective to directly address airport noise from Phoenix Sky Harbor International Airport. Objective 4 is to protect noise-sensitive areas in Tempe to the greatest extent possible. Within Objective 4 are four implementation strategies:

- Resolve airport issues to promote and protect residential and commercial land uses in Tempe based on the current configuration and operation of Sky Harbor Airport.
- Concurrently with the City of Phoenix implement acceptable land use measures as may be set forth in the Phoenix Sky Harbor Part 150 Noise Compatibility Plan.
- Monitor airport noise and flight paths to promote full compliance

with the Intergovernmental Agreement and noise mitigation flight procedures.

- Promote regional aviation solutions that are beneficial to Tempe.

Tempe Area Plans

There are three area-specific plans that contain land use goals, policies and recommendations within the study area. These include: the Rio Salado Project (1989), the Riverside/Sunset Neighborhoods Strategic Plan (1997), and the Northwest Tempe Neighborhoods Strategic Plan (1998).

The Rio Salado Project restores a five mile stretch of the Salt River from a utility corridor to a linear green belt. It integrates the resolution of flood problems, preservation of wildlife areas, protection of ground water, mitigation of landfills, and solutions for transportation needs. The project will recover over 840 acres of land from the existing flood plain. This reclaimed land provides the opportunity for the development of resorts, restaurants, retail shops, offices, condominiums, and marinas.

The Riverside/Sunset Neighborhoods Strategic Plan covers an area bordered by Rio Salado Parkway to the north, Ash Avenue to the east, University Drive to the south, and Priest Drive to the west. The Riverside/Sunset neighborhoods are two of the oldest in Tempe, established in the late 1800's. The purpose of the Riverside/Sunset Neighborhood Strategic Plan is to provide a desirable residential complement to Tempe's Downtown and Rio Salado Project through a combination of preservation and enhancement; in-fill and redevelopment; urban design and

capital improvements; and increased home and business ownership.

The Northwest Tempe Neighborhoods Strategic Plan is a joint planning effort by the neighborhood associations of Clark Park, Gililand, Holdeman, Lindon Park, Maple Ash, Marilyn Ann, and Mitchell Park. This area is generally bordered by 5th Street and University Avenue to the north, Mill Avenue to the east, Broadway Road to the South and Priest Drive to the west. The Plan was developed to address outside growth influences (expanding suburban sprawl, Arizona State University, Sky Harbor International Airport, Downtown Tempe redevelopment, and completion of the 202 Freeway) that have affected mature neighborhoods with declining air quality, increased traffic, parking issues, and rental property concerns.

Scottsdale General Plan

The Scottsdale General Plan is designed to be a flexible policy guide for the ultimate development of the City. There are four sections to the Scottsdale General Plan: Land Use (1994), Environmental Design (1992), Circulation (1991), and Public Facilities (1992). The land use plan map designates the majority of land in Scottsdale within the Sky Harbor study area for low to medium residential development and commercial land uses along the major roadways. **Exhibit 1M** depicts the Scottsdale General Plan land uses.

The Circulation and Public Facilities elements of the Scottsdale General Plan both address noise and development compatibility concerning Scottsdale Airport. There are no parts of the Scottsdale General Plan that specifically address Phoenix Sky Harbor

International Airport noise or land use compatibility.

Mesa General Plan

The Mesa General Plan (1996) is designed to define the direction of growth and the type of development that is desired and expected to occur in Mesa over the next 20 years. The Mesa General Plan establishes land use, circulation, and economic development plans, as well as specific strategies for the community to implement those plans.

Future land use designation in the General Plan within the study area are a mixture of medium density residential, neighborhood residential, open space, and general industrial. Land use compatibility policies such as overflight overlay zoning, prohibiting residential development within the 65 DNL, and fair disclosure are discussed concerning Mesa Falcon Field and Williams Gateway Airports. There are no parts of the Mesa General Plan that specifically address Phoenix Sky Harbor International Airport noise or land use compatibility.

Salt River Pima-Maricopa Indian Community

The 1988 General Development Plan of the Salt River Pima-Maricopa Indian Community covers land within the Reservation. The current general plan has three general elements: land use, circulation, and economic development. None of the elements contain references to aviation, airports, or airport noise. The 1988 General Plan is currently being updated. The proposed land use for the portion of the reservation located in the study area is shown on **Exhibit 1M**.

ZONING

While general land use plans are general land use policy guidelines, cities and counties actually control land use through zoning ordinances. In the study area, all jurisdictions have established zoning ordinances.

This section summarizes the zoning ordinances in each area jurisdiction in the airport vicinity. This information will be used in subsequent chapters to identify zoning districts which provide a compatible land use buffer and those that allow encroachment by noise-sensitive land uses. For zoning districts which permit noise-sensitive land uses, this information will provide insights into how the district regulations may be amended to promote noise-compatible development.

City of Phoenix

The Phoenix Zoning Ordinance was established by Phoenix City Ordinance No. G-449. The ordinance designates enforcement and use permit responsibilities to the Zoning Administer, appeals and variances to

the Board of Adjustment, and special permits to the City Council. Special permits may be granted by the Council in all districts for the following noise sensitive uses: religious retreats, botanical gardens, and group homes. Special permits may also be granted for drive-in theaters on 10 or more acres (R-5, S-1, S-2, PSC, C-1 and C-2) handicap schools (RE-43 to R-5, all PAD's), RV parks (C-1, C-2, C-3), hospitals (R-5), recovery homes (S-1, S-2) specialized treatment facilities (R-5), and mobile and manufactured homes on 10 or more acres (R-2, R-3).

The Phoenix *Zoning Ordinance* provides for 37 fixed zoning districts, including 16 residential use districts and 21 non-residential use districts. A number of the commercial use zones do not set specific minimum lot size requirements; these are determined based on proposed uses and required setbacks, parking, landscaping, etc.. The City has set forth detailed Development Review Procedures regarding their review of zoning and development plans. The key provisions of the ordinance relating to noise compatibility planning are summarized in **Table 1C**.

TABLE 1C
Summary of Zoning Provisions:
City of Phoenix

Zoning Districts	Noise-Sensitive Uses		Minimum Lot Size or Density Units/Acre
	Permitted	Conditional	
RESIDENTIAL DISTRICT			
S-1, Suburban District Ranch or Farm Residence	Single-family dwellings Schools Places of worship	Convents Group foster homes	43,564 s.f.
S-2, Suburban District Ranch or Farm Commercial	Same as S-1	None	3 acres
RE-43, Residential Estate	Single-family dwellings Places of worship	Group foster homes Group homes for handicapped Convents Pocket Shelters Schools	43,560 s.f.
RE-24, Residential Estate	Single-family dwellings Places of worship	Group foster homes Group homes for handicapped Convents Pocket shelters Schools	24,000 s.f.
R1-14, Single-family	Same as RE-24	Same as RE-24	14,000 s.f.
RE-35, Single-family	Single-family dwellings Places of worship	Convents Pocket shelters Schools Group homes for handicapped	1.1 du/ac
R1-18, Single-family	Same as RE-35	Same as RE-35	1.95 du/ac
R1-10, Single-family	Same as RE-35	Same as RE-35	3.5 du/ac
R1-8, Single-family	Same as RE-35	Same as RE-35	4.3 du/ac
R1-6, Single-family	Same as RE-35	Same as RE-35	5.3 du/ac
R-2, Multi-family	Single-family dwellings Multi-family dwellings Places of worship	Convents Pocket shelters Schools Group homes for handicapped	10.0 du/ac

TABLE 1C (Continued)
Summary of Zoning Provisions:
City of Phoenix

Zoning Districts	Noise-Sensitive Uses		Minimum Lot Size or Density Units/Acre
	Permitted	Conditional	
R-3, Multi-family	Same as R-2	Same as R-2 Group homes Group foster care homes	14.5 du/ac
R-3A, Multi-family	Same as R-2	Same as R-3	22 du/ac
R-4, Multi-family	Same as R-2	Same as R-3	20 du/ac
R-5, Multi-family	Same as R-2	Same as R-3 Personal care homes Nursing homes	43.5 du/ac
R-4A, Multi-Family, General	Same as RE-24 and R-3 Group Foster Homes Group Homes	Nursing homes Personal care homes Convents Group homes for handicapped	6,000 s.f.
R-O, Residential Office, Restricted Commercial	Single-family dwellings	None	24,000 s.f.
RH, Resort District	Guest rooms Dwelling units	None	2,178 s.f.
COMMERCIAL DISTRICTS			
C-O, Commercial Office, Restricted	Schools	None	6,000 s.f.
G-O, General Office	Schools	None	43,560
M-O, Major Office	Schools Day care centers	None	5 acres
C-1, Neighborhood Retail	Same as R1-6, R-3, R-4, R-5 Hospitals Libraries Nursery schools Recovery homes	Nursing homes	14.5 du/ac
C-2, Intermediate Commercial	Same as C-1 Nursing homes	None	14.5 du/ac
C-3, General Commercial	Same as C-2 Trade school	None	14.5 du/ac
RSC, Regional Shopping Center	Same as C-2	None	110 acres
INDUSTRIAL DISTRICTS			
CP, Commerce Park	Places of worship Caretakers quarters Private schools	None	N/A
A-1, Light Industrial	Same as RE-24, R-3, R-4, R-5, C-1, C-2, and C-3	Residential	N/A

TABLE 1C (Continued)
Summary of Zoning Provisions:
City of Phoenix

Zoning Districts	Noise-Sensitive Uses		Minimum Lot Size or Density Units/Acre
	Permitted	Conditional	
A-2, Industrial	Hospitals Nursing homes Libraries Nursery schools Recovery homes	None	N/A
PLANNING DISTRICTS			
PCD, Planned Community District	Same as proposed zoning district	Same as proposed zoning district	N/A
PAD, Planned Area District	Same as proposed zoning district	Same as proposed zoning district	N/A
PSC, Planned Shopping Center	Theaters	None	N/A
SUPPLEMENTARY DISTRICTS			
P-1, Passenger Auto Parking, Ltd.	None	None	N/A
P-2, Parking	None	None	N/A

Tempe

The Zoning Ordinance of the City of Tempe was established by City Ordinance No. 808. Enforcement and interpretation is the responsibility of the Office of Zoning Administrator (Director of Community Development), with direct enforcement by the Building Safety Director. Use permits and variances are granted by the Hearing Officer and appeals of the Hearing Officer's actions are heard by the Board of Adjustment.

The Tempe zoning ordinance contains 26 basic districts and two overlay

districts. Fourteen districts are residential zones, eight are commercial zones, and four are industrial zones. The two overlay zones are for limited areas of the city and are to support two area plans: The Rio Salado Project and the Southwest Tempe General Plan. Within the basic districts, some noise-sensitive uses are permitted as a matter of right while others are permitted only with a Conditional Use Permit. **Table 1D** outlines the Tempe zoning districts and their important characteristics for this study.

TABLE 1D
Summary of Zoning Provisions:
City of Tempe

Zoning Districts	Noise-Sensitive Uses		Minimum Lot Size or Density Units/Acre
	Permitted	Conditional, Subject to Special or Council Use Permit	
RESIDENTIAL DISTRICTS			
AG, Agricultural	Single-family dwellings Places of worship Convents Parish houses Schools & institutions of higher education Group homes for adult care and the disabled Guest quarters	Guest rooms Private schools Country & private clubs Hospitals or sanitariums Nursing or convalescent homes Orphanages Homes for the aged Farm laborer's quarters	1 DU/Acre
R1-15, Single-family Residence	Same as AG	Guest homes Municipal uses Private schools	2.4 DU/Acre
R1-10, Single-family Residence	Same as AG	Same as R1-15	2.8 DU/Acre
R1-8, Single-family Residence	Same as AG	Same as R1-15	3.35 DU/Acre
R1-7, Single-family Residence	Same as AG	Same as R1-15	3.75 DU/Acre
R1-6, Single-family Residence	Same as AG	Same as R1-15	4 DU/Acre
R1-5, Single-family Residence	Same as AG	Same as R1-15	6 DU/Acre
R1-4, Single-family Residence	Same as AG	Same as R1-15	8 DU/Acre
R1-PAD, Single-family Residential	Same as AG	Same as R1-15	NS
R-2, Two-family Residence	Single-family dwellings Multi-family dwellings Apartments Condominiums Places of worship Convents Parish houses Schools & institutions of higher education Group homes for adult care and the disabled Guest quarters Guest rooms Municipal uses Private schools	None	10 DU/Acre

TABLE 1D (Continued)
Summary of Zoning Provisions:
City of Tempe

Zoning Districts	Noise-Sensitive Uses		Minimum Lot Size or Density Units/Acre
	Permitted	Conditional, Subject to Special or Council Use Permit	
RESIDENTIAL DISTRICTS (Continued)			
R-3, Multi-family Residence Limited District	Same as R-2	Boarding homes Fraternity and sororities Hospitals or sanitariums Nursing or convalescent homes Orphanages Homes for the aged Nursery schools Day care centers	15 DU/Acre
R-3R, Multi-family Residence Restricted District	Same as R-2	Same as R-3	20 DU/Acre
R-4, Multi-family Residence General District	Same as R-2	Same as R-3	24 DU/Acre
MHS, Mobile Home Subdivision District	Mobile homes	None	7 DU/Acre
RMH, Mobile Home District	Mobile home parks Child care facilities	None	14 DU/Acre
TP, Trailer Park District	Trailer or recreational vehicle	None	5.5 DU/Acre
SERVICE DISTRICTS			
R/O, Residential and Office	Same as AG to include: Multi-family Dwelling Accessory Dwelling Places of worship Fine arts schools Medical clinics		10 Du/Acre
CCR, Convenience Commercial-Residence	Same as AG to include: Accessory dwellings Places of worship Fine arts schools Medical clinics Day care and nursery Schools Municipal uses	Clubs and lodges Hospitals or sanitariums Nursing or convalescent homes Orphanages Homes for the aged	7.26DU/Acre
C-1, Neighborhood Commercial	Same as CCR (permitted and use permit) to include: Private museums Nurses agency Private schools Theaters	Hospitals or sanitariums Nursing or convalescent homes Orphanages Homes for the aged	2 Acres

TABLE 1D (Continued)
Summary of Zoning Provisions:
City of Tempe

Zoning Districts	Noise-Sensitive Uses		Minimum Lot Size or Density Units/Acre
	Permitted	Conditional, Subject to Special or Council Use Permit	
SERVICE DISTRICTS (Continued)			
PCC-1, Planned Commercial Center	Same as C-1	Same as C-1 and permitted uses in the PCC-2 & IBD	—
C-2, General Commercial	Same as R/O, CCR, C-1, PCC-1, & PCC-2 permitted and Use Permit	Same as C-2 permitted	---
PCC-2, Planned Commercial General Center	Same as C-1	Same as PCC-1 and IBD permitted to include: Drive-in theaters	5 Acres
CCD, Central Commercial	Single-family residential Multi-family residential	Same as C-2	40 DU/Acre
MG, Multi-use General	Multi-family residential General medical/dental offices & clinics Theaters Art galleries Day care centers Hotels and motels	None	1 Acre
RCC, Regional Commercial Center	General medical/dental offices & clinics Hospitals Theaters Art galleries Municipal facilities Day care centers Hotels and motels Veterinary clinics		—
INDUSTRIAL DISTRICTS			
IBD, Industrial Buffer	Motion picture studios General medical/dental offices & clinics Accessory dwellings	Mobile homes or trailers as accessory dwellings	N/A
I-1, Light Industrial	Same as IBD Municipal uses	Stadiums Trailer or mobile homes as accessory dwellings	N/A
I-2, General Industrial	Same as I-1	Same as I-1	N/A
I-3, Heavy Industrial	Same as I-1	Religious revivals Music festivals Mobile homes or trailers as accessory dwellings	N/A

TABLE 1D (Continued)
Summary of Zoning Provisions:
City of Tempe

Zoning Districts	Noise-Sensitive Uses		Minimum Lot Size or Density Units/Acre
	Permitted	Conditional, Subject to Special or Council Use Permit	
OVERLAY DISTRICTS			
Rio Salado Overlay District	All use shall comply with the underlying zoning	All use shall comply with the underlying zoning	All development must comply with the underlying zoning
Southwest Tempe Overlay District	All use shall comply with the underlying zoning	All use shall comply with the underlying zoning	All development must comply with the underlying zoning

City of Scottsdale

The City of Scottsdale Zoning Ordinance was established by Ordinance No. 455. The most recent edition of Scottsdale's *Zoning Ordinance* became effective in September 1992. The Superintendent of Buildings enforces the zoning ordinance while the Planning Director interprets the ordinance. Appeals are made to the Board of Adjustment, as are requests for variances. The Development Review Board provides site plan review to most development in the city, including municipal uses. The City Council must approve all locations of municipal facilities before review by the Development Review Board. Use permits may be conditional and are issued by the Planning Director after approval by the City Planning Commission and City Council.

The Scottsdale Zoning Ordinance provides for 39 zoning districts categorized into five groups: residential, commercial, industrial, mixed use, and supplementary.

Overlay districts for the protection of historical and environmental resources are included with the supplementary zoning districts and include: historic property and environmentally sensitive lands regulations, among others. The key provisions of each fixed district are reviewed in **Table 1E**. Uses allowed in the various districts include "permitted" uses, which require design review and approval by administrative officials, and "conditional" uses, which require review and approval by the Planning Commission.

The Scottsdale Zoning Ordinance contains 33 basic districts: 14 residential, 13 commercial, two industrial, one mixed-use, two parking, and one open space district. Additionally, there is one attachment district which expands commercial areas in certain circumstances, and five overlay districts (a planned residential zone, a parking zone, a historic property zone, and 2 hillside zones). The noise-sensitive use provisions of the districts are summarized in **Table 1E**.

TABLE 1E
Summary of Zoning Provisions
City of Scottsdale

District	Noise-Sensitive Uses		Minimum Lot Size per Dwelling
	Permitted	Conditional	
RESIDENTIAL DISTRICTS			
R1-190, Single-family	Single-family dwellings Public schools Municipal uses (includes libraries)	Places of worship Private schools (incl. colleges)	190,000 s.f.
R1-130, Single-family	Same as R1-190	Same as R1-190	130,000 s.f.
R1-70, Single-family	Same as R1-190	Same as R1-190	70,000 s.f.
R1-43, Single-family	Single-family dwellings Guest houses Public schools Municipal uses Places of worship	Private schools	43,000 s.f.
R1-35, Single-family	Same as R1-43	Same as R1-43	35,000 s.f.
R1-18, Single-family	Same as R1-43	Same as R1-43	18,000 s.f.
R1-10, Single-family	Same as R1-43	Same as R1-43	10,000 s.f.
R1-7, Single-family	Same as R1-43	Same as R1-43	7,000 s.f.
R-2, Two-family	Single-family dwellings Two-family dwellings Public schools	Same as R1-43	4,000 s.f.
R-3, Multifamily	Dwelling units Municipal uses	None	3,370 s.f.
R-4, Townhouse	Single-family dwellings Municipal uses Places of worship	None	5,240 s.f.
R-4R, Resort	Resorts, hotels, motels Guest ranches Single-family dwellings Timeshares Municipal uses	Places of worship	4,100 s.f./guest room 5,770 s.f./dwelling unit
R-5, Multiple-family	Boardinghouse Single-family dwellings Multi-family dwellings Public schools Municipal uses	Places of worship Convent Day nursery or pre-school Guest ranch Hotel, motel or timeshare Orphanage Private school Residential health care facility	1,320 s.f./guest room 1,890 s.f./dwelling unit
M-H, Manufactured home	Residential trailers Manufactured homes Municipal uses	None	7,000 s.f.

TABLE 1E (Continued)
Summary of Zoning Provisions
City of Scottsdale

District	Noise-Sensitive Uses		Minimum Lot Size per Dwelling
	Permitted	Conditional	
COMMERCIAL DISTRICTS			
S-R, Service-residential	Municipal uses Multi-family dwellings Single-family dwellings	Places of worship Day nursery or pre-school	3,500 s.f.
C-S, Shopping Center	Municipal uses Places of worship Theaters	Day nursery or preschool	N/A
C-1, Neighborhood Commercial	Municipal uses Dwelling units (as part of commercial development)	Places of worship Day nursery or preschool	N/A
C-2, Central Business	Museums Municipal uses Private schools Dwelling units (see C-1) Hotel, motel, timeshares Theaters Places of worship	Day nursery or pre-school Residential health care facility	1,000 s.f./guest room 500 s.f./dwelling unit
C-3, Highway Commercial	Business schools Municipal uses Hotel, motel, timeshare Movie theater Museum Theater for performing arts	Places of worship Day nursery or pre-school Drive-in theater Residential health care facility	1,000 s.f./guest room
C-4, General Commercial	Private schools Municipal uses	None	N/A
SS, Support Services	Municipal uses	None	N/A
C-O, Commercial Office	Business college Museum Library	Places of worship Hospital Municipal uses	N/A
PCoC, Planned Convenience Center	Dwelling units (see C-1) Municipal uses	Day nursery	10,890 s.f.
PNC, Planned Neighborhood Center	Municipal uses Dwelling units (see C-1) Theater, performing arts	Day nursery or pre-school Movie theater	10,890 s.f.
PCC, Planned Community Center	Municipal uses Dwelling units Movie theater	None	10,890 s.f.
PRC, Planned Regional Center	Municipal uses Hotel, motel Dwelling units Museums Theater, performing arts	Places of worship Day nursery	2,000 s.f./guest room 2,000 s.f./dwelling unit

TABLE 1E (Continued)
Summary of Zoning Provisions
City of Scottsdale

District	Noise-Sensitive Uses		Minimum Lot Size per Dwelling
	Permitted	Conditional	
D, Downtown	Multi-family dwellings Single-family dwellings Hotels, motels, resorts Municipal uses	Day nursery Group residential Specialized health care facility Minimal health care facility Hospitals and clinics Colleges and universities Cultural institutions (includes libraries and museums) Religious assembly Schools	Site dependant
INDUSTRIAL DISTRICTS			
I-G, Garden Industrial	Municipal uses	None	N/A
I-1, Industrial Park	Municipal uses	Places of worship (temporary) Day nursery or pre-school	N/A
MIXED USE DISTRICT			
PCD, Planned Community Development	Unspecified; includes residential	Unspecified	Unspecified
SUPPLEMENTARY DISTRICTS			
P-1, Passenger Auto Parking, Ltd.	None	None	N/A
P-2, Passenger Auto Parking	None	None	N/A
P-3, Parking, Multi-story	None	None	N/A
P-4, Parking	None	None	N/A
PRD, Planned Residential Development	Per underlying zone	Per underlying zone	N/A
W-P, Western Theme Park	Live entertainment Recreational vehicle area Resorts Museums Wedding chapel Dwelling units	None	1,000 s.f./ guest room 1,000 s.f./ dwelling unit
ESLO, Environmentally Sensitive Lands	Residential dwellings Resorts	None	22,000 s.f./ guest room 5 acres/ dwelling unit
OS, Open Space	Municipal uses	None	N/A
H-P, Historic Property	Per underlying zone	Per underlying zone	N/A

Mesa

The Zoning Ordinance of the City of Mesa, Section 11, Chapters 1-21 of the Mesa Code contains 18 basic zoning districts, plus three overlay districts and references to a fourth. One district is a very low density agricultural zone, 11 are residential zones, three are commercial zones, two are industrial zones, and one is a public facilities zone. The Age Specific District overlay zone is keyed to developments for the elderly and the other two overlay zones apply only in the town center area permitting special high rise and bonus intensity incentives. A flood plain overlay district, enforced by the Floodplain

Board (City Council) and administered by the City Engineer, is also referenced.

Special permits are required for certain land uses in Mesa, notable the manufacture of certain hazardous and/or heavy industrial products. These permits are granted by the Mesa City Council. No special or conditional use permits are required for land uses generally regarded to be noise-sensitive.

A listing of the various zoning districts in Mesa are shown in **Table 1F**, along with the noise-sensitive uses permitted in those zones and the permissible maximum residential development densities.

TABLE 1F
Summary of Zoning Provisions:
City of Mesa

Zoning Districts	Noise-Sensitive Uses		Minimum Lot Size or Density Units/Acre
	Permitted	Conditional, Subject to Special or Council Use Permit	
AGRICULTURE DISTRICT			
AG, Agriculture	Single-family dwelling Foster homes Group homes for the disabled Day care group home Schools Places of worship	Animal hospitals, clinics, and kennels Day care centers in conjunction with place of worship Accessory living quarters	0.1 DU/Acre
SINGLE RESIDENCE DISTRICTS			
R1-90, Single Residence	Single dwelling Foster homes Residential facilities for the developmentally disabled Schools Places of worship Group homes for the handicapped Adult care home Day care group homes	Day care centers in conjunction with places of worship Accessory living quarters	0.48 DU/Acre
R1-43, Single Residence	Same as R1-90	Same as R1-90	1 DU/Acre
R1-35, Single Residence	Same as R1-90	Same as R1-90	1.25 DU/Acre
R1-15, Single Residence	Same as R1-90	Same as R1-90	2.90 DU/Acre
R1-9, Single Residence	Same as R1-90	Same as R1-90	4.84 DU/Acre
R1-7, Single Residence	Same as R1-90	Same as R1-90	6.22 DU/Acre
R1-6, Single Residence	Same as R1-90 to include: Manufactured Home Subdivisions	Same as R1-90	7.26 DU/Acre
MULTIPLE RESIDENCE DISTRICTS			
R-2, Restricted Multiple Residence	Single and Multiple residence Boarding homes Group homes for handicapped Group foster homes Residential facilities for the developmentally disabled Bed and breakfast Schools Places of worship Day care centers Day group homes	Day care center in conjunction with places of worship Boarding homes Group homes for the handicapped Assisted living facilities Recovery homes	7.26 DU/Acre

TABLE 1F (Continued)
Summary of Zoning Provisions:
City of Mesa

Zoning Districts	Noise-Sensitive Uses		Minimum Lot Size or Density Units/Acre
	Permitted	Conditional, Subject to Special or Council Use Permit	
MULTIPLE RESIDENCE DISTRICTS (Continued)			
R-3, Limited Multiple Residence	Same as R-2	Same as R-2	7.26 DU/Acre
R-4, General Multiple Residence	Same as R-2 to include Fraternities, sororities, service and social clubs, and lodges Manufactured home and recreational vehicle parks	Same as R-2 to include Hospitals (with accessory group medical centers, nursing and convalescent homes, and hospice) Social service facilities	7.26 DU/Acre
COMMERCIAL DISTRICTS			
O-S, Office-Service	Medical offices and clinics Studios for fine arts Nursing and convalescent homes, residential and outpatient care and rehabilitation centers, and hospice Schools Places of worship Day care centers (with outdoor play area) Reception centers	Accessory dwelling units Wedding or reception centers Assisted living facilities	7.26 DU/Acre
C-1, Neighborhood Commercial	Same as O-S to include Fraternities, sororities, service and social clubs, and lodges Hospitals (with accessory medical centers)	Same as O-S to include Social service facilities	—
C-2, Limited Commercial	Same as C-1 to include Movie theaters Performing art centers Hotels and motels Vocational schools	Accessory dwelling units Wedding or reception center Social service facilities	---
C-3, General Commercial	Same as C-2	Same as C-2	—
INDUSTRIAL, MANUFACTURING AND EMPLOYMENT DISTRICTS			
M-1, Limited Industrial	Same as C-3 to include: Hotels and motels Accessory dwelling units Industrial trade schools	None	---
M-2, General Industrial	Same as M-1	None	—

TABLE 1F (Continued)
Summary of Zoning Provisions:
City of Mesa

Zoning Districts	Noise-Sensitive Uses		Minimum Lot Size or Density Units/Acre
	Permitted	Conditional, Subject to Special or Council Use Permit	
INDUSTRIAL, MANUFACTURING AND EMPLOYMENT DISTRICTS (Continued)			
PEP, Planned Employment Park	Same as C-3 to include: Hotels and motels Reception centers	None	---
TOWN CENTER DISTRICTS			
TCR-1, Town Center Residence	Single residence Foster homes Schools Places of worship Group homes for the handicapped Adult care homes Day care group homes	None	7.26 DU/Acre
TCR-2, Town Center Residence	Same as TCR-1 to include Multiple residence Boarding homes Assisted living facilities Bed and Breakfast Group foster homes	Day care centers Day group homes	7.26 DU/Acre
TCR-3, Town Center Residence	Same as TCR-2	Same as TCR-2	7.26 DU/Acre
TCB-1, Town Center Business	Movie theaters Medical offices and clinics Day care centers (with outdoor play area) Day care group homes General education Vocational schools Hotels, motels, and resorts Studios for fine arts Residential uses allowed in TCR-3 Nursing and convalescent homes, and hospice Fraternities, sororities, service and social clubs, and lodges Schools Places of worship Wedding and reception centers	Social service facilities	N/A

TABLE 1F (Continued)
Summary of Zoning Provisions:
City of Mesa

Zoning Districts	Noise-Sensitive Uses		Minimum Lot Size or Density Units/Acre
	Permitted	Conditional, Subject to Special or Council Use Permit	
TOWN CENTER DISTRICTS (Continued)			
TBC-2, Town Center Business	Movie theaters Medical offices and clinics Studios for fine arts Day care centers (with outdoor play area) Vocational schools Hospitals (with accessory group medical centers, nursing and convalescent homes, and hospice) Small animal hospitals Fraternities, sororities, service and social clubs, and lodges Schools Places of worship Wedding and reception centers	Social service facilities Accessory dwelling units Industrial trade schools	N/A
TCC, Town Center Core	Cultural and civic halls Galleries Auditoriums and arenas Studios for fine arts Medical offices Hotels, motels, and resorts Day care centers Vocational schools Multiple residence (minimum 20 unit/acres) Fraternities, sororities, service and social clubs, and lodges Schools Places of worship Wedding or reception centers	Social service facilities Accessory dwelling unit	N/A
PUBLIC FACILITIES DISTRICT			
PF, Public Facilities	Facilities owned, leased or operated by City, County, State, or Federal Governments, or agencies thereof, or school districts	N/A	10 Acres
OVERLAY ZONING DISTRICT			
BIZ, Bonus Intensity Zone	Same as those specified in the underlying zoning district	Same as those specified in the underlying zoning district	N/A
PAD, Planned Area Development	Same as those specified in the underlying zoning district	Same as those specified in the underlying zoning district	5 acres

TABLE 1F (Continued)
Summary of Zoning Provisions:
City of Mesa

Zoning Districts	Noise-Sensitive Uses		Minimum Lot Size or Density Units/Acre
	Permitted	Conditional, Subject to Special or Council Use Permit	
OVERLAY ZONING DISTRICT (Continued)			
DMP, Development Master Plan	Same as those specified in the underlying zoning district	Same as those specified in the underlying zoning district	40 Acres
AIR FIELD OVERLAY DISTRICT			
AOD-I, Airfield Sub-district one	None	Same as those specified in the underlying zoning district	N/A
AOD-II, Airfield Sub-district two	None	Same as those specified in the underlying zoning district	N/A
AOD-III, Airfield Sub-district three	None	Same as those specified in the underlying zoning district	N/A
AOD-IV, Airfield Sub-district four	None	Same as those specified in the underlying zoning district	N/A
AOD-V, Airfield Sub-district five	Single or multiple residential uses, subdivisions, hotels, or motels (established prior to 1/19/8 with 30 db NLR) Educational service, cultural centers, places of worship, and medical and health services (with 30 db NLR)	Same as those specified in the underlying zoning district	N/A
AOD-VI, Airfield Sub-district six	Single or multiple residential uses, hotels, and motels (established prior to 1/19/89 with 25 db NLR) Educational service, cultural centers, places of worship, and medical health services (with 25 db NLR) All other uses permitted within base zoning district except for residential use (with 0 db NLR)	Same as those specified in the underlying zoning district	N/A

TABLE 1F (Continued)			
Summary of Zoning Provisions:			
City of Mesa			
Zoning Districts	Noise-Sensitive Uses		Minimum Lot Size or Density Units/Acre
	Permitted	Conditional, Subject to Special or Council Use Permit	
AIR FIELD OVERLAY DISTRICT (Continued)			
AOD-VII, Airfield Sub-district seven	Single or multiple residential uses (with 20 db NLR) All other uses permitted within base zoning district (with 0db NLR)	Same as those specified in the underlying zoning district	N/A
AOD-VIII, Airfield Sub-district eight	Same as AOD-VII	Same as those specified in the underlying zoning district	N/A
AGE SPECIFIC OVERLAY ZONING DISTRICT			
AS, Age Specific Overlay Zoning	Same as those specified in the underlying zoning district	Special use permit to allow anyone under the age of 18 to reside in the area over a 90 day period	N/A
HISTORIC PRESERVATION OVERLAY DISTRICTS			
HP, Historic Preservation	Must meet State Historic Preservation or National Register of Historic Places criteria		40+ contiguous Acres
HL, Historic Landmark	Must meet State Historic Preservation or National Register of Historic Places criteria		N/A

Salt River Pima - Maricopa Indian Community

The Zoning Ordinance of the Salt River Pima-Maricopa Indian Community controls development on the Reservation. Enforcement is by the Planning Director and administered by the Building Official who issues building and construction permits, as well as certificates of occupancy. Conditional use permits are given by the Community Council after a determination of the Land Management Board.

The Salt River Pima-Maricopa Indian Community Zoning Ordinance has ten basic zones and one overlay district. The Ordinance reflects the primary agrarian economy by permitting agricultural and animal husbandry uses in all zones, although only one zone is specifically labeled as agricultural. All zones but the flood plain zone (not an overlay zone) permit agricultural uses by right.

The Agricultural zone is the only zone which permits all types of residences by right (for community members). Dwell-

ings for nonmembers are permitted only in guest ranches and resort hotels/motels. The overlay zone is a planned community overlay district.

The noise-sensitive use regulations of the ordinance are summarized in **Table 1G**.

TABLE 1G Zoning Provisions for Noise-Sensitive Uses Salt River Indian Reservation			
Zoning District	Noise Sensitive Uses		Minimum Lot Size or Density Units/Acre
	Permitted	Conditional, Subject to Special or Council Use Permit	
Agricultural	All DU's for tribal members	Seasonal Labor Camps, Education, Guest Ranches	Existing Size
Open Space	Incidental Residential Dwellings (members)	Same as A	Existing Size
Administration, Professional, Office	Offices, Resort Hotels/Motels	Hospital, Religious, Movies, Nursing Home, Libraries, Broadcast Studios	10,000 s.f. (hotels 40,000)
C-1, Neighborhood Convenience	None	None	N/A
C-2, Neighborhood Center	None	None	N/A
C-3, General Commercial	Offices, Theaters	Hospitals	10 ac.
NR, Natural Resource	None	None	N/A
IP, Planned Research	None	None	N/A
I-1, General Industrial	None	None	N/A
FP, Floodplain	None	None	N/A
PC, Planned Community, Overlay	Uses Permitted in Underlay Zone		Underlay

Maricopa County

Small portions of the study area are unincorporated and are zoned by Maricopa County. The Zoning Ordinance for the Unincorporated Area of Maricopa County is administered by

the Maricopa County Department of Planning and Development and enforced by the Maricopa County Zoning Inspector. Appeals, variances and use permits are handled by the Board of Adjustment. Special Use permits may be granted in any zone,

after public hearing, by the Board of Supervisors for certain noise-sensitive uses which are otherwise prohibited. Those uses include: drive-in theaters, group care facilities, guest ranches, mobile home parks and subdivisions, resort hotels, travel trailer and RV parks, residential health care facilities, and single and multi-family homes (in C-1, C-2, and C-3 zones).

The Maricopa County Zoning Ordinance contains 21 basic districts, including three rural residential, ten residential, five commercial, and three industrial districts. Additionally, there are four overlay zones, including a senior citizen developments zone (five acres), a manufactured house zone (3,000 s.f./d.u.), a hillside zone, and a planned development zone. The noise-sensitive use aspects of these districts are summarized in **Table 1H**.

TABLE 1H Summary of Zoning Provisions: Maricopa County			
Zoning Districts	Noise-Sensitive Uses		Minimum Lot Size or Density Units/Acre
	Permitted	Conditional, Subject to Special or Council Use Permit	
RESIDENTIAL DISTRICTS			
Rural-190	Single-family dwellings Churches Schools Libraries Museums	Group Homes	0.23 DU/Acre
Rural-70	Same as Rural-190	Same as Rural-190	0.62 Du/Acre
Rural-43	Same as Rural-190	Same as Rural-190	1 DU/Acre
R1-35, Single-family Residential	Same as Rural-190	Same as Rural-190	1.25 DU/Acre
R1-18 Single-family Residential	Same as Rural-190	Same as Rural-190	2.42 DU/Acre
R1-10, Single-family Residential	Same as Rural-190	Same as Rural-190	4.36 DU/Acre
R-1-8, Single-family Residential	Same as Rural-190	Same as Rural-190	5.45 DU/Acre
R1-7, Single Family Residential	Same as Rural-190	Same as Rural-190	6.22 DU/Acre
R1-6, Single-family Residential	Same as Rural-190	Same as Rural-190	7.26 DU/Acre
R-2, Limited Multiple-family Residential	Same as Rural-190 Duplexes Multi-family	Same as Rural-190	10.89 DU/Acre
R-3, Multiple-family Residential	Same as R-2	Same as Rural-190	14.52 DU/Acre
R-4, Multiple-family Residential	Same as R-2	Same as Rural-190	21.78 DU/Acre
R-5, Multiple-family Residential	Same as R-2	Same as Rural-190	43.56 DU/Acre
SC, Senior Citizen Overlay	Single-family Duplex Multi-family	-	5 acres

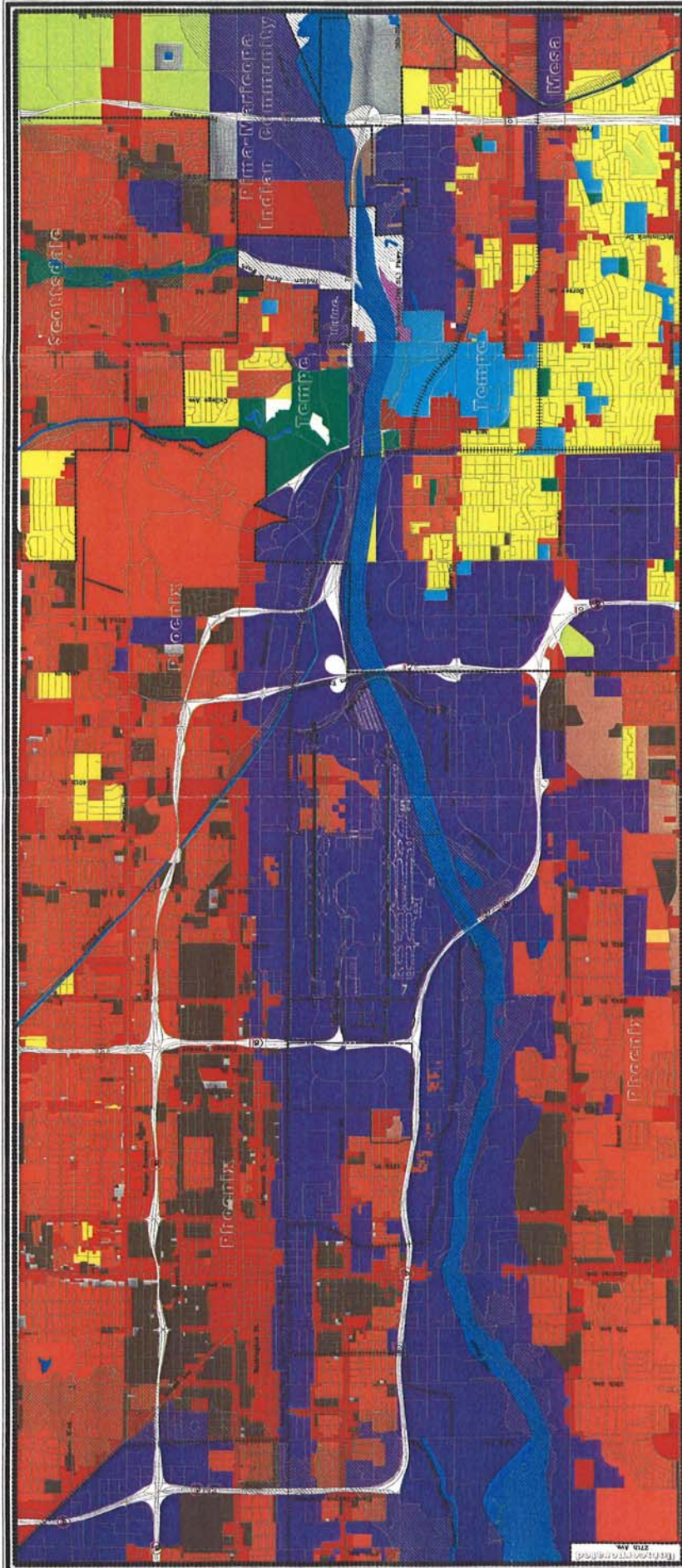
TABLE 1H (Continued)
Summary of Zoning Provisions:
Maricopa County

Zoning Districts	Noise-Sensitive Uses		Minimum Lot Size or Density Units/Acre
	Permitted	Conditional, Subject to Special or Council Use Permit	
RESIDENTIAL DISTRICTS (Continued)			
MHR, Manufactured House Residential Overlay	Manufactured Housing	-	Same as the primary zoning district
COMMERCIAL DISTRICTS			
C-S, Planned Shopping Center	Uses permitted in original Rural or Residential underlying zone	-	5 acres
C-O, Commercial Office	-	-	3.63 DU/Acre
C-1 Neighborhood Commercial	Schools Day nurseries Nursery schools Churches	-	7.26 DU/Acre
C-2, Intermediate Commercial	Same as C-1 Theaters	-	7.26 DU/Acre
C-3, General Commercial	Same as C-2	-	7.26 DU/Acre
INDUSTRIAL DISTRICTS			
IND-1, Planned Industrial	-	-	1.25 DU/Acre
IND-2, Light Industrial	Caretakers residence	-	7.26 DU/Acre
IND-3, Heavy Industrial	-	-	7.26 DU/Acre
PLANNING DISTRICTS			
PD, Planned Development Overlay	Same as underlying zoning district	-	Same as underlying zoning district

Summary of Zoning Classifications

Exhibit 1N shows the generalized zoning pattern in the area. The various zoning districts of each jurisdiction have been combined into generalized zoning categories. **Table 1J** summarizes the grouping of actual zoning districts within the Study Area for purposes of the exhibit. The "Rural Residential" category applies to districts with densities of 1.0 dwelling unit or less per

acre. The "Large Lot Residential" category applies to single-family zones with densities of 1.1 to 2.0 units per acre. The "Small Lot Residential" category applies to single-family and multi-family zones with densities of 2.1 to 5 units per acre. The "Medium Density Residential" category applies to single-family and multi-family zones with densities of 5.1 to 15 units per acre. Finally, the "High Density Residential" category applies to multi-family zones with densities of 15



LEGEND

- Airport Property
- Municipal Boundaries
- Study Area
- Agriculture
- Rural Residential (0-1 du/ac)
- Large Lot Residential (11-2 du/ac)
- Small Lot Residential (2.1-5 du/ac)
- Medium Density Residential (5-15 du/ac)
- High Density Residential (15+ du/ac)
- Hotels, Motels, & Resorts
- Commercial / Office
- Public
- Park & Open Space
- Water
- Industrial
- Planned Area District
- Vacant
- 100-Year Floodplain
- Noise-Sensitive Institutions

Source: Maricopa County, City of Phoenix, City of Tempe, City of Mesa, City of Scottsdale, and Pima-Maricopa Indian Community Zoning Maps. Updated By Coffman Associates.



TABLE 1J
Classification of Zoning Districts

Generalized Zoning Category	City of Phoenix	City of Tempe	City of Scottsdale	City of Mesa	Salt River Ind. Com.	Maricopa County
Rural Residential (0-1 du/ac)	S-1, S-2, RE-43		R1-190, R1-130	R1-90, R1-43		Rural-190, Rural-70, Rural-43
Large Lot Residential (1.1-2 du/ac)	RE-24, RE-35, R1-18		R1-43, R1-35	R1-35		R1-35
Small Lot Residential (2.1-5 du/ac.)	R1-14, R1-10, R1-8	R1-15, R1-10, R1-8, R1-7, R1-6	R1-8, R1-10	R1-15, R1-9		R1-18, R1-10
Medium Density Residential (5.1-15 du/ac.)	R1-6, R-2, R-3, R-4A	R1-5, R1-4, R-2, R-3, MHS, RMH, TP	R1-7, R-2, R-3, R-4, M-H	R1-6, R-2, R-3, R-4		R1-8, R1-7, R1-6, R-2, R-3
High Density Residential (15+ du/ac.)	R-3A, R-4, R-5	R-3R, R-4	R-5			R-4, R-5
Hotel, Motel, & Resort	RH		R-4R			
Commercial	C-O, G-O, M-O, C-1, C-2, C-3, RSC	C-1, PCC-1, C-2, PCC-2, CCD, MG, RCC	C-S, C-1, C-2, C-3, C-4, SS, C-O, PcoC, PNC, PCC, PRC, D	O-S, C-1, C-2, C-3	C-1, C-2, C-3	C-S, C-O, C-1, C-2, C-3
Industrial and Transportation	CP, A-1 A-2	IBD, I-1, I-2, I-3	I-G, I-1	M-1, M-2	IP, I-1	IND-1, IND-2, IND-3
Open Space	N/A	N/A	N/A	N/A	N/A	N/A
NOTES:	When approving a PAD, the City of Phoenix indicates the development's overall zoning density by following the designation with a number. PAD.2 indicates a density of 1 du/ac; PAD.5 indicates 2.2 du/ac; and PAD.11 indicates 10 du/ac. The City of Phoenix also uses the designation of IND.PK and CP/GCP to indicate areas of proposed industrial or business parks, for which specific plans have not been approved.					

dwelling units or more per acre. The "Commercial" and "Industrial" categories include commercial and industrial districts, respectively. The "Resort" category applies to districts permitting resort facilities. The "Open Space" category includes districts which permit only open space uses or very non-intensive development and has been used here to indicate where golf courses or parks have been built or planned.

SUBDIVISION REGULATIONS

Subdivision regulations apply in cases where a parcel of land is proposed to be divided into lots or tracts. They are established to ensure the proper arrangement of streets, adequate and convenient open space, efficient movement of traffic, adequate and properly-located utilities, access for fire-fighting apparatus, avoidance of congestion, and the orderly and efficient layout and use of land.

Subdivision regulations can be used to enhance noise-compatible land development by requiring developers to plat and develop land so as to minimize noise impacts or reduce the noise sensitivity of new development. The regulations can also be used to protect the airport proprietor from litigation for noise impacts at a later date. The most common requirement is the dedication of a noise or aviation easement to the local government by the land subdivider as a condition of development approval. The easement authorizes overflights of the property, with the noise levels attendant to such operations. It also requires the developer to provide noise insulation in the construction of the buildings.

While Phoenix, Tempe, Scottsdale, Mesa, and Maricopa County regulate the subdivision of land, none of them require special development considerations in the vicinity of the Phoenix Sky Harbor International Airport.

BUILDING CODES

Building codes regulate the construction of buildings, ensuring that they are built to safe standards. Building codes may be used to require sound insulation in new residential, office, and institutional buildings when warranted by existing or potential high aircraft noise levels. Phoenix, Tempe, Scottsdale, Mesa, and the Salt River Pima-Maricopa Indian Community have adopted versions of the Unified Building Code (UBC). None of the jurisdiction have adopted additional regulations related to noise in the vicinity of Phoenix Sky Harbor International Airport. Maricopa County does, however, enforce sound attenuation

standards as part of their Building Codes for subdivisions within the "noise impact" areas around military airports.

PREVIOUS NOISE COMPATIBILITY STUDY

The previous Noise Compatibility Plan was completed in 1989. The primary objective of the Plan was to improve the compatibility between Sky Harbor aircraft operations and noise-sensitive land uses within the airport environs, while allowing the airport to continue to serve its role in the community, region, and nation. The Plan contained three closely related programs aimed at satisfying this objective: the aviation noise abatement plan, land use management plan, and implementation plan.

There are nine short term and two long term noise abatement measures recommended in the previous Plan.

The short term recommendations include:

- **NA-1:** Continue the runway use program calling for the equalization of departure operations to the east and west for both the daytime and nighttime.

Status: Runway use is determined by the direction of the wind. During periods of calm winds (less than 5 knots), the airport can operate in either direction. It is during calm wind periods that runway use can be shifted to balance runway use activity. However, switching runway use direction can be difficult because changes generally cannot occur in a timely fashion during high activity periods due to the large number of

aircraft that have to be re-sequenced. **Table 1K** depicts runway use direction

data between November 1, 1997 and November 1, 1998.

Direction	Day		Night		Total	
	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures
West	81,890 (34%)	145,538 (62%)	8,661 (45%)	10,144 (40%)	90,551 (35%)	155,682 (60%)
East	158,962 (66%)	89,200 (38%)	10,586 (55%)	15,216 (60%)	169,548 (65%)	104,416 (40%)

Source: Sky Harbor Permanent Noise and Flight Track Monitoring System.

- **NA-2:** Request airlines adopt the use of FAA Advisory Circular (AC) 91-53 or equivalent replacement noise abatement departure procedures by jet air carrier aircraft. Request that low bypass ratio aircraft reduce power to 1.7 EPR or less during the thrust reduction mode and that high bypass ratio aircraft reduce power to normal climb thrust.

Status: AC 91-53 was superceded in 1993 by AC 91-53A. FAA developed AC 91-53A to provide procedures for establishing noise abatement departure profiles (NADP). Two types of NADPs are described in AC 91-53A, close-in and distant. The close-in NADP provides noise reduction for noise-sensitive areas in close proximity to the airport. The distant NADP is intended to provide noise reduction over all other areas. These two procedures are differentiated by their use of thrust and flap settings. Most air carriers, including the predominant carriers at Sky Harbor (America West and Southwest Airlines), uses a variation of these NADPs as part of their standard operating procedures for departures.

- **NA-3:** Request the use of NBAA "close in" or comparable departure procedures by general aviation

business jet aircraft when departing from all runways.

Status: The Aviation Department recommends the use of NBAA procedures for business jet aircraft.

- **NA-4:** Implement a left turn by all jets and large propeller aircraft departing Runway 26L to a heading of 245 degrees upon crossing the middle marker for Runway 8R approaches. Maintain that heading until reaching 13 DME from the SRP VORTAC. To enhance traffic separation, assign Runway 26R/L departures based on the SID procedure selected. Assign Runway 26L to aircraft using left-turning or straight-out SIDs. Assign Runway 26R to aircraft using right-turning SIDs.

Status: The Air Traffic Control published a SID procedure from Runway 26L requiring a turn to a 240-degree heading. The FAA does turn a majority of the departures onto the 240-degree heading; however, due to pilot requests, approximately five percent of aircraft still depart straight-out. These "straight-out" departures are only granted when airport traffic volume is low so as not to cause traffic delays.

- **NA-5:** Implement a departure route procedure which overflies the Salt River to a position one mile west of the SRP VORTAC for use by all jets and large propeller aircraft departing Runways 8R/L (One DME departure). **Status:** This procedure is reflected in SIDs published for Sky Harbor International Airport. Since the VORTAC was moved to allow for the construction of the Price Freeway, the procedure is now called the 4 DME Departure, but the intent of the procedure remains unchanged. In 1996 the City of Phoenix installed a flight track and noise monitoring system to monitor aircraft compliance with this procedure. On June 15, 1998, the Airport implemented a formal compliance program for the 4 DME Departure procedure. The program consists of notifying carriers of their deviation from the 4 DME procedure and requesting an explanation for the deviation. During 1999, over 97 percent of aircraft departing Runways 8R/L complied with this procedure.
 - **NA-6:** Standardize initial departure and final approach routes for helicopter traffic using Sky Harbor. **Status:** There are standard departure and approach procedures for helicopters when landing on the helipad. (See Exhibit 1H).
 - **NA-7:** Continue existing runup policy. **Status:** Engine runups are prohibited between the hours of 11 p.m. and 5 a.m. A hush house is being considered that would allow engine runups 24-hours a day, while reducing runup noise at all times.
 - **NA-8:** Encourage airlines to utilize Stage 3 aircraft, especially for late night departures. **Status:** In 1999, 85 percent of the aircraft operating at Sky Harbor International Airport were Stage 3. As of January 1, 2000, 100 percent of the aircraft operating at Sky Harbor International Airport were Stage 3.
 - **NA-9:** Encourage the use of established published visual approaches during VFR conditions, traffic permitting. **Status:** There are published visual approaches for Runways 26L and 8R. The FAA utilizes these approaches whenever weather and traffic permit.
- The long term noise abatement recommendations are based upon the presence the of third parallel Runway 7-25 located on the south side of the existing south parallel runway. Runway 7-25 is currently under construction and therefore the following long term recommendations have not been implemented.
- **NA-10:** Implement turns by all jets and large propeller aircraft departing new parallel Runway 25 to a heading of 245 degrees upon crossing the middle marker for Runway 7 approaches. If no middle marker is constructed, the turn location should be defined as 7.1 miles west of the SRP VORTAC. Maintain that heading until reaching 13 DME from the SRP VORTAC.
 - **NA-11:** Implement a departure route procedure which overflies the Salt River to a position one mile west of the SRP VORTAC for use by all jets and large propeller aircraft departing Runway 7.

Five land use management strategies were recommended in the Plan. The first four recommendations involve land use planning strategies and the fifth recommendation is a aircraft noise mitigation measure.

LU-1: Recommended noise overlay zoning intended to establish special development standards based on land use compatibility guidelines from F.A.R. Part 150 within the 1992 abated noise contours.

Status: Noise overlay zoning has not been adopted by Phoenix or Tempe. The establishment of noise overlay zoning was in the process of being implemented when the Airport Noise and Capacity Act (ANCA) of 1990 requiring the phase out of Stage 2 aircraft over 75,000 pounds by the year 2000 was passed. The requirements of ANCA could potentially cause the noise contours to decrease. For this reason, overlay zoning was put on hold until new contours could be developed based on a quieter national aircraft fleet.

LU-2: Recommended Phoenix and Tempe seek fair disclosure legislation to permit a local fair disclosure rule.

Status: During the legislative process, an informal disclosure effort was recommended for the Airport, Phoenix, and Tempe to inform the public, government officials, real estate people, and lenders about the airport and the need for land use compatibility. Fair disclosure legislation was proposed but failed to pass in its full form due to opposition from the real estate industry. The legislation that did pass states that airports can have the noise/overflight effect listed with the County Recorder after public notice and a hearing. Again, due to ANCA and the potential

for smaller noise contours, this program has been put on hold until new contours are developed.

LU-3: Recommended Phoenix and Tempe adopt the final Part 150 Study as the airport compatibility element of their general plans.

Status: The Phoenix General Plan references the Sky Harbor Part 150 and aircraft noise compatibility within the Safety Element. The Tempe General Plan references the Sky Harbor Part 150 in Objective 4 of the Land Use Element. Objective 4 states that acceptable land use measures should be implemented as set forth in the Phoenix Sky Harbor Part 150 Noise Compatibility Plan.

LU-4: Recommended that guidelines be adopted for planning commissions, boards of zoning adjustment, and planning departments in Phoenix and Tempe requiring them to consider the impact of airport noise on community development proposals and applications for variances and special uses.

Status: Phoenix and Tempe have not adopted special guidelines for reviewing the effect of airport noise on community development proposals or applications for variances and special uses. Both the planning and development services departments coordinate with the aviation department planner when proposals for rezoning or construction occur in the vicinity of the airport.

LU-5: Recommended soundproofing existing residents and schools within the 1992 abated 70 DNL noise contour in the near term. The long term soundproofing program covered homes in the higher levels of the 65-70 DNL noise contour. Homes in

areas zoned for industrial or commercial were excluded from the program.

Status: One hundred fifty-three homes have been sound-insulated to date. Another 250 homes are scheduled for sound insulation in the year 2000 and are currently in the design process. Future plans call for sound insulating 500 homes per year.

The Implementation Program, the third element of the Noise Compatibility Plan, has three recommendations; noise monitoring and contour updating, complaint response, and noise compatibility plan review and evaluation.

The noise monitoring and flight track system is operational, and DNL noise levels are calculated for each monitoring site every quarter. This

system is also used to respond to complaints, track compliance with the 4 DME procedure, and analyze trends.

SUMMARY

The information discussed in this chapter provides a foundation upon which the remaining elements of the planning process will be constructed. Information on current airport facilities and utilization serve as a basis for the development of the aircraft noise analyses during the next phase of the study. This information will, in turn, provide guidance to the assessment of potential changes to aviation facilities or procedures necessary to meet the goals of the planning process. The inventory of the airport environs will allow the assessment of airport noise impacts.

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