

Chapter One

INVENTORY

The inventory of existing conditions is the initial step in the preparation of the Scottsdale Airport Master Plan. The inventory will serve as an overview of the airport, its facilities and services, its role in the regional and national airport systems, and the relationship to past development around the airport.

The Master Plan requires a comprehensive collection and evaluation of data relating to Scottsdale Airport. This chapter includes the following information:

- Overview of the airport's role in the regional, state, and national aviation systems.
- Existing conditions at the airport, including descriptions of airport facilities, regional airspace, air traffic activity, and other regional airports.

- Background information regarding the airport and surrounding area, including airport location, history, regional climate, and adjacent land uses.
- Area's socioeconomic profile and an inventory of environmental conditions.

The information outlined in this chapter was obtained through on-site inspections of the airport, including interviews with airport management, airport tenants, and representatives of various government agencies. Additional information and documents were provided by the Federal Aviation Administration (FAA), Arizona Department of Transportation – Multi-Modal Planning Division – Aeronautics Group (ADOT-MPD – Aeronautics Group), and the City of Scottsdale Aviation Department.



AIRPORT PLANNING

Airport planning exists on many levels including national, state, regional, and local. Each level has a different emphasis and purpose. On the national level, Scottsdale Airport is included in the *National Plan of Integrated Airport Systems* (NPIAS) and within an FAA report published in 2012 entitled *General Aviation Airports: A National Asset*. On the state level, the airport is included in the *2008 Arizona State Airports System Plan* (SASP). At the regional level, Scottsdale Airport is included in the Maricopa Association of Government's (MAG) *Regional Transportation Plan: 2010 Update* (RTP). An Airport Master Plan is the primary local airport planning document. The last Master Plan was completed in 1997.

NATIONAL LEVEL

The role of the federal government in the development of airports cannot be overstated. Many of the nation's existing airports were either initially constructed by the federal government or their development and maintenance was partially funded through various federal grant-in-aid programs to local communities. In large measure, the system of airports existing today is due, in part, to the existence of federal policy that promotes the development of civil aviation. As part of a continuing effort to develop a national airport system to meet the needs of civil aviation and promote air commerce, the United States Congress has continually maintained a national plan for the development and maintenance of airports.

On the national level, Scottsdale Airport is included in the NPIAS as a reliever airport. This designation includes 268 airports nationwide. Reliever airports are

located in major metropolitan areas and serve to provide general aviation pilots with an attractive alternative to using busy commercial service airports. Overall, the NPIAS identifies 3,330 existing airports which are considered significant to the national air transportation system. The NPIAS is published and used by the FAA in administering the Airport Improvement Program (AIP), which is the source of federal funds for airport improvement projects across the country. The AIP program is funded exclusively by user fees and user taxes, such as those on fuel and airline tickets. The 2013-2017 NPIAS estimates that \$42.5 billion worth of needed airport improvements are eligible for AIP funding across the country over the next five years. An airport must be included in the NPIAS to be eligible for federal funding assistance through the AIP.

The NPIAS supports the FAA's strategic goals for safety, system efficiency, and environmental compatibility by identifying specific airport improvements. The current issue of the NPIAS identifies approximately \$10.6 million in development needs over the next five years for Scottsdale Airport. This figure is not a guarantee of federal funding; instead, this figure represents development needs as presented to the FAA by the airport administration in the annual airport capital improvement program. Of the \$42.5 billion in airport development needs identified by the NPIAS nationally, approximately seven percent, or approximately \$3 billion, is listed for the 268 reliever airports, which includes Scottsdale Airport.

Airports that apply for and accept AIP grants must adhere to various grant assurances. These assurances include maintaining the airport facility safely and efficiently in accordance with specific conditions. The duration of the assurances depends on the type of airport, the use-

ful life of the facility being developed, and other factors. Typically, the useful life for an airport development project is a minimum of 20 years. Thus, when an airport accepts AIP grants, they are obligated to maintain that facility in accordance with FAA standards for at least that long.

In 2012, the FAA conducted a study of general aviation airports and published the findings in the *General Aviation Airports: A National Asset* document. The study analyzed the important role general aviation airports play in the nation's economy, society, and aviation system.

The report classifies general aviation airports into four categories primarily based on their activity levels: national, regional, local, and basic. These classifications help guide policy makers when making decisions and better represent the economic contributions and diverse roles that general aviation airports provide to the national aviation system and their communities.

Of the 2,952 general aviation airports included in this study, 497 were not classified because their activity levels and characteristics did not clearly fit into one of the groups. These airports will require further study.

This report has been integrated into the NPIAS. General aviation activity contributed \$38.8 billion in economic output in 2009. When factoring in manufacturing and visitor expenditures, general aviation accounted for an economic contribution of \$76.5 billion.

While Scottsdale Airport is classified in the NPIAS as a reliever airport, it is categorized as one of the 84 "national" airports in the *General Aviation Airports: A National Asset* report. Scottsdale Airport

is one of two airports in Arizona with this national designation. The FAA describes national airports as those that support diverse economies by connecting communities to national and international markets. The airports have very high levels of activity and service a wide range of aircraft including sophisticated business jets. They often provide an alternative for general aviation operations to avoid congested commercial service airports. On average, over 200 aircraft are based at national airports. **Exhibit 1A** summarizes the key findings of the NPIAS and General Aviation National Asset studies.

STATE LEVEL

At the state level, Scottsdale Airport is included in the SASP, which includes 83 airports, 59 of which are NPIAS-classified. The study classifies airports in the state by role. **Table 1A** presents the functions of the airport roles, including the reliever classification for Scottsdale Airport, highlighted in bold text.

The purpose of the SASP is to provide a framework for the integrated planning, operation, and development of Arizona's aviation assets. The SASP defines the specific role of each airport in the state's aviation system and establishes funding needs. The SASP provides policy guidelines that promote and maintain a safe aviation system in the state, assess the state's airport capital improvement needs, and identify resources and strategies to implement the plan. Of the 83 airports in the SASP, 11 are designed as commercial service airports, eight as reliever airports, 29 as general aviation – community airports, 25 as general aviation – rural airports, and 10 as general aviation – basic airports.

**TABLE 1A
Airport Roles
Arizona Airports Functional Roles**

Role	Typical Airport Reference Code	Function
Commercial Service	Consistent with Master Plan	Enplane 2,500 or more passengers annually and receive scheduled passenger service.
Reliever	Up to C/D-III	Relieve congestion at a commercial service airport.
General Aviation - Community	Up to B-II	Serve regional economies, connecting state and national economies, and serve all types of general aviation aircraft.
General Aviation - Rural	Up to B-I	Serve a supplemental role in local economies, primarily serving smaller business, recreational, and personal flying.
General Aviation - Basic	A-I	Serve a limited role in the local economy, primarily serving recreational and personal flying.

Source: 2008 Arizona State Airports System Plan

REGIONAL LEVEL

At the regional level, Scottsdale Airport is included in the MAG RTP. The RTP examines the future air transportation needs of the greater Phoenix metropolitan area with the aim of maximizing the transportation and economic benefits of airports, while minimizing any adverse impacts related to congestion, the environment, and airspace.

According to the regional aviation profile in the RTP, of the 16 airports, two are established as commercial service airports, seven are classified as relievers, and six are given general aviation status. Luke Air Force Base is also included as the only military airport. Scottsdale Airport is classified as a reliever airport in the RTP, identifying it as a facility that relieves congestion at a commercial service airport by providing an alternative for general aviation operations.

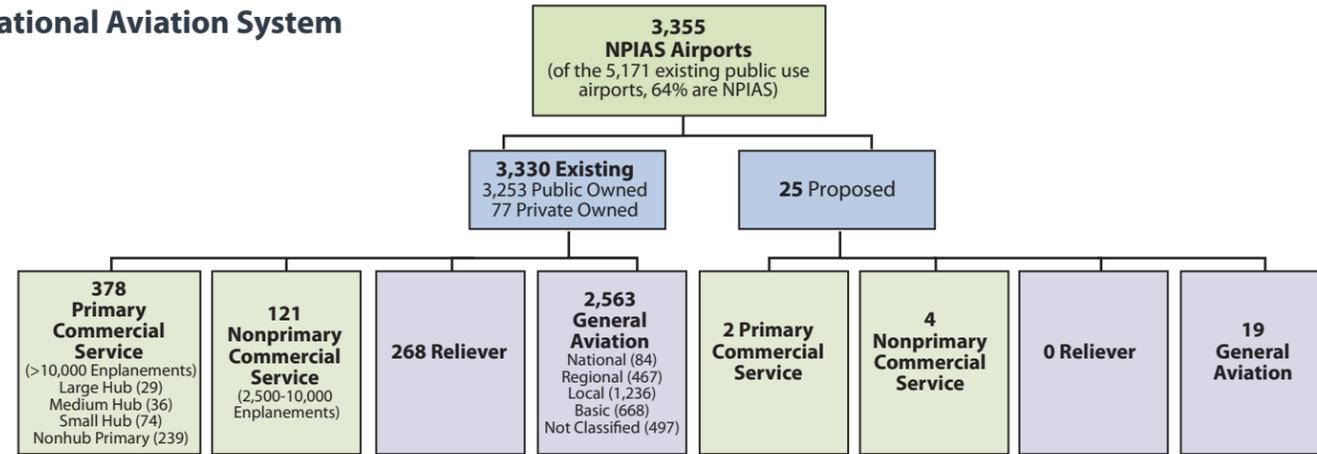
LOCAL LEVEL

The Airport Master Plan is the primary planning document at the local level. The Master Plan is intended to provide a 20-year vision for airport development based on aviation demand forecasts. Over time, the forecast element of the Master Plan typically becomes less reliable due to changes in aviation activity and/or the economy.

The most recent update to the Scottsdale Airport Master Plan was done in 1997. Therefore, this is an appropriate time to update the Master Plan and revisit development assumptions from the previous planning study.

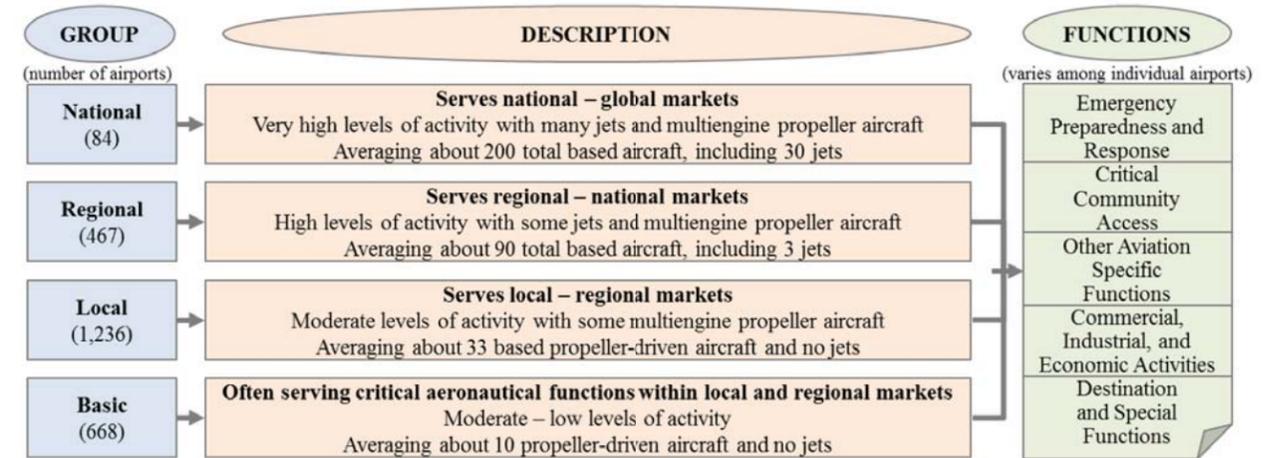
One component of the Airport Master Plan is a set of Airport Layout Plan (ALP) drawings that are used to depict existing and future development on the airport. It should be noted that the airport has continually updated its ALP drawings as needed, with the most recent version completed in 2012.

National Aviation System

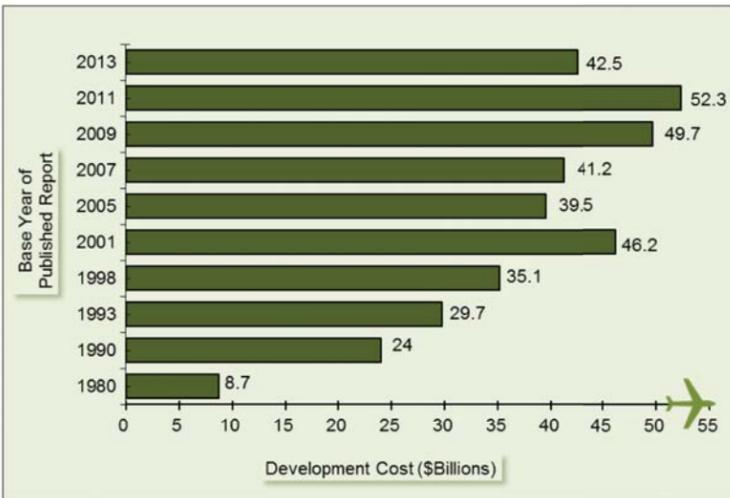


There are more than 19,800 aviation facilities in the United States. 5,171 of those are public use facilities. The National Plan of Integrated Airport Systems (NPIAS) includes 3,355 public use landing facilities, of which 3,330 are existing and 25 are proposed.

General Aviation Airports



The FAA has further categorized general aviation airports to help guide policy makers when making decisions regarding airport development.

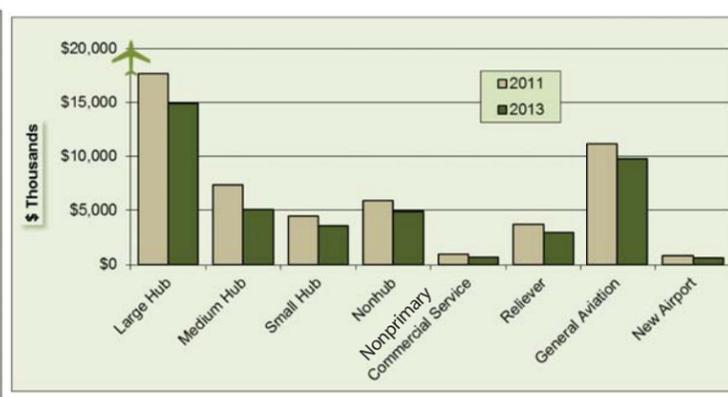
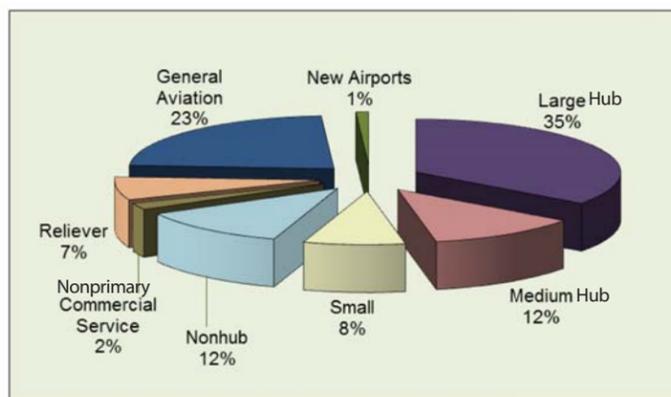


The FAA estimates that over the next five years, (2013-2017), there will be \$42.5 billion airport infrastructure projects eligible for Airport Improvement Program (AIP) funding.

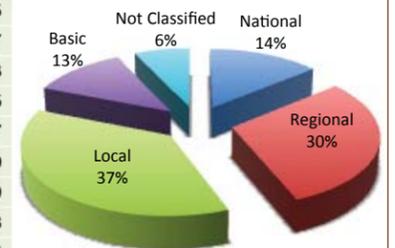
Emergency Preparedness and Response	<ul style="list-style-type: none"> Aeromedical Flights Law Enforcement/National Security/Border Security Emergency Response Aerial Fire Fighting Support Emergency Diversionary Airport Disaster Relief and Search and Rescue Critical Federal Functions 	
Critical Community Access	<ul style="list-style-type: none"> Remote Population/Island Access Air Taxi/Charter Services Essential Scheduled Air Service Cargo 	
Other Aviation Specific Functions	<ul style="list-style-type: none"> Self-Piloted Business Flights Corporate Flight Instruction Personal Flying Charter Passenger Services Aircraft/Avionics Manufacturing/Maintenance Aircraft Storage Aerospace Engineering/Research 	

Commercial, Industrial, and Economic Activities	<ul style="list-style-type: none"> Agricultural Support Aerial Surveying and Observation Low-Orbit Space Launch and Landing Oil and Mineral Exploration/Survey Utility/Pipeline Control and Inspection Business Executive Flight Service Manufacturing and Distribution Express Delivery Service Air Cargo 	
Destination and Special Events	<ul style="list-style-type: none"> Tourism and Access to Special Events Intermodal Connections (rail/ship) Special Aeronautical (skydiving/airshows) 	

General aviation airports provide important services for both local communities and the national aviation system.



Category	National	Regional	Local	Basic	Not Classified	TOTAL
Safety	\$75,705,614	\$86,710,307	\$70,021,759	\$16,866,556	\$7,026,556	\$256,330,795
Security	\$30,588,072	\$70,028,017	\$116,979,036	\$54,635,381	\$42,428,521	\$314,659,027
Reconstruction	\$566,808,683	\$1,151,264,524	\$1,408,160,656	\$505,127,646	\$225,522,854	\$3,856,884,363
Standards	\$824,339,636	\$2,215,374,810	\$2,967,664,186	\$1,013,246,603	\$533,257,040	\$7,553,882,275
Environmental	\$15,797,438	\$9,895,920	\$25,330,900	\$13,827,647	\$4,270,342	\$69,122,247
Noise	\$59,033,952	\$12,492,106	\$4,410,211	\$0	\$0	\$75,936,269
Capacity	\$167,431,296	\$218,153,518	\$168,522,546	\$56,143,576	\$32,282,883	\$642,533,819
Terminal	\$48,187,551	\$61,979,002	\$70,218,522	\$21,798,925	\$9,867,686	\$212,051,688
Access	\$47,984,641	\$109,815,827	\$104,412,928	\$42,708,943	\$13,451,896	\$318,374,235
Other	\$7,571,000	\$27,813,731	\$49,226,059	\$26,995,300	\$15,686,691	\$127,292,781
Total	\$1,843,447,883	\$3,963,527,762	\$4,984,946,803	\$1,751,350,577	\$883,794,474	\$13,427,067,499



The 449 commercial service (primary and nonprimary) airports account for 69% of the total development in the NPIAS. The 2,563 general aviation and 268 reliever airports account for 30% of development.

Airports in the general aviation categories account for \$13.4 billion of the \$42.5 billion in identified development need over the next five years.

AIRSIDE FACILITIES

Airside facilities are those which facilitate the movements between the air and ground. Generally, these facilities include the runway, taxiways, airfield lighting and marking aids, weather and communication aids, and navigational aids. **Exhibit 1B** depicts airside facilities on an aerial photograph for visual reference. Airside facility data is discussed in detail in the following sections.

RUNWAY 3-21

Scottsdale Airport is served by one runway. Runway 3-21 is 8,249 feet long by 100 feet wide and is orientated northeast to southwest. The landing threshold for Runway 3 is displaced 739 feet. The Runway 21 landing threshold is displaced 400 feet. The displaced landing thresholds are utilized in order to provide for FAA required safety areas surrounding the usable runway. **Table 1B** presents data specific to the runway. Other than the lengths and widths of the runway surface, the following items are included, as detailed:

- *Pavement type* – Indicates the surface material type.
- *Pavement condition* – FAA’s current rating of runway pavement material.
- *Pavement strength* – Based on the construction of the pavement, a runway can provide differing load bearing capacities. Single wheel gear loading (SWL) refers to having one wheel per landing gear strut. Dual wheel loading (DWL) and dual tandem wheel loading

(DTWL) include the design of aircraft landing gear with additional wheels on each landing gear strut, which distributes the aircraft weight across more of the pavement surface; thus, the surface itself can support a greater total aircraft weight.

- *Pavement markings* – Pavement markings aid in the movement of aircraft along airport surfaces and identify closed or hazardous areas on the airport. Runway markings provide pilots with designation and centerline stripes in basic form, while non-precision markings add threshold bars, edges, and touchdown zones.
- *Lighting* – Runway lighting is placed near the pavement edge to define the lateral limits of the pavement surface. Medium intensity runway lighting (MIRL) is typical of general aviation airports. Runway end lights also demark end of pavements.
- *Elevation* – Each runway end is situated at a specific point above mean sea level (MSL). Those listed on the exhibit identify the MSL location of each runway end.
- *Gradient* – Runway gradient describes the effective slope of a runway surface. Runway pavement should be moderately sloped to allow for effective drainage, but not so as to reduce visibility from end to end.
- *Traffic Pattern* – Runway traffic patterns are established to control movements in the immediate vicinity of the airport area. Left-hand patterns are standard and allow the pilot to make left-hand turns throughout the traffic pattern.

TABLE 1B Runway Data Scottsdale Airport	
	Runway 3-21
Length	8,249 feet
Width	100 feet
Displaced Threshold	Runway 3 – 739 feet Runway 21 – 400 feet
Pavement Type	Asphalt
Pavement Condition	Good
Pavement Strength	45,000 pounds SWL 75,000 pounds DWL
Markings	Non-Precision
Lighting	MIRL
Elevation	1,444.3 feet MSL (Runway 3) 1,510.3 feet MSL (Runway 21)
Runway Gradient	0.81%
Traffic Pattern	Left (Runway 3) Right (Runway 21)
SWL - Single Wheel Loading DWL - Dual Wheel Loading MIRL - Medium Intensity Runway Lighting MSL - Mean Sea Level	
Source: Airport Facility Directory - Southwest U.S. (March 2013); FAA Form 5010-1, <i>Airport Master Record</i> ; Airport Layout Plan (March 2012)	

Runway Declared Distances

Declared distances are the effective runway length that the airport operator declares available for takeoff run, takeoff distance, accelerate-stop distance, and landing distance requirements. Pilots utilize these measurements in their runway length calculations. The four declared distances are defined as the following:

Takeoff run available (TORA) – The runway length declared available and suitable for the ground run of an aircraft taking off.

Takeoff distance available (TODA) – The TORA plus the length of any remaining

runway or clearway beyond the far end of the TORA. The full length of TODA may need to be reduced because of obstacles in the departure area.

Accelerate-Stop Distance Available (ASDA) – The runway plus stopway length declared available and suitable for the acceleration and deceleration of an aircraft aborting a takeoff.

Landing Distance Available (LDA) – The runway length declared available and suitable for landing an aircraft.

Declared distances may be used to obtain additional runway safety area (RSA) and/or runway object free area (ROFA) prior to the runway’s threshold (the start of the LDA) and/or beyond the stop end of the LDA and ASDA, to mitigate unacceptable incompatible land uses in the runway protection zone (RPZ), to meet runway approach and/or departure surface clearance requirements, or to mitigate environmental impacts. Declared distances may also be used as an incremental improvement technique when it is not practical to fully meet these requirements listed above. **Table 1C** presents the published declared distances at Scottsdale Airport.

The TORA and TODA are often equal to the actual runway length which is currently the case at Scottsdale Airport. The ASDA and LDA are the primary considerations in determining the runway length available for use by aircraft, as these calculations consider providing full RSA. A detailed analysis of the declared distances as they relate to FAA design standards is presented later in the study.

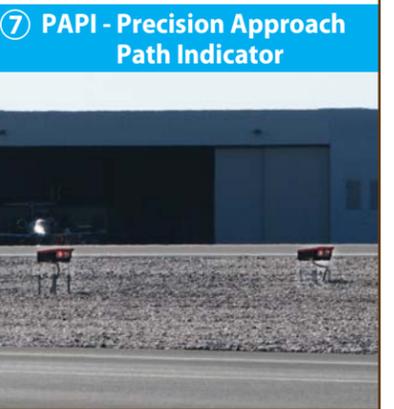
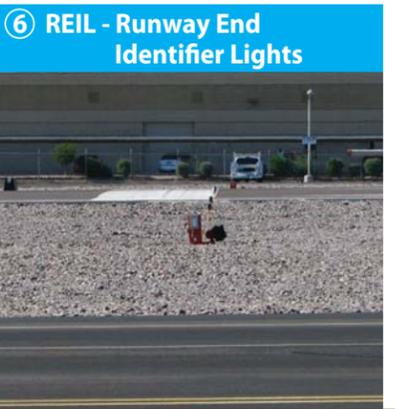
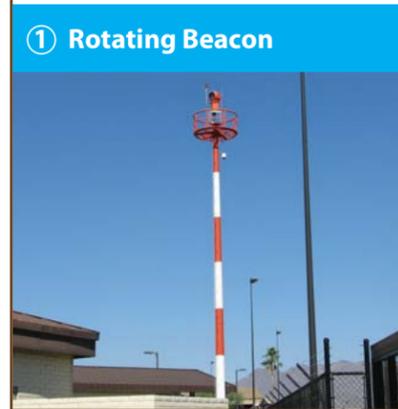
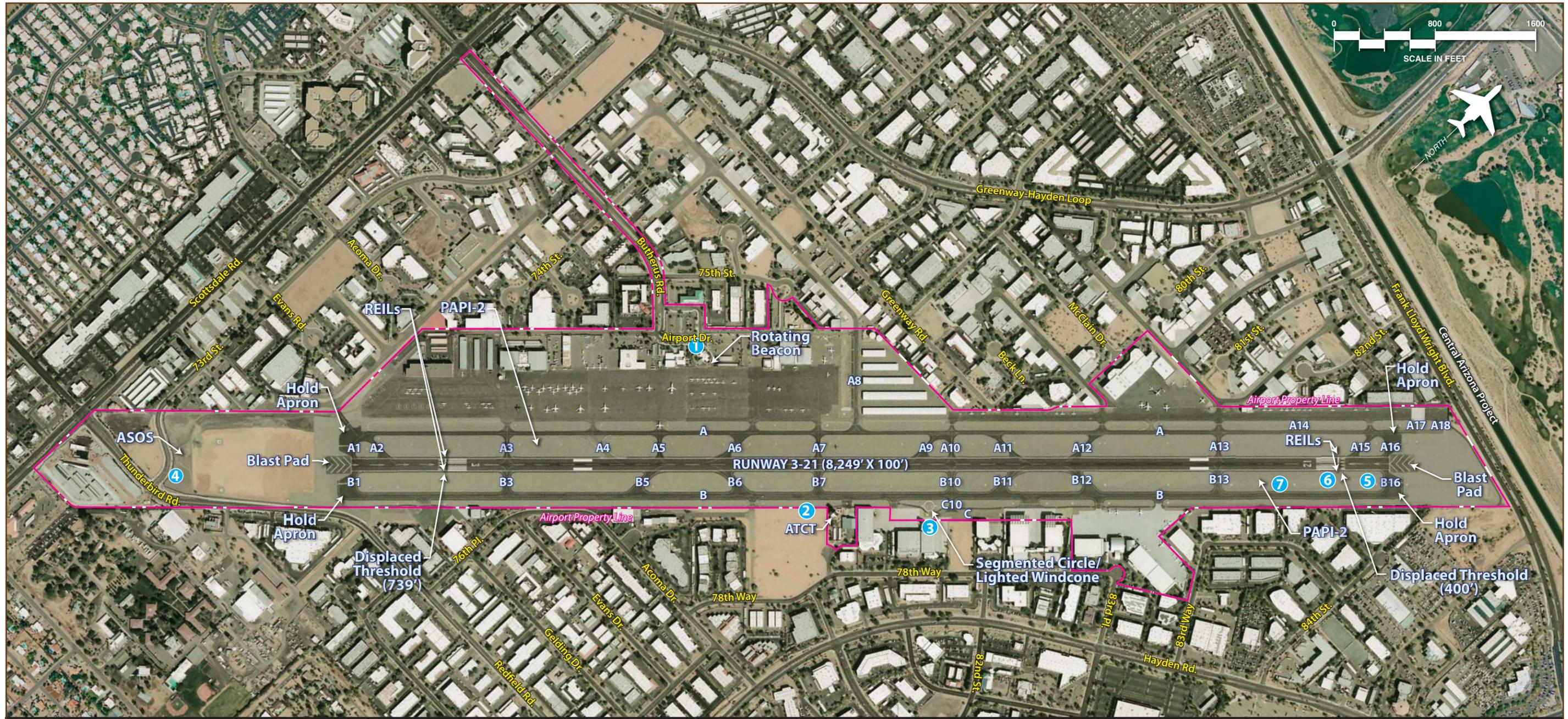


TABLE 1C
Published Declared Distances
Scottsdale Airport

Declared Distances (feet)	Runway	
	3	21
Takeoff Run Available (TORA)	8,249	8,249
Takeoff Distance Available (TODA)	8,249	8,249
Accelerate-Stop Distance Available (ASDA)	7,849	8,069
Landing Distance Available (LDA)	7,110	7,669

Source: Airport Records

Note: The airport has recently made improvements on the southwest side of the airfield that results in additional RSA being provided beyond the departure end of Runway 21. These improvements have been coordinated with the FAA and result in additional ASDA and LDA offered on Runway 21.

TAXIWAYS

The airfield taxiway system at Scottsdale Airport includes parallel taxiways as well as entrance/exit and access taxiways. Runway 3-21 is supported by parallel Taxiway A which extends between the runway ends on the west side of the runway. The parallel taxiway has a separation of 250 feet from the runway (centerline to centerline). There are 14 entrance/exit taxiways linking Runway 3-21 with parallel Taxiway A. The taxiways are designated as A1, A2, A3, A4, A5, A6, A7, A9, A10, A11, A12, A13, A15, and A16 (moving from southwest to northeast).

Taxiway B serves as the full-length parallel taxiway serving the east side of Runway 3-21. There are 10 entrance/exit

taxiways linking Runway 3-21 with parallel Taxiway B. The taxiways are designated B1, B3, B5, B6, B7, B10, B11, B12, B13, and B16 (moving from southwest to northeast).

Other taxiways extend west of parallel Taxiway A and east of parallel Taxiway B, providing access to aircraft parking apron space and landside facilities on either side of Runway 3-21. Taxiway C runs parallel to the runway in the midfield area on the east side of the airport. It extends 635 feet and serves the direct access airpark properties to the east. Taxiway C is provided access to Taxiway B by entrance/exit Taxiway C10. All active taxiways and their associated dimensions are listed in **Table 1D**.

Hold aprons are available on Taxiways A1, A16, B1, and B16 serving each end of Runway 3-21. The hold aprons allow pilots to perform flight checks, including engine run-ups and a location where airport traffic control tower (ATCT) personnel can instruct pilots to wait for clearance to enter the runway.

**TABLE 1D
Taxiway Data
Scottsdale Airport**

Designated "A" Taxiways	Length (feet)	Width (feet)	Designated "B" Taxiways	Length (feet)	Width (feet)
A	8,650	40	B	8,250	40
A1	400	40	B1	200	40
A2	375	40-50	B3	200	40
A3	300	40-50	B5	290	40
A4	350	40-50	B6	290	40
A5	300	40-50	B7	200	40
A6	400	40-50	B10	200	40
A7	300	40-50	B11	290	40
A8	820	35	B12	290	40
A9	275	40	B13	200	40
A10	300	40	B16	200	40
A11	290	40	Other Taxiways	Length	Width
A12	390	40-50	C	635	40
A13	300	40-50	C10	100	40
A14	100	50			
A15	380	40-50			
A16	200	40			
A17	140	50			
A18	100	55			

Source: Airport Records; Airport Layout Plan (March 2012)

PAVEMENT MARKINGS

Pavement markings aid in the movement of aircraft along airport surfaces and identify closed or hazardous areas on the airport. Runway 3-21 has non-precision markings that include threshold, designation, centerline, edge, and aiming points. The thresholds on each end of the runway are displaced, with white arrows serving as the runway centerline leading to the displaced threshold.

Blast pads marked with yellow chevrons also serve each runway end. The blast pad is a surface adjacent to the ends of the runway provided to reduce the erosive effect of jet blast and propeller wash. Each end of Runway 3-21 is equipped with a 200-foot long by 150-foot wide blast pad.

Taxiway and taxilane centerline markings are provided to assist pilots in maintaining proper clearance from pavement edges and objects near the taxiways. Taxiway markings also include hold lines located on the entrance/exit taxiways serving Runway 3-21. The hold line positions function to keep aircraft from entering the runway environment without clearance. Hold lines on the entrance/exit taxiways are situated 152 feet from the runway centerline.

Aircraft movement areas on various parking aprons are identified with centerline markings. Aircraft tiedown positions are identified on various apron surfaces as well.

AIRFIELD LIGHTING AND SIGNAGE

Airfield lighting and signage systems extend an airport's usefulness into periods of darkness and/or poor visibility. A variety of lighting systems are installed on the airfield for this purpose. These systems at the airport, categorized by function, are summarized as follows.

Identification Lighting

The location of the airport at night is universally identified by a rotating beacon. The rotating beacon projects two beams of light, one white and one green, 180 degrees apart. The rotating beacon at Scottsdale Airport is located on the west side of the airport, approximately 150 feet north of the terminal building.

Runway and Taxiway Lighting

Runway and taxiway edge lighting utilizes fixtures placed near the edge of the pavement to define the lateral limits of the pavement. This lighting is essential for safe operations during night and/or times of low visibility in order to maintain safe and efficient access to and from the runways and aircraft parking areas.

Runway 3-21 is equipped with MIRL. Each runway end is equipped with threshold lighting to identify the landing threshold. Threshold lighting consists of specially designed light fixtures that are red on one half of the lens and green on the other half of the lens. The green portion of the lights are turned towards the approach surface and are intended to be seen from landing aircraft, while the red portion is visible to aircraft on the runway surface. Note: A runway safety area lighting project is currently underway to

meet FAA standards for non-precision runways. The improvement project will involve the installation of new runway distance remaining signs and runway threshold lighting. It will also involve replacing runway edge lighting globes on the final 2,000 feet of each runway end.

All taxiways associated with Runway 3-21 are equipped with medium intensity taxiway lighting (MITL). Other taxiways and taxilanes that provide access to more remote areas on the airfield are equipped with elevated taxiway reflectors.

Airfield Signage

The airport has a runway/taxiway signage system that assists pilots in identifying their location on the airfield and directing them to their desired location. The presence of runway/taxiway signage is an essential component of a surface movement guidance control system necessary for the safe and efficient operation of the airport. The signage system installed at Scottsdale Airport includes runway and taxiway designations, holding positions, routing/directional, runway exits, and runway distance remaining. The majority of airfield signs are lit. Signs not lit are reflective to allow enhanced awareness during nighttime conditions.

Visual Approach Lighting

Visual approach aids consist of a series of lights that, when interpreted by pilots, give an indication of being above, below, or on the designated descent path to the runway. A two-box precision approach path indicator (PAPI-2) system is installed on both ends of Runway 3-21. The PAPI-2 is located on the left side of each approach end and consists of two light

boxes that alert approaching pilots of their position relative to a four-degree glide slope. The four-degree glide slope is greater than normal in order to allow a higher aircraft descent path, thus helping to mitigate noise in areas adjacent to the runway approaches.

Runway End Identification Lights

Runway end identification lights (REILs) provide rapid and positive identification of the approach end of a runway. The system consists of two synchronized flashing lights, located laterally on each side of the runway threshold, facing the approaching aircraft. A REIL system has been installed at each displaced threshold serving Runway 3-21.

Pilot-Controlled Lighting

The airport's lighting system is connected to a pilot-controlled lighting (PCL) system. When the ATCT is closed, the PCL system allows pilots to activate the PAPIs, REILs, and MIRL system on Runway 3-21 through a series of clicks with their transmitter on the common traffic advisory frequency (CTAF) 119.9 MHz.

WEATHER AND COMMUNICATION AIDS

Scottsdale Airport is equipped with a lighted wind cone and segmented circle which provides pilots with information about wind conditions and traffic pattern usage. These facilities are situated in a midfield location on the airfield approximately 330 feet east of Runway 3-21. There are also other wind cones spread out in different locations on the airfield, allowing wind conditions to be visually interpreted by pilots.

Scottsdale Airport is served by an automated surface observation system (ASOS). An ASOS automatically records weather conditions such as temperature, dew point, wind speed, altimeter setting, visibility, sky condition, and precipitation. The ASOS updates observations every minute, 24 hours a day, and this information is transmitted to pilots in the airport vicinity. This information is transmitted at regular intervals on the airport's automated terminal information service (ATIS) frequency or via a local telephone number (480-483-3049), where a computer-generated voice will present airport weather information. ATIS broadcasts are updated hourly and provide arriving and departing pilots with the current surface weather conditions, communication frequencies, and other important airport-specific information. The ATIS frequency at Scottsdale Airport is 118.6 MHz. The ASOS system is located southwest of Runway 3-21, approximately 1,300 feet from the end of runway pavement.

NAVIGATIONAL AIDS

Navigational aids are electronic devices that transmit radio frequencies into point-to-point guidance and position information. The types of electronic navigational aids available for aircraft flying to or from the airfield include the very high frequency omnidirectional range (VOR) and global positioning system (GPS).

The VOR, in general, provides azimuth readings to pilots of properly equipped aircraft by transmitting a radio signal at every degree to provide 360 individual navigational courses. Distance measuring equipment (DME) can be combined with a VOR facility (VOR/DME) to provide distance as well as directional information to

the pilot. Military tactical air navigation aids (TACANs) and VORs are commonly combined to form a VORTAC. The VORTAC provides distance and direction information to both civilian and military pilots. The Phoenix VORTAC is located approximately 12 nautical miles south of the airport. It serves the circling VOR/DME approach to the airport. The Willie VORTAC is located approximately 23 nautical miles southeast of Scottsdale Airport and serves another circling VOR approach to the airport.

GPS is an additional navigational aid for pilots. GPS was initially developed by the United States Department of Defense for

military navigation around the world. GPS differs from a VOR in that pilots are not required to navigate using a specific ground-based facility. GPS uses satellites placed in orbit around the earth to transmit electronic radio signals, which pilots of properly equipped aircraft use to determine altitude, speed, and other navigational information. With GPS, pilots can directly navigate to any airport in the country and are not required to navigate to a specific ground-based navigational facility.

Airfield lighting and marking, weather and communication, and navigational aids are summarized in **Table 1E**.

TABLE 1E Airside Facility Data Scottsdale Airport	
	Runway 3-21
Runway Lighting	MIRL
Taxiway Lighting	MITL and Elevated Reflectors
Visual Approach Aids: Approach Slope Indicators REILs	PAPI-2 (Both Ends) Yes (Both Ends)
Weather/Communication/ Navigational Aids	ASOS, PCL, GPS, VOR, ATIS
Visual Aids	Rotating Beacon, Lighted Wind Cone, Segmented Circle
MIRL - Medium Intensity Runway Lighting MITL - Medium Intensity Taxiway Lighting PAPI - Precision Approach Path Indicator REIL - Runway End Identification Light ASOS - Automated Surface Observation System PCL - Pilot-Controlled Lighting GPS - Global Positioning System VOR - Very High Frequency Omnidirectional Range ATIS - Automated Terminal Information Service	
Source: Airport Facility Directory - Southwest U.S. (March 2013); FAA Form 5010-1, <i>Airport Master Record</i> ; Airport Layout Plan (March 2012)	

AIRPORT LANDSIDE FACILITIES

Landside facilities are the facilities that support the aircraft and pilot/passenger handling functions. These facilities in-

clude the airport terminal complex, fixed base operators (FBOs), aircraft storage hangars, aircraft maintenance hangars, aircraft parking aprons, and support facilities such as fuel storage, automobile

parking, utilities, aircraft rescue and fire-fighting, and security fencing and gates. The landside facilities at Scottsdale Airport are identified on **Exhibit 1C**.

AIRPORT TERMINAL AREA

The airport terminal building was originally constructed in 1969 and later expanded in the 1990s and mid-2000s to include approximately 17,970 square feet of space. The two-story facility houses airport administration, a waiting lobby, restroom facilities, rental car counters, aviation-related businesses, and a restaurant. The terminal building is centrally located on the west side of the airfield adjacent to abundant aircraft parking apron space.

Immediately north of the terminal building is the Aviation Business Center and U.S. Customs and Border Protection (CBP) offices that accommodate a mix of aviation and non-aviation related businesses. The CBP program was originally established in 1999 at Scottsdale Airport. Under this program, arrivals and departures were limited to specific countries. In 2011, the CBP program at Scottsdale Airport expanded offering a new service called "US-VISIT." This program features advanced biometric identification techniques allowing visitors from all over the world to Scottsdale Airport, provided they have proper visas. Normal hours of operation for CBP services are from 9 a.m. to 5 p.m., Thursday through Monday. Services can be requested outside of office hours for an additional fee and based on officers' availability. Note: The City of Scottsdale is working on an agreement with CBP to offer increased service hours. If this agreement is approved, customs service will be offered 10 hours per day and seven days per week.

AIRCRAFT HANGAR FACILITIES

Hangar facilities at Scottsdale Airport are comprised of conventional hangars, executive hangars, T-hangars, linear box hangars, and covered tiedown hangars. Conventional hangars provide a large open space, free from roof support structures, and have the capability to store several aircraft simultaneously. Conventional hangars are often utilized by airport businesses, such as FBOs and large aircraft maintenance providers. Conventional hangars are typically 10,000 square feet or larger.

Executive hangars provide the same type of aircraft storage as conventional hangars, but are typically smaller than 10,000 square feet. These hangars are normally utilized by individual owners to store several aircraft or by smaller airport businesses. This type of hangar is becoming more popular at general aviation airports and often is included in a larger contiguous facility that contains several separate hangar facilities.

T-hangars and linear box hangars provide for separate aircraft storage facilities within a larger hangar complex. These hangars typically provide space for only one aircraft and are used for private storage only. Covered tiedown hangars serve the same purpose as T-hangars and linear box hangars, except that they are not enclosed. They are tiedown spaces with a protective roof covering.

As shown on **Exhibit 1C**, there are 22 separate hangar facilities at Scottsdale Airport providing approximately 437,600 square feet of hangar, maintenance, and office space. Conventional hangar space at the airport totals approximately 223,600 square feet in 10 separate hangars. There are two separate executive



No.	Hangar Type (Number of Units)	Building Size in Square Feet	Leasehold	Aviation Services Provided	No.	Hangar Type (Number of Units)	Building Size in Square Feet	Leasehold	Aviation Services Provided
1	Linear Box Hangars (8)	36,000	Air Commerce Center	Aircraft Storage and Other Services	12	Covered Tiedown Hangars (14)	14,500	Greenway	Aircraft Storage
2	T-Hangars (9)	12,000	City of Scottsdale	Aircraft Storage	13	Covered Tiedown Hangars (20)	20,000	Greenway	Aircraft Storage
3	Covered Tiedown Hangars (11)	9,600	City of Scottsdale	Aircraft Storage	14	T-Hangars (21)	30,000	Greenway	Aircraft Storage
4	Covered Tiedown Hangars (11)	9,600	City of Scottsdale	Aircraft Storage	15	T-Hangars (32)	33,000	Greenway	Aircraft Storage
5	Conventional Hangar (1)	20,000	Landmark Aviation	Aircraft Maintenance, Painting and Storage	16	Conventional Hangar (1)	19,600	Signature Flight Support	Aircraft Storage
6	Conventional Hangar (1)	20,000	Landmark Aviation	Aircraft Storage	17	Conventional Hangar (1)	20,000	Signature Flight Support	Aircraft Storage
7	Linear Box Hangars (4)	14,400	Landmark Aviation	Aircraft Storage	18	Executive Hangar (1)	6,400	Signature Flight Support	Aircraft Maintenance and Storage
8	Executive Hangars (2)	19,500	Landmark Aviation	FBO and Aircraft Maintenance	19	Conventional Hangar (1)	14,000	Signature Flight Support	Aircraft Maintenance and Storage
9	Conventional Hangar (1)	25,000	Landmark Aviation	Aircraft Storage	20	Conventional Hangar (1)	30,000	Signature Flight Support	Aircraft Storage
10	Conventional Hangar (1)	15,000	Landmark Aviation	Aircraft Storage	21	Conventional Hangar (1)	30,000	Signature Flight Support	Aircraft Storage
11	Covered Tiedown Hangars (9)	9,000	Greenway	Aircraft Storage	22	Conventional Hangar (1)	30,000	Signature Flight Support	Aircraft Maintenance and Storage

hangar facilities totaling approximately 25,900 square feet. Finally, 10 T-hangar, linear box hangar, and covered tiedown hangar facilities are on the airport and provide 139 separate storage units comprising approximately 188,100 square feet.

AIRCRAFT PARKING APRONS

There are several designated aircraft parking apron areas at Scottsdale Airport. The primary apron area on the west side of the airport extends approximately 3,600 feet along the west side of Taxiway A. It contains 120 marked tiedowns for smaller general aviation aircraft and ample space for larger aircraft. Farther northeast adjacent to Taxiway A, there are two designated parking areas for small general aviation aircraft. Each area contains 21 marked tiedown spaces.

There are several other dedicated parking aprons adjacent to specialty aviation operators that conduct aviation activity on the east and west sides of the airport, including the FBO facilities. There are additional parking apron areas located throughout the airport in close proximity to conventional, executive, T-hangars, linear box hangars, and shade hangars.

All totaled, there are approximately 200,000 square yards of aircraft parking apron offered at the airport. Within these areas, approximately 162 marked tiedown positions are offered for smaller general aviation aircraft. Additional unmarked areas can be configured to meet the demands of larger business jet aircraft. It is estimated that these unmarked areas can accommodate approximately 100 business jets depending on their size and position.

GENERAL AVIATION SERVICES

An array of general aviation services is available at Scottsdale Airport. This includes aircraft rental, flight training, aircraft rental, aircraft maintenance, aircraft avionics, aircraft charter, aircraft management, aircraft fueling, aircraft painting, aircraft sales, aircraft detailing, hangar rental, pilot supplies, rental cars, a restaurant, and many other services.

There are currently two FBOs on the airfield that provide aviation fueling services: Landmark Aviation and Signature Flight Support.

Landmark Aviation: Landmark Aviation is a full-service FBO at the airport that provides a variety of general aviation services on the west side of the airport. While maintaining several hangar facilities at the airport, it operates its main FBO activities from a facility that provides hangar space, offices, conference rooms, flight planning, a pilot's lounge, and other amenities. Full-service Jet A and 100LL fuels are provided 24 hours per day, seven days per week.

Signature Flight Support: Signature Flight Support conducts FBO activities at Scottsdale Airport, providing for an array of general aviation services. Several hangar facilities on the east and west sides of the airport are under the direct control of Signature Flight Support. Its FBO operations are conducted from a facility on the east side of the airport that provides hangar space, offices, conference rooms, flight planning, a pilot's lounge, and other amenities. Full service Jet A and 100LL fuels are provided 24 hours per day, seven days per week.

There is a full range of specialty aviation businesses located throughout the airport

that provide aviation services including those previously mentioned. **Table 1F** further outlines these airport tenants and the services that they offer. The City of

Scottsdale Aviation Department provides airport management and oversees the day-to-day operations at the airport.

TABLE 1F Airport Business Tenants Scottsdale Airport	
Business Name	Activity/Services Provided
AIRCRAFT CHARTER / MANAGEMENT / SALES	
Air Care 1	Aircraft Charter
Alante Air Charter	Aircraft Charter & Management
All Access Jets	Aircraft Charter
Aviation West Charters	Aircraft Charter
Business Aircraft Management	Aircraft Management
Empire Aviation	Aircraft Sales
Falcon Executive Aviation	Aircraft Charter & Management
Jet Pros, LLC	Aircraft Charter, Brokerage & Management
John Hopkinson and Associates	Aircraft Sales
Landmark Aviation	Aircraft Charter
Pacific Air Center	Aircraft Sales
Sawyer Charter Service	Aircraft Charter
Scott Air – Island Air Express	Aircraft Charter
Sojourn Aviation	Aircraft Sales
Solairus Aviation	Aircraft Sales
Tempus Jets	Aviation Charter & Brokerage
AIRCRAFT RENTAL / LEASING / FLIGHT TRAINING	
Aviation Resource Group (Aerodyne)	Flight Training
Alliance Aircraft Services	Aircraft Rental & Flight Training
Elite Flight Training	Flight Training
June Bonesteel	Ground School Training
Legacy Flight Training	Flight Training
Plus 5 Sport Aero	Flight Training
Sawyer Aviation, LLC	Aircraft Rental & Flight Training
SDL Holdings	Flight Training
Southwest Flight Center	Aircraft Rental & Flight Training
Universal Helicopters, Inc.	Flight Training, Leasing & Photography
Vertical Works	Flight Training
AIRCRAFT MAINTENANCE / REPAIR	
Centerline Aircraft	Aircraft Maintenance
Cessna Aircraft Company	Aircraft Maintenance
Dallas Airmotive	Aircraft Maintenance
Duncan Avionics	Aircraft Avionics
Executive Aircraft Maintenance	Aircraft Maintenance
Horizon Paint Repair	Specialized Aircraft Repair
Lone Star AOG	Aircraft Maintenance
PDR Services	Specialized Aircraft Repair
Southwest Flight Center	Aircraft Maintenance
Timmy Shines	Specialized Aircraft Repair

TABLE 1F (Continued)	
Airport Business Tenants	
Scottsdale Airport	
Business Name	Activity/Services Provided
AIRCRAFT WASHING / DETAILING	
Aero Panache	Aircraft Washing
Classic Air Aviation	Aircraft Washing
Jean Clean 360	Aircraft Washing
The Allen Groupe	Aircraft Washing
Time For Sale	Aircraft Washing
West Coast Wash Station	Aircraft Washing
AUTO RENTAL SERVICES	
Alamo/National Car Rental	Rental Cars
Avis Rent-A-Car Systems	Rental Cars
Enterprise Rent-A-Car	Rental Cars
Go Rentals	Rental Cars
Hertz Rent-A-Car	Rental Cars
FIXED BASE OPERATORS	
Landmark Aviation	Fixed Base Operator
Signature Flight Support	Fixed Base Operator
HANGAR / SHADE / OFFICE LEASING SERVICES	
Air Commerce Center	Office & Hangar Rentals
Greenway Hangars	Hangar Rentals
Landmark Aviation	Office & Hangar Rentals
IN-FLIGHT CATERING SERVICES	
Bashas', Inc. dba AJ's Fine Foods	In-Flight Catering
In-Flight Concierge	In-Flight Catering
Ciao Baby	In-Flight Catering
U.S. GOVERNMENT	
FAA Control Tower	Air Traffic Control
U.S. Customs and Border Protection	Customs
Source: Airport Records (February 2015 Business Permit List)	

AUTOMOBILE PARKING

There are several automobile parking lots available for vehicle use at Scottsdale Airport. A designated parking area for automobiles adjacent to the west side of the terminal building is accessible from Airport Drive via Butherus Drive. A total of 103 parking spaces are included in this area, with 10 being labeled for "Rental Car" parking. On the north side of the terminal area, the Aviation Business Center and U.S. Customs and Border Protection offices is provided 147 automobile

parking spaces. In all, the terminal area offers 250 vehicle parking spots.

Other parking areas on the airport are located adjacent to aviation-related businesses on the east and west sides of the airport. The Signature Flight Support FBO provides for approximately 70 marked parking spaces on the east side of the airport. In addition, approximately 100 parking spaces are provided adjacent to its hangar facilities on the west side of the airport. Approximately 250 marked parking spaces are offered through Landmark

Aviation's complexes on the west side of the airport. The Air Commerce Center also accommodates 117 vehicle parking spaces on the southwest side of the airport.

The ATCT and City of Scottsdale Fire Station #609 also provide parking spaces on the east side of the airport for their personnel. The ATCT contains controlled-access parking spaces and the Fire Station accommodates 16 marked parking spaces. All totaled, there are approximately 820 marked automobile parking spaces serving a variety of activities at Scottsdale Airport.

PARK-AND-RIDE TRANSIT FACILITY

In order to provide an alternative means to diversify the City of Scottsdale's transportation system, a park-and-ride transit facility has been constructed at the southeast corner of the intersection of Scottsdale and Thunderbird Roads on airport property. The facility is designed to serve express bus routes that travel on Loop 101, as well as local bus routes on Scottsdale and Thunderbird Roads, and planned bus rapid transit on Scottsdale Road. Other transportation sources, such as carpools and vanpools, can use the facility as well.

The facility includes approximately 275 parking spaces (173 covered), a designated walkway to guide passengers from the parking areas to the passenger pick-up platform, fare vending machines and information kiosk, pedestrian amenities, lighting, display boards showing real-time bus information, and a maintenance/storage building. The park-and-ride transit facility was funded by a combination of both grants and local resources, including \$5 million from the

American Recovery and Reinvestment Act (ARRA).

FUEL FACILITIES

There are five fuel farms located on the airport that currently store aviation fuel. Landmark Aviation operates three fuel farms on the west side of the airport. Its north fuel farm consists of underground tanks providing for 30,000 gallons of Jet A fuel storage and 15,000 gallons of 100LL storage. The fuel farm located nearest to its FBO facility contains 15,000 gallons of underground Jet A fuel storage. Finally, the company's south fuel farm provides for the underground storage of 20,000 gallons of Jet A fuel and 20,000 gallons of 100LL.

The fourth fuel farm is located adjacent to Signature Flight Support's FBO facility on the east side of the airport. This fuel farm consists of underground tanks providing for 60,000 gallons of Jet A fuel storage and 20,000 gallons of 100LL storage.

An underground fuel farm is also located at the Air Commerce Center located on the southwest side of the airport. It provides two 12,000-gallon capacity tanks for Jet A fuel.

The two FBOs on the airport provide full-service fueling capabilities via fuel trucks. Signature Flight Support has a fleet of five fuel delivery trucks that consist of one 100LL fuel truck that stores 1,200 gallons of fuel and four Jet A fuel trucks, two having storage capacities of 5,000 gallons each and two having storage capacities of 3,000 gallons each. Landmark Aviation also operates fuel delivery trucks. Two 950-gallon capacity trucks deliver 100LL and three 5,000-gallon capacity trucks deliver Jet A fuel.

AIRCRAFT RESCUE AND FIREFIGHTING

The City of Scottsdale Fire Station #609 is a state-of-the-art 8,636-square-foot facility situated on the east side of the airport in a desirable midfield location adjacent to Taxiway B. The facility is designed to provide emergency and rescue services to the airport and surrounding area. At least five full-time firefighters are present at the facility 24 hours per day, seven days per week. In the event of an emergency call outside the airport, a firefighter will remain on duty at the airport at all times.

Fire Station #609 is aircraft rescue and firefighting (ARFF) certified, which means it has the equipment and personnel needed to meet certain FAA standards for aircraft emergency situations at Title 14 Code of Federal Regulations (CFR) Part 139 certificated airports. Although Scottsdale Airport does not carry a Part 139 certificate and is not required to adhere to ARFF standards, it meets Index A requirements. The ARFF index has been established according to the length of aircraft and scheduled daily flight frequency for Part 139 scheduled air service. There are five indices, A through E, with A applicable to the smallest aircraft and E to the largest (based on wingspan).

A variety of equipment that is capable of handling fire and rescue operations specific to aircraft emergencies is present at the fire station. The primary response ARFF vehicle includes a 2004 Oshkosh Striker capable of carrying 1,500 gallons of water, 210 gallons of aqueous film forming foam (AFFF), and 500 pounds of Purple K dry chemical. In addition, Fire

Station #609 houses Engine #609 which responds to all types of emergency calls. Fire department personnel at the fire sta-

tion have direct communication with airport operations and ATCT personnel, allowing immediate emergency services to the airfield when needed.

A total of 27 personnel on the City of Scottsdale Fire Department are ARFF certified. The fire department has a mutual aid agreement in place with the City of Phoenix to respond to Scottsdale Airport in the event that a large-scale emergency or incident takes place.

AIRCRAFT WASH RACK / PAD

A designated aircraft wash rack is located on the west side of the airport adjacent to the north designated aircraft parking apron, approximately 800 feet southwest of the Runway 21 displaced threshold. This facility allows aircraft owners to wash their aircraft and was constructed to ensure proper drainage of run-off water and cleaners. Approximately 1,300 feet northeast of the aircraft wash rack is an aircraft wash pad. This location allows adequate space for the washing of larger aircraft.

SECURITY FENCING / GATES

Scottsdale Airport's operation areas are completely enclosed with chain link fence topped by three-strand barbed-wire to prevent the inadvertent access onto the airport by vehicles and pedestrians. The fence does not always follow the legal airport property boundary due to the layout of physical features and infrastructure development.

There are several functioning controlled-access gates serving different areas on the airfield. In addition, there are manual gates on airport property that are con-

trolled by airport personnel as well as private airport tenants.

There are several controlled-access gates that provide aircraft access to and from the Scottsdale Airpark. These gates will be further detailed and identified later in this chapter.

UTILITIES

The availability and capacity of the utilities serving the airport are factors in determining the development potential of the airport, as well as the land immediately adjacent to the facility. Utility availability is a critical element when considering future expansion capabilities for both airside and landside components. **Table 1G** presents the utilities and providers serving Scottsdale Airport.

TABLE 1G Utility Services Scottsdale Airport	
Utility	Service Provider
Electricity	Arizona Public Service
Water	City of Scottsdale
Sanitary Sewer	City of Scottsdale
Phone	City of Scottsdale / Century Link
Internet	City of Scottsdale / Cox Cable
Solid Waste Disposal	City of Scottsdale
Emergency Phone Lines	Cox Communications
Source: Airport Records	

SCOTTSDALE AIRPARK

The Scottsdale Airpark is a hub of commerce, employment, aviation, tourism, entertainment, and recreation that is among the largest employment centers in Arizona. The airpark is a two-mile by three-mile corridor anchored by the Scottsdale Airport and the Loop 101 Freeway. It provides 33.9 million square

feet of building space for over 2,900 companies that employ 53,000 people.

A vast array of aviation and non-aviation related services are offered within the airpark. These business categories include:

- Accounting
- Auto
- Publishing
- Aviation/Aerospace/Defense
- Light manufacturing
- Retail
- High tech
- Healthcare and Biotech
- Hospitality
- Business services

The national economic recession negatively impacted the Scottsdale Airpark beginning in 2008, as companies tied to residential development and mortgage services caused a spike in building vacancies. In recent years, however, the vacancies have decreased and employment has been on the rise.

The Scottsdale Airpark is projected to experience increases in building space, companies, and employment over the next several years. By 2030, estimates are calling for 50 million square feet of buildings, 4,000 companies, and 75,000 employees throughout the entire airpark.

Several aviation-related facilities within the Scottsdale Airpark are provided access to Scottsdale Airport via a system of taxilanes connecting to Taxiways A, B, and C on airport property. A user access fee is levied on those entities that have access to the runway and taxiway system at Scottsdale Airport.

Currently, six controlled-access gates provide access to and from the Scottsdale

Airpark. Taxilanes 1 through 6 provide access to a combination of hangar types that support several different aviation activities. There are also hangar facilities on the east side of the airport, which are technically airpark property, but are provided direct access to Scottsdale Airport. Direct access means an airpark property has aircraft access to the airside airport property via an existing taxiway or taxilane, without having a fence or a controlled-access gate. While these airpark properties operate with an imaginary fence line, they must meet specific security requirements and submit a comprehensive security plan.

According to airport records, 129 aircraft are currently stored in hangars at the Scottsdale Airpark. Several facilities within the Airpark are used for non-aviation purposes such as commercial, industrial, and warehousing. **Exhibit 1D** highlights the taxilanes and parcels that comprise the Scottsdale Airpark.

VICINITY AIRSPACE

The *Federal Aviation Administration Act of 1958* established the FAA as the responsible agency for the control and use of navigable airspace within the United States. 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; and personnel and material. The system also includes components shared jointly with the military.

AIRSPACE STRUCTURE

Airspace within the United States is 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 in the United States, as shown on **Exhibit 1E**. 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.

Class A Airspace: Class A airspace includes all airspace from 18,000 feet MSL to flight level (FL) 600 (60,000 feet MSL). This airspace is designated in Federal Aviation Regulation (F.A.R.) Part 71.193 for positive control of aircraft. The Positive Control Area allows flights governed only under instrument flight rules (IFR) operations. The aircraft must have special radio and navigation equipment, and the pilot must obtain clearance from an ATC facility to enter Class A airspace. In addition, the pilot must possess an instrument rating.

Class B Airspace: Class B airspace has been designated around some of the country’s busiest commercial service airports, such as Phoenix Sky Harbor International Airport. 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 busy commercial service airports. This airspace is the most restrictive controlled airspace encountered by pilots operating under visual flight rules (VFR).

In order to fly within Class B airspace, an aircraft must be equipped with special radio and navigation equipment and must obtain clearance from air traffic control. Moreover, 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. Part 61.95, which requires special ground and flight training for Class B airspace. Helicopters do not need special navigation equipment or a transponder if they operate at or below 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 range of the center of Class B airspace. A Mode C transponder allows the ATCT to track the altitude of the aircraft.

Class C Airspace: The FAA has established Class C airspace at 120 airports around the country, as a means of regulating air traffic in these areas. Class C 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 some commercial service airports. In order to fly inside Class C airspace, the aircraft must have a two-way radio, an encoding transponder, and have established communication with the ATC. Aircraft may fly below the floor of the Class C airspace, or above the Class C airspace ceiling without establishing communication with ATC. The closest Class C airspace surrounds Tucson International Airport and Davis Monthan Air Force Base.

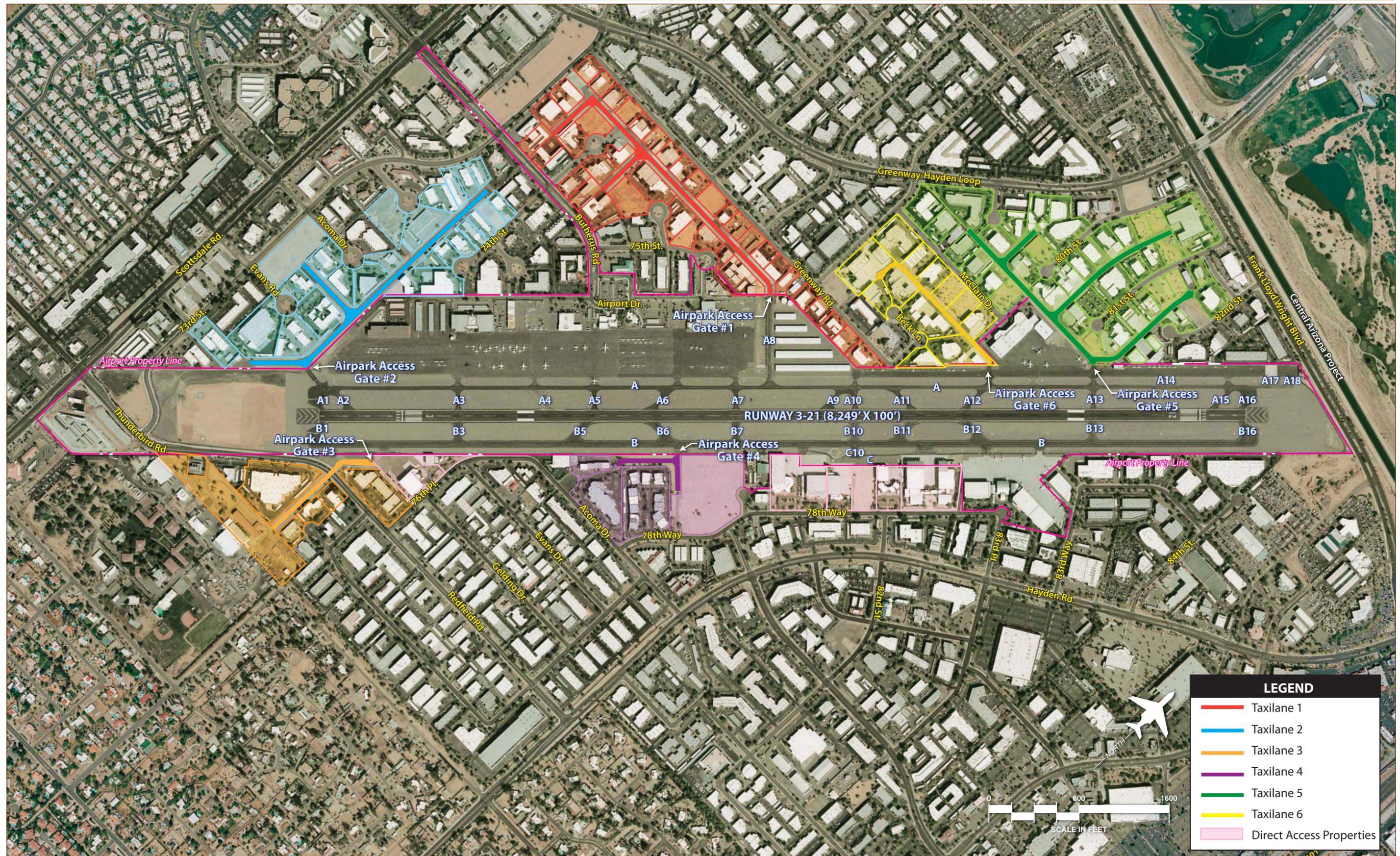
Class D Airspace: Class D airspace is controlled airspace surrounding airports with an ATCT such as at Scottsdale Airport. The Class D airspace typically constitutes a cylinder with a horizontal radi-

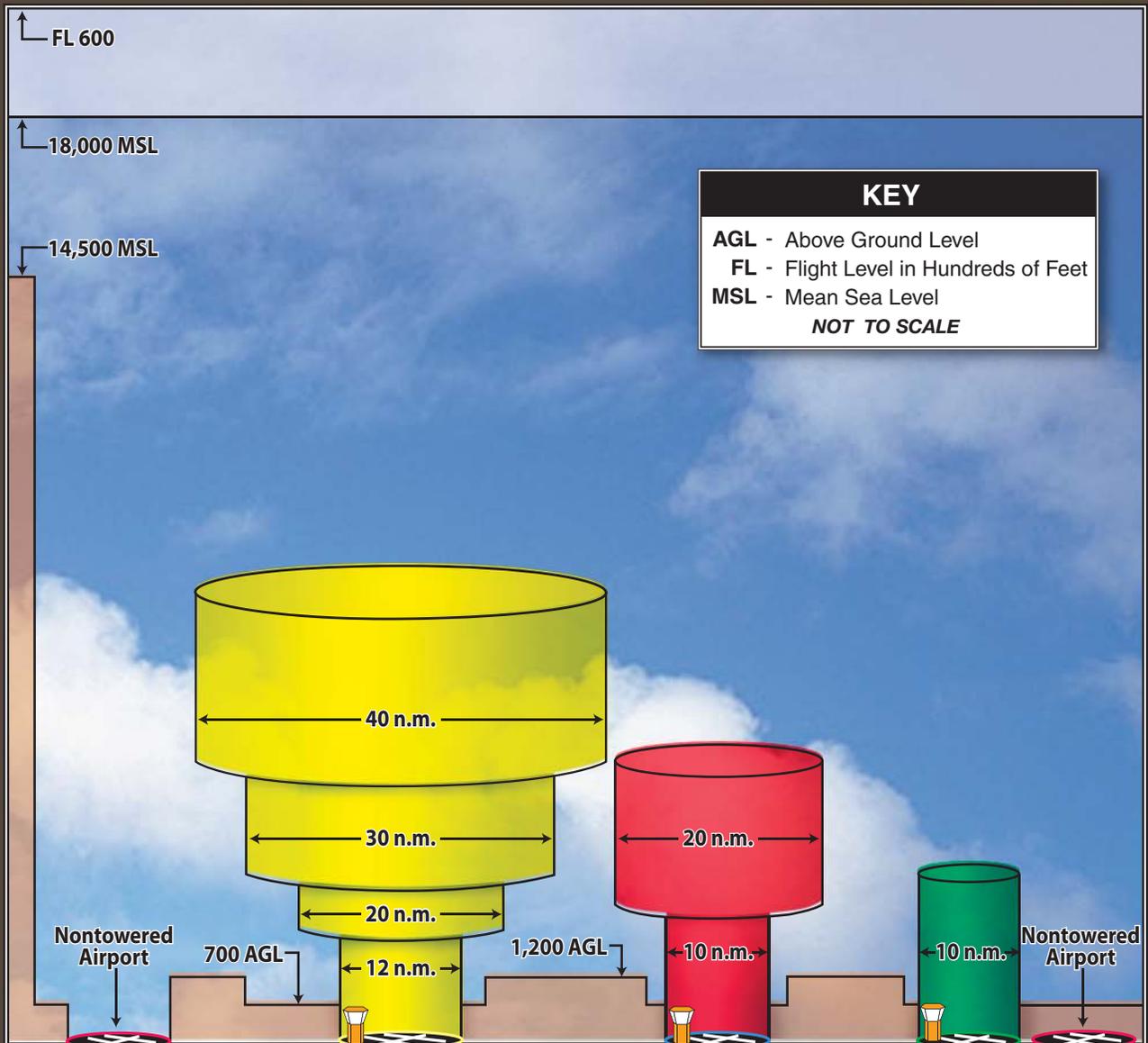
us of five miles from the airport, extending from the surface up to a designated vertical limit, typically set at approximately 2,500 feet above the airport elevation. If an airport has an instrument approach or departure, the Class D airspace sometimes extends along the approach or departure path.

Class E Airspace: Class E airspace consists of controlled airspace designed to contain IFR operations near an airport, and while aircraft are transitioning between the airport and en route environments. Unless otherwise specified, Class E airspace terminates at the base of the overlying airspace. Only aircraft operating under IFR are required to be in contact with air traffic control when operating in Class E airspace. While aircraft conducting visual flights in Class E airspace are not required to be in radio communications with air traffic control facilities, visual flight can only be conducted if minimum visibility and cloud ceilings exist. Airports supported by Class E airspace typically exist outside of busy airspace associated with large metropolitan areas.

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 the overlying Class E airspace (700 to 1,200 feet above ground level [AGL]). During periods when the ATCT is closed at Scottsdale Airport, Class D airspace reverts to Class G airspace.

Exhibit 1F shows the Class B and Class D airspace surrounding Scottsdale Airport. The Class D airspace consists of controlled airspace extending upward from





KEY
 AGL - Above Ground Level
 FL - Flight Level in Hundreds of Feet
 MSL - Mean Sea Level
NOT TO SCALE

CLASSIFICATION

- CLASS A**
- CLASS B**
- CLASS C**
- CLASS D**
- CLASS E**
- CLASS G**

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.

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.

the surface to and including 4,000 feet MSL within a five-mile radius of Scottsdale Airport. Due to the presence of Phoenix Sky Harbor International Airport approximately 12 miles southwest of the airport, Class B airspace is situated on top of the airport beginning at 6,000 feet MSL.

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. The designation of special use airspace identifies for other users the areas where military activity occurs, provides for segregation of that activity from other fliers, and allows charting to keep airspace users informed. These areas are depicted on **Exhibit 1F**.

Victor Airways: Victor Airways are designated navigational routes extending between VOR facilities. Victor Airways have a floor of 1,200 feet AGL and extend upward to an altitude of 18,000 feet MSL. Victor Airways are eight nautical miles wide.

As previously discussed, there are a number of VOR facilities within proximity to Scottsdale Airport. Several Victor Airways lead to and from these VOR facilities and include the following:

- V327-562-567, the closest Victor Airway, is located almost directly above the airport.
- V95 traverses airspace approximately three miles east of the airport.
- V528 is located approximately six miles east of the airport.
- V257 is located approximately five miles west of Scottsdale Airport.

Military Operations Areas: A military operations area (MOA) is an area of airspace designated for military training use. This is not restricted airspace; however, pilots who use the airspace should be on alert for the possibility of military traffic. A pilot may need to be aware that military aircraft can be found in high concentrations, conducting aerobatic maneuvers and possibly operating at high speeds at lower altitudes. The activity status of an MOA is advertised by a Notice to Airmen (NOTAM) and noted on sectional charts.

The Outlaw MOA is located approximately 30 miles southeast of the airport. There are no MOAs in close proximity to Scottsdale Airport, most likely due to the congested nature of the airspace in the greater Phoenix metropolitan area.

Restricted Airspace: Restricted areas contain airspace identified by an area on the surface of the earth within which the flight of aircraft, while not wholly prohibited, is subject to restrictions. Activities within these areas must be confined because of their nature or limitations imposed upon aircraft operations that are not a part of those activities or both. Restricted areas denote the existence of unusual, often invisible, hazards to aircraft such as artillery firing, aerial gunnery, or guided missiles. Penetration of restricted areas without authorization from the using or controlling agency may be extremely hazardous to the aircraft and its occupants. Restricted areas are published in the Federal Register and constitute Title 14 CFR Part 73, *Special Use Airspace*.

There are no restricted areas in the vicinity of Scottsdale Airport. Restricted airspace R-2310A, B, and C lie within the Outlaw MOA farther southeast, well beyond the airspace associated with the airport.

Alert Areas: Alert areas are often associated with high concentrations of military aircraft performing training maneuvers. Military activities in these areas typically operate at lower altitudes and may occur anytime of the day or night. General aviation flights are not restricted within these areas, but pilots are strongly cautioned to be alert for high-speed military training aircraft.

Alert Area A-231 is located approximately 17 miles west of the airport. This alert area is associated with Luke Air Force Base.

Prior to May 2010, Alert Area A-231 was the only charted advisory alerting aircraft of concentrated student jet fighter training near the vicinity of Luke Air Force Base. As a result of an average of five near mid-air collisions (NMAC) per quarter and in an effort to improve flight safety, the FAA mandated two-way radio communication near common fighter training areas and critical flight paths near Luke Air Force Base in the form of a Special Air Traffic Rule (SATR), which amended Title 14 CFR Part 93. The SATR was implemented in May 2010 and mandates two-way radio communication within the vertical and lateral boundaries of the charted area during periods of fighter training activity as described in the CFRs. The SATR has significantly improved flight safety in the vicinity of the largest military fighter training base in the world.

Military Training Routes: Military training routes (MTRs) are designated airspace that has been generally established for use by high performance military aircraft to train below 10,000 feet AGL and in excess of 250 knots. There are VR (visual) and IR (instrument) designated MTRs. MTRs with no segment above

1,500 feet AGL will be designated with the “VR” or “IR,” followed by a four digit number (e.g., VR1520, IR1521). MTRs with one or more segments above 1,500 feet AGL are identified by the route designation, followed by a three-digit number (e.g., VR531). The arrows on the route show the direction of travel. MTRs vary in width and may be up to 20 miles wide. There are numerous MTRs in the region, the closest to Scottsdale Airport being VR241/VR244, located approximately 15 miles to the north.

Wilderness Areas: Several wilderness areas exist in proximity to Scottsdale Airport. Aircraft are requested to maintain a minimum altitude of 2,000 feet above the surface of designated National Park areas, which includes wilderness areas and designated breeding grounds. FAA Advisory Circular (AC) 91-36C defines the “surface” as the highest terrain within 2,000 feet laterally of the route of flight or the uppermost rim of a canyon or valley.

The airport is located within 20 miles of three wilderness areas including the Fort McDowell, Verde River, and Salt River Bald Eagle Breeding Areas.

AIRSPACE CONTROL

Scottsdale Airport has an ATCT, which is operated by the FAA. The ATCT is located on the east side of the airfield, approximately 700 feet southwest of the lighted wind cone and segmented circle, and 400 feet from the runway centerline. The ATCT currently operates from 6:00 a.m. through 9:00 p.m., seven days a week.

The ATCT provides an array of control services, including ground control (121.6 MHz), clearance delivery (124.8 MHz), and ATIS information (118.6 MHz). Out-

side of its operational hours, there are no formal air traffic control services available at the airport. When the ATCT is closed, air traffic advisories are made using the CTAF, which is the same frequency as the tower (119.9 MHz).

The ATCT located on the airfield controls air traffic within Class D airspace that surrounds the airport. Approach and departure control services for arriving and departing aircraft on an instrument flight plan are provided by Phoenix Approach/Departure Control on radio frequency 120.7 MHz.

INSTRUMENT APPROACH PROCEDURES

Instrument approach procedures are a series of predetermined maneuvers established by the FAA, using radio and satellite navigational aids that assist pilots in locating and landing at an airport, especially during instrument flight conditions. The capability of an instrument approach is defined by the visibility and cloud ceiling minimums associated with the approach. Visibility minimums define the horizontal distance the pilot must be able to see in order to complete the approach. Cloud ceilings define the lowest level a cloud layer (defined in feet above the ground) can be situated for the pilot to complete the approach. If the observed visibility or cloud ceilings are below the minimums prescribed for the approach, the pilot cannot complete the instrument approach.

There are currently seven published instrument approach procedures serving Scottsdale Airport. Three of these procedures offer straight-in approach capabilities and include two area navigation (RNAV) approaches to Runway 3 and one

RNAV approach to Runway 21. These approaches are equipped with required navigation performance (RNP) which allows an aircraft to fly a specific path between two defined points in space as long as the aircraft is equipped with the proper performance monitoring and alerting system. RNP refers to the level of performance required for a specific procedure or a specific block of airspace. For instance, an RNP value of 0.30 means that a navigation system must be able to calculate the aircraft's position to within a circle with a radius of three-tenths of a nautical mile. Approaches with RNP values down to 0.10 allow aircraft to follow precise flight paths through congested airspace, around noise-sensitive areas, or through difficult terrain. The RNP approach serving Runway 21 allows for this value. Furthermore, these approaches provide for both vertical and horizontal guidance information to pilots.

The four other published approaches provide circling minimums which allow pilots the flexibility to land on the runway most closely aligned with the prevailing wind at that time. This flexibility generally requires circling approaches to have higher visibility and cloud ceiling minimums than the straight-in approaches. This is done to provide pilots with sufficient visibility and ground clearance to navigate visually from the approach to the desired runway end for landing. These circling instrument approach procedures are non-precision in nature, meaning they only provide horizontal guidance to the pilot.

Exhibit 1G summarizes FAA approved and published instrument approach procedures, including associated weather minimums, for Scottsdale Airport. It should be noted that the straight-in instrument approach procedures allow for

aircraft with approach speeds up to and including 140 knots. Aircraft with approach speeds between 141-166 knots (Category D) are not authorized to conduct a straight-in instrument approach procedure. All aircraft, including those in Category D, are approved to conduct the circling instrument approach procedures at the airport.

ARRIVAL AND DEPARTURE PROCEDURES

Because of the heavily used airspace over the Phoenix metropolitan area, the FAA has established a series of standard terminal arrival (STAR) and departure procedures. A STAR is a preplanned air traffic control arrival procedure designed to provide for the transition from the enroute phase of the flight to an outer fix or an instrument approach fix in the terminal area. The four published STARs are Arlin Three, Blythe Four, Jacobs Two, and Sunss Seven.

Departure procedures are preplanned instrument procedures which provide obstruction clearance from the terminal area to the appropriate enroute structure. These procedures can either provide obstacle clearance protection information to pilots through obstacle departure procedures (ODPs) or increase airspace efficiency and reduce communications and departure delays through standard instrument departures (SIDs). There are three departure procedures specific to Scottsdale Airport. The Maricopa One is an ODP and Jonhh One and Scottsdale Seven serve as SIDs.

LOCAL OPERATING PROCEDURES

Scottsdale Airport is situated at 1,510 feet MSL. The traffic pattern at the airport is maintained to provide the safest and most efficient use of the airspace surrounding the airport. It is preferred to keep the aircraft traffic pattern on the west side of the airport; therefore, the airport utilizes a non-standard right-hand traffic pattern for Runway 21. Detailed study on the runway usage at the airport has been previously analyzed through discussions with the ATCT manager, hourly ATCT traffic counts, and ATCT tower logs. Based upon this analysis, runway use was determined to be 56 percent for Runway 21 and 44 percent for Runway 3.

The posted traffic pattern altitude for different types of aircraft is closely adhered to by the ATCT. For propeller-driven aircraft, the traffic pattern altitude is 2,500 feet MSL. The traffic pattern altitude for jets is 3,000 feet MSL. For helicopters, it is 2,000 feet MSL.

NOISE ABATEMENT RULES AND PROCEDURES

In an effort to reduce noise impacts in areas adjacent to Scottsdale Airport, pilots are encouraged to adhere to voluntary noise abatement procedures. There are many noise-sensitive areas in the vicinity of the airport. As a result, airport staff has provided a list of rules and procedures to reduce the noise impacts on surrounding neighbors of the airport. **Table 1H** outlines these rules and procedures.

WEATHER MINIMUMS BY AIRCRAFT TYPE

	Category A		Category B	
	Cloud Height (feet AGL)	Visibility (miles)	Cloud Height (feet AGL)	Visibility (miles)
RNAV (RNP) Y Runway 3				
RNP 0.30 DA	359	1.25	359	1.25
RNAV (RNP) Z Runway 3				
RNP 0.30 DA	359	1.25	359	1.25
RNAV (RNP) Runway 21				
RNP 0.10 DA	438	1.25	438	1.25
RNP 0.16 DA	477	1.5	477	1.5
RNAV (GPS)-D				
Circling	570	1	570	1
RNAV (GPS)-E				
Circling	630	1	630	1
VOR/DME-A				
Circling	870	1.5	870	1.5
VOR-C				
Circling	930	2	930	2
	Category C		Category D	
	Cloud Height (feet AGL)	Visibility (miles)	Cloud Height (feet AGL)	Visibility (miles)
RNAV (RNP) Y Runway 3				
RNP 0.30 DA	359	1.25	N/A	N/A
RNAV (RNP) Z Runway 3				
RNP 0.30 DA	359	1.25	N/A	N/A
RNAV (RNP) Runway 21				
RNP 0.10 DA	438	1.25	N/A	N/A
RNP 0.16 DA	477	1.5	N/A	N/A
RNAV (GPS)-D				
Circling	650	2	650	2
RNAV (GPS)-E				
Circling	630	2	630	2
VOR/DME-A				
Circling	870	2.5	870	2.75
VOR-C				
Circling	930	2.75	930	3

Aircraft categories are established based on the aircraft approach speed (VREF) or 1.3 times the aircraft's stall speed in landing configuration as follows:

- Category A: 0-90 knots
- Category B: 91-120 knots
- Category C: 121-140 knots
- Category D: 141-166 knots

Abbreviations:

- AGL - Above Ground Level
- RNAV - Area Navigation
- GPS - Global Positioning System
- RNP - Required Navigation Performance
- DA - Decision Altitude
- VOR - Very High Frequency Omnidirectional Range
- DME - Distance Measuring Equipment



**TABLE 1H
Noise Abatement Rules and Procedures
Scottsdale Airport**

Prohibited Procedures

- Intersection takeoffs, stop-and-go, formation, simulated single engine departures, or go-arounds prohibited.
- Touch-and-go operations prohibited between 9:30 p.m. and 6:30 a.m.
- Engine maintenance run-ups prohibited between 10:00 p.m. and 7:00 a.m., except in emergencies.
- Runway weight restriction is 75,000 lbs. maximum certificated landing weight. Aircraft operations between 75,000 lbs. and 100,000 lbs. must secure P.P.R.

Preferred Procedures

- Voluntary curfew - 10:00 p.m. - 6:00 a.m.
- Runway 3 is the designated calm wind runway and preferred noise abatement runway.
- When departing Runway 21, make right turn to 300 degrees as soon as possible, or make climbing full 270-degree right turn before heading east or southbound.
- Aircraft not meeting F.A.R. Part 36 Stage III requirements are requested to use Runway 3 for departure and Runway 21 for arrivals, weather and traffic permitting.
- Climb as high as possible before leaving airport boundaries.
- Please fly high and tight patterns.
- Follow the PAPI (4 degrees)
- Descents below 2,500 feet MSL during practice approaches are discouraged.
- Left-hand traffic pattern on Runway 3 and right-hand traffic pattern on Runway 21.
- On Runway 21, aircraft are requested to make short final approaches avoiding direct overflight of residential areas.
- Jets are requested to use NBAA Standard Noise Abatement Departure procedures or comparable procedure of aircraft manufacturer.
- Propeller aircraft are requested to use AOPA "Noise Awareness Steps."

These are general recommendations; some may not be advisable for every aircraft in every situation. No noise reduction procedure should be allowed to compromise safety.

Source: Airport Records

In working with ATCT personnel, the airport has further detailed the recommended noise abatement procedures and other local operating procedures for pilots. **Exhibits 1H** and **1J** depict these recommendations for fixed-wing aircraft and helicopters, respectively.

VICINITY AIRPORTS

There are several other airports of various sizes, capacities, and functions within the vicinity of Scottsdale Airport. It is important to consider the capabilities and limitations of these airports when planning for future changes and improvements at Scottsdale Airport. In an urban setting, airports within 30 nautical miles

of each other can have some influence on the activity of the other airport. The following public use airports are within 30 nautical miles of Scottsdale Airport with at least one paved runway.

- Phoenix Deer Valley Airport
- Phoenix Sky Harbor International Airport
- Mesa-Falcon Field Airport
- Stellar Airpark
- Glendale Municipal Airport
- Chandler Municipal Airport
- Phoenix-Mesa Gateway Airport
- Phoenix Goodyear Airport

Exhibit 1K provides information on the roles, facilities, services, and operational levels these airports experience. Infor-

mation pertaining to each airport was obtained from FAA Form 5010-1, *Airport Master Record*.

From this analysis of public use airports in the region, it is evident that there are several facilities serving the needs of all types of aviation activity. Phoenix Sky Harbor International Airport and Phoenix-Mesa Gateway Airport primarily cater to scheduled commercial airline activity and large corporate jets. Phoenix-Mesa Gateway Airport also provides facilities and services that accommodate smaller general aviation aircraft. Except for Stellar Airpark, the other airports provide an array of services that cater to general aviation needs, including some business jets. The primary runway lengths at certain airports, such as Mesa-Falcon Field, Stellar, and Chandler, can somewhat limit the use of larger aircraft from being able to fully operate at these facilities.

Even with the existence of several aviation facilities nearby, Scottsdale Airport is positioned well due to the full range of services it has to offer at the airport as well as in the community. In addition, it is home to one of the longest runways in the region which allows it to support general aviation activity, ranging from small single engine piston-powered aircraft up to large corporate jets. The vicinity airports each have unique qualities that may serve a specific segment of aviation. These factors must be considered carefully in determining the service area for Scottsdale Airport, which will be discussed in the next chapter.

AIRPORT CHARACTERISTICS

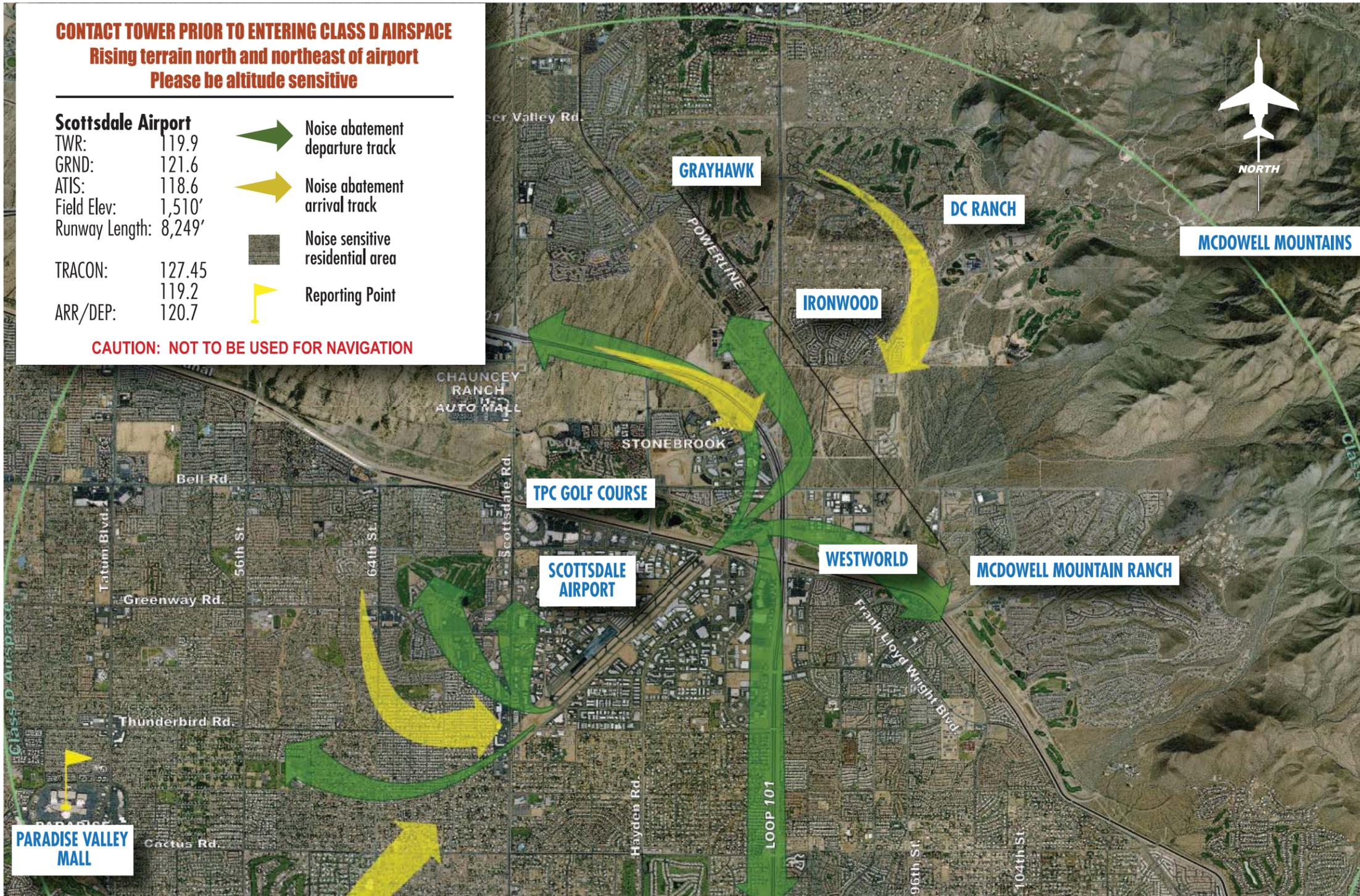
Any comprehensive master planning effort must factor all influences on an airport. Many of these factors are not direct-

ly related to aviation, but do play a key role in the overall growth potential of the airport. The purpose of this section is to summarize various studies and data collected to provide an understanding of the characteristics of the airport and the regional area. This information serves as an important baseline when evaluating future airport development to support demand over the planning period of the Master Plan.

AIRPORT LOCATION

Scottsdale Airport sits on approximately 335 acres of property, approximately nine miles north of the City of Scottsdale's central business district. As depicted on **Exhibit 1L**, the airport is generally bounded on the north by Frank Lloyd Wright Boulevard, to the east by Hayden Road, to the south by Redfield Road, and to the west by Scottsdale Road and Greenway-Hayden Loop. Butherus Drive extends east from Scottsdale Road serving as the main point of access to the airport. The terminal building, located on the west side of the airport, is accessed from Airport Drive via Butherus Drive. Several roadways extending from Butherus Drive and Airport Drive provide access to aviation facilities on the west side of the airport. On the east side of the airport, a combination of roadways allow for access to airport facilities. These roadways include 76th Place, Acoma Drive, 78th Way, and 83rd Place.

Scottsdale Airport provides excellent access to regional highway infrastructure, linking it to the greater Phoenix metropolitan area and points beyond. Loop 101 is located east of the airport and creates a bypass around the City of Scottsdale, providing access to Phoenix and Tempe to the north and south. Loop 101 also con-



CONTACT TOWER PRIOR TO ENTERING CLASS D AIRSPACE
Rising terrain north and northeast of airport
Please be altitude sensitive

Scottsdale Airport

TWR: 119.9
 GRND: 121.6
 ATIS: 118.6
 Field Elev: 1,510'
 Runway Length: 8,249'

TRACON: 127.45
 119.2
 ARR/DEP: 120.7

-  Noise abatement departure track
-  Noise abatement arrival track
-  Noise sensitive residential area
-  Reporting Point

CAUTION: NOT TO BE USED FOR NAVIGATION

1. If practical, avoid noise sensitive areas. Make every effort to fly at or above 2,000 feet AGL over such areas when overflight cannot be avoided.
2. Consider using a reduced power setting if flight must be low because of cloud cover or overlying controlled airspace or when approaching the airport of destination. Propellers generate more noise than engines; flying with the lowest practical RPM setting will reduce aircraft noise substantially.
3. Perform stalls, spins, and other practice maneuvers over uninhabited terrain.
4. Familiarize yourself and comply with airport noise abatement procedures.
5. On takeoff, gain altitude as quickly as possible without compromising safety. Begin takeoffs at the start of a runway, not at an intersection.
6. Use Precision Approach Path Indicator (PAPI). This will indicate a safe glidepath and allow a smooth, quiet descent to the runway.
7. Retract the landing gear either as soon as a landing straight ahead on the runway can no longer be accomplished or as soon as the aircraft achieves a positive rate of climb. If practical maintain best-angle-of-climb airspeed until reaching 50 feet or an altitude that provides clearance from terrain or obstacle. Then accelerate to best-rate-of-climb airspeed. If consistent with safety, make the first power reduction at 500 feet.
8. Fly a tight landing pattern to keep noise as close to the airport as possible. Practice descent to the runway at low power settings and with as few power changes as possible.
9. If possible, do not adjust the propeller control for flat pitch on the downwind leg; instead, wait until short final. This practice not only provides a quieter approach, but also reduces stress on the engine and propeller governor.
10. Avoid low-level, high-power approaches, which not only create high noise impacts, but also limit options in the event of engine failure.
11. Flying between 11 p.m. and 7 a.m. should be avoided whenever possible.

A.O.P.A. NOISE AWARENESS STEPS

April 2011

Note: These are general recommendations; some may not be advisable for every aircraft in every situation. No noise reduction procedure should be allowed to compromise flight safety.

SCOTTSDALE AIRPORT MASTER PLAN



Procedures

- Enter Class Delta Airspace at or above 1000' AGL while in route to the reporting points, and over residential areas whenever possible.
- For Noise Abatement reasons, pilots should use paths over roadways or sparsely populated areas as much as possible, and use reporting points when entering or exiting Class Delta Airspace for Scottsdale Airport.
- Use frequency 119.9, unless specified otherwise by Scottsdale Tower.
- State position, arrival or departure request, and ATIS code on initial call.

Reporting Points

- PIMA - intersection of Raintree Road and Loop 101.
- BELL - intersection of Bell and Scottsdale Roads.
- JAX - (Crackerjax) intersection of Paradise Lane and Scottsdale Road.

Recommended Arrival Routes

For landings at locations other than Scottsdale Airport / Airpark, report "LANDING ASSURED" to inform Scottsdale Tower that descent for landing has started.

On landing approach at Scottsdale Airport/Airpark operators shall remain west of the parallel Taxiway and runway extended centerline AT ALL TIMES unless specifically approved otherwise.

North and northwest arrivals proceed to JAX reporting point at 500' AGL, then direct to destination.

East and South arrivals to PIMA reporting point at 500' AGL, then direct to destination.

Recommended Departure Routes

North and Northwest departures upon approval shall depart and proceed to BELL reporting point at or below 500' AGL, then climb to requested altitude while turning on course or preferred routing.

West and Southwest departures upon approval shall depart and proceed to JAX reporting point at or below 500' AGL until crossing reporting point, then climb to requested altitude while turning on course or preferred routing.

East and South departures shall obtain specific approval to cross the runway, then depart and proceed to PIMA reporting point at or below 500' AGL the climb to requested altitude while proceeding on course or preferred routing.

On departure climb out operators shall remain west of the parallel Taxiway and runway extended centerline AT ALL TIMES unless specifically approved otherwise.

Note: Departure and Arrival routes that require crossing the runway require specific approval PRIOR to crossing.

Phoenix Deer Valley Airport (DVT)	Phoenix Sky Harbor International Airport (PHX)	Mesa-Falcon Field Airport (FFZ)	Stellar Airpark (P19)			
<p>Airport Sponsor: City of Phoenix</p> <p>Distance from SDL: 9 nm Northwest</p> <p>NPIAS Classification: Reliever</p> <p>GA Asset Classification: National</p> <p>Primary Runway: 7R-25L <i>Length:</i> 8,196' <i>Width:</i> 100'</p>  <p>Surface Type / Condition: Asphalt / Good Strength Rating: 20,000 lbs. SWL; 91,000 lbs. DWL; 255,000 lbs. DTWL Marking: Non-precision Runway Lighting: MIRL Nav aids: PAPI-2; REILs Based Aircraft: 995 Annual Operations: 365,432 Services Provided: Fuel (100LL & Jet A), Maintenance, Hangars, Tiedowns, Air Ambulance, Avionics, Charter, Instruction, Rental, Sales Instrument Approaches: RNAV (GPS) Rwy 7R RNAV (GPS) Rwy 25L RNAV (GPS)-B RNAV (GPS)-C</p>	<p>Airport Sponsor: City of Phoenix</p> <p>Distance from SDL: 12 nm Southwest</p> <p>NPIAS Classification: Primary Commercial Service</p> <p>GA Asset Classification: None</p> <p>Primary Runway: 8-26 <i>Length:</i> 11,489' <i>Width:</i> 150'</p>  <p>Surface Type / Condition: Concrete / Good Strength Rating: 30,000 lbs. SWL; 200,000 DWL; 400,000 lbs. DTWL; 620,000 lbs. DDTWL Marking: Precision Runway Lighting: HIRL Nav aids: PAPI-4; REILs; MALSR; MALSF Based Aircraft: 68 Annual Operations: 450,204 Annual Enplanements: 18,439,079 (domestic) Services Provided: Scheduled Airlines, Fuel (100LL & Jet A), Hangars, Maintenance, Tiedowns, Air Ambulance, Avionics, Cargo, Charter, Sales Instrument Approaches: Multiple ILS or LOC Multiple RNAV (GPS)</p>	<p>Airport Sponsor: City of Mesa</p> <p>Distance from SDL: 13 nm Southeast</p> <p>NPIAS Classification: Reliever</p> <p>GA Asset Classification: Regional</p> <p>Primary Runway: 4R-22L <i>Length:</i> 5,101' <i>Width:</i> 100'</p>  <p>Surface Type / Condition: Asphalt / Good Strength Rating: 38,000 lbs. SWL; 60,000 lbs. DWL; 90,000 lbs. DTWL Marking: Non-precision Runway Lighting: MIRL Nav aids: PAPI-2; REILs Based Aircraft: 611 Annual Operations: 190,605 Services Provided: Fuel (100LL and Jet A), Maintenance, Air Ambulance, Avionics, Charter, Instruction, Rental, Sales Instrument Approaches: RNAV (GPS) Rwy 4L RNAV (GPS) Rwy 4R RNAV (GPS)-B</p>	<p>Airport Sponsor: Private</p> <p>Distance from SDL: 19 nm South</p> <p>NPIAS Classification: None</p> <p>GA Asset Classification: None</p> <p>Primary Runway: 17-35 <i>Length:</i> 3,913' <i>Width:</i> 60'</p>  <p>Surface Type / Condition: Asphalt / Good Strength Rating: N/A Marking: Basic Runway Lighting: MIRL Nav aids: PAPI-2 ; REILs Based Aircraft: 161 Annual Operations: 39,000 (estimated) Services Provided: Aircraft fuel (100LL), Tiedowns Instrument Approaches: VOR or GPS-A</p>			
Glendale Municipal Airport (GEU)	Chandler Municipal Airport (CHD)	Phoenix-Mesa Gateway Airport (IWA)	Phoenix Goodyear Airport (GYR)			
<p>Airport Sponsor: City of Glendale</p> <p>Distance from SDL: 20 nm Southwest</p> <p>NPIAS Classification: Reliever</p> <p>GA Asset Classification: Regional</p> <p>Primary Runway: 1-19 <i>Length:</i> 7,150' <i>Width:</i> 100'</p>  <p>Surface Type / Condition: Asphalt / Good Strength Rating: 40,000 lbs. SWL; 60,000 lbs. DWL Marking: Non-precision Runway Lighting: MIRL Nav aids: PAPI-2; REILs Based Aircraft: 289 Annual Operations: 76,127 Services Provided: Fuel (100LL & Jet A), Maintenance, Hangars, Tiedowns, Air Ambulance, Avionics, Charter, Instruction, Rental, Sales Instrument Approaches: RNAV (GPS) Rwy 1 RNAV (GPS) Rwy 19</p>	<p>Airport Sponsor: City of Chandler</p> <p>Distance from SDL: 22 nm Southeast</p> <p>NPIAS Classification: Reliever</p> <p>GA Asset Classification: Regional</p> <p>Primary Runway: 4R-22L <i>Length:</i> 4,870' <i>Width:</i> 75'</p>  <p>Surface Type / Condition: Asphalt / Good Strength Rating: 30,000 lbs. SWL Marking: Non-precision (4R); Basic (22L) Runway Lighting: MIRL Nav aids: PAPI-4; REILs Based Aircraft: 333 Annual Operations: 197,427 Services Provided: Fuel (100LL & Jet A), Maintenance, Hangars, Tiedowns, Agriculture, Avionics, Charter, Instruction, Rental, Sales Instrument Approaches: RNAV (GPS) Rwy 4R VOR Rwy 4R NDB Rwy 4R</p>	<p>Airport Sponsor: Phoenix-Mesa Gateway Airport Authority</p> <p>Distance from SDL: 23 nm Southeast</p> <p>Airport Classification: Primary Commercial Service</p> <p>GA Asset Classification: None</p> <p>Primary Runway: 12R-30L <i>Length:</i> 10,401' <i>Width:</i> 150'</p>  <p>Surface Type / Condition: Concrete / Good Strength Rating: 55,000 lbs. SWL; 95,000 lbs. DWL; 185,000 lbs. DTWL; 550,000 lbs. DDTWL Marking: Precision Runway Lighting: HIRL Nav aids: PAPI-4; REILs Based Aircraft: 128 Annual Operations: 157,915 Annual Enplanements: 693,543 Services Provided: Scheduled Airlines, Fuel (100LL & Jet A), Hangars, Maintenance, Tiedowns; Air Ambulance, Cargo, Charter, Instruction, Rental Instrument Approaches: ILS or LOC Rwy 30C Multiple RNAV (GPS) VOR or TACAN Rwy 30C</p>	<p>Airport Sponsor: City of Phoenix</p> <p>Distance from SDL: 26 nm Southwest</p> <p>NPIAS Classification: Reliever</p> <p>GA Asset Classification: Regional</p> <p>Primary Runway: 13-21 <i>Length:</i> 8,501' <i>Width:</i> 150'</p>  <p>Surface Type / Condition: Asphalt / Good Strength Rating: 75,000 lbs. SWL; 200,000 lbs. DWL; 270,000 lbs. DTWL Marking: Basic Runway Lighting: MIRL Nav aids: PAPI-2; REILs Based Aircraft: 223 Annual Operations: 144,172 Services Provided: Fuel (100LL & Jet A), Maintenance, Hangars, Tiedowns, Instruction Instrument Approaches: RNAV (GPS) Rwy3</p>			
<p>KEY</p> <p>DDTWL - Double Dual Tandem Wheel Loading DWL - Dual Wheel Loading DWTW - Dual Tandem Wheel Loading</p>	<p>GPS - Global Positioning System HIRL - High Intensity Runway Lighting ILS - Instrument Landing System</p>	<p>LOC - Localizer MALSF - Medium Intensity Approach Lighting System with Sequenced Flashing Lights</p>	<p>MALSR - Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights MIRL - Medium Intensity Runway Lighting</p>	<p>NDB - Non-Directional Beacon PAPI - Precision Approach Path Indicator REIL - Runway End Identification Lights</p>	<p>RNAV - Area Navigation SWL - Single Wheel Loading TACAN - Tactical Air Navigation</p>	<p>VOR - Very High Frequency Omnidirectional Range</p>  <p>NORTH (All Pictures)</p>

KEY

SCOTTSDALE AIRPORT MASTER PLAN



nects directly to U.S. Interstate 17 as well as U.S. Interstate 10 via U.S. Highway 60. These major thoroughfares link the Phoenix metropolitan area to other cities in the region, including Flagstaff to the north, Tucson to the south, and Los Angeles to the west.

AIRPORT HISTORY

The present day Scottsdale Airport began on June 22, 1942, when it served as a basic training facility for World War II Army Air Corp pilots. Known as Thunderbird II Airfield, the facility was home to hundreds of pilot cadets training for the war. During its peak, Thunderbird II Airfield accommodated approximately 600 cadets who flew an average of two hours per day, accounting for over 3,500 aircraft operations daily.

After World War II, the Arizona State Teachers College (now Arizona State University) acquired the airport to support its own aviation program. The program was short-lived, however, due to operational costs and driving distance from the college campus in Tempe.

In 1953, the Arizona Conference of Seventh Day Adventists purchased the airport and established Thunderbird Academy. The Church converted barracks and hangars into dormitories and training centers to support several functions related to mechanics, woodworking, and welding. In addition, the Church utilized the airfield to train pilots for its missionary program.

In 1962, a land developer began negotiating with the Church to acquire approximately 640 acres to develop an industrial park. In 1966, the City of Scottsdale acquired approximately 225 acres adjacent

to this area for the development and operation of the airfield. Upon acquisition, the city began construction of a 4,800-foot by 75-foot paved runway. Support facilities including an aircraft parking apron, connecting taxiway, and aircraft turn-a-rounds were also constructed. In 1967, the runway and support facilities were officially opened. This initial development in the late 1960s culminated with the construction of a dedicated general aviation terminal building in 1969.

The 1970s and 1980s saw continued growth and development of the airport to include several thousand square feet of additional hangar development, a full-length parallel taxiway on the east and west sides of the runway, additional runway pavement (length and width), the installation of navigational aids serving the airfield, and the construction of a new ATCT on the east side of the airport. Several other projects have been conducted at the airport since this time that include numerous pavement rehabilitation improvements, drainage and erosion control, runway safety area enhancements, security upgrades, terminal renovations, and airport noise-related projects, including monitoring and blast fences.

Today, Scottsdale Airport and the surrounding Scottsdale Airpark is a major economic asset for the City of Scottsdale. The airport and airpark are primary sources of employment in the region and are home to hundreds of corporations and businesses. The airport is home to 368 based aircraft and experiences approximately 150,000 aircraft operations annually. Several aviation and non-aviation related businesses are located on and adjacent to the airport that provide an array of services.

REGIONAL CLIMATE

Weather conditions must be considered in the planning and development of an airport, as daily operations are affected by local weather. Temperature is a significant factor in determining runway length needs, while local wind patterns (both direction and speed) can affect the operation and capabilities of the runway. The need for navigational aids and lighting is determined by the percentage of time the visibility is impaired due to cloud coverage and other conditions.

The City of Scottsdale’s climate is typical of the desert southwest: warm and dry. Summers are very warm with rain and thunderstorms occurring during the late

summer monsoon season. The spring and fall are typically drier and winters are usually mild with little rain.

The average annual daily high temperature is 86.2 degrees Fahrenheit (F), ranging from 66.7 degrees F in December to 105.3 degrees F in July. Average low temperatures range between 36.9 degrees F in January to 72.7 degrees F in July, leading to an average annual daily low temperature of 52.4 degrees F. Average annual precipitation in the area is 11.74 inches. Winds in the area are generally from the south and southwest, averaging 6.2 miles per hour (mph). A summary of climatic data specific to the City of Scottsdale is presented in **Table 1J**.

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Annual
Avg. High Temp. (F)	66.8	72.1	77.0	85.9	94.7	103.2	105.3	103.7	98.6	86.4	71.7	66.7	86.2
Avg. Low Temp. (F)	36.9	38.7	43.0	47.8	55.5	63.3	72.6	72.7	64.9	52.6	41.4	37.7	52.4
Avg. Precip. (in.)	0.98	1.09	1.11	0.35	0.20	0.12	1.36	1.59	1.22	0.84	1.29	1.60	11.74
Wind Speed (mph)	5.2	5.8	6.5	7.0	7.0	6.8	7.0	6.7	6.3	5.8	5.2	5.0	6.2

Source: *Western Regional Climate Center and www.weather.com*

AIRPORT ACTIVITY

At general aviation reliever airports such as Scottsdale Airport, total annual operations (takeoffs and landings) and based aircraft are the primary indicators of aeronautical activity. These indicators will be used in subsequent analysis in this Master Plan to project future aviation demand and determine future facility needs.

Annual Operations

Aircraft operations, a takeoff or landing, are classified as local or itinerant. Local operations consist mostly of aircraft

training operations conducted within the airport traffic pattern and touch-and-go and stop-and-go operations. Itinerant operations are arriving or departing aircraft which have an origin or destination away from the airport.

Aircraft operations are further classified in four general categories: air carrier, air taxi, general aviation, and military. Air carrier operations are defined as those conducted commercially by aircraft having a seating capacity of 60 or more and/or a maximum payload capacity of 18,000 pounds. Air carrier operations do not occur at Scottsdale Airport. Air taxi operations can include small commercial service aircraft operations, as well as general aviation type aircraft for the “on-

demand” commercial transport of persons and property in accordance with Title 14 CFR Part 135 and Subchapter K of Title 14 CFR Part 91.

Exhibit 1M presents historical aircraft operations for Scottsdale Airport over the past 20 years. During this timeframe, annual aircraft operations at the airport have averaged approximately 191,200. The airport noticed a significant decrease in operations most recently in 2010, most likely due to ailing economic conditions at the time. The past two years have seen a gradual increase in activity as the economy improves. Chapter Two will provide more details as to specific types of aircraft operations conducted at the airport.

Based Aircraft

Identifying the current number of based aircraft is important to Master Plan analysis, yet it can be challenging because of the transient nature of aircraft storage.

The airport maintains a record of aircraft based on the airport. There are currently 368 aircraft based at the airport, which includes a large number of business jets. Historical based aircraft information is also presented on **Exhibit 1M**.

CAPITAL IMPROVEMENT HISTORY

To assist in funding capital improvements, the FAA and ADOT-MPD – Aeronautics Group have provided funding assistance to the City of Scottsdale through the AIP and Arizona Aviation Fund. **Table 1K** summarizes approximately \$23.8 million in grant-aided capital improvement projects undertaken at the airport over the past several years. Of this total, the airport has received over \$17 million in federal grants and \$6 million in state grants. This has included funding for engineering and construction projects, planning studies, airfield safety improvements, and security enhancements.

TABLE 1K
Capital Improvement History – Grant Funding
Scottsdale Airport

Year	Grant Number	Project Description	Total Grant Amount
FEDERAL GRANTS			
1999	3-04-0032-014	Widen Runway 3-21; Extend Taxiway - Phase I	\$1,723,000
2001	3-04-0032-015	Extend Parallel Taxiway; Improve Runway Safety Area - Phase I	\$2,330,022
2002	3-04-0032-016	Construct Service Road; Rehabilitate Aircraft Parking Apron	\$1,494,614
2003	3-04-0032-017	Environmental Mitigation; Extend Taxiway	\$150,000
2003	3-04-0032-018	Conduct Noise Compatibility Plan Study	\$273,180
2003	3-04-0032-019	Improve Runway Safety Area	\$364,240
2004	3-04-0032-020	Improve Runway Safety Area	\$1,436,771
2005	3-04-0032-021	Environmental Mitigation - Install Blast Fence; Install Noise Monitoring System	\$356,951
2006	3-04-0032-022	Construct Taxiways; Install Airfield Guidance Signage; Rehabilitate Access Road; Rehabilitate Taxiways	\$394,250
2007	3-04-0032-023	Construct Taxiway; Install Apron Lighting	\$3,794,217
2009	3-04-0032-024	Rehabilitate Aircraft Parking Aprons - Design Only	\$123,693
2010	3-04-0032-025	Rehabilitate Aircraft Parking Aprons	\$2,000,000
2010	3-04-0032-026	Conduct Environmental Study	\$273,738
2011	3-04-0032-027	Rehabilitate Aircraft Parking Aprons	\$654,096
2011	3-04-0032-028	Rehabilitate Aircraft Parking Aprons	\$1,915,847
2012	3-04-0032-029	Update Airport Master Plan Study	\$427,500
Subtotal Federal Grants			\$17,712,119

TABLE 1K (Continued)
Capital Improvement History – Grant Funding
Scottsdale Airport

Year	Grant Number	Project Description	Total Grant Amount
STATE GRANTS			
2000	N613	Land Acquisition; Airfield Improvements; Pavement Preservation; Drainage Control	\$50,460
2000	0107	Runway Pavement Preservation	\$351,639
2000	0158	Widen Runway 3-21; Extend Taxiway - Phase I (Match on Federal Grant # 3-04-0032-014)	\$83,888
2000	0119	Upgrade Landside Utilities	\$324,056
2001	1118	Rehabilitate Aircraft Parking Aprons; Airfield Improvements - Design Only	\$329,151
2001	1155	Extend Parallel Taxiway; Improve Runway Safety Area - Phase I (Match on Federal Grant # 3-04-0032-015)	\$117,012
2003	3F26	Construct Service Road; Rehabilitate Aircraft Parking Apron (Match on Federal Grant # 3-04-0032-016)	\$74,351
2003	3S12	Improve Runway Safety Area; Rehabilitate Aircraft Parking Aprons - Design Only	\$202,500
2003	3S90A	APPP - Rehabilitate Airfield Pavements	\$270,401
2004	4F04	Environmental Mitigation - Install Blast Fence; Construct Taxiway (Match on Federal Grant # 3-04-0032-017)	\$7,342
2004	4F05	Conduct Noise Compatibility Plan Study (Match on Federal Grant # 3-04-0032-018)	\$13,410
2004	4F06	Improve Runway Safety Area (Match on Federal Grant # 3-04-0032-019)	\$17,880
2004	4S39	Design and Construct Fencing and Gates; Security Upgrades	\$172,489
2004	4S61	APPP - Rehabilitate Aircraft Parking Aprons	\$680,839
2005	5S28	Security Lighting Upgrade on Aircraft Parking Aprons - Design Only	\$31,500
2005	5S29	Improve Airport Entrance Road and Parking Lot - Design Only	\$147,984
2005	5F37	Improve Runway Safety Area (Match on Federal Grant # 3-04-0032-020)	\$37,547
2006	6F51	Environmental Mitigation - Install Blast Fence; Install Noise Monitoring System (Match on Federal Grant # 3-04-0032-021)	\$8,212
2006	6S14	Improve Airport Entrance Road and Parking Lot	\$1,730,175
2007	7F57	Construct Taxiways; Install Airfield Guidance Signage; Rehabilitate Access Road; Rehabilitate Taxiways (Match on Federal Grant # 3-04-0032-022)	\$9,683
2007	7S19	Construct Aircraft Wash Rack	\$124,200
2008	8F83	Construct Taxiway; Install Apron Lighting (Match on Federal Grant # 3-04-0032-023)	\$75,939
2008	8S03	Improve Terminal Parking Area - Phase II	\$810,000
2008	8S13	Improve Airport Rotating Beacon	\$7,206
2009	9F54	Rehabilitate Aircraft Parking Aprons - Design Only (Match on Federal Grant # 3-04-0032-024)	\$3,255
2011	1F13	Conduct Environmental Study (Match on Federal Grant # 3-04-0032-026)	\$5,471
2011	1F19	Rehabilitate Aircraft Parking Aprons (Match on Federal Grant # 3-04-0032-025)	\$52,631
2011	1F55	Rehabilitate Aircraft Parking Aprons (Match on Federal Grant # 3-04-0032-027)	\$16,836
2011	1S47	Improve Runway Safety Area	\$274,066
2012	2F1Q	Rehabilitate Aircraft Parking Aprons (Match on Federal Grant # 3-04-0032-028)	\$46,652
2013	3F2G	Update Airport Master Plan Study (Match on Federal Grant # 3-04-0032-029)	\$20,986
Subtotal State Grants			\$6,097,761
TOTAL ALL GRANTS			\$23,809,880

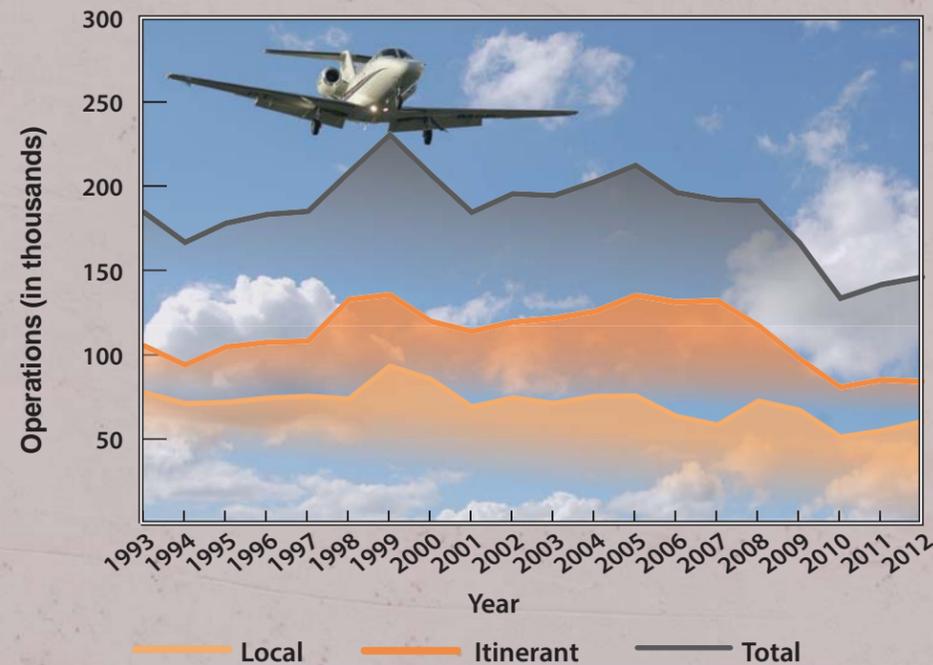
Source: FAA and ADOT-MPD - Aeronautics Group

SCOTTSDALE AIRPORT MASTER PLAN

Calendar Year	ITINERANT					LOCAL			Total Operations	BASED AIRCRAFT
	Air Carrier	Air Taxi	General Aviation	Military	Total	Civil	Military	Total		
1993	0	4,235	102,566	201	107,002	77,442	68	77,510	184,512	420
1994	2	3,866	91,638	224	95,730	70,902	106	71,008	166,738	393
1995	0	3,471	102,606	301	106,378	71,667	64	71,731	178,109	403
1996	5	4,162	104,703	201	109,071	74,136	97	74,233	183,304	403
1997	0	4,203	105,233	314	109,750	75,024	334	75,358	185,108	400
1998	14	6,274	127,613	568	134,469	73,281	441	73,722	208,191	401
1999	5	7,226	129,774	324	137,329	93,119	153	93,272	230,601	424
2000	8	7,947	113,203	417	121,575	85,298	159	85,457	207,032	425
2001	11	8,466	106,654	447	115,578	68,894	96	68,990	184,568	439
2002	1	10,252	110,331	520	121,104	74,398	62	74,460	195,564	446
2003	4	10,219	112,700	394	123,317	71,121	34	71,155	194,472	460
2004	8	11,055	115,900	423	127,386	75,264	31	75,295	202,681	439
2005	0	11,816	124,783	278	136,877	75,544	8	75,552	212,429	439
2006	0	12,389	120,366	198	132,953	63,166	179	63,345	196,298	471
2007	0	13,390	119,984	363	133,737	58,129	116	58,245	191,982	447
2008	0	11,232	107,351	359	118,942	72,268	201	72,469	191,411	392
2009	9	8,168	90,933	278	99,388	67,029	27	67,056	166,444	423
2010	0	12,250	69,767	365	82,382	51,055	78	51,133	133,515	424
2011	5	12,969	73,304	580	86,858	54,620	162	54,782	141,640	424
2012	10	14,521	70,719	530	85,780	60,234	78	60,312	146,092	368

Operations Source: FAA Air Traffic Activity Data System (ATADS) as reported by the SDL ATCT; Based Aircraft Source: 1993-2010 - Scottsdale Airport Environmental Assessment; 2011-2012 - Airport Records

OPERATIONS



BASED AIRCRAFT



CURRENT BASED AIRCRAFT MIX

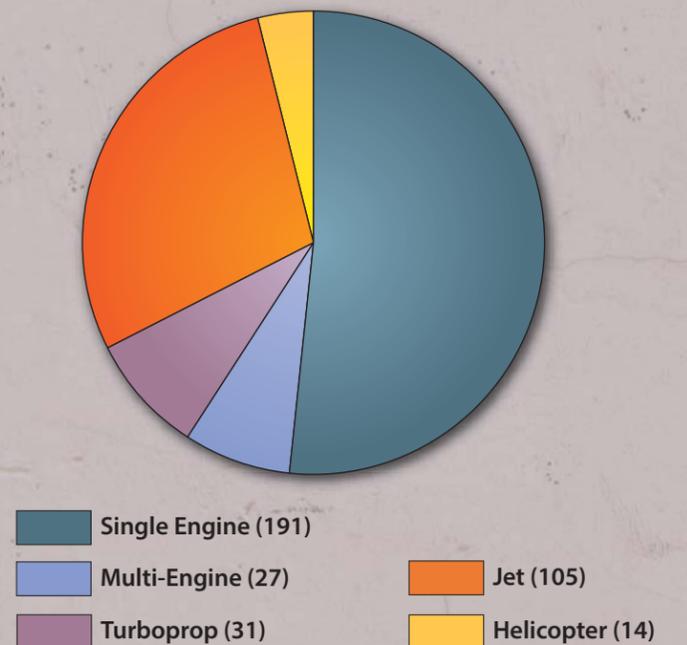


Table 1L details several capital improvement projects that the airport has completed without grant-in-aid funding through the FAA or ADOT-MPD – Aero-

navics Group. Approximately \$12.2 has been designated for projects ranging from security enhancements to airport terminal renovations.

TABLE 1L Capital Improvement History - No Grant Funding Scottsdale Airport			
Year	Project Number	Project Description	Total Project Amount
1999	A7008	Upgrade Airport Gates	\$267,765
2000	A9920	Remodel Aviation Business Center	\$190,963
2000	A9921	Remodel Airport Terminal Building	\$362,689
2001	A2101	Airport Drainage and Signs	\$137,000
2005	A0502	Airport Parking Lot Lighting	\$3,775
2007	A0703	Airport Security System Enhancements	\$25,222
2009	A0903	Airport Security System Improvements	\$120,000
2012	A1201	Construct Airport Operations/Maintenance Center	\$4,900,000
2012	A1202	Airport Terminal Area Signage Upgrade	\$200,000
2014	AA002A	Airport Terminal Area Redevelopment	\$6,000,000
TOTAL PROJECT AMOUNT			\$12,207,414
Source: Airport Records			

AREA LAND USE AND ZONING

The area land use surrounding Scottsdale Airport can have a significant impact on airport operations and growth. The following identifies baseline information related to land use and zoning in the vicinity of the airport. By understanding the land use issues surrounding the airport, more appropriate recommendations can be made for the future of the airport.

FEDERAL LEGISLATION AND REGULATIONS

There are numerous federal laws and regulations related to airport land use compatibility. Airports that accept federal development grants are required to make every reasonable effort to comply with the laws and regulations. The following is a summary of the federal laws and regulations related to land use com-

patibility and zoning surrounding airports.

Airport and Airway Improvement Act of 1982 - United States Code (USC), Title 49

Upon acceptance of federal funds, this Act obligates the airport owners to operate and maintain the airport and comply with specific assurances, including maintenance of compatible land uses around airports. The implementation of this Act is handled through stipulations outlined in the grant documents signed by airport owners when they accept federal funds for a project.

Objects Affecting Navigable Airspace - Title 14 CFR Part 77

This federal regulation establishes standards for determining obstructions in nav-

igable airspace. It sets forth requirements for construction and alteration of structures (i.e., buildings, towers, etc.). It also provides for studies of obstructions to determine their effect on the safe and efficient use of airspace, as well as providing for public hearings regarding these obstructions, along with provisions for the creation of antenna farm areas. It also establishes methods of identifying surfaces that must be free from penetration by obstructions, including buildings, cranes, cell towers, etc., in the vicinity of an airport. This regulation is predominately concerned with airspace-related issues. Implementation and enforcement of the elements contained in this regulation are a cooperative effort between the FAA and the individual state aviation agencies or the airports themselves.

The imaginary surfaces defined in Title 14 CFR Part 77 include the primary surface, transitional surface, approach surface, horizontal surface, and the conical surface. **Exhibit 1N** depicts a model example of the application of the Part 77 surfaces.

Airport Noise Compatibility Planning – Title 14 CFR Part 150

This federal regulation provides guidance for controlling planning for aviation noise compatibility on and around airports. These procedures and standards are used by the airport to prepare noise exposure maps and noise compatibility programs. The Title 14 CFR Part 150 process enables communities to plan for compatible land use around airports to minimize the impact from incompatible land uses on the airport.

The noise compatibility planning process is the only “regulatory” avenue available

to local airport operators for addressing airport noise issues. However, the City of Scottsdale also uses the Title 14 CFR Part 150 study process to raise awareness of aircraft noise issues and pilot education of recommended noise abatement procedures.

Exhibit 1P depicts noise overlay zones surrounding the airport that have been adopted through Ordinance 4024 which amended Chapter Five of the *Scottsdale Revised Code*. New development within the Airport Influence Area is to:

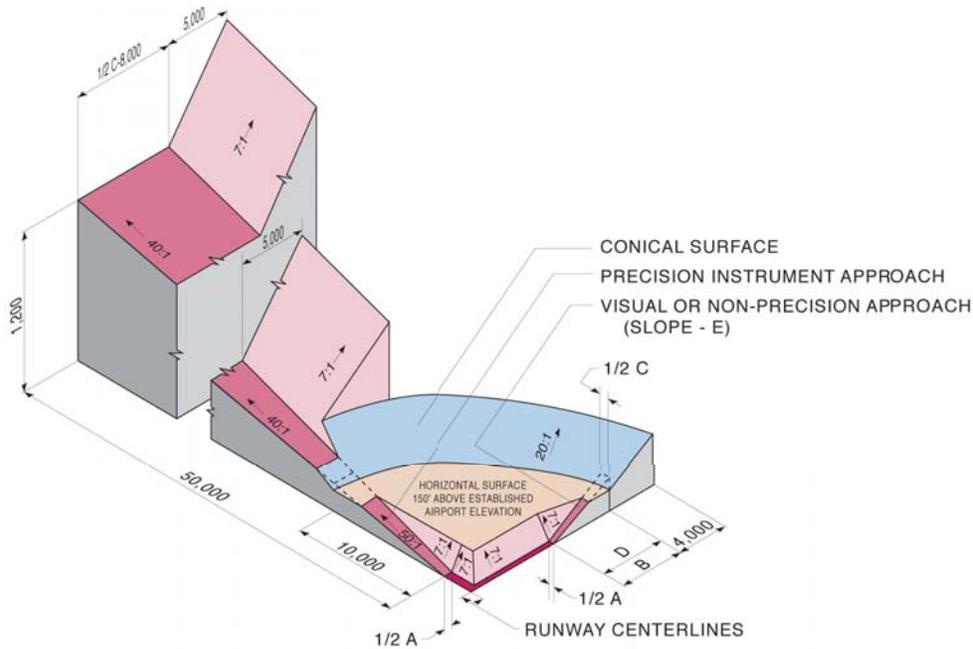
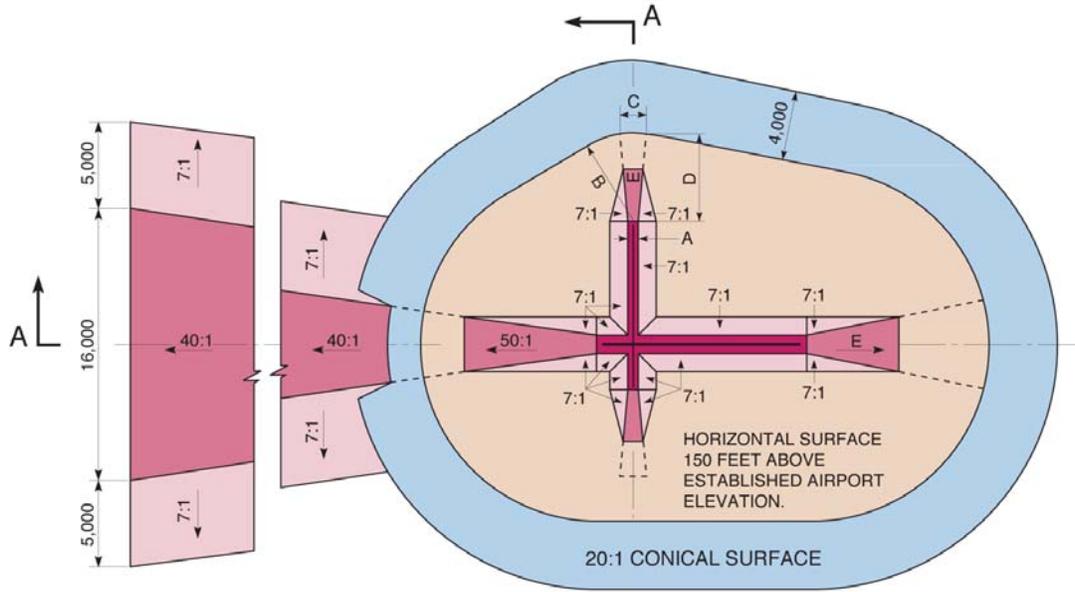
- Avoid obstructions that may destroy or impair the airport’s utility and the public investment therein;
- Comply with FAA standards for noise awareness and mitigation;
- Protect the viability of the airport as a general aviation facility; and
- Promote the public health, safety, and general welfare.

Also included on the exhibit is a description of the land uses allowed within each zone. These land use controls promote the compatibility of the airport with the community.

Airport Land Use Compatibility Planning – FAA Advisory Circular (AC) 150/5060-6

This document guides the development of a compatibility plan to ensure the environs surrounding an airport are not developed in a manner that could pose a risk to the airport’s operations. This document specifically looks at land use and noise issues.

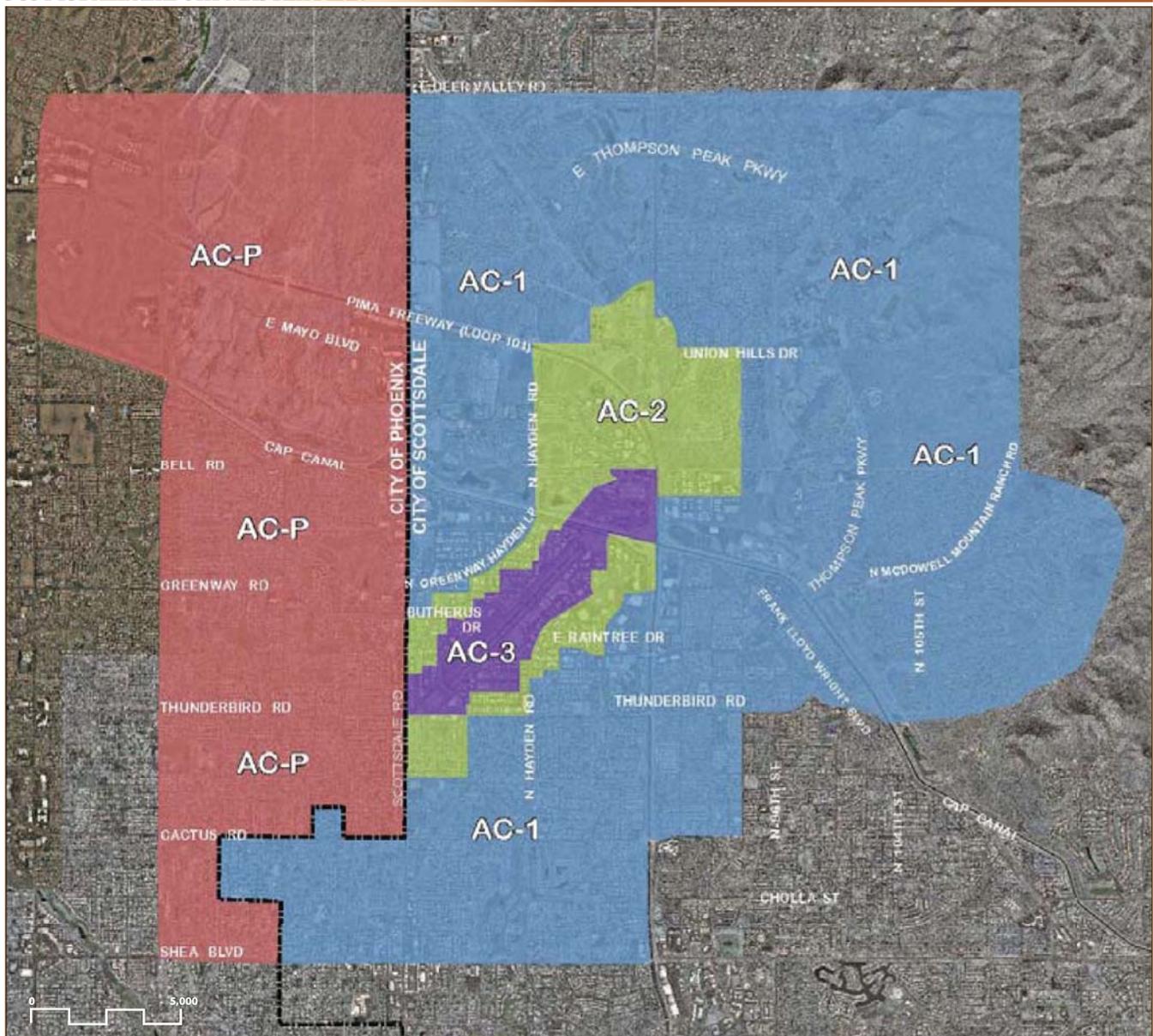
SCOTTSDALE AIRPORT MASTER PLAN



DIM	ITEM	DIMENSIONAL STANDARDS (FEET)					
		VISUAL RUNWAY		NON-PRECISION INSTRUMENT RUNWAY			PRECISION INSTRUMENT RUNWAY
		A	B	A	B		
					C	D	
A	WIDTH OF PRIMARY SURFACE AND APPROACH SURFACE WIDTH AT INNER END	250	500	500	500	1,000	1,000
B	RADIUS OF HORIZONTAL SURFACE	5,000	5,000	5,000	10,000	10,000	10,000
		VISUAL APPROACH		NON-PRECISION INSTRUMENT APPROACH			PRECISION INSTRUMENT APPROACH
		A	B	A	B		
C	APPROACH SURFACE WIDTH AT END	1,250	1,500	2,000	3,500	4,000	16,000
D	APPROACH SURFACE LENGTH	5,000	5,000	5,000	10,000	10,000	*
E	APPROACH SLOPE	20:1	20:1	20:1	34:1	34:1	*

A - UTILITY RUNWAYS
 B - RUNWAYS LARGER THAN UTILITY
 C - VISIBILITY MINIMUMS GREATER THAN 3/4 MILE
 D - VISIBILITY MINIMUMS AS LOW AS 3/4 MILE
 * - PRECISION INSTRUMENT APPROACH SLOPE IS 50:1 FOR INNER 10,000' AND 40:1 FOR AN ADDITIONAL 40,000'

SCOTTSDALE AIRPORT MASTER PLAN



LEGEND AND TABLE KEY

----- Municipal Boundary

Airport Influence Areas

- AC-1
- AC-2
- AC-3
- AC-P

NP - Not Permitted

P - Permitted with Use Limitations

(1) - Avigation easement required under Sec. 5-357

(2) - Noise attenuation required under Sec. 5-358

Noise Sensitive Uses	AC ¹ -3	AC-2	AC-1
Dwelling unit*	NP	P (1) (2)	P (1)
Manufactured home*	NP	P (1) (2)	P (1)
Elementary and secondary school*	NP	P (1) (2)	P (1)
Hospital*	NP	P (1) (2)	P
Travel accommodation*	NP	P (1) (2)	P
Place of worship	NP	P (1) (2)	P (1)
Cultural, civic, and social organization	NP	P (1) (2)	P (1)

* The terms dwelling unit, manufactured home, elementary and secondary school, hospital and travel accommodation defined in the Basic Zoning Ordinance.

¹ AC - Airport Compatibility District

Airport Master Plans – FAA Advisory Circular (AC) 150/5070-6A

This document guides the development of airport master plans. The guiding principle of the airport planning process is to develop a safe and efficient airport through the use of acceptable standards. While there are many steps in the planning process, none of these steps should be treated in a piecemeal manner. The airside and landside issues must be equally evaluated to create a plan that provides for compatible airport and community development where possible.

A Model Zoning Ordinance to Limit Height of Objects Around Airports – FAA Advisory Circular (AC) 150/5190-4A

This advisory circular concerns itself with developing zoning ordinances to control the height of objects. It is based upon the surfaces described in Subpart C of Title 14 CFR Part 77, *Objects Affecting Navigable Airspace*. This document provides sample language and model ordinances for use by local airports.

The City of Scottsdale has enacted height and hazard zoning guidelines surrounding the airport. Ordinance No. 1254 was adopted by the Scottsdale City Council to regulate and restrict the height of structures and objects of natural growth in the vicinity of Scottsdale Airport.

Airport Design - Advisory Circular (AC) 150/5300-13A

This document provides the basic standards and recommendations for airport design. Topics include various runway and taxiway safety areas, the runway pro-

tection zones, threshold siting surfaces, runway length, and facility separation standards.

Grant Assurances

Pursuant to the provisions of Title 49, U.S.C., subtitle VII, as amended, assurances are required to be submitted as part of a project application by sponsors requesting funds. Upon acceptance of the grant offer by the sponsor, these assurances are incorporated in, and become part of, the grant agreement. There are 39 grant assurances, several of which address airport planning. The following are the primary land use compatibility grant assurances:

- Grant Assurance 21 requires, in part, that the sponsor:

“...take appropriate action, to the extent reasonable, including the adoption of zoning laws, to restrict the use of land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations, including landing and takeoff of aircraft.”

- Grant Assurance 20 relates to an airport sponsor’s obligation for hazard removal and mitigation to address potential obstructions to the airspace around the airport. Grant Assurance 20 states that the airport sponsor will:

“...take appropriate action to assure that such terminal airspace as is required to protect instrument and visual operations to the airport (including established minimum flight altitudes) will be adequately cleared and protected by removing, lowering, relocating, marking, or lighting or otherwise mitigating existing airport haz-

ards and by preventing the establishment or creation of future airport hazards.”

EXISTING LAND USE AND ZONING

The majority of land immediately surrounding Scottsdale Airport is under the jurisdiction of the City of Scottsdale. Land west of Scottsdale Road is located within the City of Phoenix. The airport is primarily surrounded by commercial land use which encompasses areas that make up the Scottsdale Airpark, as well as property immediately adjacent to Scottsdale Road west of the airport, Frank Lloyd Wright Boulevard north of the airport, and Loop 101 east of the airport. A Central Arizona Project (CAP) canal, managed and operated by the Central Arizona Water Conservation District, is located adjacent to Frank Lloyd Wright Boulevard immediately northeast of the airport. To the north of the CAP canal is the TPC Scottsdale Champions Golf Course. Pockets of commercial, residential, and open space uses are located farther north. Land use to the south and west of the airport is predominantly residential in nature. **Exhibit 1Q** shows the existing land uses based on aerial photography of the airport and surrounding area.

Under ideal conditions, the development immediately surrounding the airport would be controlled and limited to compatible land uses. Compatible uses would include light and heavy industrial development, and some commercial development. Land use zoning is the most common land use control. The City of Scottsdale has in place a detailed zoning plan for all areas adjacent to Scottsdale Airport. Property immediately surrounding the airport contains a number of zoning designations including Industrial Park,

Central Business District, General Commercial, Commercial Office, and Open Space. It should be noted that a small area immediately southwest of the runway system, located at the northeast corner of the intersection of Scottsdale Road and Thunderbird Road, is zoned as Resort/Townhouse Residential.

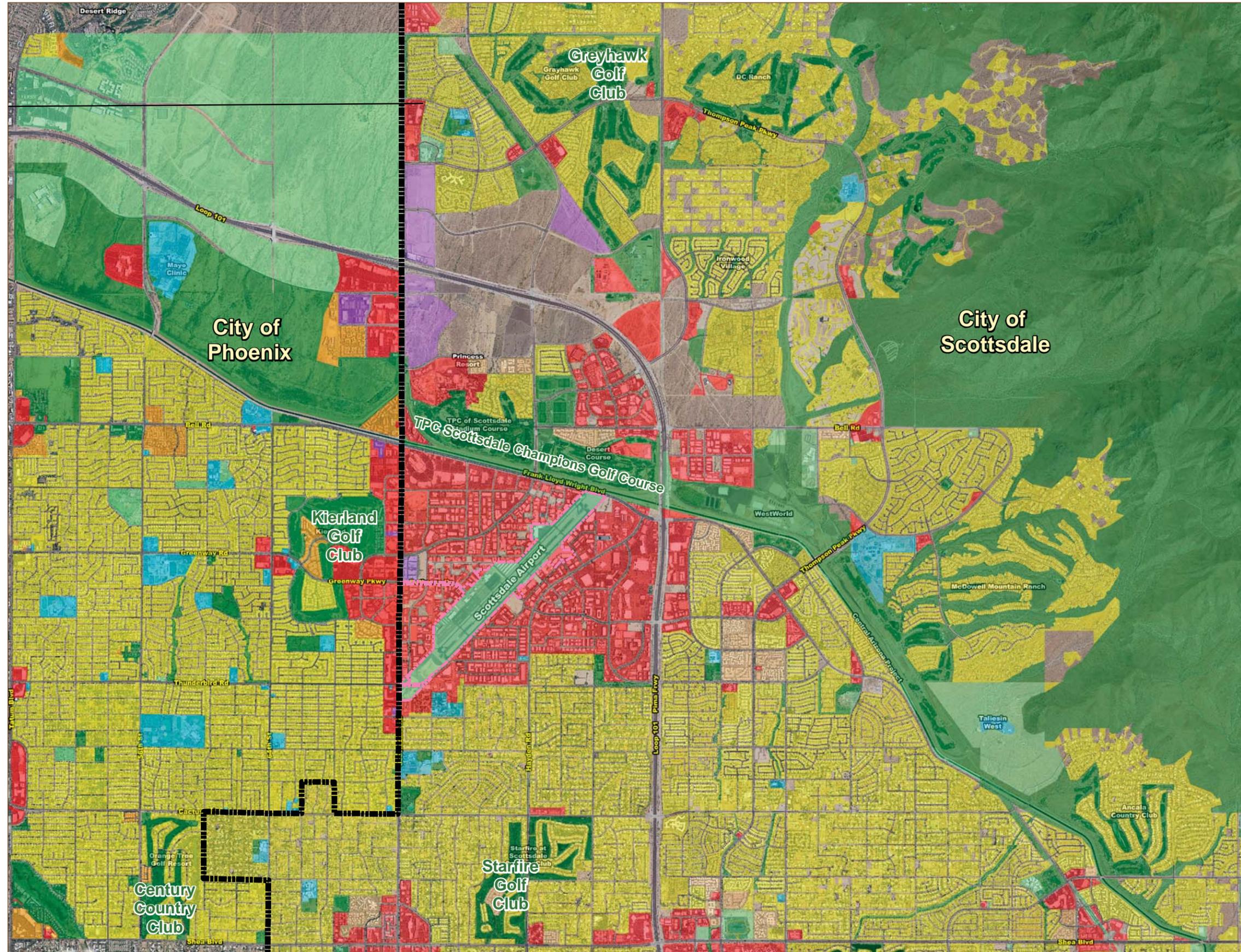
CITY OF SCOTTSDALE GENERAL PLAN 2001 AND FUTURE LAND USE

The *City of Scottsdale General Plan 2001* (General Plan) is the long range planning document that helps guide the future growth and character of the community. The General Plan addresses all attributes of the community, from land use, housing, transportation, and infrastructure, to the natural environment.

The land use element of the General Plan establishes goals and policies for the types and locations of land uses citywide. The General Plan encourages the orderly and efficient distribution of land uses in the city based on character and compatibility. **Exhibit 1R** depicts the distribution of land uses throughout the City of Scottsdale. Note that the land uses closest to the airport include Cultural/Institutional or Public Use, Employment, and Mixed-Use Neighborhoods. *Please refer to the General Plan for definitions attributed to land uses as well as General Plan Amendment Criteria.*

GREATER AIRPARK CHARACTER AREA PLAN

Although the General Plan incorporates broad goals, policies, and direction for the entire city, more detailed planning is found at the Character Area level. In 2010, the Scottsdale City Council adopted

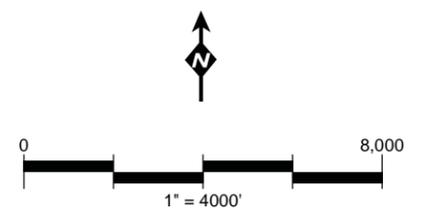


Legend

- Municipal Boundary
- Airport Property
- Single Family Residential
- Multi Family Residential
- Commercial
- Industrial
- Mixed Use
- Noise Sensitive
- Public
- Parks and Open Space

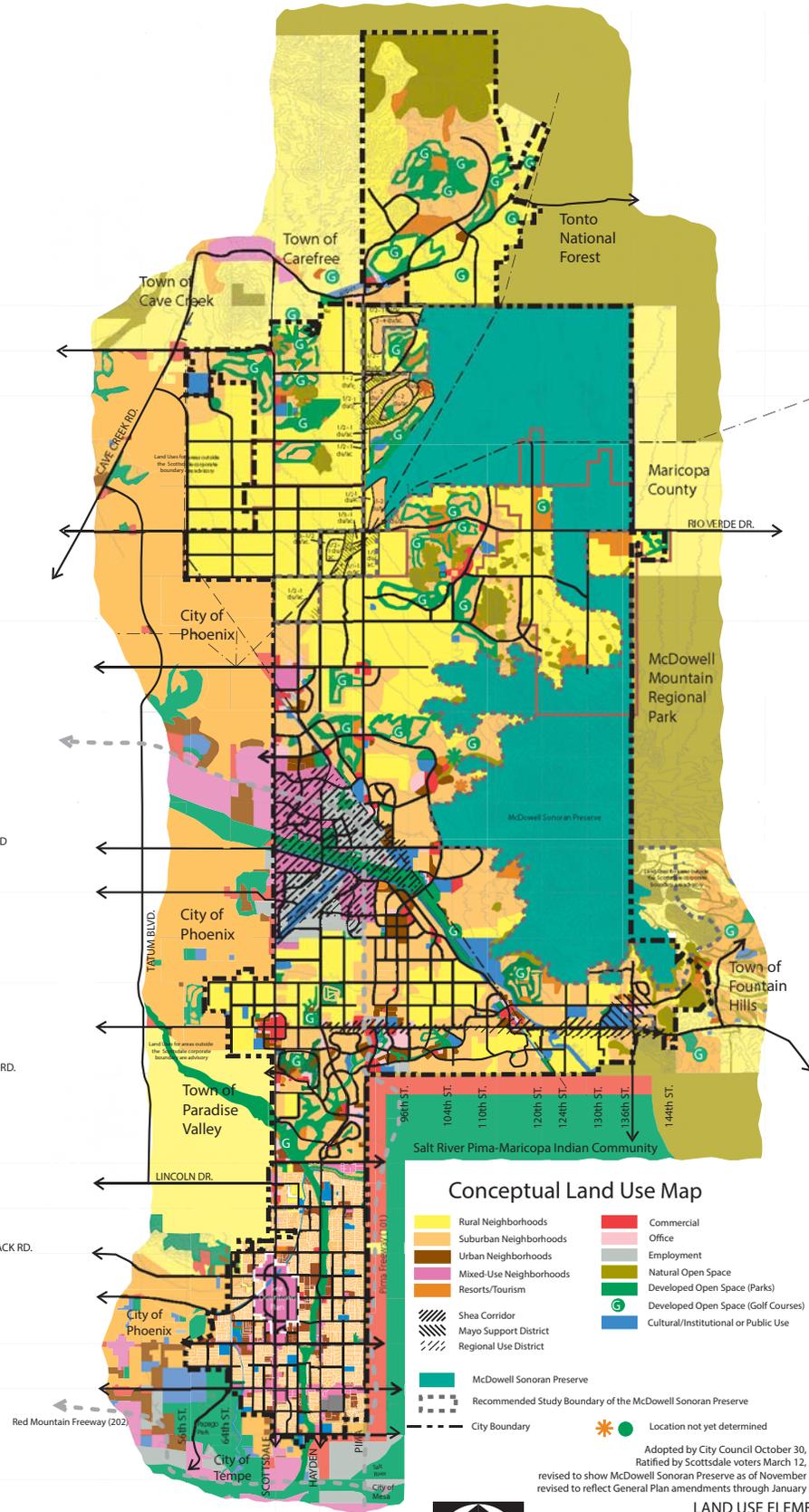
Source:

Aerial is from April 2012, Todd Photographic. Base data from the City of Scottsdale Geographic Information System (October 2010). Phoenix Land Use & Noise Sensitive data from City of Phoenix 2011. Scottsdale Noise Sensitive data from City of Scottsdale registered businesses.



SCOTTSDALE AIRPORT MASTER PLAN

- JENNY LYNN
- CIRCLE MOUNTAIN
- HONDA BOW
- ROCKAWAY HILLS
- DESERT HILLS
- JOY RANCH
- STAGECOACH PASS
- CAREFREE HWY.
- DOVE VALLEY
- LONE MOUNTAIN
- DIXILETA
- DYNAMITE
- JOMAX
- HAPPY VALLEY
- PINNACLE PEAK
- DEER VALLEY
- BEARDSLEY
- OUTER LOOP
- UNION HILLS
- BELL RD./FRANK LLOYD WRIGHT BLVD.
- GREENWAY RD.
- THUNDERBIRD RD.
- CACTUS RD.
- SHEA BLVD.
- DOUBLE TREE RANCH RD.
- MCCORMICK PKWY.
- INDIAN BEND RD.
- MCDONALD DR.
- CHAPARRAL/CAMELBACK RD.
- CAMELBACK RD.
- INDIAN SCHOOL RD.
- THOMAS
- MCDOWELL RD.
- MCKELLIPS RD.



Conceptual Land Use Map

- Rural Neighborhoods
- Suburban Neighborhoods
- Urban Neighborhoods
- Mixed-Use Neighborhoods
- Resorts/Tourism
- Commercial
- Office
- Employment
- Natural Open Space
- Developed Open Space (Parks)
- Developed Open Space (Golf Courses)
- Cultural/Institutional or Public Use
- Shea Corridor
- Mayo Support District
- Regional Use District
- McDowell Sonoran Preserve
- Recommended Study Boundary of the McDowell Sonoran Preserve
- City Boundary
- Location not yet determined

Adopted by City Council October 30, 2001
 Ratified by Scottsdale voters March 12, 2002
 revised to show McDowell Sonoran Preserve as of November 2013
 revised to reflect General Plan amendments through January 2015

LAND USE ELEMENT

Locations depicted on this map are generalized

Land Uses shown outside Scottsdale city boundaries are advisory and use the closest comparable Scottsdale land use categories. They are reflective of other communities' General Plan Land Uses as of 2001



the *Greater Airpark Character Area Plan*, complete with community goals and policies that speak specifically to the special attributes and functions of the Greater Airpark. The plan envisioned the Greater Airpark as a highly functioning employment area, supported by mixed-use corridors, activity centers, and public spaces. **Exhibit 1S** depicts the distribution of land uses as specified by the *Greater Airpark Character Area Plan*. Note that the land use distribution is similar, but with more specific detail than the General Plan, depicting more precise locations of Aviation, Employment, and Airpark Mixed Use and Airpark Mixed Use – Residential in close proximity to the airport. *Please refer to the Greater Aircraft Character Area Plan for these more specified land use definitions.*

SOCIOECONOMIC CHARACTERISTICS

Socioeconomic characteristics are collected and examined to derive an understanding of the dynamics of growth within the vicinity of Scottsdale Airport. This information is essential in determining aviation demand level requirements, as most general aviation demand can be directly related to the socioeconomic condition of the area. Statistical analysis of population, employment, and income

trends can define the economic strength of the region and the ability of the region to sustain a strong economic base over an extended period of time.

Whenever possible, local or regional data is used for analysis. For this study, socioeconomic data was gathered from various sources, including the Maricopa Association of Governments (MAG), which is the regional metropolitan planning organization, and the Bureau of Economic Analysis, United States Census Bureau, and Woods & Poole Complete Economic and Demographic Data. It should be noted that only historical figures are presented in this section. Future socioeconomic projections will be outlined in Chapter Two.

POPULATION

Population is one of the most important socioeconomic factors to consider when planning for future needs of an airport. Trends in population provide an indication of the potential of the region to sustain growth in aviation activity. Historical population data for the City of Scottsdale and other incorporated areas in proximity to Scottsdale Airport is presented in **Table 1M**. Additional population data for Maricopa County, the State of Arizona, and the United States is also included.

	2000	2005	2010	2012	Average Annual Growth Rate
City of Scottsdale	204,060	221,030	217,385	219,713	0.62%
City of Phoenix	1,324,016	1,408,069	1,445,632	1,464,727	0.85%
City of Mesa	400,491	436,945	439,041	444,856	0.88%
Maricopa County	3,092,927	3,577,074	3,817,117	3,884,705	1.92%
State of Arizona	5,130,632	5,829,839	6,392,015	6,553,255	2.06%
United States	281,421,906	296,507,061	308,745,538	313,914,040	0.91%

Source: Maricopa Association of Governments; U.S. Census Bureau

As shown in the table, all reporting entities have experienced positive growth in population since 2000. During this time, the population of Scottsdale has increased at an average annual growth rate (AAGR) of 0.62 percent. This translates to the addition of approximately 15,650 new residents. The Cities of Phoenix and Mesa experienced slightly higher AAGRs of 0.85 percent and 0.88 percent, respectively, during the same time period.

Maricopa County and the State of Arizona have experienced very strong AAGRs of approximately two percent during this same time. As a point of comparison, the United States population grew at 0.91 percent. These positive growth trends have been attributed to the availability of affordable quality homes, excellent educa-

tional institutions, and enjoyable recreational amenities.

EMPLOYMENT

Analysis of a region’s employment base can be valuable in determining the overall well-being of the general area. In most cases, the area’s makeup and health is significantly impacted by the availability of jobs, variety of employment opportunities, and types of wages provided by local employers. **Table 1N** provides historical employment characteristics from 2000 to 2012 in four analysis categories, including the Phoenix-Mesa-Glendale Metropolitan Statistical Area (MSA) and Maricopa County.

	2000	2005	2010	2012	Average Annual Growth Rate
Phoenix-Mesa-Glendale MSA	1,925,507	2,229,015	2,226,778	2,228,661	1.23%
Maricopa County	1,875,529	2,168,992	2,154,472	2,156,330	1.17%
State of Arizona	2,795,777	3,208,243	3,201,490	3,181,084	1.08%
United States	165,370,892	172,551,446	173,767,337	177,066,237	0.57%

MSA - Metropolitan Statistical Area

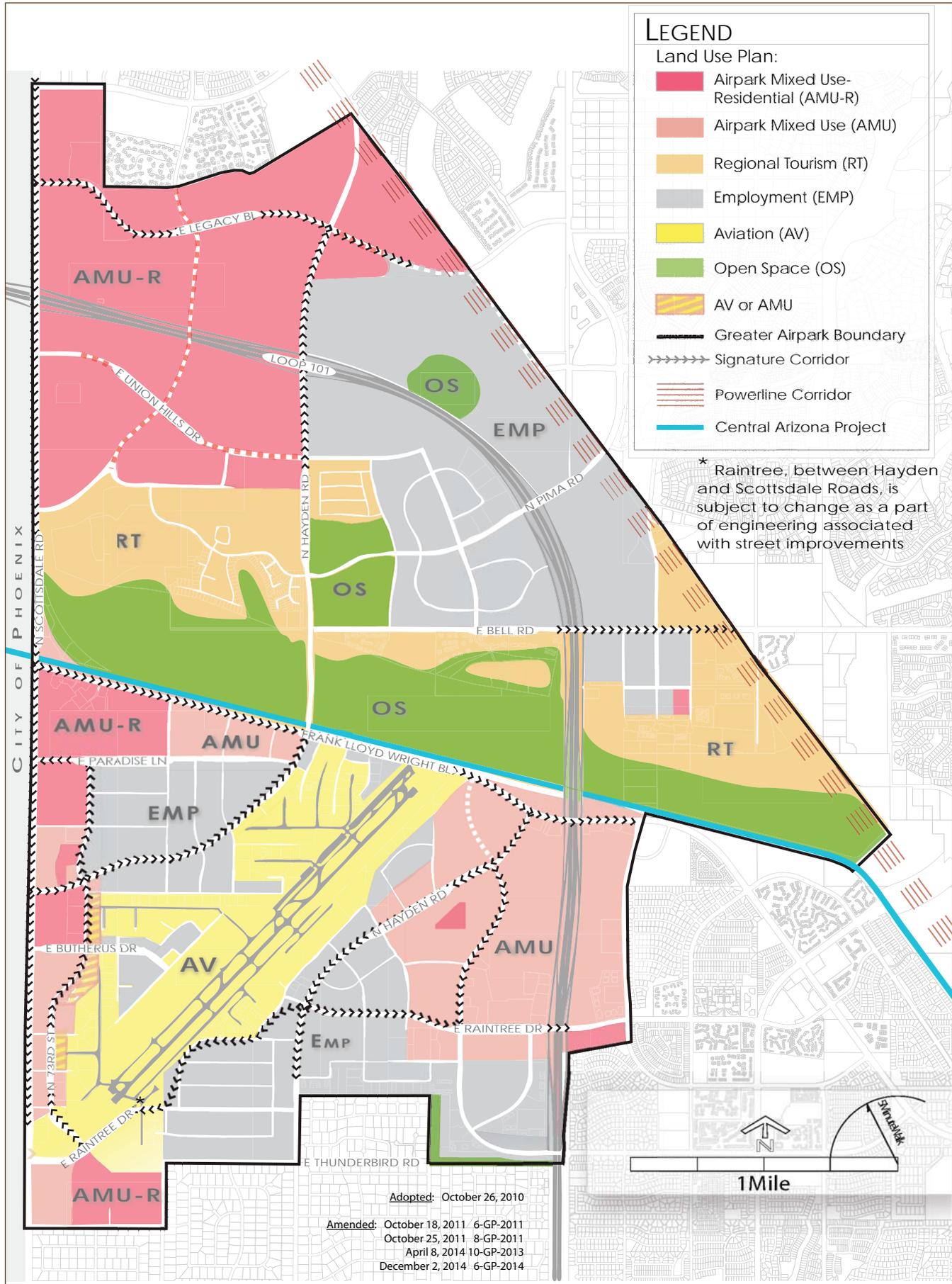
Source: Bureau of Economic Analysis; Woods & Poole Complete Economic Demographic Data (2013)

Total employment in the region has grown at over one percent annually since 2000; however, since 2005, the Phoenix-Mesa-Glendale MSA, Maricopa County, and State of Arizona have experienced negative growth. This can be attributed to the economic recession that the United States has recently experienced. Since 2010, the region has been experiencing positive trends in employment similar to the pre-2005 timeframe.

Although the recent downturn in the economy has affected the employment

base, the greater Phoenix metropolitan area continues to sustain an economy that provides a variety of employment options serving multiple industries. Locally, the City of Scottsdale is a center of commerce for the region. Scottsdale is a hub for retail shopping, medical facilities, industry, government, and much more. The major employers in Scottsdale are presented in **Table 1P**. Understanding the types of employment opportunities will aid in identifying demand for aviation services in the area.

SCOTTSDALE AIRPORT MASTER PLAN



Source: Airpark CAP Land Use, Adopted 10/26/10; Amended 12/2/14



**GREATER AIRPARK
LAND USE MAP**

Exhibit 1S

TABLE 1P Major Employers City of Scottsdale		
Employer	Description	Employees
Scottsdale Healthcare	Health Services	6,700
Scottsdale Unified School District	Education	3,600
General Dynamics C4 Systems	Communications, Networking, Intelligence	2,700
City of Scottsdale	Government	2,455
CVS - CareMark	Health Services	2,238
Mayo Clinic	Health Services	2,061
Vanguard Insurance Agency	Investment Management	1,899
Scottsdale Insurance Company	Insurance and Financial Services	1,501
Troon Golf	Recreation	1,342
International Cruise & Excursion	Travel Solutions	1,000

Source: City of Scottsdale - Economic Development Department (2010)

PER CAPITA PERSONAL INCOME

Table 1Q compares the per capita personal income (PCPI) for the Phoenix-Mesa-Glendale MSA and Maricopa County since 2000. The PCPI for the State of Arizona and United States is also provided for this time period. PCPI is determined by dividing the total income by popula-

tion. In order for PCPI to grow, income growth must outpace population growth significantly. As shown in the table, the region has experienced positive growth in PCPI since 2000. Similar to employment trends, the PCPI decreased during the recession but has returned to positive growth in recent years.

TABLE 1Q Historical Per Capita Personal Income (adjusted to 2005 dollars)					
	2000	2005	2010	2012	Average Annual Growth Rate
Phoenix-Mesa-Glendale MSA	\$32,237	\$34,863	\$32,449	\$32,950	0.18%
Maricopa County	\$32,978	\$35,606	\$33,624	\$34,124	0.29%
State of Arizona	\$29,274	\$32,223	\$31,092	\$31,462	0.60%
United States	\$33,756	\$35,452	\$35,951	\$36,741	0.71%

MSA - Metropolitan Statistical Area

Source: Woods & Poole Complete Economic and Demographic Data (2013)

ENVIRONMENTAL INVENTORY

Available information regarding the existing conditions at Scottsdale Airport has been derived from internet resources, agency maps, and existing literature. The intent of this task is to inventory potential environmental sensitivities that might affect future improvements at the airport.

AIR QUALITY

The United States (U.S.) Environmental Protection Agency (EPA) has established National Ambient Air Quality Standards (NAAQS) based on health risks for six pollutants: carbon monoxide (CO); nitrogen dioxide (NO₂); sulfur dioxide (SO₂); lead (Pb); ozone (O₃); and two sizes of particulate matter (PM), PM measuring 10 mi-

micrometers or less in diameter (PM₁₀) and PM measuring 2.5 micrometers in diameter (PM_{2.5}).

An area with ambient air concentrations exceeding the NAAQS for a criteria pollutant is said to be a nonattainment area for the pollutant's NAAQS, while an area where ambient concentrations are below the NAAQS is considered an attainment area. EPA requires that areas designated as nonattainment demonstrate how they will attain the NAAQS by an established deadline. To accomplish this, states prepare State Implementation Plans (SIPs). SIPs are typically a comprehensive set of reduction strategies and emissions budgets designed to bring the area into attainment.

Scottsdale Airport is located in Maricopa County. Maricopa County Air Quality Department has the goal of ensuring federal clean air standards are achieved and maintained. However, according to EPA's *Green Book – Nonattainment Status for Each County by Year for Arizona*, Maricopa County is in nonattainment for the following NAAQS standards: 8-hour O₃ (marginal) and PM₁₀ (serious).

Various levels of project-specific review would apply to the airport within both the *National Environmental Policy Act* (NEPA) and local permitting requirements for airport development projects. Potentially significant air quality impacts associated with a Federal Aviation Administration (FAA) project or action would be demonstrated by the project or action exceeding one or more of the NAAQS for any of the time periods analyzed.

COASTAL RESOURCES

Federal activities involving or affecting coastal resources are governed by the *Coastal Barriers Resource Act* (CBRA), the

Coastal Zone Management Act (CZMA), and Executive Order (E.O.) 13089, *Coral Reef Protection*.

Scottsdale Airport is located approximately 320 miles from the Pacific Ocean, the nearest U.S. protected coastal area. Thus, the airport is not located within a Coastal Zone.

DEPARTMENT OF TRANSPORTATION (DOT) ACT: SECTION 4(f)

Section 4(f) of the DOT Act, which was recodified and renumbered as Section 303(c) of 49 United States Code (USC), provides that the Secretary of Transportation will not approve any program or project that requires the use of any publicly owned land from a historic site, public park, recreation area, or waterfowl and wildlife refuge of national, state, regional, or local importance unless there is no feasible and prudent alternative to the use of such land, and the project includes all possible planning to minimize harm resulting from the use.

The term "use" includes not only the physical taking of such lands, but "constructive use" of such lands. "Constructive use" of lands occurs when "a project's proximity impacts are so severe that the protected activities, features, or attributes that qualify a resource for protection under Section 4(f) are substantially impaired" (23 Code of Federal Regulations [CFR] Section 771.135).

There are several public parks and golf courses located within the vicinity of Scottsdale Airport. These properties include TPC Scottsdale Champions Golf Course, immediately north of the airport, and Kierland Golf Club, immediately west of the airport. Numerous smaller public

parks are located primarily west and south of the airport within the residential neighborhoods.

There are no waterfowl or wildlife refuges within the vicinity of the airport. The nearest historic sites listed on the National Register of Historic Properties (NRHP) are Taliesin West and Squaw Peak Inn; these Section 4(f) resources are located approximately four to five miles away from the airport, respectively.

FARMLAND

According to U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), the airport is comprised of Gilman loams, which are classified as prime farmland, if irrigated. However, airport property is not equipped with an irrigation system nor is it used for agricultural purposes. In fact, most of the airport has been developed or paved. Therefore, the *Farmland Protection Policy Act* is not applicable to development at the airport.

FISH, WILDLIFE, AND PLANTS

The U.S. Fish and Wildlife Service (USFWS) is charged with overseeing the requirements of the *Endangered Species Act*, specifically Section 7, which sets forth requirements for consultation to determine if a proposed action “may affect” a federally endangered or threatened species.

If an agency determines that an action “may affect” a federally protected species, then Section 7(a)(2) requires the agency to consult with USFWS to ensure that any

action the agency authorizes, funds, or carries out is not likely to jeopardize the continued existence of any federally-listed endangered or threatened species, or result in the destruction or adverse modification of critical habitat. If a species has been listed as a candidate species, Section 7(a)(4) states that each agency must confer with USFWS.

According to USFWS’ Arizona Ecological Service database, dated February 5, 2013, there are 10 species listed as endangered (E), one species proposed for endangered (PE), one species listed as threatened (T), and five candidate (C) species known to occur within Maricopa County. These species are identified in **Table 1R**.

There are no designated critical habitats in Maricopa County at this time (although critical habitat is being proposed for the acuna cactus). As listed in **Table 1R**, none of the species identified have potential to occur at the airport since the airport lacks the necessary habitat.

Other federal laws potentially applicable to the airport include the *Migratory Bird Treaty Act*, which prohibits activities that would harm migratory birds, their eggs or nests, and E.O. 13312, *Invasive Species*, which aims to prevent the introduction of invasive species as a result of a proposed action.

The *Arizona Native Plant Law* (Arizona Revised Statutes [ARS], Section 3-904) also protects certain native plants classified by the Arizona Department of Agriculture (ADA). This law states that protected plants cannot be removed from any lands, including private lands, without permission and a permit from the ADA.

TABLE 1R
Federally Listed Threatened and Endangered Species
Maricopa County, Arizona

Common Name	Status	Habitat	Habitat Present At Airport
Arizona cliffrose	Endangered	White limestone soils derived from tertiary lakebed deposits.	No
California least tern	Endangered	Open, bare or sparsely vegetated sand, sandbars, gravel pits, or exposed flats along shorelines of inland rivers, lakes, reservoirs, or drainage systems.	No
Desert pupfish	Endangered	Shallow springs, small streams, and marshes. Tolerates saline and warm water.	No
Gila topminnow	Endangered	Small streams, springs, and cienegas vegetated shallows.	No
Lesser long-nosed bat	Endangered	Desert scrub habitat with agave and columnar cacti present as food plants.	No
Mexican spotted owl	Threatened	Nests in canyons and dense forests with multilayered foliage structure.	No
Razorback sucker	Endangered	Riverine and lacustrine areas, generally not in fast moving water and may use backwaters.	No
Sonoran pronghorn	Endangered	Broad intermountain alluvial valleys with creosotebursage and palo verde-mixed cacti associations.	No
Southwestern willow flycatcher	Endangered	Cottonwood/willow and tamarisk vegetation communities along rivers and streams.	No
Woundfin	Endangered	Inhabits shallow, warm, turbid, fast-flowing water. Tolerates high salinity.	No
Yuma clapper rail	Endangered	Fresh water and brackish marshes.	No
Acuna cactus	Proposed Endangered	Well drained knolls and gravel ridges in Sonoran desertscrub.	No
Roundtail chub	Candidate	Cool to warm waters of rivers and streams.	No
Sonoran desert tortoise	Candidate	Primarily rocky (often steep) hillsides and bajadas of Mohave and Sonoran desertscrub, but may encroach into desert grassland, juniper woodland, interior chaparral habitats, and even pine communities.	No
Sprague's pipit	Candidate	Strong preference to native grasslands with vegetation of intermediate height and lacking woody shrubs.	No
Tucson shovel-nosed snake	Candidate	Sonoran desertscrub; associated with soft, sandy soils having sparse gravel. Found in creosote-mesquite floodplain environments.	No
Yellow-billed cuckoo	Candidate	Large blocks of riparian woodlands.	No

Source: USFWS Arizona Ecological Field Services Office, Heritage Data Management System, dated February 5, 2013.

FLOODPLAINS

E.O. 11988, *Floodplain Management* directs federal agencies to take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and

preserve the natural and beneficial values served by the floodplains.

Furthermore, as defined in FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures*, agencies are required to “make a finding that there is no practicable alternative before taking action that

would encroach on a base floodplain based on a 100-year flood.” FAA Order 1050.1E (9.2b) also clarifies that “if the proposed action and reasonable alternatives are not within the limits of, or if applicable, the buffers of a base floodplain, a statement to that effect should be made”; no further analysis is necessary. The limits of base floodplains are determined by Flood Insurance Rate Maps (FIRMs) prepared by Federal Emergency Management Agency (FEMA).

According to the most recent FIRMs for the airport (dated September 30, 2005), the entire airport is located in Zone X. Zone X are areas of 0.2 percent annual chance of flood (500-year flood), areas of one percent annual chance flood (100-year flood), with average depths of less than one foot or with drainage areas less than one square mile, or areas protected by levees from one percent annual chance flood.

GREENHOUSE GASES AND CLIMATE

Greenhouse gases (GHGs) are those that trap heat in the earth's atmosphere. Greenhouse gases can be either naturally occurring or anthropogenic (man-made) and include water vapor (H₂O) and carbon dioxide (CO₂). Several classes of halogenated substances that contain fluorine, chlorine, or bromine are also GHGs, but they are, for the most part, solely a product of industrial activities. All GHG inventories measure CO₂ emissions, but beyond CO₂, different inventories include different greenhouse gases (such as methane [CH₄], nitrous oxide [N₂O], and O₃).

No significance thresholds for the creation of GHG have been promulgated to date. However, research has shown that there is a direct correlation between fuel

combustion and GHG emissions. In terms of U.S. contribution, the General Accounting Office (GAO) (2009) reports that “domestic aviation contributes about 3 percent of total carbon dioxide emissions, according to EPA data,” compared with other industrial sources, including the remainder of the transportation sector (20 percent) and power generation (41 percent). The International Civil Aviation Organization (ICAO) estimates that GHG emissions from aircraft account for roughly 3 percent of all anthropogenic (man-made) GHG emissions globally (Melrose 2010). Climate change due to GHG emissions is a global phenomenon, so the affected environment is the global climate.¹

The scientific community is continuing efforts to better understand the impact of aviation emissions on the global atmosphere. The FAA is leading and participating in a number of initiatives intended to clarify the role that commercial aviation plays in GHG and climate. The FAA, with support from the U.S. Global Change Research Program and its participating federal agencies (e.g., the National Aeronautics and Space Administration [NASA], National Oceanic and Atmospheric Administration [NOAA], EPA, and Department of Energy [DOE]), has developed the Aviation Climate Change Research Initiative (ACCRI) in an effort to advance scientific understanding of regional and global climate impacts of aircraft emissions. FAA also funds the Partnership for Air Transportation Noise & Emissions Reduction (PARTNER) Center of Excellence research initiative to quantify the effects of aircraft exhaust and contrails on global

¹As explained by the U.S. EPA (2009), “greenhouse gases, once emitted, become well mixed in the atmosphere, meaning U.S. emissions can affect not only the U.S. population and environment but other regions of the world as well; likewise, emissions in other countries can affect the United States.”

and U.S. climate and atmospheric composition. Similar research topics are being examined at the international level by the ICAO (Maurice and Lee 2007).

HAZARDOUS MATERIALS, POLLUTION PREVENTION, AND SOLID WASTE

Federal, state, and local laws, including the *Resource Conservation Recovery Act* (RCRA) and the *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA), as amended (also known as the Superfund), regulate hazardous materials use, storage, transport, and disposal. These laws may extend to past and future landowners of properties containing these materials. Disturbing areas that contain hazardous materials or contaminants can cause significant impacts to soil, surface water, groundwater, air quality, and the organisms using these resources.

According to EPA's EJ View EnviroMapper web site, there are several businesses at the airport that currently report to EPA for their handling of hazardous materials or wastes. However, there are no mapped Superfund or Brownfield sites in proximity to the airport. Fuel storage facilities and businesses that handle hazardous materials located at the airport are required to comply with all applicable regulations.

Solid waste at Scottsdale Airport is collected by the City of Scottsdale Solid Waste Management Division and transported to the Salt River Landfill, located approximately 11 miles southeast of the airport. According to the Salt River Pima-Maricopa Indian Community, the Salt River Landfill is projected to have capacity until 2032.

HISTORICAL, ARCHITECTURAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

Determination of a project's environmental impact to historic and cultural resources is made under guidance in the *National Historic Preservation Act* (NHPA) of 1966, as amended, the *Archaeological and Historic Preservation Act* (AHPA) of 1974, the *Archaeological Resources Protection Act* (ARPA), and the *Native American Graves Protection and Repatriation Act* (NAGPRA) of 1990, among others. Impacts can occur when the proposed project causes an adverse effect on a property which has been identified (or is unearthed during construction) as having historical, architectural, archaeological, or cultural significance.

In March 2012, as part of an Environmental Assessment being conducted on a project at the airport, a Class I archaeological records search was prepared (SWCA 2012). The records search indicated that there have been two archaeological surveys done within a small portion of the north end of the airport's airfield area. A total of 54 survey projects have been conducted within a one-mile radius of the airport.

Five archaeological sites have been recorded within the airport's one-mile radius, two of which were recommended as eligible for listing on the NRHP; however, no archaeological sites have been recorded within the airport boundaries. The current-day runway incorporates portions of the historic-era runway, but it has been previously expanded and modernized.

As discussed previously, the nearest historic sites listed on the NRHP are Taliesin West, located approximately four miles

east of the airport, and Squaw Peak Inn, located approximately five miles to the southwest.

WATER QUALITY

The airport is located within the Upper and Lower Indian Bend Wash watersheds. According to EPA's MyWATERS Mapper online tool, the closest waters listed in a *Clean Water Act (CWA)*, Section 303(d) list (Impaired Waters List) is Chaparral Park Lake, which is listed for dissolved oxygen and E. Coli. The lake is located approximately seven miles downstream of the airport.

Under the CWA, the State of Arizona has been given authority by EPA to establish water quality standards, control discharges, and regulate other issues concerning water quality. The use of best management practices (BMPs) during construction is a requirement of construction-related permits such as Arizona Pollutant Discharge Elimination System (AZ-PDES) Construction General Permit (AZG2003-001) and is incorporated into the appropriate storm water pollution prevention plan (SWPPP). Scottsdale Airport has an approved SWPPP, dated May 31, 2011.

WETLANDS

Certain drainages (both natural and human-made) come under the purview of U.S. Army Corps of Engineers (USACE) under Section 404 of the CWA; wetlands are also protected. In addition, E.O. 11990, *Protection of Wetlands*, also provides definitions and protection of wetlands. Wetlands typically exhibit three

characteristics: hydrology, hydrophytes (plants able to tolerate various degrees of flooding or frequent saturation), and poorly drained or "hydric" soils.

USFWS's National Wetlands Inventory indicates that there are no wetlands located on the Scottsdale Airport property. A review of NRCS's Web Soil Survey further indicates that no hydric soils are located on airport property.

WILD AND SCENIC RIVERS

Wild and scenic rivers refer to designations within U.S. Department of the Interior, National Park Service's *Nationwide Rivers Inventory*. Public Law 90-542 states that such rivers are free-flowing and possess "outstanding remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural or other similar values."

The State of Arizona has two designated Wild and Scenic Rivers: Fossil Creek and Verde River. These resources are located approximately 40 miles northeast of the airport and are located in a separate drainage basin.

SUMMARY

This chapter has presented comprehensive data related to the airport, the community, and surrounding area. This information provides the foundation upon which the remaining elements of the planning process for the Master Plan can be accomplished and is important to forecast future aviation activity and facility needs.

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