

Chapter One

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**INVENTORY**



# INVENTORY

The inventory of existing conditions at Lake Havasu City Municipal Airport (HII) will serve as an overview of the airport, its facilities, its role in the regional and national aviation systems, and the relationship to development which has occurred around the airport in the past. The information delineated in this chapter attempts to provide a foundation, or starting point, for all subsequent evaluations.

This Master Plan includes a comprehensive collection and evaluation of information relating to the airport and the surrounding area, including the following:

- Physical inventories and descriptions of the facilities and services currently provided at the airport,

including the regional airspace, air traffic control, and aircraft operating procedures.

- Background information pertaining to Lake Havasu City and the regional area, including descriptions of the regional climate, surface transportation systems, and Lake Havasu City Municipal Airport's role in state and national aviation systems. Descriptions of recent development which has taken place on the airport and plans for future development which may impact the airport are also included.
- Population and other significant socioeconomic data which can provide an indication of future trends that could influence aviation activity at the airport.



- An overview of existing local and regional plans and studies to determine their potential influence on the development and implementation of the Airport Master Plan.

An accurate and complete inventory is essential to the success of the Master Plan. The inventory of existing conditions serves primarily as a foundation upon which most of the analysis conducted in later chapters is formed. This information was obtained through on-site investigations of the airport and interviews with airport management, airport tenants, representatives of various government agencies, and local and regional economic agencies. Information was also obtained from documents prepared by the Federal Aviation Administration (FAA), Arizona Department of Transportation (ADOT) – Aeronautics Division, Lake Havasu City, Mohave County, and the State of Arizona.

## ***REGIONAL SETTING***

As depicted on **Exhibit 1A**, Lake Havasu City Municipal Airport is located on approximately 646 acres of property in Lake Havasu City, Arizona. The airport is approximately six miles to the north of Lake Havasu City's central business district. Lake Havasu City is located in the southwest corner of Mohave County, which is geographically the second largest county in Arizona. The county is mostly classified as desert, but does contain approximately 1,000 miles of shoreline to include the Colorado River and two man-made lakes: Lake Havasu and Lake Mohave.

Lake Havasu City is situated on the eastern shore of Lake Havasu on the Colorado River border of Arizona and California. It is located at the foothills of the Mohave Mountains and is part of the northern and western limits of the Sonoran Desert. The city's elevation ranges from 450 feet above sea level at the Lake Havasu shoreline to more than 1,500 feet above sea level at the foothills of the Mohave Mountains. The city was established in 1963 and is home to the historic London Bridge. Each year hundreds of thousands of visitors frequent the area to take part in recreational activities associated with Lake Havasu.

Lake Havasu City Municipal Airport is located on the north side of Lake Havasu City. It is bounded on the north by Arizona State Highway 95 and the Mohave Mountain Range, to the east by the Mohave Mountain Range, to the south by vacant terrain, and to the west by State Highway 95. The properties adjacent to the south end of the airport are owned by private, city, and state agencies. Immediate access to the airport is provided by Airport Centre Boulevard, which is accessed directly from State Highway 95. Retail Centre Boulevard also provides access to the airport via State Highway 95.

Regionally, Lake Havasu City Municipal Airport is located approximately 150 miles southeast of Las Vegas, Nevada; 200 miles northwest of Phoenix, Arizona; and 320 miles northeast of Los Angeles, California. U.S. Interstate 40 can be accessed via State Highway 95 approximately 15 miles north of the airport while State High-

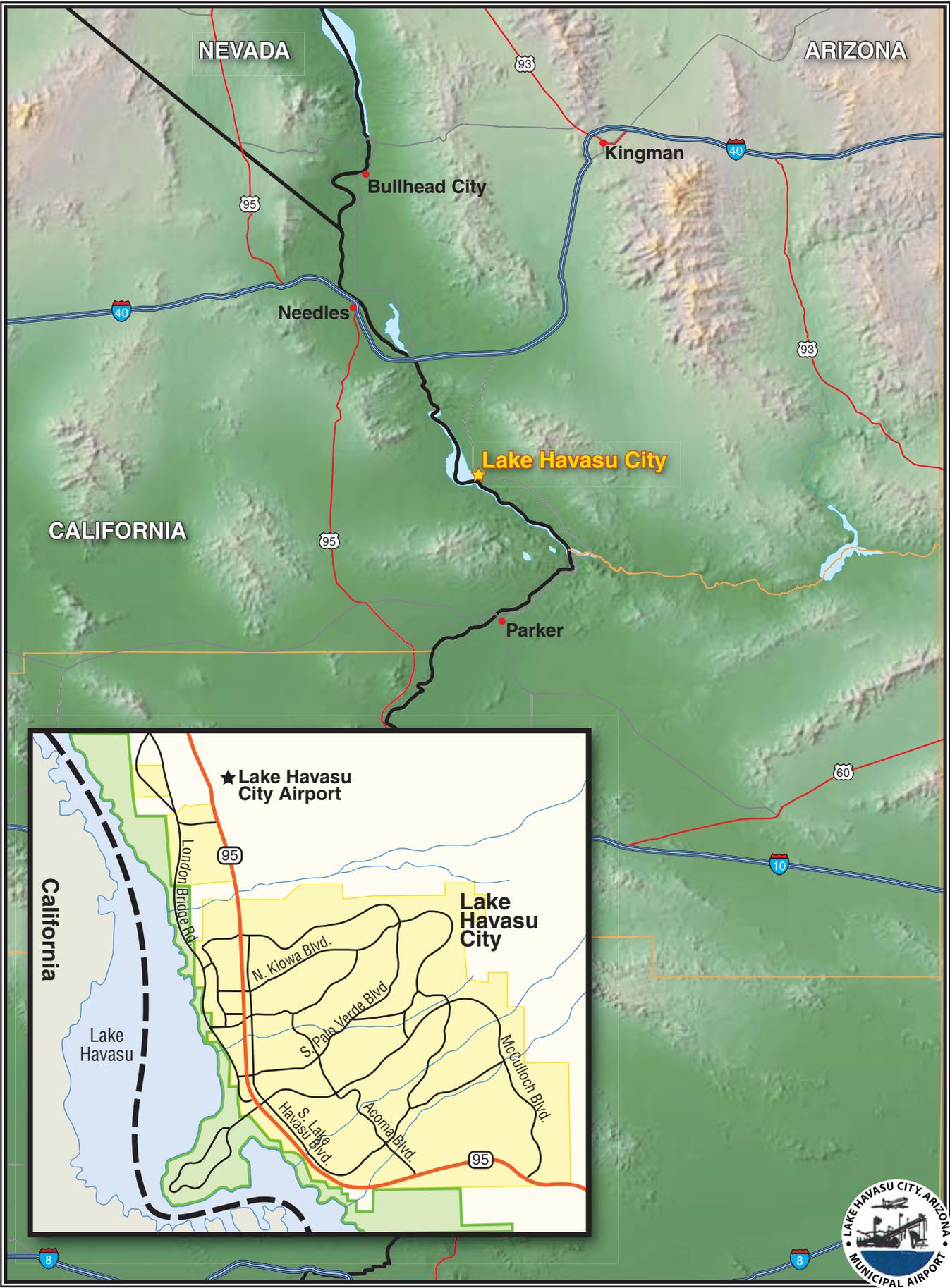


Exhibit 1A  
VICINITY MAP

way 95 leads to U.S. Interstate 10 approximately 70 miles south of the airport.

**OTHER  
TRANSPORTATION MODES**

Local ground transportation for the general public within Lake Havasu City is available through Havasu Area Transit (HAT). This fixed route transit service operates five routes that originate from a central transfer station. Each bus makes up to 24 stops along the fixed route. HAT services are provided Monday – Friday from 6:00 a.m. to 7:00 p.m. and Saturday from 6:00 a.m. to 6:00 p.m. Arizona Road Runner Shuttle, Amore Shuttle, Best Ride Shuttle, and Commuter Services also provide ground transportation services to Lake Havasu City residents using a taxi-type shuttle service throughout the local area and across the State of Arizona, including service to Las Vegas, Nevada.

**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 regional climate is typical of the desert southwest: warm and dry. The normal daily minimum temperature ranges from 43 degrees in January and December to 83 degrees in July. The normal daily maximum temperature ranges from 65 degrees in January and December to 108 degrees in July. The region averages approximately 6.25 inches of precipitation annually. On average, Lake Havasu City experiences sunshine 84 percent of the year. The monthly average wind speed is 7.8 miles per hour (mph), and the predominant wind direction is from the north to south. A summary of climatic data is presented in **Table 1A**.

<b>TABLE 1A Climate Summary Lake Havasu City, AZ</b>												
	<b>Jan.</b>	<b>Feb.</b>	<b>March</b>	<b>April</b>	<b>May</b>	<b>June</b>	<b>July</b>	<b>Aug.</b>	<b>Sept.</b>	<b>Oct.</b>	<b>Nov.</b>	<b>Dec.</b>
High Temp. Avg. (F)	65	71	76	85	93	103	108	106	100	88	74	65
Low Temp. Avg. (F)	43	47	52	59	68	77	83	81	75	63	50	43
Precip. Avg. (in.)	1.06	0.90	0.86	0.21	0.12	0.05	0.41	0.67	0.55	0.43	0.40	0.59
Wind Speed (mph)	6.2	7.3	8.5	9.0	9.1	9.0	8.7	8.1	7.7	7.0	6.6	6.2
Sunshine (%)	77	80	82	86	88	90	85	85	89	85	80	77
Source: www.weather.com and www.city-data.com												

## ***AIRPORT HISTORY***

In 1989, Lake Havasu City acquired land from the Bureau of Land Management (BLM) when it was determined that a private airport on the south side of Lake Havasu City would be unable to accommodate the aviation demand in the region. As a result, a City-owned, public use airport was constructed on the north side of the City. Upon completion of the Lake Havasu City Municipal Airport in 1991, a 5,500-foot runway, parallel taxiway system, aircraft apron area, and terminal building were provided to pilots and passengers utilizing the airport. Initial development of the airport also included a non-directional beacon (NDB), Automated Weather Observation System (AWOS), Airport Rescue and Firefighting (ARFF) facility, and a fuel storage facility consisting of three 12,000-gallon underground fuel storage tanks. Since this time, several projects have been undertaken to improve and expand services at the airport.

## **RECENT CAPITAL IMPROVEMENTS**

To assist in funding capital improvements, the FAA has provided funding assistance to Lake Havasu City Municipal Airport through the Airport Improvement Program (AIP). The AIP is funded through the Aviation Trust Fund, which was established in 1970 to provide funding for aviation capital investment programs (aviation development, facilities and equipment, and

research and development). The Trust Fund also finances a portion of the operation of the FAA. It is funded by user fees, taxes on airline tickets, aviation fuel, and various aircraft parts.

**Table 1B** summarizes federal grants for Fiscal Year (FY) 1997 through FY 2007. The FAA has provided approximately \$14.58 million for airport improvements at Lake Havasu City Municipal Airport over the past ten years.

Between 1997 and 2007, ADOT invested more than \$1.91 million in improvements at Lake Havasu City Municipal Airport. **Table 1C** summarizes these projects and their total expenditures over this ten-year period.

## ***AIRPORT ADMINISTRATION***

Lake Havasu City Municipal Airport is owned, operated, and maintained by Lake Havasu City. The City employs a full-time Airport Manager who reports to the Director of Community Services within the City's administrative structure. In addition, there are employees who serve in administrative, operational, and maintenance capacities. The airport staff maintains a presence on the airport seven days per week. The airport is an independent business service within the City's Community Services Department.

A seven-member committee of citizen volunteers makes up the Airport Advisory Board. This group meets monthly to consider various airport matters and makes recommendations

concerning these matters to the City Council. Airport Board members serve three-year terms and elect a

chairperson and vice-chairperson amongst themselves.

<b>TABLE 1B</b>			
<b>Federal Grants</b>			
<b>Lake Havasu City Municipal Airport</b>			
<b>Fiscal Year</b>	<b>Grant Number</b>	<b>Project Description</b>	<b>Total Grant Funds</b>
1997/98	AIP02	Land Acquisition	\$3,200,185
1998/99	AIP08	Runway/Taxiway Extension	\$253,300
1999/00	AIP02	Land Acquisition	\$25,676
1999/00	AIP08	Runway/Taxiway Extension	\$628,615
1999/00	AIP09	Runway Extension Maintenance	\$969,538
1999/00	AIP10	Runway/Taxiway Extension	\$1,904,828
1999/00	AIP11	Runway/Taxiway Extension	\$34,294
2000/01	AIP02	Land Acquisition	\$307,038
2000/01	AIP09	Runway Extension Maintenance	\$30,462
2000/01	AIP10	Runway/Taxiway Extension	\$95,172
2000/01	AIP11	Runway/Taxiway Extension	\$829,370
2000/01	AIP12	Runway/Taxiway Extension	\$794,723
2001/02	AIP12	Runway/Taxiway Extension	\$3,196
2001/02	AIP13	Pavement Preservation	\$69,576
2001/02	AIP14	Taxilanes	\$17,047
2001/02	DTFA01	Airport Security Program	\$5,469
2002/03	AIP12	Runway/Taxiway Extension	\$407
2002/03	AIP13	Pavement Preservation	\$537,141
2002/03	AIP14	Taxilanes	\$2,113
2002/03	AIP15	Fire Truck / Security Access	\$350,575
2002/03	DTFA01	Airport Security Program	\$72,173
2003/04	11590-160	Air Service Subsidy	\$281,479
2003/04	AIP13	Pavement Preservation	\$18,888
2003/04	AIP14	Taxilanes	\$105,462
2003/04	AIP15	Fire Truck / Security Access	\$450,106
2004/05	11590-160	Air Service Subsidy	\$34,933
2004/05	AIP13	Pavement Preservation	\$41,518
2004/05	AIP15	Fire Truck / Security Access	\$1,047,755
2005/06	AIP15	Fire Truck / Security Access	\$196,841
2005/06	AIP16	Terminal C – Apron	\$83,233
2005/06	AIP17	Terminal C – Apron	\$2,194,586
2006/07	AIP18	Master Plan Update Study	\$475*
2006/07	AIP19	Electrical and Signage Upgrade	\$3845*
<b>Total Grant Funds</b>			<b>\$14,585,699</b>
* Grant money received to date for project; does not signify total grant amount			
Source: Lake Havasu City			

**TABLE 1C**  
**State Grants**  
**Lake Havasu City Municipal Airport**

<b>Fiscal Year</b>	<b>Grant Number</b>	<b>Project Description</b>	<b>Total Grant Funds</b>
1998/99	N207	Planning, Development, and Land	\$94,873
1998/99	N307	Runway/Taxiway Extension	\$203,479
1998/99	N707	Runway/Taxiway	\$97,737
1998/99	N826	Northwest Access Road	\$290,159
1999/00	E9061	Runway/Taxiway Extension	\$91,822
1999/00	N207	Planning, Development, and Land	\$1,261
1999/00	N707	Runway/Taxiway	\$34,228
1999/00	N826	Northwest Access Road	\$6,700
1999/00	N828	Runway/Taxiway Extension	\$47,591
1999/00	N850	Master Plan Update	\$34,200
2000/01	E0155	Runway/Taxiway Extension	\$40,714
2000/01	E9061	Runway/Taxiway Extension	\$4,672
2000/01	N707	Runway/Taxiway	\$261,635
2000/01	N826	Northwest Access Road	\$9,051
2000/01	N828	Runway/Taxiway Extension	\$1,495
2000/01	N850	Master Plan Update	\$1,800
2001/02	E1139	Pavement Preservation	\$3,416
2001/02	E1151	Taxilanes	\$836
2001/02	E156	Runway/Taxiway Extension	\$39,012
2001/02	N307	Runway/Taxiway Extension	\$219,999
2002/03	E1139	Pavement Preservation	\$24,169
2002/03	E1151	Taxilanes	\$104
2002/03	E3F33	Fire Truck / Security Access	\$17,209
2002/03	E9061	Runway/Taxiway Extension	\$1,683
2002/03	N307	Runway/Taxiway Extension	\$76,522
2003/04	E0155	Runway/Taxiway Extension	\$1,683
2003/04	E1139	Pavement Preservation	\$3,124
2003/04	E1151	Taxilanes	\$5,176
2003/04	E3F33	Fire Truck / Security Access	\$22,095
2003/04	E3S60	Air Service Subsidy	\$139,533
2004/05	E1139	Pavement Preservation	\$2,038
2004/05	E3F33	Fire Truck / Security Access	\$51,433
2004/05	E3S60	Air Service Subsidy	\$17,317
2005/06	E3F33	Fire Truck / Security Access	\$9,663
2005/06	E5F68	Terminal C - Apron	\$4,086
2005/06	E5F69	Terminal C - Apron	\$57,752
2006/07	N/A	Master Plan Update Study	\$13*
2006/07	N/A	Electrical and Signage Upgrade	\$101*
<b>Total Grant Funds</b>			<b>\$1,918,267</b>
* Grant money received to date for project; does not signify total grant amount			
Source: Lake Havasu City			

## ***ECONOMIC IMPACTS***

The last formal economic impact study of the airport was completed by ADOT in 2002. This study analyzed the direct, indirect, and induced economic impacts of all public use airports in Arizona, including Lake Havasu City Municipal Airport. At the time, it was estimated that Lake Havasu City Municipal Airport had an impact of \$35.5 million annually on the local economy.

The total economic impact of the airport includes the direct-effect employment, payroll, and sales. Indirect benefits would include visitor spending, which leads directly to off-airport employment, payroll, and sales. The cumulative economic benefit of an airport includes a multiplier effect which is essentially the recycling of money within the local economy to create more jobs in nearly every economic sector.

On-airport direct economic benefits include 82 jobs, with a direct payroll of \$2.9 million and sales of over \$7 million. Visitor spending accounts for 119 additional jobs, \$2.4 million in payroll, and \$5.8 million in sales. When the multiplier effect is applied, economic activity generated at Lake Havasu City Municipal Airport accounts for 361 local jobs, \$10 million in payroll, and \$25.4 million in sales.

## ***STORMWATER POLLUTION PREVENTION PLAN (SWPPP)***

Stormwater runoff is simply rainwater or snowmelt that runs off the land and into streams, rivers, and lakes. When stormwater runs through sites of industrial or construction activity, it may pick up pollutants and transport them into national waterways and affect water quality.

Mandated by Congress under the *Clean Water Act*, the National Pollutant Discharge Elimination System (NPDES) Stormwater Program is a comprehensive two-phased national program for addressing the non-agricultural sources of stormwater discharges which adversely affect the quality of our nation's waters. The program uses the NPDES permitting mechanism to require the implementation of controls designed to prevent harmful pollutants from being washed by stormwater runoff into local water bodies.

The State of Arizona has been delegated the authority to administer the NPDES program. Administratively, this is the responsibility of the Arizona Department of Environmental Quality (ADEQ). The ADEQ's Arizona Pollutant Discharge Elimination System (AZDES) program now has regulatory authority over discharges of pollutants to Arizona surface water.

Under the regulations, separate permits are required for construction activities that disturb one or more acres of land and for general stormwater permits. Airports are included as an industrial facility under the AZDES and must obtain a Multi-Sector General Permit. This permit requires the development of a SWPPP.

The airport is currently in the process of updating its SWPPP. The SWPPP for the airport includes airport tenants, and Lake Havasu City provides annual training and inspection services. The airport has a Multi-Sector General Permit.

### ***SPILL PREVENTION CONTROL AND COUNTER- MEASURES (SPCC) PLAN***

Title 40 of the Code of Federal Regulations (CFR), Part 112, defines the Environmental Protection Agency's (EPA) *Oil Pollution Prevention Plan*. The purpose of the rule is to prevent the discharge of oil into the navigable waters of the United States or adjoining shorelines as opposed to response and cleanup after a spill occurs. The EPA revised these prevention rules on July 17, 2002, to establish the SPCC Plan to meet the purpose of this rule. The EPA has recently approved a final rule to extend compliance dates for SPCC Plans to July 1, 2009.

Before a facility is subject to the SPCC rule, it must meet the following three criterion:

1) it must be non-transportation related,

2) it must have an aggregate above-ground storage capacity greater than 1,320 gallons or a completely buried storage capacity greater than 42,000 gallons, and

3) there must be a reasonable expectation of a discharge into or upon navigable waters of the United States or adjoining shorelines.

By definition within the rule, an airport is considered a non-transportation-related facility. In using this wording, the EPA is trying to distinguish between oil delivery vehicles using public roadways from those facilities that store or handle oil products. The airport has 20,000 gallons of above-ground fuel storage and 36,000 gallons of below-ground fuel storage, exceeding the minimums for above-ground storage capacities. Finally, there are a number of existing washes and ditches on the airport that lead to navigable waters of the United States. Therefore, the airport meets all three criterion.

The airport does have a SPCC Plan in place to address issues related to the discharge of oils. As stated earlier, the SPCC has extended the compliance deadline to July 1, 2009 for owners and operators of facilities to prepare or amend and implement their SPCC Plan.

### ***AVIATION ACTIVITY***

Records of airport operational activity are essential for determining required facilities (types and sizes), as well as eligibility for federal funding. Airport

staff and the FAA record key operational statistics including aircraft operations and enplaned passengers. Analysis of historical activity levels aid in determining trends which will enhance the airport's ability to meet facility demands in a timely manner. The following sections detail specific operational activities.

### AIRCRAFT OPERATIONS

Aircraft operational statistics at Lake Havasu City Municipal Airport are reported annually on the FAA Form 5010 Airport Master Record. This information is generally estimated by the airport due to the lack of an airport traffic control tower (ATCT). An aircraft operation is defined as either a takeoff or a landing. **Table 1D** presents a summary of operations since 1998. The number of total operations has remained relatively constant during this time period.

<b>TABLE 1D</b>	
<b>Historical Aircraft Operations</b>	
<b>Lake Havasu City Municipal Airport</b>	
<b>Year</b>	<b>Total Operations</b>
1998	55,344
1999	50,270
2000	49,600
2001	49,853
2002	49,733
2003	51,996
2004	53,892
2005	51,078
2006	50,956

Source: 1998-1999 - FAA Terminal Area Forecast  
 2000-2004 - Cost Recovery Analysis Study  
 2005-2006 - Airport 5010 Master Record

### PASSENGER ENPLANEMENTS

Passenger enplanements are collected and analyzed by recording the number of passengers who depart (enplane) commercial service aircraft. Passenger enplanement records are utilized to determine terminal building space capacities, automobile parking requirements, automobile access capacities, etc. Also, the FAA provides annual entitlement funds based upon the level of enplanements reached at the airport. Passenger levels on each flight are recorded by the airlines and reported to the airport and the FAA on a monthly basis. **Table 1E** presents historical enplanement levels at Lake Havasu City Municipal Airport since 1998.

As of May 6, 2007, Mesa Airlines operating under Air Midwest ceased operations at the airport. Prior to that time, they were providing two daily non-stop flights to Phoenix Sky Harbor International Airport on Monday through Friday and one daily non-stop flight to Phoenix Sky Harbor International Airport on Saturday and Sunday using Beech 1900 aircraft that are capable of carrying up to 19 passengers.

Although there is currently no commercial airline service at Lake Havasu City Municipal Airport, the City is actively seeking to regain commercial services in the future. This potential will be taken into consideration when preparing forecasts and facility requirements for the airport.

**TABLE 1E**  
**Annual Passenger Activity**  
**Lake Havasu City Municipal Airport**

<b>Year</b>	<b>Passenger Enplanements</b>
1998	9,633
1999	9,223
2000	8,266
2001	7,427
2002	7,317
2003	9,475
2004	10,761
2005	8,618
2006	6,085
2007*	1,626

Source: Airport records; \*Commercial service operations ceased on May 6, 2007

## FUEL SALES

D2 Aero General Aviation Services and Desert Skies Executive Air Terminal are the fixed base operators (FBOs) on the airfield that currently provide Avgas and Jet A fueling services. As shown in **Table 1F**, fuel sales decreased significantly from 2002 through 2004. In 2005, there was a dramatic increase in fuel sales. This can be attributed to the addition of a second FBO operating at the airport. Fuel sales through April 2007 indicate similar totals to what was experienced in 2005. Havasu Air Center, an FBO that has recently been constructed on the north side of the airport, also provides aircraft fueling services.

**TABLE 1F**  
**Historical Fuel Sales**  
**Lake Havasu City Municipal Airport**

<b>Year</b>	<b>Fuel Sales (gallons)</b>
2002	474,944
2003	377,467
2004	359,044
2005	526,245
2006	475,529
2007*	177,243

Source: Airport records; \* January-April fuel sales

## **AIRPORT SYSTEM PLANNING ROLE**

Airport planning exists on three primary levels: local, state, and national. Each level has a different emphasis and purpose. An Airport Master Plan is the primary local airport planning document. This Master Plan will provide a vision of both the airfield and landside facilities over the course of the next 20 years.

## STATE PLANNING

At the state level, Lake Havasu City Municipal Airport is included in the *Arizona State Aviation System Plan* (SASP). The purpose of the SASP is to ensure that the state has an adequate and efficient system of airports to serve its aviation needs. The SASP defines the specific role of each airport in the state's aviation system and establishes funding needs. Through the state's continuous aviation system planning process, the SASP is updated every five years. According to records, the most recent update to the SASP was in 2000 when the *State Aviation Needs Study* (SANS) was prepared. The SANS provides policy guidelines that promote and maintain a safe aviation system in the state, assess the state's airports' capital improvement needs, and identify resources and strategies to implement the plan.

Lake Havasu City Municipal Airport is one of 112 airports included in the 2000 SANS, which includes all public and private airports and heliports in Arizona that are open to the public, including American Indian and recreational airports. The SANS classifies Lake Havasu City Municipal Airport as a commercial service airport.

## NATIONAL PLANNING

At the national level, the airport is included in the *FAA National Plan of Integrated Airport Systems* (NPIAS). This plan includes a total of 3,431 existing airports that are significant to national air transportation and are,

therefore, eligible to receive grants under the FAA AIP. The NPIAS supports the FAA's strategic goals for safety, system efficiency, and environmental compatibility by identifying specific airport improvements. An airport must be included in the NPIAS to be eligible for federal grant-in-aid assistance from the FAA.

The 2007-2011 NPIAS identifies \$41.2 billion for airport development across the country. Of that total, approximately 74 percent is designated for the 517 commercial service airports identified. Lake Havasu City Municipal Airport is classified as a non-primary commercial service airport in the NPIAS. These airports have between 2,500 and 10,000 annual passenger enplanements and account for 22 percent of the nation's total active aircraft fleet.

## AIRSIDE FACILITIES

Airport facilities can be functionally classified into two broad categories: airside and landside. The airside category includes those facilities which are needed for the safe and efficient movement of aircraft, such as runways, taxiways, lighting, and navigational aids. The landside category includes those facilities necessary to provide a safe transition from surface to air transportation and support aircraft servicing, storage, maintenance, and operational safety on the ground. Existing airside facilities at Lake Havasu City Municipal Airport are identified on **Exhibit 1B**. **Table 1G** summarizes airside facility data.

<b>TABLE 1G Airside Facility Data Lake Havasu City Municipal Airport</b>	
	<b>Runway 14-32</b>
Runway Length (feet)	8,001
Runway Width (feet)	100
Runway Surface Material	Asphalt
Surface Treatment	None
Condition	Good
Runway Load Bearing Strength (pounds): Single Wheel Loading (SWL)	100,000
Runway Lighting	MIRL
Runway Marking	Non-precision
Taxiway Lighting	MITL on Taxiway A and entrance/exit taxiways
Taxiway Marking	Centerline striping and hold positions
Visual Approach Aids: Approach Slope Indicators	PAPI-4
Approach Lighting	REILs
Instrument Approach Aids	VOR/DME or GPS-A
Visual Aids	Segmented Circle, Lighted Wind Cones, Rotating Beacon
Weather or Navigational Aids	AWOS-III
MIRL - Medium Intensity Runway Lights MITL - Medium Intensity Taxiway Lights PAPI - Precision Approach Path Indicator REIL - Runway End Identifier Lights GPS - Global Positioning System VOR/DME - Very High Frequency Omnidirectional Range / Distance Measuring Equipment AWOS - Automated Weather Observation System	
Source: Airport Facility Directory - Southwest U.S. (July 2007); FAA Form 5010-1, Airport Master Record	

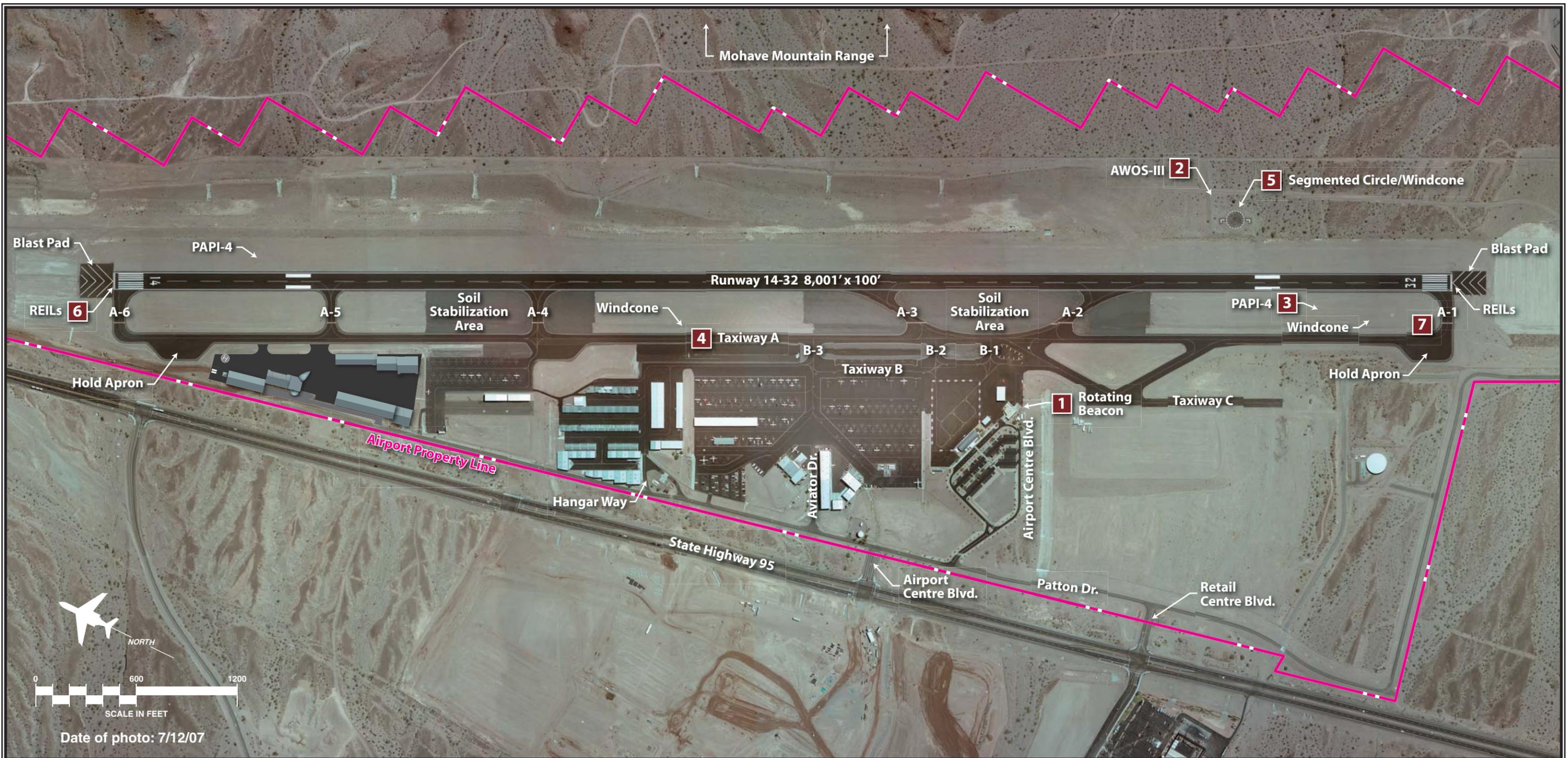
## RUNWAY

Lake Havasu City Municipal Airport is served by a single runway oriented in a northwest/southeast manner. Runway 14-32 is 8,001 feet long by 100 feet wide and is in “good” condition. Runway 14-32 has been strength-rated at 100,000 pounds single wheel loading (SWL). SWL refers to the design of aircraft landing gear which has one wheel on each landing gear strut. This weight-bearing strength is adequate to generally accommodate all aircraft in the general aviation fleet today.

## TAXIWAYS

The taxiway system at Lake Havasu City Municipal Airport includes a full-length parallel taxiway. Taxiway A serves as the parallel taxiway for Runway 14-32 and is located 340 feet west of the runway centerline. A large hold apron is located at the north and south ends of Taxiway A which allow pilots to perform preflight checks and/or bypass other aircraft which are ready for departure.

There are six entrance/exit taxiways on the west side of Runway 14-32 designated as A-1, A-2, A-3, A-4, A-5, and



A-6 as one moves from south to north. Taxiways A-2 and A-3 provide high-speed exits from the runway. Taxiway A-2 is located approximately 2,100 feet from the Runway 32 threshold and Taxiway A-3 is located approximately 4,500 feet from the Runway 14 threshold. High-speed taxiways are angled to allow aircraft to exit the runway at a higher rate of speed than if the taxiway were at a right angle. This configuration increases the overall capacity of the airfield and improves aircraft movement efficiency.

Further to the west are taxiways that provide access to aircraft parking areas. Taxiway B is located approximately 200 feet west of Taxiway A. Taxiways B-1, B-2, and B-3 connect Taxiways A and B. Located to the south of the main terminal area, Taxiway C provides access to vacant property that will be utilized for future aviation development. All active taxiways with their associated dimensions are listed in **Table 1H**. There are several taxilanes that serve more remote areas of the airfield such as individual hangars and T-hangar complexes.

**PAVEMENT MARKINGS**

Pavement markings aid in the movement of aircraft along airport surfaces and identify closed or hazardous areas on the airport. Runway 14-32 has non-precision markings to include the runway designations, centerline, edges, touchdown point, and landing thresholds.

<b>TABLE 1H FAA Designated Taxiways Lake Havasu City Municipal Airport</b>		
<b>Taxiway</b>	<b>Length (feet)</b>	<b>Width (feet)</b>
A	8,001	50
A-1	250	65
A-2	500	50
A-3	500	50
A-4	250	65
A-5	250	50
A-6	250	65
B	1,500	35-70
B-1	150	65
B-2	150	65
B-3	150	65
C	1,500	50-65

Source: Airport records

Taxiway and taxilane centerline markings are provided to assist pilots in maintaining proper clearance from pavement edges and objects near the taxiway/taxilane edges. Taxiway markings also include aircraft holding positions located on the connecting taxiways. Aircraft movement areas on the apron are also identified with centerline markings. Aircraft tiedown positions are identified on various apron surfaces, and pavement edge markings are present on Taxiway A and certain portions of Taxiway B.

**RUNWAY BLAST PAD**

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. Runway 14 is equipped with a 200-foot long by 200-foot wide blast pad and Runway 32 is equipped with a 200-foot long by 140-foot wide blast pad.

## **AIRFIELD LIGHTING**

Airfield lighting systems extend an airport's usefulness into periods of darkness and/or poor visibility. A variety of lighting systems are installed at the airport for this purpose. These lighting systems, 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 Lake Havasu City Municipal Airport is located directly south of the terminal apron area adjacent to the fire station.

### **Runway/Taxiway Lighting and Signage**

Runway and taxiway edge lighting utilizes light 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 runway and aircraft parking areas.

Runway 14-32 is equipped with medium intensity runway lights (MIRL). These lights are set atop a pole that is approximately one foot above the ground. The light poles are frangible, meaning if one is struck by an object, such as an aircraft wheel, they can

easily break away, thus limiting the potential damage to an aircraft.

Each runway end is equipped with threshold lighting. Threshold lighting consists of specially designed light fixtures that are red on the departure side and green on the arrival side.

Medium intensity taxiway lighting (MITL) is taxiway lights which are mounted on the same type of structure as the runway lights. MITL is currently available on Taxiway A and the entrance/exit taxiways leading to Runway 14-32.

The airport also has a runway/taxiway signage system. 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 Lake Havasu City Municipal Airport, which is lighted, includes runway and taxiway designations, holding positions, routing/directional, runway exits, and noise abatement procedures. It should be noted that the airport is planning to have its runway and taxiway signage upgraded in 2008.

### **Visual Approach Lighting**

On the left side of Runway 14 and Runway 32 is a four-box precision approach path indicator (PAPI-4L). The PAPI consists of a system of lights located approximately 800 feet from the Runway 14-32 thresholds at Lake Havasu City Municipal Airport. When

interpreted by pilots, these lights give an indication of being above, below, or on the designated descent path to the runway. A PAPI system has a range of five miles during the day and up to 20 miles at night.

### **Runway End Identification Lights**

Runway end identification lights (REILs) provide rapid and positive identification of the approach ends of a runway. A REIL consists of two synchronized flashing lights, located laterally on each side of the runway end, facing the approaching aircraft. A REIL system has been installed on both ends of Runway 14-32. There are no sophisticated approach lighting systems prior to the runways.

### **Pilot-Controlled Lighting**

At nighttime, runway and taxiway lighting can be controlled through a pilot-controlled lighting system. This allows pilots to increase or decrease the intensity of the airfield lighting system from the aircraft, with use of the aircraft's radio transmitter. Pilots utilizing the Lake Havasu City Municipal Airport can tune their radio to the common traffic advisory frequency (CTAF) 122.7 MHz to utilize the pilot-controlled lighting system.

## **WEATHER AND COMMUNICATION AIDS**

Lake Havasu City Municipal Airport has three wind cones, one inside the segmented circle and the other two lo-

cated closer to each of the runway ends. Two of the three wind cones are lighted, including the one inside the segmented circle. The wind cones provide information to pilots regarding wind conditions, such as direction and speed. The segmented circle provides traffic pattern information to pilots. Having three wind cones spread out along the runway system is advantageous because wind indications can be determined from anywhere along the runway.

The airport is equipped with an Automated Weather Observation System III (AWOS-III). An AWOS automatically records weather conditions such as wind speed, wind gusts, wind direction, temperature, dew point, altimeter setting, and density altitude. In addition, the AWOS-III will record visibility, precipitation, and cloud height. This information is then transmitted at regular intervals on radio frequency 119.025 MHz. In addition, the same information is available through a dial-in telephone number (928-764-2317). The AWOS is located approximately 500 feet east of Runway 14-32 adjacent to the segmented circle and wind cone.

Lake Havasu City Municipal Airport also utilizes a CTAF, which was briefly discussed in the previous section. This radio frequency (122.7 MHz) is used by pilots in the vicinity of the airport to communicate with each other about approaches to, or departures from, the airport. In addition, a UNICOM frequency, which shares the same frequency as the CTAF, is also available where a pilot can obtain fixed base operator (FBO) information.

## NAVIGATIONAL AIDS

Navigational aids are electronic devices that transmit radio frequencies, which pilots of properly equipped aircraft can translate into point-to-point guidance and position information. The types of electronic navigational aids available for aircraft flying to or from Lake Havasu City Municipal Airport include a very high frequency omnidirectional range (VOR) facility, global positioning system (GPS), and Loran-C.

The VOR, in general, provides azimuth readings to pilots of properly equipped aircraft transmitting a radio signal at every degree to provide 360 individual navigational courses. Frequently, distance measuring equipment (DME) is 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 civil VORs are commonly combined to form a VORTAC. The VORTAC provides distance and direction information to both civil and military pilots. The Needles VORTAC is located approximately 13 nautical miles (nm) northwest of the airport and the Parker VORTAC is located approximately 32 nm to the southwest of 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 using a specific ground-based navigational facility.

The civilian GPS has been improved with the wide area augmentation system (WAAS), which was launched on July 10, 2003. The WAAS uses a system of reference stations to correct signals from the GPS satellites for improved navigation and approach capabilities. The present GPS provides for enroute navigation and instrument approaches with both course and vertical navigation. The WAAS upgrades are expected to allow for the development of approaches at most airports with cloud ceilings as low as 250 feet above the ground and visibilities as low as three-quarters-of-a-mile, after 2015.

Loran-C is another point-to-point navigation system available to pilots. Where GPS utilizes satellite-based transmitters, Loran-C uses a system of ground-based transmitters.

Another type of navigational aid includes a nondirectional beacon (NDB). The NDB transmits nondirectional radio signals whereby the pilot of an aircraft equipped with direction-finding equipment can determine their bearing to or from the NDB facility in order to track to the beacon station. There are no NDBs at or in the vicinity of Lake Havasu City Municipal Airport.

## INSTRUMENT APPROACH PROCEDURES

Instrument approach procedures are a series of predetermined maneuvers established by the FAA, using electronic navigational aids to assist pilots in locating and landing at an airport during low visibility and/or cloud ceiling 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 that the pilot must be able to

see to complete the approach. Cloud ceilings define the lowest level a cloud layer (defined in feet above ground level) can be situated for a pilot to complete the approach. If the observed visibility or cloud ceiling is below the minimums prescribed for the approach, the pilot cannot complete the instrument approach.

One instrument approach has been approved for Lake Havasu City Municipal Airport. The details for the VOR/DME or GPS-A approach is presented in **Table 1J**.

<b>TABLE 1J Instrument Approach Data Lake Havasu City Municipal Airport</b>						
<b>Weather Minimums by Aircraft Type</b>						
<b>Category A</b>		<b>Category B</b>		<b>Categories C and D</b>		
<b>Cloud Height (feet AGL)</b>	<b>Visibility (miles)</b>	<b>Cloud Height (feet AGL)</b>	<b>Visibility (miles)</b>	<b>Cloud Height (feet AGL)</b>	<b>Visibility (miles)</b>	
<b>VOR/DME or GPS-A</b>						
Straight-In	N/A					
Circling	1,017	1.25	1,017	1.5	1,017	3
Aircraft categories are established based on 1.3 times the stall speed in landing configuration as follows: Category A: 0-90 knots Category B: 91-120 knots Categories C and D: 121-166 knots AGL – Above Ground Level						
Source: U.S. Terminal Procedures, Southwest SW-4 (July 2007)						

There is no straight-in instrument approach approved for the airport at this time. The VOR/DME or GPS-A approach is considered a circling approach only, which allows pilots to approach the airport and then land on the runway most closely aligned with the current winds.

The airport has approved circling approaches for aircraft with approach speeds up to and including 166 knots. This means that the airport has a de-

sign capacity for some larger aircraft, such as the family of Gulfstream business jets.

## LANDSIDE FACILITIES

Landside facilities are the ground-based facilities that support the aircraft and pilot/passenger handling functions. These facilities typically include the terminal building, fixed

base operators (FBOs), aircraft storage hangars, aircraft maintenance hangars, aircraft parking aprons, and support facilities such as fuel storage, automobile parking, utilities, and aircraft rescue and firefighting. Land-side facilities at Lake Havasu City Municipal Airport are identified on **Exhibit 1C**.

### **PASSENGER TERMINAL BUILDING**

The passenger terminal building at Lake Havasu City Municipal Airport was built in 1991 and totals approximately 5,700 square feet. Located west of Runway 14-32 near midfield, the terminal building houses airport administration, Hertz Car Rentals, Avis Car Rentals, waiting areas for passengers, a vending area, and restrooms.

The terminal building also has areas set aside for commercial airline operations which include an office for airline management, airline ticketing, baggage claim, a screening area for commercial passengers, and a security checkpoint area for the Transportation Security Administration (TSA). These areas are currently vacant as no airline is providing commercial service to and from the airport. The terminal building layout is depicted on **Exhibit 1D**.

The passenger terminal building and parking lot are accessible via Airport Centre Boulevard to the west. The terminal access roadway provides a one-way traffic lane to the terminal

building, parking lots, and City Fire Station #6.

### **TERMINAL APRON**

The terminal ramp apron is located directly to the east of the terminal building and encompasses approximately 11,000 square yards. This space is designated for commercial aircraft to park, deplane, and board passengers. There are currently two marked parking areas for commercial aircraft.

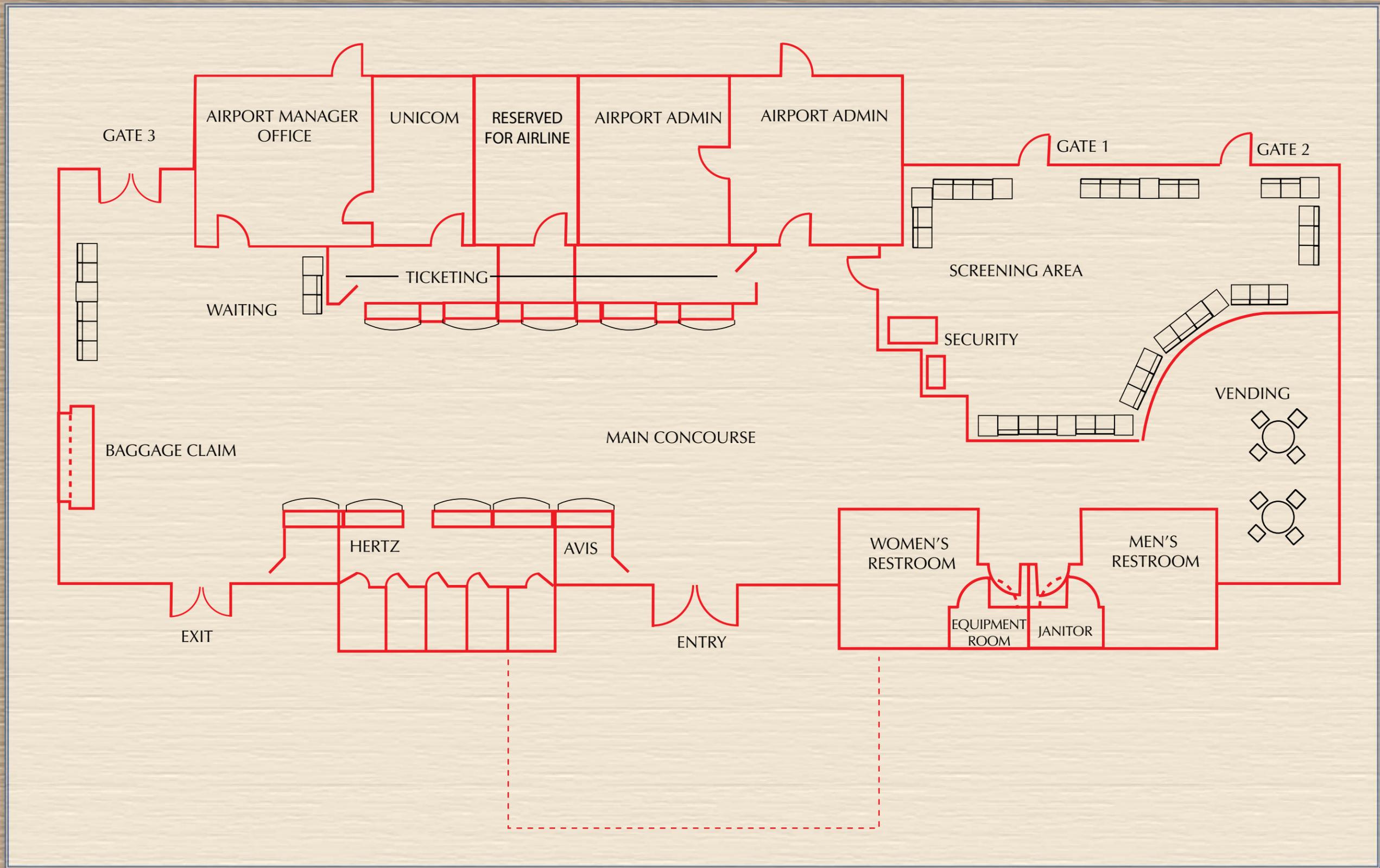
### **TERMINAL AUTOMOBILE PARKING**

Lake Havasu City Municipal Airport has three designated parking areas for automobiles near the passenger terminal building. The paved parking lot closest to the terminal building is dedicated for 24-hour parking and includes 65 marked automobile parking spaces plus four handicap positions. There are also 20 marked rental car parking spaces in this area, with ten belonging to Avis Car Rentals and ten belonging to Hertz Car Rentals.

A second paved parking lot is located further west and includes an additional 82 marked automobile positions. This parking lot is considered for 72-hour parking as indicated by signage.

Still further to the west is a third automobile parking area that is unpaved. This area has no marked automobile parking spaces and is considered for overflow parking only. In total, there are approximately 170





marked automobile spaces to the west of the airport terminal building, with four being handicap accessible.

## **GENERAL AVIATION SERVICES**

Lake Havasu City Municipal Airport currently has three full-service FBOs – D2 Aero General Aviation Services, Desert Skies Executive Air Terminal, and Havasu Air Center. The following is a list of services provided by each business.

### **D2 Aero General Aviation Services**

- Aviation fuel (Avgas and Jet A)
- Aircraft parking and tie-downs
- Pilot services
- Crew car
- Catering
- Full service maintenance facility
- Aircraft charter
- Aircraft detailing
- Hangar space
- Pilot supplies
- Flight instruction and aircraft rental
- Scenic bi-plane rides

D2 Aero General Aviation Services operates out of a 6,600 square-foot main hangar and also utilizes a 3,000 square-foot hangar. It employs seven people and provides full-service Jet A and Avgas from 6:30 a.m. to 6:30 p.m., seven days per week. Self-service Avgas is available 24 hours per day, seven days per week.

D2 Aero General Aviation Services currently has seven individual hangars on its lease parcel totaling approximately 33,300 square feet with an additional 6,000 square feet of of-

fice space. It leases some of its hangars and office space to private individuals/companies that perform various aviation-related services listed above. Businesses that sub-lease hangar/office space from D-2 Aero include Arizona Aircraft Maintenance, Wing Waxers, Wing West Aviation, Bi-Plane Rides, Havasu Sea Plane Adventure, and Edgewater Aviation.

### **Desert Skies Executive Air Terminal**

- Aviation fuel (Avgas and Jet A)
- Aircraft parking and tie-downs
- Pilot services
- Flight instruction and aircraft rental
- Aircraft charter
- Aircraft parts
- Pilot supplies
- Oxygen service
- Catering

Desert Skies Executive Air Terminal operates out of a 5,600 square-foot hangar with additional office space. Eight people are currently employed and provide full service Avgas and Jet A fueling services between the hours of 6:00 a.m. and 6:00 p.m., seven days per week.

Desert Skies Executive Air Terminal currently owns several other hangars on the airport that it leases to private individuals/companies that perform aviation-related activities. Aviation-related businesses that sub-lease from Desert Skies include Cinema Aircraft Restorations, Aviation Support Services, and BH Aviation. In all, approximately 24,000 square feet of hangar space is owned by Desert Skies at the airport.

### **Havasu Air Center**

- Aircraft fuel (Avgas and Jet A)
- Aircraft parking and tie-downs
- Hangar storage
- Catering
- Full service maintenance
- Pilot services
- Pilot supplies
- Aircraft charter
- Flight instruction and aircraft rental
- Aircraft brokerage

Havasu Air Center employs approximately eight people while operating out of an 11,200 square-foot hangar. Several additional executive-style hangars are being constructed in different phases, totaling approximately 100,000 square feet of hangar space.

### **GENERAL AVIATION HANGARS**

General aviation hangars include shade hangars, Port-A-Port hangars, and box hangars. Shade hangars are tie-down spaces with a protective roof covering. Port-A-Port hangars provide for separate, single-aircraft storage areas. Box hangars provide a larger enclosed space that can accommodate larger multi-engine piston or turbine aircraft.

There are currently three shade hangar complexes at the airport. One is located on the south end of the terminal ramp apron and houses the AirEvac aircraft. The other two complexes are located further north. One complex contains 16 individual aircraft spaces and the other has seven marked aircraft spaces. In total, there are 24 shade hangar spaces at the air-

port providing approximately 27,200 square feet of aircraft storage.

There are 21 Port-A-Port hangar facilities on the airport, providing approximately 30,000 square feet of aircraft storage space. These hangars are located in the private aircraft storage area. Port-A-Port hangars are similar to T-hangars, in that they are enclosed hangars for individual aircraft storage. However, each Port-A-Port hangar can be disconnected and transported to a different location.

There are 53 individual box hangars encompassing approximately 103,400 square feet of aircraft storage space at Lake Havasu City Municipal Airport. These hangars range in size from approximately 1,500 square feet to 6,000 square feet. The box hangars are located on the north side of the airport. The airport currently owns 26 of these hangars, with the remainder being privately owned.

### **GENERAL AVIATION APRONS**

There are two separate general aviation aprons at Lake Havasu City Municipal Airport, encompassing a total of approximately 97,500 square yards and providing approximately 218 designated aircraft parking positions.

The main general aviation apron is located to the north of the terminal ramp apron in the midfield area of the airport. This apron area encompasses approximately 80,000 square yards and provides 169 aircraft parking positions. Included on the main general aviation apron are eight marked posi-

tions designated for helicopter parking. This area is located on the south-east side of the apron and on the east side of Taxiway B. Currently, D2 Aero General Aviation Services and Desert Skies Executive Air Terminal each lease 26 tiedown spaces from the airport. The remainder of the tiedowns is for transient and permanent aircraft parking.

The north ramp apron is located north of the private storage hangar area. This apron area encompasses approximately 17,500 square yards and provides 49 marked aircraft parking positions.

### **CARGO AIRCRAFT APRON**

There is an area located on the main general aviation apron that is used primarily as a cargo loading area. This area is located between the shade hangars and leased automobile parking. Approximately 3,500 square yards of apron space and seven marked aircraft positions encompass this area. Current cargo operators at the airport include Ameriflight and Empire Airlines, which fly under contract with Federal Express, UPS, and DHL. They utilize a variety of aircraft including the Cessna Caravan, Beechcraft King Air, Piper Chieftan, Fairchild Metroliner, and Fairchild Merlin.

### **GENERAL AVIATION AUTOMOBILE PARKING**

There are several parking lots available for vehicle parking at Lake Havasu City Municipal Airport. As previously

mentioned, the airport terminal building provides for a large majority of the automobile parking on the airport.

The two major FBOs located on the airport, D2 Aero General Aviation Services and Desert Skies Executive Air Terminal, also have designated parking spaces. D2 Aero has approximately ten marked parking spaces plus some additional unmarked parking in certain areas adjacent to its facility. Desert Skies has 16 total parking spaces, one of which is reserved for handicap access. Another aviation-related business on the airport that provides parking for their employees and customers includes Arizona Aircraft Maintenance, with five marked parking spaces.

North of the FBOs is an area that encompasses approximately 4,500 square yards that is dedicated for leased automobile parking. There are 128 total parking spaces available. A controlled access gate located adjacent to Patton Drive leads to this area. There are approximately 160 total marked automobile parking spaces located in these areas. Lake Havasu City Municipal Airport has a total of approximately 330 automobile parking spaces that serve a variety of aviation-related activities when taking into account terminal building parking, general aviation parking, and leased automobile parking areas.

### **FUEL FACILITIES**

There are two fuel farms located on the airport that currently store aviation fuel. D2 Aero General Aviation

Services owns and operates a fuel farm that consists two above-ground fuel storage tanks located approximately 200 feet south of its facility. One 10,000-gallon capacity tank is dedicated for the storage of Avgas, and one 10,000-gallon capacity tank is dedicated for Jet A fuel. Fuel is delivered to aircraft via two refueling trucks. These consist of one Avgas fuel truck that stores 1,500 gallons of fuel and one Jet A fuel truck that has a storage capacity of 2,200 gallons. Self-service Avgas fueling capability is also offered by D2 Aero. This facility consists of a fuel dispenser that is connected to the Avgas fuel storage tank and a credit card reader.

Desert Skies Executive Air Terminal also operates a fuel storage area on the airport. It leases the fuel farm from the Lake Havasu City Municipal Airport. The fuel farm consists of three underground fuel storage tanks. Two 12,000-gallon capacity tanks are dedicated for Avgas storage, and one 12,000-gallon capacity tank is used for Jet A fuel storage. Desert Skies has four fuel trucks that deliver fuel to aircraft. Avgas is delivered via an 1,100-gallon and a 1,200-gallon capacity fuel truck, while Jet A fuel is delivered by a 1,700-gallon and a 2,200-gallon capacity truck.

## **SUPPORT FACILITIES**

Several support facilities serve as critical links in providing the necessary efficiency to aircraft ground operations such as the aircraft rescue and fire-fighting (ARFF) capabilities, airport maintenance, and perimeter fencing.

## **Part 139 Certification**

Title 14, Code of Federal Regulations (CFR), Part 139 prescribes rules governing the certification and operation of land airports that serve any scheduled or unscheduled passenger operation of an air carrier that is conducted with an aircraft having a seating capacity of more than nine passengers.

Under this certification process, airports are reclassified into four new classes, based on the type of air carrier operations served. The classes include:

- **Class I Airport** – an airport certificated to serve scheduled operations of large air carrier aircraft that can also serve unscheduled passenger operations of large air carrier aircraft and/or scheduled operations of small air carrier aircraft.
- **Class II Airport** – an airport certificated to serve scheduled operations of small air carrier aircraft and the unscheduled passenger operations of large air carrier aircraft. A Class II airport cannot serve scheduled large air carrier aircraft.
- **Class III Airport** – an airport certificated to serve scheduled operations of small air carrier aircraft. A Class III airport cannot serve scheduled or unscheduled large air carrier aircraft. Lake Havasu City Municipal Airport is a Class III airport.

- **Class IV Airport** – an airport certificated to serve unscheduled passenger operations of large air carrier aircraft. A Class IV airport cannot serve scheduled large or small air carrier aircraft.

Although the airport currently does not have scheduled operations by air carrier aircraft, it is actively pursuing commercial airline service. As a result, the airport is maintaining its Part 139 certification.

### **Aircraft Rescue Fire and Firefighting Facilities (ARFF)**

Part 139 airports are required to provide aircraft rescue and firefighting (ARFF) services during air carrier operations that require a Part 139 certificate. Each certified airport maintains equipment and personnel based on an ARFF index established according to the length of aircraft and scheduled daily flight frequency. There are five indices, designated as A through E, with A applicable to the smallest aircraft and E to the largest (based on wingspan). Lake Havasu City Municipal Airport is categorized within ARFF Index A. As such, the airport is required to maintain equipment and properly trained personnel consistent with this standard.

The Lake Havasu City Municipal Airport ARFF facility is located to the south of the airport terminal building. Designated as City Fire Station #6, the facility has approximately 4,400 square feet and includes an office area, living quarters, and an equipment storage area. A primary ARFF

vehicle and a fire engine are kept at the facility. The ARFF vehicle is a 1999 Emergency One Titan and has 1,640 gallons of storage capacity and is capable of carrying 223 gallons of AFFF foam and 500 pounds of Purple K dry chemical. A 750-gallon capacity fire engine is also stationed at the facility.

ARFF equipment at the airport meets Index B level ARFF capability; however, the airport operates under Index A requirements. There are 12 ARFF-certified personnel working for the Lake Havasu City Fire Department.

### **Snow and Ice Control Plan**

Due to weather conditions and patterns at Lake Havasu City Municipal Airport, snow and ice control is not required for its Part 139 certification.

### **Maintenance Facilities**

The Lake Havasu City Municipal Airport does not have a dedicated maintenance facility on the airport. Maintenance equipment is stored inside a hangar and at various outside locations.

### **Security Fencing / Gates**

Lake Havasu City Municipal Airport operations areas (AOAs) are completely enclosed by an eight-foot chain link fence topped by three-strand barbed wire. The fence does not always follow the airport boundary due to the layout

of physical features and actual boundary lines.

There are currently five controlled access gates located at the airport. The locations include one south of the airport terminal building, one at Aviator Drive, one at the entrance of the lease automobile parking area, one at Hangar Way, and one at the north end of the airport leading to the north ramp apron tiedown area.

## **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 of an airport, both airside and landside components.

The airport is supplied by electricity, water, and sanitary sewer. Electric service is provided by Unisource. Lake Havasu City provides water, sanitary sewer, and stormwater services. Telephone and communications services are provided by Frontier. There is currently no natural gas service to the airport.

## ***PAVEMENT MANAGEMENT PROGRAM***

The Arizona Department of Transportation – Aeronautics Division (ADOT) has implemented the Arizona Pavement Preservation Program (APPP) to assist in the preservation of the Arizo-

na airport system infrastructure. Public Law 103-305 requires that airports requesting Federal Airport Improvement Program (AIP) funding for pavement rehabilitation or reconstruction have an effective pavement maintenance management system. To this end, ADOT has completed and is maintaining an Airport Pavement Management System (APMS) which, coupled with monthly pavement evaluations by the airport sponsor, fulfills this requirement.

The APMS uses the Army Corps of Engineers’ “Micropaver” program as a basis for generating a five-year APPP. The APMS consists of visual inspections of all airport pavements. Evaluations are made of the types and severities observed and entered into a computer program database. Pavement Condition Index (PCI) values are determined through the visual assessment of pavement condition in accordance with the most recent FAA Advisory Circular 150/5380-6 and range from 0 (failed) to 100 (excellent). Every three years a complete database update, with new visual observations, is conducted. Individual airport reports from the update are shared with all participating system airports. ADOT ensures that the APMS database is kept current, in compliance with FAA requirements.

Every year ADOT, utilizing the APMS, will identify airport pavement maintenance projects eligible for funding for the upcoming five years. These projects will appear in the State’s Five-Year Airport Development Program. Once a project has been identified and approved for funding by the State Transportation Board, the air-

port sponsor may elect to accept a state grant for the project and not participate in the APPP, or the airport sponsor may sign an Inter-Government Agreement (IGA) with ADOT to participate in the APPP.

Lake Havasu City Municipal Airport participates in the State's pavement maintenance program for AIP eligible pavement rehabilitation projects. On a daily basis, airport personnel complete an operations log for the airport, a portion of which includes visual observations of the pavement conditions. Lake Havasu City will perform routine pavement maintenance such as crack sealing and repair on an as-needed basis.

## **AREA AIRSPACE AND AIR TRAFFIC CONTROL**

*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 Aerospace System (NAS) to protect persons and property on the ground and to establish a safe environment for civil, commercial, and military aviation. The NAS is defined as the common network of U.S. airspace, including air navigational facilities; airports and landing areas; aeronautical charts; associated rules, regulations, and procedures; technical information; and personnel and material. System components shared jointly with the military are also included as part of this system.

To ensure a safe and efficient airspace environment for all aspects of aviation, the FAA has established an airspace structure that regulates and establishes procedures for aircraft using the National Airspace System. The U.S. airspace structure provides for categories of airspace, controlled and uncontrolled, and identifies them as Classes A, B, C, D, E, and G as described below. **Exhibit 1E** generally illustrates each airspace type in three-dimensional form.

- Class A airspace is controlled airspace and includes all airspace from 18,000 feet mean sea level (MSL) to Flight Level 600 (approximately 60,000 feet MSL). This airspace is designed in Federal Aviation Regulation (F.A.R) Part 71.193, for positive control of aircraft. The Positive Control Area (PCA) allows flights governed only under instrument flight rules (IFR) operations. The aircraft must have special radio and navigational equipment, and the pilot must obtain clearance from an air traffic control (ATC) facility to enter Class A airspace. In addition, the pilot must possess an instrument rating.
- Class B airspace is controlled airspace surrounding high-activity commercial service airports (i.e., 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 major airports. In order to fly within Class B airspace, an aircraft

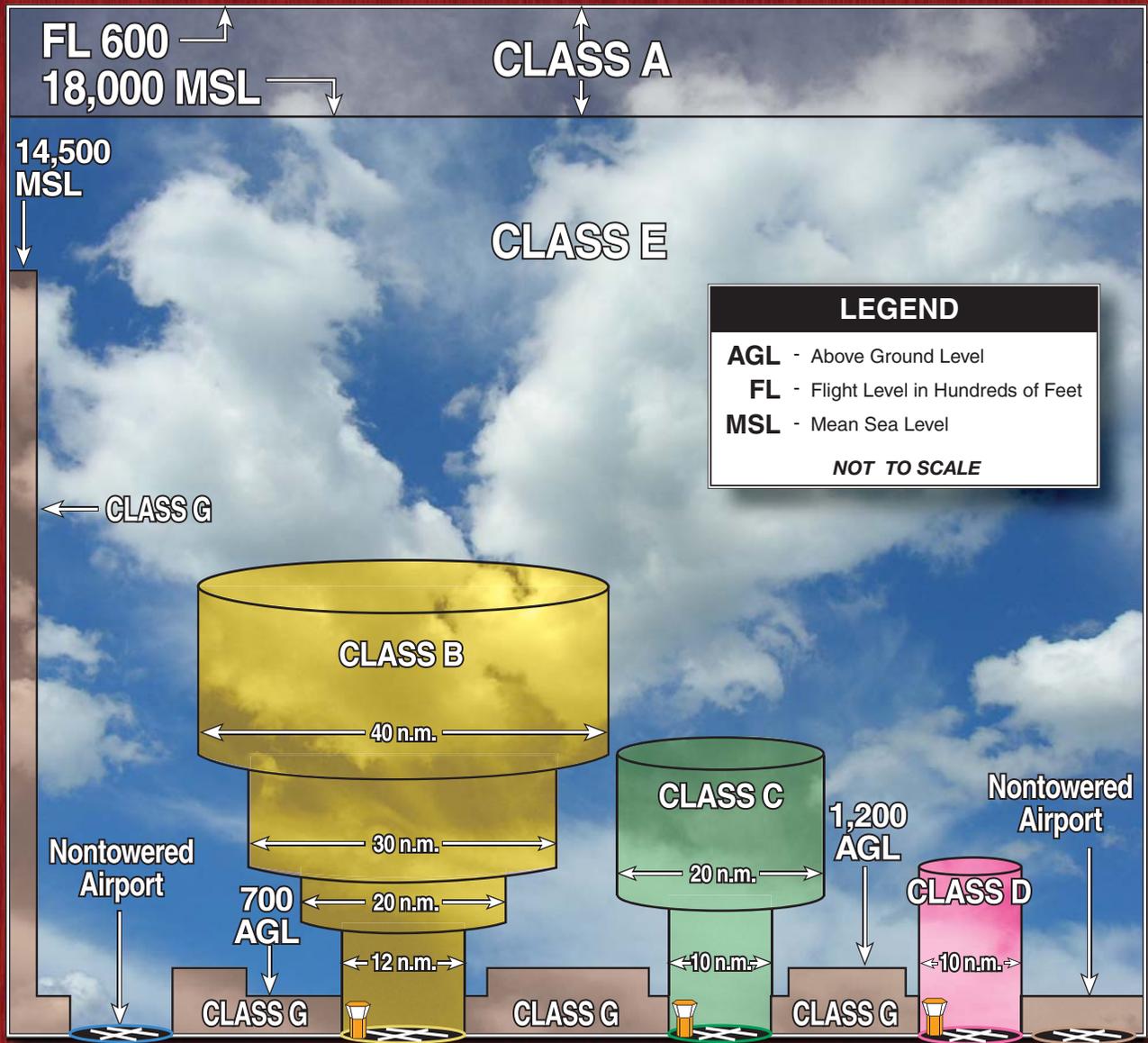
must be equipped with special radio and navigation equipment and must obtain clearance from air traffic control. A pilot is required to have at least a private pilot's certificate or be a student pilot who has met the requirements of F.A.R. Part 61.95, which requires special ground and flight training for the Class B airspace. Aircraft are also required to utilize a Mode C transponder within a 30 nm range of the center of the Class B airspace. A Mode C transponder allows the ATCT to track the location and altitude of the aircraft.

- Class C airspace is controlled airspace surrounding lower-activity commercial service (i.e., Tucson International Airport) and some military airports. 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 major airports. To operate inside Class C airspace, the aircraft must be equipped with a two-way radio, an encoding transponder, and the pilot must have established communication with ATC.
- Class D airspace is controlled airspace surrounding most airports with an operating ATCT and not classified under B or C airspace designations. The Class D airspace typically constitutes a cylinder with a horizontal radius of four or five nm 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.

All aircraft operating within Classes A, B, C, and D airspace must be in constant contact with the air traffic control facility responsible for that particular airspace sector.

- Class E airspace is controlled airspace surrounding an airport that encompasses all instrument approach procedures and low-altitude federal airways. Only aircraft conducting instrument flights are required to be in contact with the appropriate air traffic control facility when operating in Class E airspace. While aircraft conducting visual flights in Class E airspace are not required to be in radio contact with air traffic control facilities, visual flight can only be conducted if minimum visibility and cloud ceilings exist.
- Class G airspace is uncontrolled airspace typically in overtop rural areas that does not require communication with an air traffic control facility. Class G airspace lies between the surface and the overlaying Class E airspace (700 to 1,200 feet above ground level [AGL]). While aircraft may technically operate within this Class G airspace without any contact with ATC, it is unlikely that many aircraft will operate this low to the ground. Furthermore, F.A.R. Part 91.119, *Min-*



**LEGEND**

**AGL** - Above Ground Level  
**FL** - Flight Level in Hundreds of Feet  
**MSL** - Mean Sea Level

*NOT TO SCALE*

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



*imum Safe Altitudes*, specify minimum altitudes for flight.

Airspace within the vicinity of Lake Havasu City Municipal Airport is depicted on **Exhibit 1F**. The airport is located in Class G airspace, with Class E airspace directly to the south with a floor 700 feet above the surface extending to Class A airspace.

## **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. 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 nm wide.

As previously discussed, there are two VOR facilities within the airport's region. Although not labeled, V135 is located approximately 12 nm west of Lake Havasu City Municipal Airport.

### **Military Operations Areas (MOAs)**

Lake Havasu City Municipal Airport is located inside the Turtle MOA. An MOA is an area of airspace designated for military training use. This is not restricted airspace; however, pilots

who use this 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 and/or at lower elevations. The activity status of an MOA is advertised by a Notice to Airmen (NOTAM) and noted on sectional charts. The Turtle MOA typically will have activity from 11,000 feet MSL to 18,000 feet MSL. It is published in use from 6:00 a.m. to 5:00 p.m. Monday through Friday.

### **Military Training Routes**

A Military Training Route, or MTR, is a long, low-altitude corridor that serves as a flight path for military aircraft. The corridor is often ten miles wide, 70 to 100 miles long, and may range from 500 feet to 1,500 feet AGL and can be higher. There are several MTRs located in the vicinity of the airport, with the closest being approximately 12 nm to the northeast. General aviation pilots should be aware of the locations of the MTRs and exercise special caution if they need to cross them.

## **LOCAL OPERATING PROCEDURES**

Lake Havasu City Municipal Airport is situated at 781 feet MSL. The traffic pattern at the airport is maintained to provide the safest and most efficient use of the airspace surrounding the airport. The airport utilizes a non-standard right-hand traffic pattern for

Runway 14 in order to keep a safe distance between aircraft and the Mohave Mountain Range directly to the east of the airport. A standard left-hand traffic pattern is used for Runway 32. The traffic pattern altitude for high performance aircraft, including jets, is 2,303 feet MSL. The traffic pattern altitude for smaller turbine and piston aircraft is 1,803 feet MSL.

Pilots operating in and out of Lake Havasu City Municipal Airport are encouraged to follow noise abatement procedures, which prohibit the straight-in and straight-out departure of aircraft. Aircraft should enter the traffic pattern using a 45-degree entry to downwind. The procedures are designed so that residential areas to the southwest of the airport can be avoided.

### **Obstructions**

There are power lines, towers, and rising terrain to the north and northeast of the airport. A hill, located approximately 1,255 feet from Runway 32, is 255 feet right of the runway extended centerline. A 28:1 approach slope angle is required to clear the obstruction.

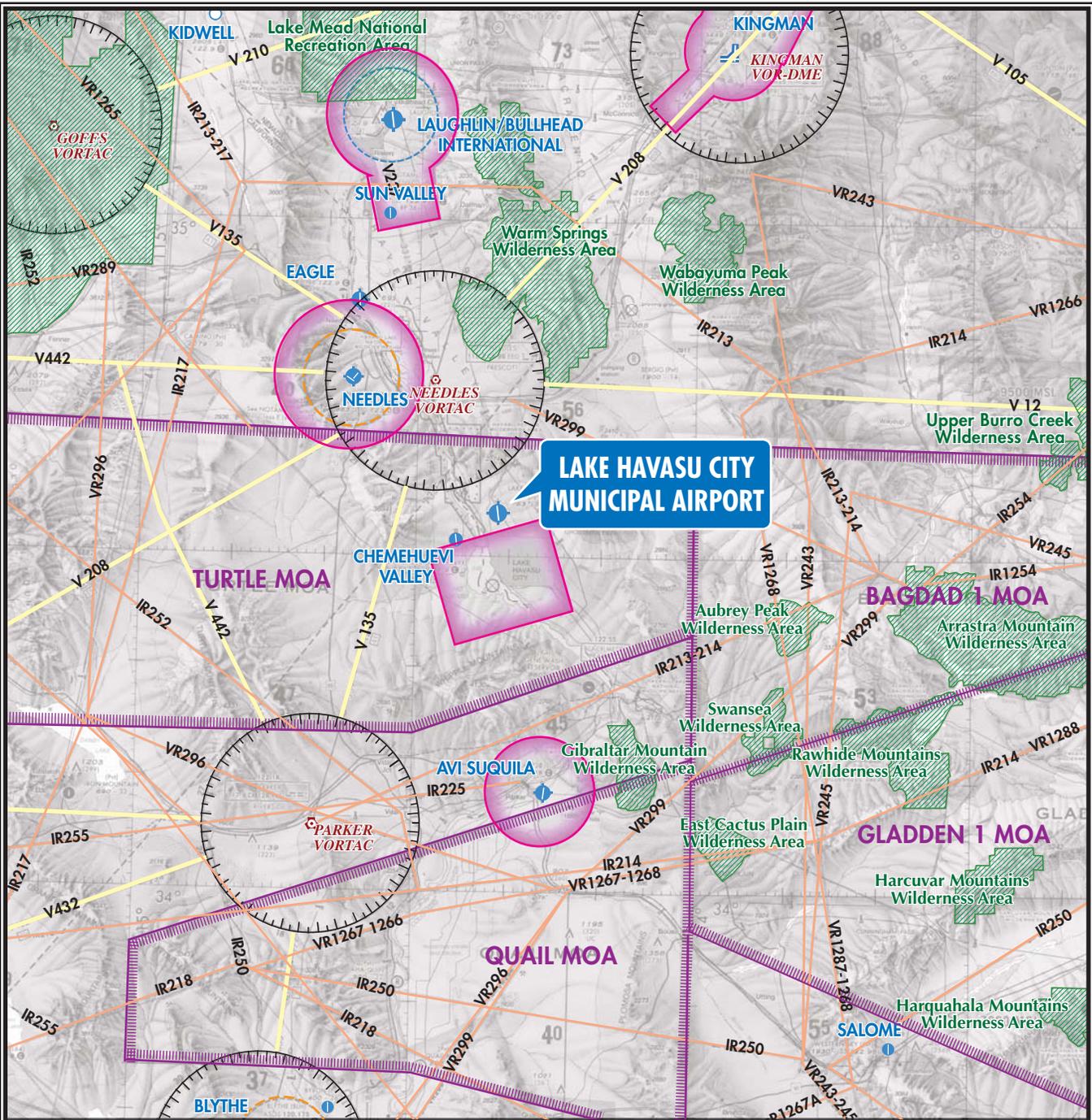
## ***REGIONAL AIRPORTS***

A review of public use airport facilities with at least one paved runway within a 50-nm radius of Lake Havasu City Municipal Airport was conducted to identify and distinguish the types of

air service provided in the region, as indicated on **Exhibit 1F**. Information pertaining to each airport was obtained from FAA Form 5010, *Airport Master Record*. **Table 1K** identifies the major characteristics of each airport.

**Chemehuevi Valley Airport (49X)** is located approximately 4 nm southwest of Lake Havasu City Municipal Airport in Havasu Lake, California. It is a public use airport owned by the Chemehuevi Indian Tribe. The airport is served by one runway which is 5,000 feet long and rated in fair condition. Four aircraft are reported to be based at the airport. The airport reported 4,000 operations in 2004. The airport is unattended and provides only aircraft tiedowns. There are no published instrument approach procedures that serve the airport.

**Needles Airport (EED)**, located approximately 18 nm northwest of Lake Havasu City Municipal Airport, is owned and operated by San Bernardino County, California. The airport is equipped with two runways, with the longest being 5,005 feet in length and rated in good condition. Approximately 24 aircraft are based at the airport. There were approximately 10,500 operations reported in 2006. One FBO on the field provides aviation services including full-service fueling and minor aircraft maintenance. There are two non-precision instrument approaches that serve the airport, with one being a circling approach.



**LEGEND**

- Airport with other than hard-surfaced runways
- Airport with hard-surfaced runways 1,500' to 8,069' in length
- Airports with hard-surfaced runways greater than 8,069' or some multiple runways less than 8,069'
- VORTAC
- Non-Directional Radiobeacon (NDB) Compass Rose
- Compass Rose
- Military Operations Area (MOA)
- Wilderness Areas
- Military Training Routes
- Victor Airways
- Class D Airspace
- Class E (sfc.) Airspace
- Class E Airspace with floor 700' above surface

NORTH  
 NOT TO SCALE

Source: Phoenix North Sectional Chart,  
 US Department of Commerce,  
 National Oceanic and Atmospheric  
 Administration, February 15, 2007

LAKE HAVASU CITY, ARIZONA  
MUNICIPAL AIRPORT

**TABLE 1K  
Regional Airport Data  
Lake Havasu City Municipal Airport**

<b>Airport Name</b>	<b>FAA Classification</b>	<b>Distance (nm)</b>	<b>Longest Runway (feet)</b>	<b>Based Aircraft</b>	<b>Annual Operations</b>
Chemehuevi Valley	General Aviation	4	5,000	4	4,000
Needles	General Aviation	18	5,005	24	10,500
Eagle Airpark	General Aviation	23	4,800	58	16,000
Avi Suquilla	General Aviation	26	4,780	42	10,200
Laughlin/Bullhead International	Commercial	37	7,520	63	27,126
Kingman	Commercial	46	6,827	273	61,305

Source: FAA Form 5010-1, Airport Master Record; FAA Air Traffic Activity System (ATADS)

**Eagle Airpark (A09)** is located approximately 23 nm northwest of Lake Havasu City Municipal Airport in Mohave Valley, AZ. It is a privately owned, public use airport served by one runway that is 4,800 feet long. Approximately 58 aircraft are reported on the airport, including four multi-engine aircraft and two jets. The airport reported approximately 16,000 operations in 2006. FBO services at the airport include Jet A and Avgas fuel, aircraft hangars, tiedowns, and aircraft maintenance. There are no published instrument approach procedures that serve the airport.

**Avi Suquilla Airport (P20)**, located approximately 26 nm south of Lake Havasu City Municipal Airport in Parker, AZ, is a public use airport owned and operated by the Colorado River Indian Tribes. One runway that is 4,780 feet long serves the airport. Approximately 42 aircraft are considered to be based at the airport, in-

cluding one multi-engine aircraft and one helicopter. The airport reported 10,200 aircraft operations in 2006. The local FBO provides Jet A and Avgas fuel, aircraft maintenance, and tiedowns to its customers. One circling non-precision approach serves the airport.

**Laughlin/Bullhead International Airport (IFP)** is located 37 nm north of Lake Havasu City Municipal Airport and is owned and operated by Mohave County. It has one runway which is 7,520 feet long and rated in good condition. A control tower is located on the field which reported approximately 27,126 aircraft operations in 2006. The airport reports 63 based aircraft, including two helicopters and three jets. One FBO is located on the field, providing a variety of aviation services, including full-service fuel, aircraft maintenance, oxygen service, a pilot's lounge, courtesy transportation, and catering. The airport is

served by three non-precision instrument approaches. The airport also provides scheduled and unscheduled commercial service operations.

**Kingman Airport (IGM)**, located approximately 46 nm northeast of Lake Havasu City Municipal Airport, is owned and operated by the City of Kingman. Two runways are provided at the airport, with the longest being 6,827 feet and rated in good condition. Approximately 273 aircraft are reported at the airport, including 95 multi-engine aircraft and 17 jets. There were 61,305 operations reported in 2005. FBO services are provided at the airport, including full-service fuel, aircraft parking and tiedowns, aircraft maintenance, avionics sales and services, aircraft modifications, and aircraft parts. There are three non-precision instrument approaches approved for use into the airport. Commercial service operations are also present at the airport.

### ***AREA LAND USE AND ZONING***

The area land use surrounding Lake Havasu City Municipal Airport can have a significant impact on airport operations and growth. The following sections identify baseline information related to both the existing and future land uses in the vicinity of Lake Havasu City Municipal Airport. By understanding the land use issues surrounding the airport, more appropriate recommendations can be made for the future of the airport.

### **EXISTING LAND USES**

Lake Havasu City Municipal Airport is located within the corporate boundaries of Lake Havasu City. Existing land uses immediately surrounding the airport include mainly vacant land to the north and east. These areas are part of the Mohave Mountain Range and include uninhabitable land due to steep terrain and other physical features. There is a small parcel of Bureau of Land Management property north of the airport that is used for temporary RV camping. To the southeast of the airport is the Unisource Electrical Sub-Station. Approximately three-quarters-of-a-mile south of the airport is 40 acres of land utilized for an RV park. There is a large area of vacant land southwest of the airport that is currently State Trust Land. Land west of State Highway 95 is currently being utilized for commercial business development. The majority of developed property in this area is located a few miles to the south of the airport.

### **FUTURE LAND USES AND ZONING**

Under ideal conditions, the development immediately surrounding the airport can be controlled and limited to compatible uses. Compatible uses would include light and heavy industrial development and some commercial development.

There are a number of methods by which governmental entities can ensure that land uses in and around airports are developed in a compatible

manner. The objective of enforcing land use restrictions is to protect designated areas for the maintenance of operationally safe and obstruction-free airport activity.

Land use zoning is the most common land use control. Zoning is the exercise of the jurisdictional powers granted to state and local governments to designate permitted land uses on each parcel. Typically, zoning is developed through local ordinances and is often included in comprehensive plans. The primary advantage of zoning is that it can promote compatibility with the airport while leaving the land in private ownership. Zoning is subject to change; therefore, any potential alterations to the zoning code near the airport should be monitored closely for compatibility.

Title 14 of the Lake Havasu City Code of Ordinances establishes the Airfield Overlay District. This district is intended to protect the public health, safety, and general welfare of the area surrounding the airport by minimizing exposure to hazards generated by airport operations. Also, it is to further the development of compatible land uses around the airport. In addition to the restriction of the Airfield Overlay District, existing zoning surrounding the airport calls for general commercial to the west of the airport (west of State Highway 95) and industrial and heavy manufacturing to the south and southeast. This zoning is considered compatible with airport activity.

The future land uses in Lake Havasu City are shown on **Exhibit 1G**. Land to the north and east of the airport are

shown as vacant in the future due to physical constraints associated with the Mohave Mountain Range. Areas to the southeast, south, and southwest are shown as employment centers that could support industrial and manufacturing activities. Finally, land to the west of State Highway 95 is designated for commercial land use, similar to the activities currently being implemented in this area.

Height restrictions are necessary to ensure that objects will not impair flight safety or decrease the operational capability of the airport. Title 14 of the Code of Federal Regulations (CFR), Part 77, *Objects Affecting Navigable Airspace*, defines a series of imaginary surfaces surrounding airports. The imaginary surfaces consist of the approach zone, conical zones, transitional zones, and horizontal zones. Objects such as trees, towers, buildings, or roads, which penetrate any of these surfaces, are considered by the FAA to be an obstruction to air navigation. Current Lake Havasu City ordinances adhere to and support the height restriction guidelines as set forth in 14 CFR, Part 77. Height restrictions can be accomplished through height and hazard zoning, aviation easements, or fee simple acquisition.

## ***PUBLIC AIRPORT DISCLOSURE MAP***

Arizona Revised Statutes (ARS) 28-8486, *Public Airport Disclosure*, provides for a public airport owner to publish a map depicting the “territory in the vicinity of the airport.” The territory in the vicinity of the airport is

defined as the traffic pattern airspace and the property that experiences 60 day-night noise level (DNL) or higher in counties with a population of more than 500,000, and 65 DNL or higher in counties with less than 500,000 residents. The DNL is calculated for a 20-year forecast condition. ARS 28-8486 provides for the State Real Estate Office to prepare a disclosure map in conjunction with the airport owner. The disclosure map is recorded with the county. As part of this Master Plan, a Public Airport Disclosure Map will be prepared.

## ***SOCIOECONOMIC CHARACTERISTICS***

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

population, employment, and income trends 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. Historical data was obtained from the Arizona Department of Economic Security, U.S. Census Bureau, Bureau of Labor Statistics, as well as pertinent internet sites including Lake Havasu City's website.

## **POPULATION**

Population is one of the most important socioeconomic factors to consider when planning for future needs of an airport. Historical and forecast trends in population provide an indication of the potential of the region to sustain growth in aviation activity. Historical population data for Lake Havasu City, Mohave County, the State of Arizona, and the United States is shown in **Table 1L**.

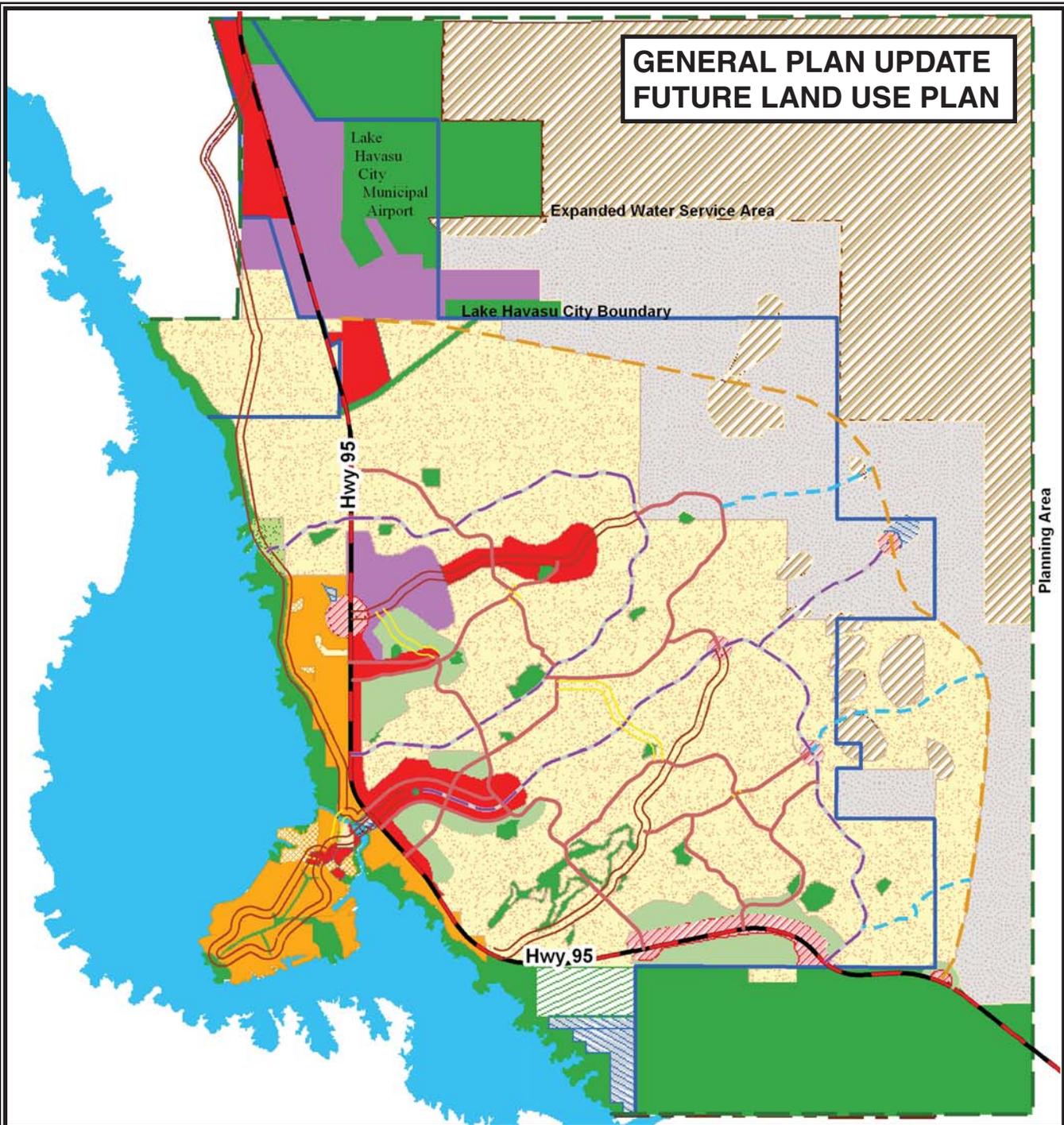
	<b>1990</b>	<b>2000</b>	<b>2005</b>	<b>2006</b>	<b>Average Annual Growth Rate</b>
Lake Havasu City	24,363	41,045	53,204	55,338	5.26%
Mohave County	93,497	155,157	188,035	194,920	4.70%
State of Arizona	3,665,228	5,130,632	5,829,839	6,239,482	3.38%
United States	248,709,873	281,421,906	296,507,061	299,398,484	1.17%

Source: Arizona Department of Economic Security; U.S. Census Bureau

The table indicates that Lake Havasu City, Mohave County, and the State of Arizona have all grown at a greater rate than the national average over

the past 16 years. Lake Havasu City has shown very strong growth during this time period, increasing at an average annual growth rate (AAGR) of

# GENERAL PLAN UPDATE FUTURE LAND USE PLAN



### Legend

- City Boundary
- Expanded Water Service Area
- Planning Area
- Proposed Parkway

### Future Land Use Designation

- |  |  |
|--|--|
| <span style="background-color: #d3d3d3; border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span> Rural Residential          | <span style="background-color: #008000; border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span> Open Space & Park        |
| <span style="background-color: #ffff00; border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span> Low Density Residential    | <span style="background-color: #ffcc00; border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span> Resort                   |
| <span style="background-color: #90ee90; border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span> Medium Density Residential | <span style="background-color: #ffcc00; border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span> Resort Residential       |
| <span style="background-color: #90ee90; border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span> High Density Residential   | <span style="background-color: #ffcc00; border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span> Resort Related           |
| <span style="background-color: #ff0000; border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span> Commercial (Nodal)         | <span style="background-color: #ccccff; border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span> Resort Related Mainland  |
| <span style="background-color: #ff0000; border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span> Commercial                 | <span style="background-color: #ccccff; border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span> Mountain Protection Area |
| <span style="background-color: #800080; border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span> Employment                 |  |

Source: Lake Havasu City General Plan 2001; Revised October 2007



5.26 percent. This translates into the addition of approximately 31,000 new residents to the City over this time period. Mohave County, as a whole, has shown strong growth since 1990, with a 4.70 percent AAGR.

Since 1990, Arizona is regularly at the top of the list of states with the highest growth rates. It has shown strong growth rates over the period, at 3.38 percent annually.

The overall U.S. population grew at a 1.17 percent AAGR as a point of comparison. These positive growth trends have been attributed to the availability of affordable quality homes, excel-

lent educational institutions, and enjoyable recreational amenities.

## EMPLOYMENT

Analysis of a community's employment base can be valuable in determining the overall well-being of that community. In most cases, the community'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 1M** provides historical employment characteristics from 1990 to 2006 in four analysis categories.

<b>TABLE 1M Historical Employment Statistics</b>					
	<b>1990</b>	<b>2000</b>	<b>2005</b>	<b>2006</b>	<b>Average Annual Growth Rate</b>
Lake Havasu City	12,149	17,928	22,902	24,375	4.45%
Mohave County	37,260	54,640	69,930	72,140	4.22%
State of Arizona	1,707,287	2,404,916	2,727,003	2,854,400	3.26%

Source: US Bureau of Labor Statistics; Lake Havasu City Chamber of Commerce

Total employment in the region has grown at a very strong rate similar to that of population over the past 15 years. Mohave County's employment base has grown 4.22 percent annually since 1990. Lake Havasu City has shown an even stronger AAGR, adding jobs at a rate of approximately 4.45 percent annually since 1990. Both the City and County have an AAGR that is greater than the State of Arizona. These statistics reveal a long-term, positive employment growth trend for the City, County, and State. These numbers are impressive given the national economic slowdown coupled with the impacts of 9/11.

The major employers in Lake Havasu City are presented in **Table 1N**. Understanding the types of employment opportunities will aid in identifying demand for aviation services. The largest employer in the City is Havasu City Medical Center. The second largest employer is Lake Havasu City. As is common in most cities, the Lake Havasu School District supports a large number of employees. As presented in the table, the largest employers are diverse, providing opportunities for a wide array of economic sectors.

<b>TABLE 1N Major Employers Lake Havasu City</b>		
<b>Employer</b>	<b>Description</b>	<b>Employees</b>
Havasu City Medical Center	Hospital / Medical Services	695
Lake Havasu City	Government	671
Lake Havasu School District	Education	530
Sterilite Corporation	Household Plastics	425
London Bridge Resort	Tourism	315
Wal-Mart	Retail Variety Store	259
Shugrue's Restaurant	Restaurant	250
Mission of Nevada, Inc.	Laundry	200
Mohave Community College	Higher Education	183
Bradley Chevrolet & Ford	Auto Sales	160
New Horizons Center	Nursing/Care Services	160

Source: Lake Havasu City

## **PER CAPITA PERSONAL INCOME**

**Table 1P** compares the per capita personal income (PCPI) for Lake Havasu City, Mohave County, the State of Arizona, and the United States. As illustrated on the table, Lake Havasu City's and Mohave County's PCPI has

historically been well below that of the State of Arizona and United States. Over the period, Lake Havasu City's and Mohave County's PCPI has increased at an AAGR of approximately 2.68 percent, compared to the state and national PCPI increasing at an AAGR of approximately 3.87 percent.

<b>TABLE 1P Historical Per Capita Personal Income (PCPI) Statistics</b>					
	<b>1990</b>	<b>2000</b>	<b>2005</b>	<b>2006</b>	<b>Average Annual Growth Rate</b>
Lake Havasu City	\$13,777	\$18,280	\$21,316	\$21,025	2.68%
Mohave County	\$14,859	\$18,326	\$22,055	\$22,643*	2.67%
State of Arizona	\$17,005	\$25,656	\$30,019	\$31,178	3.86%
United States	\$19,477	\$29,843	\$34,471	\$35,808	3.88%

\* Extrapolated

Source: Lake Havasu City Partnership for Economic Development; Bureau of Economic Analysis

## **ENVIRONMENTAL INVENTORY**

Available information about the existing environmental conditions at Lake Havasu City Municipal Airport has been derived from previous environmental studies, 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. These resources are discussed further within the following sections.

## **SOCIAL RESOURCES**

### **Compatible Land Use**

The compatibility of existing and planned land uses in the vicinity of an airport is usually associated with the extent of the airport's noise impacts. Typically, significant impacts will occur over noise-sensitive areas within the 65 DNL noise contour.

Land uses surrounding the Lake Havasu City Municipal Airport consist predominantly of open space. The airport is bounded to the west by State Route 95. As depicted within the *Lake Havasu City General Plan 2001*, the land immediately surrounding the airport is identified as Employment. West of the airport is identified as Commercial and north and east of the airport is identified as Open Space and Park.

The *Lake Havasu City General Plan 2001* encourages the expansion of employment-related uses around the airport and the relocation of industrial uses along the lakeshore to the airport area. A goal within the general plan is to minimize the impact of noise by supporting public awareness programs regarding compatible land use planning in the vicinity of the airport.

### **Noise**

The Yearly Day-Night Average Sound Level (DNL) is used in this study to assess aircraft noise. DNL is the metric currently accepted by the Federal Aviation Administration (FAA), Environmental Protection Agency (EPA),

and Department of Housing and Urban Development (HUD) as an appropriate measure of cumulative noise exposure. These three agencies have each identified the 65 DNL noise contour as the threshold of incompatibility. No residences or other noise-sensitive development are located in the immediate vicinity of the airport. A small residential area is located approximately three-quarters-of-a-mile to the south of the airport. Another residential development, Desert Hills, is located approximately one mile west/southwest of the airport across State Route 95.

## **NATURAL RESOURCES**

### **Department of Transportation Act: Section 4(f)**

Section 4(f) properties include publicly owned land from a public park, recreational area, or wildlife and waterfowl refuge of national, state, or local significance; or any land from a historic site of national, state, or local significance. There are no Section 4(f) resources located on airport property. However, the Havasu National Wildlife Refuge (NWR) is located approximately 1.5 miles west of the airport. This NWR stretches 30 miles from Needles, CA to Lake Havasu City, AZ along the Colorado River.

### **Fish, Wildlife, and Plants**

A number of regulations have been established to ensure that projects do not negatively impact protected plants, animals, or their designated

habitat. Section 7 of the *Endangered Species Act* (ESA), as amended, applies to federal agency actions and sets forth requirements for consultation to determine if the proposed action may affect a federally endangered or threatened species. The *Sikes Act* and various amendments authorize states to prepare statewide wildlife conservation plans for resources under their jurisdiction. To determine whether impacts would occur to protected resources, internet research was undertaken.

According to the U.S. Fish and Wildlife Service (FWS) website, a number of species are listed in Mohave County as being threatened or endangered. **Table 1Q** lists these species.

<b>Species</b>	<b>Federal Status<sup>1</sup></b>
Arizona cliffrose	Endangered
Bonytail chub	Endangered
California Brown pelican	Endangered
California condor	Endangered
Desert Tortoise	Threatened
Holmgren milk vetch	Endangered
Hualapai Mexican vole	Endangered
Humpback chub	Endangered
Jones cycladenia	Threatened
Mexican spotted owl	Threatened
Razorback sucker	Endangered
Siler pincushion cactus	Threatened
Southwestern willow flycatcher	Endangered
Virgin River chub	Endangered
Woundfin	Endangered
Yuma clapper rail	Endangered
Fickeisen plains cactus	Candidate
Relict leopard frog	Candidate
Yellow-billed cuckoo	Candidate
Virgin spinedance	Conservation Agreement

Source: <sup>1</sup> FWS online listed species database

No known threatened or endangered species are located on airport property. The desert scrub habitat found in the vicinity of the airport is suitable habitat for listed plant and mammal species. The Havasu NWR, located approximately 1.5 miles west of the airport along the Colorado River and Lake Havasu, contains habitat for many listed species. Within the NWR, several areas have been set aside within Lake Havasu specifically for the use of raising two native endangered fish: the bonytail chub and razorback sucker.

### **Historical, Architectural, 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. In addition, the *Antiquities Act of 1906*, the *Historic Sites Act of 1935*, and the *American Indian Religious Freedom Act of 1978* also protect historical, architectural, archaeological, and cultural resources. Impacts may 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.

There are no known historic or cultural resources located on airport property.

ty. A search of the National Register of Historic Places did not retrieve any data for the area.

### **Wetlands/Waters of the U.S.**

The U.S. Army Corps of Engineers regulates the discharge of dredged and/or fill material into waters of the United States, including adjacent wetlands, under Section 404 of the *Clean Water Act*. Wetlands are defined in Executive Order 11990, Protection of Wetlands, as “those areas that are inundated by surface or groundwater with a frequency sufficient to support and under normal circumstances does or would support a prevalence of vegetation or aquatic life that requires saturated or seasonably saturated soil conditions for growth and reproduction.” Categories of wetlands include swamps, marshes, bogs, sloughs, potholes, wet meadows, river overflows, mud flats, natural ponds, estuarine areas, tidal overflows, and shallow lakes and ponds with emergent vegetation. Wetlands exhibit three characteristics: hydrology, hydrophytes (plants able to tolerate various degrees of flooding or frequent saturation), and poorly drained soils.

To assess potential wetland impacts, the National Wetlands Inventory (NWI) map was reviewed. According to the map, two washes traverse airport property from east to west. Coordination with the airport confirmed these washes and identified them as being previously identified as jurisdictional waters.

### **DOCUMENT SOURCES**

As mentioned earlier, a variety of different sources were utilized in the inventory process. The following listing reflects a partial compilation of these sources. This does not include data provided by airport management as part of their records, nor does it include airport drawings and photographs which were referenced for information. On-site inventory and interviews with staff and tenants contributed to the inventory effort.

*Airport/Facility Directory, Southwest*, U.S. Department of Transportation, Federal Aviation Administration, National Aeronautical Charting Office, July, 2007 Edition.

*Phoenix Sectional Aeronautical Chart*, U.S. Department of Transportation, Federal Aviation Administration, National Aeronautical Charting Office, May, 2007.

*National Plan of Integrated Airport Systems (NPIAS)*, U.S. Department of Transportation, Federal Aviation Administration, 2007-2011.

*U.S. Terminal Procedures, Southwest U.S.*, U.S. Department of Transportation, Federal Aviation Administration, National Aeronautical Charting Office, July, 2007 Edition.

*Lake Havasu City General Plan 2001*. Lake Havasu City. 2001.

*Lake Havasu City Municipal Airport: Airport Certification Manual (ACM) Class III Airport*. Federal Aviation Administration. June 2005.

*Airport Operating Regulations.* Lake Havasu City. Resolution No. 91-697, Ordinance No. 91-347, Amending Ordinance No. 93-411.

A number of internet websites were also used to collect information for the inventory chapter. These include the following:

Lake Havasu City: [www.lhcaz.gov](http://www.lhcaz.gov)

Lake Havasu City Partnership for Economic Development:  
[www.lakehavasu.org](http://www.lakehavasu.org)

Lake Havasu Chamber of Commerce:  
[www.havasuchamber.com](http://www.havasuchamber.com)

FAA 5010 Airport Master Record Data: <http://www.airnav.com>

U.S. Census Bureau:  
<http://www.census.gov>

Mohave County, Arizona:  
[www.co.mohave.az.us](http://www.co.mohave.az.us)

Arizona Department of Economic Security:  
<http://www.de.state.az.us/ASPNew/default.asp>

Arizona Workforce Informer:  
<http://www.workforce.az.gov/>

Bureau of Economic Analysis, U.S. Department of Commerce:  
<http://www.bea.gov/bea/regional/data.htm>