BUCKEYE
municipal airport

Airport Master Plan

BUCKEYE MUNICIPAL AIRPORT

AIRPORT MASTER PLAN
Final Technical Report

Prepared For

The Town Of Buckeye, Arizona

By

Coffman Associates, Inc.

Approved
March 20, 2007
Buckeye Town Council

The preparation of this document was financed in part through a planning grant from the Federal Aviation Administration (FAA) as approved under the Airport and Airway Improvement Act of 1982, as amended. The contents of this report do not necessarily reflect the official views or policy of the FAA. Acceptance of this report by the FAA does not in any way constitute a commitment on the part of the United States to participate in any development depicted therein, nor does it indicate that the proposed development is environmentally acceptable in accordance with applicable public laws.

TABLE OF CONTENTS

CONTENTS

BUCKEYE AIRPORT
Buckeye, Arizona

Airport Master Plan Update
Final Technical Report

INTRODUCTION

Chapter One
INVENTORY

Chapter One (Continued)

Chapter Two
FORECASTS

Chapter Three
FACILITY REQUIREMENTS

Chapter Three (Continued)

Chapter Four
AIRPORT DEVELOPMENT ALTERNATIVES

Chapter Five
AIRPORT PLANS

Chapter Five (Continued)

Chapter Six
CAPITAL IMPROVEMENT PROGRAM

EXHIBITS

EXHIBITS (Continued)

INTRODUCTION

INTRODUCTION

The Buckeye Airport Master Plan Update has been undertaken to evaluate the airport's capabilities and role, to forecast future aviation demand, and to plan for the timely development of new or expanded facilities that may be required to meet that demand. The ultimate goal of the Master Plan is to provide systematic guidelines for the airport's overall maintenance, development, and operation.

The Master Plan is intended to be a proactive document which identifies and then plans for future facility needs well in advance of the actual need. This is done to ensure that the Town of Buckeye can coordinate project approvals, design, financing, and construction in a timely manner, prior to experiencing the detrimental effects of inadequate facilities.

An important result of the Master Plan is reserving sufficient areas for future facility needs. This protects development areas and ensures they will be readily available when required to meet future needs. The intended result is a detailed land use concept which outlines specific uses for all areas of airport property.

The preparation of this Master Plan is evidence that the Town of Buckeye recognizes the importance of air transportation to the community and the associated challenges inherent in providing for its unique operating and improvement needs. The cost of maintaining an airport is an investment which yields impressive benefits to the community. With a sound and realistic Master Plan, Buckeye Airport can maintain its role as an important link

to the national air transportation system for the community and maintain the existing public and private investments in its facilities.

The Town of Buckeye initiated this Master Plan in 2005 to revaluate and adjust as necessary the future development plan for the Buckeye Airport. The last Master Plan for Buckeye Airport was completed in February 1998. In the interim eight years the management of the airport transferred back to the Town from a private contractor who had managed and developed the airport during the preceding 20 years. The Town is now responsible for funding all capital improvements at the airport and matching Federal Aviation Administration (FAA) and Arizona Department of Transportation (ADOT) - Aeronautics development grants. This has previously been the responsibility of the master lease holder. This Master Plan is intended to provide guidance through an updated capital improvement and financial program to demonstrate the future investments required by the Town of Buckeye at the Buckeye Airport. Additionally, the Town of Buckeye desires guidance in operational revenue production at the airport through the use and development of airport property.

The Town of Buckeye is poised to experience strong residential and commercial land development. Nearly 300,000 home sites are currently planned for development in the Town of Buckeye municipal planning area on over 102,000 acres. Over 135 schools are planned. More than 6,700 acres of commercial development is planned totaling 45,400,000 square feet of building. Rapid growth over the next 20 years is expected as this development takes shape. The Town of Buckeye desires to understand how this will affect demand at the Buckeye Airport, but also how Buckeye Airport can be a catalyst for this growth. Along with this growth there are concerns over incompatible land use encroachment. This Master Plan along with a Title 14 Code of Federal Regulations (CFR) Part 150 Noise Compatibility Study are intended to assist the Town of Buckeye in protecting the airport from incompatible development, as well as, minimizing the impacts of the airport on the local community.

Finally, this Master Plan was initiated to consider the ever-changing needs of the air transportation industry. Since the completion of the last Master Plan significant changes in the general aviation industry have occurred including the development and introduction of the very light jet or microjet, the Sport Pilot rule, and the continued expansion of corporate aviation and fractional jet ownership. Each of these factors needs to be considered in terms of future facility needs at Buckeye Airport.

MASTER PLAN GOALS AND OBJECTIVES

The primary objective of the Buckeye Airport Master Plan is to develop and maintain a financially feasible, long term development program which will satisfy aviation demand and be compatible with community development, other transportation modes, and the

environment. The accomplishment of this objective requires the evaluation of the existing airport and a determination of what actions should be taken to maintain an adequate, safe, and reliable airport facility to meet the air transportation needs of the area. The completed Master Plan will provide an outline of the necessary development and give responsible officials advance notice of future needs to aid in planning, scheduling, and budgeting.

Specific goals and objectives of the Buckeye Airport Master Plan are:

- **Preserve Public and Private Investments**

The Town of Buckeye, United States Government (through the Federal Aviation Administration [FAA]), and State of Arizona (through the Department of Transportation – Aeronautics Division [ADOT]) have made considerable investments in the airport's infrastructure. Private individuals and businesses have made investments in buildings and other facilities. The Master Plan will provide for continued maintenance and necessary improvements to the airport's infrastructure to ensure maximum utility of the private facilities at Buckeye Airport and ensure the continued use of publicly-funded facilities.

- **Be Reflective of Community Goals and Objectives**

The Buckeye Airport is a public facility serving the needs of the local residents and businesses. The Master Plan needs to be reflective of the desires and visions the local communities have for quality of life, business and development, and land use. The Master Plan will consider existing community planning documents for surrounding communities and the County in the ultimate design and use of the airport.

- **Maintain Safety**

Safety is an essential consideration in the planning and development at the airport. The Master Plan will focus on maintaining the highest levels of safety for airport users, visitors, employees, and surrounding communities.

- **Preserve the Environment**

Protection and preservation of the local environment are essential concerns in the Master Plan. Any improvements called for in the Master Plan will be mindful of environmental requirements.

- **Attract Public Participation**

To ensure that the Master Plan reflects the concerns of the public, the local communities, airport tenants, airport users, and businesses throughout the region, the Master Plan process will include an active public outreach program to solicit comments and suggestions and include them in the final Master Plan, to the extent possible.

- **Strengthen the Economy**

In continuing support of the area's growing economy, the Master Plan is aimed at retaining and increasing jobs and revenue for the region and its businesses.

MASTER PLAN TASKS

The Master Plan will accomplish these objectives by carrying out the following:

- Determining projected needs of airport users through the year 2023.
- Identifying existing and future facility needs.
- Determining the optimal length of Runway 17-35 and whether a runway extension is needed.
- Determining whether a parallel runway should be included in facility planning.
- Identifying that land on existing airport property that may in excess of aviation demand through the planning period and may be used for non-aviation purposes in the interim.
- Developing a realistic, commonsense plan for the use and/or expansion of the airport.
- Developing land use strategies for the use of airport property.
- Establishing a schedule of development priorities and a program for improvements.
- Analyzing the airport's financial requirements for capital improvement needs and grant options.
- Coordinating this Master Plan with local, regional, state, and federal agencies.
- Conducting active and productive public involvement through the planning process.

BASELINE ASSUMPTIONS

While the ultimate recommendations of this Master Plan have yet to be determined, a study such as this typically requires several baseline assumptions that will be used throughout the analysis. These baseline assumptions for this study are as follows:

- Buckeye Municipal Airport will remain as a general aviation airport through the planning period.
- The Town of Buckeye and Maricopa County population, employment, and economy will continue to grow positively through the 20-year period of this Master Plan. Specifics of projected growth are contained in Chapter Two, Aviation Demand Forecasts.
- The general aviation industry will continue to grow positively through the planning period. Specifics of projected growth in the national general aviation industry are contained in Chapter Two, Aviation Demand Forecasts.
- Luke Air Force Based (AFB) will remain in operation as a military airfield during the planning period and its mission protected to the extent practicable.

- Both a federal program and state program will be in place through the planning period to assist in funding future capital development needs.

MASTER PLAN ELEMENTS AND PROCESS

The Buckeye Airport Master Plan Update is being prepared in a systematic fashion following FAA guidelines and industry-accepted principles and practices. The Master Plan update for Buckeye Airport has six general elements that are intended to assist in the discovery of future facility needs and provide the supporting rationale for their implementation. **Exhibit IA** provides a graphical depiction of the process and elements involved in the Buckeye Airport Master Plan Update.

Element One encompasses the inventory efforts. The inventory efforts are focused on collecting and assembling relevant data pertaining to the airport and the area it serves. Information is collected on existing airport facilities and operations. Local economic and demographic data is collected to define the local growth trends. Planning studies which may have relevance to the Master Plan are also collected. Information collected during the inventory efforts is summarized in Chapter One, Inventory.

Element Two examines the potential aviation demand for aviation activity at the airport. This analysis utilizes local socioeconomic information, as well as national air transportation trends to quantify the levels of aviation activity which can reasonably be expected to occur at Buckeye Airport though the year 2023. This includes general aviation based aircraft and annual aircraft operations by type. The results of this effort are used to determine the types and sizes of facilities which will be required to meet the projected aviation demands for the airport through the planning period. The results of this analysis are presented in Chapter Two, Aviation Demand Forecasts.

Element Three comprises the facility requirements analysis. The intent of this analysis is to compare the existing facility capacities to forecast aviation demand and determine where deficiencies in capacities (as well as excess capacities) may exist. Where deficiencies are identified, the size and type of new facilities to accommodate the demand are identified. The airfield analysis focuses on improvements needed to serve the type of aircraft expected to operate at the airport in the future, as well as navigational aids to increase the safety and efficiency of operations. This element also examines aircraft storage hangars and apron needs. The findings of this analysis are presented in Chapter Three, Facility Requirements.

Element Four considers a variety of solutions to accommodate the projected facility needs. This element proposes various facility and site plan configurations to efficiently and effectively use the available airport property. A thorough analysis is completed to identify the strengths and weaknesses of each proposed development alternative, with the intention

of determining a single direction for development. These results are presented in Chapter Four, Airport Development Alternatives.

Element Five comprises two independent, yet interrelated work efforts: a recommended development plan and an environmental overview. Chapter Five, Airport Plans, presents a graphic and narrative description of the recommended plan for the use, development, and operation of the airport, and a review of federal environmental requirements applicable to Buckeye Airport. The official Airport Layout Plan (ALP) drawings used by the FAA and the ADOT in determining grant eligibility and funding will be included as an appendix to the Master Plan.

Element Six focuses on the capital needs program. This program defines the schedules, costs, and funding sources for the recommended development projects. The Capital Improvement Program will be included in Chapter Six.

COORDINATION

The Buckeye Airport Master Plan Update is of interest to many within the local community. This includes local citizens, community organizations, airport users, airport tenants, area-wide planning agencies, and aviation organizations. As an important component of the regional, state, and national aviation systems, the Master Plan Update is of importance to both state and federal agencies responsible for overseeing air transportation.

To assist in the development of the Buckeye Airport Master Plan Update, the Town of Buckeye has identified a cross-section of community members and interested persons to act in an advisory role in the development of the Master Plan. As members of the Planning Advisory Committee (PAC), the committee members reviewed phase reports and provided comments throughout the study to help ensure that a realistic, viable plan was developed.

To assist in the review process, a series of draft working papers were prepared at three milestones in the planning process as shown on **Exhibit IA**. The draft working paper process allowed for input and review during each step of the Master Plan process to ensure that all Master Plan issues were fully addressed as the recommended program was developed.

Three public information workshops were also included as part of the plan coordination. The public information workshops allowed the public to provide input and learn about general information concerning the Master Plan. The Master Plan report was also be available on the internet via the consultant's web page: www.coffmanassociates.com.

04MP11-IA-8/28/06

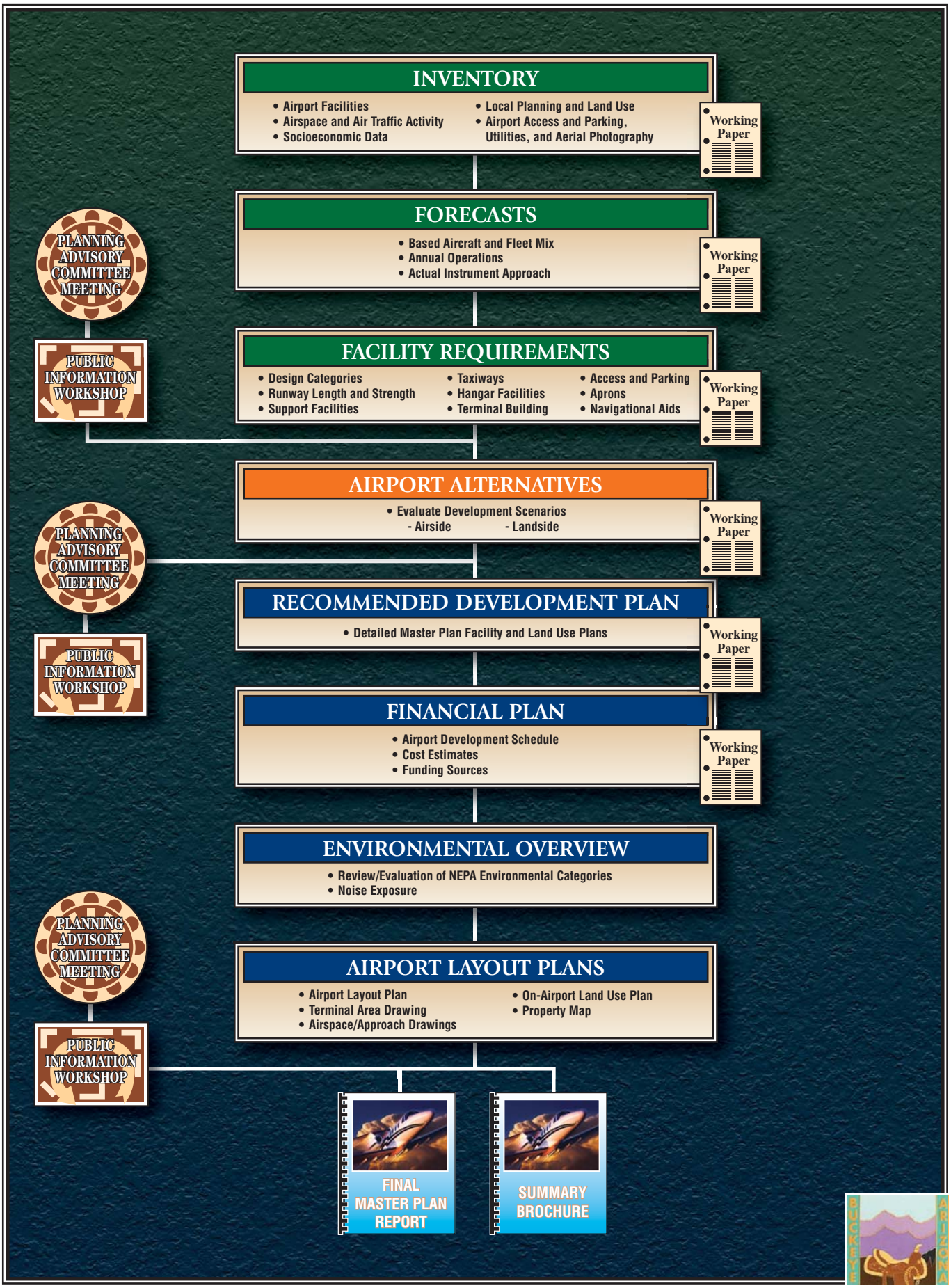


Exhibit IA
MASTER PLAN PROCESS

Chapter One

INVENTORY

INVENTORY

The initial step in the preparation of the Airport Master Plan Update for Buckeye Municipal Airport is the collection of information pertaining to the airport and the area it serves. The information collected in this chapter will be used in subsequent analyses in this study. The inventory of existing conditions at Buckeye Municipal Airport provides an overview of the airport facilities, airspace, and air traffic control. Background information regarding the regional area is also collected and presented. This includes information regarding the airport's role in regional, state, and national aviation systems, surface transportation, and a socio-economic profile.

The information was obtained from several sources, including on-site inspections, airport records, review of related planning studies, the Federal Aviation Administration (FAA), the

Arizona Department of Transportation - Aeronautics Division (ADOT), various government agencies, and a number of Internet sites (which presently summarize much of the statistical information and facts about the airport). Interviews with airport staff, planning associations, and airport tenants also contributed to the data collection.

AIRPORT FACILITIES

Airport facilities can be functionally classified into two broad categories: airside and landside. The airside category includes those facilities directly associated with aircraft operations. 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.

AIRSIDE FACILITIES

Airside facilities include runways, taxiways, airfield lighting, and navigational aids. Airside facilities are identified on **Exhibit 1A**. **Table 1A** summarizes airside facility data.

TABLE 1A
Airside Facility Data
Buckeye Municipal Airport

	Runway 17-35
Runway Length (feet) Runway Width (feet)	5,500 75
Runway Surface Material Condition	Asphalt Good
Runway Pavement Markings Condition	Basic Good
Runway Load Bearing Strengths (lbs.)	30,000 SWL
Runway Lighting	Medium Intensity
Taxiway Lighting	Medium Intensity
Taxiway Pavement Markings Condition	Centerline, Holdlines Good
Approach Lighting	PAPI-2L (Runway 17) PAPI-4L (Runway 35)
Navigational Aids	VORTAC GPS Loran-C
Instrument Approach Procedures	None
Other Aids	Segmented Circle Lighted Wind Cone Rotating Beacon Lighted & Unlighted Directional Signs Runway Threshold Lights

Source: *Airport/Facility Directory, Southwest U.S*; FAA Form 5010-1, Airport Master Record

GPS – Global Positioning System
PAPI – Precision Approach Path Indicator
SWL – Single Wheel Loading
VORTAC – Very High Frequency Omnidirectional Range Facility with military Tactical Navigational Aid

Runways

A single runway is available at Buckeye Municipal Airport. Runway 17-35 is 5,500 feet long and 75 feet wide and oriented in a north-south direction. Originally constructed in 1984 at 4,300 feet, Runway 17-35 was extended 1,200 feet to the north in 2003 and 2004. Based upon FAA pavement strength testing and documents, the load bearing strength of Runway 17-

04MP11-1A-10/24/05

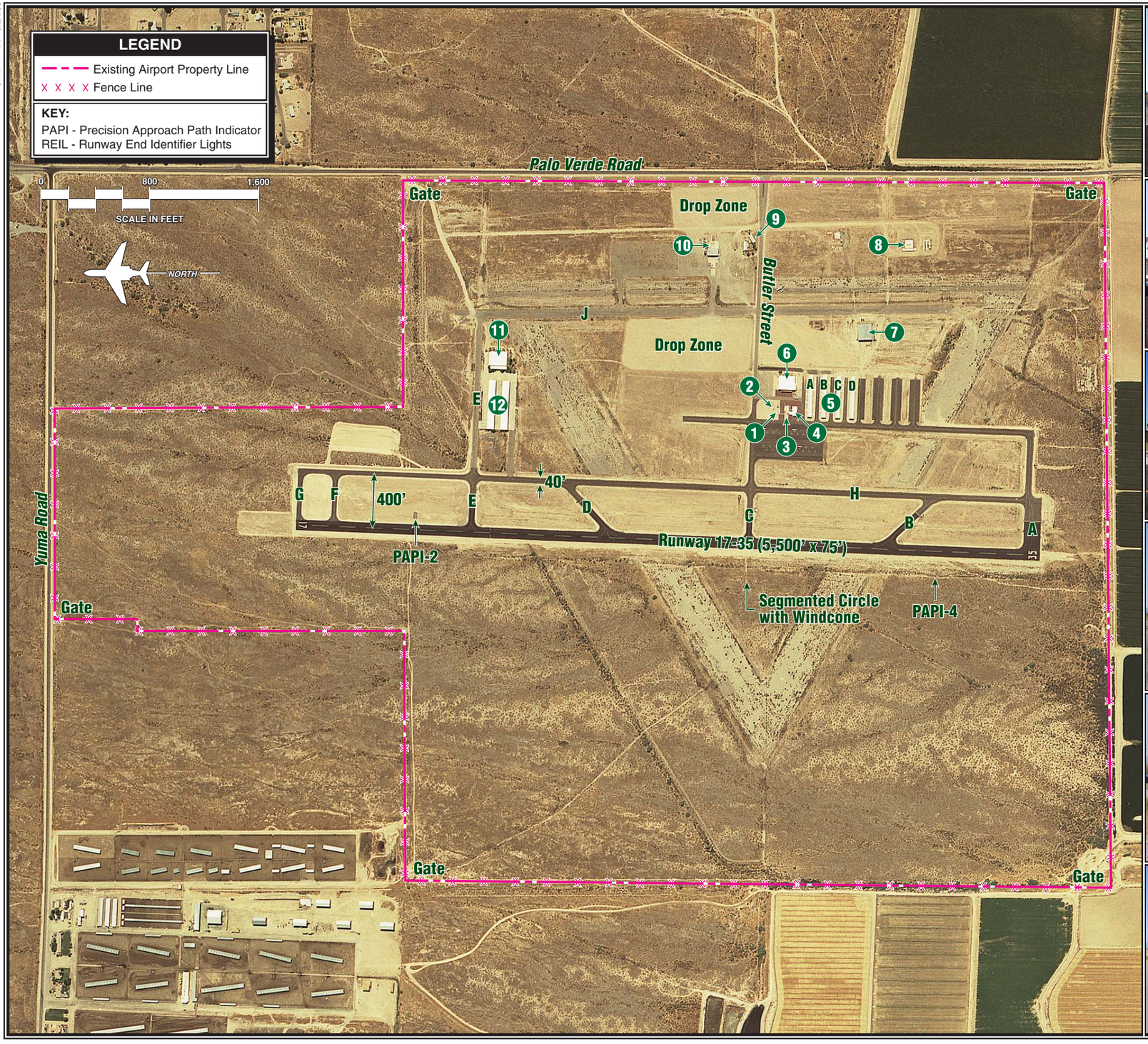


Exhibit 1A
EXISTING FACILITIES

35 has been calculated at 30,000 pounds single wheel loading (SWL). SWL refers to the design of certain aircraft landing gear which has a single wheel on each main landing gear strut. This varies from the FAA Form 5010-1 and Airport/Facility Directory which lists a 12,500 pound SWL strength rating for Runway 17-35. The FAA Form 5010-1 should be updated.

Runway gradient describes the upward or downward slope of a runway. The gradient is determined by dividing the difference in runway end elevations by the runway length. Runway 17-35 slopes upward to the north. There is a 38-foot elevation difference between each end of the runway, which equates to a 0.7 percent gradient.

Taxiways

The existing taxiway system at Buckeye Municipal Airport, as illustrated on **Exhibit 1A**, consists of parallel, connecting, and entrance/exit taxiways. Runway 17-35 is served by a full-length parallel taxiway, Taxiway H. Taxiway H is 40 feet wide, and there is 400 feet of separation between the Taxiway H centerline the Runway 17-35 centerline.

Several entrance/exit taxiways, which are designated as Taxiways A, B, C, D, E, F, and G, provide connections between Parallel Taxiway H and Runway 17-35. Taxiways B and D are acute-angled (also known as high-speed) exit taxiways which allow aircraft to exit the runway at higher speeds than the other exit taxiways which are perpendicular to the runway centerline. The high-speed exits increase airfield capacity by reducing the amount of time an aircraft occupies the runway after landing. Each of these taxiways is 40 feet wide.

A holding apron is available at the Runway 35 end. This area allows aircraft to prepare for departure off the taxiway surface. Taxiway F at the Runway 17 end can be described as a by-pass taxiway. This allows aircraft to access the runway and depart should an aircraft be preparing for departure on Taxiway G at the Runway 17 end.

Taxiway J is located on the east side of the airport and provides access to landside facilities. This taxiway is actually the remaining pavement portions of the previous runway at the airport.

An undesignated taxiway extends along the terminal apron east of Taxiway H. This taxiway provides access to Taxiway A for aircraft located in the T-hangars and from the main apron area. This taxiway is 35 feet wide and was constructed in the late 1990s.

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. A rotating beacon projects two beams of light, one white and one green, 180 degrees apart. The rotating beacon at Buckeye Municipal Airport is located atop a steel tower east of the runway near the terminal building as shown on **Exhibit 1A**.

Pavement Edge Lighting: Pavement 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 17-35 is equipped with medium intensity runway lighting (MIRL). Taxiways A, B, C, D, E, F, and G are equipped with medium intensity taxiway lighting (MITL). Taxiway J, Taxiway E east of Taxiway H, and the undesignated taxiway extending along the eastern edge of the apron have no lighting.

Visual Approach Lighting: A precision approach path indicator (PAPI) is installed on each end of Runway 17-35. A PAPI-2 is installed on the left side of Runway 17. A PAPI-4 is installed on the left side of Runway 35. The PAPI consists of a system of lights located at various distances from the runway threshold. When interpreted by the pilot, these lights give the pilot an indication of being above, below, or on the designed descent path to the runway. The PAPI-4 consists of four separate light boxes arranged in a row. The PAPI-2 consists of two separate light boxes arranged in a row.

Pilot-Controlled Lighting: A pilot-controlled lighting system (PCL) allows pilots to activate and/or increase the intensity of the airfield lighting and taxiway lights from the aircraft with the use of the aircraft's radio transmitter. At Buckeye Municipal Airport, the Runway 17-35 MIRLs are on the PCL system.

Airfield Signs: Airfield identification signs assist pilots in identifying their location on the airfield and directing them to their desired location. Current airfield signage includes a mixture of lighted and unlighted signs installed at all taxiway and runway intersections.

Runway Threshold Lighting: Runway threshold lights identify the runway end. Runway threshold lights have specially designed lights that are green on one side and red on the other. The green side is oriented towards the landing aircraft. There are eight threshold lights at each runway end.

Pavement Markings

Pavement markings aid in the movement of aircraft along airport surfaces and identify closed or hazardous areas on the airport. The basic markings on Runway 17-35 identify the runway designation and centerline.

Taxiway and apron centerline markings are provided to assist aircraft using these airport surfaces. Taxiway

centerline markings assist pilots in maintaining proper clearance from pavement edges and objects near the taxiway/taxilane edges. Pavement markings also identify aircraft parking and aircraft holding positions.

Weather and Communication Aids

The airport is also equipped with a lighted wind cone and segmented circle. The wind cone provides information on wind direction and velocity. The segmented circle indicates the traffic pattern location for pilots. The lighted wind cone and segmented circle are located west of Runway 17-35, as shown on **Exhibit 1A**.

LANDSIDE FACILITIES

Landside facilities are the facilities that support the aircraft and pilot/passenger handling functions. These facilities typically include the terminal building, aircraft storage/maintenance hangars, aircraft parking aprons, and support facilities such as fuel storage, automobile parking, roadway access, and aircraft rescue and firefighting. Landside facilities are identified on **Exhibit 1A**. **Table 1B** summarizes landside facility data. All buildings and structures at Buckeye Municipal Airport are owned by the Town of Buckeye.

Terminal Building

The passenger terminal building is located at the terminus of Butler Drive, near the center of the aircraft parking apron. The terminal building includes space for aircraft management, restrooms, a pilot's lounge, and a meeting/greeting area. The terminal building encompasses approximately 1,200 square feet.

Automobile Parking

There are no designated parking spaces at the airport. Public parking is available between the terminal building and the large conventional hangar east of the terminal building. This area provides both paved and unpaved areas for parking. Many aircraft owners park in, or adjacent to, their T-hangars. Vehicles also park in undesignated areas on various tenant leaseholds at the airport.

Aircraft Hangar Facilities

There are eight separate enclosed hangar facilities totaling approximately 116,600 square feet at the airport used for aircraft storage and/or maintenance. The large shade structures along Taxiway E are not included as they are not used for aircraft storage.

Hangar space at Buckeye Municipal Airport is comprised of conventional hangars and T-hangars. Conventional hangars provide a large enclosed space, typically accommodating more than one aircraft. T-hangars provide for separate, single aircraft storage areas, typically in one large building where as many as 10 T-hangars are located next to each other. Individual

characteristics of each hangar facility are summarized in **Table 1B**.

Conventional hangar space at the airport totals approximately 41,000 square feet, in three separate structures. There are four 10-unit T-hangar structures totaling approximately 38,600 square feet.

TABLE 1B
Landside Facility Data

Facility	Square Footage	Tenant	Structure Condition	Location on Exhibit 1A
Electrical Vault		None	Block Good	#1
Fuel Storage – 100LL Two, 10,000 gallon above ground tanks Self-Serve Fuel	N/A	Town of Buckeye for self-service fuel and storage (note: only one tank is in use)	Metal Good	#3
Terminal	1,200	Town of Buckeye	Block Good	#4
T-Hangar – Row A	9,656	Various	Metal Good	#5
T-Hangar – Row B	9,656	Various	Metal Good	#5
T-Hangar – Row C	9,656	Various	Metal Good	#5
T-Hangar – Row D	9,656	Various	Metal Good	#5
Conventional Hangar Hangar Space Office Space	 12,500 2,100	APS Trademark Group Groen Brothers	Metal Good	#6
Conventional Hangar Hangar Space Office Space	 11,900 2,100	Lauridsen Industrial Corporation	Metal Fair, Needs Repair	#7
Fuel Storage – Jet-A, 100LL Two, 12,000 gallon above ground tanks	N/A	Trademark Group	Metal Good	#8
Office	1,584	Desert Skydiving	Metal Good	#9
Office	1,320	Desert Skydiving	Metal Good	#9
Conventional Hangar	3,978	Desert Skydiving	Metal Good	#10
Conventional Hangar Hangar Space Office Space	 12,500 3,125	Groen Brothers	Metal Good	#11
Shade Structure - North Shade Structure - South	18,513 18,513	Groen Brothers	Metal Good	#12

Apron

The aircraft parking apron at Buckeye Municipal Airport encompasses approximately 16,700 square yards. There are approximately 40 tiedown positions available on the apron. No distinction is made between local and transient tiedowns.

Fuel Storage Facilities

Fuel storage at Buckeye Municipal Airport totals 44,000 gallons. All fuel storage facilities are owned by the Town of Buckeye. Two 10,000-gallon storage tanks are located north of the terminal building. One is not in use. The other is used for 100LL storage. Two 12,000-gallon storage tanks are located east of the terminal building near Palo Verde Road. One tank is used for Jet A storage; the other is used for 100LL storage. A block structure surrounds all storage tanks to contain any inadvertent release of fuel. The Town of Buckeye operates a self-service fuel island adjacent to the terminal building using one of the 10,000 gallon 100LL storage tanks. The remaining storage tanks are leased to the Trademark Group, which distributes both Jet-A fuel and 100LL fuel by mobile fuel truck.

Desert Skydiving has a 1,000-gallon above ground storage tank and 500-gallon storage tank on a trailer which are used intermittently. Groen Brothers operates a 500-gallon mobile fuel vehicle intermittently.

Tenants

The following businesses and organizations on located on airport property:

- Trademark Group – Aircraft Fueling
- Groen Brothers – Gyrocopter construction, testing, maintenance, and training.
- Desert Skydiving Center – Skydiving
- Buckeye Flight Experience - Flight Training

Arizona Public Service (APS) leases a portion of the conventional hangar east of the terminal building and 15 acres of land for emergency preparedness in the event of an emergency at the Palo Verde nuclear powerplant. The Palo Verde nuclear powerplant is located west of the Town of Buckeye.

Aircraft Rescue and Firefighting

There are no aircraft rescue and firefighting (ARFF) facilities located on the Buckeye Municipal Airport. The airport is not required to have such facilities located at the airport. The nearest local fire station is located in downtown Buckeye, approximately eight miles from the airport.

Fencing

New perimeter fencing was added in 2005. This includes six-foot chain link fencing with 3-strand barb wire on top. This new fencing extends around

the perimeter of the airport, beginning north of Butler Street and terminating on the south side of Butler Street. There is no fencing on the interior of the airport. The apron area and aircraft taxiways are not segregated by fencing or other means from the entrance road and parking areas. Five manual gates were included as part of the fencing project. Their location is shown on **Exhibit 1A**.

Utilities

Water service at the airport is provided by on-site wells. Septic systems are used for sanitary sewer needs. Arizona Public Service (APS) provides electrical services.

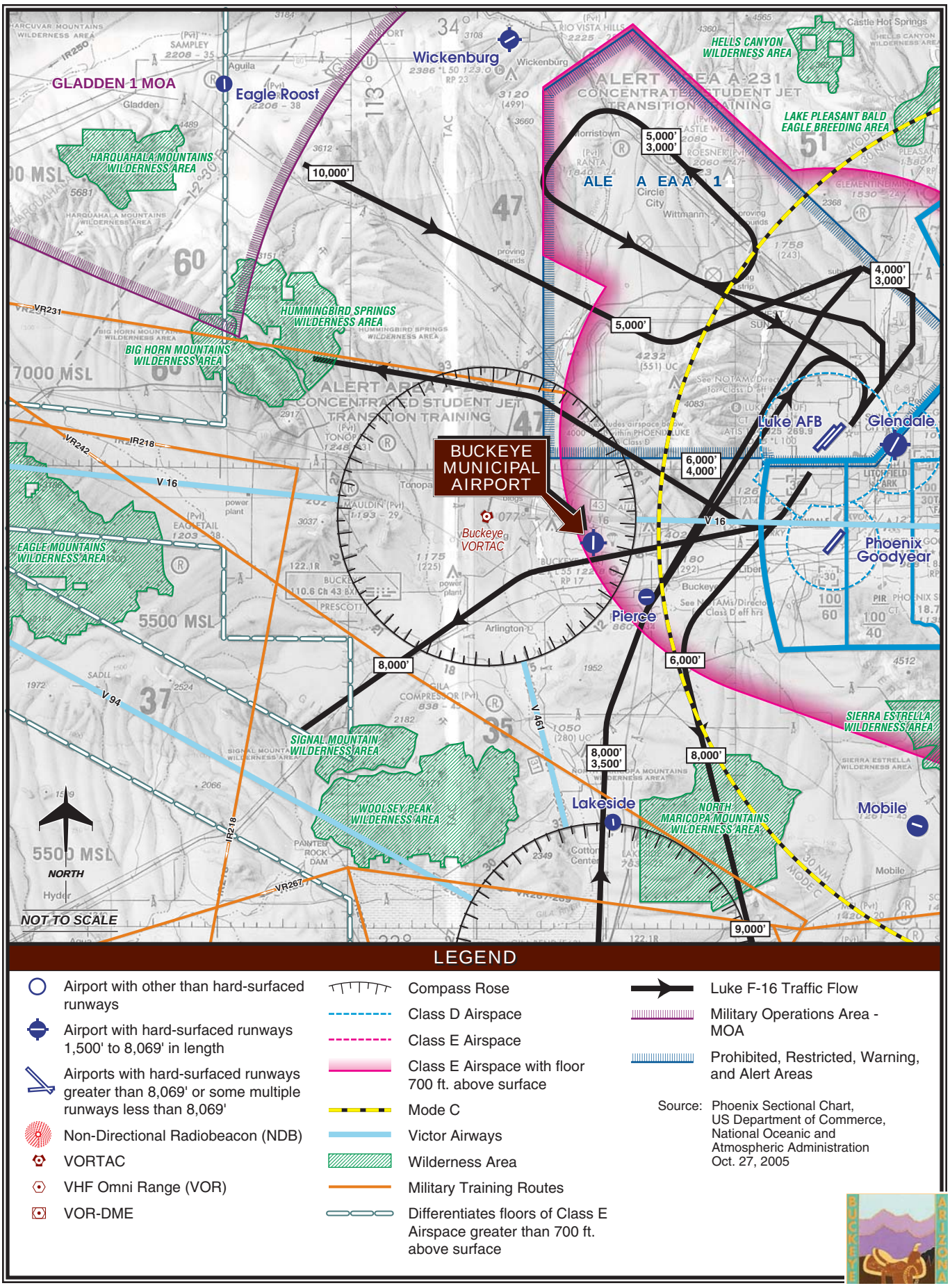
ENROUTE NAVIGATION AND AIRSPACE

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

The VOR, in general, provides azimuth readings to pilots of properly equipped aircraft by transmitting a radio signal at every degree to provide 360 individual navigational courses. Frequently, distance measuring equipment (DME) is combined with a VOR facility (VOR/DME) to provide distance as well as direction information to the pilot. In addition, the military Tactical Air Navigational Systems (TACANS) and civil VORs are commonly combined to form a VORTAC. A VORTAC provides distance and direction information to civil and military pilots. Pilots flying to or from the airport can utilize the Buckeye VORTAC located approximately seven nautical miles northwest of the airport. **Exhibit 1B**, a map of the regional airspace system, depicts the location of the Buckeye VORTAC.

GPS is an additional navigational aid. GPS was initially developed by the United States Department of Defense for military navigation around the world. Increasingly, GPS has been utilized more in civilian aircraft. GPS uses satellites placed in orbit around the globe to transmit electronic signals, which properly equipped aircraft use to determine altitude, speed, and position information. GPS allows pilots to navigate directly to any airport in the country. In contrast with the VOR, pilots are not required to navigate from one specific navigational aid to the next. Loran-C uses a system of ground-based transmitters. Similar to GPS, pilots can navigate directly to their destination.

A GPS modernization effort is underway by the FAA and focuses on augmenting the GPS signal to satisfy requirements for accuracy, coverage, availability, and integrity. For civil aviation use, this includes the development of the Wide Area Augmentation System (WAAS), which was launched on July 10, 2003. The



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'
- Non-Directional Radiobeacon (NDB)
- VORTAC
- VHF Omni Range (VOR)
- VOR-DME
- Compass Rose
- Class D Airspace
- Class E Airspace
- Class E Airspace with floor 700 ft. above surface
- Mode C
- Victor Airways
- Wilderness Area
- Military Training Routes
- Differentiates floors of Class E Airspace greater than 700 ft. above surface
- Luke F-16 Traffic Flow
- Military Operations Area - MOA
- Prohibited, Restricted, Warning, and Alert Areas

Source: Phoenix Sectional Chart, US Department of Commerce, National Oceanic and Atmospheric Administration Oct. 27, 2005

Exhibit 1B
AIRSPACE MAP

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 to most airports with cloud ceilings as low as 250 feet above the ground and visibilities restricted to three-quarters mile, after 2015.

VICINITY AIRSPACE

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 two basic categories of airspace, controlled and uncontrolled, and identifies them as Classes A, B, C, D, E, and G.

Class A airspace is controlled airspace that includes all airspace from 18,000 feet mean sea level (MSL) to Flight Level 600 (approximately 60,000 feet MSL). Class B airspace is controlled airspace surrounding high-capacity commercial service airports (i.e., Phoenix Sky Harbor International Airport). Class C airspace is controlled airspace surrounding lower activity commercial service airports and some military airports (i.e., Tucson International Airport). Class D airspace is controlled airspace surrounding airports with an airport traffic control tower (i.e., Phoenix Goodyear Airport). All aircraft operating within Classes A, B, C, and D airspace must be in contact with the air traffic control facility responsible for that particular airspace. Class E airspace is controlled airspace that encompasses all instrument approach procedures and low-altitude federal airways. Only aircraft conducting instrument flights are required to be in contact with air traffic control when operating in Class E airspace. Aircraft conducting visual flights in Class E airspace are not required to be in radio communications with air traffic control facilities. Visual flight can only be conducted if minimum visibility and cloud ceilings exist. Class G airspace is uncontrolled airspace that does not require contact with an air traffic control facility.

Airspace in the vicinity of Buckeye Municipal Airport is depicted on **Exhibit 1B**. Buckeye Municipal Airport is located in Class E airspace, beginning at 700 feet above the surface and extending to 18,000 feet MSL. Class E airspace also encompasses the low-altitude Victor Airways in the vicinity of the airport. Victor Airways are corridors of airspace eight miles wide that extend upward from 1,200 feet above ground level (AGL) to 18,000 feet MSL and extend between VOR navigational facilities. Victor Airways in the area emanate from the Buckeye VORTAC.

SPECIAL USE AIRSPACE

Airspace may be reserved for use by a specific agency, primarily the military, within which operations of other aircraft are restricted or prohibited. The special use airspace in the vicinity of

Buckeye Municipal Airport is defined in the following paragraphs and is identified on **Exhibit 1B**.

Alert Area A-231 is located immediately north of the airport. This area encompasses a primary training area for student pilots from Luke Air Force Base (AFB). This area is in operation continuously from 500 feet AGL to 6,500 feet MSL. While civilian operations are not limited within Alert Area A-231, pilots are requested to contact approach control at the radar approach control (RAPCON) based at Luke AFB for advisories.

While military aircraft from Luke AFB do not use Buckeye Municipal Airport, several approach and departure paths for Luke AFB extend to the north and south of Buckeye Municipal Airport. Altitudes on these routes extend from 3,500 feet MSL to 8,000 feet MSL. Typical routes near Buckeye Municipal Airport are shown on **Exhibit 1B**.

While not located immediately adjacent to the Buckeye Municipal Airport, several military operations areas (MOAs) are located in the regional area as shown on **Exhibit 1B**. MOAs define areas of high level military activity and are intended to segregate military and civilian aircraft. While civilian operations are not restricted within the MOA, civilian aircraft are cautioned to be alert for military aircraft when operating in the MOA. Theses MOAs are under control of the Albuquerque Air Route Traffic Control Center (ARTCC). The Gladden 1 MOA is located to the north of the airport. Aircraft operate above 7,000 feet MSL or 5,000 feet AGL, whichever is higher. It is in use Monday through Friday between 6:00 a.m. and 7:00 p.m., and normally extends to 11:30 p.m. by NOTAM.

A number of military training routes (MTRs) are located near Buckeye Municipal Airport. These routes are used by military training aircraft which commonly operate at speeds in excess of 250 knots and at altitudes to 10,000 feet MSL. While general aviation flights are not restricted within this area, pilots are strongly cautioned to be alert for high-speed military jet training aircraft. The nearest MTR is VR 231 approximately five miles from the airport.

As shown on **Exhibit 1B**, several areas in the vicinity of Buckeye Municipal Airport are designated as National Recreation and Wilderness Areas. Aircraft in and over these designated areas are requested to remain above 2,000 feet AGL.

AIR TRAFFIC CONTROL

Buckeye Municipal Airport does not currently have an airport traffic control tower (ATCT) to regulate flight operations. Instead, pilots follow general flight procedures for arriving and departing the airport. Pilots announce their position and intentions on the Unicom frequency 122.8.

Enroute air traffic control service to Buckeye Municipal Airport is provided by the Albuquerque Air Route Traffic Control Center (ARTCC). ARTCCs control aircraft in a large multi-state

area. All aircraft in radio communication with the ARTCC are provided with altitude, aircraft separation, and route guidance to and from the airport.

The Phoenix Terminal Radar Approach Control (TRACON) facility, based at Phoenix Sky Harbor International Airport, controls aircraft operating within the Class B airspace surrounding Phoenix Sky Harbor International Airport. The TRACON uses direct radio communications and the Automated Radar Terminal tracking system (ARTS) to control air traffic within its jurisdiction. Air traffic control services provided by Phoenix TRACON include radar vectoring, sequencing and separation of IFR aircraft, and traffic advisories.

Luke Radar Approach Control (RAPCON) is the servicing approach control for Buckeye Municipal Airport Monday through Friday. RAPCON provides air traffic services to include radar vectoring, separation and traffic advisories. The RAPCON uses direct radio communications and the Standard Terminal Automation Replacement System (STARS) tracking system to control aircraft within its jurisdiction. While VFR aircraft arriving and departing Buckeye Municipal Airport are not required to contact Luke RAPCON, they may do so to expedite their progress through the area.

LOCAL OPERATING PROCEDURES

Buckeye Municipal Airport is situated at 1,021 feet MSL. The traffic pattern altitude at the airport is approximately 1,000 feet above airfield elevation (2,000 feet MSL). Runway 35 utilizes left-hand traffic patterns. For left-hand traffic patterns, aircraft approach the runway end following a series of left turns. Runway 17 utilizes a right-hand traffic pattern. For right-hand traffic patterns, aircraft approach the runway end following a series of right turns. With these traffic patterns, all aircraft in the local pattern remain west of the runway. The right traffic pattern was established to avoid overflights of the Town of Hope, to avoid conflicts with the parachute landing zone located along Palo Verde Road, and to avoid potential conflicts with approaches to Luke AFB.

AREA AIRPORTS

A review of airports within 30 nautical miles of Buckeye Municipal Airport has been made to identify and distinguish the type of air service provided in the area surrounding the airport. Public-use airports within 20 nautical miles of the airport were previously illustrated on **Exhibit 1B**. Information pertaining to each airport was obtained from FAA master airport records.

Glendale Municipal Airport is located approximately 21 nautical miles northeast of Buckeye Municipal Airport. Glendale Municipal Airport is owned and operated by the City of Glendale. A single runway is available for use. Runway 1-19 is 7,150 feet long and 100 feet wide. The ATCT at Glendale Municipal Airport is operated from 6:00 a.m. to 8:30

p.m., Monday through Friday, and 7:00 a.m. to 7:00 p.m. on the weekends. There is one published GPS instrument approach into Glendale Municipal Airport. There are approximately 269 based aircraft at Glendale. A full range of general aviation services are available at the airport.

Phoenix Goodyear Airport is located approximately 15.5 nautical miles east of Buckeye Municipal Airport. Phoenix Goodyear Airport is owned and operated by the City of Phoenix. A single runway 8,500 feet long by 150 feet wide is available for use. Phoenix Goodyear Airport has an operating ATCT, which is operated from 6:00 a.m. to 9:00 p.m. daily. There are approximately 227 based aircraft at Phoenix Goodyear Airport. A limited range of general aviation services are available at Phoenix Goodyear Airport.

Luke Air Force Base is located approximately 16.7 miles northeast of Buckeye Municipal Airport. Luke AFB is a military base with two runways. The largest runway has a length of 10,012 feet and a width of 150 feet. There is an operating ATCT at the air base. Luke AFB serves as the primary F-16 training base for the U.S. Air Force.

Gila Bend Municipal Airport is located approximately 27.7 nautical miles south of Buckeye Municipal Airport. Gila Bend Municipal Airport provides a single runway 5,200 feet long by 75 feet wide. The airport is uncontrolled and there are two based aircraft. There are no instrument approach procedures. Limited general aviation services are available at the airport.

Buckeye Municipal Airport is approximately 18 NM south/southwest of Luke AUX-1 practice airfield. Extensive student instrument training takes place daily to Runway 11. Luke RAPCON provides approach control service for this area.

REGIONAL SETTING

Buckeye Municipal Airport is located in the west-central portion of the Town of Buckeye planning area as shown on **Exhibit 1C**. The Town of Buckeye is located in the southwestern portion of the Phoenix Metropolitan Area in Maricopa County, Arizona. The Town of Buckeye is the westernmost community in the metropolitan area.

The Town of Buckeye is located along Interstate Highway 10. The Palo Verde Road interchange on Interstate Highway 10 provides access to the Buckeye Municipal Airport, which is located less than one mile south of the Interstate Highway. Arizona State Route 85 extends through downtown Buckeye. Route 85 links the Town of Buckeye with Interstate Highway 8 to the south.

AIRPORT ACCESS, SIGNAGE, AND INTERNATIONAL CIRCULATION

The Buckeye Municipal Airport is located at the intersection of Palo Verde Road and Butler Street. Butler Street provides access to the terminal building. Both Palo Verde Road and Butler Street are two lane roads. Two signs

04MP11-1C-11/3/05

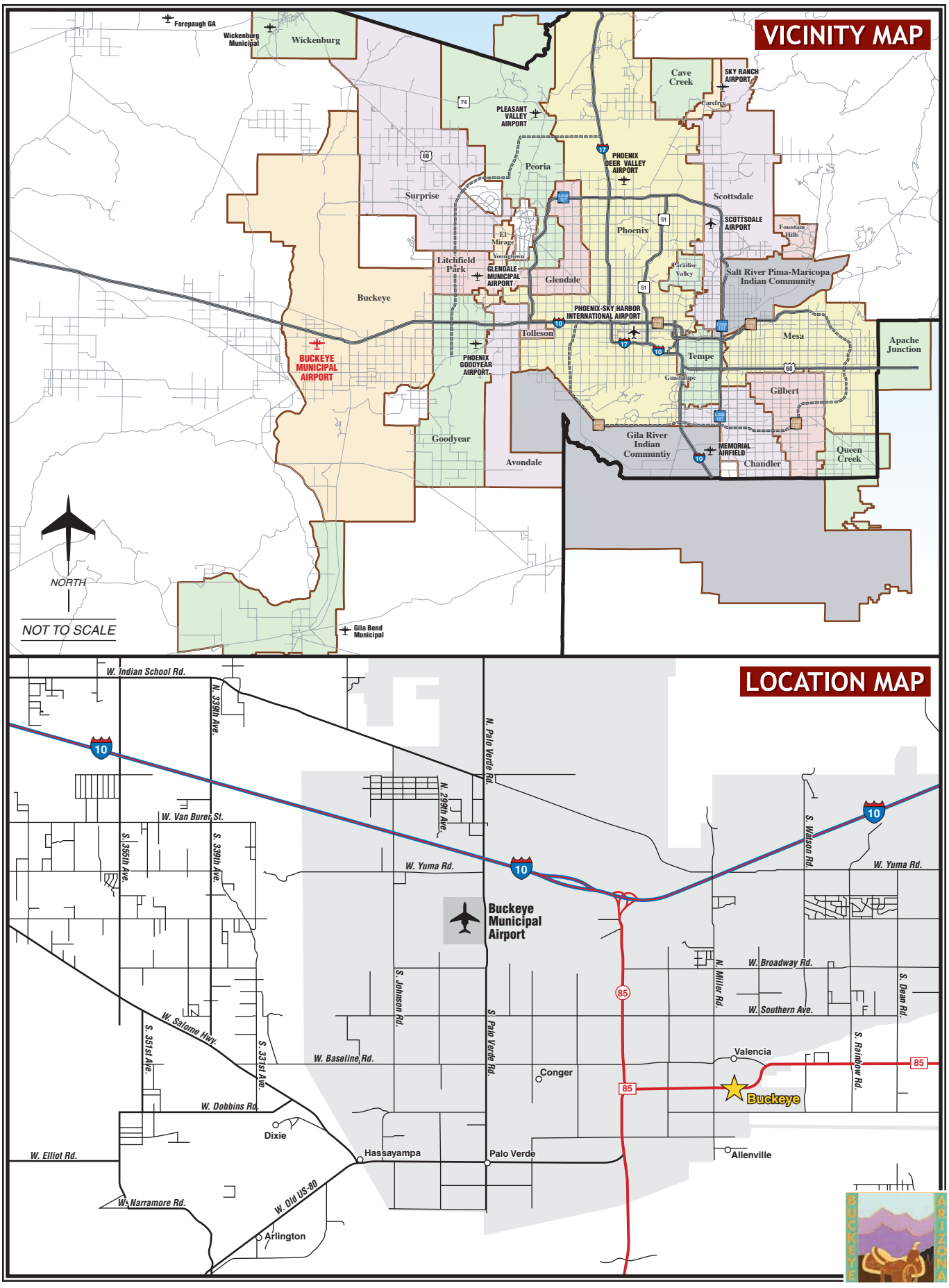


Exhibit 1C
LOCATION MAP

(one for northbound traffic and one for southbound traffic) along Palo Verde Road direct drivers to Buckeye Municipal Airport. There is no signage along Interstate Highway 10. ADOT will not allow signage until an airport traffic control tower is established at the airport.

Other than Butler Road, there are no other paved vehicle roadways on the airport. Internal circulation to hangar facilities is made via taxiways or taxilanes and unpaved roadways. An unpaved road provides vehicle access around the airport perimeter.

GROUND TRANSPORTATION

The Union Pacific rail line extends through the Town of Buckeye. Several industrial areas along the line have spurs. The rail line is located south of the Buckeye Municipal Airport and is not available at or near the airport. Amtrak service is not available in the Phoenix Metropolitan Area. Greyhound Bus Lines does not provide a terminal location in the Town of Buckeye. This closest service point is in Glendale, Arizona. Daily parcel and overnight express services have pick-up and delivery routes in Buckeye. Local transportation service includes several taxi companies, some of which cater to customers with special needs. While no public transportation is available in the Town of Buckeye, the community receives assistance for transporting elderly and disabled persons through the ADOT, Section 5310, *Elderly & Persons with Disabilities Transportation Program*.

CLIMATE

Weather plays an important role in the operational capabilities of an airport. Temperature is an important factor in determining runway length. The percentage of time that visibility is impaired due to cloud coverage or inclement weather is a major factor in determining the use of instrument approach aids. The region experiences very little precipitation annually, with the greatest amounts occurring in the months of July and August. July is the warmest month, while January is the coolest. **Table 1C** summarizes typical temperature and precipitation data for the Town of Buckeye.

TABLE 1C
Temperature and Precipitation Data

	Temperature (Fahrenheit)		
	Mean Maximum	**Mean Minimum**	**Precipitation (inches)**
January	67.8	34.6	0.82
February	72.5	38.4	0.78
March	78.4	42.4	0.75
April	86.6	48.4	0.28
May	95.0	55.8	0.10
June	104.2	64.0	0.07
July	107.1	74.4	0.87
August	105.2	73.6	1.13
September	100.8	65.3	0.77
October	89.9	52.0	0.50
November	76.9	40.9	0.62
December	68.1	35.0	0.90
Annual Average	87.7	52.1	7.59

Source: Western Regional Climate Center

AIRPORT SYSTEM PLANNING ROLE

Airport planning exists on many levels: local, state, and national. Each level has a different emphasis and purpose. An airport master plan is the primary local airport planning document.

An Airport Master Plan was previously competed for Buckeye Municipal Airport in 1998. The 1998 Master Plan's principal airside recommendations included extending Runway 17-35 to 7,300 feet, establishing a precision instrument approach to Runway 35, and planning for a parallel runway for small aircraft use west of Runway 17-35. Runway 17-35 was extended to 5,500 feet in 2004.

Principal landside recommendations included the extension of the apron area to the north, constructing additional T-hangar access taxilanes and extending the terminal taxiway to Taxiway A, and reserving a number of aviation-related parcels along Taxiway J. The construction of four T-hangar taxilanes and the extension of the terminal taxiway to Taxiway A have been completed since the last Master Plan.

Regionally, Buckeye Municipal Airport is included in the Maricopa Association of Governments (MAG) *Regional Aviation System Plan* (RASP). The RASP is in place to provide an overview for airport planning in the region, to set the overall plan for airports in the region, and to assess proposed project costs and the proper phasing of projects. Buckeye Municipal Airport is one of 16 public-use airports in the MAG region.

At the state level, Buckeye 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. 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. Buckeye 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 Native American and recreational airports.

At the national level, the airport is included in the *National Plan of Integrated Airport Systems* (NPIAS). This plan identifies 3,364 existing airports which are significant to national air transportation, as well as airport development necessary to meet the present and future requirements in support of civil needs. An airport must be included in the NPIAS to be eligible for federal funding assistance. Buckeye Municipal Airport is classified as a general aviation airport in the NPIAS.

AIRPORT HISTORY AND ADMINISTRATION

Originally constructed during World War II by Luke Air Force Base, Buckeye Municipal Airport was utilized by the Air Force as an auxiliary base for military training purposes. In 1949, the airfield was decommissioned and transferred to the State of Arizona by Quit Claim Deed under the Surplus Property Act of 1944. The Town of Buckeye subsequently acquired the airport from the state on March 11, 1960, also by Quit Claim Deed.

The original airport site included three runways, of which only Runway 16-34 was maintained by the Town of Buckeye. In the early 1980s, Runway 16-34 was closed and Runway 17-35 constructed to serve as the primary runway. The remaining portions of Runway 16-34 now serve as Taxiway J. The original construction of Runway 17-35 was completed in 1987.

In 1985 the Town of Buckeye delegated airport management, maintenance, and development responsibilities to a single lessee. The Lauridsen Industrial Corporation was selected as the sole lessee and signed a 25-year master lease with the Town. The lease was approved by the Federal Aviation Administration (FAA) and was structured in a manner which prevents exclusive rights. The master lease provided the Lauridsen Industrial Corporation the opportunity to operate and develop the airport. The lease also stipulated, however, that the lessee was responsible for all local approach plan which describes artificial surfaces defining the edges of airshare funding of airport improvement projects within the first five year capital improvement program. During this lease period, all the buildings currently existing at the airport were developed by the lessee. This lease agreement was terminated in 2003 when the Town took over control of the airport and received ownership of all structures and equipment. The Town of Buckeye now manages and develops the airport.

The airport is the responsibility of a full-time airport manager who reports directly to the Public Works Director. The Town established an airport advisory board to advise the Town Council on the operation and development of the airport. In 2004, the Town Council approved both minimum standards for aeronautical operators at the airport and rules and regulations that govern the use of the airport.

Over the past 10 years, the Buckeye Municipal Airport has been improved with both Federal and State grant assistance. **Table 1D** summarizes both federal and state grants for Buckeye Municipal Airport since 1995. Combined, over $3.4 million in federal and state grant funds have been used since 1995 to improve Buckeye Municipal Airport.

Height and Hazard Zoning

Height and hazard zoning establishes height limits for new construction near the airport and within the runway approaches. It is based upon an space, which are to remain free of obstructions for the purpose of safe air

navigation. It requires that anyone who is proposing to construct or alter an object that affects airspace must notify the FAA prior to its construction. The Town of Buckeye does not have height and hazard zoning for the Buckeye Municipal Airport. An ultimate product of this Master Plan will be a sample height and hazard zoning ordinance for Buckeye Municipal Airport.

TABLE 1D
Federal and State Grants
Buckeye Municipal Airport

Grant Number	Fiscal Year	Description	Total Grant
Federal Grants			
006-1995	1995	Install perimeter fencing Acquire land for approaches Construct taxiway	$76,000 140,554 232,000
007-2002	2002	Extend runway	300,000
008-2003	2003	Extend runway	1,224,757
009-2004	2004	Update Airport Master Plan Study	150,000
010-2005	2005	Install perimeter fencing	371,450
011-2005	2005	Conduct Noise Compatibility Study	200,000
Subtotal Federal Grants			**$2,694,761**
State Grants			
N727	1995	Construct taxiway	$180,000
3S91B	2002	Pavement Maintenance	264,716
3F54	2002	Extend Runway (Design Only)	14,727
4F20	2003	Extend Runway	60,122
6F02	2004	Update Airport Master Plan Study	3,948
6F03	2005	Install perimeter fencing	9,776
6F74	2005	Conduct Noise Compatibility Study	5,264
6S06	2005	Pave Entrance Road, Fire Protection System (Design Only)	$247,500
Subtotal State Grants			**$786,053**
Total All Grants			**$3,480,814**

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 the 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 Recorder. Buckeye Municipal Airport has a public airport disclosure map. This map includes all property within the traffic pattern air-

space around the airport as shown on **Exhibit 1D**.

Storm Water 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 development of an SWPPP for Buckeye Municipal Airport is currently underway. The airport has applied for a Multi-Sector General Permit.

Spill Prevention Control and Countermeasure (SPCC) Plan

Title 40 of the Code of Federal Regulations (CFR) Part 112, defines the EPA's *Oil Pollution Prevention Rule.* 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 Spill Prevention, Control and Countermeasure (SPCC) Plan to meet the purpose of this rule. All SPCC Plans were to be completed by August 18, 2003.

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 State or adjoining shorelines.

By definition within the rule, an airport is considered a non-transportation-related facility. In using the non-transportation-related facility wording, the EPA is trying to distinguish between oil delivery vehicles using public roadways from those facilities that store or handle oil products. The regulation of delivery vehicles is the responsibility of the Department of Transportation (DOT) not EPA. As detailed earlier, the airport has 44,000 gallons of aboveground fuel storage, exceeding the minimum 1,320 gallons established by rule. 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 and is required to have a SPCC plan. The airport has a current SPCC plan.

Table 1E provides a summary of the status of various the various regulatory and administrative plans, studies discussed above.

SOCIOECONOMIC CHARACTERISTICS

For an airport master plan, 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 service level requirements, as well as forecasting future aviation demand.

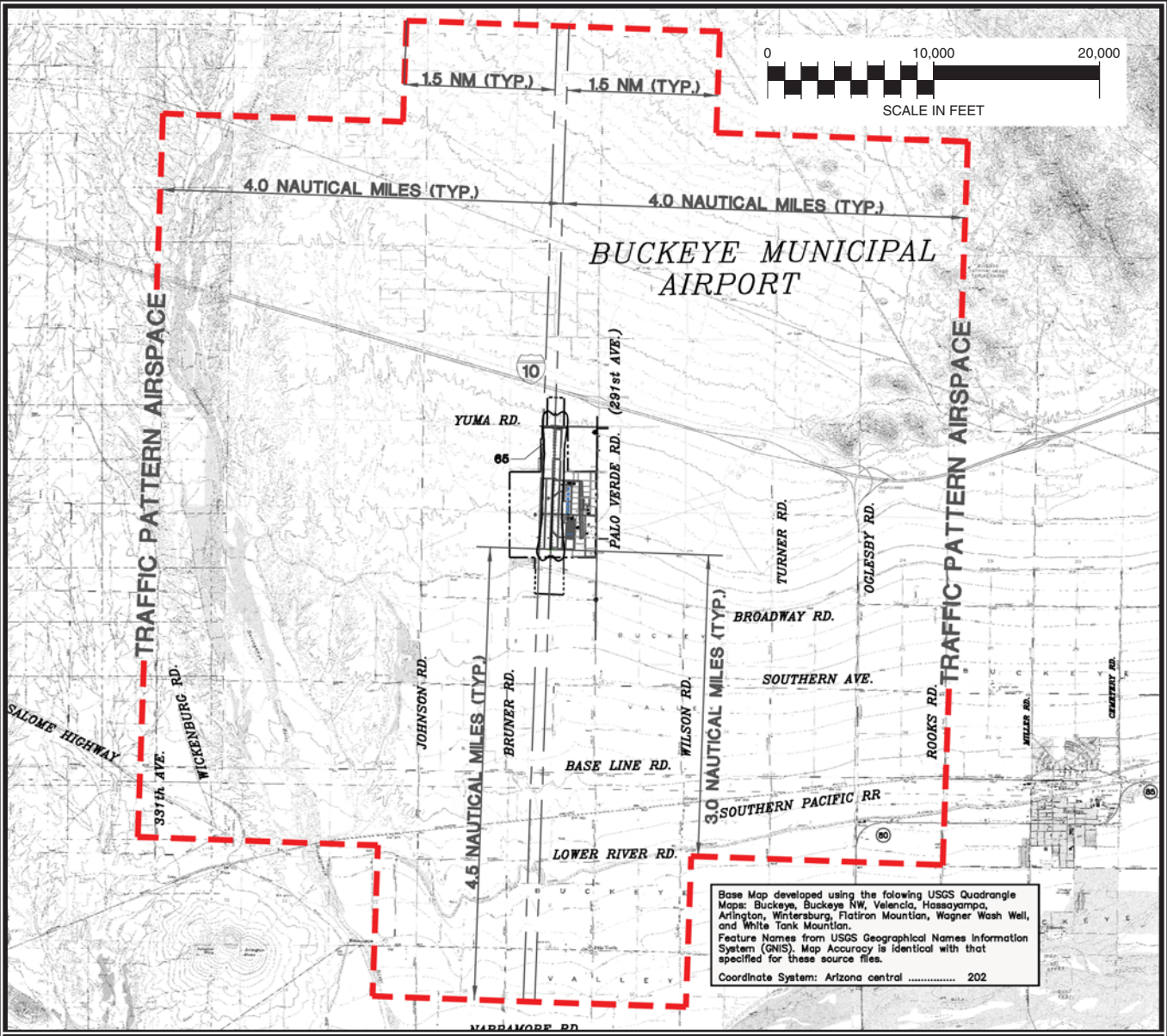
TABLE 1E
Summary of Regulatory and Administrative Plans, Studies, and Facility Improvements

Description	Status
Storm Water Pollution and Prevention Plan (SWPPP)	Complete.
Spill Prevention, Control and Countermeasure (SPCC) Plan	Complete
Minimum Standards	Adopted October 2004
Airport Rules and Regulations	Adopted October 2004
Height Zoning Ordinance	In place.
Public Airport Disclosure Map	Complete and on file with the Arizona Department of Real Estate.
Aircraft Wash Rack	There is no aircraft wash rack at the airport.

Population

Historical population totals are presented in **Table 1F**. Historical population totals were obtained from the Arizona Department of Economic Security, Population Statistics Unit. Between 1990 and 2004, the Town of Buckeye grew by more than 9,400 residents, nearly all of this growth has been experienced since 1998. During this 15-year period, the Town has averaged a 7.8 percent annual growth rate. Over the same period, Maricopa County experienced a 3.7 percent annual growth rate.

04MP11-1D-10/27/05



NOTES:

1. This map has been prepared in accordance with A.R.S., Section 28-8486, relating to public airport disclosure.
2. The Traffic Pattern Boundaries have been established in accordance with the guidelines provided in FAA Order 7400.2D.
3. 1 Nautical mile = 6,080 feet or 1.1515 statute miles.

LEGEND:

- Traffic Pattern Airspace
- Existing Airport Property Line
- Extended Runway Centerline
- DNL Noise Contours

NORTH

Exhibit 1D
PUBLIC AIRPORT DISCLOSURE MAP

TABLE 1F
Historical Population
Town of Buckeye and Maricopa County

Year	Town of Buckeye	Maricopa County
Historical		
1990	5,040	2,130,400
1991	5,305	2,179,975
1992	5,360	2,233,700
1993	5,060	2,291,200
1994	5,065	2,355,900
1995	5,130	2,454,525
1996	4,905	2,634,625
1997	4,960	2,720,575
1998	5,035	2,806,100
1999	5,865	2,913,475
2000	8,497	3,072,149
2001	10,650	3,192,125
2002	11,955	3,296,250
2003	13,030	3,396,875
2004	14,505	3,524,175
Avg. Annual Growth Rate	7.8%	3.7%

Source: Arizona Department of Economic Security

Employment

Table 1G summarizes labor force data for the Town of Buckeye since 1990. While the total number of people employed has remained nearly static over this period, unemployment has risen. The unemployment rate in 2004 was higher than the Maricopa County and state averages.

TABLE 1G
Labor Force Data
Town of Buckeye

	1990	2000	2004
Civilian Labor Force	3,434	3,047	3,486
Unemployed	100	194	322
Unemployment Rate	2.9%	6.4%	9.2%

Source: Arizona Department of Economic Security

ENVIRONMENTAL INVENTORY

Available information about the existing environmental conditions at Buckeye Municipal Airport has been derived from a 1994 *Environmental Assessment* completed for the Buckeye Municipal *Airport*, as well as from internet resources, agency maps, and existing literature. The intent of this task is to inventory potential environmental sensitivities that might affect future improvements at the airport.

Air Quality

The U.S. Environmental Protection Agency (EPA) has adopted air quality standards that specify the maximum permissible short-term and long-term concentrations of various air contaminants. The National Ambient Air Quality Standards (NAAQS) consist of primary and secondary standards for six criteria pollutants which include: Ozone (O_3), Carbon Monoxide (CO), Sulfur Dioxide (SO_2), Nitrogen Oxide (NO), Particulate matter (PM10), and Lead (Pb). Various levels of review apply within both NEPA and permitting requirements.

Buckeye Municipal Airport is located Maricopa County which is in non-attainment for Ozone (both 8-hour and 1-hour) and Particulate Matter. The non-attainment area for both criteria pollutants is centered on the City of Phoenix.

Department of Transportation Act: Section 4(f)

Section 4(f) properties includes publicly-owned land from a public park, recreation 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, or in the vicinity of, airport property, or in an area that may considered for future acquisition.

Farmlands

The *Farmland Protection Policy Act (FPPA)* authorizes the Department of Agriculture to develop criteria for identifying the effects of federal programs on the conversion of farmland to nonagricultural uses. Farmland protected by the FPPA is classified as either unique farmland, prime farmland (which is not already committed to urban development or water storage), or farmland which is of state or local importance (as determined by the appropriate government agency and the Secretary of Agriculture).

The property along the southern border of the airport on either side of the Roosevelt Irrigation Channel is considered prime farmland by the United States Department of Agriculture Natural Resource Conservation Service (formally the Soil Conservation Service).

Fish, Wildlife, and Plants

The Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS) are charged with overseeing the requirements contained with Section 7 of the Endangered Species Act. This act was put into place to protect animal or plant species whose populations are threatened by human activities. Along with the FAA, the FWS and the NFMS review projects to determine if a significant impact to

these protected species will result with implementation of a proposed project. Significant impacts occur when the proposed action could jeopardize the continued existence of a protected species, or would result in the destruction or adverse modification of Federally-designated critical habitat in the area.

Table 1H depicts federal threatened and endangered species and species of special concern listed for Maricopa County. A records search completed for the 1994 EA did not indicate the presence of and endangered, threatened, or other special status species near the airport.

TABLE 1H
Threatened, Endangered, or Sensitive Species

Common Name	Scientific Name	Status
Arizona agave	Agave arizonica	E
Arizona cliffrose	Purshia subintegra	E
Bald eagle	Haliaeetus leucocephalus	T
Cactus ferruginous pygmy-owl	Glauciduim brasilianum cactorum	E
California Brown pelican	Pelecanus occidentalis californicus	E
Desert pupfish	Cyprinodon macularius	E
Gila topminnow	Poeciliopsis occidentalis occidentalis	E
Lessor long-nosed bat	Leptonycteris curasoae yerbabuenae	E
Mexican spotted owl	Strix occidentalis lucida	T
Razorback sucker	Xyrauchen texanus	E
Sonoran pronghorn	Antilocapra Americana sonoriensis	E
Southwestern willow flycatcher	Empidonax traillii extimus	E
Yuma clapper rail	Rallus longirostris yumanensis	E
Gila chub	Gila intermedia	E
Yellow-billed cuckoo	Coccyzus americanus	C

Source: US Fish and Wildlife Service, Maricopa County Species List
E – Endangered
T – Threatened
C – Candidate

Floodplains

Floodplains are defined in *Executive Order 11988, Floodplain Management*, as "the lowland and relatively flat areas adjoining inland and coastal waters...including at a minimum, that area subject to a one percent or greater chance of flooding in any given year" (i.e., that area would be inundated by a 100-year flood). Federal agencies, including the FAA, are directed to "reduce the risk of loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by floodplains." A 100-year floodplain exists along the Roosevelt Irrigation District Canal south of the airport.

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. There are no known wetlands on or immediately adjacent to the airport.

Wild and Scenic Rivers

The Verde River is the only designated Wild and Scenic River in Arizona. This river is located in northern Arizona.

Historical, Architectural, and Cultural Resources

Determination of a project's impact to historic and cultural resources is made in compliance to with the *National Historic Preservation Act (NHPA) of 1966*, as amended for federal undertakings. Two state acts also require consideration of cultural resources. The NHPA requires that an initial review be made of an undertaking's *Area of Potential Effect (APE)* to determine if any properties in, or eligible for inclusion is the National Register of Historic Places are present in the area. A cultural resources survey completed in 1993 found no historic, prehistoric, or isolated artifacts at Buckeye Municipal Airport.

SUMMARY

The information discussed on the previous pages provides a foundation upon which the remaining elements of the planning process will be constructed. Information on current airport facilities and utilization will serve as a basis, with additional analysis and data collection, for the development of forecasts of aviation activity and facility requirement determinations. The inventory of existing conditions is the first step in the process of determining those factors which will meet projected aviation demand in the community and the region.

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 tenants also contributed to the inventory effort.

2000 Arizona State Aviation Needs Study (SANS), Arizona Department of Transportation, Aeronautics Division.

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

National Plan of Integrated Airport Systems (NPIAS), U.S. Department of Transportation, Federal Aviation Administration, 2001-2005.

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

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

1998 Airport Master Plan Update, Coffman Associates, Inc.

1994 Environmental Assessment, Coffman Associates, Inc.

Working Paper No. 2, Maricopa Association of Governments, *Regional Aviation System Plan Update*, Aviation Demand Forecasts.

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

FAA 5010 Data
http://www.airnav.com

Arizona Department of Economic Security:
http://www.de.state.az.us

Arizona Department of Transportation, Aeronautics Division:
http://www.dot.state.az.us/Aero/index.htm

Western Regional Climate Center, website:
www.wrcc.dri.edu/index.html

Federal Emergency Management Agency
www.fema.gov/fhm/
Buckeye Valley Development
www.buckeyedevelopment.com

Chapter Two

FORECASTS

FORECASTS

Facility planning must begin with a definition of the demand that may reasonably be expected to occur at the facility over a specific period of time. For the Buckeye Municipal Airport, this involves forecasts of aviation activity through the year 2025. In this Master Plan, forecasts of based aircraft, the based aircraft fleet mix, and annual aircraft operations will serve as the basis for facility planning.

The primary objective of this planning effort is to define the magnitude of change in aviation demand that can be expected over time. Because of the cyclical nature of the economy, it is virtually impossible to predict, with certainty, year-to-year fluctuations in activity when looking more than 20 years into the future. However, a trend can be established which delineates long-term growth potential. While a single line is often used to express the anticipated growth, it is important to remember that actual growth may fluctuate above and

below this line. The point to remember about forecasts is that they serve only as guidelines, and planning must remain flexible to respond to unforeseen facility needs. This is because aviation activity is affected by many external influences, as well as by the types of aircraft used and the nature of available facilities.

Recognizing this, the Master Plan for Buckeye Municipal Airport will be demand-based rather than time-based. Demand-based planning relates capital improvements to demand factors, such as based aircraft, instead of points in time. This allows the airport to address capital improvement needs according to the actual demand occur-

ring at the airport. For example, should based aircraft growth slow or dramatically decline, it may not be necessary to implement some improvement projects. However, should the airport experience accelerated growth in based aircraft, the plan will need to be flexible enough to respond accordingly. This dynamic aspect of forecasting aeronautical needs will be further described in subsequent chapters of this Master Plan.

In order to fully assess current and future aviation demand for the Buckeye Municipal Airport, an examination of several key factors is needed. These include: national and regional aviation trends, historical and forecast socio-economic and demographic information of the area, and historical trends at Buckeye Municipal Airport.

NATIONAL AVIATION TRENDS

In the 11 years since the passage of the *General Aviation Revitalization Act* of 1994 (federal legislation which limits the liability on general aviation aircraft to 18 years from the date of manufacture), it is clear that the Act has successfully infused new life into the general aviation industry. This legislation sparked an interest to renew the manufacturing of general aviation aircraft due to the reduction in product liability, as well as renewed optimism for the industry.

After the passage of this legislation, annual shipments of new aircraft rose every year between 1994 and 2000. According to the General Aviation Manufacturers Association (GAMA), between 1994 and 2000 general aviation aircraft shipments increased at an average annual rate of more than 20 percent, increasing from 928 shipments in 1994, to 3,140 shipments in 2000. As shown in **Table 2A,** the growth in the general aviation industry slowed considerably after 2000, negatively impacted by the national economic recession and the events surrounding 9/11. In 2003, there were over 450 fewer aircraft shipments than in 2000, a decline of 14 percent.

Most notable about 2003 shipments was that single-engine piston deliveries were the only category to increase. Single-engine piston deliveries increased to 1,825 from 1,601 or 14.0 percent. This is most likely the result of new product offerings and the age of the single-engine piston aircraft fleet. Turboprop and turbojet deliveries declined. Business jets were down 23.4 percent, the second year of decline. This is the result of slowing demand by fractional jet companies and a large used market for turboprop and turbojet aircraft.

In 2004, the general aviation production showed a significant increase, returning near pre-9/11 levels for most indicators. With the exception of multi-engine piston aircraft deliveries, deliveries of new aircraft in all categories increased.

TABLE 2A
Annual General Aviation Airplane Shipments
Manufactured Worldwide and Factory Net Billings

Year	Total	SEP	MEP	TP	J	Net Billings ($ millions)
2000	3,140	1,862	103	415	760	13,497.0
2001	2,994	1,644	147	421	782	13,866.6
2002	2,687	1,601	130	280	676	11,823.1
2003	2,686	1,825	71	272	518	9,994.8
2004	2,963	1,999	52	321	591	11,903.8

Source: GAMA
SEP – Single-Engine Piston; MEP – Multi-Engine Piston; TP – Turboprop; J – Turbofan/Turbojet

On July 21, 2004, the FAA published the final rule for light-sport aircraft (LSA). The *Certification of Aircraft and Airmen for the Operation of Light-Sport Aircraft* rules went into effect September 1, 2004. This final rule establishes new light-sport aircraft categories and allows aircraft manufacturers to build and sell completed aircraft without obtaining type and production certificates. Instead, aircraft manufacturers will build to industry consensus standards. This reduces development costs and subsequent aircraft acquisition costs. This new category places specific conditions on the design of the aircraft, to limit them to "slow (less than 120 knots maximum) and simple" performance aircraft. New pilot training times are reduced and offer more flexibility in the type of aircraft which the pilot would be allowed to operate.

Viewed by many within the general aviation industry as a revolutionary change in the regulation of recreational aircraft, this new rule is anticipated to significantly increase access to general aviation by reducing the time required to earn a pilot's license and the cost of owning and operating an aircraft. These regulations are aimed primarily at the recreational aircraft owner/operator. By 2016, there is expected to be 15,410 of these aircraft in the national fleet.

While impacting aircraft production and delivery, the events of 9/11 and economic downturn have not had the same negative impact on the business/corporate side of general aviation. The increased security measures placed on commercial flights have increased interest in fractional and corporate aircraft ownership, as well as on-demand charter flights. According to GAMA, the total number of corporate operators increased by 471 in 2003 (the latest year of available data). Corporate operators are defined as those companies that have their own flight departments and utilize general aviation airplanes to enhance productivity. **Table 2B** summarizes the number of U.S. companies operating fixed-wing turbine aircraft since 1991.

TABLE 2B
U.S. Companies Operating Fixed-Wing Turbine Business Aircraft and Number of Aircraft, 1991-2003

Year	Number of Operators	Number of Aircraft
1991	6,584	9,504
1992	6,492	9,504
1993	6,747	9,594
1994	6,869	10,044
1995	7,126	10,321
1996	7,406	11,285
1997	7,805	11,774
1998	8,236	12,425
1999	8,778	13,148
2000	9,317	14,079
2001	9,709	14,837
2002	10,191	15,569
2003	10,661	15,870

Source: GAMA/NBAA

The growth in corporate operators comes at a time when fractional aircraft programs are experiencing significant growth. Fractional ownership programs sell 1/8 or greater shares in an aircraft at a fixed cost. This cost, plus monthly maintenance fees, allows the shareholder a set number of hours of use per year and provides for the management and pilot services associated with the aircraft's operation. These programs guarantee the aircraft is available at any time, with short notice. Fractional ownership programs offer the shareholder a more efficient use of time (when compared with commercial air service) by providing faster point-to-point travel times and the ability to conduct business confidentially while flying. The lower initial startup costs (when compared with acquiring and establishing a flight department) and easier exiting options are also positive benefits.

Since beginning in 1986, fractional jet programs have flourished. **Table 2C** summarizes the growth in fractional shares since 1986. The number of aircraft in fractional jet programs has grown rapidly. In 2001, there were 696 aircraft in fractional jet programs. This grew to 776 aircraft in fractional jet programs at the end of 2002 and 823 in 2003.

TABLE 2C
Fractional Shares 1986-2003

Year	Number of Shares
1986	3
1987	5
1988	26
1989	51
1990	57
1991	71
1992	84
1993	110
1994	158
1995	285
1996	548
1997	957
1998	1,551
1999	2,607
2000	3,834
2001	4,071
2002	4,232
2003	4,515

Source: GAMA/NBAA

Two business aviation forecasts, Honeywell Aerospace's *12th Annual Business Aviation Outlook* and Rolls-Royce's *The Market for Business Jets 2003-2022*, project continuing demand for new business aircraft. The Honeywell forecast predicts 7,724 new aircraft deliveries between 2003 and 2013. The Rolls-Royce forecast predicts 13,948 new aircraft between 2003 and 2022.

Each year, the FAA updates and publishes a national aviation forecast. Included in this publication are forecasts for the large air carriers, regional/commuter air carriers, general aviation, and FAA workload measures. The forecasts are prepared to meet budget and planning needs of the constituent units of the FAA and to provide information that can be used by state and local authorities, the aviation industry, and the general public. The current edition when this chapter was prepared was FAA *Aerospace Forecasts-Fiscal Years 2005-2016*, published in March 2005. The forecasts use the economic performance of the United States as an indicator of future aviation industry growth. Similar economic analyses are applied to the outlook for aviation growth in international markets.

In the seven years prior to the events of 9/11, the U.S. civil aviation industry experienced unprecedented growth in demand and profits. The impacts to the economy and aviation industry from the events of 9/11 were immediate and significant. However, the economic climate and aviation industry have been recovering in the past year. The FAA expects the U.S. economy to recover rapidly over the next two years, growing moderately thereafter. This will positively influence the aviation industry, leading to passenger, air cargo, and general aviation growth throughout the forecast period (assuming that there will not be any new successful terrorists incidents against either U.S. or world aviation). The FAA forecast assumes that the regulatory environment affecting general aviation will not change dramatically. The forecast also assumes that the fractional ownership market will continue to expand and bring new operators and shareholders into business aviation.

The FAA projects the active general aviation aircraft fleet to increase at an average annual rate of 1.1 percent over the 12-year forecast period, increasing from 210,600 in 2003, to 240,070 in 2016. This growth includes the addition of a new aircraft category, light-sport aircraft, which is expected to enter the active fleet in 2005 and account for 15,410 aircraft in 2016. Light-sport aircraft include small two-seat fixed-wing airplanes, powered-parachutes, gyroplanes, lighter-than-air planes, and weight shift categories.

FAA forecasts identify two general aviation economies that follow different market patterns. The turbojet fleet is expected to increase at an average annual rate of 5.4 percent, increasing from 8,153 in 2003, to 15,900 in 2016. Factors leading to this substantial growth include expected strong U.S. and global economic growth; the continued success of fractional-ownership programs; and a continuation of the shift from commercial air travel to corporate/business air travel by business travelers and corporations. In addition, new microjets will begin to enter the fleet in 2006, and grow to 4,500 aircraft by 2016. These aircraft are expected to stimulate the market for on-demand air taxis.

Exhibit 2A depicts the FAA forecast for active general aviation aircraft in the United States. The number of single-engine piston aircraft is pro-

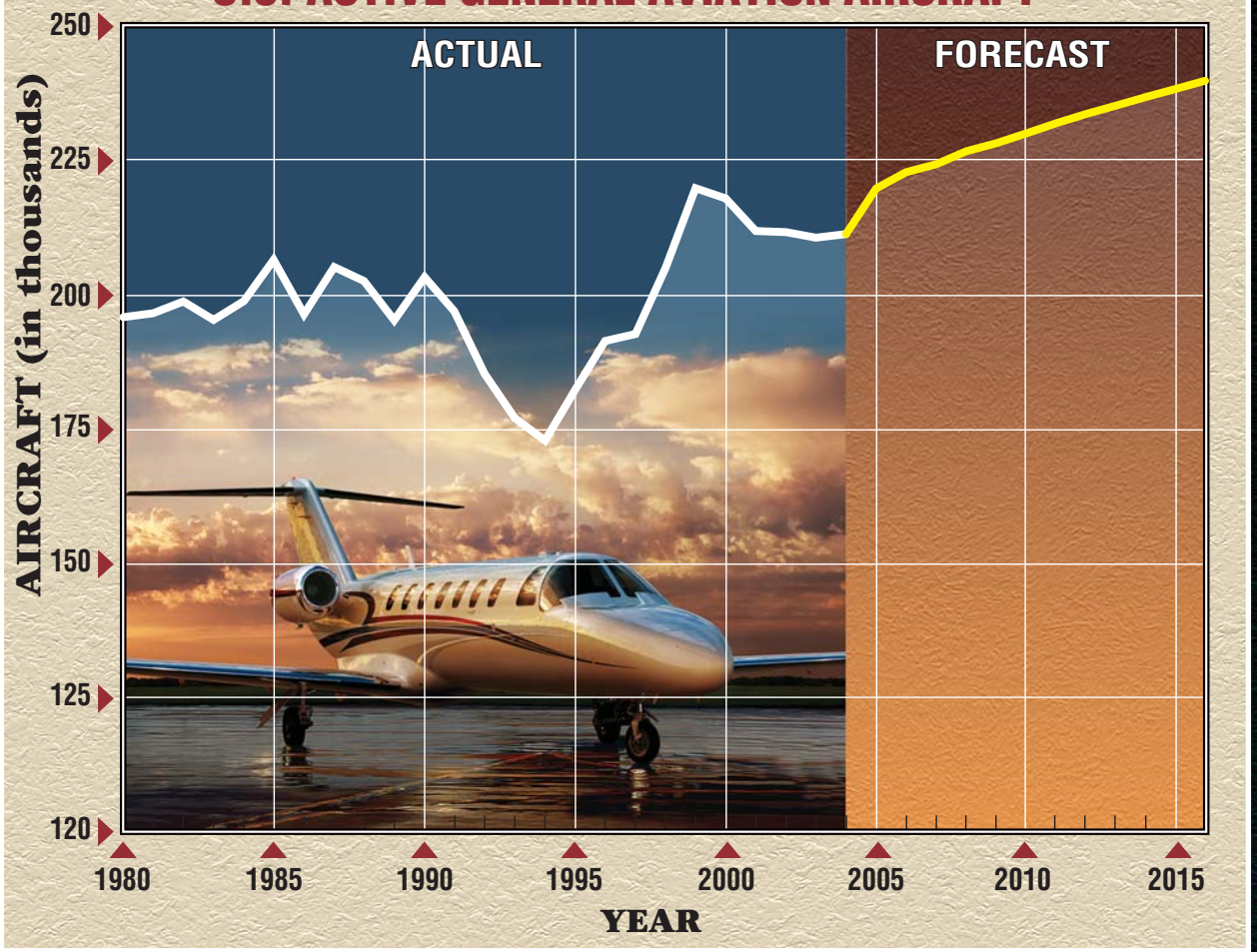
jected to reach 148,000 in 2015, which represents an average annual growth rate of 0.2 percent. During this same time, the number of active multi-engine piston aircraft in the fleet is expected to decline by 0.2 percent, resulting in a total of 17,235 aircraft in 2016. The number of turboprop aircraft is expected to increase at an average annual rate of 3.7 percent over the 12-year forecast period to 8,400 active aircraft. The rotorcraft fleet is forecast to grow 1.2 percent annually through 2016, while the number of experimental aircraft is projected to increase from 20,603 in 2003, to 21,380 in 2010. Thereafter, the growth in experimental aircraft is expected to flatten, primarily due to the growth in sport aircraft.

The declines in the aircraft utilization rates experienced in 2000 (down 3.2 percent) and 2001 (down 7.2 percent) were due, in part, to higher fuel prices and the 2001 U.S. economic recession. However, the restrictions placed on general aviation in the aftermath of the 9/11 events contributed heavily to the decline in utilization in 2001. A strong recovery in the U.S. economy in 2004 and 2005 has led to increased utilization rates for most categories of general aviation aircraft.

The total pilot population is projected to increase from an estimated 618,633 in 2004, to 750,260 by 2016, which represents an average annual growth rate of 1.6 percent. The student pilot population increased 0.7 percent in 2004, and is forecast to increase at an annual rate of 1.8 percent over the 12-year forecast period, reaching a total of 108,800 in 2016. Growth rates for the other pilot categories over the forecast period are as follows: airline transport pilots, up 1.7 percent; recreational pilots, up 1.6 percent; rotorcraft only, up 1.2 percent; and glider only, up 0.2 percent.

Over the past several years, the general aviation industry has launched a series of programs and initiatives whose main goals are to promote and assure future growth within the industry. "No Plane, No Gain" is an advocacy program created in 1992 by the General Aviation Manufacturers Association (GAMA) and the National Business Aircraft Association (NBAA) to promote acceptance and increased use of general aviation as an essential, cost-effective tool for businesses. Other programs are intended to promote growth in new pilot starts and introduce people to general aviation. "Project Pilot," sponsored by the Aircraft Owners and Pilots Association (AOPA), promotes the training of new pilots in order to increase and maintain the size of the pilot population. The "Be a Pilot" program is jointly sponsored and supported by more than 100 industry organizations. The NBAA sponsors "AvKids," a program designed to educate elementary school students about the benefits of business aviation to the community and career opportunities available to them in business aviation. The Experimental Aircraft Association's (EAA) Young Eagles Program promotes aviation through providing free aircraft rides to kids. Over the years, programs such

U.S. ACTIVE GENERAL AVIATION AIRCRAFT



U.S. ACTIVE GENERAL AVIATION AIRCRAFT (in thousands)

Year	FIXED WING						Experimental	Sport Aircraft	Other	Total
	PISTON		TURBINE		ROTORCRAFT					
	Single Engine	Multi-Engine	Turboprop	Turbojet	Piston	Turbine				
2004 (Est.)	144.0	17.7	7.3	8.4	2.2	4.7	20.8	N/A	6.2	211.3
2008	145.5	17.5	7.7	10.5	2.4	4.9	21.3	10.8	6.1	227.7
2012	147.0	17.4	8.1	13.3	2.5	5.1.	21.4	13.2	5.9	233.9
2016	148.0	17.2	8.4	15.9	2.6	5.3	21.4	15.4	5..8	240.1

Source: FAA Aerospace Forecasts, Fiscal Years 2005-2016.

Notes: An active aircraft is one that has a current registration and was flown at least one hour during the calendar year.

Exhibit 2A
U.S. ACTIVE GENERAL AVIATION AIRCRAFT FORECASTS

as these have played an important role in the success of general aviation and will continue to be vital to its growth in the future.

POPULATION PROJECTIONS

Population growth provides an indication of the potential for sustaining growth in aviation activity over the planning period. **Table 2D** summarizes forecast population numbers for the Town of Buckeye. The Town of Buckeye projects the Town's population growing at an average annual rate of 16.3 percent through 2025. These local population forecasts assume implementation and phased development programs of the many master-planned residential developments now approved in the Town of Buckeye.

TABLE 2D
Historical and Forecast Population
Town of Buckeye

Year	Town of Buckeye
Historical	
1990	5,040
1995	5,130
2000	8,497
2004	14,505
Avg. Annual Growth Rate	7.8%
Forecasts	
2010	100,000
2015 *	182,500
2020	265,000
2025	345,000
Avg. Annual Growth Rate	16.3%

Source for historical data: Arizona Department of Economic Security
Source for forecast population: Town of Buckeye

The Town of Buckeye projections vary from those prepared by the Maricopa Association of Governments (MAG). In the July 2003 *Interim Projections of Population, Housing, and Employment by Municipal Planning Area and Regional Analysis Zone* publication prepared by MAG, the Town of Buckeye was projected by MAG to reach 275,500 residents by 2025, nearly 70,000 less than the Town's own projections. In the MAG projections, the Town of Buckeye would not surpass 345,000 residents until closer to 2030. A similar variance is shown in 2010, where MAG projects 58,600 residents, while the Town of Buckeye projects 100,000 residents.

For this Master Plan report, the higher forecast prepared by the Town will be assumed since it accounts differently for the planned residential communities than does MAG. By utilizing the Town's projections, the Master Plan will be consistent with local Town planning. The Town does not maintain separate housing or employment projections. Therefore, while projections of housing and employment may be available from MAG, for consistency, the MAG projections were not utilized in this study as the MAG projections have a different growth rate than the Town based on different population assumptions.

STATE AND REGIONAL TRENDS

The Arizona Department of Transportation (ADOT) Aeronautics Division assists airports in the state in identifying infrastructure needs, with a

state aviation needs study and other special aviation studies. The most recent study on a statewide basis is the *State Aviation Needs Study* (SANS) - *2000*. The SANS 2000 includes forecasts of aviation activity in the state. The Maricopa Association of Governments (MAG) is charged with preparing and updating a *Regional Airport System Plan* (RASP) for the Phoenix metropolitan area. The most recent aviation forecasts for the MAG-RASP were prepared in late 2001, after the events of September 11. They were adopted by MAG in 2003.

Table 2E depicts the based aircraft forecasts prepared from the SANS 2000 for the state and Maricopa County. The base year for these forecasts was 1998. The SANS 2000 forecast that based aircraft in the state would grow at an annual average rate of 1.3 percent through 2020. This is well above the 0.7 percent that the FAA projects for active aircraft nationwide.

TABLE 2E
Maricopa County Based Aircraft Forecasts

	Base Year*	2005	2010	2015	2020	2025
SANS 2000						
Arizona	6,700	7,156	7,674	8,247	8,896	NA
Maricopa County	3,857	4,065	4,303	4,568	4,877	NA
MAG-RASP						
Maricopa County	4,317	4,820	5,517	6,215	6,913	7,612

Sources: *State Aviation Needs Study – 2000*; ADOT, 1999.
Regional Airport System Plan; Maricopa Council of Governments, 2001.

* Base Year: SANS – 1998; MAG-RASP – 2000.

The percentage of Arizona-based aircraft in Maricopa County was actually forecast to decline over the years, from 57.6 percent in 1998 to 54.8 percent in 2020. Thus, the average growth rate for based aircraft in Maricopa County was projected to be slightly lower, at 1.2 percent.

Table 2A also presents the more recent forecast of Maricopa County based aircraft prepared for the MAG-RASP. The base year for this forecast was 2000. As evident from the table, based aircraft in Maricopa County increased by 12 percent between 1998 and 2000. In fact, the actual based aircraft in 2000 were more than the SANS 2000 forecast for 2010.

As could be expected, the MAG-RASP forecast of based aircraft is higher. This forecast projects total based aircraft in the region to reach 7,612 by 2025. This would be an annual average increase of 2.1 percent, significantly stronger than the national or statewide growth rates projected by FAA and ADOT, respectively.

Keeping in line, the MAG-RASP projects fixed-wing turbine aircraft based in the county to grow from 170 in 2000, to 427 by 2025. This would be

an increase of 151 percent (3.75 percent annually). Turbine aircraft would also grow as a percentage of all based aircraft, from 3.9 percent in 2000, to 9.3 percent in 2025.

SERVICE AREA

The generalized service area of an airport is defined by its proximity to other airports providing similar service. Buckeye Municipal Airport is one of several airports serving the general aviation needs of the Phoenix metropolitan area.

Exhibit 2B depicts Buckeye Municipal Airport in relationship to other airports that serve the West Valley. These airports include: Phoenix Goodyear Airport to the east, Glendale Municipal Airport to the northeast, Pleasant Valley Airport to the northeast, and Gila Bend Municipal Airport to the south. **Table 2F** compares the runway lengths and based aircraft of these airports to Buckeye Municipal Airport.

TABLE 2F
Public Airports
West Valley

Name	Distance from Buckeye	Longest Runway (ft.)	Approach Minimums (feet-miles)	Based Aircraft	2004 Annual Operations*
Buckeye Municipal	NA	5,500	NA	54	44,000
Phoenix Goodyear	15.5	8,500	NA	209	105,471
Pleasant Valley	31.5	4,200 (Dirt)	NA	61	76,000
Glendale Municipal	20.6	7,150	500 – 1 ¼	269	118,140
Gila Bend Municipal	27.7	5,200	NA	2	11,000

* Tower counts, except for Buckeye, Gila Bend, and Pleasant Valley, which are an estimate taken from FAA Form 5010.

These five airports base a total of 595 aircraft. Glendale Municipal Airport has the most with 269 based aircraft. Phoenix Goodyear Airport and Glendale Municipal Airport are similar in traffic volume with over 100,000 annual operations each. Buckeye Municipal Airport and Pleasant Valley Airport are currently on the western fringes of the growing metropolitan area, and have not experienced the same activity levels as Glendale Airport or Phoenix Goodyear Airport yet. Pleasant Valley Airport, in particular, is a recreational-only airport due to the airport not having any paved runways. Gila Bend Municipal Airport and the Gila Bend community are more rural from the Phoenix metropolitan area. The based aircraft and operational levels are consistent with this distance from the metropolitan area.

The MAG-RASP has considered alternatives for developing new airports in the south valley. There are no specific sites, but the MAG-RASP includes a potential new general aviation airport located in Pinal County, and is likely to be contained within the Gila River Indian Community. A location west of

Interstate 10 is viewed as having the least potential impact on military airspace in the area.

Based upon the proximities of the other four public airports listed above, the primary general aviation service area for Buckeye Municipal Airport is limited to the Town of Buckeye and areas to the west as Glendale Municipal Airport and Phoenix Goodyear Airport provide higher levels of service than Buckeye Municipal Airport. Since both Glendale Municipal Airport and Phoenix Goodyear Airport have longer runways and provide a greater level of maintenance and other services to general aviation, these airports most likely serve some of the transient activity that may be destined for Buckeye Municipal Airport. Therefore, in some respects, Buckeye Municipal Airport is most likely not capturing all the transient activity it possible could. Should Buckeye Municipal Airport increase its service levels (maintenance, fueling, customer service) and physical facilities (runway length, instrument approaches) comparable to these airports, it could begin to draw transient activity back from these airports.

A review of based aircraft owners' addresses was used to determine the based aircraft service area. As shown on **Exhibit 2B**, aircraft owners base at Buckeye Municipal Airport from a large portion of the western metropolitan area. Based aircraft owners actually choose to base at Buckeye Municipal Airport over airports located in closer proximity to their home or business. As shown on the exhibit, Buckeye Municipal Airport draws based aircraft from Glendale, Avondale, Litchfield Park, Goodyear, Surprise, Peoria, Avondale, and unincorporated portions of Maricopa County to the west. Over 50 aircraft owners are currently on a waiting list for hangars at Buckeye Municipal Airport. Some factors which may lead to the airport having such a large service area include: cost factors (hangar rentals are less expensive at Buckeye), lower activity levels which tend to attract recreational and sport aircraft owners, condition of facilities (paved runway at Buckeye versus the dirt runways in Pleasant Valley), and airspace factors. While Buckeye is located in close proximity to Luke Air Force Base (AFB), it is located outside the Alert Area associated with Luke AFB. Buckeye Municipal Airport is located 17 miles from Luke AFB, while Glendale is only 4 miles, and Goodyear is only 6.7 miles. This allows general aviation aircraft using Buckeye Municipal Airport more area to maneuver around the military airspace. Buckeye Municipal Airport is also located outside the Phoenix Class B airspace; whereas, Glendale and Goodyear are both located under the Phoenix Class B airspace. This allows the airport to be used for training without the complicated airspace environment.

AVIATION ACTIVITY FORECASTS

General aviation is defined as that portion of civil aviation which encompasses all portions of aviation, except scheduled commercial operations. To determine the types and sizes of facilities that should be planned to accom-

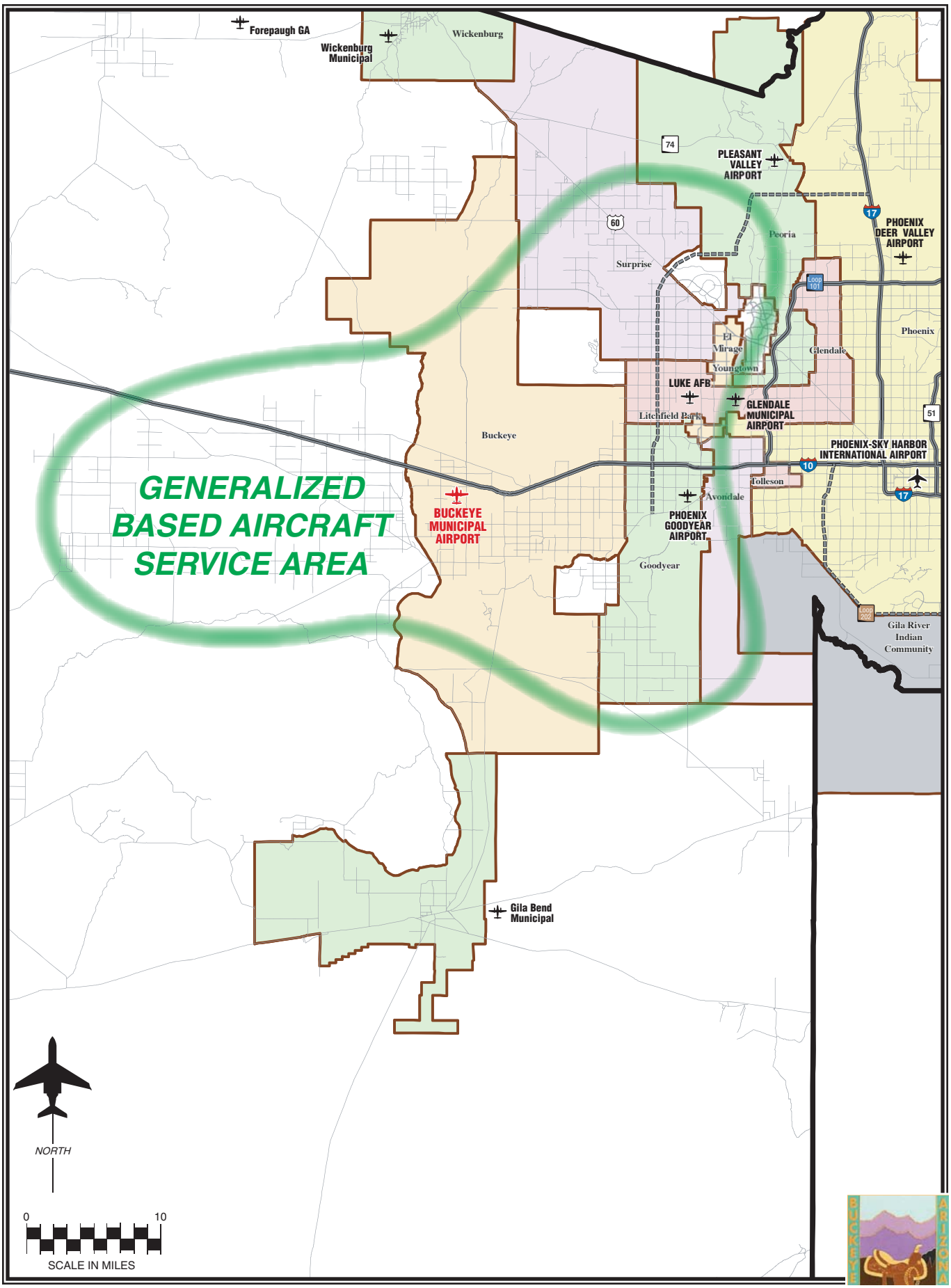


Exhibit 2B
BASED AIRCRAFT SERVICE AREA

modate general aviation activity, certain elements of this activity must be forecast. These indicators of general aviation demand include: based aircraft, aircraft fleet mix, annual operations, peak activity, and annual instrument approaches.

The following forecast analysis examines each of the aviation-demand categories expected at Buckeye Municipal Airport through 2025. Each segment will be examined individually, and then collectively, to provide an understanding of the overall aviation activity at the airport.

The remainder of this chapter presents the forecasts for aviation demand, which includes the following:

- Based Aircraft
- Based Aircraft Fleet Mix
- Local and Itinerant Operations
- Peak Activity
- Annual Instrument Approaches

Based Aircraft

The number of based aircraft is the most basic indicator of general aviation demand. By first developing a forecast of based aircraft, the growth of aviation activities at the airport can be projected.

As shown in **Table 2G,** total based aircraft have fluctuated at the airport in the past 10 years, but have increased since 1980 when there were 22 aircraft based at Buckeye Municipal Airport. In 2004, there were 54 aircraft based at the airport. This is 16 less than in 1994 when 70 aircraft were based at the airport. The declines in the early 1990s are the result of the relocation of a large flight training operation to Phoenix Goodyear Airport. Since 2000, based aircraft levels have remained relatively static. This is most likely the result of changes in the management of the airport, changes in the availability and types of services, and the lack of new hangar construction in more than 10 years. Since 2000, the management of the airport has been transferred back to the Town from a private management company. Only limited fueling services have been available. A new service and flight training operation for gyrocopters has been added at the airport.

TABLE 2G
Historical Based Aircraft
Buckeye Municipal Airport

Year	Based Aircraft
1980	22
1994	70
1997	46
2000	55
2004	54
Avg. Ann. Growth Rate	3.8%

Source: MAG-RASP, Airport Records, 5010-1

Because actual based aircraft levels were not available on an annual basis, statistical methods of projected based aircraft (such as time-series and regression analyses) were not performed. Furthermore, past based aircraft trends are most likely not indicative of future growth potential at Buckeye Municipal Airport. Statistical measures such as time-series analysis and regressions analyses rely on past performance, in part, for establishing indicators of future de-

mand. As indicated earlier in the presentation of population projections and discussions of land use development in the Town of Buckeye, summarized in Chapter One, the Town of Buckeye is poised for explosive growth. The Town's population is expected to grow nearly 600 percent in the next five years and nearly 2,300 percent over the next 20 years. This population growth will undoubtedly have an impact on future based aircraft growth that is much different from the factors affecting basing aircraft levels at the airport in the past.

Table 2H examines the ratio of population at other general aviation airports in the Phoenix metropolitan area since 1980. This data is used to derive an understanding of how aviation demand is affected by rapidly growing communities. For example, since 1980 the population in the Chandler Airport service area (assumed to be the City of Gilbert and City of Chandler) has expanded by more than 330,000 residents and at annual rate of 10.6 percent. This is very similar to that forecast for the Town of Buckeye over the next 20 years. Based aircraft at Chandler Municipal Airport also grew during the same period, increasing at an annual rate of 7.0 percent and 367 aircraft.

Of the other general aviation airports examined in the metropolitan area, only Scottsdale Airport experienced a decline in based aircraft while the population increased. This may be the result of limited land area at Scottsdale Airport and Deer Valley Airport serving a large portion of the small aircraft demand as Scottsdale Airport matured as a business aviation airport. In general, the trend is for increasing based aircraft levels as the population grows and for a declining ratio of based aircraft to population. This declining ratio is the result of the population growing faster than based aircraft.

Table 2J presents two forecast scenarios for future based aircraft at Buckeye Municipal Airport based upon assumptions of the ratio of based aircraft to forecast population in the Town of Buckeye. Both scenarios assume a declining ratio of based aircraft per 1,000 residents through the planning period when compared to the existing ratio. Forecast Scenario I projects the ratio of based aircraft to 1,000 residents declining to less than one aircraft per 1,000 residents by the end of the planning period. This has occurred at various points in the past for Glendale Municipal Airport. Forecast Scenario I projects based aircraft growing at 8.1 percent annually and by 223 aircraft over the planning period.

Forecast Scenario II is a more aggressive forecast that assumes a similar growth in the number of based aircraft as has occurred at Chandler Airport in the past 25 years. This scenario assumes the addition of over 400 aircraft at Buckeye Municipal Airport by 2025.

TABLE 2H
Ratio of Residents to Based Aircraft
Selected Communities in the Phoenix Metropolitan Area

	Glendale Airport			Chandler Airport		
	Based AC	Population	Ratio	Based AC	Population	Ratio
1980	219	93,640	2.34	90	35,905	2.51
1991	167	151,635	1.10	238	128,955	1.85
1994	178	164,890	1.08	247	163,575	1.51
1997	184	191,105	0.96	300	230,680	1.30
2000	208	218,812	0.95	392	286,278	1.37
2004	269	233,330	1.15	457	371,995	1.23
Average	0.9%	3.9%	1.26	7.0%	10.2%	1.63
	Scottsdale Airport			**Phoenix Deer Valley Airport**		
	Based AC	Population	Ratio	Based AC	Population	Ratio
1980	517	88,945	5.81	472	796,745	0.59
1991	405	135,275	2.99	778	1,004,695	0.77
1994	393	154,145	2.55	803	1,051,515	0.76
1997	400	186,610	2.14	908	1,250,285	0.73
2000	425	202,705	2.10	1,206	1,321,045	0.91
2004	460	221,130	2.08	1,262	1,416,055	0.89
Average	-0.5%	3.9%	2.95	4.2%	2.4%	0.78
	Phoenix Goodyear Airport			**Mesa Airport**		
	Based AC	Population	Ratio	Based AC	Population	Ratio
1980	140	15,440	9.07	601	155,465	3.87
1991	142	34,720	4.09	580	295,680	1.96
1994	153	39,295	3.89	559	318,885	1.75
1997	198	46,530	4.26	878	350,555	2.50
2000	198	63,578	3.11	923	396,375	2.33
2004	209	105,430	1.98	985	447,130	2.20
Average	1.7%	8.3%	4.40	2.1%	4.5%	2.44

Source for Historical Population: Arizona Department of Economic Security
Source for Historical Based Aircraft: MAG-RASP, Airport Records
Notes:
Goodyear population includes Avondale, Tolleson, and Litchfield Park
Chandler population includes Gilbert

TABLE 2J
Based Aircraft Per 1,000 Residents Forecasts

Year	Buckeye Airport Based Aircraft	Buckeye Population	Ratio
1994	70	5,065	13.8
1997	46	4,960	9.3
2000	55	8,497	6.5
2004	54	14,505	3.7
Avg. Ann. Growth Rate	-2.6%	11.1%	
Scenario I			
2010	110	100,000	1.10
2015	183	182,500	1.00
2020	239	265,000	0.90
2025	276	345,000	0.80
Avg. Ann. Growth Rate	8.1%	16.3%	
Scenario II			
2010	100	100,000	1.00
2015	201	182,500	1.10
2020	318	265,000	1.20
2025	449	345,000	1.30
Avg. Ann. Growth Rate	10.6%	16.3%	

Source for Historical Population: Arizona Department of Economic Security
Source for Forecast Population: Town of Buckeye, 2015 Extrapolated
Source for Historical Based Aircraft: MAG-RASP, Airport Records
Based Aircraft Forecasts: Coffman Associates

The FAA, ADOT Aeronautics, and MAG have all examined future based aircraft demand at Buckeye Municipal Airport. The 2005 FAA *Terminal Area Forecast* (TAF) used a base year total of 74 based aircraft remaining constant through 2020. The *2000 State Aviation Needs Study* (SANS) projected based aircraft growing from 74 in 1998 to 200 by 2020. The 2001 MAG *Regional Aviation System Plan* (RASP) projected based aircraft growing from 55 in 2000 to 132 by 2020.

The 1998 Master Plan projected based aircraft reaching 130 by 2015. Actual based aircraft growth at Buckeye Municipal Airport has been slower than forecast in the previous Master Plan. Many of the reasons for slower growth were listed above. This included changes in the management of the airport and services, and the fact that no new hangars have been developed at the airport in more than 10 years.

TABLE 2K
Based Aircraft Forecast Summary

Forecast	2004	2010	2015	2020	2025
Ratio of Residents to Based Aircraft (Scenario I)		110	183	239	276
Ratio of Residents to Based Aircraft (Scenario II)		100	201	318	449
1998 Buckeye Municipal Airport Master Plan		105	130	N/A	N/A
2001 MAG-RASP		70	101	132	N/A
2005 FAA Terminal Area Forecast (TAF)		74	74	74	N/A
2000 State Aviation Needs Study (SANS)		122	156	200	N/A
Preferred Planning Forecast	**54**	**110**	**175**	**225**	**275**

Source: Coffman Associates analysis

MAG-RASP: Maricopa Association of Governments Regional Aviation System Plan

Table 2K and **Exhibit 2C** provide a summary of all general aviation based aircraft forecasts for Buckeye Municipal Airport. The combination of the forecasts defines the planning envelope, or the area within which future demand should be found. Due to variances in how each forecast has accounted for effects of the projected population growth on future aviation demand at Buckeye Municipal Airport, the planning envelope range is broad. The lower portion of the planning envelope is defined by the FAA TAF, which projects static growth at the airport through planning period. The FAA TAF more than likely does not account for the projected population growth patterns. The upper reaches of the planning envelope are defined by Forecast Scenario II. This planning forecast assumed that ratio of aircraft to residents in the Town of Buckeye would be comparable to that experienced at Chandler Airport in the past, as the City of Chandler and Town of Gilbert have grown and expanded.

In evaluating these forecasts, several conclusions can be made. First, the FAA TAF which projects static growth at the airport through the planning period does not adequately consider the expected growth in the community. While the Town's population growth may impact aviation demand at different rates, a positive impact is inevitable. As shown earlier in **Table 2G**, nearly every airport in the Phoenix metropolitan area has experienced based aircraft growth as the population has grown.

The 2001 MAG RASP forecast and 1998 Master Plan forecast are most likely not indicative of future growth. The 1998 Master Plan was based on the community growing to 51,000 residents by 2015. Current growth projections have the Town exceeding 50,000 residents before 2010. The 2001 MAG RASP projects based aircraft growing slower than the previous Master Plan.

Forecast Scenario II of the ratio of based aircraft to residents may overstate future based aircraft demand. This forecast is much higher than the 2000 SANS and Forecast Scenario I of the ratio of based aircraft to residents, which closely fall together. An extrapolation of the 2000 SANS forecast to 2025 would yield 250 aircraft. This is within 12 percent of the Forecast Scenario I which forecasts 279 based aircraft in 2025. The tight range of these two forecasts indicates a higher degree of reliability for estimating future based aircraft demand. The planning forecast was developed to lie slightly above the 2000 SANS projections and slightly below Forecast Scenario I of the ratio of based aircraft to residents forecast.

This planning forecast projects 222 new based aircraft by 2025. Based aircraft are projected to grow at 8.2 percent annually. This is less than half the annual population growth rate projected for the Town of Buckeye.

Based Aircraft Fleet Mix

Knowing the aircraft fleet mix expected to utilize the airport is necessary to properly plan facilities that will best serve the level of activity and the type of activities occurring at the airport. **Table 2L** indicates that the 2005 based aircraft fleet mix is comprised mainly of single-engine piston aircraft. The based aircraft fleet mix has been examined as a share of total based aircraft and is depicted on **Exhibit 2D**.

TABLE 2L
Based Aircraft Fleet Mix

Year	Total	Single Engine Piston	Multi-Engine Piston	Turboprop	Turbojet	Helicopter	Other*
1995	38	36	2	0	0	0	0
2004	54	35	2	1	0	0	16
Percentage Share							
1995	100.0%	94.7%	5.3%	0.0%	0.0%	0.0%	0.0%
2003	100.0%	64.8%	3.7%	1.9%	0.0%	0.0%	29.6%
Forecast							
2010	110	81	4	2	1	1	21
2015	175	132	8	4	3	2	26
2020	225	170	11	5	5	2	32
2025	275	205	15	8	9	3	35
Percentage Share							
2010	100.0%	73.0%	4.0%	2.0%	1.0%	1.0%	19.0%
2015	100.0%	75.8%	4.5%	2.2%	1.5%	1.0%	15.0%
2020	100.0%	75.6%	5.0%	2.4%	2.0%	1.0%	14.0%
2025	100.0%	74.4%	5.6%	2.9%	3.3%	1.0%	12.8%
Change	221	170	13	7	9	3	19

Source: Coffman Associates analysis
* Gyroplanes and ultralights

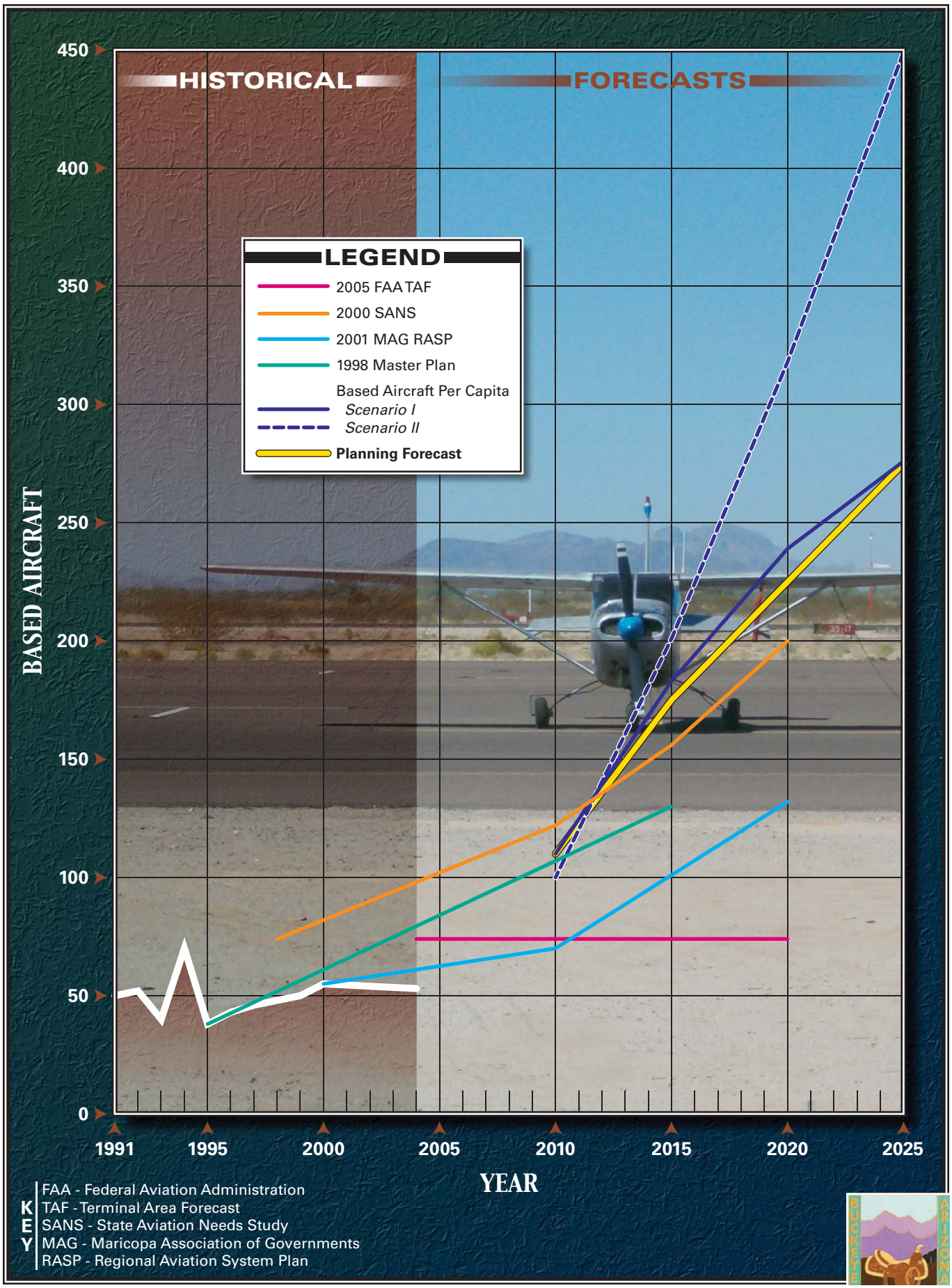


Exhibit 2C
BASED AIRCRAFT FORECASTS

04MP17-1A-2/21/05

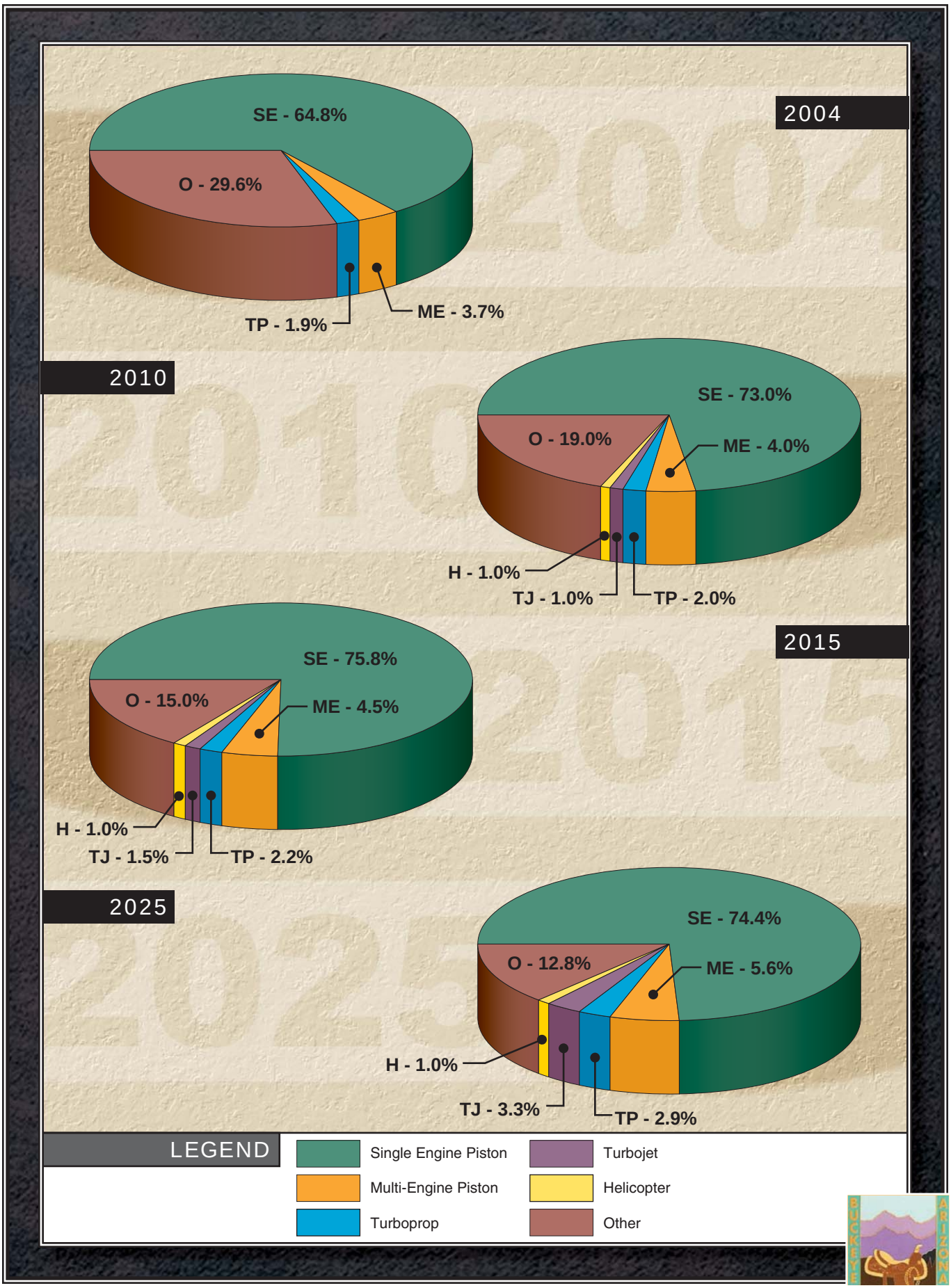


Exhibit 2D
BASED AIRCRAFT FLEET MIX FORECAST

The single-engine piston category as a percentage of total based aircraft is expected to increase through planning period. Local economic and population growth will add new private aircraft ownership. The new regulations for sport aircraft should increase single-engine based aircraft levels as well. This new rule-making is expected to result in 300 to 500 new aircraft nationally each year, beginning in 2006. By 2015, this results in between 2,700 and 4,500 new single-engine piston aircraft. The traditional single-engine piston fleet is expected to grow in the next 12 years as well.

Thirteen new multi-engine piston aircraft are added through the planning period. While nationally, the number of multi-engine piston aircraft is expected to decline, multi-engine piston aircraft are an integral component of flight training programs and for some private ownership.

The number of helicopters grows by three through the planning period. Helicopters are projected for a slow, yet steady growth rate nationally through the planning period. With an increase in population could also come an increase in the need for medivac services and other types of services that rely on helicopters.

Up to 16 new turbine-powered aircraft are projected through the planning period. The introduction of the new microjets and expanded single-engine turbine-powered aircraft should not be disregarded as potential aircraft which may base at the airport. Business and corporate aviation continues to grow. The MAG RASP envisions strong growth in this segment of aviation for the metropolitan area. The FAA expects turbine-powered aircraft growth to outpace all other segments of aircraft growth over the next 12 years. The expanding commercial and residential base could lead to more business and corporate aviation aircraft ownership at Buckeye Municipal Airport.

ANNUAL OPERATIONS

There are two types of operations at an airport: local and itinerant. A local operation is a takeoff or landing performed by an aircraft that operates within sight of an airport, or which executes simulated approaches or touch-and-go operations at the airport. Itinerant operations are those performed by aircraft with a specific origin or destination away from the airport. Generally, local operations are characterized by training operations. Typically, itinerant operations increase with business and commercial use since business aircraft are used primarily to carry people from one location to another.

Due to an absence of an airport traffic control tower (ATCT), actual operation counts are not available for Buckeye Municipal Airport. Instead, only estimates of operations are available. Since early 2004, a record of aircraft landings has been kept for the airport on weekdays and during normal business hours. These records indicate that, on average, there are 80 operations per day at the airport. To account for the periods when the opera-

tions are not observed, it is estimated that over 120 operations are conducted at the airport each day. This equates to an annual total of 43,800 annual operations. This annual total includes military activity at the airport. While generally the military conducts few operations at the airport, the United States Air Force Academy Jump Team utilizes the airport approximately two weeks each year. **Table 2M** summarizes historical operational estimates for Buckeye Municipal Airport. The 2004 total was developed based upon the activity observations. The method for estimating annual operations prior to 2004 is not readily known.

TABLE 2M
Historical Operations

Year	Annual Operations
1995	25,400
2000	35,027
2004	39,000
2005	44,000

Source: Airport Records, FAA Form 5010-1, 1998 Master Plan

Typically, the operations per based aircraft range from 200 operations per based aircraft at airports with small amounts of flight training, to near 1,000 operations per based aircraft at airports with significant levels of flight training. It appears that there is a significant level of training operations at the airport since the ratio of operations to based aircraft currently exceeds 800 as shown in **Table 2N**.

TABLE 2N
Annual Operations Forecasts

Year	Based Aircraft	Annual Operations	Operations Per Based Aircraft
Historical			
1995	38	25,400	668
2000	55	35,027	637
2004	54	39,000	722
2005	54	44,000	815
Scenario I			
2010	110	77,000	700
2015	175	105,000	600
2020	225	123,800	550
2025	275	137,500	500
Avg. Annual Growth Rate	8.5%	5.9%	
Scenario II			
2010	110	88,000	800
2015	175	140,000	800
2020	225	180,000	800
2025	275	220,000	800
Avg. Annual Growth Rate	8.5%	8.4%	

Projections of annual operations are examined by the number of operations per based aircraft. Two forecasts of operations per based aircraft have been developed. Forecast Scenario I, shown in **Table 2N**, assumes a declining number of operations per based aircraft through the planning period. This forecast would be consistent with a transition to more transient activity and lower levels of training activity at the airport. As shown in the table, this forecast yields 137,500 annual operations at Buckeye Municipal Airport by 2025. A second forecast assumes a static or constant share of operations per based aircraft through the planning period. This forecast is consistent with the high levels of training activity already occurring at the airport and would remain through the planning period. Forecast Scenario II yields 220,000 annual operations in 2025.

The FAA, ADOT Aeronautics, and MAG have all projected annual operations for Buckeye Municipal Airport. The 2005 FAA *Terminal Area Forecast* (TAF) used a base year total of 17,020 annual operations remaining constant through 2020. The *2000 State Aviation Needs Study* (SANS) projected annual operations growing from 16,020 in 1998 to 47,900 by 2020. The 2001 MAG *Regional Aviation System Plan* (RASP) projected annual operations growing from 90,000 in 2000 to 180,000 by 2020.

The 1998 Master Plan projected annual operations reaching 140,600 by 2015. Similar to actual based aircraft growth at Buckeye Municipal Airport, annual operations growth has been slower than forecast in the previous Master Plan. Many of the reasons for slower activity have been detailed earlier in this chapter. Activity levels in 2005 were less than half of what was projected in the last Master Plan.

A summary of annual operations forecasts for Buckeye Municipal Airport is shown in **Table 2P**. The FAA projects an increase in aircraft utilization and the number of general aviation hours flown nationally. This trend, along with projected growth in based aircraft, supports future growth in annual operations at Buckeye Municipal Airport. The Phoenix region is home to significant levels of flight training, due to the favorable climate conditions which support flight training. This is a trend that could be expected to continue at the airport. Considering these factors, Forecast Scenario II has been selected for the annual operations planning forecast for the airport. This forecast projects annual operations growing at an average annual growth rate of 8.4 percent through the planning period, consistent with based aircraft growth.

TABLE 2P
Annual Operations Forecast Summary

Forecast	2004	2010	2015	2020	2025
Operations Per Based Aircraft (Scenario I)		77,000	105,000	123,800	137,500
Operations Per Based Aircraft (Scenario II)		88,000	140,000	180,000	220,000
1998 Buckeye Municipal Airport Master Plan		111,200	140,600	N/A	N/A
2001 MAG-RASP		140,080	165,120	190,190	N/A
2005 FAA Terminal Area Forecast (TAF)		17,020	17,020	17,020	N/A
2000 State Aviation Needs Study (SANS)		21,000	27,700	36,400	N/A
Preferred Planning Forecast	**44,000**	**88,000**	**140,000**	**180,000**	**220,000**

Source: Coffman Associates analysis
MAG-RASP: Maricopa Association of Governments Regional Aviation System Plan

Due to the high number of operations per based aircraft at Buckeye Municipal Airport, local operations are expected to account for 70 percent of annual operations at the airport. For planning purposes, local operations are projected to account for the majority of operations through the planning period, although declining slightly to 55 percent by 2025. **Exhibit 2E** depicts the general aviation operations forecast. **Table 2Q** summarizes the local and itinerant operations forecasts through 2025.

TABLE 2Q
Local and Itinerant Operations Forecast

Year	Local Operations	% of Total	Itinerant Operations	% of Total	Total Operations
Historical					
2005	30,800	70%	13,200	30%	44,000
Forecasts					
2010	61,600	70%	26,400	30%	88,000
2015	91,000	65%	49,000	35%	140,000
2020	108,000	60%	72,000	40%	180,000
2025	121,000	55%	99,000	45%	220,000

PEAKING CHARACTERISTICS

Most facility planning relates to levels of peak activity. The following planning definitions apply to peak periods:

- Peak Month – The calendar month when peak aircraft operations occur.
- Design Day – The average day in the peak month.

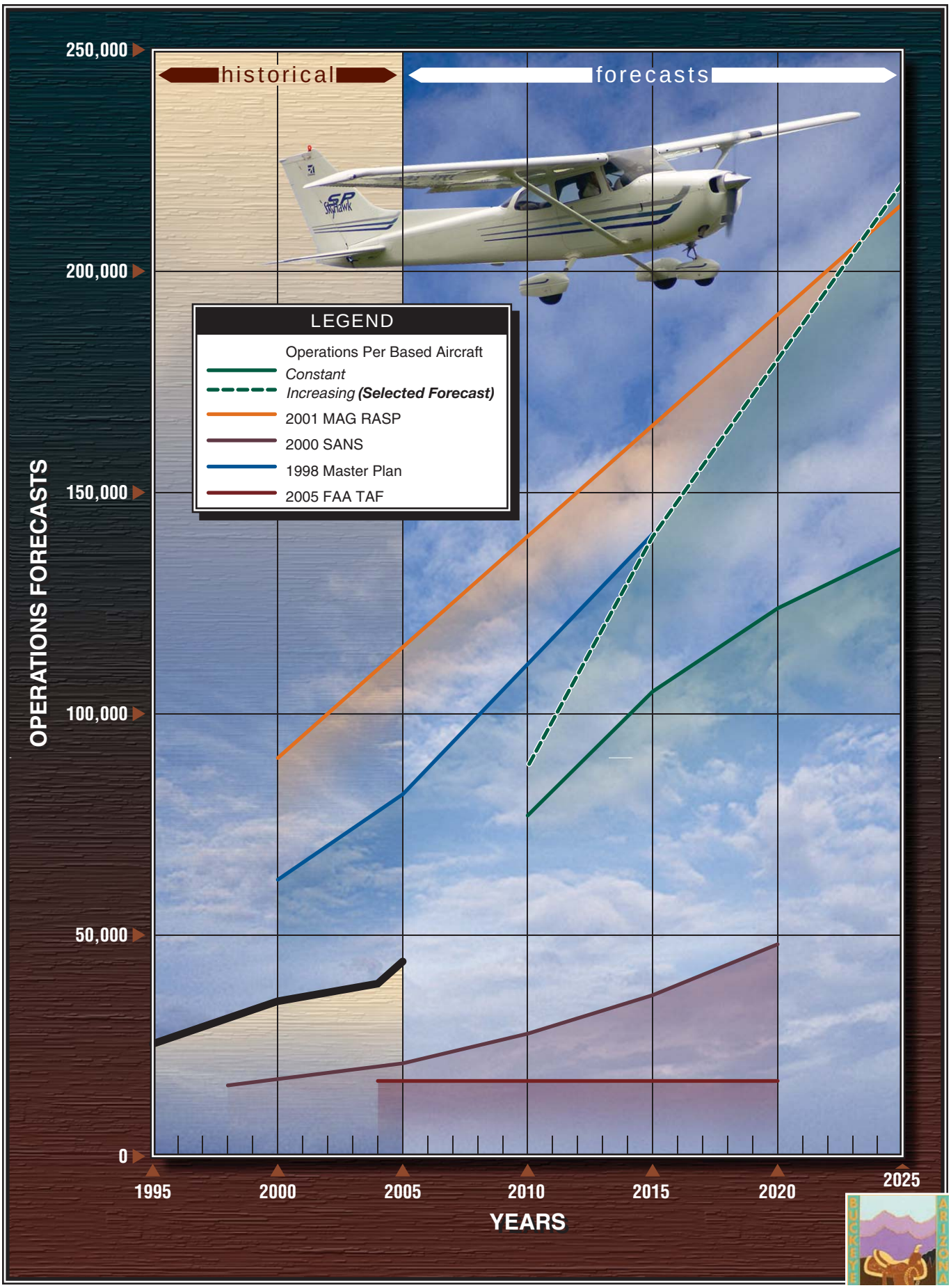


Exhibit 2E
ANNUAL OPERATIONS FORECASTS

- Busy Day – The busy day of a typical week in the peak month.

- Design Hour – The peak hour within the design day.

It is important to note that only the peak month is an absolute peak within a given year. All other peak periods will be exceeded at various times during the year. However, they do represent reasonable planning standards that can be applied without overbuilding or being too restrictive.

Without an airport traffic control tower, adequate operational information is not available to directly determine peak operational activity at the airport. Therefore, peak period forecasts have been determined according to trends experienced at similar airports. Typically, the peak month for activity at general aviation airports approximates 10 to 15 percent of the airport's annual operations. General aviation operations and total operations were estimated at 12 percent of total annual operations. The forecast of busy day operations was calculated as 1.25 times design day activity. Design hour operations were estimated at 15 percent of design day operations. **Table 2R** summarizes peak operations forecasts for the airport.

TABLE 2R
Peak Period Forecasts

		Forecasts			
	2004	2010	2015	2020	2025
Annual	44,000	88,000	140,000	180,000	220,000
Peak Month	5,280	10,560	16,800	21,600	26,400
Design Day	170	341	542	697	852
Busy Day	213	426	677	871	1065
Design Hour	26	51	81	105	128

ACTUAL INSTRUMENT APPROACHES (AIAs)

An instrument approach, as defined by the FAA, is "an approach to an airport with the intent to land by an aircraft in accordance with an Instrument Flight Rule (IFR) flight plan, when visibility is less than three miles and/or when the ceiling is at or below the minimum initial approach altitude." There are currently no instrument approach procedures established for Buckeye Municipal Airport. Consequently, there are no actual instrument approaches.

Typically, AIAs for airports with available instrument approaches utilized by advanced aircraft will average about one percent of itinerant operations. National trends indicate an increasing percentage of annual approaches given the greater availability of approaches at airports with GPS and the availability of more cost-effective equipment. **Table 2S** summarizes forecast AIAs for the planning period. AIAs are projected at one percent of itinerant operations.

TABLE 2S
Actual Instrument Approaches Forecast

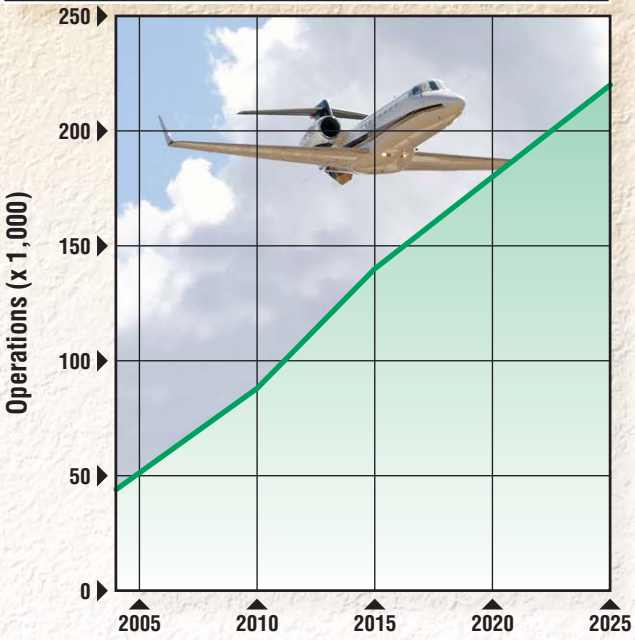
	Forecasts			
	2010	**2015**	**2020**	**2025**
Annual Itinerant Operations	26,400	49,000	72,000	99,000
Actual Instrument Approaches	264	490	720	990

SUMMARY

This chapter has provided forecasts for each sector of aviation demand anticipated through the planning period. **Exhibit 2F** presents a summary of the aviation forecasts developed for Buckeye Municipal Airport. The airport is expected to experience an increase in total based aircraft and annual operations throughout the planning period. The next step in this study is to assess the capacity of the existing facilities to accommodate forecast demand and determine what types of facilities will be needed to meet these demands.

	Base Yr.	2010	2015	2020	2025
ANNUAL OPERATIONS					
Itinerant	13,200	26,400	49,000	72,000	99,000
Local	30,800	61,600	91,000	108,000	121,000
Total Annual Operations	***44,000***	***88,000***	***140,000***	***180,000***	***220,000***
PEAK PERIODS					
Peak Month (12%)	5,280	10,560	16,800	21,600	26,400
Design Day	170	341	542	697	852
Busy Day	213	426	677	871	1,065
Design Hour (15%)	26	51	81	105	128
ACTUAL INSTRUMENT APPROACHES	0	264	490	720	990
BASED AIRCRAFT FLEET MIX					
Single Engine Piston	35	81	132	170	205
Multi-Engine Piston	2	4	8	11	15
Turboprop	1	2	4	5	8
Turbojet	0	1	3	5	9
Helicopter	0	1	2	2	3
Other	16	21	26	32	35
Total	***54***	***110***	***175***	***225***	***275***

OPERATIONS FORECAST



BASED AIRCRAFT FORECAST

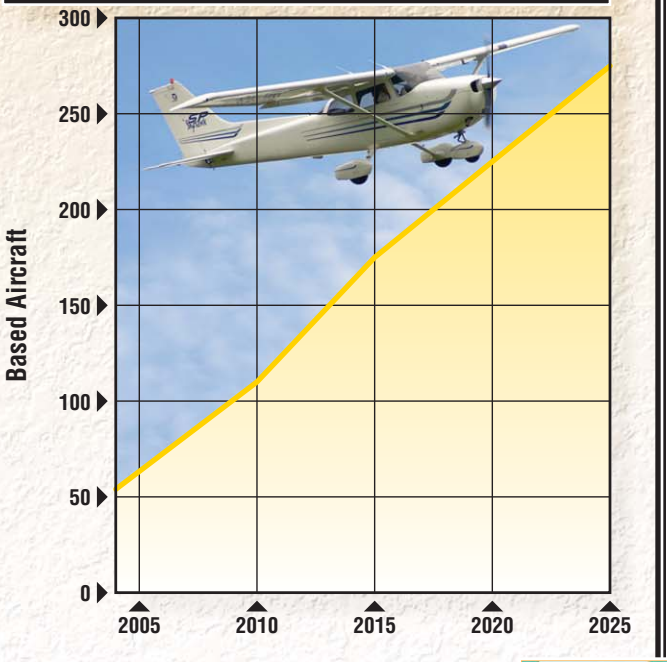


Exhibit 2F
FORECAST SUMMARY

Chapter Three

FACILITY REQUIREMENTS

FACILITY REQUIREMENTS

To properly plan for the future of the Buckeye Municipal Airport, it is necessary to translate forecast aviation demand into the specific types and quantities of facilities that can adequately serve projected "unconstrained" demand levels. This chapter uses the results of the forecasts conducted in Chapter Two, as well as established planning criteria, to determine the airfield (i.e., runways, taxiways, navigational aids, marking and lighting) and landside (i.e., hangars, general aviation terminal building, aircraft parking apron, fueling, automobile parking and access) facility requirements.

The objective of this effort is to identify, in general terms, the adequacy of the existing airport facilities and outline what new facilities may be needed and when they may be needed to accommodate "unconstrained" forecast demands. Having established these facility requirements, alternatives for providing these "unconstrained" facilities will be evaluated in Chapter Four to determine the most cost-effective and efficient means for implementation.

PLANNING HORIZONS

Cost-effective, safe, efficient, and orderly development of an airport should rely more upon actual demand at an airport than a time-based forecast figure. Thus, in order to develop a master plan that is demand-based rather than time-based, a series of planning horizon milestones have been estab-

lished that take into consideration the reasonable range of aviation demand projections.

It is important to consider that over time, the actual activity at the airport may be higher or lower than what the annualized forecast portrays. By planning according to activity milestones, the resultant plan can accommodate unexpected shifts or changes in the aviation demand. It is important to plan for these milestones so that airport officials can respond to unexpected changes in a timely fashion. As a result, these milestones provide flexibility while potentially extending this plan's useful life should aviation trends slow over the period.

The most important reason for utilizing milestones is to allow the airport to develop facilities according to need generated by actual demand levels. The demand-based schedule provides flexibility in development, as the schedule can be slowed or expedited according to actual demand at any given time over the planning period. The resultant plan provides airport officials with a financially-responsible and needs-based program. **Table 3A** presents the planning horizon milestones for each activity demand category.

TABLE 3A
Planning Horizon Activity Levels

	Historical	Short Term Planning Horizon (± 5 years)	Intermediate Term Planning Horizon (± 10 years)	Long Term Planning Horizon (± 20 years)
Based Aircraft	54	110	175	275
Annual Operations				
Local	30,800	61,600	91,000	121,000
Itinerant	13,200	26,400	49,000	99,000
Total Annual Operations	44,000	88,000	140,000	220,000

AIRFIELD REQUIREMENTS

Airfield requirements include the need for those facilities related to the arrival and departure of aircraft. These facilities are comprised of the following items:

- Runways
- Taxiways
- Navigational Aids
- Airfield Lighting and Marking

The adequacy of existing airfield facilities at Buckeye Municipal Airport is analyzed from a number of perspectives within each of these components, including (but not limited to): airfield capacity, runway length, runway pavement strength, Federal Aviation Administration (FAA) design standards, and air traffic control.

AIRFIELD CAPACITY

An airport's airfield capacity is expressed in terms of its annual service volume (ASV). Annual service volume is a reasonable estimate of the maximum level of aircraft operations that can be accommodated in a year without incurring significant delay factors. As aircraft operations surpass the ASV, delay factors increase exponentially. Annual service volume accounts for annual differences in runway use, aircraft mix, and weather conditions. The airport's annual service volume was examined utilizing Federal Aviation Administration (FAA) Advisory Circular (AC) 150/5060-5, *Airport Capacity and Delay*.

Exhibit 3A graphically presents the various factors included in the calculation of an airport's ASV. These include the airfield characteristics, meteorological conditions, aircraft mix, and demand characteristics (aircraft operations). The following describes the input factors as they relate to Buckeye Municipal Airport:

- **Runway Configuration** - A single runway configuration with a full-length parallel taxiway and no instrument approach.

- **Runway Use** – Winds dictate using Runway 17 the majority of the time.

- **Exit Taxiways** - Based upon mix, only taxiways between 2,000 feet and 4,000 feet count in the exit rating. There are two exits available within this range at the airport. This reduces hourly by approximately 6.0 percent.

- **Weather Conditions** - The airport operates under visual meteorological conditions (VMC) over 99.5 percent of the time. Instrument meteorological conditions (IMC) occur when cloud ceilings are between 500 and 1,000 feet. Poor visibility conditions (PVC) apply for minimums below 500 feet and one mile. Because IMC and PVC occur less than one percent combined, they are considered negligible for this analysis.

- **Aircraft Mix** - Description of the classifications and the percentage mix for each planning horizon is presented on **Table 3B**.

- **Percent Arrivals** - Generally follows the typical 50-50 percent split.

- **Touch-and-Go Activity** - Percentages of touch-and-go activity are presented in **Table 3B**. This level of activity increases hourly capacity by 40 percent.

- **Operational Levels -** Operational planning horizons were outlined in the previous section of this chapter. The peak month was estimated at 12 percent of the total annual operations. The peak hour was estimated at 15 percent of the average daily operations.

TABLE 3B
Aircraft Operational Mix - Capacity Analysis

Aircraft Classification	Current	Short Term (± 5)	Intermediate Term (± 10)	Long Term (± 20)
VFR				
Classes A & B	99%	98.5%	98.3%	98.1%
Class C	1%	1.5%	1.7%	1.9%
Class D	0%	0%	0%%	0%%
Percent Local Operations (Touch-and-Go's)	70%	70%	65%	55%

Definitions:
- Class A: Small single-engine aircraft with gross weights of 12,500 pounds or less.
- Class B: Small twin-engine aircraft with gross weights of 12,500 pounds or less.
- Class C: Large aircraft with gross weights over 12,500 pounds up to 300,000 pounds.
- Class D: Large aircraft with gross weights over 300,000 pounds.

HOURLY RUNWAY CAPACITY

Based upon the input factors, current and future hourly capacities for the various operational scenarios at Buckeye Municipal Airport were determined. As the mix of aircraft operating at an airport changes to include a higher percentage of large aircraft (weighing over 12,500 pounds), the hourly capacity of the system declines slightly. As indicated on **Table 3C**, the percentages of Class C aircraft will increase with the planning horizon activity milestones.

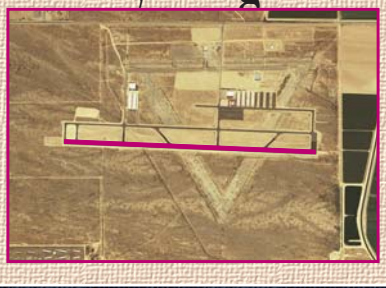
The current and future hourly capacities are depicted in **Table 3C**. At Buckeye Municipal Airport, the current hourly capacity is 145operations. This is expected to decline to 137 operations by the long term planning horizon.

TABLE 3C
Airfield Demand/Capacity Summary
Single Runway Configuration

	Base Year	Short Term (± 5)	Intermediate Term (± 10)	Long Term (± 20)
Operational Demand				
Annual	44,000	88,000	140,000	220,000
Design Hour	26	51	81	128
Capacity				
Annual Service Volume	249,000	245,000	243,000	236,000
Weighted Hourly Capacity	145	142	141	137
Delay				
Per Operation (Minutes)	0.1	0.2	0.5	1.6
Total Annual (Hours)	7	29	1,166	5,866

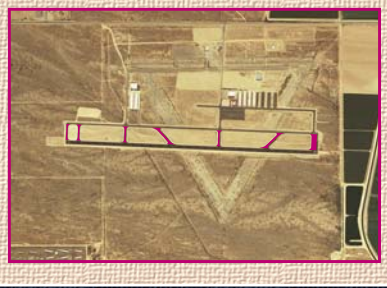
AIRFIELD LAYOUT

Runway Configuration



Runway Use

Number of Exits



WEATHER CONDITIONS

VFR

IFR

PVC

AIRCRAFT MIX

A&B

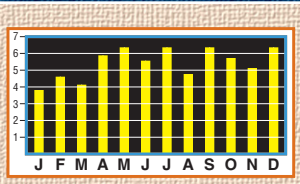
C

D

OPERATIONS

Arrivals and Departures

Total Annual Operations



Touch-and-Go Operations

Exhibit 3A
AIRFIELD CAPACITY FACTORS

ANNUAL SERVICE VOLUME

The weighted hourly capacity is utilized to determine the annual service volume in the following equation:

$$ASV = C \times D \times H$$

C = weighted hourly capacity;
D = ratio of annual demand to the average daily demand during the peak month; and
H = ratio of average daily demand to the design hour demand during the peak month.

The ratio of annual demand to average daily demand (D) was determined to be 258 for Buckeye Municipal Airport. This is expected to remain relatively constant over the long term planning period. The ratio of average daily demand to average peak hour demand (H) was determined to be 6.7. This ratio was also projected to remain relatively constant over the long term planning period.

The current ASV was determined to be 249,000 operations. With the slight increase in Class C aircraft to operate at the airport through the planning period, the annual service volume is projected to decrease to 236,000 as operations increase over the long term. The airport is currently at 17 percent of its annual service volume. Assuming projected long term planning horizon annual operations, the airport would be at 93 percent of the airport's ASV. **Table 3C** summarizes the airport's ASV over the long term planning horizon.

AIRCRAFT DELAY

As the number of annual aircraft operations approaches the airfield's capacity, increasing amounts of delay to aircraft operations begin to occur. Delays occur to arriving and departing aircraft in all weather conditions. Arriving aircraft delays result in aircraft holding outside of the airport traffic area. Departing aircraft delays result in aircraft holding at the runway end until released by air traffic control.

Table 3C also summarizes the aircraft delay analysis conducted for Buckeye Municipal Airport. Current annual delay is negligible and estimated at seven hours total. As an airport's operations increase toward the annual service volume, delay increases exponentially. Analysis of delay factors for the long range planning horizon indicate that annual delay can be expected to reach over 5,800 hours.

CAPACITY ANALYSIS CONCLUSIONS

The top half of **Exhibit 3B** compares annual service volume to existing and forecast operational levels at Buckeye Municipal Airport. FAA Order 5090.3C, *Field Formulation of the National Plan of Integrated Airport Systems* (*NPIAS*), indicates that improvements for airfield capacity purposes should begin to be considered once operations reach 60 to 75 percent of the annual service volume. Buckeye Municipal Airport will enter this range with operational levels slightly

above those forecast for intermediate planning horizon, and will begin to experience significant delays if capacity improvements are not undertaken.

The only means to provide the necessary capacity to accommodate projected long term growth and reduce delays is through the construction of a parallel runway. **Table 3D** shows that a parallel runway could increase the ASV over 100,000 operations in the long term planning horizon. Assuming projected long term planning horizon annual operations, the airport would be at 63 percent of the airport's ASV. This is a 30 percent reduction from the single runway configuration. Annual delay would be reduced by 4,000 hours.

TABLE 3D
Airfield Demand/Capacity Summary
Parallel Runway Configuration

	Base Year	Short Term (± 5)	Intermediate Term (± 10)	Long Term (± 20)
Operational Demand				
Annual	44,000	88,000	140,000	220,000
Design Hour	26	51	81	128
Capacity				
Annual Service Volume	374,000	358,000	354,000	349,000
Weighted Hourly Capacity	217	208	205	203
Delay				
Per Operation (Minutes)	0.1	0.2	0.3	0.5
Total Annual (Hours)	7	29	700	1,800

Based upon this analysis, for the airport to accommodate the projected levels of activity, a parallel runway will be needed in the long term planning horizon. This and other capacity enhancement alternatives will be considered and evaluated in the next chapter.

RUNWAY ORIENTATION

For the operational safety and efficiency of an airport, it is desirable for the primary runway of an airport's runway system to be oriented as close as possible to the direction of the prevailing wind. This reduces the impact of wind components perpendicular to the direction of travel of an aircraft that is landing or taking off (defined as a crosswind).

FAA Advisory Circular 150/5300-13, *Airport Design*, recommends that a crosswind runway should be made available when the primary runway orientation provides for less than 95 percent wind coverage for specific crosswind components. The 95 percent wind coverage is computed on the basis of the crosswind component not exceeding 10.5 knots (12 mph) for ARCs A-I and B-I; 13 knots (15 mph) for ARCs A-II and B-II; and 16 knots (18 mph) for ARC C-I through D-II.

Exhibit 3C summarizes wind coverage for Runway 17-35 using wind data obtained from an Arizona Meteorologi-

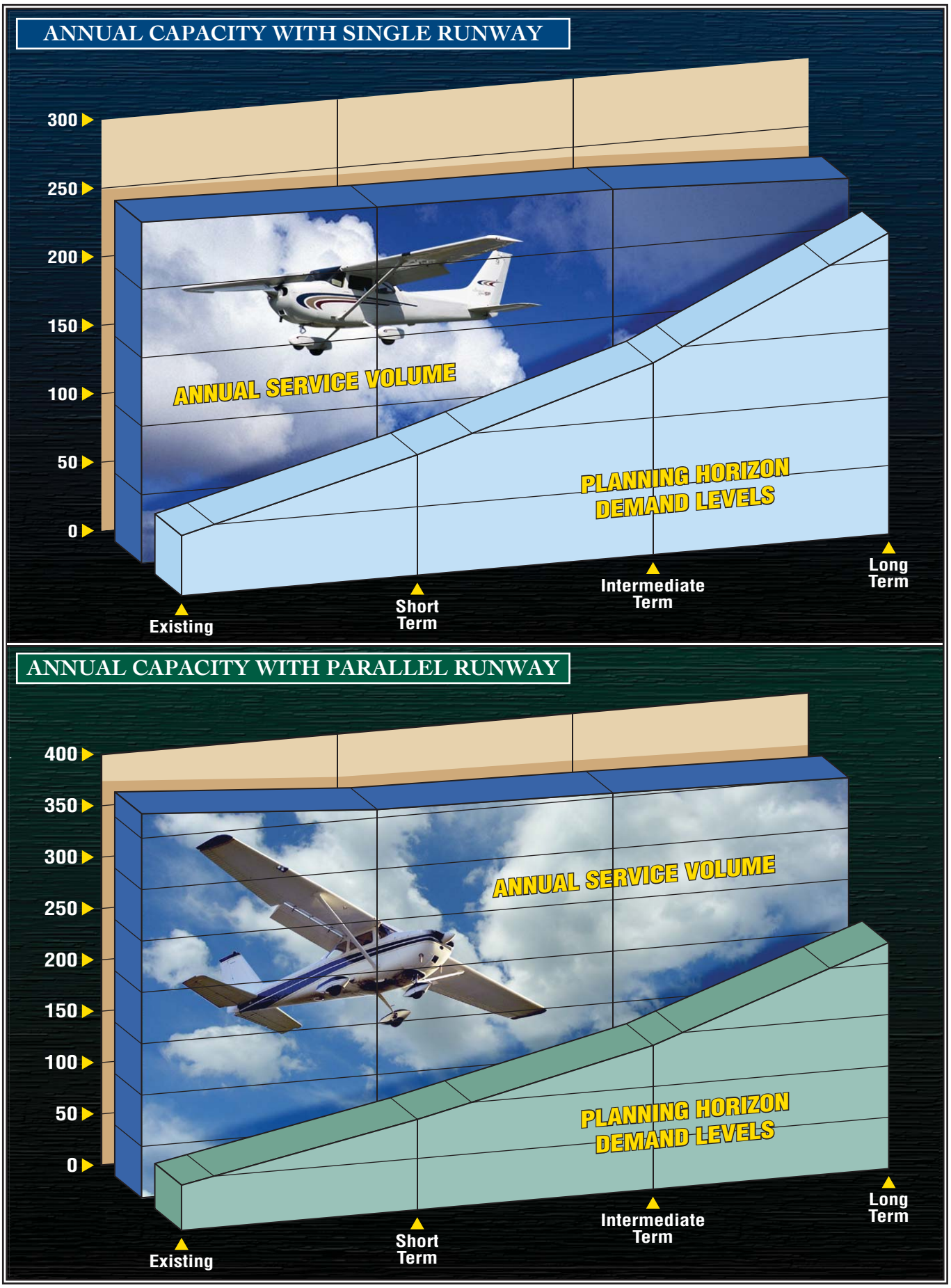
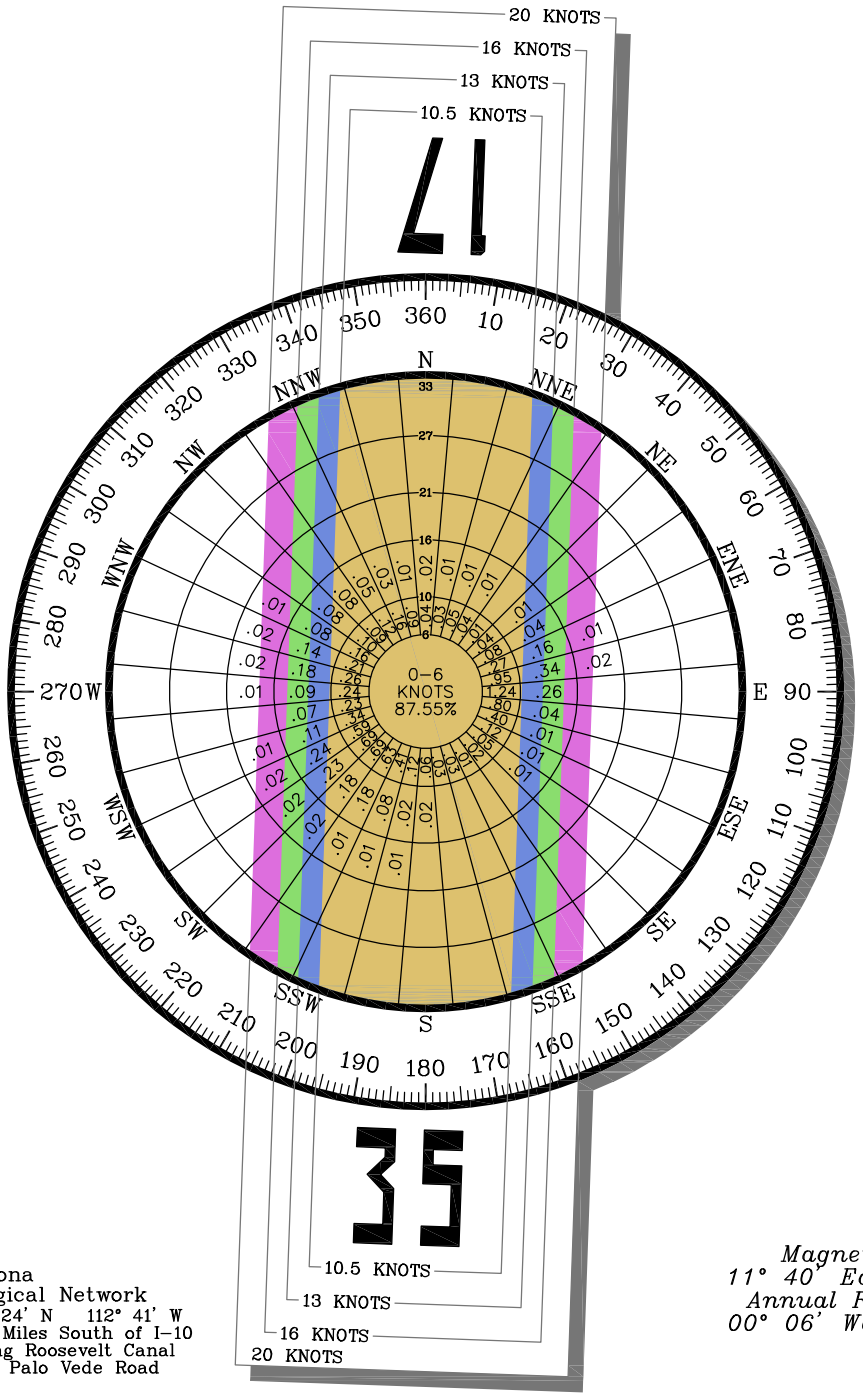
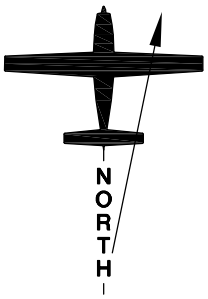


Exhibit 3B
ANNUAL SERVICE VOLUME

ALL WEATHER WIND COVERAGE

Runway	10.5 Knots	13 Knots	16 Knots	20 Knots
Runway 17–35	*98.02%*	*98.95%*	*99.83%*	*99.98%*





SOURCE:
University of Airzona
Arizona Meteorological Network
Buckeye Site: 33° 24' N 112° 41' W
2.2 Miles South of I–10
Along Roosevelt Canal
and Palo Vede Road

OBSERVATIONS:
44,901 All Weather Observations
1998–2006

Magnetic Variance
11° 40' East (April 2006)
Annual Rate of Change
00° 06' West (April 2006)

Exhibit 3C
WINDROSE

cal Network (AZMET) weather station. This station is located near the intersection of the Roosevelt Irrigation District Canal and Palo Verde Road less than one-half mile from the Buckeye Municipal Airport. Data obtained from this site included more than 44,000 hourly observations starting in 1998.

As shown on **Exhibit 3C**, using this wind data, the single north-south runway at Buckeye Municipal Airport provides greater than 95 percent wind coverage for all crosswind conditions. Since Runway 17-35 provides greater than 95 percent wind coverage, a crosswind runway is not required at Buckeye Municipal Airport. The high percentage of winds below 10 knots is the primary factor that leads to the high percentage wind coverage at the airport. This analysis should be re-evaluated once in 10 years of wind data collected on the airport site.

PHYSICAL PLANNING CRITERIA

The selection of appropriate Federal Aviation Administration (FAA) design standards for the development and location of airport facilities is based primarily upon the characteristics of the aircraft which are currently using or are expected to use the airport. Planning for future aircraft use is of particular importance since design standards are used to plan separation distances between facilities. These standards must be determined now since the relocation of these facilities will likely be extremely expensive at a later date.

The FAA has established a coding system to relate airport design criteria to the operational and physical characteristics of aircraft expected to use the airport. This code, the airport reference code (ARC), has two components. The first component, depicted by a letter, is the aircraft approach speed (operational characteristic); the second component, depicted by a Roman numeral, is the airplane design group and relates to aircraft wingspan (physical characteristic). Generally, aircraft approach speed applies to runways and runway-related facilities, while aircraft wingspan primarily relates to separation criteria involving taxiways, taxilanes, and landside facilities.

According to FAA Advisory Circular 150/5300-13, *Airport Design*, an aircraft's approach category is based upon 1.3 times its stall speed in landing configuration at that aircraft's maximum certificated weight. The five approach categories used in airport planning are as follows:

Category A: Speed less than 91 knots.
Category B: Speed 91 knots or more, but less than 121 knots.
Category C: Speed 121 knots or more, but less than 141 knots.
Category D: Speed 141 knots or more, but less than 166 knots.
Category E: Speed greater than 166 knots.

The airplane design group (ADG) is based upon the aircraft's wingspan. The six ADGs used in airport planning are as follows:

Group I: Up to but not including 49 feet.
Group II: 49 feet up to but not including 79 feet.
Group III: 79 feet up to but not including 118 feet.
Group IV: 118 feet up to but not including 171 feet.
Group V: 171 feet up to but not including 214 feet.
Group VI: 214 feet or greater.

Exhibit 3D presents a summary of representative aircraft by ARC. As indicated on the exhibit, the airport does not currently, nor is it expected to, serve aircraft in ARCs A-III, B-III, C-III, D-III, C-IV, D-IV, or D-V. These are large transport aircraft commonly used by commercial air carriers. These aircraft are primarily accommodated at Phoenix Sky Harbor International Airport. As mentioned previously in Chapter Two, Buckeye Municipal Airport presently serves general aviation activity. This role is expected to remain the same through the planning period.

FAA advises designing airfield facilities to meet the requirements of the airport's most demanding aircraft, or critical aircraft. As discussed above, this is the aircraft, or group of aircraft (defined by ARC), with at least 500 operations at the airport. In order to determine future facility needs, an ARC should first be determined, and then appropriate airport design criteria can be applied. This begins with a review of aircraft currently using the airport and those expected to use the airport through the planning period.

Buckeye Municipal Airport is currently utilized by all types of general aviation aircraft ranging from small single-engine and multi-engine piston aircraft to turboprop and business jet aircraft. Based aircraft at Buckeye Municipal Airport fall within ARCs A-I and B-I and include a variety of single-engine and multi-engine piston aircraft.

The type of transient aircraft using the airport is more diverse than the type of aircraft based at the airport and includes single-engine and multi-engine piston aircraft, as well as turboprop aircraft and various business jets within ARCs B-I, B-II, C-I, and C-II. Activity in the approach category C is below 500 annual operations now; therefore, ARC B-II is the critical design category for Buckeye Municipal Airport.

As discussed in Chapter Two, the potential exists in the future for increased use of the airport by business jet aircraft. This follows with the national trend of increased business and corporate use of turbojet aircraft, strong sales and deliveries of business jet aircraft, and expanded fractional ownership programs. The expanding local economy and population also supports the potential for increased use by business jet aircraft. Therefore, business jets are projected to be the critical design aircraft in the future. Business jets fall within a wide range of ARCs, from ARCs B-I to C-II. To safely accommodate all aircraft expected to use Buckeye Municipal Airport in the future, the airport would need to conform to ARC C-II design standards.

A-I

- Beech Baron 55
- **Beech Bonanza**
- Cessna 150
- Cessna 172
- Piper Archer
- Piper Seneca

B-I less than 12,500 lbs.

- Beech Baron 58
- Beech King Air 100
- Cessna 402
- Cessna 421
- **Eclipse 500 Jet**
- Piper Navajo
- Piper Cheyenne
- Swearingen Metroliner
- Cessna Citation I

B-II less than 12,500 lbs.

- **Super King Air 200**
- Cessna 441
- DHC Twin Otter

B-I, II over 12,500 lbs.

- Super King Air 300
- Beech 1900
- Jetstream 31
- Falcon 10, 20, 50
- Falcon 200, 900
- **Citation** II, **III**, IV, V
- Saab 340
- Embraer 120

A-III, B-III

- DHC Dash 7
- **DHC Dash 8**
- DC-3
- Convair 580
- Fairchild F-27
- ATR 72
- ATP

C-I, D-I

- Beech 400
- **Lear** 25, 31, **35**, 45, 55, 60
- Israeli Westwind
- HS 125-400, 700

C-II, D-II

- Cessna Citation X
- **Gulfstream** II, III, **IV**
- Canadair 600
- Canadair Regional Jet
- Super King Air 350

C-III, D-III

- Boeing Business Jet
- B 727-200
- **B 737-300 Series**
- MD-80, DC-9
- Fokker 70, 100
- A319, A320
- Gulfstream V
- Global Express

C-IV, D-IV

- **B-757**
- B-767
- DC-8-70
- DC-10
- MD-11
- L1011

D-V

- **B-747** Series
- B-777

Note: Aircraft pictured is identified in bold type.

Exhibit 3D
AIRPORT REFERENCE CODES

EXISTING	SHORT TERM NEED	LONG TERM NEED
RUNWAYS		
Runway 17-35		
ARC B-II Visual Approach Each End 5,500' x 75' No Surface Treatment 30,000# Single Wheel Loading (SWL)	Same ≥ 1 mile visibility approach minimums each end Same Same Same	ARC C-II < 1 mile visibility approach minimums - Rwy 35 ≥ 1 mile visbility approach minimums - Rwy 17 8,600' x 100' Grooved Surface 30,000# SWL • 75,000# DWL
Runway Safety Area (RSA)		
75' each side of runway centerline 300' prior to landing threshold 300' beyond each runway end	Same Same Same	200' each side of runway centerline 600' prior to landing threshold 1,000' beyond each runway end
Object Free Area (OFA)		
250' each side of runway centerline 300' beyond each runway end	Same Same	400' each side of runway centerline 1,000' beyond each runway end
Obstacle Free Zone (OFZ)		
200' each side of runway centerline 200' beyond each runway end	Same Same	Same Same Add POFZ - Rwy 35
Runway Protection Zone (RPZ) - Runway 35		
Inner Width - 500' Outer Width - 700' Length - 1,000'	Same Same Same	Inner Width - 1,000' Outer Width - 1,700' Length - 2,500'
Runway Protection Zone (RPZ) - Runway 17		
Inner Width - 500' Outer Width - 700' Length - 1,000'	Same Same Same	Inner Width - 500' Outer Width - 1,010' Length - 1,700'
Future Parallel Runway		
		ARC B-I (small aircraft only) Visual Approach Each End 4,300' x 60' • 12,500# SWL
Runway Safety Area (RSA)		
		60' each side of runway centerline 240' prior to landing threshold 240' beyond each runway end
Object Free Area (OFA)		
		250' each side of runway centerline 240' beyond each runway end
Obstacle Free Zone (OFZ)		
		125' each side of runway centerline 200' beyond each runway end
Runway Protection Zone (RPZ) - Each End		
		Inner Width - 250' Outer Width - 450' Length - 1,000'
TAXIWAYS		
Runway 17-35		
Full-Length Parallel Taxiway H - 40' wide 400' from runway centerline Connecting Taxiways A, C, E, F, & G - 40' wide each Hi-Speed Exit Taxiways B & D - 40' wide each Holding Apron - Rwy 35	Same Same Same Same Same	Same Same Same Same Same Add Holding Apron - Rwy 17
Future Parallel Runway		
		Full-Length Parallel Taxiway - 25' wide 150' from runway centerline 3 Connecting Taxiways, 2 Hi-Speed Exits - 25' wide each Holding Apron Each End
HELIPAD		
	Helipad 2 parking positions lighted	Same Same Same

POFZ - Precision Obstacle Free Zone

Exhibit 3E
AIRCRAFT OPERATIONAL AREA REQUIREMENTS

As the primary runway, Runway 17-35 should be designed to ARC C-II standards. It is not necessary to design all future airfield elements to this ARC. The appropriate design category for the future parallel runway is ARC B-I, small (less than 12,500 pounds) aircraft only. The primary need for this runway is to segregate the smaller, slower aircraft from the larger, high-performance aircraft in the future to improve airfield capacity.

The design of taxiway and apron areas should consider the wingspan requirements of the most demanding aircraft to operate within that specific functional area on the airport. The airfield taxiways, aircraft maintenance and repair hangar areas, and transient apron areas should consider ADG II design requirements to accommodate the wingspan requirements of the largest general aviation aircraft to operate at the airport. T-hangar and small conventional hangar areas should consider ADG I requirements as these commonly serve smaller single and multi-engine piston aircraft.

AIRFIELD SAFETY STANDARDS

The FAA has established several imaginary surfaces to protect aircraft operational areas and keep them free from obstructions that could affect the safe operation of aircraft. These include the object free area (OFA), obstacle free zone (OFZ), precision obstacle free zone (POFZ), runway protection zone (RPZ), and runway safety area (RSA).

The OFA is defined as “a two-dimensional ground area surrounding runways, taxiways, and taxilanes, which is clear of objects except for objects whose location is fixed by function.” The RSA is "a defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway." The OFZ is a “defined volume of airspace centered above the runway centerline whose elevation is the same as the nearest point on the runway centerline and extends 200 feet beyond each runway end.” The POFZ is defined as “a volume of airspace above an area beginning at the runway threshold, at the threshold elevation, and centered on the extended runway centerline, 200 feet long by 800 feet wide.” The POFZ is only in effect when the following operational conditions are met: vertically-guided approach, reported ceiling below 250 feet and/or visibility less than three-quarters-of-a-statute-mile, an aircraft on final approach within two (2) miles of the runway threshold. When these conditions are met, aircraft holding for take-off must hold in such a position so that neither the fuselage nor the tail of the aircraft penetrates the POFZ. The wings of the aircraft are allowed to penetrate the surface. Since there are no vertically-guided approaches to the airport now, the POFZ is not required. It may be required in the future. The FAA expects the OFA, RSA, OFZ, and POFZ to be under the control of the airport and free from obstructions.

The RPZ is a two-dimensional trapezoidal-shaped surface located along

the extended runway centerline to protect people and property on the ground. It is desirable for airport to own the RPZ in fee simple to ensure that no incompatible development occurs within its boundaries. However, when this may not be possible, acquisition of an avigation easement or the implementation of local land use/zoning regulations can also ensure that the RPZ remains free of incompatible development.

The dimensional requirements for ARC B-I, small aircraft exclusively (future parallel runway), ARC B-II (existing Runway 17-35), and ARC C-II (future Runway 17-35) are summarized on **Exhibit 3E** for existing and future conditions. A review of these design requirements at Buckeye Municipal Airport indicates that the ARCB-II design requirements are fully met on Runway 17-35. The analyses in Chapter Four will examine the options for meeting ARC C-II design requirements on Runway 17-35 and ARC B-I on a future parallel runway.

RUNWAY LENGTH

Runway length requirements are based upon five primary elements: airport elevation, the mean maximum daily temperature of the hottest month, runway gradient, critical aircraft type expected to use the runway, and aircraft loading.

Aircraft performance declines as elevation, temperature, and runway gradient factors increase. For calculating runway length requirements at Buckeye Municipal Airport, elevation is 1,032 feet above mean sea level (MSL); the mean maximum daily temperature of the hottest month is 107 degrees Fahrenheit. At the airport, the Runway 17 end is located at 1032.7 feet MSL, while the Runway 35 end is located at 994.7 feet MSL. This is a difference of 38 feet, or an effective runway gradient of 0.69 percent.

FAA Advisory Circular (AC) 150/5235-4B, *Runway Length Requirements for Airport Design*, provides guidelines to determine runway lengths for civil airports. Quoting from the AC: "For airport projects receiving Federal funding, the use of this AC is mandatory."

Primary Runway Length

The first step in determining runway length is to identify the list of critical design airplanes that will make regular use of the runway. Regular use is defined in AC 150/5325-4B as at least 500 or more annual itinerant operations.

For Buckeye Municipal Airport, Runway 17-35 is used by all categories of aircraft using the airport, each with different runway length requirements. Small single and multi-engine piston-powered aircraft conduct over 500 annual operations on Runway 17-35. Therefore, they are the current critical design aircraft for determining existing runway length requirements. As shown in **Table 3F**, 4,800 feet of runway length is needed for the current mix of aircraft at the airport. At 5,500 feet, Runway 17-35 adequately provides for this mix of aircraft to operate

at the airport. Therefore, no additional length is needed on Runway 17-35 to serve these aircraft now or into the future.

TABLE 3F **Recommended Runway Lengths**	
Airport and Runway	
Airport Elevation	1,032 feet MSL
Mean Daily Maximum Temperature of the Hottest Month (July)	107 degrees F
Maximum Difference in Runway End Elevations	38 feet
Runway Lengths Recommended	
Existing Users Runway 17-35	4,800 feet
Business Aircraft 60% useful load 90% useful load	 5,500 feet 8,700 feet
Future Parallel Runway	4,300 feet
Source: FAA AC 150/5325-4B, *Runway Length Requirements for Airport Design* *MSL – Mean Sea Level* *F – Fahrenheit*	

The increased use of the airport by privately-owned business jets must be considered in this analysis. Business jets have proved themselves to be an asset to corporations by meeting the needs of companies for flexibility in scheduling, time savings, and privacy. In response to these types of needs, AC 150/5325-4B recommends that "general aviation airports that receive regular use by large airplanes over 12,500 pounds, in addition to business jets, should provide a runway length comparable to non-GA airports." Therefore, the business jet aircraft will be critical for determining the future critical runway length for the airport.

Runway length requirements for business jets are determined according to a "family grouping of airplanes" having similar performance characteristics and operating weights. For Buckeye Municipal Airport, the majority of business jet operations are expected to be conducted by aircraft weighing less than 60,000 pounds. Therefore, the runway length requirements for the family of general aviation business jets weighing less than 60,000 pounds are critical for critical for determining runway length for Buckeye Municipal Airport.

Having established the critical "family grouping of airplanes," the useful load must be determined. Useful load is the difference between the maximum structural takeoff weight and the operating empty weight. Useful load typically consists of the fuel, passengers, baggage, and cargo that can be carried. Higher useful loading increases the takeoff weight and runway length requirements.

AC 150/5325-4B provides for determining runway length requirements at 60 percent useful load and 90 percent useful. The FAA does not provide for determining runway lengths based

upon 100 percent useful load. This is due to many of the aircraft used in determining the curves are weight restricted during the climb after takeoff. In other words, due to the need to maintain a certain positive climb rate after departure, the aircraft can never be fully loaded.

The 60 percent useful load is used when flights from the aircraft are to regional locations and full fuel loading is not required. The 90 percent useful load represents higher passenger and fuel loading. As shown in **Table 3F**, 5,500 feet of runway length is recommended for Buckeye Municipal Airport considering 60 percent useful loading. A runway length of 8,700 feet is recommended for 90 percent useful loading.

Presently, Runway 17-35 is 5,500 feet long, meeting the recommended runway length for 60 percent useful loading. For most of the year, when daily temperatures do not reach in the lower 100's, the useful load of business jets is not greatly affected by operations at the airport. However, on the warm summer days, aircraft operators must reduce useful load to be able to depart on the 5,500 feet of runway at the airport. This means that business jet operators must reduce fuel or passenger loading to ensure that they can depart on the available runway length. This increases operator costs as they must stop enroute to their final destination to take on the additional fuel needed. To ensure that future business jet operators can operate without restriction at the airport, facility planning should consider a runway length that provides for 90 percent useful loading. As mentioned above, this equates to 8,700 feet of length on Runway 17-35. The alternatives analysis will examine the options available for extending Runway 17-35 to 8,700 feet.

Parallel Runway Length

The future parallel runway is planned for single and multi-engine aircraft less than 12,500 pounds. As shown in **Table 3F**, the recommended length for these types of airplanes is 4,300 feet.

RUNWAY WIDTH

Runway width is primarily determined by the planning ARC for the particular runway. FAA ARC B-II design standards require a 75-foot wide runway. Runway 17-35 is currently 75 feet wide meeting this requirement. In the future, Runway 17-35 will need to be 100 feet wide to meet ARC C-II design requirements. FAA design standards specify a minimum width of 60 feet for the future ARC B-I (small aircraft exclusively) parallel runways.

PAVEMENT STRENGTH

The most important feature of airfield pavement is its ability to withstand repeated use by aircraft of significant weight. The current strength rating on Runway 9-27 is 30,000 pounds single wheel loading (SWL). This current strength rating is adequate for the mix of aircraft currently using, the airport. A dual wheel loading (DWL)

strength of up 75,000 pounds is needed for the mix of business aircraft which may use the airport in the future. A pavement strength rating of 12,500 pounds is appropriate for the future parallel runway.

TAXIWAYS

Taxiways are constructed primarily to facilitate aircraft movements to and from the runway system. Some taxiways are necessary simply to provide access between the aprons and runways, whereas other taxiways become necessary as activity increases at an airport to provide safe and efficient use of the airfield.

Taxiway width is determined by the ADG of the runway. For Runway 17-35, ADG II specifies a minimum taxiway width of 35 feet. All existing taxiways at the airport meet or exceed this width requirement. Any taxiways serving the future parallel runway must be at least 25 feet wide.

Design standards for separation between the runways and parallel taxiways are based upon the wingspan of the critical aircraft using the runway and approach visibility minimums. Runway 17-35 is served by a full-length parallel taxiway located 400 feet east of the Runway 17-35 centerline. This meets FAA design standards for instrument approaches with visibility minimums less than ¾ of a mile and aircraft through ARC C-II. This runway to taxiway centerline distance is sufficient for the expected operations of the airport through the planning period. Any taxiway serving the future parallel runway should be located 125 feet from the runway centerline.

The type and frequency of runway entrance/exit taxiways can affect the efficiency and capacity of the runway system. As shown previously in the airfield capacity analysis, hourly capacity is reduced by six percent as the number and location of the exit taxiways on Runway 17-35 do not precisely fall within the prescribed ranges in the capacity model. The number and location of these exit taxiways on Runway 17-35 will be examined more closely in the alternatives analysis.

Holding aprons provide an area at the runway end for aircraft to prepare for departure and/or bypass other aircraft which are ready for departure. A holding apron is currently located at the Runway 35 end. Taxiway F currently serves as a by-pass taxiway for aircraft operations at the Runway 17 end. A by-pass taxiway is similar in function to a holding apron, as it allows aircraft ready for departure to bypass those that are still preparing for departure. The advantage of a holding apron over a by-pass taxiway is that it allows piston-powered aircraft to be oriented into the wind for the pre-departure run-up. Holding aprons should be planned for the all existing and future runway ends at the airport.

HELIPADS

The airport does not have a designated helipad on the main apron area. Helicopters utilize the same areas as fixed-wing aircraft. Helicopter and fixed-

wing aircraft should be segregated to the extent possible. Facility planning should include establishing a designated transient helipad at the airport, including providing up to two parking positions. Lighting should be provided to allow the safe operation to the helipad at night.

NAVIGATIONAL AIDS AND INSTRUMENT APPROACH PROCEDURES

Navigational Aids

Navigational aids are electronic devices that transmit radio frequencies which properly equipped aircraft and pilots translate into point-to-point guidance and position information. The very high frequency omnidirectional range (VOR), global positioning system (GPS), and LORAN-C are available for pilots to navigate to and from Buckeye Municipal Airport. These systems are sufficient for navigation to and from the airport; therefore, no other navigational aids are needed at the airport.

Instrument Approach Procedures

Instrument approach procedures consist of a series of predetermined maneuvers established by the FAA for navigation during inclement weather conditions. Currently there are no established instrument approach procedures for Buckeye Municipal Airport. Therefore, during those times when visibility drops below three miles and/or cloud ceilings are below 1,000 feet MSL, the airport is essentially closed to arrivals.

A GPS modernization effort is underway by the FAA and focuses on augmenting the GPS signal to satisfy requirements for accuracy, coverage, availability, and integrity. For civil aviation use, this includes the continued development of the Wide Area Augmentation System (WAAS), which was initially launched in 2003. The WAAS uses a system of reference stations to correct signals from the GPS satellites for improved navigation and approach capabilities. Where the non-WAAS GPS signal provides for en-route navigation and limited instrument approach (lateral navigation) capabilities, WAAS provides for approaches with both course and vertical navigation. This capability was historically only provided by an instrument landing system (ILS), which requires extensive on-airport facilities. The WAAS upgrades are expected to allow for the development of approaches to most airports with cloud ceilings as low as 200 feet above the ground and visibilities restricted to ½ mile, after 2015.

Nearly all new instrument approach procedures developed in the United States are being developed with GPS. GPS approaches are currently categorized as to whether they provide only lateral (course) guidance or a combination of lateral and vertical (descent) guidance. An approach procedure with vertical guidance (APV) GPS approach provides both course and descent guidance. A lateral navigation approach (LNAV) approach only provides course guidance. In the future

as WAAS is upgraded, precision approaches similar in capability to the existing ILS will become available. These approaches are currently categorized as the Global Navigation Satellite System (GNSS) Landing System (GLS). A GLS approach may be able to provide for approaches with ½ mile visibility and 200-foot cloud ceilings. A GLS would be implemented in lieu of an ILS approach.

Since both course guidance and descent information is desirable for an instrument approach to Buckeye Municipal Airport and GPS does not require the installation of costly navigation equipment at the airport, a GLS should be planned to the Runway 35 end. This allows for a precision approach to the airport without impacting any of the Luke Air Force Base airspace to the north. No other instrument approach procedures would be needed for the airport.

AIRFIELD MARKING, LIGHTING AND SIGNAGE

There are a number of lighting and pavement marking aids serving pilots using the Buckeye Municipal Airport. These lighting and marking aids assist pilots in locating the airport during night or poor weather conditions, as well as assist in the ground movement of aircraft. **Exhibit 3F** summarizes the existing lighting aids and presents future requirements.

Identification Lighting

The location of an airport at night is universally indicated by a rotating beacon. The rotating beacon at the airport is located on the top of a metal tower east of Runway 17-35 near the terminal building. The rotating beacon is sufficient and should be maintained through the planning period.

Runway and Taxiway Lighting

Runway 17-35 is equipped with medium intensity runway lighting (MIRL), which will be adequate through the planning period. Taxiways A, B, C, D, E, F, G, and H are equipped with medium intensity taxiway lighting (MITL). This lighting is sufficient and should be maintained through the planning period. MITLs should be planned for the taxiway extending along the east edge of the apron and by the T-hangars. MIRLs should be planned for the future parallel runway. MITLs should be planned for any taxiway serving the future parallel runway.

Airfield Signs

Airfield signage assists pilots in identifying their location on the airport. Signs located at intersections of taxiways provide crucial information to avoid conflicts between moving aircraft and potential runway incursions. Directional signage also instructs pilots as to the location of taxiways and apron areas. This directional signage is sufficient and should be maintained through the planning.

Consideration should be given to redesignating all taxiways in conformance with FAA AC 150/5340-18D,

Standards for Airport Sign Systems. This AC specifies that taxiway designations should start from one side of the airport and move to the other. Stub taxiways, such as the connecting taxiways between the runway and parallel taxiway should be designated alphanumerically. Under the recommendations of this AC, the taxiway identifications for the existing taxiways at Buckeye Municipal Airport would be as follows:

Taxiway H – Taxiway A
Taxiway A – Taxiway A1
Taxiway B – Taxiway A2
Taxiway C – Taxiway A3
Taxiway D – Taxiway A4
Taxiway E – Taxiway A5
Taxiway F – Taxiway A6
Taxiway G – Taxiway A7

Visual Approach Lighting

In most instances, the landing phase of any flight must be conducted in visual conditions. To provide pilots with visual guidance information during landings to the runway, electronic visual approach aids are commonly provided at airports. A two-light precision approach path indicator (PAPI-2) is installed on the approach end of Runway 17, while a four-light visual approach slope indicator (PAPI-4) is installed on the approach end of Runway 35. The PAPI-4 on Runway 35 is appropriate for the mix of aircraft operating at the airport and should be maintained through the planning period. The PAPI-2 on Runway 17 should be upgraded to a PAPI-4. The four-light PAPI provides greater visual clues to pilot of whether they are above or below the designed descent path to the runway end. The PAPI-4 is also designed for larger business aircraft. A PAPI-2 should be planned for each of the future parallel runway.

Approach and Runway End Identification Lighting

Runway end identifier lights (REILs) are flashing lights located at each runway end that facilitate identification of the runway end at night and during poor visibility conditions. REILs provide pilots with the ability to identify the runway ends and distinguish the runway end lighting from other lighting on the airport and in the approach areas. REILs should be planned for Runway 17. To support a GLS approach to Runway 35, a medium intensity approach lighting system with runway alignment indicator lights (MALSR) will be required. REILs should be planned for each of the future parallel runway. Shielding of the lights might be necessary to limit impacts on adjacent property.

Distance Remaining Signs

Distance remaining signage should be planned for Runway 17-35. These lighted signs are placed in 1,000-foot increments along the runway to notify pilots of the length of runway remaining.

Pilot-Controlled Lighting

Buckeye Municipal Airport is equipped with pilot-controlled lighting

EXISTING	SHORT TERM NEED	LONG TERM NEED
INSTRUMENT APPROACH PROCEDURES		
Runway 17-35		
None	APV - Runway 35	Upgrade to GLS
AIRFIELD LIGHTING		
Rotating Beacon Lighted Airfield Directional Signs Taxiway Edge Lighting Pilot-Controlled Lighting (Runway Lights Only)	Same Redesignate Taxiway Identifiers Light Apron Edge Taxiway Add Taxiway and Approach Lights to PCL System	Same Same Same Same
Runway 17-35		
Medium Intensity Runway Edge Lighting (MIRL) PAPI-4 - Runway 35 PAPI-2 - Runway 17	Same Same Upgrade to PAPI-4 Add REIL - Runway 17 and 35	High Intensity Runway Edge Lighting (HIRL) Same Same Same MALSR - Runway 35 Distance Remaining Signs
Future Parallel Runway		
		Medium Intensity Runway Edge Lighting (MIRL) PAPI-4 Each End REIL - Each End

AIRFIELD MARKINGS		
Taxiway Centerline, Hold Positions	Same	Same
Runway 17-35		
Basic	Nonprecision	Precision - Runway 35
Future Parallel Runway		
		Basic
WEATHER FACILITIES		
Lighted Wind Socks/Segmented Circle	Same Automated Weather Observation System (AWOS)	Same Same

KEY

GLS - Global Navigation Satellite System (GNSS) Landing System
APV - Approach With Vertical Guidance
MALSR - Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights
REIL - Runway End Identification Lighting
PAPI - Precision Approach Path Indicator
MITL - Medium Intensity Taxiway Lighting

Exhibit 3F
AIRPORT SUPPORT REQUIREMENTS

(PCL). PCL allows pilots to control the intensity of the runway lighting using the radio transmitter in the aircraft. PCL also provides for more efficient use of airfield lighting energy. A PCL system turns the airfield lights off or to a lower intensity when not in use. Similar to changing the intensity of the lights, pilots can turn up the lights using the radio transmitter in the aircraft. This system should be maintained through the planning period. The visual approach aids should be added to the PCL system, along with the taxiway lighting.

Pavement Markings

In order to facilitate the safe movement of aircraft about the field, airports use pavement markings, lighting, and signage to direct pilots to their destinations. Runway markings are designed according to the type of instrument approach available on the runway. FAA Advisory Circular 150/5340-1H, *Marking of Paved Areas on Airports*, provides the guidance necessary to design airport markings.

Runway 17-35 is marked with basic/visual markings that identify the runway centerline and designation. Nonprecision markings are required for an APV instrument approach. Nonprecision runway markings identify the runway centerline, threshold, aiming point, and designation. Precision markings are required for a GLS approach. Precision markings identify the runway designation, centerline, threshold, aiming point, touchdown zone, and provide side strips. Basic markings are sufficient for the future parallel runway.

Holdlines need to be marked on all taxiways connecting to the runway. At Buckeye Municipal Airport, the holdlines are currently required to be placed 125 feet from the runway centerline. In the future, the holdlines will be required 250 feet from the runway centerline. These markings assist in reducing runway incursions as aircraft must remain behind the holdline until taking the active runway for departure.

Taxiway and apron areas also require marking to assure that aircraft remain on the pavement and clear of any objects located along the taxiway/taxilane. Yellow centerline stripes are currently painted on all taxiway and apron surfaces at the airport to provide assistance to pilots in taxing along these surfaces at the airport. Besides routine maintenance, these markings will be sufficient through the planning period.

WEATHER REPORTING

The airport has a lighted wind cone that provides pilots with information about wind conditions. A segmented circle provides traffic pattern information to pilots. These facilities are required when the airport is not served by a 24-hour ATCT. These facilities are sufficient and should be maintained in the future.

The airport is not equipped with any type of automated weather service.

An AWOS provides automated weather observations 24 hours per day. The system updates weather observations every minute, continuously reporting significant weather changes as they occur. The AWOS reports cloud ceiling, visibility, temperature, dew point, wind direction, wind speed, altimeter setting (barometric pressure), and density altitude (airfield elevation corrected for temperature). An AWOS should be planned at Buckeye Municipal to provide pilots with accurate weather specific to Buckeye Municipal Airport. An AWOS would also aid in compiling wind data specific to Buckeye Municipal Airport, which is needed for the required FAA runway orientation analysis.

REMOTE COMMUNICATIONS FACILITIES

Buckeye Municipal Airport is not currently equipped with a remote communications outlet (RCO). It is recommended that an RCO is added to the airport. An RCO would provide pilots with a direct communication link to the Phoenix Approach Control. This communication link facilitates the opening and closing of flight plans.

AIR TRAFFIC CONTROL

Buckeye Municipal Airport does not have an operational airport traffic control tower (ATCT); therefore, no formal terminal air traffic control services are available at the airport. Establishment of an ATCT is governed by Title 14 of the Code of Federal Regulation (CFR) Part 170, *Establishment And Discontinuance Criteria For Air Traffic Control Services And Navigational Facilities.*

14 CFR Part 170.13 *Airport Traffic Control Tower (ATCT) Establishment Criteria,* provides the general criteria along with general facility establishment standards that must be met before an airport can qualify for an ATCT. These are as follows:

1. The airport, whether publicly or privately owned, must be open to and available for use by the public as defined in the Airport and Airway Improvement Act of 1982;
2. The airport must be recognized by and contained within the National Plan of Integrated Airport Systems;
3. The airport owners/authorities must have entered into appropriate assurances and covenants to guarantee that the airport will continue in operation for a long enough period to permit the amortization of the ATCT investment;
4. The FAA must be furnished appropriate land without cost for construction of the ATCT; and;
5. The airport must meet the benefit-cost ratio criteria utilizing three consecutive FAA annual counts and projections of future traffic during the expected life of the tower facility. (An FAA annual count is a fiscal year or a calendar year activity summary. Where actual traffic counts are unavailable or

not recorded, adequately documented FAA estimates of the scheduled and nonscheduled activity may be used.)

An airport meets the establishment criteria when it satisfies the criterion above and its benefit-cost ratio equals or exceeds one. The benefit-cost ratio is the ratio of the present value of the ATCT life cycle benefits (BPV) to the present value of ATCT life cycle costs (CPV).

The benefits of establishing an ATCT result from the prevention of aircraft collisions, the prevention of other type of preventable accidents, reduced flying time, emergency response notification; and general security oversight. Benefits from preventable collisions are further broken down into mid-air collisions, airborne-ground collisions, and ground collisions. Data collected for analyzing the establishment of an ATCT include scheduled and non-scheduled commercial service, and non-commercial traffic which includes military operations.

Since the cost data fluctuates each year based on new control tower operational cost estimates, development cost estimates, and aircraft operational costs, the benefit/costs analysis ratios change frequently and cannot be readily determined for the airport in the future The FAA has sole authority over the benefit/cost analysis. Therefore, any analysis must be completed by FAA staff and cannot be developed independently for this Master Plan.

The airport is projected to exceed annual operational levels that support FAA ATCT at other airports across the country. Therefore, for planning purposes, it is assumed that the airport will at sometime during the planning period of this Master Plan qualify for an ATCT. The alternatives analysis will examine alternative locations for the construction of an ATCT at Buckeye Municipal Airport.

LANDSIDE REQUIREMENTS

Landside facilities are those necessary for handling aircraft and passengers while on the ground. These facilities provide the essential interface between the air and ground transportation modes. The capacities of the various components of each area were examined in relation to projected demand to identify future landside facility needs.

HANGARS

The demand for aircraft storage hangars typically depends upon the number and type of aircraft expected to be based at the airport. For planning purposes, it is necessary to estimate hangar requirements based upon forecast operational activity. However, hangar development should be based on actual demand trends and financial investment conditions.

Utilization of hangar space varies as a function of local climate, security, and owner preferences. The trend in general aviation aircraft, whether single or multi-engine, is in more sophisticated (and, consequently, more expen-

sive) aircraft. Vintage aircraft owners and many recreational aircraft owners prefer hangar space to protect their aircraft, which many times are constructed with fabric wing and fuselage covers. Therefore, many aircraft owners prefer hangar space to outside tie-downs. Presently, the majority of aircraft based at the airport are stored in enclosed hangar space.

There is a waiting list of over 50 aircraft owners for hangar space at Buckeye Municipal Airport; therefore, it is evident that there is a demand for more hangar space. T-hangar requirements were determined by providing 1,200 square feet of space for aircraft within each T-hangar space. Conventional hangar space was determined by providing 1,200 square feet for single engine aircraft and 2,500 square feet for multi-engine aircraft.

As indicated on **Exhibit 3G**, additional hangar space is expected to be required through the planning period. The alternatives analysis will examine options available for hangar development at the airport and determine the best location for each type of hangar facility. Additionally, consideration will be given to designating areas for commercial general aviation facilities providing services such as aircraft maintenance and repair.

AIRCRAFT PARKING APRON

A parking apron should be provided for at least the number of locally-based aircraft that are not stored in hangars, as well as transient aircraft. There are 36 tie-downs available for both based and transient aircraft at the airport. Although the majority of future based aircraft were assumed to be stored in an enclosed hangar, a number of based aircraft will still tie down outside. Along with based aircraft parking needs, transient aircraft parking needs must also be considered in determining apron requirements. The airport aircraft tie-down apron encompasses approximately 16,700 square yards.

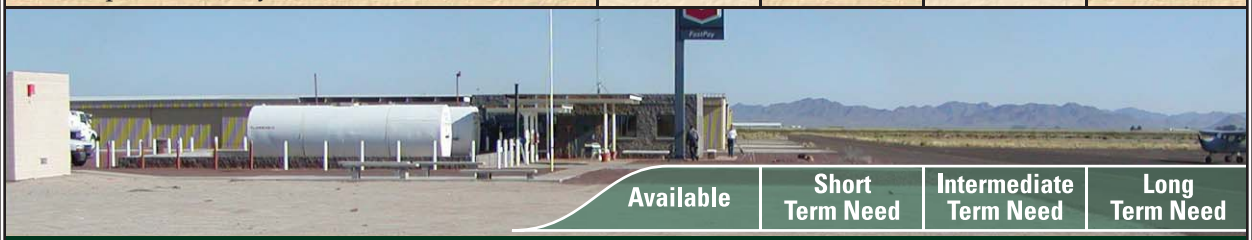
Total apron area requirements were determined by applying a planning criterion of 800 square yards per transient aircraft parking position and 500 square yards for each locally-based aircraft parking position. The results of this analysis are presented on Exhibit 3F. Based upon the planning criteria above and assumed transient and based aircraft users, additional apron areas will be needed through the planning period. Additional apron area in excess of these needs may be needed as new hangar areas are developed on the airport, which are not contiguous with the existing apron areas.

GENERAL AVIATION TERMINAL FACILITIES

General aviation terminal facilities have several functions at general aviation airport. Space is required for passengers waiting, pilots' lounge and flight planning, concessions, management, storage, and various other needs. This space is not necessarily limited to a single, separate terminal building, but also includes the space

	Available	Short Term Need	Intermediate Term Need	Long Term Need
Aircraft Storage Hangar Requirements				
Aircraft to be Hangared	50	101	155	223
T-Hangars	40	72	112	153
Conventional Hangar Positions	10	29	43	70
T-Hangar Area (s.f.)[1]	38,624	86,400	134,400	183,600
Conventional Hangar Storage Area	40,978	72,500	107,500	175,000
Maintenance Area	--	23,800	36,300	53,800
Subtotal Conventional Hangar Area	40,978	96,300	143,800	228,800
Total Hangar Area	***79,602***	***182,700***	***278,200***	***412,400***

	Available	Short Term Need	Intermediate Term Need	Long Term Need
Aircraft Parking Apron Requirements				
Single, Multi-Engine Transient Aircraft Positions		26	41	64
Apron Area (s.y.)		20,500	32,500	51,100
Locally-Based Aircraft Positions		9	20	52
Apron Area (s.y.)		4,500	10,000	26,000
Total Positions	36	35	61	116
Total Apron Area (s.y.)	16,700	25,000	42,500	77,100



	Available	Short Term Need	Intermediate Term Need	Long Term Need
Transient Passenger Terminal Facilities				
General Aviation Terminal Building Area (s.f.)	1,200	4,300	6,900	10,900
Other Facilities				
	None	Aircraft Wash Rack	Same	Same
				Covered Aircraft Owners' Maintenance Facility

[1]Excludes T-Shade Hangars

Exhibit 3G
LANDSIDE FACILITY REQUIREMENTS

offered by fixed base operators for these functions and services.

In the future, terminal space within the general aviation facilities will be needed to serve the on-demand and air taxi operators using microjet aircraft. A significant number of the existing microjet orders are intended to be put in air taxi service across the country. Since these services will not be scheduled airline activity, they will be able to efficiently and affordably operate from general aviation terminal facilities.

The methodology used in estimating general aviation terminal facility needs was based on the number of airport users expected to utilize general aviation facilities during the design hour. General aviation space requirements were then based upon providing 90 square feet per design hour itinerant passenger. Exhibit 3F outlines the general aviation space requirements for general aviation terminal services at Buckeye Municipal Airport. Presently, a 1,200 square-foot building located on the aircraft apron serves the purposes listed above. Future needs could be met with the development of a new facility, expansion of the existing facility, or the private development of similar space in an FBO hangar. The alternatives analysis will examine this in more detail in Chapter Four, Airport Development Alternatives.

SUPPORT REQUIREMENTS

Various facilities that do not logically fall within classifications of airfield, terminal building, or general aviation facilities have been identified for inclusion in this Master Plan. Facility requirements have been identified for these remaining facilities:

- Automobile Parking
- Security
- Perimeter Fencing
- Airport Maintenance
- Aircraft Wash Facility
- Aviation Fuel Storage
- Utilities
- Off-Airport Vehicular Access
- On-Airport Vehicular Access

Automobile Parking

General aviation vehicular parking demands have been determined for Buckeye Municipal Airport. There are no designated parking spaces at the airport. Parking near the terminal building includes both paved and unpaved areas. Parking is accomplished adjacent to the hangars for based aircraft owners and tenants.

Space determinations were based on industry standards. Terminal automobile parking spaces required to meet general aviation itinerant demands were calculated by taking the design hour itinerant passengers and using a multiplier of 1.3 for each planning period. This multiplier represents the anticipated increase in corporate operations and air taxi operations from microjet operators, which in turn increases the number passengers and parking demands. Parking requirements for the airport are summarized in **Table 3G**.

TABLE 3G
Vehicle Parking Requirements

	Future Requirements			
	Existing	Short Term	Intermediate Term	Long Term
Design Hour Itinerant Passengers	25	55	88	138
Terminal Vehicle Spaces	Note 1	72	114	179
Parking Area (s.f.)	Note 1	28,800	45,700	71,700

Note 1. There are no designated parking spaces at the airport. Parking near the terminal building includes both paved and unpaved areas.

Security

In cooperation with representatives of the general aviation community, the TSA published security guidelines for general aviation airports. These guidelines are contained in the publication entitled *Security Guidelines for General Aviation Airports*, published in May 2004. Within this publication, the TSA recognized that general aviation is not a specific threat to national security. However, the TSA does believe that general aviation may be vulnerable to misuse by terrorists as security is enhanced in the commercial portions of aviation and at other transportation links.

To assist in defining which security methods are most appropriate for a general aviation airport, the TSA defined a series of airport characteristics that potentially affect an airport's security posture. These include:

1. **Airport Location** – An airport's proximity to areas with over 100,000 residents or sensitive sites that can affect its security posture. Greater security emphasis should be given to airports within 30 miles of mass population centers (areas with over 100,000 residents) or sensitive areas such as military installations, nuclear and chemical plants, centers of government, national monuments, and/or international ports.

2. **Based Aircraft** – A smaller number of based aircraft increases the likelihood that illegal activities will be identified more quickly. Airports with based aircraft over 12,500 pounds warrant greater security.

3. **Runways** – Airports with longer paved runways are able to serve larger aircraft. Shorter runways are less attractive as they cannot accommodate the larger aircraft which have more potential for damage.

4. **Operations** – The number and type of operations should be considered in the security assessment.

Table 3H summarizes the recommended airport characteristics and ranking criterion. The TSA suggests that an airport rank its security posture according to this scale to deter-

mine the types of security enhancements that may be appropriate.

Table 3H also ranks Buckeye Municipal Airport according to this scale. As shown in the table, the Buckeye Municipal Airport ranking on this scale is 27. Points are assessed for the airport being in close proximity to a population base over 100,000, Luke Air Force Base to the north and the Palo Verde Nuclear powerplant to the west, having more than 26 based aircraft, having based aircraft over 12,500 pounds, having a runway greater than 5,001 feet in length, having a paved runway surface, having 14 CFR Part 135 charter operations to the airport, and for having flight training activities at the airport.

TABLE 3H
Airport Characteristics Measurement Tool

	Assessment Scale	
Security Characteristic	**Public Use Airport**	**Buckeye Municipal Airport**
Location		
Within 20 nm of mass population areas [1]	5	5
Within 30 nm of a sensitive site[2]	4	5
Falls within outer perimeter of Class B airspace	3	0
Falls within boundaries of restricted airspace	3	0
Based Aircraft		
Greater than 101 based aircraft	3	0
26-100 based aircraft	2	2
11-25 based aircraft	1	0
10 or fewer based aircraft	0	0
Based aircraft over 12,500 pounds	3	3
Runways		
Runway length greater than 5,001 feet	5	5
Runway length less than 5,000 feet, greater than 2,001 feet	4	0
Runway length 2,000 feet or less	2	0
Asphalt or concrete runway	1	1
Operations		
Over 50,000 annual operations	4	0
Part 135 operations	3	3
Part 137 operations	3	0
Part 125 operations	3	0
Flight training	3	3
Flight training in aircraft over 12,500 pounds	4	0
Rental aircraft	4	0
Maintenance, repair, and overhaul facilities conducting long-term storage of aircraft over 12,500 pounds	4	0
Totals		**27**

Source: *Security Guidelines for General Aviation Airports*

[1] An area with a total population over 100,000

[2] Sensitive sites include military installations, nuclear and chemical plants, centers of government, national monuments, and/or international ports

As shown in **Table 3J**, a rating of 27 points places Buckeye Municipal Airport on the third tier ranking of security measures by the TSA. This rating clearly illustrates that emerging security needs at Buckeye Municipal Airport as the airport grows from a rural airport to a more urban business class airport. The Buckeye Municipal Airport ranking could increase to 40 by the Short Term Planning Horizon with based aircraft levels over 100, annual operations over 50,000, the addition of rental aircraft, and based aircraft over 12,500 pounds.

TABLE 3J
Recommended Security Enhancements Based on Airport Characteristics Assessment Results

	Points Determined Through Airport Characteristics Assessment			
Security Enhancements	**> 45**	**25-44**	**15-24**	**0-14**
Fencing	■			
Hangars	■			
Closed-Circuit Television (CCTV)	■			
Intrusion Detection System	■			
Access Controls	■	■		
Lighting System	■	■		
Personal ID System	■	■		
Challenge Procedures	■	■		
Law Enforcement Support	■	■	■	
Security Committee	■	■	■	
Transient Pilot Sign-in/Sign-Out Procedures	■	■	■	
Signs	■	■	■	
Documented Security Procedures	■	■	■	■
Positive/Passenger/Cargo/Baggage ID	■	■	■	■
Aircraft Security	■	■	■	■
Community Watch Program	■	■	■	■
Contact List	■	■	■	■

Source: *Security Guidelines for General Aviation Airports*

Based upon the results of the security assessment, the TSA recommends 13 security enhancements for Buckeye Municipal Airport. These enhancements are shown in **Table 3J**.

FRACTIONAL JET OPERATOR SECURITY REQUIREMENTS

The major fractional jet operators have established minimum standards for FBOs serving their aircraft. These minimum standard documents specify the following general security requirements:

Identification: The FBO should issue unique identification badges for employees who have access to the aircraft operations areas. Unescorted passenger access to the ramp is prohibited.

Employees: The FBO must conduct FAA-compliant background checks on each employee. The FBO must have pre-employment drug screening.

Aircraft Security: Aircraft cannot be left unattended when the ground power unit or auxiliary power unit is operating. Aircraft must be locked when unattended. Aircraft must be parked in well-lit, highly-visible areas with a minimum of six-foot chain link fencing. Security cameras are preferred. Sightseers or visitors are not allowed access aboard or near aircraft.

Facility Security: Visual surveillance of all aircraft operational areas belonging to the FBO is required. FBOs shall establish controlled access to the aircraft operational areas. The FBO should maintain at least six feet between safety fence and parked ground equipment. Bushes and shrubs must be less than four feet in height.

Perimeter Fencing

Perimeter fencing is used at airports to primarily secure the aircraft operations area. The physical barrier of perimeter fencing provides the following functions:

- Gives notice of the legal boundary of the outermost limits of a facility or security sensitive area.
- Assists in controlling and screening authorized entries into a secured area by deterring entry elsewhere along the boundary.
- Supports surveillance, detection, assessment, and other security functions by providing a zone for installing intrusion-detection equipment and closed-circuit television (CCTV).
- Deters casual intruders from penetrating a secured area by presenting a barrier that requires an overt action to enter.
- Demonstrates the intent of an intruder by their overt action of gaining entry.
- Causes a delay to obtain access to a facility, thereby increasing the possibility of detection.
- Creates a psychological deterrent.
- Optimizes the use of security personnel while enhancing the capabilities for detection and apprehension of unauthorized individuals.
- Demonstrates a corporate concern for facility security.
- Provides a cost-effective method of protecting facilities.
- Limits inadvertent access to the aircraft operations area by wildlife.

Portions of the airport perimeter at Buckeye Municipal Airport are equipped with 6-foot chain-link fencing with three strand barbed wire on top. Five manual access gates are located in various locations around the perimeter on the south, west, and

north sides of the property. However, the airport operations area is not fenced off. The existing perimeter fencing terminates at Butler Street and does not continue to the west to the apron area. There is no physical barrier between Butler Street and the apron area. Therefore, vehicles can easily access the apron area and the runways and taxiways if they would wish.

Facility planning should include installing physical barriers such as fencing between the public access roads, automobile parking areas, and aircraft operational areas. The alternatives analysis will examine various options for meeting this goal while also ensuring access to the airfield from existing hangar facilities.

Airport Maintenance Building

Presently, there is not a dedicated airport maintenance facility. When maintenance needs to be performed on any of the facilities, equipment is brought in from existing Town facilities off the airport. A facility for general maintenance activities would assist in the cost-effective and time-efficient maintenance of the airport. Consideration should be given to developing a permanent maintenance facility on the airport. The alternatives analysis will examine optimal locations for the construction of a maintenance building.

Aircraft Wash Facility

Presently, there is not a designated aircraft wash facility on the airport. Consideration should be given to establishing an aircraft wash facility at the airport to collect aircraft cleaning fluids used during the cleaning process.

Aviation Fuel Storage

The existing aviation fuel storage at Buckeye Municipal Airport totals 44,000 gallons, all in above-ground storage tanks. All fuel storage tanks are owned by the Town of Buckeye. The Town operates a self-service fuel island. An independent fuel provider provides both 100LL and Jet-A fuel delivery and sales.

Fuel storage requirements can vary based upon individual supplier and distributor policies. For this reason, fuel storage requirements will be dependent upon the individual distributors. More frequent deliveries can reduce the fuel storage capacity requirement. Fuel tanks should be of adequate capacity to accept the full 8,000 gallons of fuel from a tanker refueler while still maintaining a reasonable level of fuel in the storage tank to meet demand. Each fuel storage tank at the airport is at least 10,000 gallons. This allows the tank to hold 2,000 gallons of fuel and still accept a full tanker of fuel. The existing tanks have sufficient capacity to meet delivery requirements.

At the present time, the fuel storage facilities are dispersed in two separate locations on the airport. The 100LL fuel storage is located along the apron area occupying apron frontage that could be used for hangar development. Consideration will be given in the alternatives to ultimately consolidating fuel storage in one location on the airport.

As detailed in Chapter One, federal requirement for spill prevention at the airport require parked mobile fuel vehicles have sized secondary containment such as dikes or catch basins to contain spills. The alternatives analysis will examine options for developing a permanent mobile fuel vehicle parking area with a permanent structure that serves as a catch basin for an inadvertent release of fuel from a parked mobile fuel vehicle.

Utilities

Electrical and water services are available at the airport. APS provides electrical service. Water is provided by the Town of Buckeye using on-airport wells. Septic systems are in place for sanitary sewer requirements.

The Town of Buckeye is presently examining future utility requirements utilizing a grant from ADOT-Aeronautics. This will include an examination of fire protection needs at the airport and installing an appropriate fire loop and fire hydrants. Utility extensions to new hangar areas will be needed through the planning period as well as the availability of sanitary sewer connections to Town waste water treatment plants.

Off-Airport Access

Primary access to the airport is provided from Palo Verde Road off of Interstate Highway 10. Besides routine maintenance and pavement improvements, the existing roadway access to the airport should be capable of supporting aviation-related growth at the airport.

On-Airport Access

Many private vehicles regularly use the apron and taxilanes for movement as the only interior access road is Butler Street. The segregation of vehicle and aircraft operational areas is supported by FAA guidance established in June 2002. FAA AC 50/5210-20, *Ground Vehicle Operations on Airports*, states: "The control of vehicular activity on the airside of an airport is of the highest importance." The AC further states: "An airport operator should limit vehicle operations on the movement areas of the airport to only those vehicles necessary to support the operational activity of the airport."

Service roads are typically used to segregate vehicles from the aircraft operational areas. The alternatives analysis will examine options for interior access roads to serve hangar facilities as well as a service road extending around the runway and airport perimeter for airport maintenance vehicles.

SUMMARY

The intent of this chapter has been to outline the facilities required to meet potential aviation demands projected for the airport through the planning horizon. The next step is to develop a direction for implementation that will best meet these projected needs. The remainder of the Master Plan will be devoted to outlining this direction, its schedule, and costs.

Chapter Four

AIRPORT DEVELOPMENT ALTERNATIVES

AIRPORT DEVELOPMENT ALTERNATIVES

Prior to defining the recommended development program for Buckeye Municipal Airport, it is important to consider development potential and constraints at the airport. The purpose of this chapter is to consider the actual physical facilities which are needed to accommodate projected demand and meet the program requirements as defined in Chapter Three, Aviation Facility Requirements.

In this chapter, a number of airport development alternatives are considered for the airport. For each alternative, different physical facility layouts are presented for the purposes of evaluation. The ultimate goal is to develop the underlying rationale which supports the final recommended master plan development concept. Through this process, an evaluation of the highest and best uses of airport property is made while considering local development goals, physical and environmental constraints, and appropriate federal airport design standards.

Any development proposed by a master plan evolves from an analysis of projected needs. Though the needs were determined by the best methodology available, it cannot be assumed that future events will not change these needs. Therefore, to ensure flexibility in planning and development to respond to unforeseen needs, the landside alternatives consider the maximum development potential of airport property.

The alternatives presented in this chapter have been developed to meet

the overall program objectives for the airport in a balanced manner. Through coordination with the Planning Advisory Committee (PAC), the public, and the Town of Buckeye, the alternatives (or combination thereof) will be refined and modified as necessary to develop the recommended development concept. Therefore, the alternatives presented in this chapter can be considered a beginning point in the development of the recommended concept for the future development of Buckeye Municipal Airport

NO-BUILD ALTERNATIVE

In analyzing and comparing the advantages and disadvantages of various development alternatives, it is important to consider the consequences of no future development at Buckeye Municipal Airport. The "no-build" or "do-nothing" alternative essentially considers keeping the airport in its present condition and not providing for any type of expansion or improvement to the existing facilities (other than general airfield and Town-owned hangar and terminal building maintenance projects). The primary result of this alternative, as with any growing air transportation market, would be the eventual inability of the airport to satisfy the increasing demands of the airport service area. The growth of activity at Buckeye Municipal Airport is partially a result of the growing economy and population of the Town of Buckeye and communities to the west and growth within the general aviation industry as a whole.

The general aviation industry has experienced extended periods of decline and growth over the last 20 years. However, general aviation is now seen as a growth industry once more. While overall, general aviation growth will be steady but slow nationally, the demand for higher performance aircraft is experiencing the strongest rate of growth. With heightened interest in commercial aviation security, corporate general aviation could expect demand for private aircraft to grow even more. This is expected to be spurred by the introduction of the new microjets and expectations for true air taxi service at general aviation airports. Although some restrictions (i.e., Transportation Security Administration [TSA] rulemaking) may work to counter-balance some of this growth, Buckeye Municipal Airport's role as a strategically located airport requires that it be in a position to respond to anticipated demands for improved facilities.

The analysis of facility needs indicated long-term needs for airfield, aircraft storage, terminal, and access needs resulting from existing demand and projected demand. Continual air traffic growth and changes to the mix of aircraft operating at the airport are placing increased demands on the airfield and changes in aircraft storage hangar, apron, and taxiway needs. Some of the newer-generation business jets require larger hangars for storage and larger apron areas to maneuver. The increased use of Buckeye Municipal Airport by larger business jets and the potential for pilot training activities are projected to cause the

airport to begin to reach its annual service volume, which could result in increasing levels of delay to aircraft operators.

Faced with continual growth in air traffic activity, the runway system may not be able to efficiently accommodate air traffic, and delays would increase. Following the no-build alternative would not allow for airfield capacity improvements or improvements which are needed to meet new Federal Aviation Administration (FAA) design standards for instrument approaches and safety areas.

Following the no-build alternative would also not support the private businesses that have made investments at Buckeye Municipal Airport. As these businesses grow, the airport will need to be able to accommodate the infrastructure needs of new hangars, an expanded apron, and automobile parking needs. Each of the businesses on the field provides jobs for local residents, interject economic revenues into the community, and pay taxes for local government operations.

By owning and operating Buckeye Municipal Airport, the Town is charged with the responsibility of developing aviation facilities necessary to accommodate aviation demand and to minimize operational constraints. Flexibility must be programmed into airport development to assure adequate capacity should market conditions change unexpectedly. While these objectives may not be all-inclusive, they should provide a point of reference in the alternatives evaluation process.

In essence, the no-build alternative is inconsistent with the long-term goals of the Arizona Department of Transportation – Aeronautics Division and the FAA, which are to enhance local and interstate commerce. This alternative, if pursued, would affect the long-term viability of the airport and its services to the Town of Buckeye and the Phoenix Metropolitan Area.

ANALYSIS OF AIRSIDE DEVELOPMENT ALTERNATIVES

The purpose of this section is to identify and evaluate various viable airside development alternatives at Buckeye Municipal Airport to meet program requirements set forth in Chapter Three. Airfield facilities are, by nature, the focal point of an airport complex. Because of their primary role and the fact that they physically dominate airport land use, airfield facility needs are often the most critical factor in the determination of viable airport development alternatives. In particular, the runway system requires the greatest commitment of land area and defines minimum building set-back distances from the runways and object clearance standards. These criteria, depending upon the areas around the airport, must be defined first in order to ensure that the fundamental needs of the airport are met. Therefore, airside requirements will be considered prior to detailing land use development alternatives.

AIRSIDE ISSUES

The issues to be considered in this analysis are summarized on **Exhibit 4A**. These issues are the result of the findings of the Aviation Demand Forecasts and Aviation Facility Requirements evaluations, and they include input from the PAC and Town staff.

Airfield Capacity

The need to increase airfield capacity was a primary finding of the aviation facility requirements analysis. FAA Order 5090.3C, *Field Formulation of the National Plan of Integrated Airport Systems (NPIAS),* indicates that improvements for airfield capacity should be considered once annual operations reach 60 percent of the annual service volume (ASV). For Buckeye Municipal Airport, the ASV of the existing single runway is estimated at 249,000 annual operations. The ASV is expected to decline to 236,000 over the planning period as larger corporate aircraft activity increases at the airport. Buckeye Municipal Airport would reach 60 percent of annual service volume with more than 141,000 annual operations. This is projected to occur during the intermediate term planning horizon.

The capacity analysis confirmed previous planning efforts from the 1998 Buckeye Municipal Airport Master Plan update and concluded that a runway for use by small general aviation aircraft exclusively is the best method available for improving capacity and reducing delays. The proposed parallel runway (Runway 17R-35L) is considered in each of the three airfield alternatives to follow. The proposed parallel runway would be located west of existing Runway 17-35. This area of the airport is presently undeveloped. Locating the parallel runway east of existing Runway 17-35 would unnecessarily impact existing landside development. The parallel runway is planned at 4,300 feet long, 60 feet wide, and would have visual approaches to each end. FAA design standards specify that the parallel runway centerline be located 700 feet from the existing Runway 17-35 centerline.

Airport Reference Code (ARC) Designation

The design of airfield facilities is based, in part, on the physical and operational characteristics of aircraft using the airport. The FAA utilizes the Airport Reference Code (ARC) system to relate airport design requirements to the physical (wingspan) and operational (approach speed) characteristics of the largest and fastest aircraft conducting 500 or more operations annually at the airport. While this can at times be represented by one specific make and model of aircraft, most often the airport's ARC is represented by several different aircraft which collectively conduct more than 500 annual operations at the airport.

The FAA uses the 500 annual operations threshold when evaluating the need to develop and/or upgrade airport facilities to ensure that an airport is cost-effectively constructed to meet the needs of those aircraft that are using,

AIRSIDE CONSIDERATIONS

- A parallel runway to meet long term capacity needs.
- The upgrade of Runway 17-35 to Airport Reference Code (ARC) C-II design standards.
- The extension of Runway 17-35 to 8,700 feet.
- A precision instrument approach procedure to Runway 35.
- The installation of an automated weather observation system (AWOS).
- A holding apron/bypass taxiway at each runway end to reduce departure delays.

LANDSIDE CONSIDERATIONS

- 113 new T-hangars to meet projected demand.
- An additional 187,800 square feet of conventional hangar space to meet projected demand.
- An additional 80 tiedown locations and 32,000 square yards of apron for aircraft tiedown and parking.
- A helipad and helicopter landing areas to segregate helicopters from fixed-wing aircraft.
- A drop zone for parachute landing activities.
- A fencing plan to secure the airfield operations area.
- Identify potential revenue support parcels
- Consolidated fuel storage
- An aircraft wash rack
- An airport maintenance building
- A location for a future airport traffic control tower (ATCT)

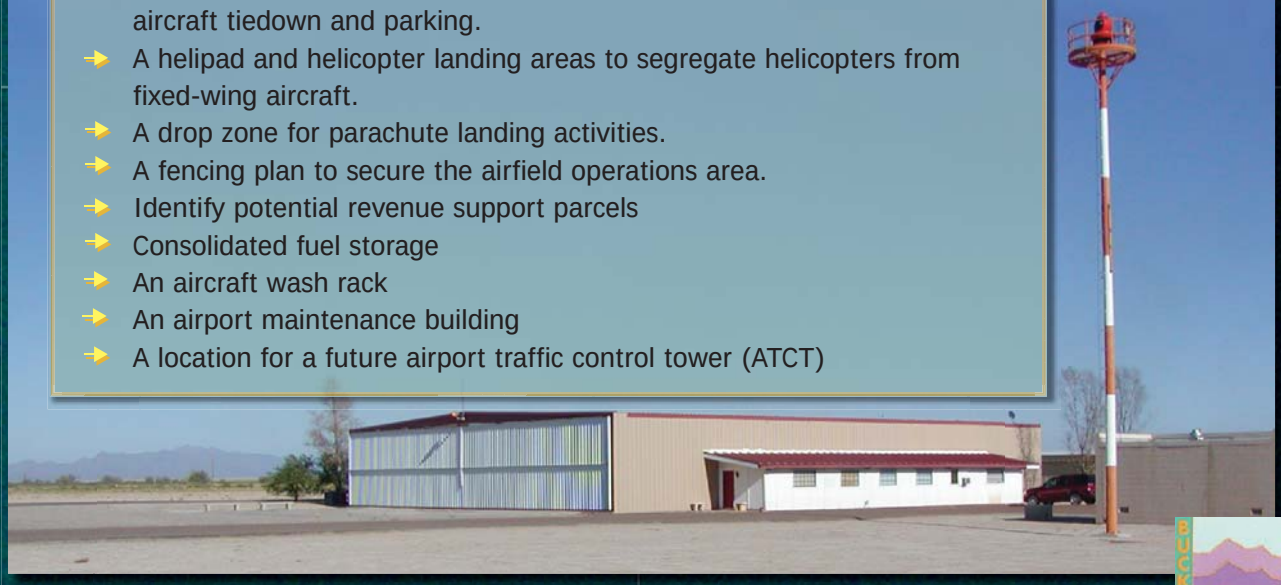


Exhibit 4A
DEVELOPMENT CONSIDERATIONS

or have the potential to use, the airport on a regular basis. Typically, aircraft operate at airports that are outside the ARC designated for the airport. This is due to these aircraft not meeting the 500 annual operations threshold.

At Buckeye Municipal Airport, based aircraft fall within ARC A-I and B-I. However, the mix of transient aircraft is more diverse and includes aircraft in ARCs B-I, B-II, C-I, and C-II. Aircraft in ARCs C-I and C-II are the most demanding aircraft to operate at the airport (due to their higher approach speeds); however, these aircraft conduct less than 500 annual operations at the airport. Therefore, at this time, the most demanding approach category for the airport is Approach Category B. The wingspans of the most demanding aircraft fall within Airplane Design Group (ADG) II.

The current critical aircraft at Buckeye Municipal Airport fall within ARC B-II design standards. The potential exists in the future for increased use of the airport by business turboprop and turbojet aircraft. This follows with the national trend of increased business and corporate use of turboprop and turbojet aircraft, strong sales and deliveries of turboprop and turbojet aircraft, and expanded fractional ownership programs for these aircraft.

Common business and turboprop aircraft have higher approach speeds than the current critical aircraft operating at the airport; however, most of these aircraft have similar wingspans to the existing critical aircraft operating at the airport. The higher approach speeds of these aircraft are expected to have the potential of changing the critical aircraft designation for the airport. Ultimately, the airport is expected to accommodate aircraft within ARC C-II.

Table 4A compares the existing (ARC B-II) and future (ARC C-II) design requirements for Runway 17-35. ARC B-I (small aircraft exclusively) design standards for the parallel runway are also summarized in **Table 4A**.

Runway 17-35 Length

A 3,200-foot extension of Runway 17-35 is considered in the alternatives analysis. This extension would result in Runway 17-35 increasing in length from 5,500 feet to 8,700 feet. This runway length is consistent with the FAA runway length requirements contained in FAA AC 150/5325-4A, *Runway Length Requirements for Airport Design*.

While the present length of Runway 17-35 can allow for unrestricted operations for many business jet aircraft when temperatures are mild, operations become restricted when daily temperatures climb into the 90s or 100s. At the higher temperatures, aircraft operators must reduce useful load to be able to depart on the 5,500 feet of runway at the airport. This means that business jet operators must reduce fuel or passenger loading to ensure that they can depart on the available runway length. This increases operator costs as they must stop enroute to their final destination to take on the additional fuel needed.

Generally, the existing runway length is assumed to accommodate business jets at 60 percent useful loading. To ensure that future business jet operators can operate without restriction at the airport, facility planning should consider a runway length that provides for 90 percent useful loading. As mentioned above, this equates to 8,700 feet of length on Runway 17-35.

TABLE 4A
Airfield Safety and Facility Dimensions (in feet)

	Ultimate Runway 17-35 [1]		Existing Runway 17-35	Proposed Parallel Runway
Airport Reference Code (ARC)	C-II		B-II	B-I (small aircraft)
Approach Visibility Minimums	½ Mile – Runway 35 One Mile – Runway 17		One Mile Each End	Visual Each End
Runway				
Length	8,700		5,500	4,300
Width	150		100	60
Runway Safety Area (RSA)				
Width	400		150	120
Length Beyond Runway End	1,000		300	240
Object Free Area (OFA)				
Width	800		500	250
Length Beyond Runway End	1,000		300	240
Obstacle Free Zone (OFZ)				
Width	400		400	250
Length Beyond Runway End	200		200	200
Precision Obstacle Free Zone (POFZ)				
Runway 35 End				
Width	800		N/A	N/A
Length Beyond Runway End	200		N/A	N/A
Runway Centerline To:				
Hold Line	200		200	125
Parallel Taxiway Centerline	400		240	240[2]
Edge of Aircraft Parking Apron	500		305.5	284.5
	17	35		
Runway Protection Zone (RPZ)				
Inner Width	500	1,000	500	250
Outer Width	1,010	1,700	700	450
Length	1,700	2,500	1,000	1,000
Obstacle Clearance	34:1	50:1	20:1	20:1
Taxiways				
Width	35			35[2]
Safety Area Width	79			49[2]
Object Free Area Width	131			89[2]
Taxiway Centerline To:				
Parallel Taxiway/Taxilane	105			69[2]
Fixed or Moveable Object	65.5			44.5[2]
Taxilanes				
Taxilane Centerline To:				
Parallel Taxilane Centerline	97			64[2]
Fixed or Moveable Object	57.5			39.5[2]
Taxilane Object Free Area	115			79[2]

Source: FAA Advisory Circular (AC) 150/5300-13, *Airport Design*, Change 9; 14 CFR Part 77, *Objects Affecting Navigable Airspace*

[1] *Will be renamed Runway 17L-35R once the short parallel Runway 17R-35L is constructed.*

[2] Exceeds the standards for ARC B-I small aircraft exclusively to allow for an upgrade to ARC B-II in the future if required.

The FAA does not provide for determining runway lengths based upon 100 percent useful load. This is due to the fact that many of the aircraft used in determining runway length curves are weight restricted during the climb after takeoff. In other words, due to the need to maintain a certain positive climb rate after departure, the aircraft can never be fully loaded.

Precision Instrument Approach

The facility requirements analysis indicated the need for a precision instrument approach to Runway 35 with Category I (CAT I) capability (one-half mile visibility minimums and 200-foot cloud ceiling minimums). A precision instrument approach provides both vertical and course guidance to pilots. This capability is currently provided with the land-based instrument landing system (ILS) and global positioning system (GPS) satellite-based navigation through the wide area augmentation system (WAAS). A CAT I precision approach, whether provided by an ILS or WAAS capable approach, changes the design requirements for the airport. For example, the total area required for the runway protection zone (RPZ) increases from 29 acres to 78 acres. The distance that buildings must be placed from the centerline increases by 250 feet laterally each side of the runway.

To achieve CAT I standards, any future precision approach to Runway 35 will require the installation of a medium intensity approach lighting system with runway alignment indicator lights (MALSR). The MALSR is an approach lighting system that begins 200 feet from the landing threshold and extends 2,400 feet into the approach area.

Automated Weather Observation System Siting

Presently, the airport is without any form of automated or actual weather observation which provides important weather details to pilots such as visibility, cloud ceilings, and altimeter settings. Wind speed and direction can be estimated by pilots using the lighted wind cone.

The unavailability of current weather observation and reporting primarily affects itinerant aircraft operations to the airport as pilots cannot readily determine weather conditions at the airport from a distant location. The nearest weather reporting station is located at Goodyear Airport, approximately 15 nautical miles to the east. Aircraft operating under Title 14 Code of Federal Regulations (CFR) Part 135, *Operating Requirements: Commuter and On Demand Operations and Rules Governing Persons On Board Such Aircraft*, conducting aircraft charter activities, are especially affected as these aircraft cannot operate at the airport unless current weather reporting is available. Section 135.213, *Weather Reports and Forecasts*, states that weather observations made and furnished to pilots to conduct Instrument Flight Rule (IFR) operations at an airport must be taken at the airport where those IFR operations are conducted. Fractional aircraft operators are also limited

when there is no weather reporting. Section 91.1039 *IFR Takeoff, Approach and Landing Minimums* states that no pilot may begin an instrument approach procedure to an airport unless that airport or the alternate airport has a weather reporting facility.

FAA Order 6560.20A, *Siting Criteria for Automated Weather Observing Systems (AWOS)* provides AWOS siting requirements. While each AWOS sensor has specific siting requirements, all AWOS sensors should be located together and outside the runway and taxiway's object free areas. Generally, AWOS sensors are best placed between 1,000 and 3,000 feet from the primary runway threshold and between 500 and 1,000 feet from the runway centerline. However, this criterion can be relaxed to meet site requirements or reduce impacts to landside development.

Holding Aprons/By-Pass Taxiways

Holding aprons provide an area at the runway end for aircraft to prepare for departure and/or bypass other aircraft which are ready for departure. A holding apron is currently located at the Runway 35 end. Taxiway F currently serves as a by-pass taxiway for aircraft operations at the Runway 17 end. A by-pass taxiway is similar in function to a holding apron, as it allows aircraft ready for departure to bypass those that are still preparing for departure. The advantage of a holding apron over a by-pass taxiway is that it allows piston-powered aircraft to be oriented into the wind for the pre-departure run-up. Holding aprons should be planned for all existing and future runway ends at the airport. By-pass taxiways are planned along the east side of the parallel runway as there is not sufficient area between the parallel taxiway west of Runway 17-35 and the parallel runway to locate a holding apron.

AIRSIDE ALTERNATIVES

Prior to examining the airside development alternatives, physical constraints must be identified. Yuma Road extends along the northern airport boundary. While this is a two-lane road now, it is planned as a four-lane arterial road in the future. Yuma Road is located approximately 1,800 feet north of the Runway 17 end. The Runway 17 end can only be extended approximately 800 feet north before requiring the relocation of Yuma Road as a full 1,000-foot RSA and OFA is required behind the Runway 17 end in the future to meet ARC C-II standards. The Roosevelt Irrigation District (RID) Canal is located approximately 1,100 feet south of the Runway 35 end. The RID Canal is a trunk canal supporting regional irrigation needs. Any shift of the Runway 35 end to the south would require the relocation or bridging of the RID Canal as a full 1,000-foot RSA is required behind the Runway 35 end in the future to meet ARC C-II standards. Broadway Road is located approximately 3,100 feet south of the Runway 35 end. Similar to Yuma Road, Broadway Road is also considered an important arterial road serving areas west of the airport in the future.

Alternative A

Airside Alternative A is shown on **Exhibit 4B**. This alternative provides for a 3,200–foot extension of Runway 17-35 to the south, for an ultimate length of 8,700 feet. This alternative requires crossing the RID canal and Broadway Road. In this alternative, the RID canal is placed underground and covered; essentially, the canal is bridged. Broadway Road is closed and cul-de-sacs are created at the east and west ultimate airport boundary to maintain limited access on Broadway Road to adjoining properties. While not shown on this alternative, an option would exist to relocate Broadway Road to the south so that through traffic lanes could be maintained in the future. This alternative also widens Runway 17-35 to 100 feet to meet ARC C-II design requirements.

This alternative shows the installation of a medium intensity approach lighting system with runway alignment indicator lights (MALSR) at the ultimate Runway 35 end and the runway protection zone (RPZ) required for a precision instrument approach. The RPZ is a two-dimensional trapezoidal area behind the runway end that should be cleared of any objects that can cause the congregation of people or property on the ground. Ideally, the RPZ and area for the MALSR are owned in fee by the airport. The precision RPZ crosses portions of an existing dairy farm located south of the airport. Some portions of the dairy farm may need to be relocated or removed to meet RPZ clearance standards.

The future parallel runway is placed 700 feet west of Runway 17-35. The southern end of the future parallel runway is aligned with the existing Runway 35 end. This is a similar placement to the location of the future parallel runway in the 1998 Master Plan. The RPZ at each end of the future parallel runway would extend beyond the existing airport property line. This would require the acquisition of land to secure each RPZ and prevent the establishment of incompatible objects in the RPZ. In total, this alternative requires the acquisition of approximately 232 acres of land to protect the RPZs and provide for the runway extension.

This alternative also incorporates two taxiways to support long term activity and landside facilities on the west side of the airport. The first is a full-length parallel taxiway located west of the future parallel runway. As will be discussed later within this chapter, this taxiway would support future apron and hangar development. A full-length parallel taxiway is also developed west of Runway 17-35, between the parallel runways. The benefit of this taxiway is that it would reduce the number of runway crossings for aircraft located on the west side of the airport. Without this taxiway, aircraft located west of the future parallel runway would need to cross both runways to access either the Runway 17 or Runway 35 end. Holding aprons are planned at all ultimate runway ends.

In this alternative, the AWOS is placed in the far northwest corner of

the airport. While this location is outside the normal siting area discussed above, it is in remote portion of the airport that may not be affected by development during the planning period.

Alternative B

Airside Alternative B is shown on **Exhibit 4C**. This alternative extends both runway ends to achieve the overall 3,200-foot extension to Runway 17-35. The location of Interstate Highway 10 limits the total distance the Runway 17 end can be extended to the north. In fact, the location of Interstate Highway 10 does not allow for the full 3,200-foot extension to be placed on the north end of the runway. Therefore, an extension to the south must be considered concurrently with any extension alternative to the north.

Airside Alternative B extends the Runway 17 end 1,800 feet north. This is as far as the runway can be extended to the north without crossing Interstate Highway 10. While the actual pavement extension would not fully cross Yuma Road, the road would need to be relocated to allow for the development of the runway safety area (RSA) and object free area (OFA) behind the Runway 17 end to allow for approach clearance over Yuma Road. A potential realignment option for Yuma Road is shown on the alternative that allows for the full RSA and OFA behind the Runway 17 end and for appropriate approach protection. Yuma Road must be located at least 710 feet from the Runway 17 end to provide 15-foot clearance over Yuma Road as required by standard. The approach surface extends upward and outward at a slope of 34:1 beginning 200 feet from the runway end. In other words, the approach slope increases one-foot for each 34 feet the approach surface extends behind the runway end.

The Runway 35 end is extended 1,400 feet south and would cross the current alignment of the RID Canal. However, in contrast with Alternative B, this alternative does not impact Broadway Road. In this alternative, the RID canal is re-routed outside the limits of the RSA and OFA behind the Runway 35 end. The realignment of the canal or crossing the canal as shown in Alternative A requires detailed engineering and hydraulic analysis that is outside the scope of the Master Plan. Both options are feasible. The RID canal is similarly crossed by roads in many places now. The ultimate decision to realign or cross the RID canal will be based on cost factors, engineering feasibility, and the goals and objectives of the RID.

Similar to Alternative A, Alternative B provides for a precision approach to Runway 35. Both the MALSR and precision RPZ behind the Runway 35 end would extend to an existing dairy farm located south of Broadway Road.

This alternative requires the acquisition of approximately 236 acres of land, of which approximately 74 acres is located north of Yuma Road and 156 acres are located south of the airport. The placement of the parallel runway and taxiways on the west side of the airport are the same as in Alternative A.

04MP11-4B-8/28/06

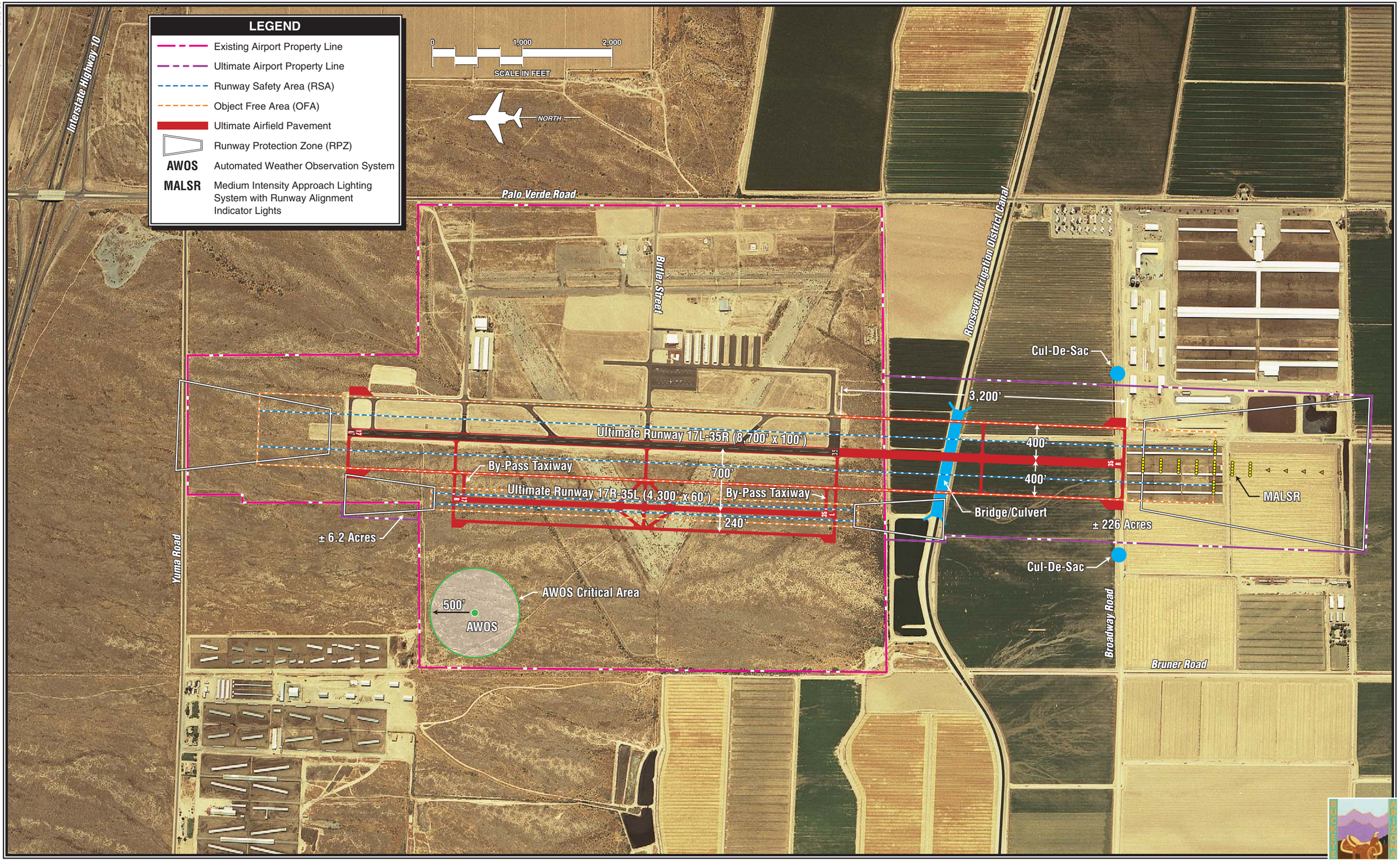


Exhibit 4B
AIRSIDE ALTERNATIVE A

04MP11-4C-8/28/06

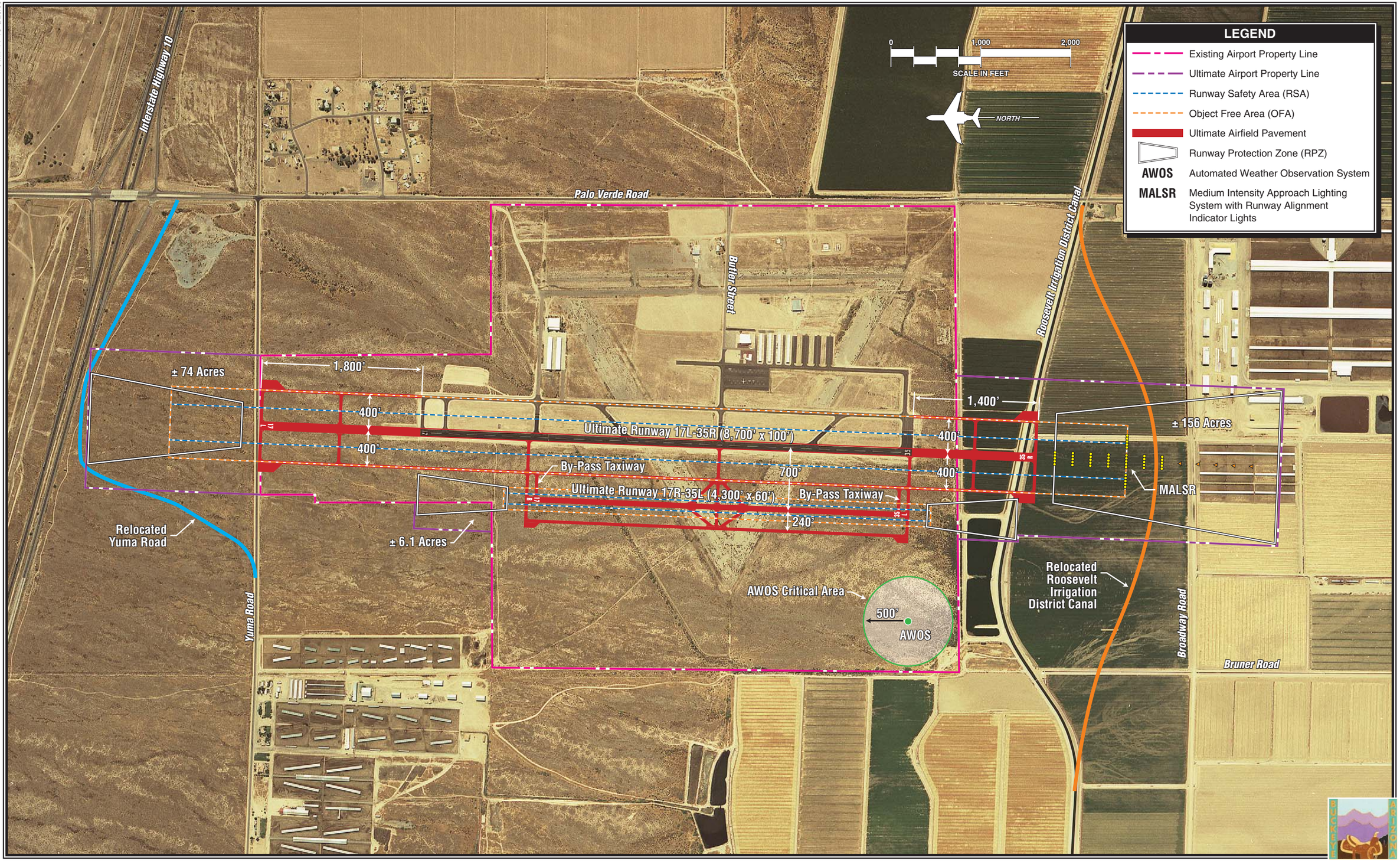


Exhibit 4C
AIRSIDE ALTERNATIVE B

The AWOS is placed in the southwest corner of the airport. Similar to Alternative A, this location was chosen as a potential site as it is a remote site of the airport that may not be affected by development during the planning period.

Alternative C

Airside Alternative C splits the 3,200-foot extension evenly between the Runway 17 and Runway 35 ends as shown on **Exhibit 4D**. In this alternative, each runway end is extended 1,600 feet. As shown on the exhibit, both Yuma Road and the existing alignment of the RID canal would be crossed. Yuma Road is relocated outside the RSA and OFA behind the Runway 17 end, while the RID canal is relocated to the south. Similar to Alternatives A and B, the runway is widened to 100 feet to meet ARC design requirements.

In comparison with Alternative B, this alternative would not require as much land acquisition north of Yuma Road. Alternative B required the acquisition of 74 acres of land north of Yuma Road. This alternative requires 62 acres. The land north of Yuma Road is industrial/commercial property and may be more expensive to acquire than land located south of the airport. In total, this alternative requires the acquisition of approximately 229 acres of land.

Similar to Alternative A and Alternative B, Alternative C provides for a precision approach to Runway 35. Both the MALSR and precision RPZ behind the Runway 35 end would extend to an existing dairy farm located south of Broadway Road.

In this alternative, the future parallel runway is placed 700 feet east of Runway 17-35 as required by standards. However, in contrast with Alternative A and Alternative B, the south end of the future parallel runway is aligned with the ultimate Runway 35 end. While this maintains the RPZ behind the northern end of the future parallel runway on existing airport property, the southern end of the future parallel runway would extend beyond the existing airport property line and cross the existing alignment of the RID canal. This alternative incorporates a parallel taxiway west of Runway 17-35 and west of the future parallel runway as shown in Alternative A and Alternative B. Holding aprons are provided at each runway end.

The AWOS is located 500 feet west of the existing Runway 17-35 centerline and 500 feet north of the existing Runway 35 end. This is within the general AWOS siting area as described above. In this location, the AWOS would not obstruct the development of any of the parallel taxiways or parallel runway west of Runway 17-35 as shown on the alternative.

Alternative D

The intent of Airside Alternative D is to reduce the land acquisition needs to the north by extending Runway 17-35 to the maximum extent practicable to the south without crossing Broadway

Road. As shown on **Exhibit 4E**, the Runway 35 end can be extended approximately 2,000 feet south without the RSA or OFA crossing Broadway Road. The Runway 17 end is extended 1,200 feet north. Similar to Alternatives B and C, both Yuma Road and the existing alignment of the RID canal would be crossed. In this alternative, Yuma Road is relocated outside the RSA and OFA behind the Runway 17 end, while the RID canal is placed underground and covered.

Similar to Alternatives A, B, and C, a precision approach to Runway 35 is assumed and the runway widened to 100 feet to meet ARC design requirements. Similar to all previous airside alternatives, the precision RPZ and MALSR would extend into an existing dairy farm located south of Broadway Road.

In comparison with Alternatives B and C, this alternative only requires the acquisition of approximately 48 acres of land north of Yuma Road. Alternative B required approximately 74 acres, whereas Alternative C required approximately 62 acres.

In this alternative, the future parallel runway is placed 700 feet east of Runway 17-35 as required by standards. But in contrast with Alternative C, the future parallel runway is situated so that the RPZ on the north end of the runway is located along the northern airport property line. In contrast with Alternative C, the future parallel runway would not cross the RID canal, although portions of the runway and southern RPZ would extend beyond the existing airport boundary. This alternative incorporates a parallel taxiway west of Runway 17-35 and west of the future parallel runway as shown in all previous airside alternatives. Holding aprons are provided at each runway end.

The AWOS is located 500 feet west of the existing Runway 17-35 centerline and 1,000 feet north of the existing Runway 35 end. This is within the general AWOS siting area as described above. In this location, the AWOS would not obstruct the development of any of the parallel taxiways or parallel runway west of Runway 17-35 as shown on the alternative.

ANALYSIS OF LANDSIDE DEVELOPMENT ALTERNATIVES

The purpose of this section is to identify and evaluate various viable landside development alternatives at Buckeye Municipal Airport to meet program requirements set forth in Chapter Three. While the airfield is comprised of facilities where aircraft movement occurs – runways, taxiways, ramps – other "landside" functions occur outside of this area. The primary general aviation functions to be accommodated landside at Buckeye Municipal Airport include public terminal facilities, aircraft storage hangars, aircraft parking aprons, commercial general aviation hangars, and automobile parking and access. The interrelationship of these functions is important to defining a long-range landside layout for general aviation uses at the airport. Runway frontage

04MP11-4D-8/28/06

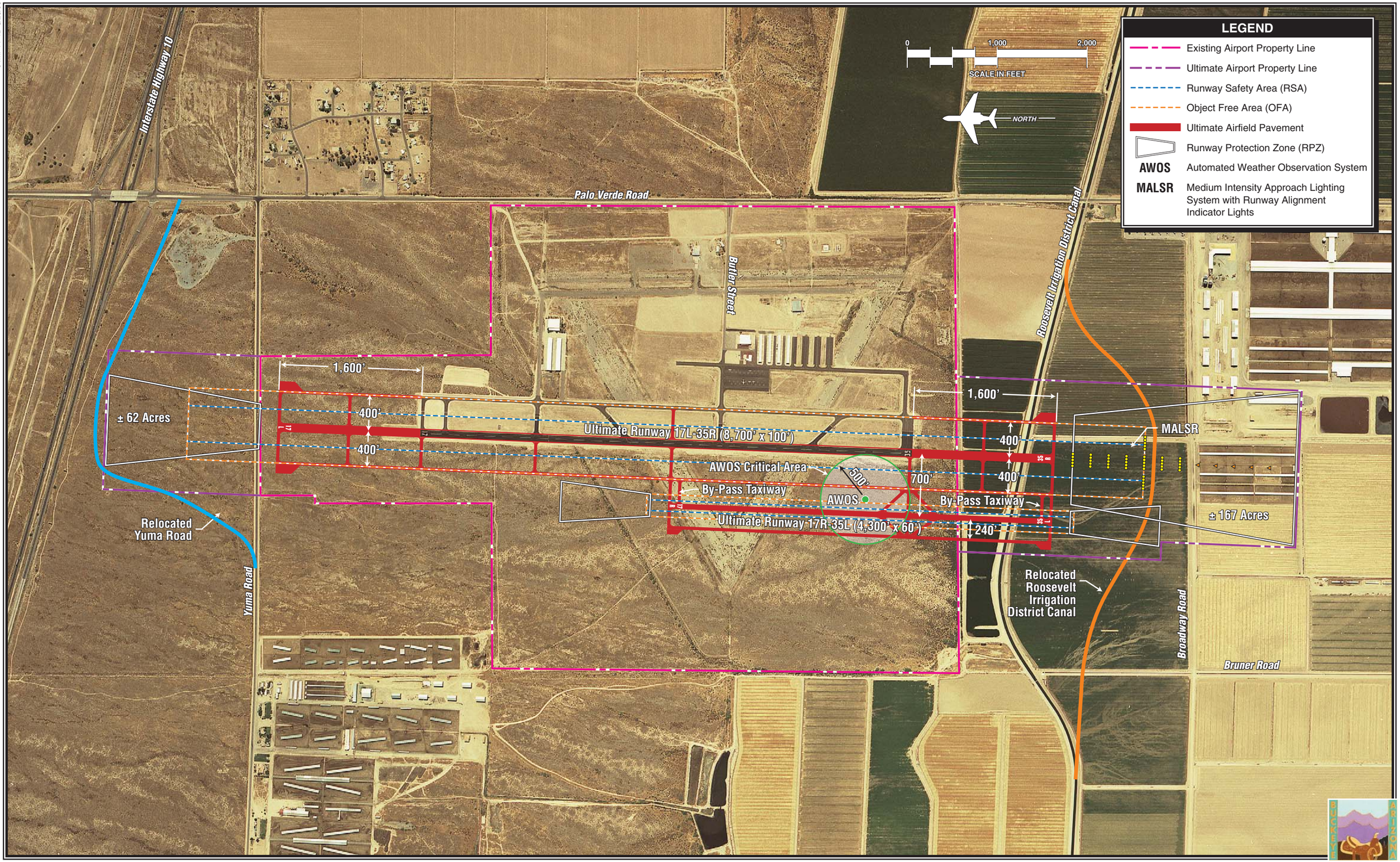


Exhibit 4D
AIRSIDE ALTERNATIVE C

04MP11-4E-8/28/06

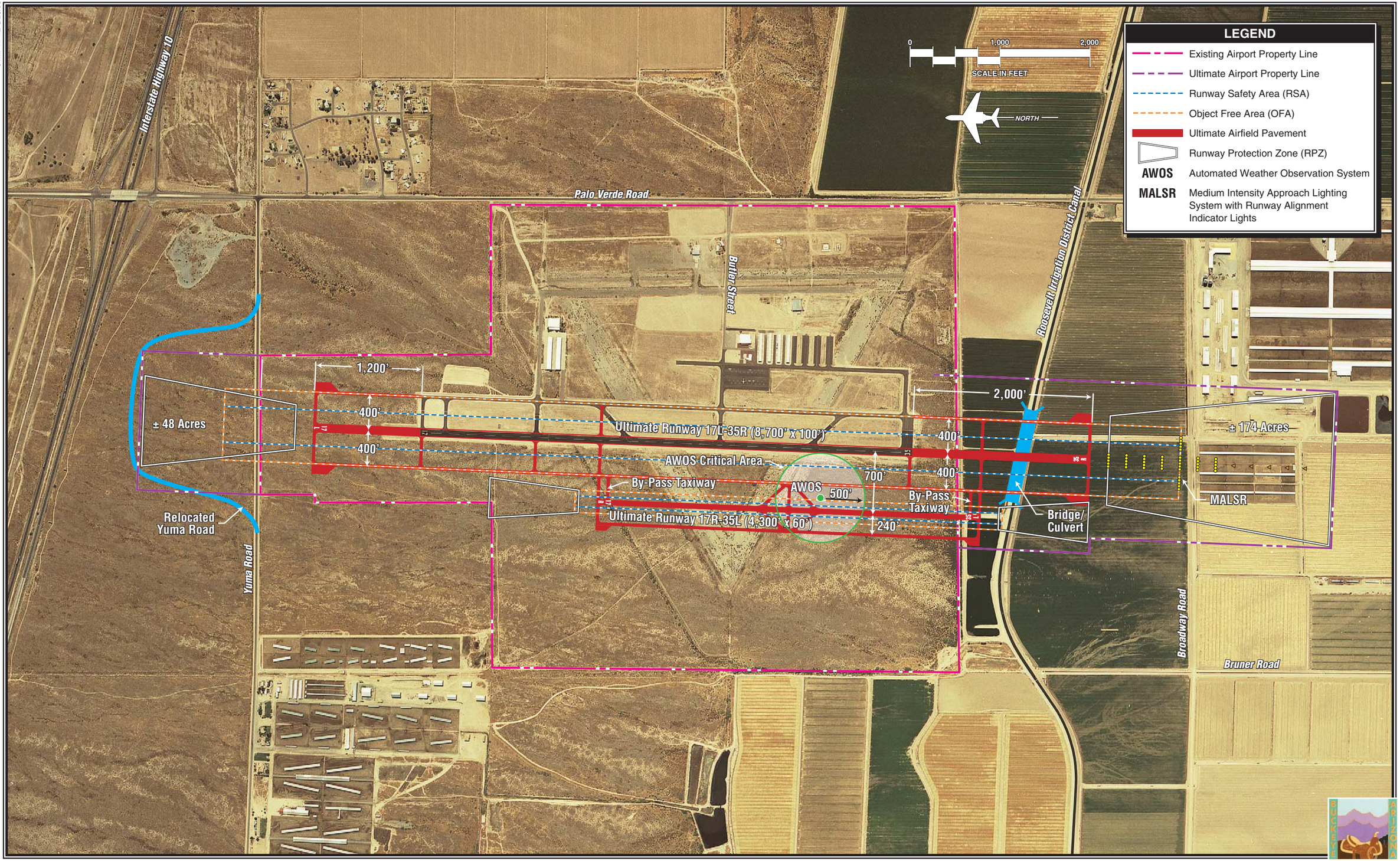


Exhibit 4E
AIRSIDE ALTERNATIVE D

should be reserved for those uses with a high level of airfield interface or need of exposure. Other uses with lower levels of aircraft movements or little need for runway exposure can be planned in more isolated locations.

LANDSIDE ISSUES

Landside development issues were summarized previously on **Exhibit 4A**. The following briefly describes proposed landside facility improvements.

Public Terminal Facilities

While a public terminal building is not specifically required at a general aviation airport, a public terminal provides some benefits. It provides a central gathering point for air travelers. A terminal building can provide a pilots' lounge and flight planning area. A terminal building can have a restaurant, which is an attractive quality for an airport. Terminal buildings can provide leaseable space for aviation-related businesses desiring to be located on an airport. The existing terminal building is located along the west edge of the apron and provides space for flight planning, a large lobby for meeting air travelers, restrooms, and space for the airport manager.

Ultimately, a terminal building at Buckeye Municipal Airport may be desirable to serve several potential functions such as: airport concessions (i.e. a restaurant, rental cars, etc.), providing space for flight planning, aviation tenants, and a pilots' lounge. Considering these many potential uses, the landside alternatives maintain a public terminal building site at Buckeye Municipal Airport.

FAA Advisory Circular 150/5360-13, *Planning and Design Guidelines for Airport Terminal Facilities,* identifies a number of basic considerations that affect the location of a terminal building. The primary considerations include the following:

1. **Runway configuration**: The terminal should be located to minimize aircraft taxiing distances and times and the number of runway crossings. The existing terminal site is located adjacent to Taxiway A, at the approximate midpoint of the runway.

2. **Access to transportation network**: The terminal should be located to provide the most direct/shortest routing to the regional roadway network. The existing terminal is located along Palo Verde Road, a major arterial road which is located along an interchange from Interstate Highway 10.

3. **Expansion potential**: The long term viability of the terminal is dependent upon the ability of the site to accommodate expansion of the terminal beyond forecast requirements. The expansion of the terminal building to the south is limited as taxiway access needs to be maintained to the T-hangars. Expansion to the north is limited by the existing 100LL fuel storage tanks. Automobile parking is lim-

ited as a large conventional hangar is located in close proximity to the terminal.

4. **FAA Geometric Design Standards**: The terminal location needs to assure adequate distance from present and future aircraft operational areas. The existing terminal site does not impact any FAA design standards.

With the exception of expansion potential, the existing terminal site meets the general recommendations of the FAA, utilizing this criterion. Therefore, the terminal building should stay in the same general area along Butler Street. The alternatives analysis examines the consolidation of the fuel storage at the airport. Consolidating the fuel storage in another location on the airport would allow for the terminal building to be expanded to the north. The alternatives analysis will assume that the terminal building for the airport will remain in its existing location.

Commercial General Aviation Activities

This essentially relates to providing areas for the development of facilities associated with aviation businesses that require airfield access. This includes businesses involved with (but not limited to) aircraft rental and flight training, aircraft charters, aircraft maintenance, line service, and aircraft fueling. These types of operators are commonly referred to as Fixed Based Operators (FBOs). High levels of activity characterize businesses such as these, with a need for apron space for the storage and circulation of aircraft. These facilities are best placed along ample apron frontage with good visibility from the runway system for transient aircraft. The facilities commonly associated with businesses such as these include large conventional type hangars that hold several aircraft. Utility services are needed for these types of facilities, as well as automobile parking areas.

Planning for commercial general aviation activities is important for this Master Plan. The mix of aircraft using Buckeye Municipal Airport is expected to change to include some business class aircraft which have larger wingspans than the mix of aircraft using the airport in the past. These larger aircraft, which have wingspans approaching 100 feet, require greater separation distance between facilities, larger apron areas for parking and circulation, and larger hangar facilities.

Small Aircraft Storage Hangars

The facility requirements analysis indicated a need for the development of small general aviation aircraft storage hangars. This primarily involves additional T-hangars, but may also include some clearspan hangars for accommodating several aircraft simultaneously. Since storage hangars often have lower levels of activity, these types of facilities should be located away from the primary apron areas, which should be reserved for commercial general aviation activity and can be located in more remote locations of the airport. Limited utility services

are needed for these areas. Typically, this involves electricity, but may also include water and sanitary sewer.

Other Aircraft Storage Hangars

This includes areas for larger conventional hangar development. Typically, these types of hangars are used by corporations with company-owned aircraft or by an individual or group of individuals with several aircraft. These hangar areas require all utilities and segregated roadway access.

Transient Helicopters

A helipad and helicopter parking area should be considered. There is currently no designated helipad, and helicopters must use apron areas typically designed for use by fixed-wing aircraft. Fixed-wing aircraft and rotary aircraft should be segregated to the extent practical.

Skydiving Operations

A business providing skydiving services is located on the airport. There are two dedicated drop zones located north of Butler Street on the east side of the airport. Consideration is given in the alternatives to maintaining a drop zone for the existing skydiving activities, although in another location of the airport as the existing areas dedicated to the drop zone may be needed for other uses in the future. Also, consideration is being given to locating the skydiving activities closer to the runway for more direct airfield access.

While the Town of Buckeye currently allows skydiving activities at the airport, federal regulation allows the Town to control these activities at the airport. Title 14 CFR Part 105, *Parachute Operations*, specifies the requirements for skydiving operations. Section 105.23, *Parachute Operations over or onto Airports*, specifies that "for airports without an operating control tower, [no person may conduct parachute operations unless] prior approval has been obtained from the management of the airport to conduct parachute operations over or on that airport." Therefore, as activity increases at the airport, the Town may desire to discontinue allowing skydiving on the airport for safety reasons. This may be the result of the construction of a parallel runway when traffic patterns would be located on both sides of the airport. The discontinuance of the drop activities on the airport would require the drop zone to be located at another site, but the departure and landing of the aircraft could remain on the airport.

Fuel Storage

All fuel storage at Buckeye Municipal Airport is located in above-ground tanks in two different areas on the airport. The Jet-A tanks are accessed by an unpaved road extending south from Butler Street. The area where the tanks are located may ultimately be needed for alternative uses. The 100LL storage tanks are located adja-

cent to the terminal building. As discussed previously, it may be advantageous to relocate the 100LL tanks for terminal expansion. Consideration is being given to ultimately consolidating all fuel storage in a single area on the airport as fuel storage is expanded. A consolidated fuel farm allows for better monitoring of leak detection and spill prevention.

Most important to the siting of the fuel farm is fuel delivery truck access. Access should be available from the primary roadway and not require that the truck access the apron area. Airside access must also be maintained to allow for the airport fuel delivery vehicles to access the fuel storage tanks.

Airport Maintenance

There are no dedicated airport maintenance facilities on the airport. Consideration is being given to establishing a permanent location for the development of an airport maintenance facility for the storage of Town-owned equipment and supplies to maintain the facilities at the airport.

Aircraft Wash Rack

Consideration is given to developing an aircraft wash/maintenance facility to provide a suitable area for the washing of aircraft. This provides for the proper disposal of aircraft cleaning fluids. There is no such facility currently available at the airport.

Airport Traffic Control Tower

Airport activity levels in the future may require an airport traffic control tower (ATCT). The landside alternatives will consider potential areas for siting an ATCT. Final site locations and the height of the ATCT cab will completed by the FAA in a separate study outside the Master Plan. The purpose of this analysis is to reserve an area for the development of the ATCT in the future. Generally, the ATCT should be located so that it has a clear line-of-sight to all the runways and taxiways to observe aircraft on the ground and a clear view of the aircraft traffic patterns and approach areas.

Revenue Support Land Uses

The landside alternatives to follow consider options for the Town of Buckeye to utilize portions of the airport for non-aeronautical purposes such as commercial, industrial, or office park development. It should be noted that the Town does not have the approval to use airport property for non-aeronautical purposes at this time. This requires specific approval from the FAA. The Master Plan does gain approval for non-aeronautical uses, even if these uses are ultimately shown in the Master Plan. A separate request justifying the use of airport property for non-aeronautical uses will be required once the Master Plan is complete. The Master Plan can be a source for developing that justification.

Segregated Vehicular Access and Fencing

A planning consideration for any Master Plan is the segregation of vehicles and aircraft operational areas. This is both a safety and security consideration for the airport. Aircraft safety is reduced and accident potential increased when vehicles and aircraft share the same pavement surfaces. Vehicles contribute to the accumulation of debris on aircraft operational surfaces, which increases the potential for Foreign Object Damage (FOD), especially for turbine-powered aircraft. The potential for runway incursions is increased, as vehicles may inadvertently access active runway or taxiway areas if they become disoriented once on the aircraft operational area (AOA). Finally, airfield security is compromised as there is loss of control over the vehicles as they enter the secure AOA. The greatest concern is for public vehicles such as delivery vehicles and visitors, which may not fully understand the operational characteristics of aircraft and the markings in place to control vehicle access. The best solution is to provide dedicated vehicle access roads to each landside facility that is separated from the aircraft operational areas with security fencing.

The segregation of vehicle and aircraft operational areas is supported by FAA guidance established in June 2002. FAA AC 150/5210-20, *Ground Vehicle Operations on Airports*, states, "The control of vehicular activity on the airside of an airport is of the highest importance." The AC further states, "An airport operator should limit vehicle operations on the movement areas of the airport to only those vehicles necessary to support the operational activity of the airport."

The landside alternatives for Buckeye Municipal Airport have been developed to reduce the need for vehicles to cross an apron or taxiway area. Special attention is within the alternatives given to ensure public access routes to fixed base operator (FBO) facilities. FBO facilities are focal points for users who are not familiar with aircraft operations (i.e., delivery vehicles, charter passengers, etc.).

Buckeye Municipal Airport is presently without any type of fencing limiting access to aircraft operational areas. In some areas, vehicles are required to cross aircraft apron and taxiways to reach their final destination. A series of fencing alternatives have been developed to address the current fencing and security needs. These alternatives are presented on **Exhibit 4F**.

Presently, chain link fencing extends along the airport boundary but terminates near Butler Street. The interior portions of the airport do not have fencing and vehicles can directly access the apron and runways/taxiways. In fact, Butler Street connects directly to the apron area with no barrier limiting access. The location of several hangars and buildings complicate any initial fencing plans to secure the AOA. For example, a hangar is located behind the terminal building south of Butler Street. This hangar requires access to the airfield. Hangar doors are located on both the north

and south side of the hangar. Since public access is required to the terminal building, vehicles currently cross the apron and taxiways for this hangar to access the terminal building. As stated previously, facility planning should attempt to segregate vehicles and aircraft operational areas. A second area involves the skydiving activities located near the intersection of Butler Street and Palo Verde Road. Aircraft from the skydiving center taxi along a former runway alignment past a series of hangars located on the north side of the airport. Vehicles accessing the hangars on the north side of the airport cross the taxiway used by the skydiving center.

The initial fencing plan in Alternative A segregates the AOA and public roads. In this alternative, the public parking area for the terminal building is located east of the existing hangar behind the terminal. A pedestrian gate would allow for access to the terminal for vehicles parking in this lot. A vehicle access would be located along Butler Street to allow vehicle access past the hangar for authorized individuals. In this alternative, the interior fencing would place all hangar facilities and the Jet-A fuel farm within the AOA. Access gates would allow for vehicles to access the Jet-A fuel farm from Butler Street and the hangars located on the northern part of the airport using the former runway environment. While the AOA is more secure, this alternative still has vehicles using aircraft taxiways to access hangar facilities on the north side of the airport.

Alternative B eliminates the need for vehicles to use the former runway alignment to access the hangars on the north side of the airport. This is accomplished by extending a new vehicle access road to the hangars on the north side of the airport. This same roadway could also support future commercial general aviation facilities. The existing access to the terminal building is preserved; however, access to the AOA is limited by a gate located at the terminus of Butler Street. This gate would have to be sized to allow for aircraft to get to the AOA from the hangar located behind the terminal. Access gates along Butler Street would allow for access to the Jet-A fuel farm and conventional hangar located behind the T-hangars. While the AOA is more secure in this alternative, this alternative still has vehicles crossing aircraft taxiways to access the terminal building.

Alternative C incorporates the public parking option from Alternative A. The fencing is simply extended from the north to south airport boundaries. A vehicle access gate is located along Butler Street to allow access to the AOA for authorized individuals. An aircraft and vehicle access gate is located along Taxiway E. This gate would allow for the skydiving aircraft to access the AOA. In this alternative, the Jet-A fuel farm and skydiving center are not located within the AOA. This alternative does not prevent vehicles from using the former runway alignment which is also used by aircraft from the skydiving center. The Jet-A fuel farm would be located outside the fenced boundary.

04MP11-4F-8/28/06

ALTERNATIVE A

Vehicle Access Gate

Vehicle Access Gate

Butler Street

Public Parking

Pedestian Gate to Terminal

Vehicle Access Gate

Palo Verde Road

35

ALTERNATIVE B

Aircraft and Vehicle Access Gate

Butler Street

Vehicle Access Gate

Vehicle Access Gate

Palo Verde Road

35

ALTERNATIVE C

Aircraft and Vehicle Access Gate

Vehicle Access Gate

Butler Street

Public Parking

Pedestian Gate to Terminal

Palo Verde Road

LEGEND

- Existing Airport Property Line
- Existing Fence Line
- Proposed Fence Line

0 600

SCALE IN FEET

NORTH

Exhibit 4F
INITIAL FENCING PLAN

LANDSIDE ALTERNATIVES

A series of landside alternatives have been examined for the east side of the airport. This is the only portion of the airport that currently has a direct connection to the local roadway network via Palo Verde Road. This portion of the airport is also located close to Interstate 10 and currently supports all landside facilities. Due to the existing infrastructure that is in place to support future development, the east side the airport will need to accommodate future growth needs before the west side of the airport. For these reasons, detailed planning has been done for areas east of the runway.

An option for the development of the west side of the airport is provided in this chapter. Landside development in this portion of the airport will likely not happen until after the parallel runway is developed as there are currently no taxiways serving this area or a vehicle roadway network off the airport to provide public vehicle access to the west side of the airport. Bruner Road would likely need to be extended to the north to support west landside development.

EAST LANDSIDE ALTERNATIVE A

East Landside Alternative A is shown on **Exhibit 4G**. This alternative utilizes Butler Street to segregate general aviation activities. In this alternative, commercial general aviation (FBO) development is reserved north of Butler Street, while aircraft storage is focused south of Butler Street. This generally follows the principals of previous planning for the airport.

In this alternative, the apron areas are extended to the west 500 feet from the Runway 17-35 centerline. This is as close as FAA design standards allow the apron to be located to the runway for ARC C-II design standards. A helipad and aircraft wash rack are located south of the existing apron area. The helipad has two helicopter tiedown locations associated with it so that helicopters are fully segregated from the fixed-wing areas.

The large hangar behind the terminal building is eventually removed to eliminate the current situation where vehicles cross aircraft taxiways. This area would eventually serve as a public parking area supporting the terminal building and nearby T-hangars. The ATCT is located in the vacant area north of the terminal building. An area for airport maintenance and the consolidated fuel farm are located east of this parking area. The fuel farm would be readily accessible from Butler Street for fuel delivery trucks.

The T-hangars are expanded to the east to provide a second row of T-hangars. This configuration provides 160 T-hangars, meeting long term projected needs. The south side of the T-hangar area supports a series of aircraft storage hangar parcels. This area is designed to accommodate aircraft which have wingspans up to 79 feet (Airplane Design Group [ADG] II). The skydiving center is located at the south end of the existing runway and a large drop zone developed along the

southern airport boundary. This location provides direct access to the runway for skydiving aircraft. The land fronting Palo Verde Road is reserved for non-aeronautical revenue support. These are areas of the airport that do not have airfield access potential in this alternative. Therefore, these areas cannot be readily used for aeronautical purposes. North of Butler Street a series of taxiways provides for airfield access revenue support parcels. Uses may include aircraft storage hangars associated with some type of commercial, industrial, or office uses.

EAST LANDSIDE ALTERNATIVE B

East Landside Alternative B is shown on **Exhibit 4H**. Similar to Alternative A, Alternative B maintains the terminal building in its existing location. The hangar behind the terminal building is eventually removed to eliminate the current situation where vehicles cross aircraft taxiways. This area would eventually serve as a public parking area supporting the terminal building and nearby T-hangars. An area for airport maintenance is located east of this parking area. The aircraft wash rack is located in the vacant area north of the terminal building.

The T-hangars are expanded to the south. A total of 180 hangars is provided, exceeding long term projected needs. A total of 30 aircraft storage hangar parcels are provided east of the T-hangars. These are flexible parcels that could allow for individual conventional hangar development. These could also allow for up to 10,000 square-foot hangars to be developed. This area is designed only for ADG I aircraft (up to 49-foot wingspans).

Similar to Alternative A, commercial general aviation (FBO) uses are developed along an expanded apron to the north. In contrast with Alternative A, the apron also expands to the east. This can allow for a larger apron area, consolidated automobile parking, and segregation between FBO leaseholds. This is a similar in arrangement to the main terminal/FBO area on the south side of Deer Valley Airport.

The helipad is located on the north side of the airport. It is situated adjacent to a revenue support parcel with airfield access. In this location, the helipad could ideally serve a based helicopter group such as medivac or a law enforcement unit. However, this helipad may have limited transient use since it is located away from the main terminal areas.

The fuel farm is located along a new road to the north. While this is a segregated area with both airfield and roadway access, this area may not be able to serve the short-term needs due to this road not being in place. The fuel farm location in Alternative A could be developed in the short-term since it is located along Butler Street.

Revenue support parcels with airfield access are located along extended taxiways on both the north and south sides of the airport. This alternative attempts to maintain taxiway access east of Taxiway A in a perpendicular fashion to Taxiway A. This allows the entire length of the taxiway to be

04MP11-4G-8/28/06

Exhibit 4G
EAST LANDSIDE ALTERNATIVE A

04MP11-4H-8/28/06

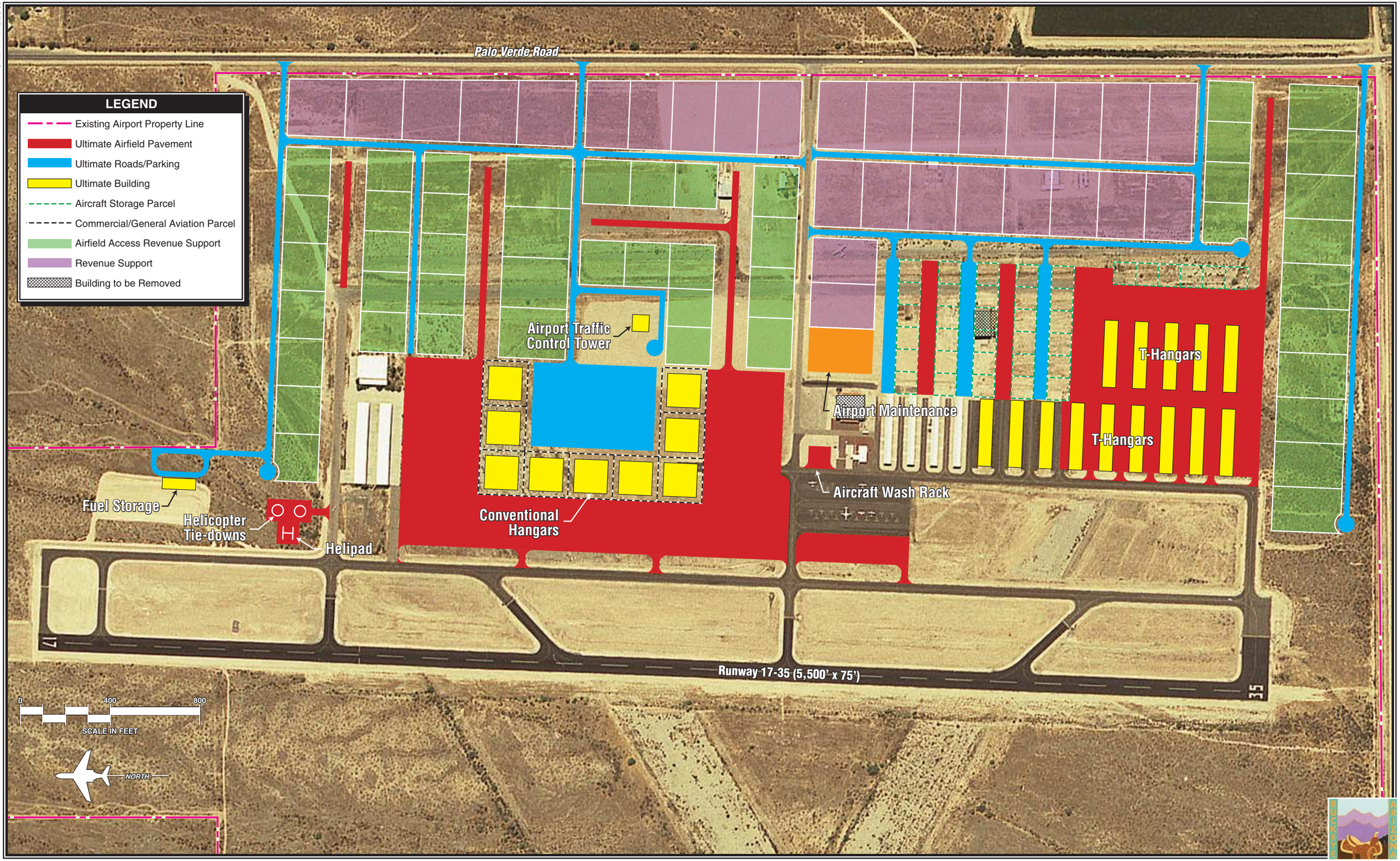


Exhibit 4H
EAST LANDSIDE ALTERNATIVE B

viewed by the taxiing aircraft as they enter or exit the taxiway. This can limit the potential taxi conflicts. This is in contrast to the taxiway shown in Alternative A providing access to the revenue support parcels north of Butler Street. With the alignment in Alternative A, aircraft may not be able to see other aircraft on the taxiway until turning south on this interior taxiway. A perpendicular taxiway eliminates the potential for conflict and also allows for incremental development. The taxiway could be extended to the east as demand warrants.

Non-aeronautical parcels are located along Palo Verde Road. These are areas of the airport that do not have airfield access potential; therefore, these areas cannot be readily used for aeronautical purposes. The ATCT is located in the center of the FBO area. This location behind hangars may cause the ATCT to be taller to maintain line-of-sight. A location closer to the apron would reduce the number of hangars or other structures that the ATCT would have to extend above to maintain line-of-sight. In this alternative, the drop zone is located off-airport. While a specific location for the skydiving center is not shown in the alternative, this could be accommodated in any of the airfield access revenue parcels or on one of the FBO parcels along the apron.

EAST LANDSIDE ALTERNATIVE C

East Landside Alternative C is shown on **Exhibit 4J.** In contrast with Alternatives A and B, this alternative retains the terminal building and conventional hangar in their existing location. Parking for the terminal building is developed east of the conventional hangar. The ATCT is located in a vacant area north of Butler Street and the terminal building along with the consolidated fuel storage. The helipad is located north of the existing apron. While this maintains the helipad in close proximity to the terminal and FBO area, it separates the apron areas. The FBO hangar areas and apron is expanded to the northern airport boundary. The existing apron is expanded to the west. The aircraft wash rack is located on the south side of the existing apron.

The T-hangars are expanded to the east. This configuration can allow for 280 T-hangars, which more than doubles the projected need during the planning period. There are 65 aircraft storage parcels shown to the south of the T-hangars. These are flexible parcels that could allow for individual conventional hangar development. These could also allow for up to 10,000 square-foot hangars to be developed. This area is designed only for ADG II aircraft (up to 79-foot wingspans). Similar to Alternative B, this alternative attempts to maintain taxiway access east of Taxiway A in a perpendicular fashion. This allows the entire length of the taxiway to be viewed by the taxiing aircraft. A perpendicular taxiway eliminates the potential for conflict and also allows for incremental development. The taxiway could be extended to the east as demand warrants. An area for airport maintenance is located along the

southern boundary. This area has roadway access via the road serving the hangar parcels located adjacent to the airfield for access to the AOA.

A series of FBO parcels are located north of Butler Street. Taxiways extending to the east provide airfield access for a series of revenue support parcels with airfield access. Non-aeronautical revenue support parcels are located along Butler Street and Palo Verde Road. These are areas of the airport that do not have airfield access potential; therefore, these areas cannot be readily used for aeronautical purposes. In this alternative, the drop zone is located off-airport. The skydiving center could remain on the airport for landing and departure. While a specific location for the skydiving center is not shown in the alternative, this could be accommodated in any of the airfield access revenue parcels as one of the FBO parcels along the apron.

WEST LANDSIDE CONCEPT

A development concept for the area west of the future parallel runway is shown on **Exhibit 4K**. The projections for future hangar, apron, and terminal needs can be accommodated on the east side of the airport. Therefore, development of the west side of the airport may not be needed until the airport surpasses the long term planning horizon activity levels. This concept is presented to allow flexibility in the landside development planning for the airport should aviation growth accelerate at the airport or development is desired on this side of the airport by private aeronautical providers. Development on this side of the airport cannot proceed until roadway access is provided. Presently, Bruner Road terminates south of the airport. This alternative shows Bruner Road being extended to the north to Yuma Road to provide access to this side of the airport.

As shown on the exhibit, the west side development concept provides for aeronautical uses. An apron area supporting FBO hangars is provided in the center of the runway. A helipad is located on the north side of the apron, although it could easily be located on the south side. These FBO parcels are supported by fuel storage and an automobile parking area. An alternate location for the ATCT is also shown. T-hangars are segregated to the north of the apron area. There are 20 aircraft storage parcels shown to the south of the T-hangars. These are flexible parcels that could allow for individual conventional hangar development. These could also allow for up to 10,000 square-foot hangars to be developed. This area is designed only for ADG II aircraft (up to 79-foot wingspans).

SUMMARY

The process utilized in assessing airside and landside development alternatives involved a detailed analysis of short and long-term requirements, as well as future growth potential. Current airport design standards were considered at each stage of development.

04MP11-4J-8/28/06

Palo Verde Road

T-Hangars

T-Hangars

T-Hangars

T-Hangars

Fuel Storage

Airport Traffic Control Tower

Conventional Hangars

Conventional Hangars

Helicopter Tie-downs

Helipad

Aircraft Wash Rack

Airport Maintenance

Runway 17-35 (5,500' x 75')

35

LEGEND

- Existing Airport Property Line
- Ultimate Airfield Pavement
- Ultimate Roads/Parking
- Ultimate Building
- Aircraft Storage Parcel
- Commercial/General Aviation Parcel
- Airfield Access Revenue Support
- Revenue Support
- Building to be Removed

0 400 800

SCALE IN FEET

NORTH

Exhibit 4J
EAST LANDSIDE ALTERNATIVE C

04MP11-4K-8/29/06

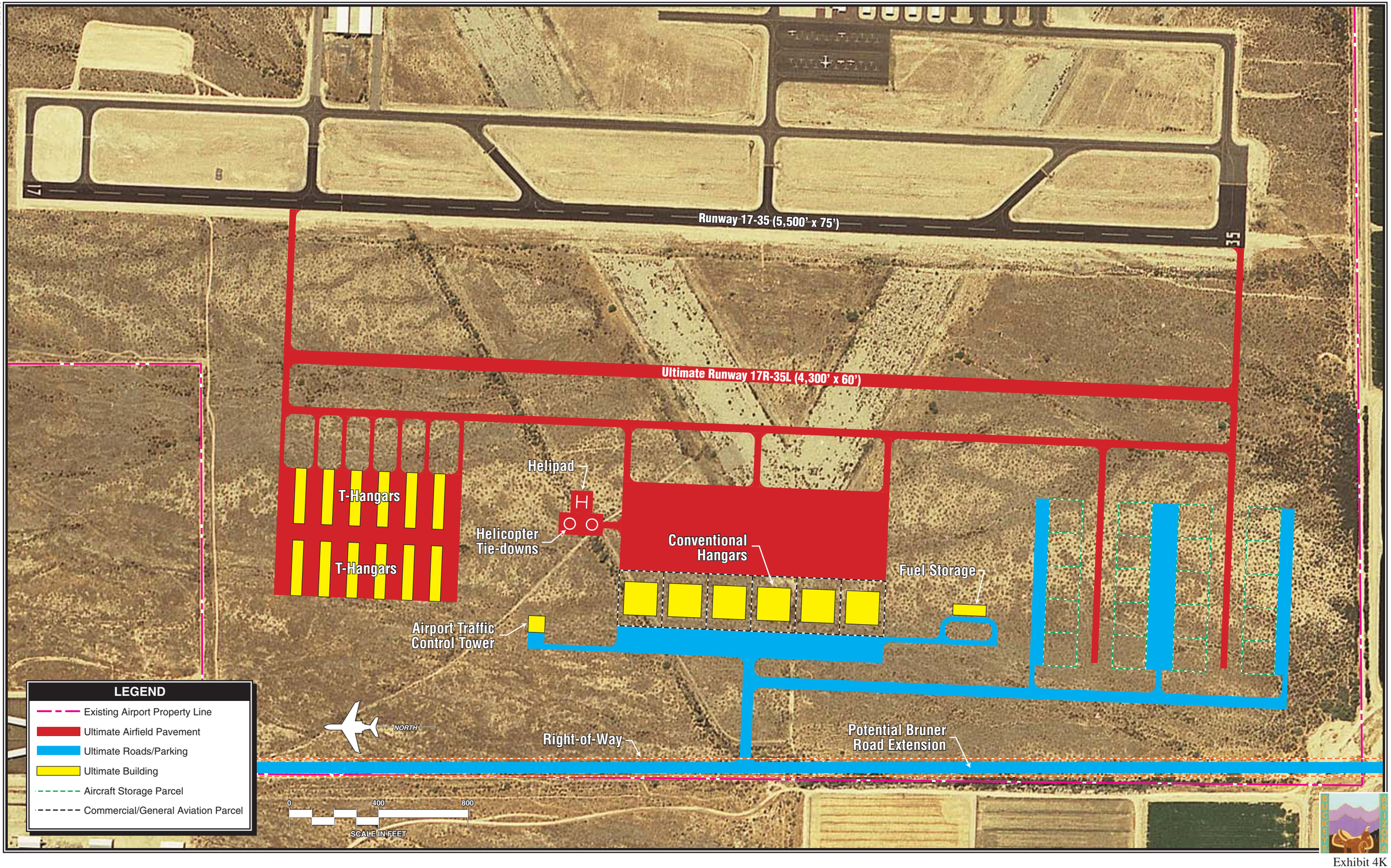


Exhibit 4K
WEST LANDSIDE DEVELOPMENT

These alternatives present an ultimate configuration of the airport that would need to be able to be developed over a long period of time. The next phase of the Master Plan will define a reasonable phasing program to implement a preferred master plan development concept over time.

Upon review of this chapter by the Town, the public, and the PAC, a final Master Plan concept can be formed.

The resultant plan will represent an airside facility that fulfills safety and design standards, and a landside complex that can be developed as demand dictates.

The preferred master plan development concept for the airport must represent a means by which the airport can grow in a balanced manner, both on the airside as well as the landside, to accommodate forecast demand. In addition, it must provide for flexibility in the plan to meet activity growth beyond the 20-year planning period.

The remaining chapters will be dedicated to refining these basic alternatives into a final development concept with recommendations to ensure proper implementation and timing for a demand-based program.

Chapter Five

AIRPORT PLANS

AIRPORT PLANS

The planning process for the Buckeye Municipal Airport Master Plan has included several technical efforts in the previous chapters intended to establish the role for the airport, project potential aviation demand, establish airfield and landside facility needs, and evaluate options for improving the airport to meet those airfield and landside facility needs. The planning process, thus far, has included the presentation of four draft working papers to the Planning Advisory Committee (PAC) and the Town of Buckeye (Town). A plan for the use of Buckeye Municipal Airport has evolved considering their input. The purpose of this chapter is to describe, in narrative and graphic form, the plan for the future use and development of Buckeye Municipal Airport. Environmental conditions that need to be considered prior to future development are also examined within this chapter.

MASTER PLAN CONCEPT

The Master Plan Concept represents the development direction for the Buckeye Municipal Airport through the planning period of this Master Plan. The Master Plan Concept is the consolidation and refinement of the four airfield and four landside alternatives, presented in Chapter Four, into a single development concept collectively representing input received from the PAC, the public through a series of public information workshops, and the Town.

AIRFIELD PLAN

Airfield components include the runways, parallel and connecting taxiways, lighting aids, navigational aids, and imaginary surfaces which help to

provide a safe operating environment for aircraft. The major airfield issues addressed in the Master Plan Development Concept include the following:

- A parallel runway to meet long term capacity needs.
- The upgrade of Runway 17-35 to Airport Reference Code (ARC) C-II design standards.
- The strengthening of Runway 17-35 and associated taxiways to 75,000 pounds dual wheel loading (DWL).
- The extension of Runway 17-35 to 8,700 feet.
- A precision instrument approach to Runway 35.
- The installation of an automated weather observation system (AWOS).
- Construct holding aprons and by-pass taxiways to allow aircraft to prepare for departure or hold off the active taxiway.
- A full-length parallel taxiway west of Runway 17-35 to reduce runway crossings.

Design Standards

As a federally obligated airport (the result of accepting federal grant funding), Buckeye Municipal Airport must comply with Federal Aviation Administration (FAA) design and safety standards. The FAA has established these design criteria to define the physical dimensions of runways and taxiways and the imaginary surfaces surrounding them that ensure the safe operation of aircraft at the airport. FAA design standards also define the separation criteria for the placement of landside facilities. As discussed previously in Chapter Three, FAA design criterion is a function of the critical design aircraft's wingspan and approach speed, and in some cases, the runway approach visibility minimums. The critical design aircraft is defined as the most demanding aircraft or "family" of aircraft which will conduct 500 or more operations (take-offs and landings) per year at the airport The FAA has established the Airport Reference Code (ARC) to relate the physical and operational factors of the critical design aircraft to airfield design standards (refer to Chapter Three).

According to FAA Advisory Circular (AC) 150/5300-13, Airport Design, an aircraft's approach category is based upon 1.3 times its stall speed in landing configuration at that aircraft's maximum certificated weight. The five approach categories used in airport planning are as follows:

Category A: Speed less than 91 knots.

Category B: Speed 91 knots or more, but less than 121 knots.

Category C: Speed 121 knots or more, but less than 141 knots.

Category D: Speed 141 knots or more, but less than 166 knots.

Category E: Speed greater than 166 knots.

The airplane design group (ADG) is based upon the aircraft's wingspan. The six ADGs used in airport planning are as follows:

Group I: Up to but not including 49 feet.

Group II: 49 feet up to but not including 79 feet.

Group III: 79 feet up to but not including 118 feet.

Group IV: 118 feet up to but not including 171 feet.

Group V: 171 feet up to but not including 214 feet.

Group VI: 214 feet or greater.

Buckeye Municipal Airport is used by a wide range of general aviation airplanes and helicopters. General aviation aircraft include single and multi-engine piston aircraft within ARCs A-I and B-I, turboprop aircraft within ARCs B-I and B-II, and business jet aircraft within ARCs C-I and C-II, and occasionally ARCs D-I and D-II.

As detailed in Chapter Three, each runway at Buckeye Municipal Airport is expected to serve different types of aircraft; therefore, an ARC has been assigned separately for each runway at the airport and used in the development of the ultimate airfield plan. As the primary runway at the airport, Runway 17-35 is expected to serve the needs of all aircraft expected to use the airport. For this reason, Runway 17-35 is planned for the most demanding ARC C-II standards. The capacity analysis in Chapter Three revealed that a future parallel runway is needed for small aircraft (aircraft weighing less than 12,500 pounds) within ARC B-I.

The design of taxiway and apron areas considers the wingspan requirements of the most demanding aircraft to operate within the specific area. All taxiways serving the runways are planned to accommodate aircraft within airplane design group (ADG) II. The T-hangar areas and west apron are planned to accommodate aircraft in ADG I. **Table 5A** summarizes the planned airfield safety and facility dimensions for Buckeye Municipal Airport. It should be noted that the parallel taxiway west of the future parallel runway is placed at 240 feet from the future Runway 17R-35L centerline. This allows this runway to be upgraded to ARC B-II if required in the future without affecting the placement of landside facilities in the interim.

- **A parallel runway to meet long term capacity needs**

As the mix of aircraft operating at the airport continues to shift to include a larger percentage of business aircraft and as operations increase, the capacity of the single runway at the airport is expected to be reached. As capacity is reached, delay to aircraft departures and arrivals increases. Increasing levels of annual delay create undesirable conditions, such as increased air emissions, increased operating costs, and extended aircraft traffic patterns. Increased air emissions are the result of aircraft engines running for longer pe-

riods of time. Aircraft engines running for longer periods of time increase fuel and maintenance costs for owners. In-flight delays cause extended downwind legs for arriving aircraft, which can lead to aircraft flying larger-than-typical traffic patterns and increased overflights of adjoining land uses.

TABLE 5A
Airfield Safety and Facility Dimensions (in feet)

	Ultimate Runway 17-35 [1]		Existing Runway 17-35	Proposed Parallel Runway
Airport Reference Code (ARC)	C-II		B-II	B-I (small aircraft)
Approach Visibility Minimums	½ Mile – Runway 35 One Mile – Runway 17		One Mile Each End	Visual Each End
Runway				
Length	8,700		5,500	4,300
Width	100		75	60
Runway Safety Area (RSA)				
Width	400		150	120
Length Beyond Runway End	1,000		300	240
Object Free Area (OFA)				
Width	800		500	250
Length Beyond Runway End	1,000		300	240
Obstacle Free Zone (OFZ)				
Width	400		400	250
Length Beyond Runway End	200		200	200
Precision Obstacle Free Zone (POFZ)				
Runway 35 End				
Width	800		N/A	N/A
Length Beyond Runway End	200		N/A	N/A
Runway Centerline To:				
Hold Line	200		200	125
Parallel Taxiway Centerline	400		240	240[2]
Edge of Aircraft Parking Apron	500		305.5	284.5
	17	35		
Runway Protection Zone (RPZ)				
Inner Width	500	1,000	500	250
Outer Width	1,010	1,700	700	450
Length	1,700	2,500	1,000	1,000
Obstacle Clearance	34:1	50:1	20:1	20:1
Taxiways				
Width	35			35[2]
Safety Area Width	79			49[2]
Object Free Area Width	131			89[2]
Taxiway Centerline To:				
Parallel Taxiway/Taxilane	105			69[2]
Fixed or Moveable Object	65.5			44.5[2]
Taxilanes				
Taxilane Centerline To:				
Parallel Taxilane Centerline	97			64[2]
Fixed or Moveable Object	57.5			39.5[2]
Taxilane Object Free Area	115			79[2]

Source: FAA Advisory Circular (AC) 150/5300-13, *Airport Design*, Change 9; 14 CFR Part 77, *Objects Affecting Navigable Airspace*

[1] *Will be renamed Runway 17L-35R once the short parallel Runway 17R-35L is constructed.*

[2] Exceeds the standards for ARC B-I small aircraft exclusively to allow for an upgrade to ARC B-II in the future if required.

The capacity analysis confirmed previous planning efforts from the 1998 Buckeye Municipal Airport Master Plan update and concluded that a runway for use by small general aviation aircraft exclusively is the best method available for reducing delays and the undesirable conditions that delay creates. The parallel runway achieves the capacity enhancement by segregating small aircraft and large aircraft operations.

The airfield plan includes the construction of a parallel runway west of Runway 17-35, following the configuration shown in Airside Alternative A and Airside Alternative B. The parallel runway is located 700 feet from the Runway 17-35 centerline as required by FAA design standards.

While FAA design standards specify that the parallel taxiway west of proposed parallel Runway 17R-35L could have a centerline-to-centerline separation distance as little as 150 feet, this taxiway is planned to be located 240 feet from the runway centerline. This is done to ensure that this taxiway would not need to be relocated in the future, should the operational needs of this runway require it to be upgraded to ARC B-II standards – the same design category of existing Runway 17-35.

The configuration of the parallel runway in Airside Alternative C and Airside Alternative D were dismissed. Airside Alternative C required crossing the Roosevelt Irrigation District Canal. While Airside Alternative D did not require crossing the canal, it did impact regulating ponds used to maintain flow in the canal. Furthermore, Airside Alternatives C and D depended upon the extension of Runway 17-35 to the south for taxiway access from the east. Depending upon operational needs, the development of the parallel runway may precede the extension to the south.

- **The upgrade of Runway 17-35 to Airport Reference Code (ARC) C-II design standards**

The potential exists in the future for increased use of the airport by business turboprop and turbojet aircraft. This follows with the national trend of increased business and corporate use of turboprop and turbojet aircraft, strong sales and deliveries of turboprop and turbojet aircraft, and expanded fractional ownership programs for these aircraft.

Common business and turboprop aircraft have higher approach speeds than the current critical aircraft operating at the airport; however, most of these aircraft have similar wingspans to the existing critical aircraft operating at the airport. The higher approach speeds of these aircraft are expected to have the potential of changing the critical aircraft designation for the airport. Ultimately, the airport is expected to accommodate aircraft within ARC C-II.

As the primary runway at the airport, Runway 17-35 is expected to be developed to ARC C-II standards in the future. As shown in Table 5A, this will require increasing the pavement width to 100 feet and creating a longer and wider runway safety area (RSA) and object free area (OFA). The run-

way centerline to parallel taxiway centerline is already located at the standard separation distance for ARC C-II.

According to FAA standards, the airport will not be required to meet ARC C-II design standards until there are at least 500 annual operations by aircraft within ARC C-II. In 2005, there were less than 50 operations by aircraft in ARC C-II and above.

- **The strengthening of Runway 17-35 to 75,000 pounds dual wheel loading (DWL)**

The current strength rating on Runway 17-35 is 30,000 pounds single wheel loading (SWL). This current strength rating is adequate for the mix of aircraft currently using the airport. The Master Plan Concept includes the overlay of Runway 17-35 to obtain an ultimate dual wheel loading (DWL) strength of up to 75,000 pounds. The strength rating would accommodate nearly all business aircraft which may use the airport in the future on a regular basis.

- **The extension of Runway 17-35 to 8,700 feet**

The Master Plan Development Concept includes extending Runway 17-35 3,200 feet from 5,500 feet to 8,700 feet. Runway 17-35 is planned to be extended on each end. A 1,800-foot extension is planned to the north. This extension requires the relocation of Yuma Road which extends along the northern airport boundary. The acquisition of approximately 74 acres of land is required to secure the RSA, OFA, and runway protection zone (RPZ).

A 1,400-foot extension is planned to the south. Approximately 156 acres of land is required to accommodate the extension and secure the RSA, OFA, and RPZ. The southerly extension crosses the existing alignment of the Roosevelt Irrigation District Canal. The Master Plan Concept includes the relocation of the canal to the south. While the canal could remain in its present location with the runway developed over it (similar to a roadway crossing the canal), the realignment of the canal as shown on **Exhibit 5A** provides better access for district personnel maintaining the canal. The current canal design not only includes the canal structure but also road beds on both the north and south sides of the canal. By extending the runway over the canal, these roadways would be eliminated. Since the district maintenance personnel could not cross the runway with their vehicles or equipment as it would be fenced for security reasons, the district would have difficulty in maintaining continual access along the length of the canal. Leaving the canal in its present location would also require a greater amount of fill since the extension would have to cross over the canal instead of falling with the declining terrain as provided by FAA standards.

The runway extension is planned to allow for increased useful load (fuel, passengers, and baggage) for business turbojet aircraft that may operate at the airport in the future. The present length of Runway 17-35 can limit the useful load of an aircraft operating at the airport. Consequently, some air-

04MP11-5A-7/21/06

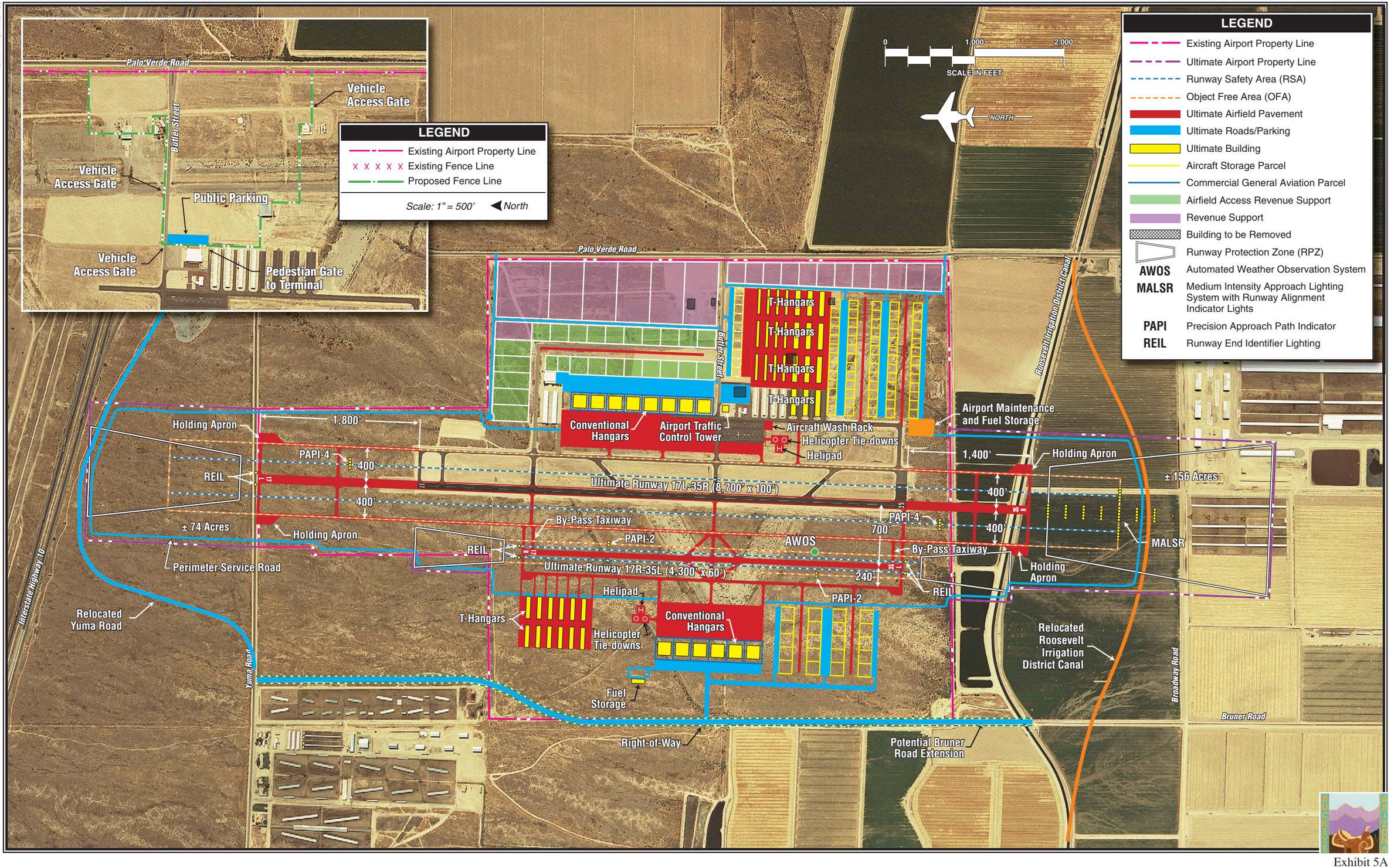


Exhibit 5A
MASTER PLAN CONCEPT

craft must reduce passenger and/or fuel loading to operate at the airport, especially during the warmest summer months.

FAA Advisory Circular (AC) 150/5235-4B, *Runway Length Requirements for Airport Design*, was used to determine the runway length for Buckeye Municipal Airport. In this AC, runway length requirements for business jets are determined according to a "family grouping of airplanes" having similar performance characteristics and operating weights. **Table 5B** summarizes the aircraft, including these groupings, for determining runway length requirements for the airport.

TABLE 5B
Family Grouping of Airplanes

Aircraft Make	Aircraft Model
Airplanes that Make Up 75 Percent of the Fleet	
Aerospatiale	Sn-601 Corvette
BAe	125-700
Beech Jet	400A, Premier I
Bombardier	Challenger 200
Cessna	Citation 500 /501, I/II/III, 525A II (CJ-2), 550, Bravo, 550 Citation II, 551 Citation II/Special, 552 Citation II 560 Encore, 560/560 XL Excel, 560 V Ultra, 650 VII, 680 Sovereign
Dassault	Falcon 10, Falcon 20, Falcon 50/50 EX Falcon, 900/900B
IAI	Jet Commander 1121, Westwind 1123/1124
Learjet	20 Series, 31/31A/31A ER, 35/35A/36/36A, 40/45
Mitsubishi	Mu-300 Diamond
Raytheon	390 Premier, 400/400XP, 600
Sabreliner	40/60, 75A, 80, T-39
Airplanes that Make Up 100 Percent of the Fleet	
BAe	Corporate 800/1000
Bombardier	Challenger 600, 604, BD-100 Continental
Cessna	S550 Citation S/II, 650 Citation III/IV, 750 Citation X
Dassault	Falcon 900C/900EX, Falcon 2000/2000EX
IAI	Astra 1125, Galaxy 1126
Learjet	45XR, 55/55B/55C, 60
Raytheon/Hawker	Horizon, 800/800XP, 1000

Source: (AC) 150/5235-4B, *Runway Length Requirements for Airport Design*

The existing length of Runway 17-35 is projected by the AC to be able to accommodate all the aircraft in the "75 Percent of the Fleet" grouping at 60 percent useful load. Useful load is the difference between the maximum structural takeoff weight and the operating empty weight. Useful load typically consists of the fuel, passengers, baggage, and cargo that can be carried. Higher useful loading in-

creases the takeoff weight and runway length requirements.

It can be inferred from the AC that aircraft included in the "100 Percent of the Fleet" grouping have significant useful load restrictions due to the existing runway length. The northerly extension of 1,800 feet would provide a runway length of 7,300 feet. At this length, the AC projects that the aircraft within the "100 Percent of the Fleet" grouping could operate at the airport at 60 percent useful load. The southerly 1,400-foot extension would allow for 90 percent useful loading for those aircraft within the "75 Percent of the Fleet" grouping. The AC does not specify the loading increases for aircraft within the "100 Percent of the Fleet" grouping, although it is expected that the additional 1,400 feet would provide additional loading for these aircraft. Therefore, this analysis reveals that the northerly 1,800-foot extension will allow the airport to be used by 100 percent of the business aircraft mix in the national fleet, albeit with payload restrictions. The southerly 1,400-foot extension is required to add useful load capabilities to both the business jet operators at the airport. In comparison, the northerly runway extension provides the most capability for the airport as it allows for a greater range of aircraft to operate at the airport. Therefore, in terms of phasing, the northerly runway extension should be pursued first.

It should be noted that these runway extensions are included in this Master Plan for planning purposes only and that this Master Plan does justify the extensions for federal grant funding. Justification for funding the extensions will be required outside the Master Plan process and closer to the time for implementation. Including the extensions in the Master Plan allows the Town to develop landside facilities considering the possibility that the runway may need to be extended in the future. It also allows the Town to implement land use planning measures to protect the ultimate approach and departure paths of the extended runway. By planning for an 8,700-foot runway, the Town can take measures to ensure that there are no hazards or obstacles that penetrate the 14 CFR Part 77 airspace and compatible land use is planned in the extended runway approach/departure paths.

Justification for the runway extensions will require that the Town detail 500 annual operations by aircraft users that require a longer runway length. This documentation is usually in the form of a letter of support from the users detailing the following:

1. Aircraft type

2. Number of annual operations

3. Runway length required to operate to their intended destination with full passenger loading assuming the mean maximum temperature of the hottest month and existing runway gradient.

- **The installation of an automated weather observation system (AWOS)**

An automated weather observation system (AWOS) is planned to be located approximately 500 feet west of

Runway 17-35 and approximately 1,000 feet from the existing Runway 35 end. This location falls within the typical siting area for an AWOS as specified in *FAA Order 6560.20A, Siting Criteria for Automated Weather Observing Systems*. The AWOS will provide important weather details to pilots such as visibility, cloud ceilings, and altimeter settings.

The unavailability of current weather observation and reporting primarily affects itinerant aircraft operations to the airport as pilots cannot readily determine weather conditions at the airport from a distant location. Aircraft operating under Title 14 Code of Federal Regulations (CFR) Part 135, *Operating Requirements: Commuter and On Demand Operations and Rules Governing Persons On Board Such Aircraft*, conducting aircraft charter and commercial activities, are especially affected as these aircraft cannot operate at the airport unless current weather reporting is available. Section 135.213, *Weather Reports and Forecasts*, states that weather observations made and furnished to pilots to conduct Instrument Flight Rule (IFR) operations at an airport must be taken at the airport where those IFR operations are conducted. Fractional aircraft operators are also limited when there is no weather reporting. Section 91.1039 *IFR Takeoff, Approach and Landing Minimums* states that no pilot may begin an instrument approach procedure to an airport unless that airport or the alternate airport has a weather reporting facility.

- **A precision instrument approach to Runway 35**

The airfield plan reserves the potential for the FAA to establish a precision instrument approach to Runway 35. This could involve the installation of the traditional instrument landing system (ILS) or utilize the Global Positioning System (GPS). A precision instrument approach provides both descent and lateral guidance to the pilot. This approach is planned for visibility minimums as low as one-half mile and cloud ceilings as low as 200 feet. The Master Plan Concept also includes the installation of a medium intensity approach lighting system with runway alignment indicator lights (MALSR) to the Runway 35 end. The MALSR is required to achieve the visibility and cloud ceiling minimums described above. Improving the instrument approach capability to Runway 35 will be at the sole discretion of the FAA. While instrument approaches are designed for use by pilots during inclement weather conditions, instrument approaches are commonly used during good visibility conditions by transient pilots to navigate to the airport.

- **Construct holding aprons and by-pass taxiways off the active taxiway to allow aircraft to prepare for departure or hold**

Piston-powered aircraft must complete a series of engine run-up tests before departure. Some aircraft on instrument flight rule (IFR) flight plans

must hold at the runway end for departure clearance. Holding aprons at the runway ends allow these activities to take place off the active taxiway surface, allowing ready-for-departure aircraft to bypass those aircraft holding or completing engine run-up tests. Holding aprons are planned on the east and west sides of the future Runway 17 and 35 ends. Holding aprons are also planned on the west side of the future parallel runway. By-pass taxiways are planned on the east side of the parallel runway. The location of the parallel taxiway located between the parallel runways prevents the construction of holding aprons on the east side of the parallel runway.

- **A full-length parallel taxiway west of Runway 17-35 to reduce runway crossings**

A full-length parallel taxiway extending between the parallel runways will reduce future runway crossings and provide for ease of access to all runway ends from both the east and west sides of the airport. In particular, aircraft landing Runway 17R-35L could exit the runway to the east if their destination is on the east side of the airport. When the west landside area develops, aircraft would only have to cross Runway 17R-35R to reach primary runway, Runway 17L-35R. Runway crossings increase the potential for runway incursions and the potential for aircraft accidents. This taxiway centerline is planned to be located 400 feet from the Runway 17-35 centerline and is designed to the same weight bearing strength as the primary runway.

- **Perimeter Service Road**

A perimeter service road is planned to allow access around the airfield operations area for airport personnel. This reduces the potential for airfield incursions as the runway and taxiways do not need to be used by vehicles.

LANDSIDE PLAN

Examples of landside facilities include aircraft storage hangars, terminal buildings, aircraft parking aprons, hangar and apron access taxilanes, fuel storage facilities, and vehicle parking lots. The landside plan for Buckeye Municipal Airport has been devised to efficiently accommodate potential aviation demand and provide revenue enhancement possibilities by designating the use of certain portions of airport property for aviation-related and non-aviation-related commercial and industrial uses. With the exception of the T-hangars and aircraft wash racks, most structural improvements are anticipated to be developed privately, as has been done in the past at Buckeye Municipal Airport.

The development of landside facilities will be demand-based. In this manner, the facilities will only be constructed if required by verifiable demand. For example, T-hangars will only be constructed if new based aircraft owners desire enclosed aircraft storage. The landside plan is based on projected needs that can change over time. The landside plan is developed with flexibility in mind to ensure the orderly development of the airport should this demand materialize.

Security

Application of the Aviation and Transportation Security Act of 2001 will need to be closely monitored throughout the implementation of this Master Plan. This law established the Transportation Security Administration (TSA) to administer transportation security nationally. While the most visible function of the TSA is commercial airline checked baggage and carry-on baggage screening, a component of the TSA security plan is general aviation airport security. As detailed in Chapter Three, the TSA has issued a series of security recommendations for general aviation airports. The Town will need to monitor these security recommendations for their applicability to the secure operation of Buckeye Municipal Airport.

Specific recommendations of the TSA applicable to Buckeye Municipal Airport include:

Access Controls: While the Town has recently installed chain link fencing around the perimeter of the airport, the interior portions of the airport and vehicles can directly access the apron and runways/taxiways. In fact, Butler Street connects directly to the apron area with no barrier limiting access. In some areas, vehicles are required to cross the aircraft apron and taxiways to reach their final destination. **Exhibit 5A** depicts a short term fencing plan that the Town can utilize to control access to the airport.

The initial fencing plan segregates the Aircraft Operating Area (AOA) and public roads. To prevent vehicles from crossing the taxiway and apron to the large conventional hangar located behind the terminal building, the Master Plan Concept constructs a new public parking area for the terminal building east of this hangar. A pedestrian gate would allow for access to the terminal for vehicles parking in this lot. A vehicle access gate would be located along Butler Street to allow vehicle access past the hangar for authorized individuals. The interior fencing would place all hangar facilities and the Jet-A fuel farm within the AOA. Access gates would allow for vehicles to access the Jet-A fuel farm from Butler Street and the hangars located on the northern part of the airport using the former runway alignment.

Lighting System: Security lights are in place along most hangar buildings at the airport, which includes illumination of the aircraft parking aprons. Security lighting systems should be included in all future landside development areas and connected to an emergency power source, if available.

Personal ID System: This refers to a method of identifying airport employees or authorized tenant access to various areas of the airport through badges or biometric controls.

Vehicle ID System: This refers to an identification system which can assist airport personnel and law enforcement in identifying authorized vehicles. Vehicles can be identified through use of decals, stickers, or hang tags.

Law Enforcement Support: Procedures may be developed to have local law enforcement personnel regularly or randomly patrol ramps and aircraft

hangar areas, with increased patrols during periods of heightened security.

Security Committee: This Committee should be composed of airport tenants and users drawn from all segments of the airport community. The main goal of this group is to involve airport stakeholders in developing effective and reasonable security measures and disseminating timely security information.

Transient Pilot Sign-in/Sign-Out Procedures: This involves establishing procedures to identify non-based pilots and aircraft using the facilities, and implementing sign-in/sign-out procedures for all transient operators and associating them with their parked aircraft. Having assigned spots for transient parking areas can help to easily identify transient aircraft on an apron.

Signs are already implemented. Signs are posted at each vehicle access gate noting that access to the airport is restricted to authorized users.

Documented Security Procedures: This refers to having a written security plan. This plan would include documenting the security initiatives already in place at the airport, as well as any new enhancements. This document could consist of, but not be limited to, airport and local law enforcement contact information, including alternates when available, and utilization of a program to increase airport user awareness of security precautions such as an airport watch program. The security plan should include a contact list. The contact list involves the development of a comprehensive list of responsible personnel/agencies to be contacted in the event of an emergency procedure. The list should be distributed to all appropriate individuals. Additionally, in the event of a security incident, it is essential that first responders and airport management have the capability to communicate. Where possible, coordinate radio communication and establish common frequencies and procedures to establish a radio communications network with local law enforcement.

Community Watch Program: A watch program involves the tenants and users monitoring activity on the airport and reporting suspicious behaviors. Established challenge procedures can assist tenants and users in identifying unauthorized and potentially illegal activities at the airport.

East Landside Plan

The east landside plan comprises all the available land east of Taxiway H to Palo Verde Road. The East Landside Plan utilizes Butler Street to segregate general aviation activities. In the plan, commercial general aviation (FBO) development is reserved north of Butler Street, while aircraft storage is focused south of Butler Street. This generally follows the principles of previous planning for the airport.

In this plan, the apron areas are extended to the west 500 feet from the Runway 17-35 centerline. This is as close as FAA design standards allow the apron to be located to the runway for ARC C-II design standards. The apron is planned to extend to the north

and support up to eight Fixed Based Operator (FBO) hangars. Parking and roadway access are planned adjacent to the FBO hangars.

The land fronting Palo Verde Road is reserved for non-aeronautical revenue support. These are areas of the airport that do not have airfield access potential; therefore, these areas cannot be readily used for aeronautical purposes. Land uses could include retail, office, or light industrial.

It should be noted that the Town does not have the approval to use airport property for non-aeronautical purposes at this time. This requires specific approval from the FAA. The Master Plan does gain approval for non-aeronautical uses, even if these uses are ultimately shown in the Master Plan. A separate request justifying the use of airport property for non-aeronautical uses will be required once the Master Plan is complete. The Master Plan can be a source for developing that justification.

Federal law obligates an airport sponsor to use all property shown on an Airport Layout Plan (ALP) and/or Property Map for public airport purposes. A distinction is generally not made between property acquired locally and property acquired with federal assistance. However, property acquired with federal assistance or transferred as surplus property from the federal government may have specific covenants or restrictions on its use different from property acquired locally.

These obligations will require that the Town formally request from the FAA a release from the terms, conditions, reservations, and restrictions contained in any conveyance deeds (some portions of Buckeye Municipal Airport were conveyed through this method) and assurances in previous grant agreements. A release is required even if the airport desires to continue to own the land and only lease the land for development. The obligations relate to the use of the land just as much as they do to the ownership of the land.

U.S. Code 47153 authorizes the FAA to release airport land when it is convincingly clear that:

a. Airport property no longer serves the purpose for which it was conveyed. In other words, the airport does not need the land now or in the future because it has no airport-related or aeronautical use, nor does it serve as approach protection, a compatible land use, or a noise buffer zone.

b. The release will not prevent the airport from carrying out the purpose for which the land was conveyed. In other words, the airport will not experience any negative impacts from relinquishing the land.

c. The release is actually necessary to advance the civil aviation interests of the counters. In other words, there is a measurable and tangible benefit for the airport or the airport system.

Ultimately, the ability of the Town to use airport property for non-aeronautical revenue production will

rest upon a determination by the FAA that portions of the airport property are no longer needed for airport-related or aeronautical uses. To prove that land is not needed for aeronautical purposes, an assessment and determination of the area that will be required for aeronautical purposes will be needed. The Master Plan provides this analysis.

A formal request to the FAA for a release from Federal obligations will have several distinct elements. The major elements of the request will include:

1. A description of the obligating conveyance instrument or grant.

2. A complete property description including a legal description of the land to be released.

3. A description of the property condition.

4. A description of federal obligations.

5. The kind of release requested. (lease or sale)

6. Purpose of the release.

7. Justification for the release.

8. Disposition and market value of the released land.

9. Reinvestment agreement. A commitment by the Town to reinvestment any lease revenues exclusively for the improvement, operation, and maintenance of the airport.

10. Draft instrument of release.

An environmental determination will also be required. While FAA Order 1050.1E, *Environmental Policies and Procedures*, states that a release of an airport sponsor from Federal obligations is normally categorically excluded and would not normally require an Environmental Assessment, the issuance of a categorical exclusion is not automatic and the FAA must determine that no extraordinary circumstances exists at the airport. Extraordinary circumstances would include a significant environmental impact to any of the environmental resources governed by Federal law. An Environmental Assessment may be required if there are extraordinary circumstances.

North of Butler Street a taxiway provides for airfield access revenue support parcels. Uses may include aircraft storage hangars associated with some type of commercial, industrial, or office uses.

A helipad and an aircraft wash rack are located south of the existing apron area. The helipad has two helicopter tiedown locations associated with it so that helicopters are fully segregated from the fixed-wing areas.

The large hangar behind the terminal building is eventually removed to eliminate the current situation where vehicles cross aircraft taxiways. This area would eventually serve as a public parking area supporting the terminal building, airport traffic control tower (ATCT), and nearby T-hangars.

An area for airport maintenance and the consolidated fuel farm are located along the southern airport boundary off of Taxiway H for airfield access for refueling vehicles and airport maintenance vehicles. The fuel farm would be readily accessible from a new public roadway along the southern airport boundary for fuel delivery trucks.

The T-hangars are expanded to the east. This configuration can allow for 280 T-hangars, which more than doubles the projected need during the planning period. There are 65 aircraft storage parcels shown to the south of the T-hangars. These are flexible parcels that could allow for individual conventional hangar development. These could also allow for up to 10,000-square-foot hangars to be developed. This area is designed only for ADG III aircraft (up to 118-foot wingspans).

West Landside Plan

A development concept for the area west of the future parallel runway is shown on **Exhibit 5A**. The projections or future hangar, apron, and terminal needs can be accommodated on the east side of the airport. Therefore, development of the west side of the airport may not be needed until the airport surpasses the long term planning horizon activity levels. This concept is presented to allow flexibility in the landside development planning for the airport should aviation growth accelerate at the airport or development is desired on this side of the airport by private aeronautical providers. Development on this side of the airport cannot proceed until roadway access is provided. Presently, Bruner Road terminates south of the airport. This alternative shows Bruner Road being extended to the north to Yuma Road to provide access to this side of the airport.

As shown on the exhibit, the west side development concept provides for aeronautical uses. An apron area supporting FBO hangars is provided in the center of the runway. A helipad is located on the north side of the apron. These FBO parcels are supported by fuel storage and an automobile parking area. T-hangars are segregated to the north of the apron area. There are 20 aircraft storage parcels shown to the south of the T-hangars. These are flexible parcels that could allow for individual conventional hangar development. These could also allow for up to 10,000-square-foot hangars to be developed.

ENVIRONMENTAL EVALUATION

A review of the potential environmental impacts associated with proposed airport projects is an essential consideration in the Airport Master Plan process. The primary purpose of this evaluation is to review the proposed improvement program for Buckeye Municipal Airport to determine whether the proposed actions could, individually or collectively, have the potential to significantly affect the quality of the environment.

Prior to construction of ***any*** of the improvements depicted on the Master Plan Development Concept, compli-

ance with the *National Environmental Policy Act* (NEPA) *of 1969*, as amended, will be required. Each year the Town should coordinate both private and public investments in the airport with FAA Airports Division environmental staff to determine the level of documentation necessary to obtain clearance for new development on the airport.

For projects not "categorically excluded" under FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures*, compliance with NEPA is generally satisfied through the preparation of an Environmental Assessment (EA). Instances in which significant environmental impacts are expected, an Environmental Impact Statement (EIS) may be required. While this portion of the Master Plan is not designed to satisfy the NEPA requirements for a categorical exclusion, EA or EIS, it is intended to supply a preliminary review of environmental issues that would need to be analyzed in more detail within the NEPA process. This evaluation considers all environmental categories required for the NEPA process as outlined in FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures* and FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*. Of the 20 environmental categories the following resources are not found within the airport environs as described within Chapter One.

- Coastal Resources
- Department of Transportation Act, Section 4(f) Properties
- Wild and Scenic Rivers
- Wetlands and Waters of the U.S.
- Environmental Justice Areas

The following sections describe potential impacts to the remaining resources (as outlined within Appendix A of FAA Order 1050.1E) as development at the airport is undertaken.

AIR QUALITY

As indicated in Chapter One, Buckeye Municipal Airport is located within a non-attainment area for Ozone and Particulate Matter. Further analysis will need to be undertaken to assess potential air quality impacts which could result from airport improvements.

FARMLAND

Development of the parallel runway, extension to Runway 35, relocation of the Roosevelt Irrigation District Canal, and installation of the MALSR will directly impact prime farmland as designated by the Natural Resource Conservation Service (NRCS). Consultation with the NRCS will need to be undertaken to determine if the Farmland Protection Policy Act (FPPA) would apply. If it is determined that FPPA would apply, Form AD-1006 "Farmland Conversion Impact Rating" would need to be submitted to the NRCS to determine whether a significant impact would result from the conversion of the farmland to non-agricultural uses.

FISH, WILDLIFE, AND PLANTS

Field surveys will be needed to assess potential impacts to sensitive biological resources, including threatened and endangered species, as much of the area planned for development is currently in a native state. Fifteen species are listed within Maricopa County by the Fish and Wildlife Conservation Service as being threatened or endangered. It is unlikely that any of these species are present in the areas proposed for development as the habitat which supports most of them consists of treed areas or locations in or near rivers, streams, or marshes; however, field surveys would be needed to verify this determination. A search of the Arizona Fish and Game website indicated that no special status species have been documented as occurring within the project vicinity; however, further field investigation is likely required.

FLOODPLAINS

Construction of the extension for Runway 35R and the relocation of the Roosevelt Irrigation District Canal will directly impact the 100-year floodplain which is located adjacent to the canal. Further coordination with the City of Buckeye and Maricopa County will be required to assess the significance of these impacts.

HISTORICAL, ARCHITECTURAL, AND CULTURAL RESOURCES

As discussed within Chapter One, no cultural or historic resources have been identified on existing airport property; therefore, development within the existing property boundaries of the airport will not impact historic, architectural, or cultural resources. As property is acquired at the airport and development is undertaken, cultural resource surveys will likely be needed to determine potential impacts. The off-airport projects such as the relocation of Yuma Road, the extension of Bruner Road, and the relocation of the Roosevelt Irrigation District Canal will also likely need to be surveyed prior to project development.

NOISE AND COMPATIBLE LAND USE

A 14 CFR Part 150 Study was undertaken for Buckeye Municipal Airport concurrently with this airport master plan. Discussions regarding noise impacts and compatible land use issues are contained within this detailed study.

HAZARDOUS MATERIALS, POLLUTION PREVENTION, AND SOLID WASTE

It is not anticipated that the proposed improvements will result in significant impacts to any of these resources. Prior to the acquisition of land, an Environmental Due Diligence Audit (EDDA) will be required to identify any hazardous materials located on the sites proposed for purchase.

LIGHT EMISSIONS AND VISUAL IMPACTS

Currently, land surrounding the airport is primarily undeveloped and rural in nature. The proposed improvements at the airport will introduce additional landside and airside lighting. Potential impacts will need to be addressed as the areas around the airport develop for residential uses.

SUMMARY

The Master Plan for Buckeye Municipal Airport has been developed in cooperation with the PAC, interested citizens, and the Town. It is designed to assist the Town in making decisions relative to the future use of Buckeye Municipal Airport as it is maintained and developed to meet its role as defined in Chapter Two.

Flexibility will be a key to the plan, since activity may not occur exactly as forecast. The Master Plan provides the Town with options to pursue in marketing the assets of the airport for community development. Following the general recommendations of the plan, the airport can maintain its viability and continue to provide air transportation services to the region.

Chapter Six

CAPITAL IMPROVEMENT PROGRAM

CAPITAL IMPROVEMENT PROGRAM

The analyses completed in previous chapters evaluated development needs at the airport through 2025, based on forecast activity, facility needs, and operational efficiency. Next, basic financial and management rationale is applied to each development item so that the feasibility of each item contained in the plan can be assessed.

The presentation of the capital improvement program has been organized into two sections. First, the airport development schedule is presented in narrative and graphic form. Second, capital improvement funding sources on the federal, state, and local levels are identified and discussed.

AIRPORT DEVELOPMENT SCHEDULES AND COST SUMMARIES

Once the specific needs and improvements for the airport have been established, the next step is to determine the cost of development and a realistic schedule for implementing the plan. This section will examine the overall cost of each item in the development plan and present a development schedule.

The recommended improvements are grouped by planning horizon: short term, intermediate term, and long term. **Table 6A** summarizes the key milestones for each of the three planning horizons.

TABLE 6A
Planning Horizon Activity Levels

	Historical	Short Term Planning Horizon (± 5 years)	Intermediate Term Planning Horizon (± 10 years)	Long Term Planning Horizon (± 20 years)
Based Aircraft	54	110	175	275
Annual Operations				
Local	30,800	61,600	91,000	121,000
Itinerant	13,200	26,400	49,000	99,000
Total Annual Operations	44,000	88,000	140,000	220,000

A key aspect of this planning document is the use of demand-based planning milestones. The short term planning horizon contains items of highest priority. These items should be considered for development based on actual demand levels within the next five years. As short term horizon activity levels are reached, it will then be time to program for the intermediate term based upon the next activity milestones. Similarly, when the intermediate term milestones are reached, it will be time to program for the long term activity milestones.

Many development items included in the recommended concept will need to follow demand indicators. For example, the plan includes construction of new hangar aprons and taxilanes. Based aircraft will be the indicator for additional hangar needs. If based aircraft growth occurs as projected, additional hangars will need to be constructed to meet the demand.

If growth slows or does not occur as projected, hangar pavement projects can be delayed. As a result, capital expenditures will be undertaken as needed, which leads to a responsible use of capital assets. Some development items do not depend on demand, such as pavement maintenance. These types of projects typically are associated with day-to-day operations and should be monitored and identified by airport management.

As a master plan is a conceptual document, implementation of these capital projects should only be undertaken after further refinement of their design and costs through architectural and engineering analyses. Moreover, some projects, such as the construction of the airport traffic control tower (ATCT) will require further study at the time of implementation.

The cost estimates presented in this chapter have been increased to allow for contingencies that may arise on the project. Capital costs presented here should be viewed only as estimates subject to further refinement during design. Nevertheless, these estimates are considered sufficiently accurate for planning purposes. Cost estimates for each of the development projects listed in the capital improvement plan are listed in current (2006) dollars. **Exhibit 6A** presents the proposed capital improvement program for Buckeye Municipal Airport.

04MP11-6A-9/27/07

		Total Cost	Federally Eligible	ADOT Eligible	Local Share
Short Term Planning Horizon (First Five Years)					
2007					
1.	Land Acquisition Environmental Assessment	$ 200,000	$ 190,000	$ 5,000	$ 5,000
2.	Construct Taxilane	431,000	409,450	10,775	10,775
3.	Construct Airport Entrance Road	1,000,000	950,000	25,000	25,000
4.	Design Taxiway Lighting	75,000	71,250	1,875	1,875
5.	Design Interior Security Fencing, Gates, and Automobile Parking	32,000	30,400	800	800
6.	Design AWOS-III Installation	38,000	36,100	950	950
Subtotal 2007		**$ 1,776,000**	**$ 1,687,200**	**$ 44,400**	**$ 44,400**
2008					
1.	North Land Acquisition (74 Acres) - Phase I	$ 4,075,000	$ 3,871,250	$ 101,875	$ 101,875
2.	Install Taxiway Lighting	508,400	482,980	12,710	12,710
3.	Install Interior Security Fencing and Gates/Construct Public Parking Lot	210,000	199,500	5,250	5,250
4.	Install AWOS-III	250,000	237,500	6,250	6,250
Subtotal 2008		**$ 5,043,400**	**$ 4,791,230**	**$ 126,085**	**$ 126,085**
2009					
1.	North Land Acquisition (74 Acres) - Phase II	$ 4,075,000	$ 3,871,250	$ 101,875	$ 101,875
2.	Design T-Hangar Construction	75,000	71,250	1,875	1,875
3.	Design North Apron Expansion - Phase I	235,000	223,250	5,875	5,875
4.	Design Automobile Parking and Access - Phase I	135,000	128,250	3,375	3,375
Subtotal 2009		**$ 4,520,000**	**$ 4,294,000**	**$ 113,000**	**$ 113,000**
2010					
1.	North Land Acquisition (74 Acres) - Phase III	$ 4,075,000	$ 3,871,250	$ 101,875	$ 101,875
2.	Construct 30 T-Hangars	805,000	-	-	805,000
3.	Extend Apron North - Phase I	3,685,000	3,500,750	92,125	92,125
4.	Construct Automobile Parking and Access - Phase I	627,000	595,650	15,675	15,675
5.	Prepare Pavement Maintenance Management Program	30,000	28,500	750	750
6.	Design Aircraft Wash Rack	38,000	36,100	950	950
7.	Design North Access Road	103,000	97,850	2,575	2,575
8.	Design Helipad and Hardstands	55,000	52,250	1,375	1,375
9.	Design Northeast Access Road	105,000	99,750	2,625	2,625
Subtotal 2010		**$ 9,523,000**	**$ 8,282,100**	**$ 217,950**	**$ 1,022,950**
2011					
1.	North Land Acquisition (74 Acres) - Phase IV	$ 4,075,000	$ 3,871,250	$ 101,875	$ 101,875
2.	Construct Aircraft Wash Rack	250,000	237,500	6,250	6,250
3.	Construct North Access Road	683,000	648,850	17,075	17,075
4.	Construct Helipad and Two Hardstands	367,000	348,650	9,175	9,175
5.	Construct Northeast Access Road	855,000	812,250	21,375	21,375
Subtotal 2011		**$ 6,230,000**	**$ 5,918,500**	**$ 155,750**	**$ 155,750**
Subtotal Short Term Planning Horizon		**$ 27,092,400**	**$ 24,973,030**	**$ 657,185**	**$ 1,462,185**
Intermediate Term Planning Horizon (6-10 years)					
1.	Runway Extension Environmental Assessment	$ 200,000	$ 190,000	$ 5,000	$ 5,000
2.	South Land Acquisition - Phase I (119 Acres)	6,158,000	5,850,100	153,950	153,950
3.	Increase Pavement Strength (Runway 17-35, Taxiway H, A, B, C, D, E, F, G)	980,000	931,000	24,500	24,500
4.	Widen Runway 17-35 to 100'	1,120,000	1,064,000	28,000	28,000
5.	Design Runway Extension and Yuma Road Relocation	430,000	408,500	10,750	10,750
6.	Yuma Road Relocation	1,614,000	1,533,300	40,350	40,350
7.	Extend Runway 17-35 and Taxiway H 1,800' North	4,133,000	3,926,350	103,325	103,325
8.	Install PAPI-4 Runway 17L	65,000	61,750	1,625	1,625
9.	Install Distance Remaining Signs to Runway 17-35	200,000	190,000	5,000	5,000
10.	Expand Apron West	835,000	793,250	20,875	20,875
11.	Construct South Access Road	832,000	790,400	20,800	20,800
12.	Construct Southeast Access Road	825,000	783,750	20,625	20,625
13.	Construct Airport Maintenance Building (1,500 square feet)	150,000	142,500	3,750	3,750
14.	Construct T-Hangar Access Taxilanes - Phase I	598,000	568,100	14,950	14,950
15.	Construct 40 T-Hangars	1,074,000	-	-	1,074,000
16.	Construct Connecting Taxiway	209,000	198,550	5,225	5,225
17.	Construct Aircraft Storage Parcel Taxilanes and Automobile Parking - Phase I	720,000	684,000	18,000	18,000
18.	Northwest Land Acquisition (4 Acres)	190,000	180,500	4,750	4,750
19.	Construct West Parallel Taxiway - Phase I	2,710,000	2,574,500	67,750	67,750
20.	Construct Runway 17R-35L, Install PAPI-2 and REILs Each End	4,840,000	4,598,000	121,000	121,000
21.	Pavement Maintenance	2,500,000	2,375,000	62,500	62,500
Subtotal Intermediate Term Planning Horizon		**$ 30,383,000**	**$ 27,843,550**	**$ 732,725**	**$ 1,806,725**

		Total Cost	Federally Eligible	ADOT Eligible	Local Share
Long Term Planning Horizon (11-20 years)					
1.	Extend Apron North (Phase II)	$ 3,920,000	$ 3,724,000	$ 98,000	$ 98,000
2.	Construct Automobile Parking and Access (Phase II)	960,000	912,000	24,000	24,000
3.	Construct Consolidated Fuel Farm	500,000	475,000	12,500	12,500
4.	Remove Hangar/Construct Automobile Parking and Access	375,000	356,250	9,375	9,375
5.	Construct Airport Traffic Control Tower (ATCT)	3,000,000	2,850,000	75,000	75,000
6.	Construct T-Hangar Access Taxilanes (Phase II)	702,000	666,900	17,550	17,550
7.	Construct 40 T-Hangars	1,074,000	0	0	1,074,000
8.	Construct Aircraft Storage Parcel Taxilanes and Automobile Parking - Phase II	554,000	526,300	13,850	13,850
9.	South Land Acquisition - Phase II (50 Acres)	10,000,000	9,500,000	250,000	250,000
10.	Relocate Roosevelt Irrigation District Canal	12,560,000	11,932,000	314,000	314,000
11.	Extend Runway 17-35 and Parallel Taxiways 1,400' South	4,140,000	3,933,000	103,500	103,500
12.	Install Instrument Landing System and MALSR to Runway 35	3,000,000	2,850,000	75,000	75,000
13.	Construct West Parallel Taxiway - Phase II	1,920,000	1,824,000	48,000	48,000
14.	Construct Runway 17R-35L Parallel Taxiway	2,860,000	2,717,000	71,500	71,500
15.	Construct Perimeter Service Road	2,000,000	1,900,000	50,000	50,000
16.	Pavement Maintenance	5,000,000	4,750,000	125,000	125,000
Subtotal Long Term Planning Horizon		**$ 52,565,000**	**$ 48,916,450**	**$ 1,287,275**	**$ 2,361,275**
Total All Development		**$ 110,040,400**	**$ 101,733,030**	**$ 2,677,185**	**$ 5,630,185**

AWOS - Automated Weather Observation System
MALSR - Medium Intensity Approach Lighting System with Runway Alignment Indicator Lighting
REIL - Runway End Identifier Lighting
PAPI - Precision Approach Path Indicator
MITL - Medium Intensity Taxiway Lighting
ADOT- Arizona Department of Transportatiton, Aeronautics Division

Exhibit 6A
CAPITAL IMPROVEMENT
PROGRAM

SHORT TERM IMPROVEMENTS

The short term planning horizon CIP focuses on infrastructure and projected demand needs of the airport between 2007 and 2011. The first year of the CIP considers projects that may be accomplished in the 2007 federal funding cycle (October 2006 to September 2007). Prior to considering these planned projects, an understanding of existing design and construction grants is necessary. In 2006, the Town of Buckeye held grants for the design and construction of a fire protection system for the east side of the airport. This system is needed for the construction of new facilities to meet Town fire code. The Town was also pursuing the design for the reconstruction of Butler Street and a utility master plan. The utility Master Plan will consider the ultimate facility layout depicted in this master plan and determine the water, wastewater, communications, and stormwater needs and structure. Finally, the Town was pursuing the design of a taxilane west of Taxiway H to support aviation access revenue parcels north of Butler Street. The Town received a tentative allocation from the Federal Aviation Administration (FAA) for the development of an Environmental Assessment (EA) for the strengthening, widening, and extension of Runway 17-35, 1,800 feet north, and associated land acquisition in 2006. Prior to extending Runway 17-35 to the north, the FAA must issue a finding of no significant impact (FONSI). The EA is the formal process to obtain this necessary environmental clearance.

While the FAA issued the tentative allocation, the region, in a separate decision, removed the obligation of these funds for FY 2006. While the Town did not lose this funding, they were also not able to pursue the EA in 2006. The FAA was to reconsider the EA funding in 2007. In 2006, the FAA did not support the extension of Runway 17-35. The short term planning period reflects this EA being used for the land acquisition necessary to protect the approach paths to Runway 17-35.

The installation of interior security fencing and access gates are programmed in the short term planning horizon. This is planned to control access to the aircraft operations area (AOA). Presently, there is no physical barrier preventing vehicle or pedestrian access to the aprons, taxiways, or runways. Automated access gates are planned to allow for access to the AOA for authorized users.

A reconfiguration of the public parking area near the terminal is also planned. Presently, vehicles cross the apron and taxilanes serving the large conventional hangar located behind the terminal building. The plan provides for creating a new public parking area to the east of the large conventional hangar for public parking, which would divert traffic away from the apron and taxilanes serving that hangar. A pedestrian access gate would allow for access to the terminal building.

An automated weather observation system (AWOS) is also planned. The AWOS will provide accurate weather reporting for the airport.

The construction of 30 T-hangars is programmed. Taxilanes are already con-

structed to support T-hangar development.

The apron is planned to be expanded to the north to support Fixed Based Operators (FBOs) which provide services to general aviation aircraft such as aircraft maintenance. Automobile parking areas and roadway access, including the extension of utilities, is also programmed.

The construction of an aircraft wash rack and helipad is also programmed. The aircraft wash rack will assist the Town in complying with its Arizona Pollution Discharge Elimination System (AZDPES) permit by collecting the contaminated water from aircraft cleaning instead of having this water drain onto the ground. The helipad and associated parking pads will allow for a segregated operational area for rotorcraft. This helipad is intended to serve future air medical companies that may base at the airport.

The construction of both access roads north of Butler Street is also programmed. These roadways are needed to support the revenue support parcels located along Palo Verde Road. Finally, taxiway lighting is planned for those taxiways which only have delineators now or no lighting.

The total investment necessary for the short term CIP is approximately $27.3 million. Of this total, $25.1 million is eligible for FAA grant funding; $661,000 is eligible for state funds, with the Town responsible for $1.4 million.

INTERMEDIATE TERM IMPROVEMENTS

The intermediate term planning horizon focuses on the airport's development needs during the six to ten-year timeframe. Due to the fluid nature of general aviation growth, and the uncertainty of infrastructure and development needs more than five years into the future, the projects in the intermediate term were combined into a single project listing and not prioritized by year. However, the project listing is intended to depict a prioritization of projects as now anticipated to meet future demand.

The implementation of many of the items in the intermediate term should be based upon actual demand. Those projects, such as T-hangar construction, should not be undertaken unless there is an existing demand for such facilities.

A primary focus of the intermediate term planning horizon is the extension of Runway 17-35 to 7,300 feet. As detailed in Chapter Five, the 1,800-foot extension to the north will allow the airport to be served by nearly every business jet now in the national fleet. The extension of the runway requires the acquisition of 74 acres of land to protect the approach to Runway 17 and encompass all the required safety and object clearance standards. This land is acquired in the short term planning period. Related projects include widening and strengthening the existing runway. The realignment of Yuma Road is needed to accommodate the extension. A precision approach path indicator

(PAPI-4) is planned once the runway is extended. The PAPI-4 is better suited for large aircraft operations than the PAPI-2 currently installed at the Runway 17 end. Distance remaining signs are also planned to extend along the full length of Runway 17-35. These allow pilots to easily determine the length of runway left when landing or departing at the airport.

The acquisition of approximately 119 acres of land between the existing airport southern boundary and Broadway Street is planned to accommodate the Runway 35 runway protection zone (RPZ) which extends beyond the existing southern airport boundary. This land acquisition also is intended to protect the ultimate approach path to the planned parallel runway.

The intermediate term planning horizon includes the expansion of the existing terminal apron to the west. This apron can be extended to within 500 feet of the Runway 17-35 centerline. This will allow for more tiedown locations and the ability to accommodate aircraft with larger wingspans. Other projects include the construction of the interior roadway network south of Butler Street, to provide access to non-airfield access parcels and future aircraft storage hangars, as well as an aircraft maintenance building.

By the intermediate term, forecasts indicate that based aircraft may increase to such a level that an additional 40 T-hangars may be needed. The T-hangar taxilane construction would be eligible for FAA funding.

A final series of projects in the intermediate term planning horizon include the construction of the parallel runway and taxiway access. This also includes the acquisition of approximately four acres of land to protect the Runway 17R RPZ. The parallel runway is anticipated to be needed as the airport surpasses 141,000 annual operations.

A total of $2.5 million is included in this planning period for on-going pavement maintenance needs such as crack sealing, rejuvenating seal coats, and slab replacements as necessary.

The total investment necessary for the intermediate term CIP is approximately $30.1 million. Of this total, $27.6 million is eligible for FAA grant funding; $727,000 is eligible for state funds, with the Town responsible for $1.8 million.

LONG TERM IMPROVEMENTS

Long term improvements, as presented on **Exhibit 6B**, continue the expansion of landside facilities and aircraft aprons to accommodate growth. Landside improvements include the expansion of the transient apron to the north to support FBO development, construction of 40 T-hangars and associated taxilanes, and automobile parking and access. The consolidation of all fuel storage is planned at the south end of the airport. The potential for more automobile parking at the terminal building is also included in the long term CIP.

The extension of Runway 17-35 to 1,400 feet south is also included in the long term planning horizon. This project requires the relocation of the Roosevelt Irrigation District Canal and acquisition of approximately 50 acres of land to protect the RPZ and keep it clear of incompatible development. This extension will be needed to allow greater fuel and/or passenger loading for aircraft operating at the airport. The installation of a precision approach to Runway 35 (an instrument landing system is assumed) and medium intensity approach lighting system (MALSR) is also programmed. This will allow the airport to be accessible during low visibility and cloud ceiling conditions, which now occur only less than one percent of the time.

The construction of an airport traffic control tower (ATCT) is also included in this period. While the construction of an ATCT is technically eligible for AIP funding, the FAA would prefer that any tower funding come from the Air Traffic Organization (ATO). ATO is a division within the FAA that maintains navigational aids, including towers, at many airports.

The construction of parallel taxiway access west of the parallel runway and extension of the center parallel taxiway are programmed at the end of the planning period. Depending upon future aviation needs and development, these taxiways may be needed to support future aviation facilities west of the parallel runway.

A total of $5.0 million is included in this planning period for on-going pavement maintenance needs such as crack sealing, rejuvenating seal coats, and slab replacements as necessary.

The total investment necessary for the long term CIP is approximately $52.5 million. Of this total, $48.9 million is eligible for FAA grant funding; $1.2 million is eligible for state funds, with the airport sponsor responsible for $2.3 million.

CAPITAL IMPROVEMENT FUNDING SOURCES

Financing capital improvements at the airport will not rely solely on the financial resources of the Town of Buckeye. Capital improvement funding is available through various grant-in-aid programs on both the state and federal levels. The following discussion outlines key sources of funding potentially available for capital improvements at Buckeye Municipal Airport.

FEDERAL GRANTS

Through federal legislation over the years, various grant-in-aid programs have been established to develop and maintain a system of public airports across the United States. The purpose of this system and its federally-based funding is to maintain national defense and to promote interstate commerce. The most recent legislation affecting federal funding was enacted in late 2003 and is titled, *Century of Aviation Re-authorization Act,* or *Vision 100*.

The four-year bill covers FAA fiscal years 2004, 2005, 2006, and 2007. This

04MP11-6B-9/27/07

SHORT TERM IMPROVEMENTS

2007
- '07-1 North Land Acquisition (74 Acres)
- '07-2 Construct Taxilane
- '07-3 Construct Airport Entrance Road
- '07-4 Design Taxiway Lighting
- '07-5 Design Interior Security Fencing, Gates, and Automobile Parking
- '07-6 Design AWOS-III Installation
- '07-7 Design Runway Widening and Strengthening

2008
- '08-1 North Land Acquisition (74 Acres)-Phase I
- '08-2 Install Taxiway Lighting
- '08-3 Install Interior Security Fencing and Gates/Construct Public Parking Lot
- '08-4 Install AWOS-III

2009
- '09-1 North Land Acquisition (74 Acres)-Phase II
- '09-2 Design T-Hangar Construction
- '09-3 Design North Apron Expansion - Phase I
- '09-4 Design Automobile Parking and Access - Phase I

2010
- '10-1 North Land Acquisition (74 Acres)-Phase III
- '10-2 Construct 30 T-Hangars
- '10-3 Extend Apron North - Phase I
- '10-4 Construct Automobile Parking and Access - Phase I
- '10-5 Prepare Pavement Maintenance Management Program
- '10-6 Design Aircraft Wash Rack
- '10-7 Design North Access Road
- '10-8 Design Helipad and Hardstands
- '10-9 Design Northeast Access Road

2011
- '11-1 North Land Acquisition (74 Acres)-Phase IV
- '11-2 Construct Aircraft Wash Rack
- '11-3 Construct North Access Road
- '11-4 Construct Helipad and Two Hardstands
- '11-5 Construct Northeast Access Road

LONG TERM IMPROVEMENTS

1. Extend Apron North (Phase II)
2. Construct Automobile Parking and Access (Phase II)
3. Construct Consolidated Fuel Farm
4. Remove Hangar/Construct Automobile Parking and Access
5. Construct Airport Traffic Control Tower (ATCT)
6. Construct T-Hangar Access Taxilanes (Phase II)
7. Construct 40 T-Hangars
8. Construct Aircraft Storage Parcel Taxilanes and Automobile Parking - Phase II
9. South Land Acquisition - Phase II (50 Acres)
10. Relocate Roosevelt Irrigation District Canal
11. Extend Runway 17-35 and Parallel Taxiways 1,400' South
12. Install Instrument Landing System and MALSR to Runway 35
13. Construct West Parallel Taxiway - Phase II
14. Construct Runway 17R-35L Parallel Taxiway
15. Construct Perimeter Service Road
16. Pavement Maintenance

LEGEND

- Existing Airport Property Line
- Ultimate Airport Property Line
- Runway Safety Area (RSA)
- Object Free Area (OFA)
- Short Term Development
- Intermediate Term Development
- Long Term Development
- Aircraft Storage Parcel
- Commercial General Aviation Parcel
- Airfield Access Revenue Support
- Revenue Support
- Building to be Removed
- Runway Protection Zone (RPZ)
- **AWOS** Automated Weather Observation System
- **MALSR** Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights
- **PAPI** Precision Approach Path Indicator
- **REIL** Runway End Identifier Lighting

INTERMEDIATE TERM IMPROVEMENTS

1. Runway Extension Environmental Assessment
2. South Land Acquisition - Phase 1 (119 Acres)
3. Increase Pavement Strength (Runway 17-35, Taxiway H,A,B,C,D,E,F,G)
4. Widen Runway 17-35 to 100'
5. Design Runway Extension and Yuma Road Relocation
6. Yuma Road Relocation
7. Extend Runway 17-35 and Taxiway H 1,800' North
8. Install PAPI-4 Runway 17L
9. Install Distance Remaining Signs to Runway 17-35
10. Expand Apron West
11. Construct South Access Road
12. Construct Southeast Access Road
13. Construct Airport Maintenance Building (1,500 square feet)
14. Construct T-Hangar Access Taxilanes - Phase I
15. Construct 40 T-Hangars
16. Construct Connecting Taxiway
17. Construct Aircraft Storage Parcel Taxilanes and Automobile Parking - Phase I
18. Northwest Land Acquisition (4 Acres)
19. Construct West Parallel Taxiway - Phase I
20. Construct Runway 17R-35L, Install PAPI-2 and REILs Each End
21. Pavement Maintenance

Palo Verde Road
Butler Street
Roosevelt Irrigation District Canal
Interstate Highway 10
Yuma Road
Broadway Road
Bruner Road
Ultimate Runway 17L-35R (8,700' x 100')
Ultimate Runway 17R-35L (4,300' x 60')
1,800'
1,400'
400'
700'
240'
± 74 Acres
± 156 Acres
Right-of-Way
Potential Bruner Road Extension
0 1,000 2,000
SCALE IN FEET
NORTH

Exhibit 6B
DEVELOPMENT STAGING

bill presented similar funding levels to the previous bill - *Air 21.* Airport Improvement Program (AIP) funding was authorized at $3.4 billion in 2004, $3.5 billion in 2005, $3.6 billion in 2006, and $3.7 billion in 2007. This new bill provides the FAA the opportunity to plan for longer term projects versus one-year re-authorizations.

The source for *Vision 100* funds is the Aviation Trust Fund. The Aviation Trust Fund was established in 1970 to provide funding for aviation capital investment programs (aviation development, facilities and equipment, and research and development). The Aviation Trust Fund also finances the operation of the FAA. It is funded by user fees including taxes on airline tickets, aviation fuel, and various aircraft parts.

Funds are distributed each year by the FAA from appropriations by Congress. A portion of the annual distribution is to primary commercial service airports based upon enplanement levels. If Congress appropriates the full amounts authorized by *Vision 100,* eligible general aviation airports could receive up to $150,000 of funding each year in Non-Primary Entitlement (NPE) funds (*National Plan of Integrated Airport Systems* [NPIAS] inclusion is required for general aviation entitlement funding). Buckeye Municipal Airport qualifies for full NPE funding as the NPIAS includes over $150,000 in yearly capital projects.

The remaining AIP funds are distributed by the FAA based upon the priority of the project for which they have requested federal assistance through discretionary apportionments. A national priority ranking system is used to evaluate and rank each airport project. Those projects with the highest priority are given preference in funding.

Under the AIP program, examples of eligible development projects include the airfield, public aprons, and access roads. Additional buildings and structures may be eligible if the function of the structure is to serve airport operations in a non revenue-generating capacity such as maintenance facilities.

Whereas entitlement monies are guaranteed on an annual basis, discretionary funds are not assured. If the combination of entitlement, discretionary, and airport sponsor match, does not provide enough capital for planned development, projects may be delayed. Other supplemental funding sources are described in the following subsections.

STATE FUNDING PROGRAM

In support of the state airport system, the State of Arizona also participates in airport improvement projects. The source for state airport improvement funds is the Arizona Aviation Fund. Taxes levied by the state on aviation fuel, flight property, aircraft registration tax, and registration fees (as well as interest on these funds) are deposited in the Arizona Aviation Fund. The Transportation Board establishes the policies for distribution of these state funds.

Under the State of Arizona grant program, an airport can receive funding for one-half (currently 2.5 percent) of the local share of projects receiving federal

AIP funding. The state also provides 90 percent funding for projects which are typically not eligible for federal AIP funding or have not received federal funding.

State Airport Loan Program

The Arizona Department of Transportation-Aeronautics Division's (ADOT) Airport Loan Program was established to enhance the utilization of state funds and provide a flexible funding mechanism to assist airports in funding improvement projects. Eligible projects include runway, taxiway, and apron improvements; land acquisition, planning studies, and the preparation of plans and specifications for airport construction projects; as well as revenue-generating improvements such as hangars and fuel storage facilities. Projects which are not currently eligible for the State Airport Loan Program are considered if the project would enhance the airport's ability to be financially self-sufficient.

There are two ways in which the loan funds can be used: Matching Funds or Revenue-Generating Projects. The Matching Funds are provided to meet the local matching fund requirement for securing federal airport improvement grants or other federal or state grants. The Revenue-Generating funds are provided for airport-related construction projects that are not eligible for funding under another program.

Pavement Maintenance Program

The airport system in Arizona is a multi-million dollar investment of public and private funds that must be protected and preserved. State aviation fund dollars are limited and the State Transportation Board recognizes the need to protect and extend to the maximum amount the useful life of the airport system's pavement. This program, Arizona Pavement Preservation Program (APPP), is established to assist in the preservation of the Arizona airport system infrastructure. Buckeye Municipal Airport participates in this program.

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

The Arizona Airport Pavement Management System uses the Army Corps of Engineers' "Micropaver" program as a basis for generating a Five-Year Airport Pavement Preservation Program (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. The Aeronautics Division ensures that the APMS database is kept current, in compliance with FAA requirements.

Every year, the Aeronautics Division, 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 airport sponsor may elect to accept a state grant for the project and not participate in the Airport Pavement Preservation Program (APPP), or the airport sponsor may sign an Inter-Government Agreement (IGA) with the Aeronautics Division to participate in the APPP.

LOCAL FUNDING

The balance of project costs, after consideration has been given to grants, must be funded through local resources. The Buckeye Municipal Airport is operated by the Town of Buckeye, and could receive some assistance from the Town. The goal for the operation of the airport is to generate ample revenues to cover all operating and capital expenditures. As with many general aviation airports, this is not possible and other financial methods will be needed.

There are several alternatives for local financing options for future development at the airport, including airport revenues, direct funding from the Town, issuing bonds, and leasehold financing. These strategies could be used to fund the local matching share, or complete the project if grant funding cannot be arranged. The capital improvement program has assumed that some landside facility development would be completed privately, while other developments (namely T-hangars) would be completed by the Town.

There are several municipal bonding options available including: general obligation bonds, limited obligation bonds, and revenue bonds. General obligation bonds are a common form of municipal bond which is issued by voter approval and is secured by the full faith and credit of the Town. Town tax revenues are pledged to retire the debt. As instruments of credit, and because the community secures the bonds, general obligation bonds reduce the available debt level of the community. Due to the community pledge to secure and pay general obligation bonds, they are the most secure type of municipal bond and are generally issued at lower interest rates and carry lower costs of issuance. The primary disadvantage of general obligation bonds is that they require voter approval and are subject to statutory debt limits. This requires that they be used for projects that have broad support among the voters, and that they be reserved for projects that have the highest public priorities.

In contrast to general obligation bonds, limited obligation bonds (sometimes referred to as self-liquidating bonds) are secured by revenues from a local source. While neither general fund revenues nor the taxing power of the local community is pledged to pay the debt service, these sources may be required to retire the debt if pledged revenues are insufficient to make interest and principal payments on the bonds. These bonds still carry the full faith and credit pledge of the local community and, therefore, are considered, for the purpose of financial analysis, as part of the debt burden of the local community. The overall debt burden of the local community is a factor in determining interest rates on municipal bonds.

There are several types of revenue bonds but, in general, they are a form of municipal bond which is payable solely from the revenue derived from the operation of a facility that was constructed or acquired with the proceeds of the bonds. For example, a lease revenue bond is secured with the income from a lease assigned to the repayment of the bonds. Revenue bonds have become a common form of financing airport improvements. Revenue bonds present the opportunity to provide those improvements without direct burden to the taxpayer. Revenue bonds normally carry a higher interest rate because they lack the guarantees of general and limited obligation bonds.

Leasehold financing refers to a developer or tenant financing improvements under a long term ground lease. The obvious advantage of such an arrangement is that it relieves the community of all responsibility for raising the capital funds for improvements. However, the private development of facilities on a ground lease, particularly on property owned by a government agency, produces a unique set of concerns.

In particular, it is more difficult to obtain private financing as only the improvements and the right to continue the lease can be claimed in the event of a default. Ground leases normally provide for the reversion of improvements to the lessor at the end of the lease term, which reduces their potential value to a lender taking possession. Also, companies that want to own their property as a matter of financial policy may not locate where land is only available for lease.

PLAN IMPLEMENTATION

The best means to begin implementation of the recommendations in this master plan is to first recognize that planning is a continuous process that does not end with completion and approval of this document. Rather, the ability to continuously monitor the existing and forecast status of airport activity must be provided and maintained. The issues upon which this master plan is based will remain valid for a number of years. The primary goal is for the airport to best serve the air transportation needs of the region, while continuing to be economically self-sufficient.

The actual need for facilities is most appropriately established by airport activity levels rather than a specified date. For example, projections have been made as to when additional hangars may be needed at the airport. In

reality, however, the timeframe in which the development is needed may be substantially different. Actual demand may be slower to develop than expected. On the other hand, high levels of demand may establish the need to accelerate the development. Although every effort has been made in this master planning process to conservatively estimate when facility development may be needed, aviation demand will dictate when facility improvements need to be delayed or accelerated.

The real value of a usable master plan is in keeping the issues and objectives in the minds of the managers and decision-makers so that they are better able to recognize change and its effect. In addition to adjustments in aviation demand, decisions made as to when to undertake the improvements recommended in this master plan will impact the period that the plan remains valid. The format used in this plan is intended to reduce the need for formal and costly updates by simply adjusting the timing. Updating can be done by the manager, thereby improving the plan's effectiveness.

In summary, the planning process requires that airport management consistently monitor the progress of the airport in terms of aircraft operations and based aircraft. Analysis of aircraft demand is critical to the timing and need for new airport facilities. The information obtained from continually monitoring airport activity will provide the data necessary to determine if the development schedule should be accelerated or decelerated.

Appendix A

GLOSSARY & ABBREVIATIONS

Glossary of Terms

ABOVE GROUND LEVEL: The elevation of a point or surface above the ground.

ACCELERATE-STOP DISTANCE AVAILABLE (ASDA): See declared distances.

ADVISORY CIRCULAR: External publications issued by the FAA consisting of non-regulatory material providing for the recommendations relative to a policy, guidance and information relative to a specific aviation subject.

AIR CARRIER: An operator which: (1) performs at least five round trips per week between two or more points and publishes flight schedules which specify the times, days of the week, and places between which such flights are performed; or (2) transports mail by air pursuant to a current contract with the U.S. Postal Service. Certified in accordance with Federal Aviation Regulation (FAR) Parts 121 and 127.

AIRCRAFT: A transportation vehicle that is used or intended for use for flight.

AIRCRAFT APPROACH CATEGORY: An alphabetic classification of aircraft based upon 1.3 times the stall speed in a landing configuration at their maximum certified landing weight.

AIRCRAFT OPERATION: The landing, takeoff, or touch-and-go procedure by an aircraft on a runway at an airport.

AIRCRAFT OPERATIONS AREA: A restricted and secure area on the airport property designed to protect all aspects related to aircraft operations.

AIRCRAFT OWNERS AND PILOTS ASSOCIATION: A private organization serving the interests and needs of general aviation pilots and aircraft owners.

AIRCRAFT APPROACH CATEGORY: A grouping of aircraft based on 1.3 times the stall speed in their landing configuration at their maximum certificated landing weight. The categories are as follows:

- *Category A:* Speed less than 91 knots.
- *Category B:* Speed 91 knots or more, but less than 121 knots.
- *Category C:* Speed 121 knots or more, but less than 141 knots.
- *Category D:* Speed 141 knots or more, but less than 166 knots.
- *Category E:* Speed greater than 166 knots.

AIRCRAFT RESCUE AND FIRE FIGHTING: A facility located at an airport that provides emergency vehicles, extinguishing agents, and personnel responsible for minimizing the impacts of an aircraft accident or incident.

AIRFIELD: The portion of an airport which contains the facilities necessary for the operation of aircraft.

AIRLINE HUB: An airport at which an airline concentrates a significant portion of its activity and which often has a significant amount of connecting traffic.

AIRPLANE DESIGN GROUP (ADG): A grouping of aircraft based upon wingspan. The groups are as follows:

- *Group I:* Up to but not including 49 feet.
- *Group II:* 49 feet up to but not including 79 feet.
- *Group III:* 79 feet up to but not including 118 feet.
- *Group IV:* 118 feet up to but not including 171 feet.
- *Group V:* 171 feet up to but not including 214 feet.
- *Group VI:* 214 feet or greater.

AIRPORT AUTHORITY: A quasi-governmental public organization responsible for setting the policies governing the management and operation of an airport or system of airports under its jurisdiction.

AIRPORT BEACON: A navigational aid located at an airport which displays a rotating light beam to identify whether an airport is lighted.

AIRPORT CAPITAL IMPROVEMENT PLAN: The planning program used by the Federal Aviation Administration to identify, prioritize, and distribute funds for airport development and the needs of the National Airspace System to meet specified national goals and objectives.

AIRPORT ELEVATION: The highest point on the runway system at an airport expressed in feet above mean sea level (MSL).

AIRPORT LAYOUT DRAWING (ALD): The drawing of the airport showing the layout of existing and proposed airport facilities.

AIRPORT MASTER PLAN: The planner's concept of the long-term development of an airport.

AIRPORT MOVEMENT AREA SAFETY SYSTEM: A system that provides automated alerts and warnings of potential runway incursions or other hazardous aircraft movement events.

AIRPORT OBSTRUCTION CHART: A scaled drawing depicting the Federal Aviation Regulation (FAR) Part 77 surfaces, a representation of objects that penetrate these surfaces, runway, taxiway, and ramp areas, navigational aids, buildings, roads and other detail in the vicinity of an an airport.

AIRPORT REFERENCE CODE (ARC): A coding system used to relate airport design criteria to the operational (Aircraft Approach Category) to the physical characteristics (Airplane Design Group) of the airplanes intended to operate at the airport.

AIRPORT REFERENCE POINT (ARP): The latitude and longitude of the approximate center of the airport.

AIRPORT SPONSOR: The entity that is legally responsible for the management and operation of an airport, including the fulfillment of the requirements of laws and regulations related thereto.

AIRPORT SURFACE DETECTION EQUIPMENT: A radar system that provides air traffic controllers with a visual representation of the movement of aircraft and other vehicles on the ground on the airfield at an airport.

AIRPORT SURVEILLANCE RADAR: The primary radar located at an airport or in an air traffic control terminal area that receives a signal at an antenna and transmits the signal to air traffic control display equipment defining the location of aircraft in the air. The signal provides only the azimuth and range of aircraft from the location of the antenna.

AIRPORT TRAFFIC CONTROL TOWER (ATCT): A central operations facility in the terminal air traffic control system, consisting of a tower, including an associated instrument flight rule (IFR) room if radar equipped, using air/ground communications and/or radar, visual signaling and other devices to provide safe and expeditious movement of terminal air traffic.

AIR ROUTE TRAFFIC CONTROL CENTER: A facility which provides enroute air traffic control service to aircraft operating on an IFR flight plan within controlled airspace over a large, multi-state region.

AIRSIDE: The portion of an airport that contains the facilities necessary for the operation of aircraft.

AIRSPACE: The volume of space above the surface of the ground that is provided for the operation of aircraft.

AIR TAXI: An air carrier certificated in accordance with FAR Part 121 and FAR Part 135 and authorized to provide, on demand, public transportation of persons and property by aircraft. Generally operates small aircraft "for hire" for specific trips.

AIR TRAFFIC CONTROL: A service operated by an appropriate organization for the purpose of providing for the safe, orderly, and expeditious flow of air traffic.

AIR ROUTE TRAFFIC CONTROL CENTER (ARTCC): A facility established to provide air traffic control service to aircraft operating on an IFR flight plan within controlled airspace and principally during the enroute phase of flight.

AIR TRAFFIC HUB: A categorization of commercial service airports or group of commercial service airports in a metropolitan or urban area based upon the proportion of annual national enplanements existing at the airport or airports. The categories are large hub, medium hub, small hub, or non-hub. It forms the basis for the apportionment of entitlement funds.

AIR TRANSPORT ASSOCIATION OF AMERICA: An organization consisting of the principal U.S. airlines that represents the interests of the airline industry on major aviation issues before federal, state, and local government bodies. It promotes air transportation safety by coordinating industry and governmental safety programs and it serves as a focal point for industry efforts to standardize practices and enhance the efficiency of the air transportation system.

ALERT AREA: See special-use airspace.

ALTITUDE: The vertical distance measured in feet above mean sea level.

ANNUAL INSTRUMENT APPROACH (AIA): An approach to an airport with the intent to land by an aircraft in accordance with an IFR flight plan when visibility is less than three miles and/or when the ceiling is at or below the minimum initial approach altitude.

APPROACH LIGHTING SYSTEM (ALS): An airport lighting facility which provides visual guidance to landing aircraft by radiating light beams by which the pilot aligns the aircraft with the extended centerline of the runway on his final approach and landing.

APPROACH MINIMUMS: The altitude below which an aircraft may not descend while on an IFR approach unless the pilot has the runway in sight.

APPROACH SURFACE: An imaginary obstruction limiting surface defined in FAR Part 77 which is longitudinally centered on an extended runway centerline and extends outward and upward from the primary surface at each end of a runway at a designated slope and distance based upon the type of available or planned approach by aircraft to a runway.

APRON: A specified portion of the airfield used for passenger, cargo or freight loading and unloading, aircraft parking, and the refueling, maintenance and servicing of aircraft.

AREA NAVIGATION: The air navigation procedure that provides the capability to establish and maintain a flight path on an arbitrary course that remains within the coverage area of navigational sources being used.

AUTOMATED TERMINAL INFORMATION SERVICE (ATIS): The continuous broadcast of recorded non-control information at towered airports. Information typically includes wind speed, direction, and runway in use.

AUTOMATED SURFACE OBSERVATION SYSTEM (ASOS): A reporting system that provides frequent airport ground surface weather observation data through digitized voice broadcasts and printed reports.

AUTOMATED WEATHER OBSERVATION STATION (AWOS): Equipment used to automatically record weather conditions (i.e. cloud height, visibility, wind speed and direction, temperature, dewpoint, etc.)

AUTOMATIC DIRECTION FINDER (ADF): An aircraft radio navigation system which senses and indicates the direction to a non-directional radio beacon (NDB) ground transmitter.

AVIGATION EASEMENT: A contractual right or a property interest in land over which a right of unobstructed flight in the airspace is established.

AZIMUTH: Horizontal direction expressed as the angular distance between true north and the direction of a fixed point (as the observer's heading).

BASE LEG: A flight path at right angles to the landing runway off its approach end. The base leg normally extends from the downwind leg to the intersection of the extended runway centerline. See "traffic pattern."

BASED AIRCRAFT: The general aviation aircraft that use a specific airport as a home base.

BEARING: The horizontal direction to or from any point, usually measured clockwise from true north or magnetic north.

BLAST FENCE: A barrier used to divert or dissipate jet blast or propeller wash.

BLAST PAD: A prepared surface adjacent to the end of a runway for the purpose of eliminating the erosion of the ground surface by the wind forces produced by airplanes at the initiation of takeoff operations.

BUILDING RESTRICTION LINE (BRL): A line which identifies suitable building area locations on the airport.

CAPITAL IMPROVEMENT PLAN: The planning program used by the Federal Aviation Administration to identify, prioritize, and distribute Airport Improvement Program funds for airport development and the needs of the National Airspace System to meet specified national goals and objectives.

CARGO SERVICE AIRPORT: An airport served by aircraft providing air transportation of property only, including mail, with an annual aggregate landed weight of at least 100,000,000 pounds.

CATEGORY I: An Instrument Landing System (ILS) that provides acceptable guidance information to an aircraft from the coverage limits of the ILS to the point at which the localizer course line intersects the glide path at a decision height of 100 feet above the horizontal plane containing the runway threshold.

CATEGORY II: An ILS that provides acceptable guidance information to an aircraft from the coverage limits of the ILS to the point at which the localizer course line intersects the glide path at a decision height of 50 feet above the horizontal plane containing the runway threshold.

CATEGORY III: An ILS that provides acceptable guidance information to a pilot from the coverage limits of the ILS with no decision height specified above the horizontal plane containing the runway threshold.

CEILING: The height above the ground surface to the location of the lowest layer of clouds which is reported as either broken or overcast.

CIRCLING APPROACH: A maneuver initiated by the pilot to align the aircraft with the runway for landing when flying a predetermined circling instrument approach under IFR.

CLASS A AIRSPACE: See Controlled Airspace.

CLASS B AIRSPACE: See Controlled Airspace.

CLASS C AIRSPACE: See Controlled Airspace.

CLASS D AIRSPACE: See Controlled Airspace.

CLASS E AIRSPACE: See Controlled Airspace.

CLASS G AIRSPACE: See Controlled Airspace.

CLEAR ZONE: See Runway Protection Zone.

COMMERCIAL SERVICE AIRPORT: A public airport providing scheduled passenger service that enplanes at least 2,500 annual passengers.

COMMON TRAFFIC ADVISORY FREQUENCY: A radio frequency identified in the appropriate aeronautical chart which is designated for the purpose of transmitting airport advisory information and procedures while operating to or from an uncontrolled airport.

COMPASS LOCATOR (LOM): A low power, low/medium frequency radio-beacon installed in conjunction with the instrument landing system at one or two of the marker sites.

CONICAL SURFACE: An imaginary obstruction-limiting surface defined in FAR Part 77 that extends from the edge of the horizontal surface outward and upward at a slope of 20 to 1 for a horizontal distance of 4,000 feet.

CONTROLLED AIRPORT: An airport that has an operating airport traffic control tower.

CONTROLLED AIRSPACE: Airspace of defined dimensions within which air traffic control services are provided to instrument flight rules (IFR) and visual flight rules (VFR) flights in accordance with the airspace classification. Controlled airspace in the United States is designated as follows:

- *CLASS A:* Generally, the airspace from 18,000 feet mean sea level (MSL) up to but not including flight level FL600. All persons must operate their aircraft under IFR.

- *CLASS B:* Generally, the airspace from the surface to 10,000 feet MSL surrounding the nation's busiest airports. The configuration of Class B airspace is unique to each airport, but typically consists of two or more layers of air space and is designed to contain all published instrument approach procedures to the airport. An air traffic control clearance is required for all aircraft to operate in the area.

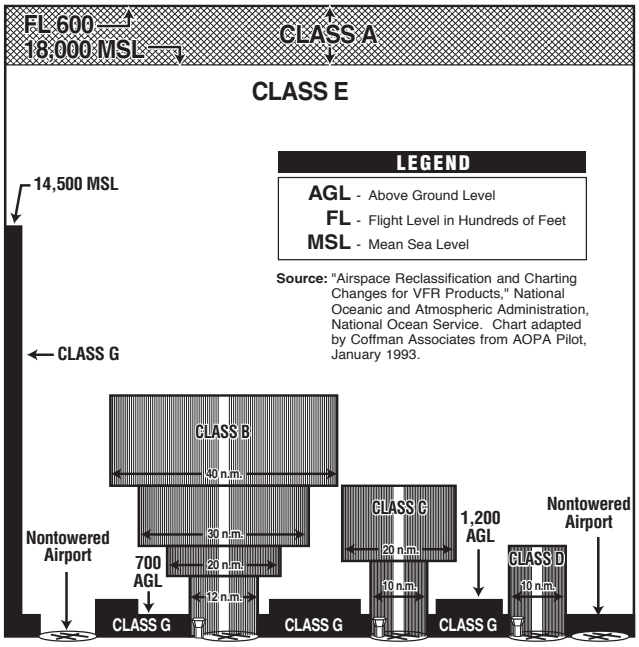
- *CLASS C:* Generally, the airspace from the surface to 4,000 feet above the airport elevation (charted as MSL) surrounding those airports that have an operational control tower and radar approach control and are served by a qualifying number of IFR operations or passenger enplanements. Although individually tailored for each airport, Class C airspace typically consists of a surface area with a five nautical mile (nm) radius and an outer area with a 10 nautical mile radius that extends from 1,200 feet to 4,000 feet above the airport elevation. Two-way radio communication is required for all aircraft.

- *CLASS D:* Generally, that airspace from the surface to 2,500 feet above the air port elevation (charted as MSL) surrounding those airports that have an operational control tower. Class D airspace is individually tailored and configured to encompass published instrument approach proce dures. Unless otherwise authorized, all persons must establish two-way radio communication.

- *CLASS E:* Generally, controlled airspace that is not classified as Class A, B, C, or D. Class E airspace extends upward from either the surface or a designated altitude to the overlying or adjacent controlled airspace. When designated as a surface area, the airspace will be configured to contain all instrument

procedures. Class E airspace encompasses all Victor Airways. Only aircraft following instrument flight rules are required to establish two-way radio communication with air traffic control.

- *CLASS G:* Generally, that airspace not classified as Class A, B, C, D, or E. Class G airspace is uncontrolled for all aircraft. Class G airspace extends from the surface to the overlying Class E airspace.



CONTROLLED FIRING AREA: See special-use airspace.

CROSSWIND: A wind that is not parallel to a runway centerline or to the intended flight path of an aircraft.

CROSSWIND COMPONENT: The component of wind that is at a right angle to the runway centerline or the intended flight path of an aircraft.

CROSSWIND LEG: A flight path at right angles to the landing runway off its upwind end. See "traffic pattern."

DECIBEL: A unit of noise representing a level relative to a reference of a sound pressure 20 micro newtons per square meter.

DECISION HEIGHT: The height above the end of the runway surface at which a decision must be made by a pilot during the ILS or Precision Approach Radar approach to either continue the approach or to execute a missed approach.

DECLARED DISTANCES: The distances declared available for the airplane's takeoff runway, takeoff distance, accelerate-stop distance, and landing distance requirements. The distances are:

- *TAKEOFF RUNWAY AVAILABLE (TORA):* The runway length declared available and suitable for the ground run of an airplane taking off;

- *TAKEOFF DISTANCE AVAILABLE (TODA):* The TORA plus the length of any remaining runway and/or clear way beyond the far end of the TORA;

- *ACCELERATE-STOP DISTANCE AVAILABLE (ASDA):* The runway plus stopway length declared available for the acceleration and deceleration of an aircraft aborting a takeoff; and

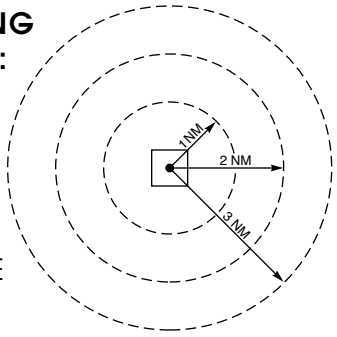
- *LANDING DISTANCE AVAILABLE (LDA):* The runway length declared available and suitable for landing.

DEPARTMENT OF TRANSPORTATION: The cabinet level federal government organization consisting of modal operating agencies, such as the Federal Aviation Administration, which was established to promote the coordination of federal transportation programs and to act as a focal point for research and development efforts in transportation.

DISCRETIONARY FUNDS: Federal grant funds that may be appropriated to an airport based upon designation by the Secretary of Transportation or Congress to meet a specified national priority such as enhancing capacity, safety, and security, or mitigating noise.

DISPLACED THRESHOLD: A threshold that is located at a point on the runway other than the designated beginning of the runway.

DISTANCE MEASURING EQUIPMENT (DME): Equipment (airborne and ground) used to measure, in nautical miles, the slant range distance of an aircraft from the DME navigational aid.



DNL: The 24-hour average sound level, in A-weighted decibels, obtained after the addition of ten decibels to sound levels for the periods between 10 p.m. and 7 a.m. as averaged over a span of one year. It is the FAA standard metric for determining the cumulative exposure of individuals to noise.

DOWNWIND LEG: A flight path parallel to the landing runway in the direction opposite to landing. The downwind leg normally extends between the crosswind leg and the base leg. Also see "traffic pattern."

EASEMENT: The legal right of one party to use a portion of the total rights in real estate owned by another party. This may include the right of passage over, on, or below the property; certain air rights above the property, including view rights; and the rights to any specified form of development or activity, as well as any other legal rights in the property that may be specified in the easement document.

ELEVATION: The vertical distance measured in feet above mean sea level.

ENPLANED PASSENGERS: The total number of revenue passengers boarding aircraft, including originating, stop-over, and transfer passengers, in scheduled and non-scheduled services.

ENPLANEMENT: The boarding of a passenger, cargo, freight, or mail on an aircraft at an airport.

ENTITLEMENT: Federal funds for which a commercial service airport may be eligible based upon its annual passenger enplanements.

ENVIRONMENTAL ASSESSMENT (EA): An environmental analysis performed pursuant to the National Environmental Policy Act to determine whether an action would significantly affect the environment and thus require a more detailed environmental impact statement.

ENVIRONMENTAL AUDIT: An assessment of the current status of a party's compliance with applicable environmental requirements of a party's environmental compliance policies, practices, and controls.

ENVIRONMENTAL IMPACT STATEMENT (EIS): A document required of federal agencies by the National Environmental Policy Act for major projects ar legislative proposals affecting the environment. It is a tool for decision-making describing the positive and negative effects of a proposed action and citing alternative actions.

ESSENTIAL AIR SERVICE: A federal program which guarantees air carrier service to selected small cities by providing subsidies as needed to prevent these cities from such service.

FEDERAL AVIATION REGULATIONS: The general and permanent rules established by the executive departments and agencies of the Federal Government for aviation, which are published in the Federal Register. These are the aviation subset of the Code of Federal Regulations.

FINAL APPROACH: A flight path in the direction of landing along the extended runway centerline. The final approach normally extends from the base leg to the runway. See "traffic pattern."

FINDING OF NO SIGNIFICANT IMPACT (FONSI): A public document prepared by a Federal agency that presents the rationale why a proposed action will not have a

significant effect on the environment and for which an environmental impact statement will not be prepared.

FIXED BASE OPERATOR (FBO): A provider of services to users of an airport. Such services include, but are not limited to, hangaring, fueling, flight training, repair, and maintenance.

FLIGHT LEVEL: A designation for altitude within controlled airspace.

FLIGHT SERVICE STATION: An operations facility in the national flight advisory system which utilizes data interchange facilities for the collection and dissemination of Notices to Airmen, weather, and administrative data and which provides pre-flight and in-flight advisory services to pilots through air and ground based communication facilities.

FRANGIBLE NAVAID: A navigational aid which retains its structural integrity and stiffness up to a designated maximum load, but on impact from a greater load, breaks, distorts, or yields in such a manner as to present the minimum hazard to aircraft.

GENERAL AVIATION: That portion of civil aviation which encompasses all facets of aviation except air carriers holding a certificate of convenience and necessity, and large aircraft commercial operators.

GLIDESLOPE (GS): Provides vertical guidance for aircraft during approach and landing. The glideslope consists of the following:

1. Electronic components emitting signals which provide vertical guidance by reference to airborne instruments during instrument approaches such as ILS; or

2. Visual ground aids, such as VASI, which provide vertical guidance for VFR approach or for the visual portion of an instrument approach and landing.

GLOBAL POSITIONING SYSTEM (GPS): A system of 24 satellites used as reference points to enable navigators equipped with GPS receivers to determine their latitude, longitude, and altitude.

GROUND ACCESS: The transportation system on and around the airport that provides access to and from the airport by ground transportation vehicles for passengers, employees, cargo, freight, and airport services.

HELIPAD: A designated area for the takeoff, landing, and parking of helicopters.

HIGH INTENSITY RUNWAY LIGHTS: The highest classification in terms of intensity or brightness for lights designated for use in delineating the sides of a runway.

HIGH-SPEED EXIT TAXIWAY: A long radius taxiway designed to expedite aircraft turning off the runway after landing (at speeds to 60 knots), thus reducing runway occupancy time.

HORIZONTAL SURFACE: An imaginary obstruction-limiting surface defined in FAR Part 77 that is specified as a portion of a horizontal plane surrounding a runway located 150 feet above the established airport elevation. The specific horizontal dimensions of this surface are a function of the types of approaches existing or planned for the runway.

INSTRUMENT APPROACH PROCEDURE: A series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from the beginning of the initial approach to a landing, or to a point from which a landing may be made visually.

INSTRUMENT FLIGHT RULES (IFR): Procedures for the conduct of flight in weather conditions below Visual Flight Rules weather minimums. The term IFR is often also used to define weather conditions and the type of flight plan under which an aircraft is operating.

INSTRUMENT LANDING SYSTEM (ILS): A precision instrument approach system which normally consists of the following electronic components and visual aids:

1. Localizer.
2. Glide Slope.
3. Outer Marker.
4. Middle Marker.
5. Approach Lights.

INSTRUMENT METEOROLOGICAL CONDITIONS: Meteorological conditions expressed in terms of specific visibility and ceiling conditions that are less than the minimums specified for visual meteorological conditions.

ITINERANT OPERATIONS: Operations by aircraft that are not based at a specified airport.

KNOTS: A unit of speed length used in navigation that is equivalent to the number of nautical miles traveled in one hour.

LANDSIDE: The portion of an airport that provides the facilities necessary for the processing of passengers, cargo, freight, and ground transportation vehicles.

LANDING DISTANCE AVAILABLE (LDA): See declared distances.

LARGE AIRPLANE: An airplane that has a maximum certified takeoff weight in excess of 12,500 pounds.

LOCAL AREA AUGMENTATION SYSTEM: A differential GPS system that provides localized measurement correction signals to the basic GPS signals to improve navigational accuracy, integrity, continuity, and availability.

LOCAL OPERATIONS: Aircraft operations performed by aircraft that are based at the airport and that operate in the local traffic pattern or within sight of the airport, that are known to be departing for or arriving from flights in local practice areas within a prescribed distance from the airport, or that execute simulated instrument approaches at the airport.

LOCAL TRAFFIC: Aircraft operating in the traffic pattern or within sight of the tower, or aircraft known to be departing or arriving from the local practice areas, or aircraft executing practice instrument approach procedures. Typically, this includes touch-and-go training operations.

LOCALIZER: The component of an ILS which provides course guidance to the runway.

LOCALIZER TYPE DIRECTIONAL AID (LDA): A facility of comparable utility and accuracy to a localizer, but is not part of a complete ILS and is not aligned with the runway.

LONG RANGE NAVIGATION SYSTEM (LORAN): Long range navigation is an electronic navigational aid which determines aircraft position and speed by measuring the difference in the time of reception of synchronized pulse signals from two fixed transmitters. Loran is used for enroute navigation.

LOW INTENSITY RUNWAY LIGHTS: The lowest classification in terms of intensity or brightness for lights designated for use in delineating the sides of a runway.

MEDIUM INTENSITY RUNWAY LIGHTS: The middle classification in terms of intensity or brightness for lights designated for use in delineating the sides of a runway.

MICROWAVE LANDING SYSTEM (MLS): An instrument approach and landing system that provides precision guidance in azimuth, elevation, and distance measurement.

MILITARY OPERATIONS: Aircraft operations that are performed in military aircraft.

MILITARY OPERATIONS AREA (MOA): See special-use airspace.

MILITARY TRAINING ROUTE: An air route depicted on aeronautical charts for the conduct of military flight training at speeds above 250 knots.

MISSED APPROACH COURSE (MAC): The flight route to be followed if, after an instrument approach, a landing is not affected, and occurring normally:

1. When the aircraft has descended to the decision height and has not established visual contact; or

2. When directed by air traffic control to pull up or to go around again.

MOVEMENT AREA: The runways, taxiways, and other areas of an airport which are utilized for taxiing/hover taxiing, air taxiing, takeoff, and landing of aircraft, exclusive of loading ramps and parking areas. At those airports with a tower, air traffic control clearance is required for entry onto the movement area.

NATIONAL AIRSPACE SYSTEM: The network of air traffic control facilities, air traffic control areas, and navigational facilities through the U.S.

NATIONAL PLAN OF INTEGRATED AIRPORT SYSTEMS: The national airport system plan developed by the Secretary of Transportation on a biannual basis for the development of public use airports to meet national air transportation needs.

NATIONAL TRANSPORTATION SAFETY BOARD: A federal government organization established to investigate and determine the probable cause of transportation accidents, to recommend equipment and procedures to enhance transportation safety, and to review on appeal the suspension or revocation of any certificates or licenses issued by the Secretary of Transportation.

NAUTICAL MILE: A unit of length used in navigation which is equivalent to the distance spanned by one minute of arc in latitude, that is, 1,852 meters or 6,076 feet. It is equivalent to approximately 1.15 statute mile.

NAVAID: A term used to describe any electrical or visual air navigational aids, lights, signs, and associated supporting equipment (i.e. PAPI, VASI, ILS, etc.)

NOISE CONTOUR: A continuous line on a map of the airport vicinity connecting all points of the same noise exposure level.

NON-DIRECTIONAL BEACON (NDB): A beacon transmitting nondirectional signals whereby the pilot of an aircraft equipped with direction finding equipment can determine his or her bearing to and from the radio beacon and home on, or track to, the station. When the radio beacon is installed in conjunction with the Instrument Landing System marker, it is normally called a Compass Locator.

NON-PRECISION APPROACH PROCEDURE: A standard instrument approach procedure in which no electronic glide slope is provided, such as VOR, TACAN, NDB, or LOC.

NOTICE TO AIRMEN: A notice containing information concerning the establishment, condition, or change in any component of or hazard in the National Airspace System, the timely knowledge of which is considered essential to personnel concerned with flight operations.

OBJECT FREE AREA (OFA): An area on the ground centered on a runway, taxiway, or taxilane centerline provided to enhance the safety of aircraft operations by having the area free of objects, except for objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes.

OBSTACLE FREE ZONE (OFZ): The airspace below 150 feet above the established airport elevation and along the runway and extended runway centerline that is required to be kept clear of all objects, except for frangible visual NAVAIDs that need to be located in the OFZ because of their function,
in order to provide clearance for aircraft landing or taking off from the runway, and for missed approaches.

OPERATION: A take-off or a landing.

OUTER MARKER (OM): An ILS navigation facility in the terminal area navigation system located four to seven miles from

the runway edge on the extended centerline, indicating to the pilot that he/she is passing over the facility and can begin final approach.

PILOT CONTROLLED LIGHTING: Runway lighting systems at an airport that are controlled by activating the microphone of a pilot on a specified radio frequency.

PRECISION APPROACH: A standard instrument approach procedure which provides runway alignment and glide slope (descent) information. It is categorized as follows:

- *CATEGORY I (CAT I):* A precision approach which provides for approaches with a decision height of not less than 200 feet and visibility not less than 1/2 mile or Runway Visual Range (RVR) 2400 (RVR 1800) with operative touchdown zone and runway centerline lights.

- *CATEGORY II (CAT II):* A precision approach which provides for approaches with a decision height of not less than 100 feet and visibility not less than 1200 feet RVR.

- *CATEGORY III (CAT III):* A precision approach which provides for approaches with minima less than Category II.

PRECISION APPROACH PATH INDICATOR (PAPI): A lighting system providing visual approach slope guidance to aircraft during a landing approach. It is similar to a VASI but provides a sharper transition between the colored indicator lights.

PRECISION APPROACH RADAR: A radar facility in the terminal air traffic control system used to detect and display with a high degree of accuracy the direction, range, and elevation of an aircraft on the final approach to a runway.

PRECISION OBJECT FREE AREA (POFA): An area centered on the extended runway centerline, beginning at the runway threshold and extending behind the runway threshold that is 200 feet long by 800 feet wide. The POFA is a clearing standard which requires the POFA to be kept clear of above ground objects protruding above the runway safety area edge elevation (except for frangible NAVAIDS). The POFA applies to all new authorized instrument approach procedures with less than 3/4 mile visibility.

PRIMARY AIRPORT: A commercial service airport that enplanes at least 10,000 annual passengers.

PRIMARY SURFACE: An imaginary obstruction limiting surface defined in FAR Part 77 that is specified as a rectangular surface longitudinally centered about a runway. The specific dimensions of this surface are a function of the types of approaches existing or planned for the runway.

PROHIBITED AREA: See special-use airspace.

PVC: Poor visibility and ceiling. Used in determining Annual Sevice Volume. PVC conditions exist when the cloud ceiling is less than 500 feet and visibility is less than one mile.

RADIAL: A navigational signal generated by a Very High Frequency Omni-directional Range or VORTAC station that is measured as an azimuth from the station.

REGRESSION ANALYSIS: A statistical technique that seeks to identify and quantify the relationships between factors associated with a forecast.

REMOTE COMMUNICATIONS OUTLET (RCO): An unstaffed transmitter receiver/facility remotely controlled by air traffic personnel. RCOs serve flight service stations (FSSs). RCOs were established to provide ground-to-ground communications between air traffic control specialists and pilots at satellite airports for delivering enroute clearances, issuing departure authorizations, and

acknowledging instrument flight rules cancellations or departure/landing times.

REMOTE TRANSMITTER/RECEIVER (RTR): See remote communications outlet. RTRs serve ARTCCs.

RELIEVER AIRPORT: An airport to serve general aviation aircraft which might otherwise use a congested air-carrier served airport.

RESTRICTED AREA: See special-use airspace.

RNAV: Area navigation - airborne equipment which permits flights over determined tracks within prescribed accuracy tolerances without the need to overfly ground-based navigation facilities. Used enroute and for approaches to an airport.

RUNWAY: A defined rectangular area on an airport prepared for aircraft landing and takeoff. Runways are normally numbered in relation to their magnetic direction, rounded off to the nearest 10 degrees. For example, a runway with a magnetic heading of 180 would be designated Runway 18. The runway heading on the opposite end of the runway is 180 degrees from that runway end. For example, the opposite runway heading for Runway 18 would be Runway 36 (magnetic heading of 360). Aircraft can takeoff or land from either end of a runway, depending upon wind direction.

RUNWAY ALIGNMENT INDICATOR LIGHT: A series of high intensity sequentially flashing lights installed on the extended centerline of the runway usually in conjunction with an approach lighting system.

RUNWAY END IDENTIFIER LIGHTS (REIL): Two synchronized flashing lights, one on each side of the runway threshold, which provide rapid and positive identification of the approach end of a particular runway.

RUNWAY GRADIENT: The average slope, measured in percent, between the two ends of a runway.

RUNWAY PROTECTION ZONE (RPZ): An area off the runway end to enhance the protection of people and property on the ground. The RPZ is trapezoidal in shape. Its dimensions are determined by the aircraft approach speed and runway approach type and minima.

RUNWAY SAFETY AREA (RSA): A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway.

RUNWAY VISIBILITY ZONE (RVZ): An area on the airport to be kept clear of permanent objects so that there is an unobstructed line-of-site from any point five feet above the runway centerline to any point five feet above an intersecting runway centerline.

RUNWAY VISUAL RANGE (RVR): An instrumentally derived value, in feet, representing the horizontal distance a pilot can see down the runway from the runway end.

SCOPE: The document that identifies and defines the tasks, emphasis, and level of effort associated with a project or study.

SEGMENTED CIRCLE: A system of visual indicators designed to provide traffic pattern information at airports without operating control towers.

SHOULDER: An area adjacent to the edge of paved runways, taxiways, or aprons providing a transition between the pavement and the adjacent surface; support for aircraft running off the pavement; enhanced drainage; and blast protection. The shoulder does not necessarily need to be paved.

SLANT-RANGE DISTANCE: The straight line distance between an aircraft and a point on the ground.

SMALL AIRPLANE: An airplane that has a maximum certified takeoff weight of up to 12,500 pounds.

SPECIAL-USE AIRSPACE: Airspace of defined

dimensions identified by a surface area wherein activities must be confined because of their nature and/or wherein limitations may be imposed upon aircraft operations that are not a part of those activities. Special-use airspace classifications include:

- *ALERT AREA:* Airspace which may contain a high volume of pilot training activities or an unusual type of aerial activity, neither of which is hazardous to aircraft.

- *CONTROLLED FIRING AREA:* Airspace wherein activities are conducted under conditions so controlled as to eliminate hazards to nonparticipating aircraft and to ensure the safety of persons or property on the ground.

- *MILITARY OPERATIONS AREA (MOA):* Designated airspace with defined vertical and lateral dimensions established outside Class A airspace to separate/segregate certain military activities from instrument flight rule (IFR) traffic and to identify for visual flight rule (VFR) traffic where these activities are conducted.

- *PROHIBITED AREA:* Designated airspace within which the flight of aircraft is prohibited.

- *RESTRICTED AREA:* Airspace designated under Federal Aviation Regulation (FAR) 73, within which the flight of aircraft, while not wholly prohibited, is subject to restriction. Most restricted areas are designated joint use. When not in use by the using agency, IFR/VFR operations can be authorized by the controlling air traffic control facility.

- *WARNING AREA:* Airspace which may contain hazards to nonparticipating aircraft.

STANDARD INSTRUMENT DEPARTURE (SID): A preplanned coded air traffic control IFR departure routing, preprinted for pilot use in graphic and textual form only.

STANDARD TERMINAL ARRIVAL (STAR): A preplanned coded air traffic control IFR arrival routing, preprinted for pilot use in graphic and textual or textual form only.

STOP-AND-GO: A procedure wherein an aircraft will land, make a complete stop on the runway, and then commence a takeoff from that point. A stop-and-go is recorded as two operations: one operation for the landing and one operation for the takeoff.

STOPWAY: An area beyond the end of a takeoff runway that is designed to support an aircraft during an aborted takeoff without causing structural damage to the aircraft. It is not to be used for takeoff, landing, or taxiing by aircraft.

STRAIGHT-IN LANDING/APPROACH: A landing made on a runway aligned within 30 degrees of the final approach course following completion of an instrument approach.

TACTICAL AIR NAVIGATION (TACAN): An ultra-high frequency electronic air navigation system which provides suitably-equipped aircraft a continuous indication of bearing and distance to the TACAN station.

TAKEOFF RUNWAY AVAILABLE (TORA): See declared distances.

TAKEOFF DISTANCE AVAILABLE (TODA): See declared distances.

TAXILANE: The portion of the aircraft parking area used for access between taxiways and aircraft parking positions.

TAXIWAY: A defined path established for the taxiing of aircraft from one part of an airport to another.

TAXIWAY SAFETY AREA (TSA): A defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an airplane unintentionally departing the taxiway.

TERMINAL INSTRUMENT PROCEDURES: Published flight procedures for conducting

instrument approaches to runways under instrument meteorological conditions.

TERMINAL RADAR APPROACH CONTROL: An element of the air traffic control system responsible for monitoring the en-route and terminal segment of air traffic in the airspace surrounding airports with moderate to high-levels of air traffic.

TETRAHEDRON: A device used as a landing direction indicator. The small end of the tetrahedron points in the direction of landing.

THRESHOLD: The beginning of that portion of the runway available for landing. In some instances the landing threshold may be displaced.

TOUCH-AND-GO: An operation by an aircraft that lands and departs on a runway without stopping or exiting the runway. A touch-and-go is recorded as two operations: one operation for the landing and one operation for the takeoff.

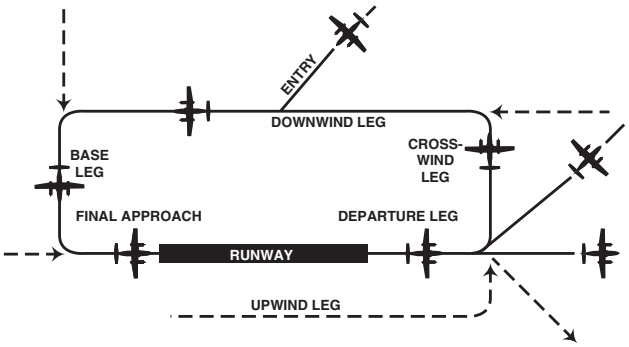
TOUCHDOWN: The point at which a landing aircraft makes contact with the runway surface.

TOUCHDOWN ZONE (TDZ): The first 3,000 feet of the runway beginning at the threshold.

TOUCHDOWN ZONE ELEVATION (TDZE): The highest elevation in the touchdown zone.

TOUCHDOWN ZONE (TDZ) LIGHTING: Two rows of transverse light bars located symmetrically about the runway centerline normally at 100-foot intervals. The basic system extends 3,000 feet along the runway.

TRAFFIC PATTERN: The traffic flow that is prescribed for aircraft landing at or taking off from an airport. The components of a typical traffic pattern are the upwind leg, crosswind leg, downwind leg, base leg, and final approach.

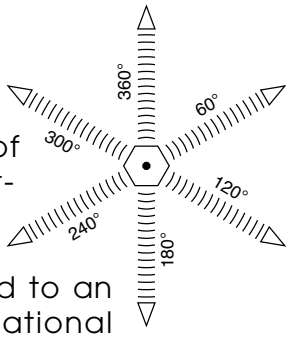


UNCONTROLLED AIRPORT: An airport without an air traffic control tower at which the control of Visual Flight Rules traffic is not exercised.

UNCONTROLLED AIRSPACE: Airspace within which aircraft are not subject to air traffic control.

UNIVERSAL COMMUNICATION (UNICOM): A nongovernment communication facility which may provide airport information at certain airports. Locations and frequencies of UNICOM's are shown on aeronautical charts and publications.

UPWIND LEG: A flight path parallel to the landing runway in the direction of landing. See "traffic pattern."



VECTOR: A heading issued to an aircraft to provide navigational guidance by radar.

VERY HIGH FREQUENCY/ OMNIDIRECTIONAL RANGE STATION (VOR): A ground-based electronic navigation aid transmitting very high frequency navigation signals, 360 degrees in azimuth, oriented from magnetic north. Used as the basis for navigation in the national airspace system. The VOR periodically identifies itself by Morse Code and may have an additional voice identification feature.

VERY HIGH FREQUENCY OMNI-DIRECTIONAL RANGE STATION/ TACTICAL AIR NAVIGATION (VORTAC): A navigation aid providing VOR azimuth, TACAN azimuth, and TACAN distance-measuring equipment (DME) at one site.

VICTOR AIRWAY: A control area or portion thereof established in the form of a corridor, the centerline of which is defined by radio navigational aids.

VISUAL APPROACH: An approach wherein an aircraft on an IFR flight plan,
operating in VFR conditions under the control of an air traffic control facility and having an air traffic control authorization, may proceed to the airport of destination in VFR conditions.

VISUAL APPROACH SLOPE INDICATOR (VASI): An airport lighting facility providing vertical visual approach slope guidance to aircraft during approach to landing by radiating a directional pattern of high intensity red and white focused light beams which indicate to the pilot that he is on path if he sees red/white, above path if white/white, and below path if red/red. Some airports serving large aircraft have three-bar VASI's which provide two visual guide paths to the same runway.

VISUAL FLIGHT RULES (VFR): Rules that govern the procedures for conducting flight under visual conditions. The term VFR is also used in the United States to indicate weather conditions that are equal to or greater than minimum VFR requirements. In addition, it is used by pilots and controllers to indicate type of flight plan.

VISUAL METEOROLOGICAL CONDITIONS: Meteorological conditions expressed in terms of specific visibility and ceiling conditions which are equal to or greater than the threshold values for instrument meteorological conditions.

VOR: See "Very High Frequency Omnidirectional Range Station."

VORTAC: See "Very High Frequency Omnidirectional Range Station/Tactical Air Navigation."

WARNING AREA: See special-use airspace.

WIDE AREA AUGMENTATION SYSTEM: An enhancement of the Global Positioning System that includes integrity broadcasts, differential corrections, and additional ranging signals for the purpose of providing the accuracy, integrity, availability, and continuity required to support all phases of flight.

Abbreviations

AC: advisory circular

ADF: automatic direction finder

ADG: airplane design group

AFSS: automated flight service station

AGL: above ground level

AIA: annual instrument approach

AIP: Airport Improvement Program

AIR-21: Wendell H. Ford Aviation Investment and Reform Act for the 21st Century

ALS: approach lighting system

ALSF-1: standard 2,400-foot high intensity approach lighting system with sequenced flashers (CAT I configuration)

ALSF-2: standard 2,400-foot high intensity approach lighting system with sequenced flashers (CAT II configuration)

APV: instrument approach procedure with vertical guidance

ARC: airport reference code

ARFF: aircraft rescue and firefighting

ARP: airport reference point

ARTCC: air route traffic control center

ASDA: accelerate-stop distance available

ASR: airport surveillance radar

ASOS: automated surface observation station

ATCT: airport traffic control tower

ATIS: automated terminal information service

AVGAS: aviation gasoline - typically 100 low lead (100LL)

AWOS: automated weather observation station

BRL: building restriction line

CFR: Code of Federal Regulations

CIP: capital improvement program

DME: distance measuring equipment

DNL: day-night noise level

DWL: runway weight bearing capacity for aircraft with dual-wheel type landing gear

DTWL: runway weight bearing capacity fo aircraft with dual-tandem type landing gear

FAA: Federal Aviation Administration

FAR: Federal Aviation Regulation

FBO: fixed base operator
FY: fiscal year

GPS: global positioning system

GS: glide slope

HIRL: high intensity runway edge lighting

IFR: instrument flight rules (FAR Part 91)

ILS: instrument landing system

IM: inner marker

LDA: localizer type directional aid

LDA: landing distance available

LIRL: low intensity runway edge lighting

LMM: compass locator at middle marker

LOC: ILS localizer

LOM: compass locator at ILS outer marker

LORAN: long range navigation

MALS: medium intensity approach lighting system

MALSR: medium intensity approach lighting system with runway alignment indicator lights

MIRL: medium intensity runway edge lighting

MITL: medium intensity taxiway edge lighting

MLS: microwave landing system

MM: middle marker

MOA: military operations area

MSL: mean sea level

NAVAID: navigational aid

NDB: nondirectional radio beacon

NM: nautical mile (6,076 .1 feet)

NPES: National Pollutant Discharge Elimination System

NPIAS: National Plan of Integrated Airport Systems

NPRM: notice of proposed rulemaking

ODALS: omnidirectional approach lighting system

OFA: object free area

OFZ: obstacle free zone

OM: outer marker

PAC: planning advisory committee

PAPI: precision approach path indicator

PFC: porous friction course

PFC: passenger facility charge

PCL: pilot-controlled lighting

PIW: public information workshop

PLASI: pulsating visual approach slope indicator

POFA: precision object free area

PVASI: pulsating/steady visual approach slope indicator

PVC: Poor visibility and ceiling.

RCO: remote communications outlet

REIL: runway end identifier lighting

RNAV: area navigation

RPZ: runway protection zone

RSA: Runway Safety Area

RTR: remote transmitter/receiver

RVR: runway visibility range

RVZ: runway visibility zone

SALS: short approach lighting system

SASP: state aviation system plan

SEL: sound exposure level

SID: standard instrument departure

SM: statute mile (5,280 feet)

SRE: snow removal equipment

SSALF: simplified short approach lighting system with sequenced flashers

SSALR: simplified short approach lighting system with runway alignment indicator lights

STAR: standard terminal arrival route

SWL: runway weight bearing capacity for aircraft with single-wheel type landing gear

STWL: runway weight bearing capacity for aircraft with single-wheel tandem type landing gear

TACAN: tactical air navigational aid

TDZ: touchdown zone

TDZE: touchdown zone elevation

TAF: Federal Aviation Administration (FAA) Terminal Area Forecast

TODA: takeoff distance available

TORA: takeoff runway available

TRACON: terminal radar approach control

VASI: visual approach slope indicator

VFR: visual flight rules (FAR Part 91)

VHF: very high frequency

VOR: very high frequency omni-directional range

VORTAC: VOR and TACAN collocated

Appendix B

AIRPORT LAYOUT PLAN DRAWINGS

Appendix B
AIRPORT LAYOUT PLAN DRAWINGS

Per FAA requirements, an official Airport Layout Plan (ALP) has been developed for Buckeye Municipal Airport. The ALP (Sheet 2 of 14) graphically presents the existing and ultimate airport layout. The ALP is used, in part by the FAA, to determine funding eligibility for future development projects.

The ALP was prepared on a computer-aided drafting system for future ease of use. The computerized plan set provides detailed information of existing and future facility layout on multiple layers that permits the user to focus in on any section of the airport at a desirable scale. The plan can be used as base information for design, and can be easily updated in the future to reflect new development and more detail concerning existing conditions as made available through design surveys.

A number of related drawings, which depict the ultimate airspace and landside development, are included with the ALP. The following provides a brief discussion of the additional drawings included with the ALP:

Terminal Area Drawings (Sheet 3 and 4 of 14)- The terminal area drawings provide greater detail concerning landside improvements on the east and west sides of the parallel runway system and at a larger scale than on the ALP.

Airport Airspace Drawing (Sheets 5 and 6 of 14) - The Airport Airspace Drawing is a graphic depiction of the Title 14 Code of Federal Regulations (CFR) Part 77, *Objects Affecting Navigable Airspace,* regulatory criterion. The Airport Airspace

Drawing is intended to aid local authorities in determining if proposed development could present a hazard to the airport and obstruct the approach path to a runway end. This plan should be coordinated with local land use planners.

Approach Surface Profile Drawings (Sheets 7,8, and 9 of 14) - These drawings provide both plan and profile views of the 14 CFR Part 77 approach surfaces for each runway end. A composite profile of the extended ground line is depicted. Obstructions and clearances over roads and railroads are shown as appropriate.

Inner Portion of the Approach Surface Drawings (Sheets 10, 11, and 12 of 14) - The Inner Portion of the Approach Surface Drawings are scaled drawings of the runway protection zone (RPZ), runway safety area (RSA), obstacle free zone (OFZ), and object free area (OFA) for each runway end. A plan and profile view of each RPZ is provided to facilitate identification of obstructions that lie within these safety areas. Detailed obstruction and facility data is provided to identify planned improvements and the disposition of obstructions (as appropriate).

On-Airport Land Use Drawing (Sheet 13 of 14) - The On-Airport Land Use Drawing is a graphic depiction of the land use recommendations. When development is proposed, it should be directed to the appropriate land use area depicted on this plan.

"Exhibit A" Property Map - The "Exhibit A" Property Map provides information on the acquisition and identification of all land tracts under the control of the airport. Both existing and future property holdings are identified on the "Exhibit A" Property Map.

AIRPORT MASTER PLAN

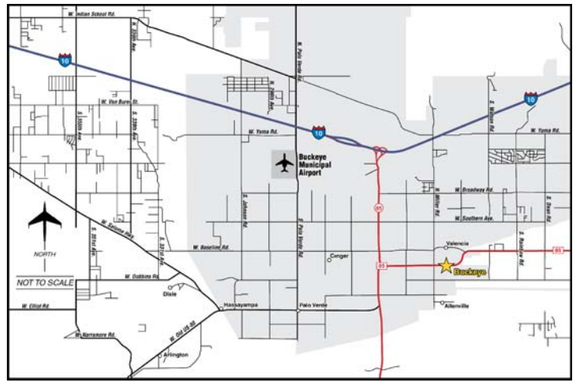
BUCKEYE MUNICIPAL AIRPORT

AIRPORT LAYOUT PLAN SET

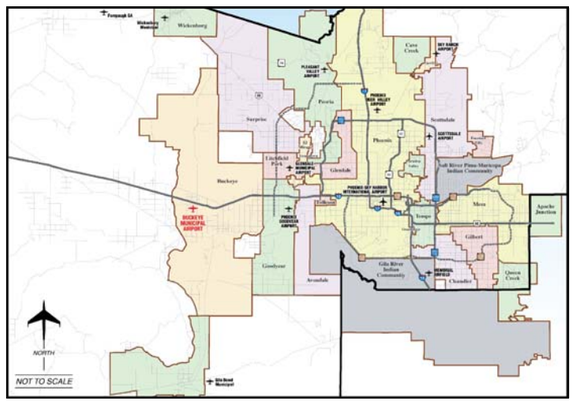
INDEX OF DRAWINGS

PREPARED FOR
TOWN OF BUCKEYE, ARIZONA

Coffman Associates
Airport Consultants



LOCATION MAP



VICINITY MAP

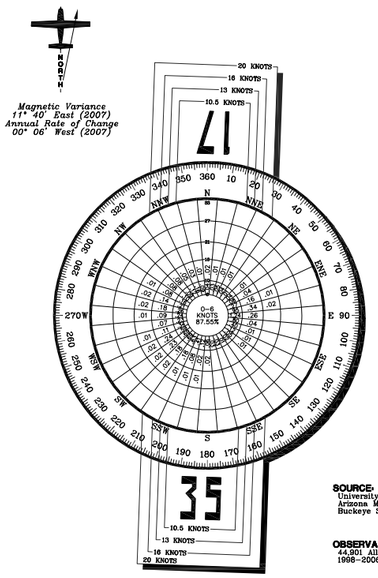
RUNWAY DATA	RUNWAY 17L-35R		RUNWAY 17R-35L	
	EXISTING	ULTIMATE	EXISTING	ULTIMATE
RUNWAY CATEGORY/AIRCRAFT DESIGN GROUP	B-II	C-II	--	B-I (SMALL AIRCRAFT)
CRITICAL DESIGN AIRCRAFT	CITATION III	CANADAIR CL600	--	KINGAIR B100
UNDERCARRIAGE WIDTH (FEET)	9.04'	10.5'	--	13.0'
WINGSPAN OF DESIGN AIRCRAFT	53.5'	61.8'	--	45.8'
APPROACH SPEED OF DESIGN AIRCRAFT (KNOTS)	114	125	--	111
MAXIMUM TAKE OFF WEIGHT (lb.)	22,000lbs	41,350lbs	--	11,000lbs
RUNWAY AZIMUTH	2.03°	SAME	--	2.03°
RUNWAY BEARING (TRUE)	N02°00'00"E	SAME	--	N02°00'00"E
RUNWAY DIMENSIONS	5,500' X 75'	8,700' X 100'	--	4,300' X 60'
ELEVATION OF RWY. TOUCH DOWN ZONE (MSL)	1032.7'/1007.0'	1045.0'/1007.00"	--	1015.0'/1007.00'
ELEVATION OF RUNWAY HIGH POINT (above MSL)	1032.7'	1045.00'	--	1015.0'
ELEVATION OF RUNWAY LOW POINT (above MSL)	994.7'	987.0'	--	990.0'
ELEVATION OF RUNWAY END (NAVD 88)	1032.7'/994.7'	1045.00'/987.0'	--	1015.0'/990.0'
WIND COVERAGE IN MPH/KNOTS	12.1/10.5-98.022% / 15/13-98.95% / 18/16-99.83% / 23/20-99.98%			
APPROACH VISIBILITY MINIMUMS	ONE MILE/ONE MILE	ONE MILE/HALF MILE	--	ONE MILE
14 CFR PART 77 CATEGORY	VISUAL/VISUAL	NONPREC/PRECISION	--	VISUAL/UTILITY
RUNWAY INSTRUMENTATION	VISUAL/VISUAL	NONPREC/PRECISION	--	VISUAL
RUNWAY APPROACH SURFACES	20:1/20:1	34:1/50:1	--	20:1
RUNWAY THRESHOLD DISPLACEMENT	NONE	SAME	--	SAME
RUNWAY SAFETY AREA WIDTH (RSA)	150'	400'	--	120'
RSA DISTANCE BEYOND EACH RUNWAY END	300'/300'	1000'/1,000'	--	240'/240'
RUNWAY OBJECT FREE AREA WIDTH (OFA)	500'	800'	--	250'
OFA DISTANCE BEYOND EACH RUNWAY END	300'/300'	1,000'/1,000'	--	240'/240'
RUNWAY OBSTACLE FREE ZONE WIDTH (OFZ)	400'	400'	--	250'
OFZ DISTANCE BEYOND EACH RUNWAY END	200'/200'	200'/200'	--	200'/200'
LINE OF SITE REQUIREMENT MET	YES	SAME	--	YES
RUNWAY PAVEMENT MATERIAL	ASPHALT	SAME	--	ASPHALT
RUNWAY PAVEMENT SURFACE TREATMENT	NONE	GROOVED	--	NONE
PAVEMENT STRENGTH (in thousand lb.)	30.0(S)	30(S) 75(D)	--	12.5(S)
RUNWAY EFFECTIVE GRADIENT (in %)	0.07%	SAME	--	SAME
MAXIMUM GRADIENT (in %)	0.34%	SAME	--	SAME
RUNWAY LIGHTING	MIRL	HIRL	--	MIRL
RUNWAY MARKINGS	BASIC/BASIC	NONPREC/PRECISION	--	NONE
RUNWAY APPROACH LIGHTING	NONE	MALSR	--	NONE
RUNWAY TAXIWAY SEPARATION	240'	400'	--	150'
TAXIWAY PAVEMENT MATERIAL	ASPHALT	SAME	--	ASPHALT
TAXIWAY WINGTIP CLEARANCE	22.4'	26.0'	--	20.0'
TAXIWAY LIGHTING	MITL	HIRL	--	MITL
TAXIWAY MARKING	CENTERLINE, HOLD LINES	SAME	--	CENTERLINE,HOLDLINE
TAXIWAY OBJECT FREE AREA	131'	186'	--	35'
TAXIWAY SAFETY AREA WIDTH	79'	118'	--	49'
TAXIWAY CL TO FIXED OR MOVEABLE OBJECT	26'	34'	--	--
DISTANCE FROM RWY. CL TO HOLD BARS	250'	SAME	--	125'
VISUAL AIDS	PAPI-2 (17) PAPI-4 (35) REILs	PAPI-4 (17L) PAPI-4 (35R) REILs	-- -- --	PAPI-2 REILs --
NAVIGATIONAL AIDS	VORTAC GPS --	SAME CAT I ILS (35R) GPS	-- -- --	-- -- --

[1] Pavement strengths are expressed in Single(S), Dual(D), Dual Tandem(DT), and/or Double Dual Tandem(DDT) wheel loading capacities.
Note: Runy. 17-35 Exist. 75% of large airplanes (less than 60,000 lb.) at 60% useful load. Ult. 75% of large airplanes (less than 60,000 lb.) at 90% useful load.
Parallel Rwy. 100% of small airplanes.

AIRPORT DATA			
BUCKEYE MUNICIPAL AIRPORT (BXK)			
CITY: BUCKEYE, ARIZONA		COUNTY: MARICOPA	
RANGE: 4 WEST TOWNSHIP: 1 NORTH		CIVIL TOWNSHIP: --	
		EXISTING	ULTIMATE
AIRPORT SERVICE LEVEL		GENERAL AVIATION	SAME
AIRPORT REFERENCE CODE		B-II	C-II
AIRPORT ELEVATION		1032.7' MSL	1045.0' MSL
MEAN MAXIMUM TEMPERATURE OF HOTTEST MONTH		107.3° F (July)	107.3° F (July)
AIRPORT REFERENCE POINT (ARP) COORDINATES (NAD 83)	Latitude	33°25'13.5000"N	33°25'18.2060"N
	Longitude	112°41'10.2510"W	112°41'13.1060"W
NAVAIDS		ROTATING BEACON VORTAC GPS PAPI's REILS -- --	ROTATING BEACON VORTAC GPS CAT I - ILS ATCT PAPI's REILS MALSR

RUNWAY END COORDINATES (NAD 83)			
RUNWAY		EXISTING	ULTIMATE
Runway 17 (17L)	Latitude	33°25'48.3240"N	33°26'06.1270"N
	Longitude	112°41'09.1010"W	112°41'08.3940"W
Runway 35 (35R)	Latitude	34°24'53.7180"N	33°24'40.1080"N
	Longitude	119°41'11.7090"W	112°41'11.9760"W
Runway 17R	Latitude	--	33°24'54.1910"N
	Longitude	--	112°41'19.6530"W
Runway 35L	Latitude	--	33°25'36.7050"N
	Longitude	--	112°41'17.8690"W

ALL WEATHER WIND COVERAGE				
Runways	10.5 Knots 12 MPH	13 Knots 15 MPH	16 Knots 18 MPH	20 Knots 23 MPH
Runway 17-35	98.02%	98.95%	99.83%	99.98%



SOURCE:
University of Airzona
Arizona Meteorological Network
Buckeye Site: 33° 24' N 112° 41' W
2.2 Miles South of I-10
Along Roosevelt Canal
and Palo Verde Road

OBSERVATIONS:
44,201 All Weather Observations
1998-2006

No.	REVISIONS	DATE	BY	APP'D.
3	RUNWAY EXTENSION (REVALIDATION)	--	--	07/20/2004
2	ADDITION OF ACIP PROJECTS (REVALIDATION)	--	--	08/02/2001
1	MP UPDATE STUDY (CONDITIONAL APPROVAL)	--	--	12/15/1997

THE PREPARATION OF THESE DOCUMENTS WAS FINANCED IN PART THROUGH A PLANNING GRANT FROM THE FEDERAL AVIATION ADMINISTRATION AS PROVIDED UNDER SECTION 505 OF THE AIRPORT AND AIRWAY IMPROVEMENT ACT OF 1982, AS AMENDED. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THESE DOCUMENTS BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED HEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS.

BUCKEYE MUNICIPAL AIRPORT

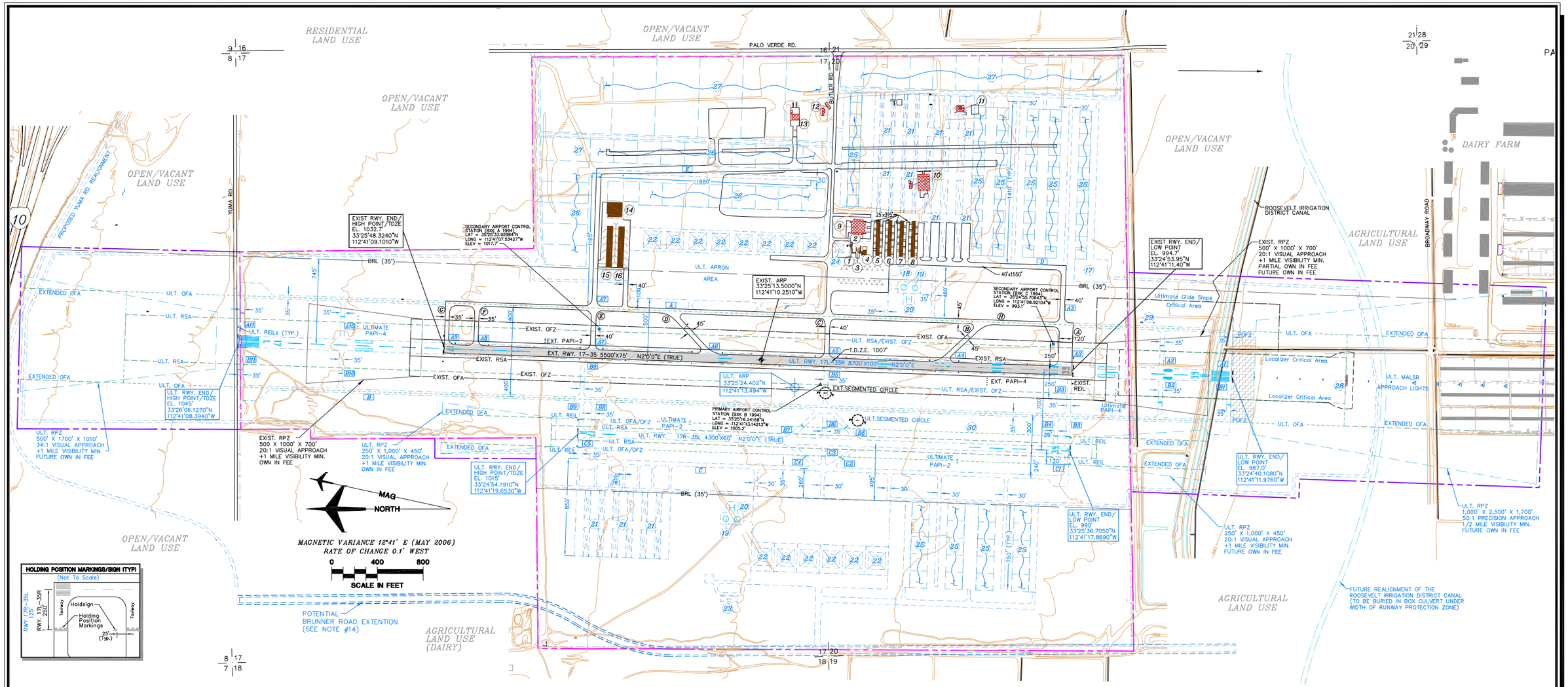
AIRPORT DATA SHEET

BUCKEYE, ARIZONA

PLANNED BY: Christopher Huguenin
DETAILED BY: Maggie Beaver
APPROVED BY: James M. Harris P.E.

September 14, 2007 SHEET 1 OF 14

Coffman Associates
Airport Consultants
www.coffmanassociates.com



LEGEND

EXISTING	ULTIMATE	DESCRIPTION
		AIRPORT PROPERTY LINE
		AIRPORT REFERENCE POINT (ARP)
		AIRPORT ROTATING BEACON
		BUILDING AND FACILITIES
N/A		BUILDINGS TO BE REMOVED
BRL		BUILDING RESTRICTION LINE (BRL)
		OBJECT FREE AREA (OFA)
		RUNWAY SAFETY AREA (RSA)
		OBSTACLE FREE ZONE (OFZ)
		FACILITY CONSTRUCTION
		FENCING
PAPI–2	PAPI–2	NAVIGATIONAL AID INSTALLATION
PAPI–4	PAPI–4	NAVIGATIONAL AID INSTALLATION
		RUNWAY END IDENTIFICATION LIGHTS (REIL)
		RUNWAY THRESHOLD LIGHTS
		LOCALIZER ANTENNA
GS	GS	GLIDE SLOPE ANTENNA
		MALSR
		RUNWAY PROTECTION ZONE (RPZ)
		PRECISION OBSTACLE FREE ZONE (POFZ)
		SEGMENTED CIRCLE/LIGHTED WIND TEE
		WIND INDICATOR (Lighted)
1100		TOPOGRAPHIC CONTOURS
32/30		SECTION CORNER
A	B	TAXIWAY DESIGNATION
▲	▲	PRIMARY AIRPORT CONTROL STATION (PACS)
●	●	SECONDARY AIRPORT CONTROL STATION (SACS)
		HOLD POSITION MARKINGS
H	H	HELIPAD

BUILDINGS/FACILITIES

EXISTING	DESCRIPTION	EL.
(1)	ELECTRIC VAULT	1020.00'
(2)	ROTATING BEACON	--
(3)	FUEL STORAGE	1014.96'
(4)	TERMINAL BUILDING	1018.60'
(5)	T–HANGAR (10 UNITS)	1021.30'
(6)	T–HANGAR (10 UNITS)	1019.70'
(7)	T–HANGAR (10 UNITS)	1019.10'
(8)	T–HANGAR (10 UNITS)	1017.50'
(9)	CONVENTIONAL HANGAR (TO BE REMOVED)	1026.50'
(10)	CONVENTIONAL HANGAR/OFFICE SPACE (TO BE REMOVED)	1024.80'
(11)	FUEL STORAGE (TO BE REMOVED)	1011.05'
(12)	OFFICE	1022.54'
(13)	CONVENTIONAL HANAGAR (TO BE REMOVED)	1031.10'
(14)	CONVENTIONAL HANGAR/OFFICE SPACE	1041.20'
(15)	T–SHADE FACILITIES	1039.80'
(16)	T–SHADE FACILITIES	1039.80'

BUILDINGS/FACILITIES

ULTIMATE	DESCRIPTION
(17)	AIRPORT MAINTENANCE AND CONSOLIDATED FUEL STORAGE FACILITY
(18)	AIRCRAFT WASH RACK
(19)	HELICOPTER HARD STANDS
(20)	HELIPAD
(21)	T–HANGARS
(22)	CONVENTIONAL HANGARS
(23)	FUEL STORAGE (WEST SIDE)
(24)	AIRPORT TRAFFIC CONTROL TOWER (ATCT)
(25)	AIRCRAFT STORAGE PARCELS
(26)	AIRPORT ACCESS REVENUE SUPPORT PARCELS
(27)	REVENUE SUPPORT PARCELS
(28)	LOCALIZER ANTENNA
(29)	GLIDESLOPE ANTENNA
(30)	AUTOMATIC WEATHER OBSERVATION STATIONS (AWOS)

GENERAL NOTES:

1. Depiction of features and objects, including related elevations within the runway protection zones are depicted on the INNER APPROACH SURFACE DRAWING.
2. Details concerning terminal improvements are depicted on the TERMINAL AREA PLANS.
3. Recommended land uses within the airport environs are depicted on the AIRPORT LAND USE PLAN.
4. Detail concerning airport property are depicted on the AIRPORT PROPERTY MAP.
5. The Building Restriction Lines (BRL) are set for the ultimate runway conditions. The BRL's encompass the runway protection zones, the runway object free area, the runway visibility zone, Navaid critical areas and areas required for terminal instrument procedures. The established BRL is an estimate of the minimum distance to the runway for an object for an object 20 feet in height. Prior to constructing any building or object on the airport, a 14 CFR Part 77 obstruction analysis should be conducted.
6. Ultimate fence line extends around Existing/Ultimate Property Line except where shown.
7. Base Map and Contours derived from August 18, 2005 aerial photography and planametric mapping, surveyed by M&B Aerial Inc..
8. Source for existing runway end/displaced threshold coordinates, runway end/displaced threshold elevations: ASIS Datasheet Systems at www.ovnwww.jccbi.gov/datasheet.
9. All elevations are in NAVD 88 and all horizontal coordinates are in NAD 83.
10. The airport has not been surveyed in accordance with FAA standard 405.
11. No threshold sting surface object penetrations.
12. No OFZ object penetrations.
13. All survey monuments enclosed in concrete casings.
14. Construction of Brunner Road across airport property will dependent on an FAA release of airport property or consent of an easement to the Town with a fair market value cost being paid to the airport by the Town of Buckeye.

SUBMITTED BY:
Coffman Associates
FOR APPROVAL BY:
APPROVED BY: ON THE DATE OF:
Airport Manager Oct 4, 2007

FAA APPROVAL STAMP
NOV 8 2007
Approved conditionally
Subject to comments contained in our letter dated: NOV 8 2007
FEDERAL AVIATION ADMINISTRATION
Western-Pacific Region
By
Manager - LAX/ADO

No.	REVISIONS	DATE	BY	APP'D.
3	RUNWAY EXTENTION (REVALIDATION)	— —	--	07/20/2004
2	ADDITION OF ACIP PROJECTS (REVALIDATION)	— —	--	08/02/2001
1	MP UPDATE STUDY (CONDITIONAL APPROVAL)	— —	--	12/15/1997

THE PREPARATION OF THESE DOCUMENTS WAS FINANCED IN PART THROUGH A PLANNING GRANT FROM THE FEDERAL AVIATION ADMINISTRATION AS PROVIDED UNDER SECTION 505 OF THE AIRPORT AND AIRWAY IMPROVEMENT ACT OF 1982, AS AMENDED. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THESE DOCUMENTS BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED HEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS.

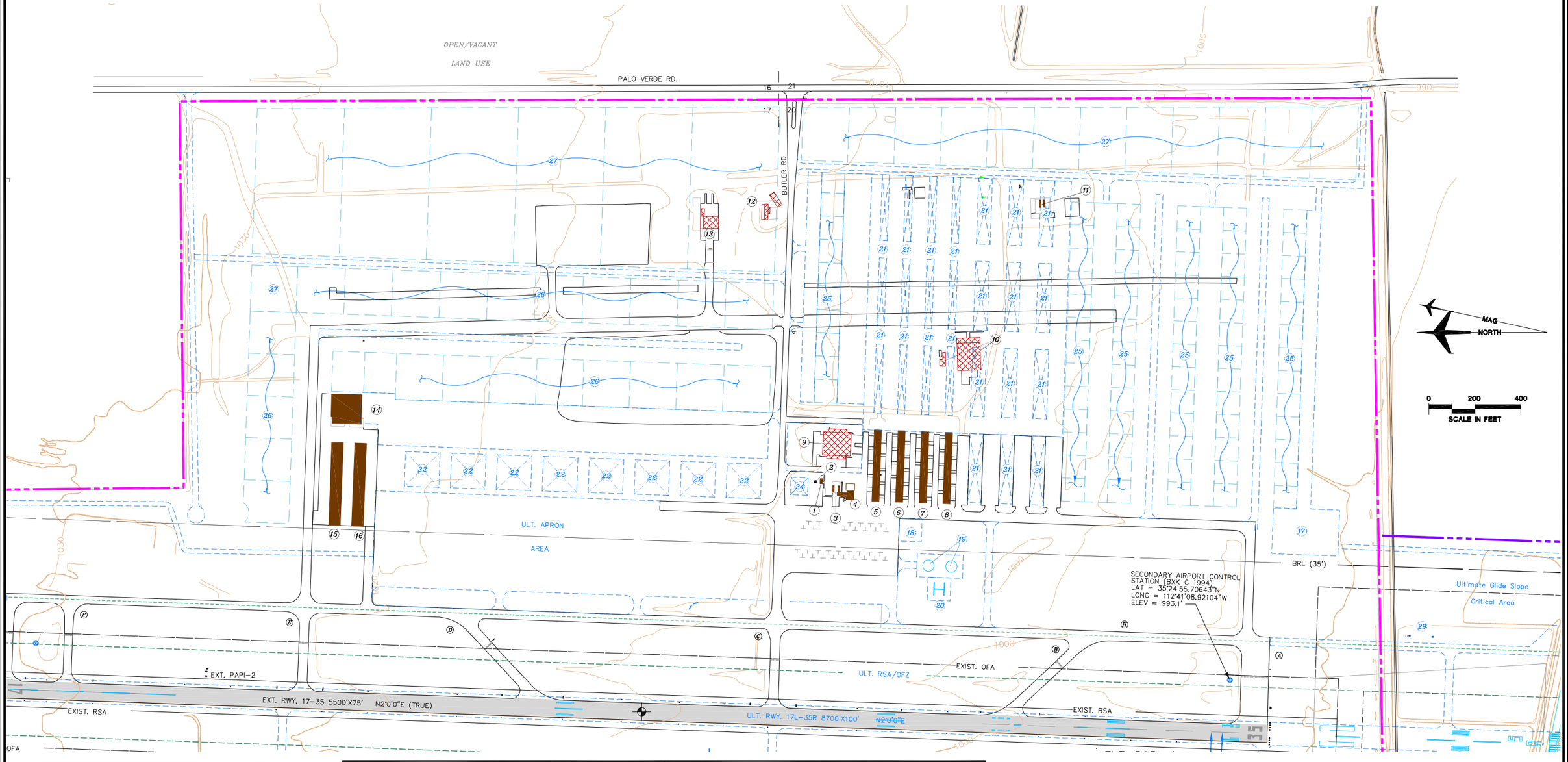
BUCKEYE MUNICIPAL AIRPORT

AIRPORT LAYOUT PLAN

BUCKEYE, ARIZONA

PLANNED BY: Christopher Huguenin
DETAILED BY: Maggie Beaver
APPROVED BY: James M. Harris P.E.
September 14, 2007 SHEET 2 OF 14

Coffman Associates
Airport Consultants
www.coffmanassociates.com



LEGEND

EXISTING	ULTIMATE	DESCRIPTION
		AIRPORT PROPERTY LINE
		AIRPORT REFERENCE POINT (ARP)
		AIRPORT ROTATING BEACON
		BUILDING AND FACILITIES
N/A		BUILDINGS TO BE REMOVED
BRL		BUILDING RESTRICTION LINE (BRL)
		OBJECT FREE AREA (OFA)
		RUNWAY SAFETY AREA (RSA)
		OBSTACLE FREE ZONE (OFZ)
		FACILITY CONSTRUCTION
		FENCING
PAPI-2	PAPI-2	NAVIGATIONAL AID INSTALLATION
PAPI-4	PAPI-4	NAVIGATIONAL AID INSTALLATION
		RUNWAY END IDENTIFICATION LIGHTS (REIL)
		RUNWAY THRESHOLD LIGHTS
		LOCALIZER ANTENNA
		GLIDE SLOPE ANTENNA
		MALSR
		RUNWAY PROTECTION ZONE (RPZ)
		PRECISION OBSTACLE FREE ZONE (POFZ)
		SEGMENTED CIRCLE/LIGHTED WIND TEE
		WIND INDICATOR (Lighted)
1000		TOPOGRAPHIC CONTOURS
X-XX X-X		SECTION CORNER
Ⓕ	Ⓕ	TAXIWAY DESIGNATION
A	A	PRIMARY AIRPORT CONTROL STATION (PACS)
		SECONDARY AIRPORT CONTROL STATION (SACS)
		HOLD POSITION MARKINGS
H	H	HELIPAD

BUILDINGS/FACILITIES

EXISTING	ULTIMATE	DESCRIPTION	EL.
(1)		ELECTRIC VAULT	1020.00'
(2)		ROTATING BEACON	--
(3)		FUEL STORAGE	1014.96'
(4)		TERMINAL BUILDING	1018.60'
(5)		T-HANGAR (10 UNITS)	1021.30'
(6)		T-HANGAR (10 UNITS)	1019.70'
(7)		T-HANGAR (10 UNITS)	1019.10'
(8)		T-HANGAR (10 UNITS)	1017.50'
(9)		CONVENTIONAL HANGAR (TO BE REMOVED)	1026.50'
(10)		CONVENTIONAL HANGAR/OFFICE SPACE (TO BE REMOVED)	1024.80'
(11)		FUEL STORAGE (TO BE REMOVED)	1011.05'
(12)		OFFICE (TO BE REMOVED)	1022.54'
(13)		CONVENTIONAL HANAGAR (TO BE REMOVED)	1031.10'
(14)		CONVENTIONAL HANGAR/OFFICE SPACE	1041.20'
(15)		T-SHADE FACILITIES	1039.80'
(16)		T-SHADE FACILITIES	1039.80'

BUILDINGS/FACILITIES

EXISTING	ULTIMATE	DESCRIPTION	EL.
	(17)	AIRPORT MAINTENANCE AND CONSOLIDATED FUEL STORAGE FACILITY	
	(18)	AIRCRAFT WASH RACK	
	(19)	HELICOPTER HARD STANDS	
	(20)	HELIPAD	
	(21)	T-HANGARS	
	(22)	CONVENTIONAL HANGARS	
	(23)	FUEL STORAGE (WEST SIDE)	
	(24)	AIRPORT TRAFFIC CONTROL TOWER (ATCT)	
	(25)	AIRCRAFT STORAGE PARCELS	
	(26)	AIRPORT ACCESS REVENUE SUPPORT PARCELS	
	(27)	REVENUE SUPPORT PARCELS	
	(28)	LOCALIZER ANTENNA	
	(29)	GLIDESLOPE ANTENNA	
	(30)	AUTOMATIC WEATHER OBSERVATION STATIONS (AWOS)	

BUCKEYE MUNICIPAL AIRPORT

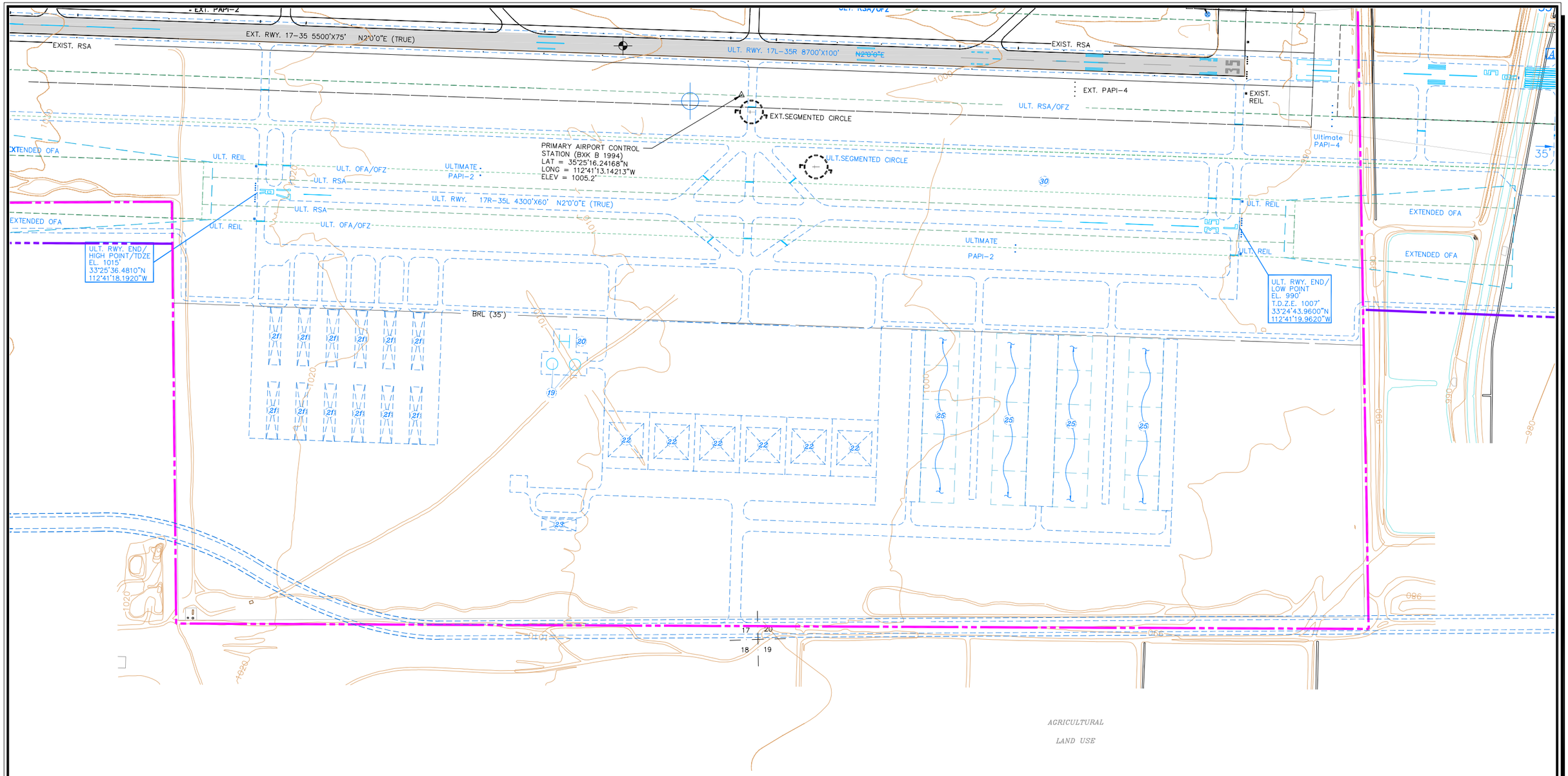
EASTSIDE TERMINAL AREA DRAWING

BUCKEYE, ARIZONA

PLANNED BY: Christopher Huguenin
DETAILED BY: Maggie Beaver
APPROVED BY: James M. Harris P.E.
September 14, 2007 SHEET 3 OF 14

THE PREPARATION OF THESE DOCUMENTS WAS FINANCED IN PART THROUGH A PLANNING GRANT FROM THE FEDERAL AVIATION ADMINISTRATION AS PROVIDED UNDER SECTION 505 OF THE AIRPORT AND AIRWAY IMPROVEMENT ACT OF 1982, AS AMENDED. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THESE DOCUMENTS BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED HEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS.

Coffman Associates
Airport Consultants
www.coffmanassociates.com



LEGEND

EXISTING	ULTIMATE	DESCRIPTION
		AIRPORT PROPERTY LINE
		AIRPORT REFERENCE POINT (ARP)
		AIRPORT ROTATING BEACON
		BUILDING AND FACILITIES
N/A		BUILDINGS TO BE REMOVED
BRL		BUILDING RESTRICTION LINE (BRL)
		OBJECT FREE AREA (OFA)
		RUNWAY SAFETY AREA (RSA)
		OBSTACLE FREE ZONE (OFZ)
		FACILITY CONSTRUCTION
		FENCING
PAPI-2	PAPI-2	NAVIGATIONAL AID INSTALLATION
PAPI-4	PAPI-4	NAVIGATIONAL AID INSTALLATION
		RUNWAY END IDENTIFICATION LIGHTS (REIL)
		RUNWAY THRESHOLD LIGHTS
		LOCALIZER ANTENNA
		GLIDE SLOPE ANTENNA
		MALSR
		RUNWAY PROTECTION ZONE (RPZ)
		PRECISION OBSTACLE FREE ZONE (POFZ)
		SEGMENTED CIRCLE/LIGHTED WIND TEE
		WIND INDICATOR (lighted)
		TOPOGRAPHIC CONTOURS
		SECTION CORNER
		TAXIWAY DESIGNATION
		PRIMARY AIRPORT CONTROL STATION (PACS)
		SECONDARY AIRPORT CONTROL STATION (SACS)
		HOLD POSITION MARKINGS
		HELIPAD

BUILDINGS/FACILITIES

EXISTING	ULTIMATE	DESCRIPTION	EL.
(1)		ELECTRIC VAULT	1020.00'
(2)		ROTATING BEACON	--
(3)		FUEL STORAGE	1014.96'
(4)		TERMINAL BUILDING	1018.60'
(5)		T-HANGAR (10 UNITS)	1021.30'
(6)		T-HANGAR (10 UNITS)	1019.70'
(7)		T-HANGAR (10 UNITS)	1019.10'
(8)		T-HANGAR (10 UNITS)	1017.50'
(9)		CONVENTIONAL HANGAR (TO BE REMOVED)	1026.50'
(10)		CONVENTIONAL HANGAR/OFFICE SPACE (TO BE REMOVED)	1024.80'
(11)		FUEL STORAGE (TO BE REMOVED)	1011.05'
(12)		OFFICE (TO BE REMOVED)	1022.54'
(13)		CONVENTIONAL HANAGAR (TO BE REMOVED)	1031.10'
(14)		CONVENTIONAL HANGAR/OFFICE SPACE	1041.20'
(15)		T-SHADE FACILITIES	1039.80'
(16)		T-SHADE FACILITIES	1039.80'

BUILDINGS/FACILITIES

EXISTING	ULTIMATE	DESCRIPTION	EL.
	(17)	AIRPORT MAINTENANCE AND CONSOLIDATED FUEL STORAGE FACILITY	
	(18)	AIRCRAFT WASH RACK	
	(19)	HELICOPTER HARD STANDS	
	(20)	HELIPAD	
	(21)	T-HANGARS	
	(22)	CONVENTIONAL HANGARS	
	(23)	FUEL STORAGE (WEST SIDE)	
	(24)	AIRPORT TRAFFIC CONTROL TOWER (ATCT)	
	(25)	AIRCRAFT STORAGE PARCELS	
	(26)	AIRPORT ACCESS REVENUE SUPPORT PARCELS	
	(27)	REVENUE SUPPORT PARCELS	
	(28)	LOCALIZER ANTENNA	
	(29)	GLIDE SLOPE ANTENNA	
	(30)	AUTOMATIC WEATHER OBSERVATION STATIONS (AWES)	

BUCKEYE MUNICIPAL AIRPORT

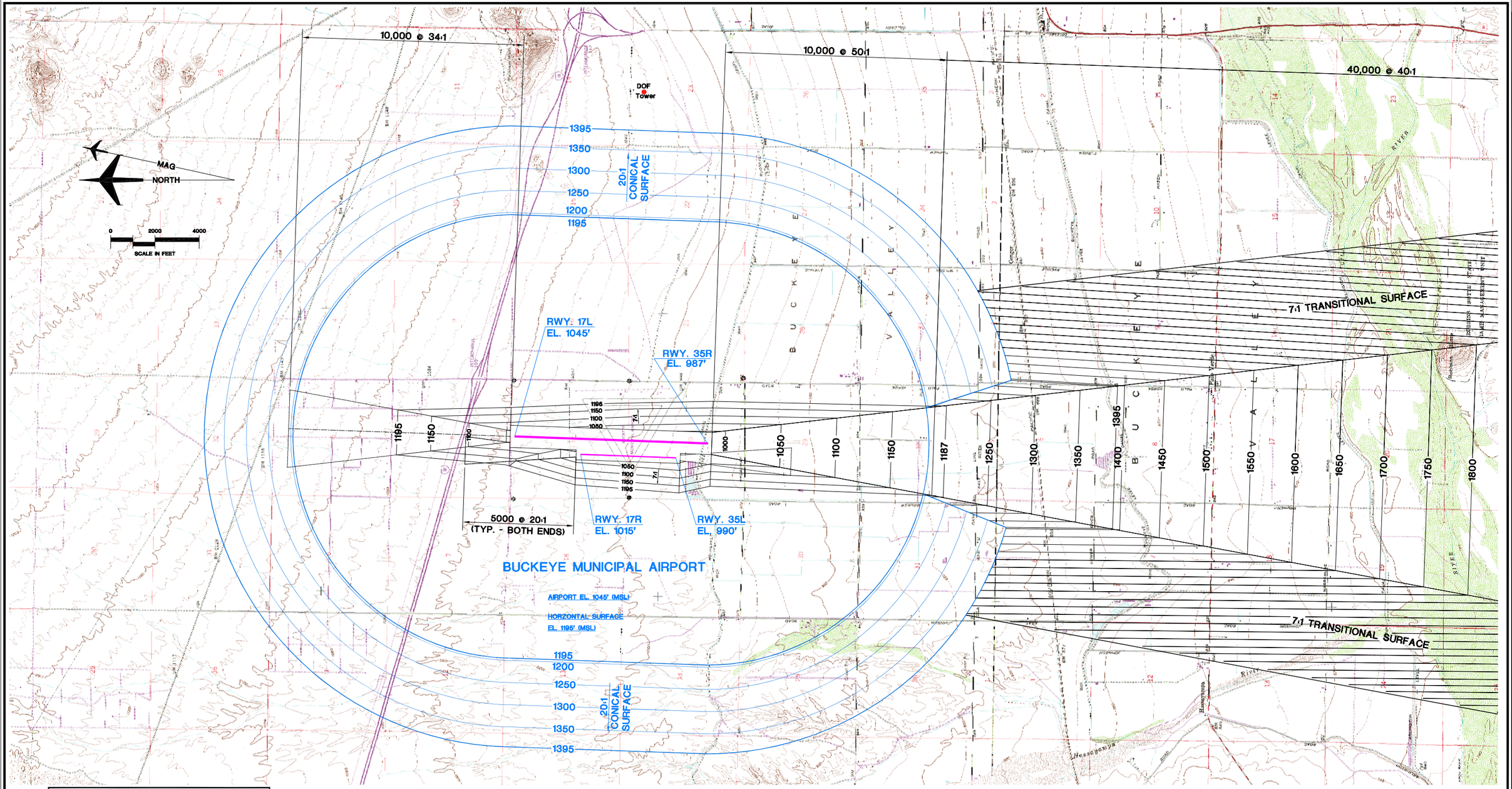
WESTSIDE TERMINAL AREA DRAWING

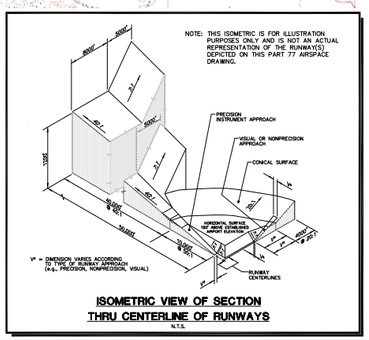
BUCKEYE, ARIZONA

PLANNED BY: Christopher Huguenin
DETAILED BY: Maggie Beaver
APPROVED BY: James M. Harris P.E.

September 14, 2007 SHEET 4 OF 14

Coffman Associates
Airport Consultants
www.coffmanassociates.com





ISOMETRIC VIEW OF SECTION
THRU CENTERLINE OF RUNWAYS
N.T.S.

DIGITAL OBSTACLE TABLE

Object Number	Object City and State	Object Structure / Status	Object Accuracy	Object Painted	Object Lighted	Object Elevation AGL / AMSL	Object Latitude	Object Longitude	Object Distance Feet / Natical Miles
03-0668	Buckeye, AZ	Tower / Verified	2C	Yes	Dual, Red with medium intensity White strobe	255' / 1299'	33°25'22.20"N	112°38'04.44"W	15,774' / 2.6NM

OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Proposed Object Disposition

NO OBSTRUCTIONS
NOTED WITHIN ANY
PART 77 AIRSPACE SURFACE

GENERAL NOTES:

1. Obstructions, clearances, and locations are calculated from ultimate runway end elevations and ultimate approach surfaces, unless otherwise noted.
2. Depiction of features and objects within the outer portion of the approach surfaces, are illustrated on the APPROACH ZONES PROFILES of these plans.
3. Depiction of features and objects within the inner portion of the approach surfaces, are illustrated on the RUNWAY END AREA PLANS, Sheets 3 and 4 of these plans.
4. Existing and future height and hazard ordinances are to be amended and/or referenced upon approval of updated PART 77 AIRSPACE PLAN.

THE PREPARATION OF THESE DOCUMENTS WAS FINANCED IN PART THROUGH A PLANNING GRANT FROM THE FEDERAL AVIATION ADMINISTRATION AS PROVIDED UNDER SECTION 505 OF THE AIRPORT AND AIRWAY IMPROVEMENT ACT OF 1982, AS AMENDED. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THESE DOCUMENTS BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED HEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS.

BUCKEYE MUNICIPAL AIRPORT

AIRPORT AIRSPACE DRAWING
FAR PART 77 INNER SURFACE

BUCKEYE, ARIZONA

PLANNED BY: Christopher Huguenin
DETAILED BY: Maggie Beaver
APPROVED BY: James M. Harris P.E.
September 14, 2007 SHEET 5 OF 14

Coffman Associates
Airport Consultants
www.coffmanassociates.com

10,000 @ 50:1

40,000 @ 40:1

DOF
Tower

1395
1350
1300
1250
1200
1195

20:1 CONICAL SURFACE

7:1 TRANSITIONAL SURFACE

5000'

RWY. 17L
EL. 1045'

RWY. 35R
EL. 987'

RWY. 17R
EL. 1015'

RWY. 35L
EL. 990'

@ 20:1
OTH ENDS)

BUCKEYE MUNICIPAL AIRPORT

AIRPORT EL. 1045' (MSL)

HORIZONTAL SURFACE
EL. 1195' (MSL)

MAG
NORTH

0 2000 4000
SCALE IN FEET

16,000'

BUCKEYE VALLEY

ISOMETRIC VIEW OF SECTION
THRU CENTERLINE OF RUNWAYS
N.T.S.

NOTE: THIS ISOMETRIC IS FOR ILLUSTRATION PURPOSES ONLY AND IS NOT AN ACTUAL REPRESENTATION OF THE RUNWAY(S) DEPICTED ON THIS PART 77 AIRSPACE DRAWING.

"A" = DIMENSION VARIES ACCORDING TO TYPE OF RUNWAY APPROACH (e.g., PRECISION, NONPRECISION, VISUAL)

PRECISION INSTRUMENT APPROACH
VISUAL OR NONPRECISION APPROACH
CONICAL SURFACE
HORIZONTAL SURFACE
RUNWAY CENTERLINES

DIGITAL OBSTACLE TABLE

Object Number	Object City and State	Object Structure / Status	Object Accuracy	Object Painted	Object Lighted	Object Elevation AGL / AMSL	Object Latitude	Object Longitude	Object Distance Feet / Natical Miles
03-0668	Buckeye, AZ	Tower / Verified	2C	Yes	Dual, Red with medium intensity White strobe	255' / 1299'	33°25'22.20"N	112°38'04.44"W	15,774' / 2.6NM

OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Proposed Object Disposition

NO OBSTRUCTIONS
NOTED WITHIN ANY
PART 77 AIRSPACE SURFACE

GENERAL NOTES:

1. Obstructions, clearances, and locations are calculated from ultimate runway end elevations and ultimate approach surfaces, unless otherwise noted.
2. Depiction of features and objects within the outer portion of the approach surfaces, are illustrated on the APPROACH ZONES PROFILES of these plans.
3. Depiction of features and objects within the inner portion of the approach surfaces, are illustrated on the RUNWAY END AREA PLANS, Sheets 3 and 4 of these plans.
4. Existing and future height and hazard ordinances are to be amended and/or referenced upon approval of updated PART 77 AIRSPACE PLAN.

BUCKEYE MUNICIPAL AIRPORT

AIRPORT AIRSPACE DRAWING
RUNWAY 35R APPROACH FAN

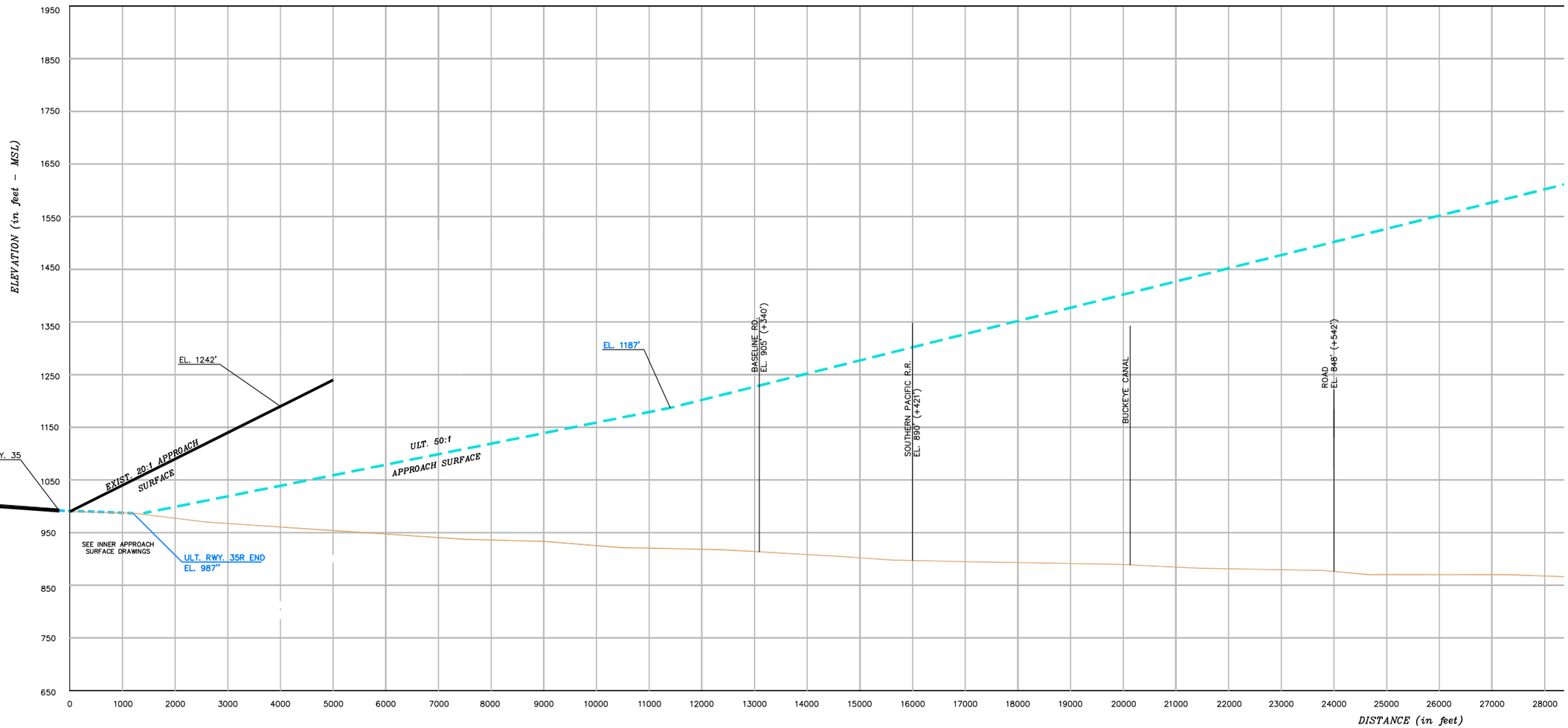
BUCKEYE, ARIZONA

PLANNED BY: Christopher Huguenin
DETAILED BY: Maggie Beaver
APPROVED BY: James M. Harris P.E.

September 14, 2007 | SHEET 6 OF 14

Coffman Associates
Airport Consultants
www.coffmanassociates.com

RUNWAY 35R 50:1 APPROACH SURFACE PROFILE

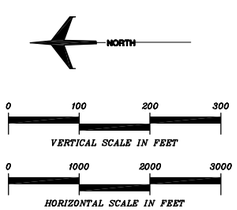


OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Proposed Object Disposition
NONE					SEE INNER APPROACH SURFACE DRAWING

GENERAL NOTES:

1. Obstructions, clearances, and locations are calculated from ultimate runway end elevations and ultimate approach surfaces, unless otherwise noted.
2. Distance for road obstructions and clearances reflect a safety clearance of 10' for airport service roads, 15' for noninterstate roads, 17' for interstate roads, and 23' for railroads.
3. Depiction of features and objects within the inner portion of the approach surfaces, is illustrated on the INNER PORTION OF RUNWAY APPROACH SURFACE DRAWING, sheets 10, 11, 12, of these plans.
4. Existing height and hazard ordinances are to be amended and/or referenced upon approval of updated AIRPORT AIRSPACE PLAN.
5. Obstruction data source NGS form 292, Aeronautical Data Sheet.



BUCKEYE MUNICIPAL AIRPORT

RUNWAY 35R PRECISION (50:1) APPROACH SURFACE PROFILE

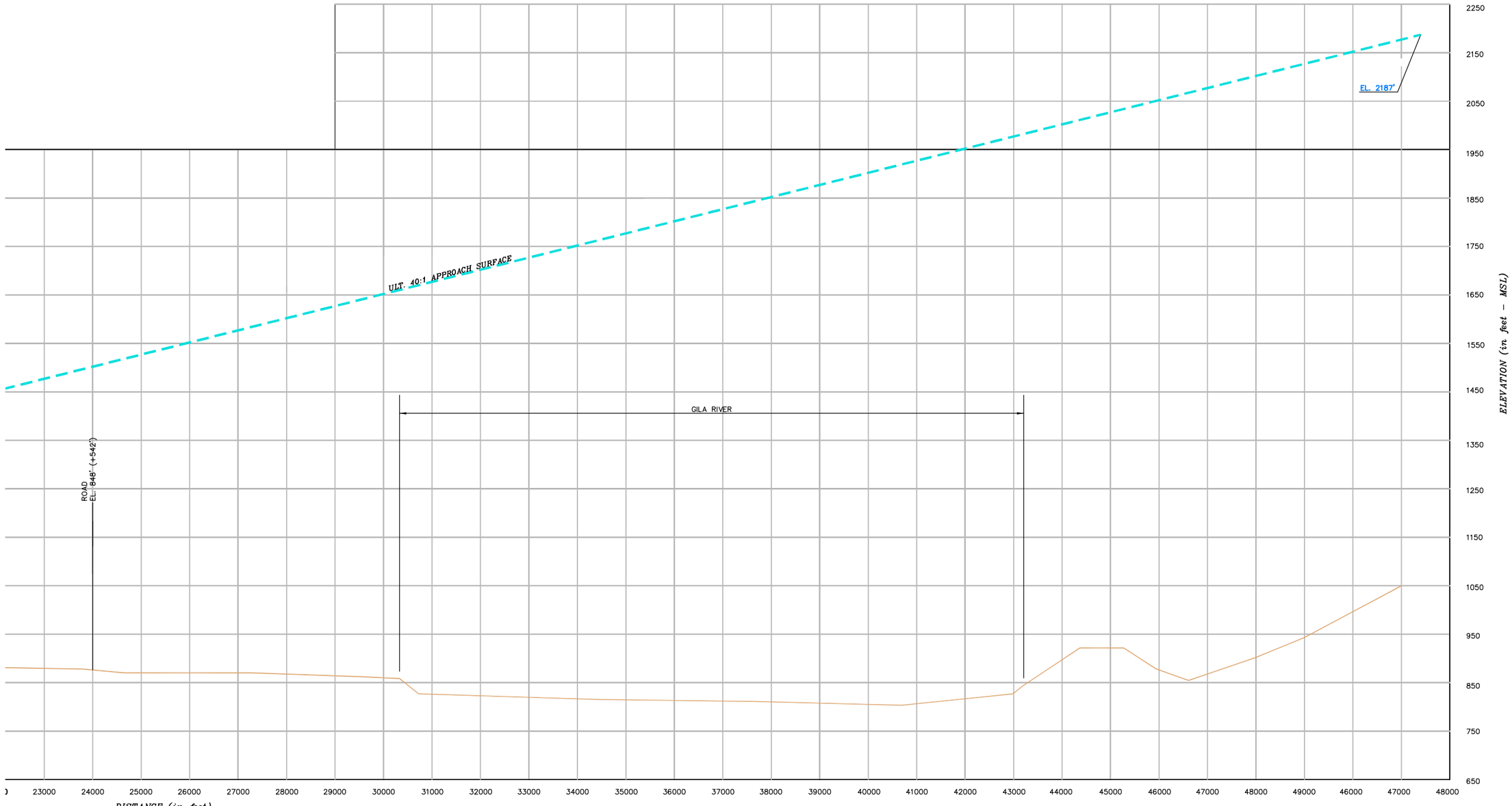
BUCKEYE, ARIZONA

PLANNED BY: Christopher Huguenin
DETAILED BY: Maggie Beaver
APPROVED BY: James M. Harris P.E.
September 14, 2007
SHEET 7 OF 14

THE PREPARATION OF THESE DOCUMENTS WAS FINANCED IN PART THROUGH A PLANNING GRANT FROM THE FEDERAL AVIATION ADMINISTRATION AS PROVIDED UNDER SECTION 505 OF THE AIRPORT AND AIRWAY IMPROVEMENT ACT OF 1982, AS AMENDED. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THESE DOCUMENTS BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED HEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS.

Coffman Associates
Airport Consultants
www.coffmanassociates.com

RUNWAY 35R 40:1 APPROACH SURFACE PROFILE



OBSTRUCTION TABLE					
Object Description	**Object Elevation**	**Obstructed Part 77 Surface**	**Surface Elevation**	**Object Penetration**	**Proposed Object Disposition**
NONE					SEE INNER APPROACH SURFACE DRAWING

GENERAL NOTES:

1. Obstructions, clearances, and locations are calculated from ultimate runway end elevations and ultimate approach surfaces, unless otherwise noted.
2. Distance for road obstructions and clearances reflect a safety clearance of 10' for airport service roads, 15' for noninterstate roads, 17' for interstate roads, and 23' for railroads.
3. Depiction of features and objects within the inner portion of the approach surfaces, is illustrated on the INNER PORTION OF RUNWAY APPROACH SURFACE DRAWING, sheets 10, 11, 12, of these plans.
4. Existing height and hazard ordinances are to be amended and/or referenced upon approval of updated AIRPORT AIRSPACE PLAN.
5. Obstruction data source NGS form 292, Aeronautical Data Sheet.

NORTH

0 100 200 300
VERTICAL SCALE IN FEET

0 1000 2000 3000
HORIZONTAL SCALE IN FEET

THE PREPARATION OF THESE DOCUMENTS WAS FINANCED IN PART THROUGH A PLANNING GRANT FROM THE FEDERAL AVIATION ADMINISTRATION AS PROVIDED UNDER SECTION 505 OF THE AIRPORT AND AIRWAY IMPROVEMENT ACT OF 1982, AS AMENDED. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THESE DOCUMENTS BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED HEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS.

BUCKEYE MUNICIPAL AIRPORT

RUNWAY 35R PRECISION (40:1) APPROACH SURFACE PROFILE

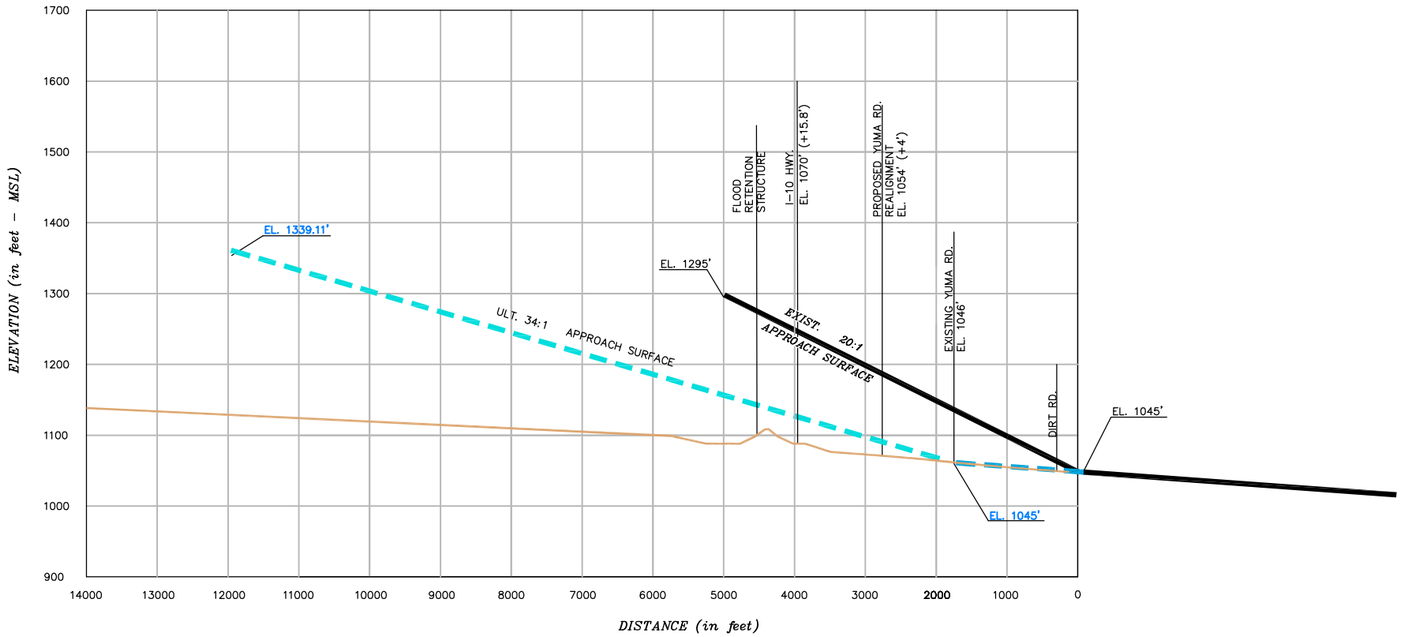
BUCKEYE, ARIZONA

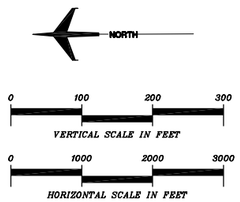
PLANNED BY: Christopher Huguenin
DETAILED BY: Maggie Beaver
APPROVED BY: James M. Harris P.E.

September 14, 2007 | SHEET 8 OF 14

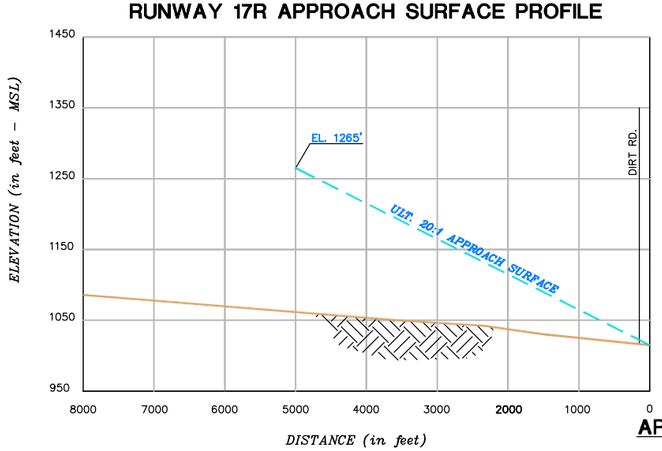
Coffman Associates
Airport Consultants
www.coffmanassociates.com

RUNWAY 17L APPROACH SURFACE PROFILE

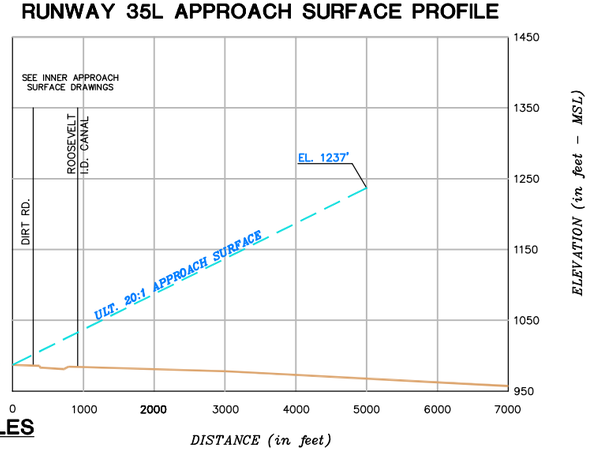




RUNWAY 17R APPROACH SURFACE PROFILE



RUNWAY 35L APPROACH SURFACE PROFILE



APPROACH SURFACE PROFILES

GENERAL NOTES:

1. Obstructions, clearances, and locations are calculated from ultimate runway end elevations and ultimate approach surfaces, unless otherwise noted.
2. Distance for road obstructions and clearances reflect a safety clearance of 10' for airport service roads, 15' for noninterstate roads, 17' for interstate roads, and 23' for railroads.
3. Depiction of features and objects within the inner portion of the approach surfaces, is illustrated on the INNER PORTION OF RUNWAY APPROACH SURFACE DRAWING, sheets 10, 11, 12, of these plans.
4. Existing height and hazard ordinances are to be amended and/or referenced upon approval of updated AIRPORT AIRSPACE PLAN.
5. Obstruction data source NGS form 292, Aeronautical Data Sheet.

OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Proposed Object Disposition
NONE					SEE INNER APPROACH SURFACE DRAWING

THE PREPARATION OF THESE DOCUMENTS WAS FINANCED IN PART THROUGH A PLANNING GRANT FROM THE FEDERAL AVIATION ADMINISTRATION AS PROVIDED UNDER SECTION 505 OF THE AIRPORT AND AIRWAY IMPROVEMENT ACT OF 1982, AS AMENDED. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THESE DOCUMENTS BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED HEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS.

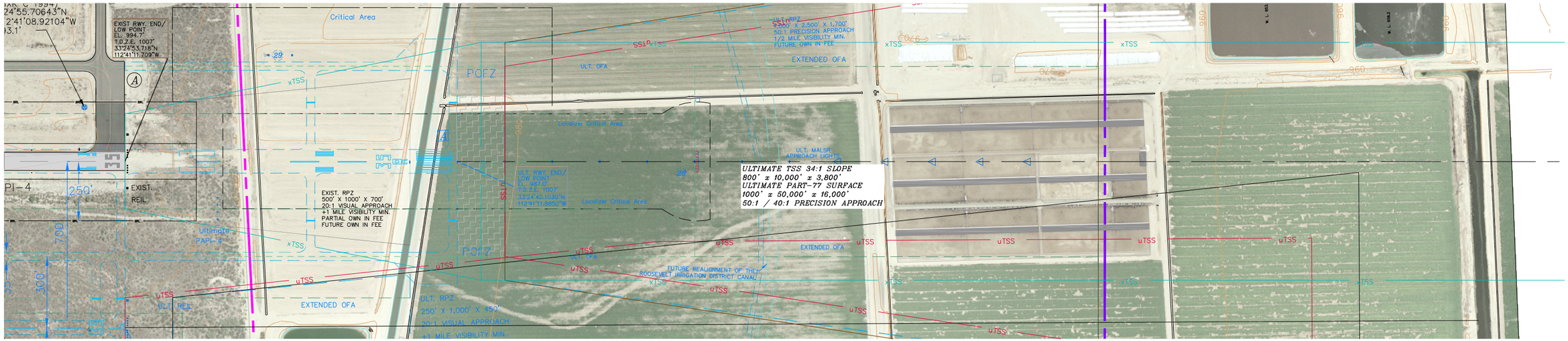
BUCKEYE MUNICIPAL AIRPORT

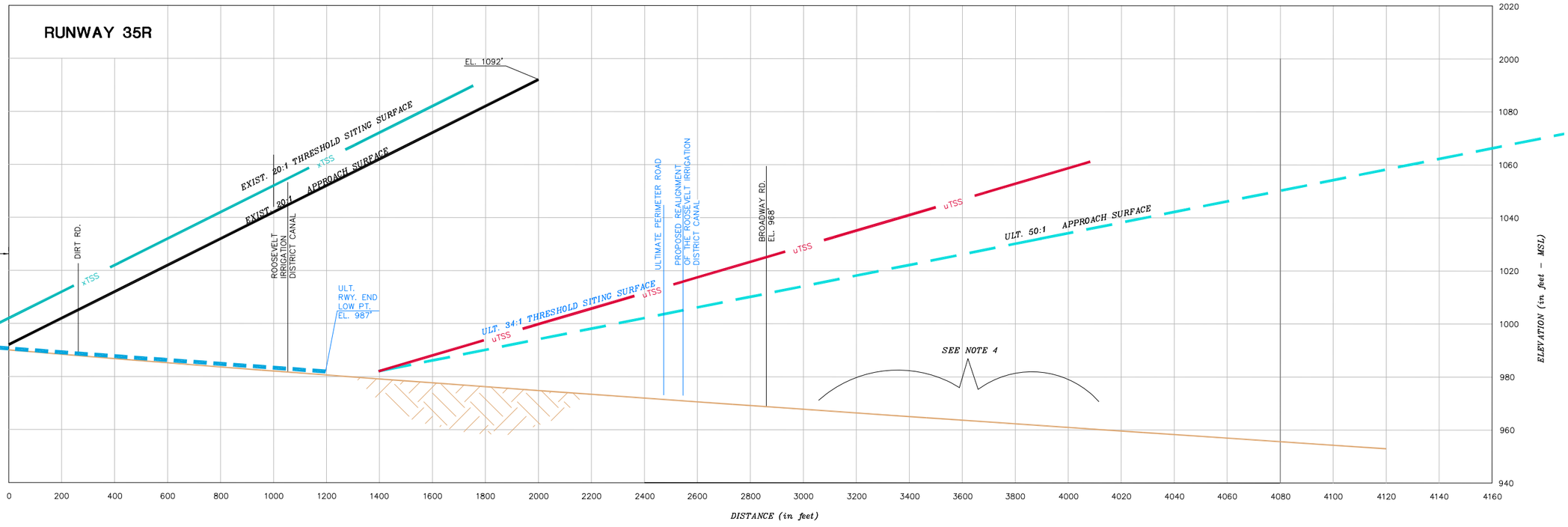
RUNWAY 17L & RUNWAY 17R-35L OUTER APPROACH SURFACE PROFILE DRAWING

BUCKEYE, ARIZONA

PLANNED BY: Christopher Huguenin
DETAILED BY: Maggie Beaver
APPROVED BY: James M. Harris P.E.
September 14, 2007

Coffman Associates
Airport Consultants
www.coffmanassociates.com





GENERAL NOTES:

1. Obstructions, clearances, and locations are calculated from ultimate runway end elevations and ultimate approach surfaces, unless otherwise noted.
2. Distance for road obstructions and clearances reflect a safety clearance of 10' for airport service roads, 15' for noninterstate roads, 17' for interstate roads, and 23' for railroads.
3. Depiction of features and objects within the outer portion of the approach surfaces, is illustrated on the RUNWAY APPROACH SURFACE PROFILES, sheets 7 and 8 of these plans.
4. Dairy farm feed canopies.

OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Proposed Object Disposition
1. NONE	--	--	--	--	-

0 20 40
VERTICAL SCALE IN FEET

0 200 400
HORIZONTAL SCALE IN FEET

THE PREPARATION OF THESE DOCUMENTS WAS FINANCED IN PART THROUGH A PLANNING GRANT FROM THE FEDERAL AVIATION ADMINISTRATION AS PROVIDED UNDER SECTION 505 OF THE AIRPORT AND AIRWAY IMPROVEMENT ACT OF 1982, AS AMENDED. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THESE DOCUMENTS BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED HEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS.

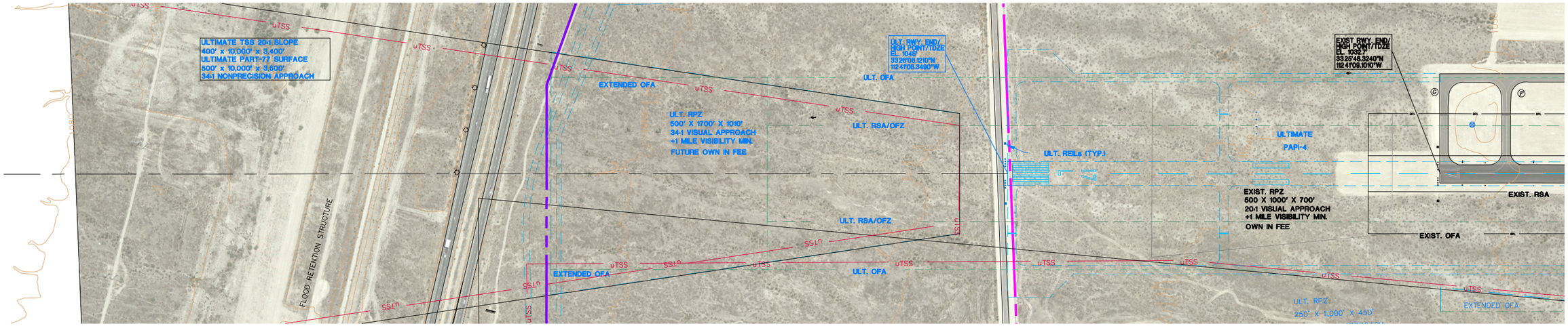
BUCKEYE MUNICIPAL AIRPORT

INNER PORTION OF THE RUNWAY 35R APPROACH SURFACE DRAWING

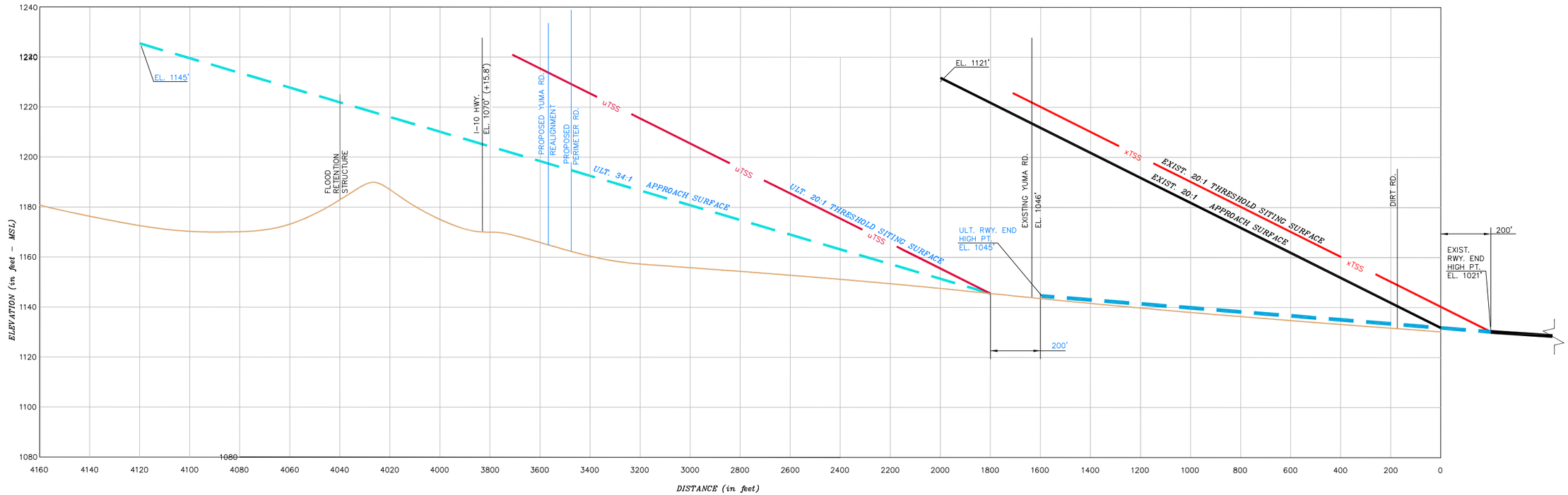
BUCKEYE, ARIZONA

PLANNED BY: Christopher Hugunin
DETAILED BY: Maggie Beaver
APPROVED BY: James M. Harris P.E.
September 14, 2007

Coffman Associates
Airport Consultants
www.coffmanassociates.com



RUNWAY 17L



GENERAL NOTES:

1. Obstructions, clearances, and locations are calculated from ultimate runway end elevations and ultimate approach surfaces, unless otherwise noted.
2. Distance for road obstructions and clearances reflect a safety clearance of 10' for airport service roads, 15' for noninterstate roads, 17' for interstate roads, and 23' for railroads.
3. Depiction of features and objects within the outer portion of the approach surfaces, is illustrated on the RUNWAY APPROACH SURFACE PROFILES, sheets 7 and 8 of these plans.

OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Proposed Object Disposition
1. NONE	--	--	--	--	-

0 20 40
VERTICAL SCALE IN FEET

0 200 400
HORIZONTAL SCALE IN FEET

THE PREPARATION OF THESE DOCUMENTS WAS FINANCED IN PART THROUGH A PLANNING GRANT FROM THE FEDERAL AVIATION ADMINISTRATION AS PROVIDED UNDER SECTION 505 OF THE AIRPORT AND AIRWAY IMPROVEMENT ACT OF 1982, AS AMENDED. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THESE DOCUMENTS BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED HEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS.

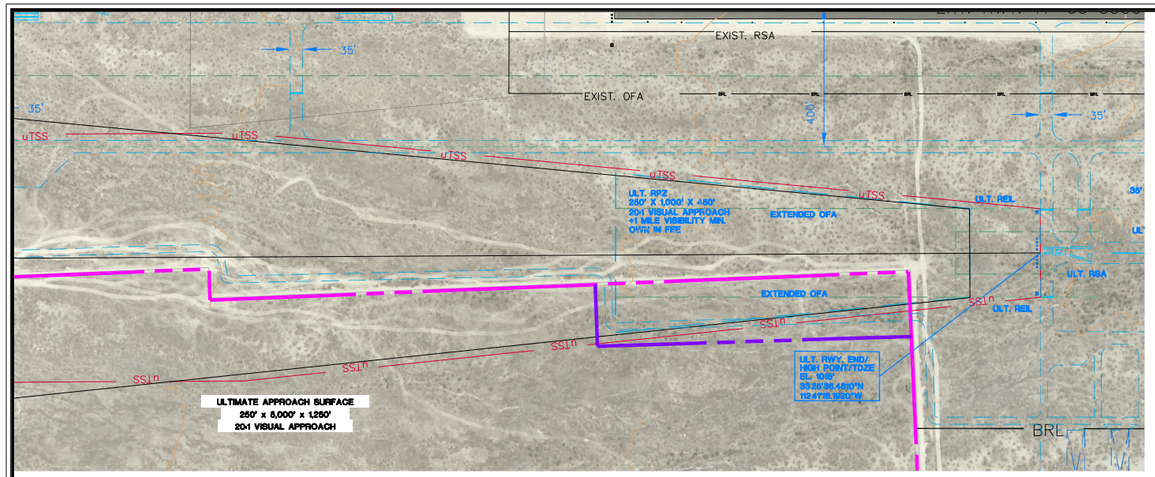
BUCKEYE MUNICIPAL AIRPORT

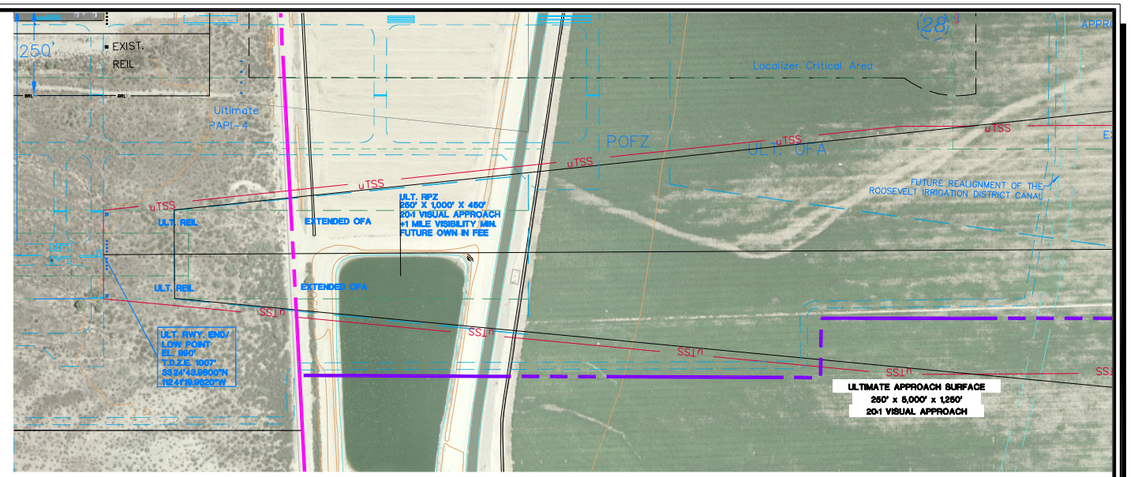
INNER PORTION OF THE RUNWAY 17L APPROACH SURFACE DRAWING

BUCKEYE, ARIZONA

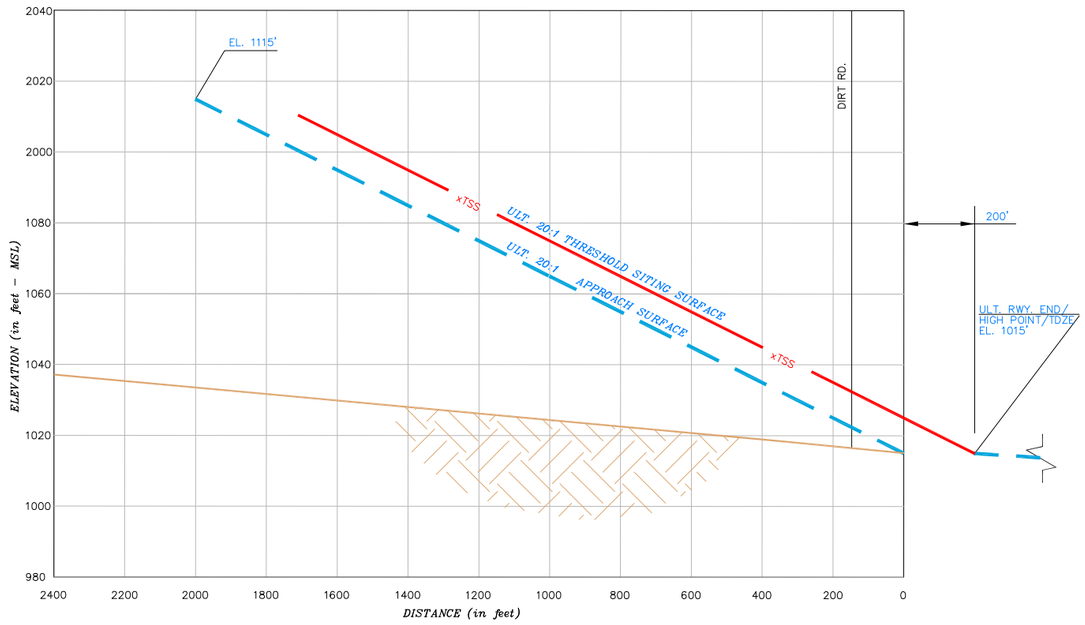
PLANNED BY: Christopher Huguenin
DETAILED BY: Maggie Beaver
APPROVED BY: James M. Harris P.E.
September 14, 2007

Coffman Associates
Airport Consultants
www.coffmanassociates.com

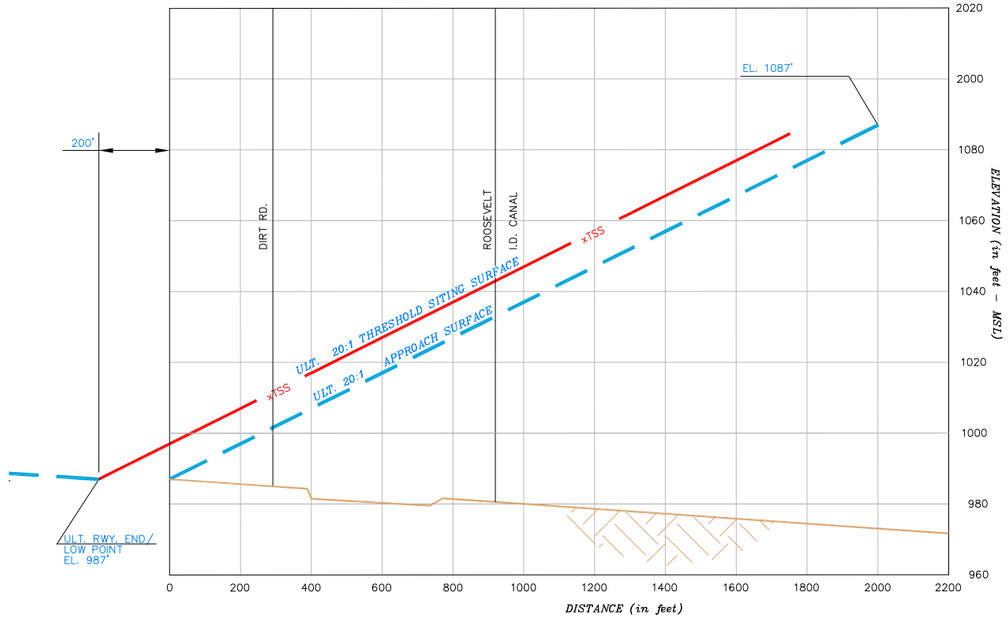




RUNWAY 17R



RUNWAY 35L



GENERAL NOTES:

1. Obstructions, clearances, and locations are calculated from ultimate runway end elevations and ultimate approach surfaces, unless otherwise noted.
2. Distance for road obstructions and clearances reflect a safety clearance of 10' for airport service roads, 15' for noninterstate roads, 17' for interstate roads, and 23' for railroads.
3. Depiction of features and objects within the outer portion of the approach surfaces, is illustrated on the RUNWAY APPROACH SURFACE PROFILES, sheets 7 and 8 of these plans.

OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Proposed Object Disposition
1. NONE	--	--	--	--	-

0 20 40
VERTICAL SCALE IN FEET

0 200 400
HORIZONTAL SCALE IN FEET

THE PREPARATION OF THESE DOCUMENTS WAS FINANCED IN PART THROUGH A PLANNING GRANT FROM THE FEDERAL AVIATION ADMINISTRATION AS PROVIDED UNDER SECTION 505 OF THE AIRPORT AND AIRWAY IMPROVEMENT ACT OF 1982, AS AMENDED. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THESE DOCUMENTS BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED HEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS.

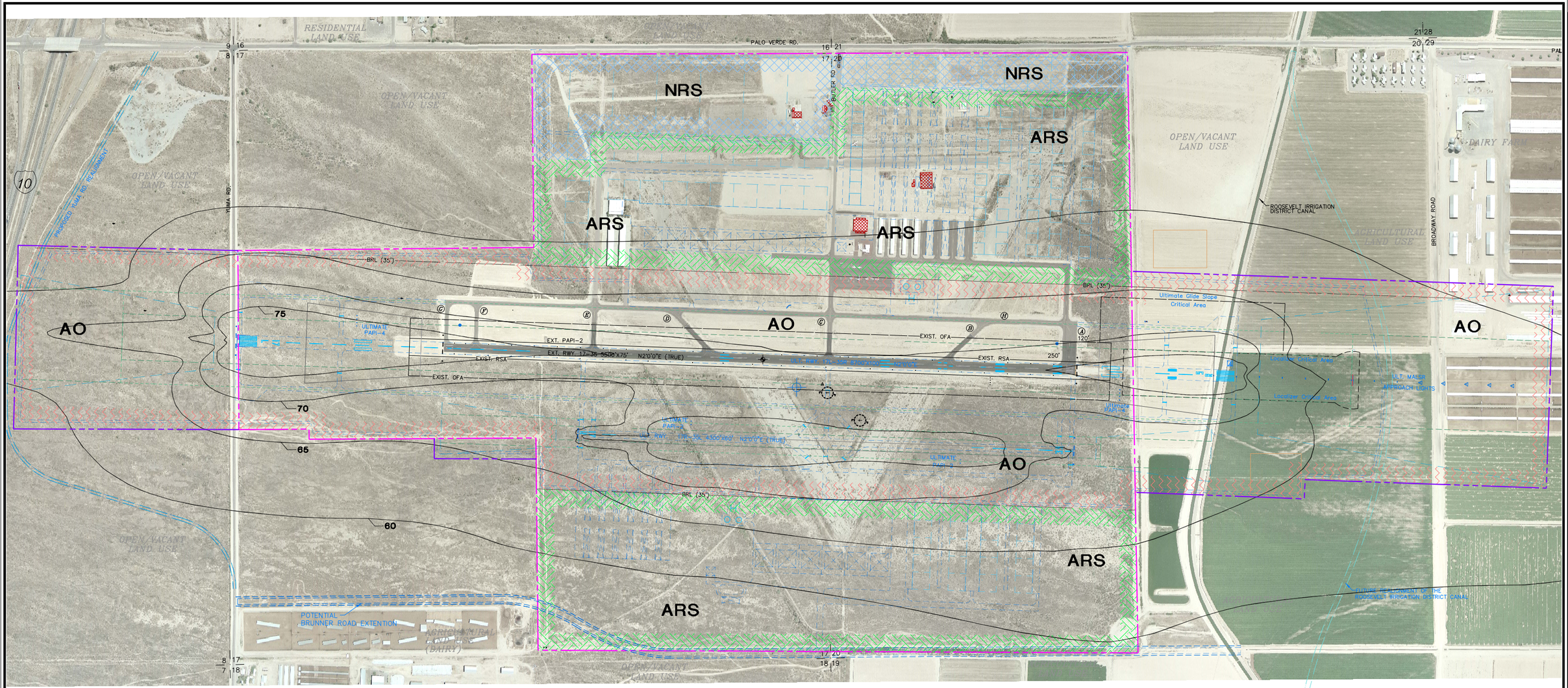
BUCKEYE MUNICIPAL AIRPORT

INNER PORTION OF THE RUNWAY 17R-35L APPROACH SURFACE DRAWING

BUCKEYE, ARIZONA

PLANNED BY: Christopher Huguenin
DETAILED BY: Maggie Beaver
APPROVED BY: James M. Harris P.E.
September 14, 2007 | SHEET 12 OF 14

Coffman Associates
Airport Consultants
www.coffmanassociates.com



ON-AIRPORT LAND USE LEGEND

AO	AIRFIELD OPERATIONS (550.23 ACRES)	NRS	NON-AVIATION REVENUE SUPPORT (62.56 ACRES)
ARS	AVIATION RELATED REVENUE SUPPORT (324.52 ACRES)	75	DNL NOISE CONTOURS

BASE MAP: AERIAL PHOTO TAKEN AUGUST 2005

MAG NORTH

MAGNETIC VARIANCE 12°41' E (MAY 2006)
RATE OF CHANGE 0.1' WEST

0 400 800
SCALE IN FEET

BUCKEYE MUNICIPAL AIRPORT

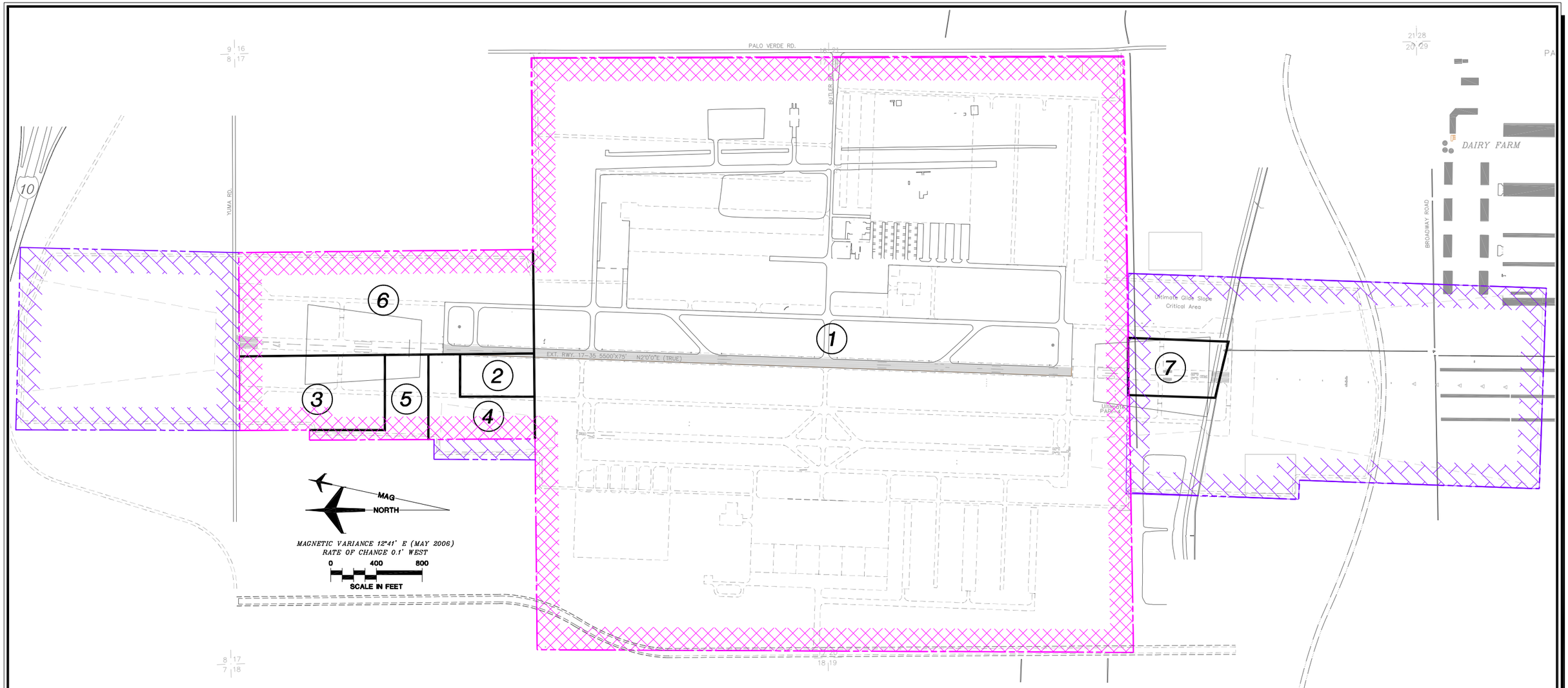
ON-AIRPORT LAND USE PLAN

BUCKEYE, ARIZONA

PLANNED BY: Christopher Huguenin
DETAILED BY: Maggie Beaver
APPROVED BY: James M. Harris P.E.

September 14, 2007 | SHEET 13 OF 14

Coffman Associates
Airport Consultants
www.coffmanassociates.com



LEGEND

EXISTING	ULTIMATE	DESCRIPTION
		AIRPORT PROPERTY LINE
		AIRPORT REFERENCE POINT (ARP)
		AIRPORT ROTATING BEACON
		BUILDING AND FACILITIES
N/A		BUILDINGS TO BE REMOVED
BRL		BUILDING RESTRICTION LINE (BRL)
		OBJECT FREE AREA (OFA)
		RUNWAY SAFETY AREA (RSA)
		OBSTACLE FREE ZONE (OFZ)
		FACILITY CONSTRUCTION
		FENCING
PAPI-2	PAPI-2	NAVIGATIONAL AID INSTALLATION
PAPI-4	PAPI-4	NAVIGATIONAL AID INSTALLATION
		RUNWAY END IDENTIFICATION LIGHTS (REIL)
		RUNWAY THRESHOLD LIGHTS
		LOCALIZER ANTENNA
		GLIDE SLOPE ANTENNA
		MALSR
		RUNWAY PROTECTION ZONE (RPZ)
		PRECISION OBSTACLE FREE ZONE (POFZ)
		SEGMENTED CIRCLE/LIGHTED WIND TEE
		WIND INDICATOR (Lighted)
1080		TOPOGRAPHIC CONTOURS
		SECTION CORNER
		TAXIWAY DESIGNATION
		PRIMARY AIRPORT CONTROL STATION (PACS)
		SECONDARY AIRPORT CONTROL STATION (SACS)
		HOLD POSITION MARKINGS
		HELIPAD

DEED REFERENCE
BUCKEYE MUNICIPAL AIRPORT

Parcel	Book – Map – Parcel No. or Reference Number	Date Recorded	Acreage (See Note ⚠)	Description
1	504–30–3 and 26	3–11–1960	635.49± Acres	Quit Claim Deed: State of Arizona to Town of Buckeye
2	504 – 30 – 1C	11–10–1986	5.59 Acres	Warranty Deed: William C. and Barbara F. Brainard, and George S. and Virginia K. Naifeh to Town of Buckeye, a Municipal Corporation
3	504 – 30 – 1E	9–26–1986	18.27 Acres	Warranty Deed: Arizona Machinery Company to Stotz Farms, Inc.
4	504 – 30 – 1H	12–31–1986	10.25 Acres	Warranty Deed: FER Properties to Town of Buckeye
5	504 – 30 – 1J	9–25–1990	7.53 Acres	Warranty Deed: Arizona Machinery Company Employees Profit Sharing Retirement Plan to FER Properties
6	16–88243	12–17–1986	53.85 Acres	Perpetual Right–of–Way: State of Arizona to Town of Buckeye
7	504–30–24B	4–6–1987	7.64 Acres	Aviation Easement: J Bar R Farms Ltd. to Town of Buckeye

⚠ Acreages are based on legal descriptions provided by The Town of Buckeye, and are subject to field and records verification.

LEGEND:

EXISTING AIRPORT PROPERTY (719.41 Acres)

PROPERTY TO BE ACQUIRED (221.37 Acres)

PARCEL LINE

THE PREPARATION OF THESE DOCUMENTS WAS FINANCED IN PART THROUGH A PLANNING GRANT FROM THE FEDERAL AVIATION ADMINISTRATION AS PROVIDED UNDER SECTION 505 OF THE AIRPORT AND AIRWAY IMPROVEMENT ACT OF 1982, AS AMENDED. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THESE DOCUMENTS BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED HEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS.

BUCKEYE MUNICIPAL AIRPORT

"EXHIBIT A"
PROPERTY MAP

BUCKEYE, ARIZONA

PLANNED BY: Christopher Huguenin

DETAILED BY: Maggie Beaver

APPROVED BY: James M. Harris P.E.

September 14, 2007

SHEET 14 OF 14

Coffman Associates
Airport Consultants
www.coffmanassociates.com

Appendix C

FORECAST APPROVAL

U.S Department
of Transportation
Federal Aviation
Administration

Western-Pacific Region
Airports Division

P.O. Box 92007
Los Angeles, CA 90009

June 20, 2006

Jason Hardison
Airport Manager
Buckeye Municipal Airport
508 East Monroe Ave.
Buckeye, AZ 85326

Dear Mr. Hardison:

Buckeye Municipal Airport, Buckeye, Arizona
Aviation Activity Forecast

The Federal Aviation Administration (FAA) has reviewed the *Draft Chapter Two Aviation Demand Forecasts* for the Buckeye Municipal Airport (BXK) master plan. We approve the forecast for long-term airport planning purposes, including Airport Layout Plan (ALP) development and the preparation of Noise Exposure Maps.

The master plan forecast is much higher than the FAA Terminal Area Forecast (TAF). However, the difference between the forecasts does not point to a change in the role of the airport as identified in the FAA National Plan of Integrated Airport Systems (NPIAS). The NPIAS designation for BXK is a general aviation airport. The NPIAS designation is not expected to change within the 20-year planning period although transition to reliever status might be considered in the future.

The master plan forecast is higher than the TAF because the Town of Buckeye projects high population growth over the next 20 years. The master plan assumes, based on comparisons to other Phoenix area airports, that high population growth will result in strong growth in both based aircraft and operations at BXK. The TAF for BXK does not consider such local factors and simply reflects current FAA Form 5010 operations data, with no change projected for future years. This is a common TAF protocol for airports that do not have an airport traffic control tower.

We also reviewed the *Chapter three Facility Requirements*. It does not appear the difference between master plan and TAF forecasts drives any major changes to the existing and proposed runway system as depicted on the current FAA approved ALP. However, the timing and need for potential projects such as Runway 17/35 extension, construction of a second runway, or significant expansion of aircraft basing facilities will depend on if and how fast forecast demand materializes. FAA will base future decisions about these types of projects on the activity levels reached and justifications provided at the time the projects are proposed for implementation.

If you have any questions about this forecast approval, please call me at (310) 725-3613.

Sincerely,

Original Signed by

Richard P. Dykas
Supervisor, Capacity Section

cc: Coffman Associates, Inc (James M. Harris)

www.coffmanassociates.com

KANSAS CITY
(816) 524-3500

237 N.W. Blue Parkway
Suite 100
Lee's Summit, MO 64063

PHOENIX
(602) 993-6999

4835 E. Cactus Road
Suite 235
Scottsdale, AZ 85254