San Carlos Apache Airport

Airport Master Plan Update
Final Report
November 19, 2007

ARMSTRONG CONSULTANTS, Inc.
airport engineering and planning services

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Introduction

INTRODUCTION

The San Carlos Apache Tribe, as the Airport Sponsor, is continuing its effort to plan for future development of the San Carlos Apache Airport. This development is designed to enhance air and ground operations, improve safety, provide better airport services and stimulate the local economy through business growth potential.

FIGURE 1 RUNWAY 27

PURPOSE

An airport master plan document describes and depicts the overall concept for the long-term development of an airport. It presents the concepts graphically in the airport layout plan (ALP) drawing set and reports the data and logic upon which the concept is based in the airport master plan (AMP) report. The goal of the master plan report is to provide direction for future airport development that will satisfy aviation demand in a financially feasible manner and meet the needs of the community with respect to the airport.

OBJECTIVES

The primary objectives of the airport master plan are to produce an attainable phased development plan concept that will satisfy the airport needs in a safe, efficient, economical and environmentally sound manner. The plan serves as a guide to decision makers, airport users and the general public for implementing airport development actions while considering both airport and community concerns and objectives. There are a number of objectives that the San Carlos Apache Tribe would like to achieve as a result of this master plan.

Objectives of the airport master plan include:

- Clearly identify the present and future roles of the San Carlos Apache Airport.
- Update aircraft activity forecasts for the airport.
- Refine the size and layout of general aviation areas.
- Evaluate development alternatives including the “No Build” alternative, to determine the preferred development alternative for meeting airfield and landside facility requirements and FAA safety and design standards.
- Provide a plan for improvement of the facility to accommodate increased usage and meet current FAA airport design standards.
- Identify optimum landside uses, which will enhance the economic benefits of the airport and that are compatible with airside development.
- Develop active and productive public involvement throughout the planning process.
- Prepare a schedule of development projects and reasonable cost estimates by which to implement the improvements proposed herein (i.e. Capital Improvement Plan).
- Develop realistic, phased development and maintenance plans for the airport.
- Provide an Airport Layout Plan drawing set in accordance with current FAA standards.
- Prepare an Environmental Overview for proposed development to determine future environmental permitting and NEPA requirements.

- Prepare compatible land-use and height restriction plan for the airport vicinity including recommended zoning protection within the airport influence zone.
- Accomplish obstruction survey and momumentation in accordance with FAA Standard 405 for a potential WAAS approach.

MASTER PLAN PROCESS AND SCHEDULE

FIGURE 2 MASTER PLANNING PROCESS

Airport planning takes place at a national, state, regional and local level. These plans are formulated on the basis of overall transportation demands and are coordinated with other transportation planning and comprehensive land use planning. The National Plan of Integrated Airport Systems (NPIAS) is a ten-year plan continually updated and published by the Federal Aviation Administration (FAA). This publication lists developments at public use airports that are considered to be of national interest and thus eligible for financial assistance for airport planning and development under the Airport and Airway Improvement Act of 1982. Statewide Integrated Airport Systems Planning identifies the general location and characteristics of new airports and the general expansion needs of existing airports to meet statewide air transportation goals. This planning is performed by state transportation or aviation planning agencies. Regional Integrated Airport Systems Planning identifies airport needs for a large regional or metropolitan area. Needs are stated in general terms and incorporated into statewide systems plans. Airport Master Plans are prepared by the operators of individual airports and are usually completed with the assistance of consultants. The San Carlos Apache Tribe is completing this master plan with the assistance of Armstrong Consultants, Inc. The airport master planning process involves collecting data, forecasting demand, determining facility requirements, studying various alternatives and developing plans and schedules. The flow chart in Figure 2 depicts the steps in

the master planning process. This process will take into consideration the needs and concerns of the airport sponsor, airport tenants and users, as well as the general public.

PLANNING ADVISORY COMMITTEE

The San Carlos Apache Airport Planning Advisory Committee (PAC) consists of members representing varied interests in the airport and the community. Their involvement throughout the master planning process will help to keep interested parties informed and will foster consensus for future development actions.

PAC REPRESENTATIVES

- *San Carlos Apache Tribal Planning, Director of Planning – Cassandra Kipp*
- *San Carlos Apache Tribal Planning – Charles Russell*
- *Apache Gold Casino – Rob Powell*
- *Luke Air Force Base – Bill Gillies*
- *Arizona Aeronautics Division – Ken Potts*
- *Federal Aviation Administration – Margie Drilling*

San Carlos Apache Airport

Chapter One
Inventory

INTRODUCTION AND AIRPORT HISTORY

The San Carlos Apache Airport (P13) is a general aviation airport located in east central Arizona, approximately five miles southeast of the City of Globe, Arizona south of U.S. Highway 70. The airport is 65 nautical miles (nm) east of Phoenix Sky Harbor International Airport; however, it is over 96 highway miles from San Carlos to Phoenix.

The airport was originally leased from the San Carlos Apache Tribe by the City of Globe and Gila County. The Globe-San Carlos Regional Airport Facility Board managed the airport. The City and County leased the airport for approximately 52 years. In August 1997 the lease was terminated and the San Carlos Apache Tribe resumed operation of the airport, the name was also changed to the San Carlos Apache Airport. The runway was relocated approximately 200 feet to the south and widened to 100 feet in 1999 to its present day location to meet FAA design standards.

The San Carlos Apache Airport is located at an elevation of 3,260 feet mean sea level (MSL). It is located within a large valley with mountainous terrain surrounding the airport.

AIRPORT GRANT HISTORY

An Airport Master Plan was completed in 1992 and was updated in 1998. A federal grant history for the capital improvements at the San Carlos Apache Airport is provided in Table 1-1. In Arizona, under the most recent FAA Airport Improvement Program legislation (Vision 100), capital improvement projects are typically funded at 95 percent by Federal Aviation Administration (FAA), 2.5 percent by state and 2.5 percent by sponsor; however, current Arizona state legislation prohibits the state from participating in Native American lands and therefore, the current cost share is 95 percent FAA and 5 percent local.

FIGURE 1-1 SAN CARLOS APACHE AIRPORT

Table 1-1 Grant History		
Project No. & Date	Description of Work	Federal Amount
AIP-001 - 1987	Conduct Miscellaneous Study	$7,740.00
	Rehabilitate Runway	$110,613.00
	Rehabilitate Taxiway	$7,424.00
	Extend Runway	$128,548.00
	Extend Taxiway	$34,144.00
	Grand Total	$288,469.00
AIP-002 - 1992	Conduct Airport Master Plan Study	$27,318.00
AIP-003 - 1996	Conduct Airport Master Plan Study	$91,060.00
AIP-004 - 1998	Rehabilitate Runway	$952,895.00
AIP-005 - 1999	Rehabilitate Runway	$2,094,870.00
AIP-006 - 1999	Construct Runway	$1,500,000.00
AIP-007 - 2000	Rehabilitate Runway	$360,281.00
AIP-008 - 2001	Rehabilitate Apron	$150,000.00
AIP-009 - 2002	Rehabilitate Apron	$463,896.00
AIP-010 - 2003	Expand Apron	$621,894.00
AIP-011 - 2004	Install Weather Reporting Equipment	$150,000.00
	Construct Heliport/Helipad	$144,191.00
	Grand Total	$294,191.00
AIP-012 - 2005	Update Airport Master Plan Study	$155,345.00
AIP-013 - 2005	Construct Heliport/Helipad	$179,864.00
	Install Weather Reporting Equipment	$80,000.00
	Grand Total	$259,864.00
AIP-014 - 2006	Install Weather Reporting Equipment	$190,000.00
	Construct Taxiway	$47,500.00
	Grand Total	$237,500.00
	TOTAL FAA AMOUNTS	**$7,497,583.00**

SOURCE: FAA 2006

SERVICE LEVEL

The airport service level reflects the type of public use the airport provides to the community. The service level also reflects the funding categories established by Congress to assist in airport development. The following list identifies the different types of airport service levels:

- **Commercial service** airports are public airports that enplane 2,500 or more annual passengers and receive aircraft offering scheduled passenger service. Commercial service airports are either:

  Primary – airport that enplanes more than 10,000 passengers annually; or

  Nonprimary – airport that enplanes between 2,500 and 10,000 passengers annually.

- **General Aviation Airports** while not specifically defined are considered to be airports not classified as commercial service. These airports are also considered nonprimary airports. General aviation airports include:

  Reliever – airport designated by the FAA as having the function of relieving congestion at a commercial service airport and providing more general aviation access to the overall community. Privately owned airports may be identified as reliever airports.

- **Other General Aviation** – airports that are largely intended to serve the needs of general aviation users (users who conduct non-military operations not involving the carriage of passengers or cargo for hire or compensation). This category also includes:

  Privately owned public-use airports - that enplane 2,500 or more passengers annually and receive scheduled passenger service.

San Carlos Apache Airport is listed in the NPIAS as a general aviation airport. The airport meets all of the NPIAS criteria for a general aviation airport.

AIRPORT ROLE

The San Carlos Apache Airport provides for a variety of users that need access to the San Carlos and Globe area. The geographic location of the San Carlos Apache Airport near the communities of San Carlos, Globe and Miami allows easy access to users throughout the area.

The San Carlos Apache Airport is currently an Airport Reference Code (ARC) C-II airport serving predominately single engine piston, multi-engine piston and turbo prop aircraft, with some use by light turbojet aircraft. Historically there was more use by larger corporate jets serving the local copper mines, but this use diminished with the closing of the FBO and loss of jet fuel availability. Current users include:

Air Medivac Services: Air medivac provides essential emergency medical transport in life threatening situations and patient transfers from clinics to higher level care facilities throughout the Globe San Carlos area. These users utilize a variety of multi-engine turboprop and turbojet aircraft.

Wildlife Management: The Bureau of Indian Affairs (BIA) utilizes the airport for wildfire control and suppression. The number of these operations varies greatly depending on the fire season in the area. The type of aircraft predominately used for aerial fire fighting is the single engine air tanker (SEAT).

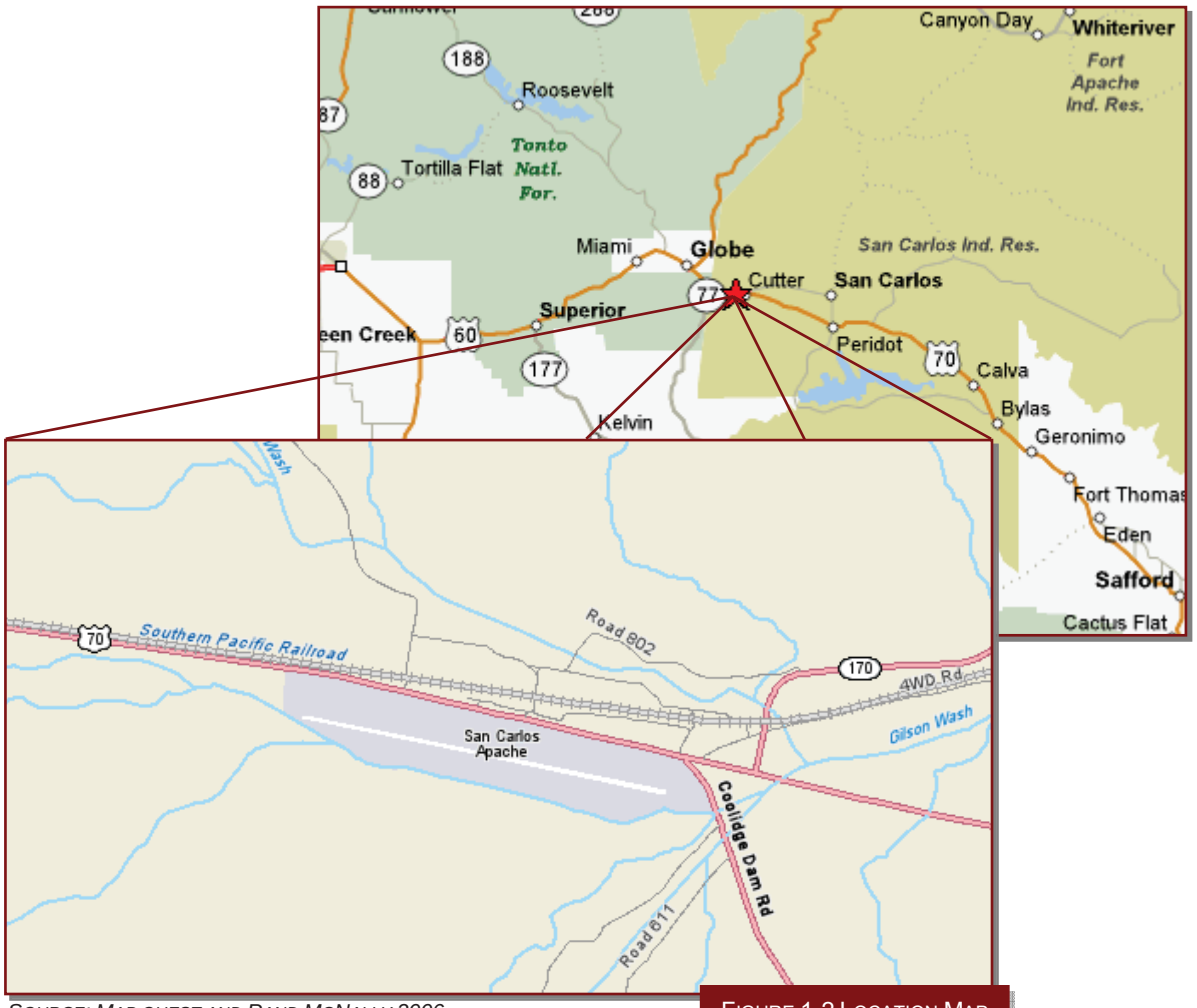
Business/Recreational Transportation: These users desire the utility and flexibility offered by general aviation aircraft. The types of aircraft utilized for personal and business transportation varies with individual preference and resources and generally includes a mix of single engine, multi-engine and turbojet aircraft. An example of this type of user is aircraft that fly into San Carlos Apache Airport to access the Apache Gold Casino Resort.

Flight Training: Flight schools from other airports in the state have students perform cross-country flights to San Carlos Apache Airport. Flight training includes instructional flying to obtain

a pilot's license or proficiency checks including biennial flight reviews. The majority of aircraft used for flight instruction include single and multi-engine piston.

AIRPORT LOCATION

The San Carlos Apache Airport is located in the southeastern portion of Arizona in Gila County. Figure 1-2 provides a graphic depiction of the location of the San Carlos Apache Airport. The airport is designated by the FAA as Site Number 00694.A and is a public use airport. The airport location is Latitude 33° 21' 11.33" North and Longitude 110° 40' 02.50" West according to airport survey data. The airport elevation is 3,260.7 feet and the airport currently has a C-II Airport Reference Code (ARC).



SOURCE: MAP QUEST AND RAND MCNALLY 2006

FIGURE 1-2 LOCATION MAP

AIRPORT PROPERTY

The existing airport property encompasses 314 acres according to the airport survey. The land surrounding the airport is owned and controlled by the San Carlos Apache Tribe and is designated as Reservation Land. The airport property is owned by the San Carlos Apache Tribe and has been designated for airport use (see Exhibit A at the end of this Chapter).

LAND USE PLANNING

The existing land use zoning for the San Carlos Apache Reservation Land is shown in the Exhibit "A" at the end of the chapter. The airport is surrounded by land uses that are considered compatible with the airport, including commercial (Apache Gold Casino Resort), industrial (Apache Timber Products) and open space. The FAA recommends that airport sponsors protect the areas surrounding an airport from incompatible development. Incompatible development includes those land uses which would be sensitive to aircraft noise or over flight, such as residences, schools, churches and hospitals and those uses which could attract wildlife and cause a hazard to aircraft operations such as landfills, ponds and wastewater treatment facilities. A recommended Compatible Land Use and Height Restriction Plan is included as part of this Master Plan.

FIGURE 1-3 REGIONAL SETTING

REGIONAL SETTING

The San Carlos Apache Airport is located in southeastern Gila County, Arizona and is situated in a broad valley at an elevation of 3,260 feet. The area has a mild climate and a wealth of outdoor recreation year round, including hunting and fishing. San Carlos Apache Airport is located approximately 5 highway miles southeast of Globe, Arizona. Figure 1-3 shows the San Carlos regional setting.

RECREATION AND TOURISM

The San Carlos area ranges from desert landscape to alpine meadows. The area contains a wide variety of geological, historical and recreational attractions. San Carlos is home to the Salt River Canyon which is often referred to as the mini Grand Canyon. Whitewater rafting, canoeing and kayaking are popular during the spring runoff. There are over 100 small ponds called tanks

in the area along with other lakes and streams. San Carlos Lake is a fully stocked lake with trout, catfish, bass, crappie and bluegill. The area's climate also makes for a great hunting environment from small to large game including trophy elk. San Carlos Apache Reservation is also home to the Apache Gold Casino Resort. The Resort offers a hotel and casino, restaurants and an 18-hole golf course which was recently rated "the best golf course in Arizona" by Golfweek America. The Casino is conveniently located adjacent to the airport on the north side of Highway 70.

SOCIOECONOMIC CHARACTERISTICS

Examining the specific socioeconomic characteristics of San Carlos Apache Reservation and Gila County will help determine the factors influencing aviation activity in the area and the extent to which aviation facility developments are needed. Characteristics, such as employment, demographic patterns and income, will help in establishing the potential growth rate of aviation within the area. In essence, by analyzing the information in this Chapter, forecasts of aviation activity can be developed. Those forecasts are provided in Chapter Two.

LOCAL PROFILE

Governmental agencies are the major employers on the San Carlos Apache Reservation. The federal government employs many residents in its delivery of health, economic and education services. Numerous tribal enterprises, the tribal administration and the San Carlos Unified School District also provide employment.

The Apache Gold Casino Resort provides approximately 450 jobs to tribal members and non-members from the surrounding communities. Other industry includes lumbering, tourism and recreation.

POPULATION

As of the 2000 US Census, there were 9,385 people residing on the San Carlos Apache Reservation and 51,335 residing in Gila County. According to population estimates from the Arizona Department of Economic Security and the U.S. Census Bureau, the population increased for Gila County from 51,335 in 2000 to 55,102 in 2006. Table 1-2 shows this increasing population trend.

TABLE 1-2 POPULATION

	1990	2000	2006
San Carlos Apache Reservation	7,294	9,385	N/A
Gila County	40,216	51,335	55,102
Arizona	3,665,228	5,130,632	6,239,482

Sources: Arizona Department of Economic Security, US Census Bureau (May 2006)

The Arizona Department of Economic Security, Research Administration, Population Statistics Unit developed population projections for all Arizona counties and the state in March of 2006. Population projections as shown in Table 1-3 indicate a 56 percent population increase for the State of Arizona from 2006 to 2026. The population of Gila County is projected to increase to 67,893 by 2026 or a 26 percent increase from the current population. The average annual increase in population for the County over the projected period is 1.08 percent and for the state is 2.37 percent.

TABLE 1-3 POPULATION PROJECTIONS

	2011	2016	2021	2026
Gila County	58,420	61,796	65,012	67,893
Arizona	7,186,070	8,093,110	8,779,567	9,744,463

Source: Arizona Department of Economic Security, Research Administration Population Statistics Unit (March, 2006)

EMPLOYMENT

As stated previously, the largest employer on the San Carlos Apache Reservation is government according to the Arizona Department of Economic Security. The second largest employment sector on the Reservation is other private service which includes the employees of the Apache Gold Casino Resort, Bashas' grocery store, San Carlos Lake Development Corp., Apache Timber Products and Nolines' Country Store. Public and government employers in the area include the Bureau of Indian Affairs, Rice School District, Indian Health Services and San Carlos Apache Tribe. According to the Arizona Department of Economic Security, the unemployment rate for the San Carlos Apache Reservation was 18.6 percent in 2000 and 21.7 percent in 2004. Employment distribution by industry for Gila County is shown in Table 1-4 and illustrated in Figure 1-5.

TABLE 1-4 GILA COUNTY EMPLOYMENT DISTRIBUTION

	Gila County	% of Total
Agriculture, Forestry, Fishing and Hunting	50	0.4
Mining	603	4.9
Utilities	105	0.8
Construction	1,021	8.2
Wholesale Trade	267	2.2
Retail Trade	1,753	14.2
Transportation and Warehousing	199	1.6
Information	143	1.2
Finance and Insurance	188	1.5
Real Estate and Rental and Leasing	225	1.8
Professional and Technical Services	174	1.4
Administrative and Waste Services	296	2.4
Educational Services	1,276	10.3
Health Care and Social Assistance	1,690	13.6
Arts, Entertainment and Recreation	932	7.5
Accommodation and Food Services	1,362	11.0
Other services	258	2.1
Public Administration	1,843	14.9
Total	12,385	100.0

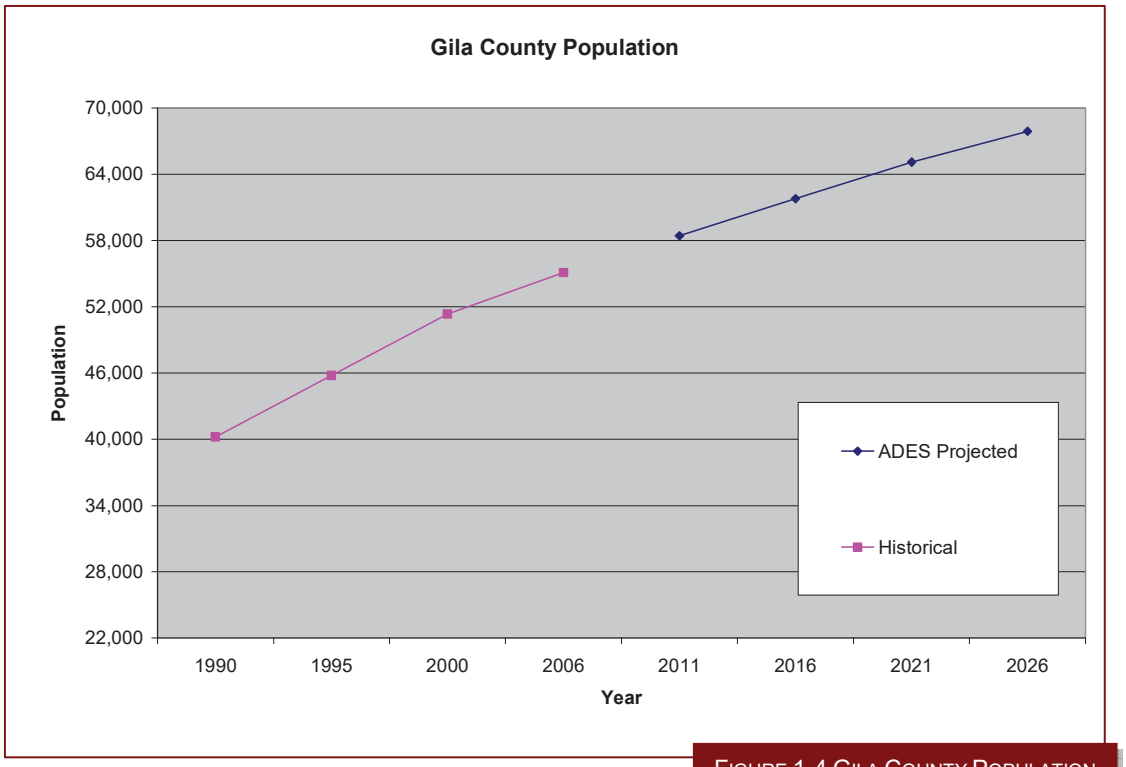


FIGURE 1-4 GILA COUNTY POPULATION

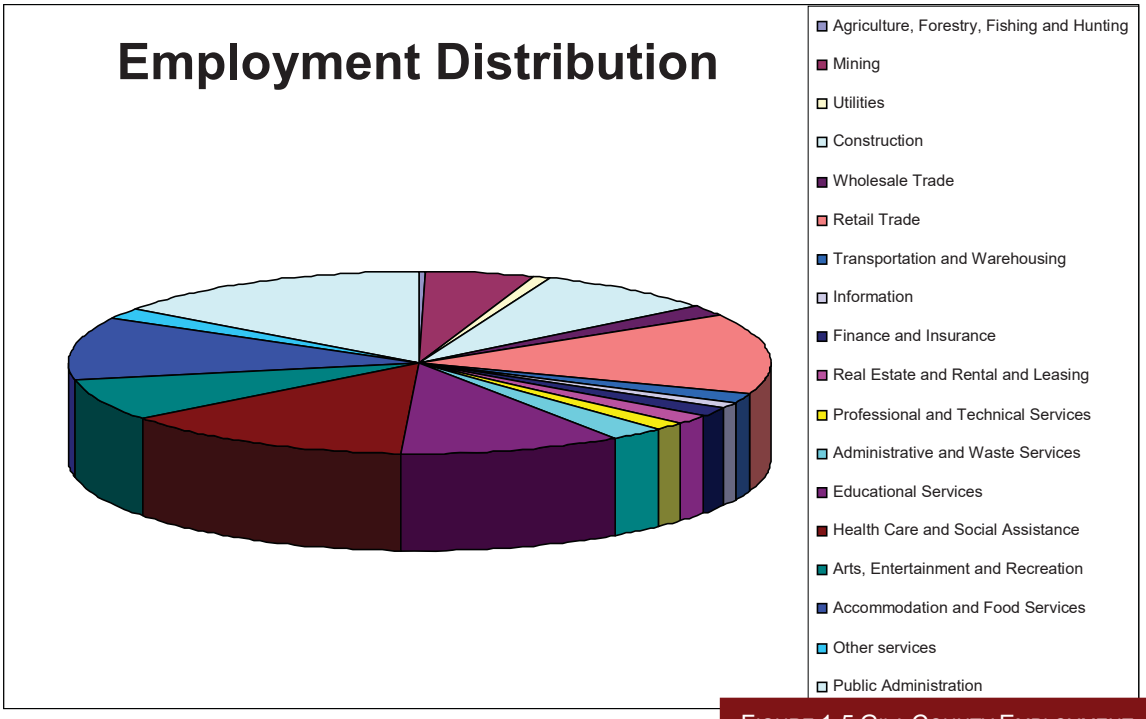


FIGURE 1-5 GILA COUNTY EMPLOYMENT

Source: Arizona Department of Economic Security, Workforce Informer, 2006

INCOME

According to the 2000 US Census, the median income for a household on the San Carlos Apache Reservation was $17,585. The median household income for Gila County was $30,917. The per capita income in 2000 was $16,315 for the County and $5,200 for the Reservation. The percentage of families living below the poverty line was 12.6 percent for the County and 48.2 percent for the San Carlos Apache Reservation.

GROWTH INDICATORS

Additional growth indicators include building permits, taxable sales and net assessed valuation. Building permits in Gila County increased from 164 in 1990 to 283 in 2004 and have remained steady since. The San Carlos Apache Tribe did not report building permit data. According to the Arizona Department of Economic Security, taxable sales for Gila County were $27,538,260 in 2004.

Healthy socioeconomic growth in the area will enhance the San Carlos Apache Airport's ability to attract future aviation activity.

CERTIFICATED PILOTS AND REGISTERED AIRCRAFT

The FAA databases of certificated airmen and registered aircraft were reviewed to determine the current distribution of pilots and registered aircraft in the San Carlos/Globe area.

This data indicates that there are 9 certificated pilots and 3 aircraft registered in San Carlos/Globe, Arizona. Aircraft are not always based where they are registered, which explains why there are 4 based aircraft at the San Carlos Apache Airport. Towns within a 60-mile radius were reviewed for certificated pilots and aircraft registrations and are listed in Table 1-5.

TABLE 1-5 CERTIFICATED PILOTS AND REGISTERED AIRCRAFT NEAR SAN CARLOS/GLOBE

	Certificated Pilots	Registered Aircraft	Based Aircraft
San Carlos/Globe	9	4	4
Safford	18	34	29
Kearny	5	0	5

Source: FAA, 2006

BASED AIRCRAFT AND OPERATIONS

According to the 1998 Airport Master Plan, in 1998 based aircraft at the San Carlos Airport totaled 23 with an annual operations estimate of 9,400. This master plan forecasted based aircraft and operations to increase annually from these baseline numbers. However, current based aircraft and operations are estimated at approximately 4 and 880. Operations and based aircraft decreased following the closing of the FBO, Mace Aviation in 2001.

TABLE 1-6 BASED AIRCRAFT AND OPERATIONS

Year	Based Aircraft	Operations
1996	23	9,600
2006	4	880

Source: 5010 Airport Master Record Interpolated

INVENTORY OF EXISTING AIRPORT FACILITIES

AREA AIRPORT/SERVICE AREA

An airport service area is defined by the communities and surrounding areas served by the airport facility. For example, factors such as the airport's surrounding topographical features (mountains, rivers, etc.), proximity to its users, quality of ground access, required driving time to the airport and the proximity of the facility to other airports that offer the same or similar services can all affect the size of a particular airport's service area. To define the service area for the San Carlos Apache Airport, the airports in the area and their specific services and facilities were reviewed.

The nearest public airport with a paved surface is located approximately 46 nautical miles southwest in Coolidge, Arizona. Runway 5/23 at Coolidge is 5,528 feet long and 150 feet wide, while the crosswind runway at Coolidge is 3,861 feet long by 75 feet wide. Williams Gateway Airport in Phoenix, Arizona is located approximately 50 nautical miles west of San Carlos Apache Airport. Falcon Field Airport in Mesa, Arizona is located approximately 54 nautical miles west of San Carlos Apache Airport. Table 1-7 shows the information on airports in the vicinity of San Carlos Apache Airport. The primary service area (20 miles – 30 minute drive) and the secondary service area is halfway between San Carlos Apache Airport and the next closest airport offering similar services. Figure 1-6 depicts the approximate primary and secondary service areas.

FIGURE 1-6 SAN CARLOS APACHE AIRPORT SERVICE AREA

TABLE 1-7 AIRPORTS SURROUNDING SAN CARLOS APACHE AIRPORT

	Identifier	Distance (Nautical Miles)	Distance (Highway Miles)	NPIAS Status	Runway Length(s) Width(s)	Pavement Type	Instrument Approach	Fuel
San Carlos Apache, San Carlos, AZ	P13	-	-	GA	6,500' x 100'	Asphalt	GPS*	No
Coolidge Municipal, Coolidge, AZ	P08	46 SW	75	GA	5,528' x 150' 3,861' x 75'	Asphalt	VOR/GPS	Yes
Williams Gateway, Phoenix, AZ	IWA	50 W	80	RL	10,401' x 150' 10,201' x 150' 9,301' x 150'	Asphalt	ILS/GPS	Yes
Falcon Field, Mesa, AZ	FFZ	54 W	80	RL	5,101' x 100' 3,799' x 75'	Asphalt	GPS/NDB	Yes
Chandler Municipal, Chandler, AZ	ZUN	58 W	88	RL	4,870' x 75' 4,401' x 75'	Asphalt	GPS/VOR	Yes
Safford Regional, Safford, AZ	SAD	60 SE	70	GA	6,015' x 100' 4,800' x 75'	Asphalt	GPS	Yes

RL: Reliever GA: General Aviation

** GPS approach NOTAMED INOP pending AWOS installation for local altimeter source*

Source: Airnav 2006

TOPOGRAPHY AND TERRAIN

San Carlos Apache Airport is at an elevation of 3,260 feet Mean Sea Level (MSL). The airport is located in a broad valley. Hills and mountains surround the valley in which the airport is located. Drainage occurs from numerous channels with a primary channel that runs south of Runway 9/27. The valley slopes in an easterly direction. Less than two miles west of the airport the terrain rises sharply from the valley floor into mountainous terrain.

AIRSIDE FACILITIES

The airside facilities of an airport are described as the runway configuration, the associated taxiway system, the ramp and aircraft parking area and any visual or electronic approach navigational aids. Figure 1-9 depicts the existing airside facilities at the San Carlos Apache Airport as well as the existing landside facilities. An overview of the San Carlos Apache Airport facilities is provided in Table 1-8.

RUNWAY

San Carlos Apache Airport currently has one runway available to aviation users. Runway 9/27 is constructed of asphalt and is 6,500 feet long and 100 feet wide with published runway strength of 60,000 pounds Dual Wheel Gear (DWG). The pavement is in good condition and has non-precision markings that are in good condition.

TAXIWAYS

Taxiways provide a surface for aircraft access from the parking apron to and from the runways. They expedite aircraft departures from the runway and increase operational safety and efficiency. The San Carlos Apache Airport has a full-length parallel taxiway (Taxiway A depicted in Figure 1-7) to Runway 9/27 offset 300 feet north of the runway and is constructed to the same pavement strength as Runway 9/27. Taxiway A is 6,500 feet long and 35 feet wide. Bypass taxiways are provided at both runway ends.

AIRCRAFT APRON

The aircraft apron provides an area for aircraft to park. The apron is typically connected to the runway via taxiways and taxilanes. There are currently two aircraft parking aprons located at the San Carlos Apache Airport, aircraft parking apron one (transient parking) is located approximately midfield and contains approximately 15,733 square yards (sy) of pavement with 23 tiedowns and is typically used by transient aircraft. The parking area is configured to accommodate large turboprop and jet aircraft as well as smaller single engine aircraft. Aircraft parking apron two (based aircraft parking) is located near the end of Runway 27 and contains approximately 19,075 sy of pavement and 30 tiedowns. This area is primarily used by based aircraft.

A helicopter parking pad was completed recently on the east end of parking apron two. It is approximately 5,077 sy and contains two pads. Both pads were constructed in accordance with Federal Aviation Administration (FAA) Advisory Circular (AC) 150/5390-2B and the Interagency Operations Guide. One type 1 and one type 2 parking pad was constructed to accommodate a Sikorsky 64 Sky Crane size helicopter and a Bell 206 Jet Ranger size helicopter respectively. The type 1 parking pad was reinforced to 30,000 lbs. and is able to accommodate a rotor blade diameter of up to 72 feet. The type 2 parking pad was constructed for a load of 12,500 lbs. and is able to accommodate a rotor blade diameter of up to 48 feet. Figure 1-8 shows the newly constructed helicopter parking pad.

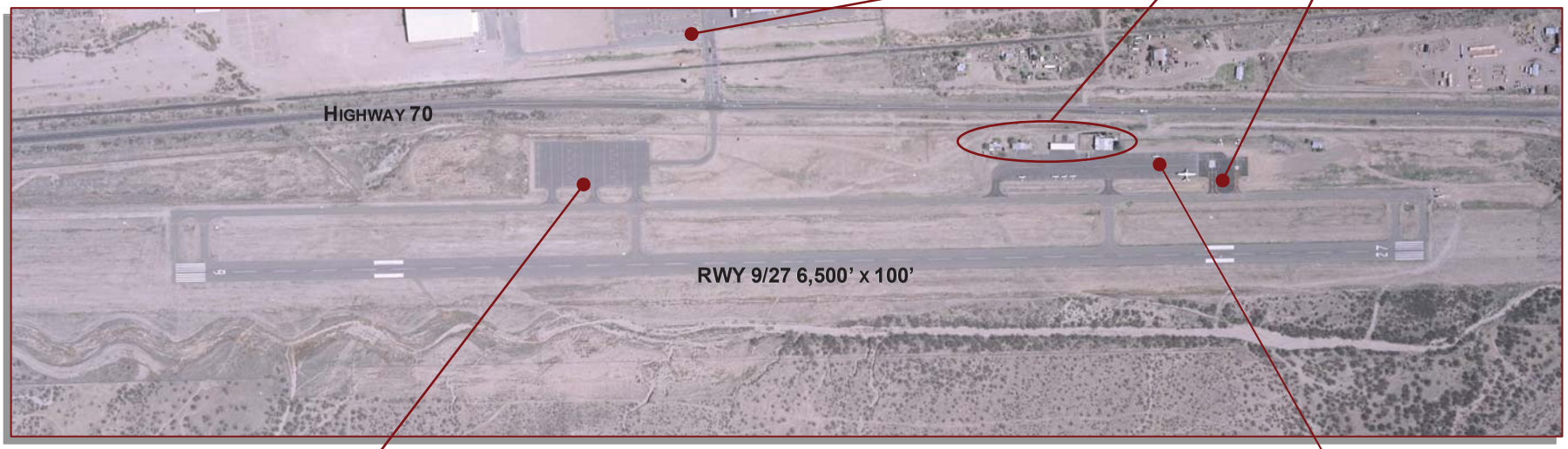
FIGURE 1-7 TAXIWAY A

FIGURE 1-8 HELICOPTER PARKING PAD'S

TABLE 1-8 SAN CARLOS APACHE AIRPORT INVENTORY

Airport Data		
Identifier	P13	
FAA Site Number	00694.*A	
NPIAS Number	04-0017	
Airport Reference Code	C-II	
Owner/Sponsor	San Carlos Apache Tribe	
Airport Elevation	3,260'	
Facilities		
Runway 9/27	Length: 6,500'	
	Width: 100'	
	Surface: Asphalt	Pavement: Good
	Marking: Nonprecision	Marking: Good
Runway Lighting	Pilot Controlled MIRL	
Navigational Aids	GPS straight in procedure to Runway 27	
Approach Minimums	1 mile visibility, 580' ceiling height (Currently Not Authorized)*	
Visual Aids RWY 9/27	PAPI-2 both ends, Beacon, Lighted wind cone and segmented circle, REIL	
Taxiways	Full length parallel	
Taxiway Lighting	Retro Reflectors	
Aircraft Aprons	15,733 SY Apron Area 1 (Transient Apron)	Good
	19,075 SY Apron Area 2 (Based A/C Apron)	Good
Tie Downs	53	Good
Pavement Strength	60,000 lbs DWG on all pavement areas	
Hangar Facilities	1 24' x 24' FBO Hangar/Pilot Lounge	Poor/Closed
	4 T-Hangars	Poor
	3 Hangars	Poor
Automobile Parking	30 Vehicles	
Perimeter Fencing	6 foot chain link security	
Fuel	None	
Weather Equipment	None (AWOS-III P/T in Process)	
FBO	None	
Utilities	Power, Water, Phone, Gas, Sewer	

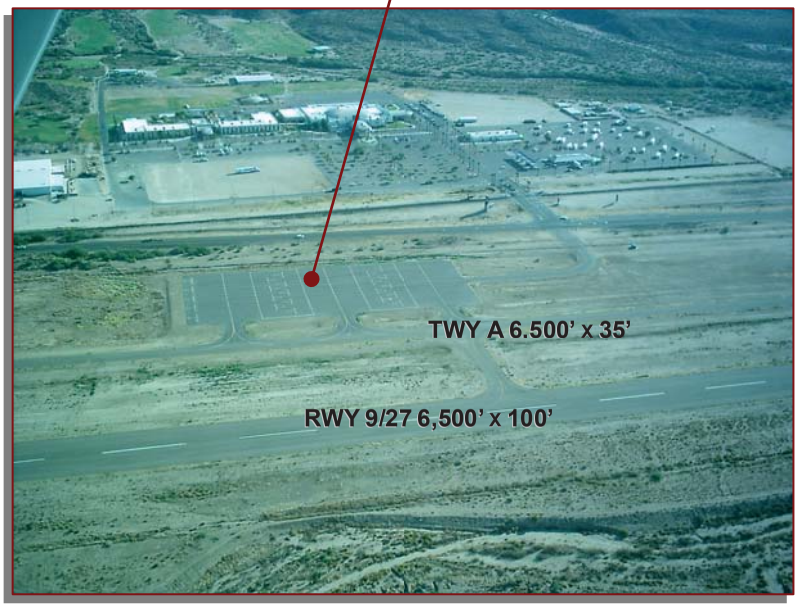
*Due to lack of local altimeter source

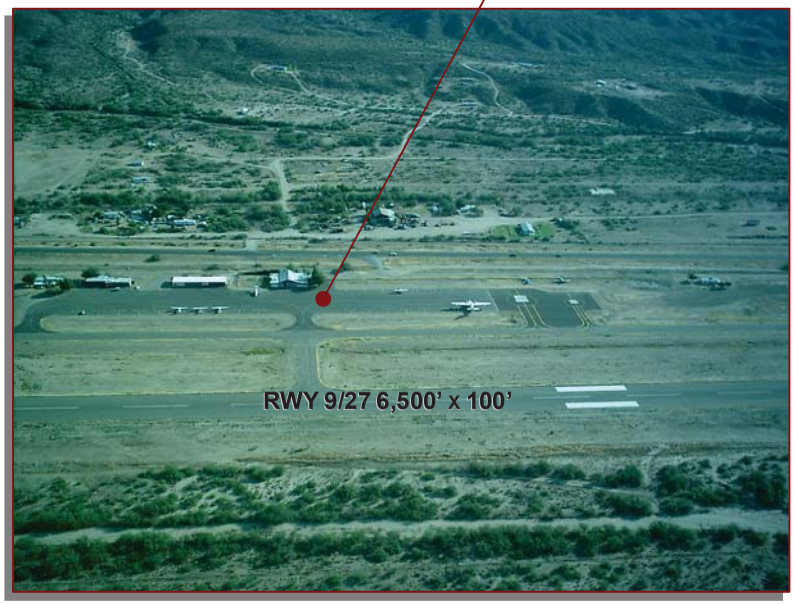


TRANSIENT APRON

BASED AIRCRAFT APRON

FIGURE 1-9 EXISTING AIRSIDE AND LANDSIDE FACILITIES





AIRFIELD LIGHTING AND SIGNAGE

Guidance on airport lighting standards is provided in FAA Advisory Circular (AC) 150/5340-30B, *Design and Installation Details for Airport Visual Aids.* Airport lighting enhances safety during periods of inclement weather and nighttime operations by providing visual guidance to pilots in the air and on the ground.

Several common airfield lighting and visual aid features of general aviation airports include a rotating beacon (activated by photoelectric cell for dusk to dawn operations), pilot-controlled Medium Intensity Runway Lights (MIRLs) (activated by aircraft radio signal), threshold lights, Runway End Identifier Lights (REILs) which mark the runway threshold with flashing strobe lights, Medium Intensity Taxiway Lights (MITLs) and/or reflective markers and Precision Approach Path Indicators (PAPIs) to provide descent guidance information during an approach to the runway. Lighting at San Carlos Apache Airport consists of Medium Intensity Runway Lights (MIRLs) on Runway 9/27 which can be controlled by the clicks of the pilot's microphone while the radio is set on frequency 122.8 (three clicks for low intensity, five clicks for medium intensity and seven clicks for high intensity). The runway lights have white colored lenses. The lenses at the last 2,000 feet of Runway 27 are bi-colored with white and yellow lenses to correspond with the non-precision GPS instrument approach procedure to that runway. Existing visual aids also include PAPIs and REILs. The airport also has a segmented circle and lighted wind cone. Taxiway A is marked with retro reflectors. The airport also has lighted identification signs at each runway end and at all hold lines.

AIRPORT SERVICES/FIXED BASE OPERATIONS

A Fixed Base Operator (FBO) is usually a private enterprise that leases land from the airport sponsor on which to provide services to based and transient aircraft. The extent of the services provided varies from airport to airport; however, these services frequently include aircraft fueling, minor maintenance and repair, aircraft rental and/or hangar storage. There are currently no FBO services provided at the San Carlos Apache Airport.

LANDSIDE FACILITIES

BUILDING AREA

The building area of a typical general aviation (GA) airport usually consists of FBO offices and/or hangars, a pilot lounge, terminal building, eating facility, additional aircraft hangars, a maintenance building and other related structures. Existing buildings at the San Carlos Apache Airport include one office/hangar and attached pilot's lounge, three conventional hangars, one four unit T-hangar and one trailer home. All existing buildings at the airport are in poor to failed condition.

UTILITIES

Available utilities at the San Carlos Apache Airport include electricity, water, phone, propane and sewer. Electricity is provided by Arizona Public Service through a 480 volt single phase power line, natural gas is provided by Southwest Gas, telephone services are provided by San Carlos Telecommunications, water is provided from an on airport well owned by the San Carlos Apache Tribe and a septic tank is provided for waste water. There are no waste water treatment facilities in the vicinity of the airport.

GROUND ACCESS AND SIGNAGE

The San Carlos Apache Airport can be reached by following US Highway 70 east from Globe or northwest from Safford (See figure 1-2). San Carlos Apache Airport is located 96 miles east of Phoenix. The San Carlos Apache Airport is located on the south side of US Highway 70 near

the intersection of US Highway 70 and State Highway 170. The signage to the airport currently consists of two airport signs, one for traffic traveling east on US Highway 70 and one for traffic traveling west on US Highway 70, the existing signs are considered adequate. Access to the San Carlos Apache Airport is provided via two separate access roads off of US Highway 70.

INTERMODAL TRANSPORTATION

The ground transportation network in the vicinity of the San Carlos Apache Airport consists of private automobile transportation only. There is no bus or rail service within the San Carlos area. The nearest bus service is 96 miles west in Phoenix. The Southern Pacific Railroad tracks run adjacent to the airport; however, the nearest railroad station is 96 miles west in Phoenix. There are no rental car companies located at the San Carlos Apache Airport. The closest rental car facilities are located in Globe. Transportation to the Casino and Resort can be arranged by contacting the Resort. If a rental car is needed Enterprise Rental Cars in Globe is able to send a vehicle to pick passengers up at San Carlos Apache Airport and bring them to Globe to the Enterprise Rental Car facility.

AIRCRAFT FUEL FACILITIES

A Fixed Base Operator (FBO) or the airport sponsor often provides aircraft fuel services. Combinations of 100LL Aviation Gas and/or Jet-A fuel are usually provided depending on the aircraft traffic mix. These fuels may be stored in underground storage tanks, above ground storage tanks, fuel trucks or a combination of the three.

The San Carlos Apache Airport currently has no aircraft fuel facilities.

AIRPORT FENCING AND SECURITY

The primary purpose of airport fencing is to prevent unwanted intrusions by persons or animals onto airport property. Airport fencing provides increased safety and security for the airport. It is normally installed along the perimeter of the airport property and outside any of the safety areas defined by the Federal Aviation Administration (FAA) in Advisory Circular (AC) 150/5300-13, *Airport Design* and Federal Aviation Regulation (FAR) Part 77, *Objects Affecting Navigable Airspace.* Airport fencing at the airport consists of a chain link fence that surrounds the perimeter of the airport along with manually-operated access gates for the airport access roads.

EMERGENCY SERVICES

Emergency fire and ambulance services are provided by San Carlos Apache EMS and if needed the Central Heights Fire District in Globe. The closest hospital is the Cobre Valley Community Hospital located in Globe approximately five miles west of the airport. The hospital is a 49-bed facility. Table 1-9 discusses the available emergency response vehicles and personnel and response times.

TABLE 1-9 SAN CARLOS EMERGENCY SERVICES

Distance from Airport: 15 miles	
Personnel	**Equipment**
Full Time: 12	9 Ambulances
4 - First Responder's	1 Ladder Truck
6 - EMT's	2 Pumper Trucks
2 - Other	2 Wildland Fire Trucks
Response Time: 10 minutes	

Source: San Carlos Apache Tribe EMS, 2006

ADDITIONAL FACILITIES

There is not currently any Airport Rescue and Fire Fighting (ARFF) equipment or personnel based at the San Carlos Apache Airport. There are also no designated security personnel at the airport, although there is a caretaker, Hanson Mull, who lives on-site, performs airport maintenance tasks and generally watches over the facilities. The San Carlos Tribal Police Department also patrols the area on occasion.

FAA SAFETY AND DESIGN STANDARDS

FAA AC 150/5300-13, *Airport Design*, establishes design standards for airports based on the Airport Reference Code (ARC) of the airport. When design standard deficiencies exist, the FAA recommends correction of such deficiencies as soon as practicable. Design standards are based on the ARC and approach visibility minimums of the airport. The ARC is a combination of the wingspan and approach speed of the critical aircraft operating at the airport. The current ARC for the San Carlos Apache Airport is C-II. A more detailed discussion of ARC's is included in Chapter 3. There are currently no design standard deficiencies that exist at the San Carlos Apache Airport as shown in Table 1-10.

SAFETY AREAS

Runway and Taxiway Safety Areas (RSAs and TSAs) are defined surfaces surrounding the runway or taxiway prepared specifically to reduce the risk of damage to aircraft in the event of an undershoot, overshoot or excursion from the runway or taxiway. The Safety Areas must be:

- Cleared and graded and have no potentially hazardous surface variations;
- Drained so as to prevent water accumulation;
- Capable, under dry conditions, of supporting snow removal equipment, ARFF equipment and the occasional passage of aircraft without causing structural damage to the aircraft; and
- Free of objects, except for objects that need to be located in the runway or taxiway safety area because of their function.

TABLE 1-10 DESIGN STANDARDS

Description	C-II
RWY Centerline to parallel TWY centerline	300'
RWY Centerline to aircraft parking apron	400'
RWY Width	100'
RWY Safety Area width	400'
RWY Safety Area length beyond RWY end	1,000'
RWY Object Free Area width	800'
RWY Object Free Area beyond RWY end	1,000'
RWY Obstacle Free Zone width	400'
RWY Obstacle Free Zone length beyond RWY end	200'
RWY Protection Zone	500' x 1,010' x 1,700'
TWY Width	35'
TWY Safety Area width	79'
TWY Object Free Area width	131'
RWY Centerline to aircraft hold lines	250'

Source: FAA Advisory Circular 150/5300-13 Change 10

OBSTACLE FREE ZONE (OFZ) AND OBJECT FREE AREA (OFA)

The obstacle Free Zone (OFZ) is a three dimensional volume of airspace which supports the transition of ground to airborne aircraft operations. The clearing standard precludes taxiing and parked airplanes and object penetrations, except for frangible visual Navigational Aids (NAVAIDs) that need to be located in the OFZ because of their function. The OFZ is similar to the FAR Part 77 Primary Surface insofar that it represents the volume of space longitudinally centered on the runway. It extends 200 feet beyond the end of each runway. The Runway Object Free Area (ROFA) is a two-dimensional ground area surrounding the runway. The ROFA standard precludes parked airplanes, agricultural operations and objects, except for objects that need to be located in the ROFA for air navigation or aircraft ground maneuvering purposes.

THRESHOLD SITING SURFACE

According to FAA AC 150/5300-13, the runway threshold should be located at the beginning of the full-strength runway pavement or runway surface. However, displacement of the threshold may be required when an object obstructs the airspace required for landing airplanes and is beyond the airport owner's power to remove, relocate or lower. Thresholds may also be displaced for environmental considerations such as noise abatement or to provide the standard RSA and OFA lengths.

Based on the non-precision GPS instrument approach and size of aircraft using the San Carlos Apache Airport, in order to meet FAA design standards, no object should penetrate a surface that starts 200 feet from the threshold of Runway 9/27 and is at the elevation of the runway centerline at the threshold and slopes upward from the threshold at a slope of 20' (horizontal) to 1' (vertical). In the plan view, this area extends laterally 400 feet on each side of the centerline at the beginning of the area and increases in width to 1,900 feet on either side of the extended centerline at a point 10,000 feet from the beginning of the area.

RUNWAY PROTECTION ZONE (RPZ)

According to FAA AC 150/5300-13, the RPZ is trapezoidal in shape and centered about the extended runway centerline. The RPZ dimension for a particular runway end is a function of the type of aircraft and approach visibility minimum associated with that runway end. At both ends of Runway 9/27 the RPZ begins 200 feet from the runway threshold and extends for 1,700 feet. The RPZ is 500 feet wide at the inner end and 1,010 feet wide at the outer end. The land uses prohibited from the RPZ are residences and places of public assembly, (Churches, schools, hospitals, office buildings, shopping centers and other uses with similar concentrations of persons typify places of public assembly).

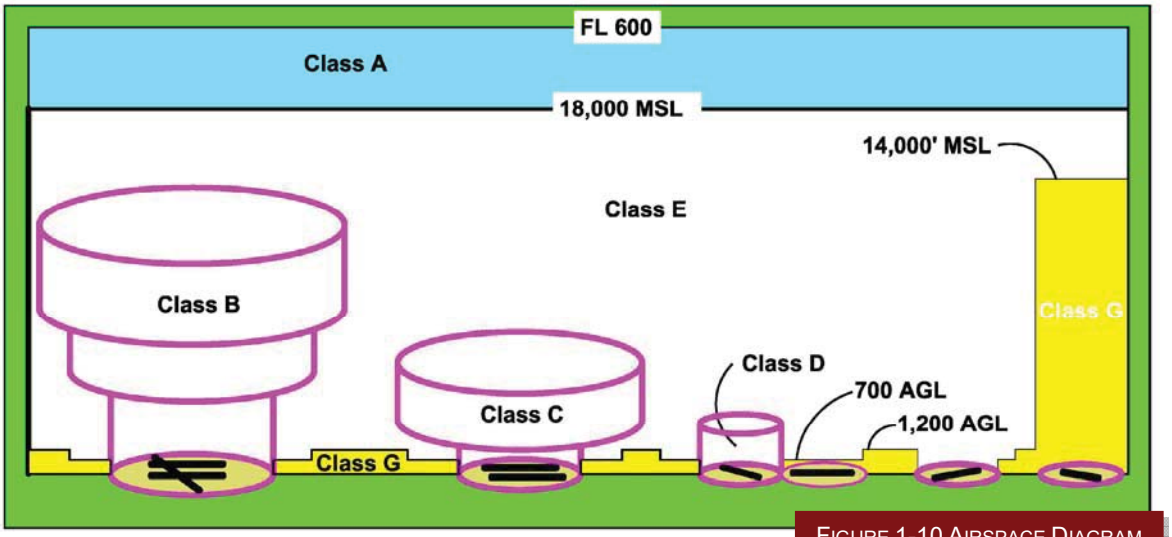
AIRSPACE CHARACTERISTICS

The National Airspace System consists of various classifications of airspace that are regulated by the FAA. Airspace is either controlled or uncontrolled. Pilots flying in controlled airspace are subject to Air Traffic Control (ATC) and must follow either Visual Flight Rule (VFR) or Instrument Flight Rule (IFR) requirements. These include combinations of operating rules, aircraft equipment and pilot certification and vary depending on the Class of airspace and are described in Federal Aviation Regulations (FAR) Part 71, *Designation of Class A, Class B, Class C, Class D and Class E Airspace Areas; Airways; Routes; and Reporting Points*, and FAR Part 91, *General Operating and Flight Rules.* Figure 1-10, shows the different airspace classes and gives a graphical representation of them.

General definitions of the classes of airspace are provided below:

- **Class A Airspace:** Airspace from 18,000 feet Mean Sea Level (MSL) up to and including Flight Level (FL) 600.
- **Class B Airspace:** Airspace from the surface to 10,000 feet MSL surrounding the nation's busiest airports in terms of IFR operations or passenger enplanements.
- **Class C Airspace:** Generally, airspace from the surface to 4,000 feet above the airport elevation (charted in MSL) surrounding those airports that have an operational control tower, are serviced by radar approach control and that have a certain number of IFR operations or passenger enplanements. The airspace usually consists of a 5 nautical mile (nm) radius core surface area that extends from the surface up to 4,000 feet above the airport elevation and a 10 nm radius shelf area that extends from 1,200 feet up to 4,000 feet above the airport elevation.
- **Class D Airspace:** Airspace from the surface up to 2,500 feet above the airport elevation (charted in MSL) surrounding those airports with an operational control tower.
- **Class E Airspace:** Generally, controlled airspace that is not Class A, Class B, Class C or Class D.
- **Class G Airspace:** Generally, uncontrolled airspace that is not designated Class A, Class B, Class C, Class D or Class E.
- **Victor Airways:** These airways are low altitude flight paths between ground based VHF Omnidirectional Receivers (VORs).

Figure 1-11 provides a graphical depiction of the airspace surrounding the San Carlos Apache Airport. The airport is situated under Class E airspace starting at 700 feet above the surface. Between the surface and 700 feet, the airspace is considered Class G. The nearest Victor Airway to San Carlos Apache Airport is Victor Airway 94 (V 94) which runs east/west and passes approximately 40 nm south of the airport.

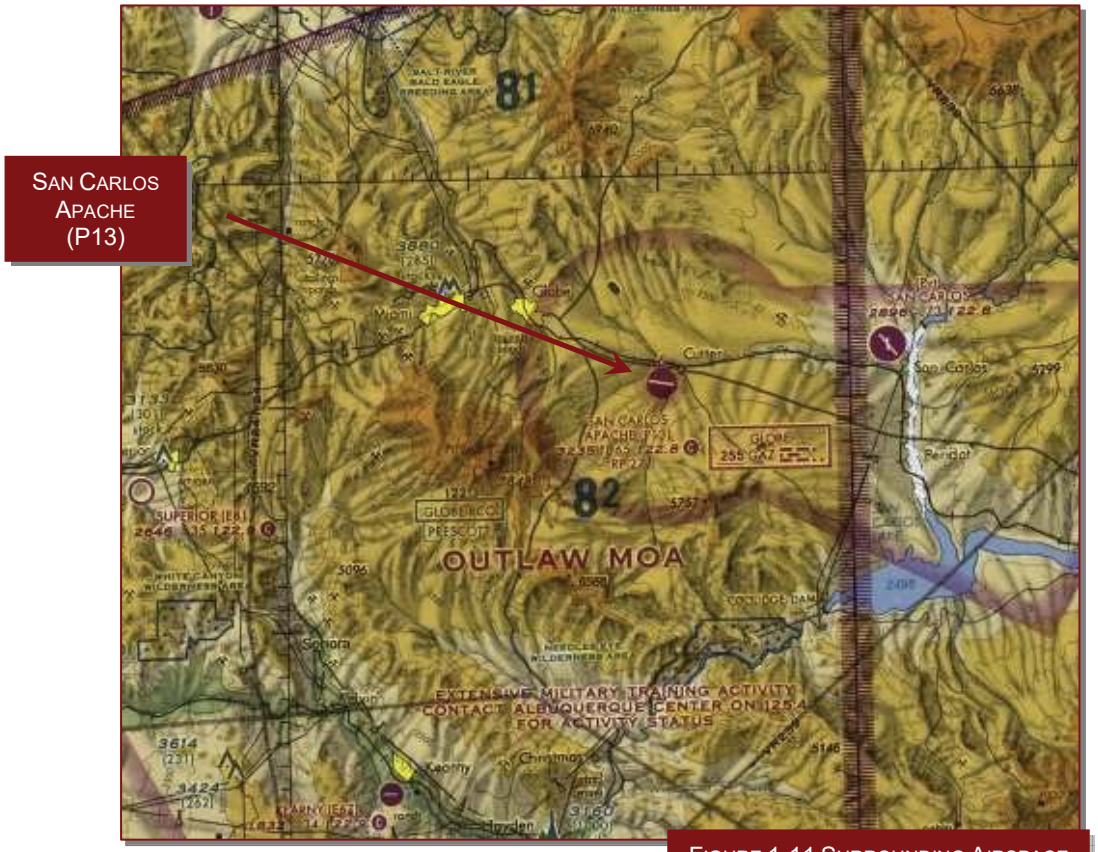


SOURCE: FAR PART 71

FIGURE 1-10 AIRSPACE DIAGRAM

The traffic patterns to the San Carlos Apache Airport are standard left hand traffic to Runway 9 and right hand traffic to Runway 27. There are no noise abatement procedures currently in place at the airport. The San Carlos Apache Airport is also located in the vicinity of three wilderness areas. The Needles Eye Wilderness area is located approximately 15 nm south, the White Canyon Wilderness Area is approximately 30 nm southwest and the Superstition Wilderness Area is approximately 35 nm east. Pilots are encouraged to maintain a minimum

altitude of 2,000 feet above ground level (AGL) over wilderness areas. Airspace and land use planning are further discussed in Chapter 3.



Source: Phoenix Sectional Aeronautical Chart

FIGURE 1-11 SURROUNDING AIRSPACE

AIRSPACE JURISDICTION

The San Carlos Apache Airport is located within the jurisdiction of the Albuquerque Air Route Traffic Control Center (ARTCC) and the Prescott Flight Service Station (FSS). The altitude of radar coverage by the Albuquerque ARTCC may vary as a result of the FAA navigational/radar facilities in operation, weather conditions and surrounding terrain. The Prescott FSS provides additional weather data and other pertinent information to pilots on the ground and enroute.

AIRSPACE RESTRICTIONS

The San Carlos Apache Airport is located within the Outlaw Military Operations Areas (MOA) and near several low-level military training routes (MTRs) (see Figure 1-12). MOAs and MTRs are established for the purpose of separating certain military training activities, which routinely necessitate acrobatic or abrupt flight maneuvers, from Instrument Flight Rule (IFR) traffic. IFR traffic can be cleared through an active MOA if IFR separation can be provided by Air Traffic Control (ATC), otherwise ATC will reroute or restrict the IFR traffic.

The San Carlos Apache Airport is situated within the Outlaw MOA and 10 nm west of the Jackal MOA. The use of the Outlaw MOA is 7:00 AM to 5:00 PM, Monday through Friday and 5:00 PM to 9:00 PM by Notice to Airmen (NOTAM) and intermittent weekends by NOTAM at an altitude of 8,000 feet MSL or 3,000 feet AGL whichever is higher up to 18,000 feet MSL. Use of the Jackal MOA occurs between the hours of 7:00 AM and 6:00 PM, Monday through Friday at an altitude of 11,000 feet MSL or 3,000 feet AGL, whichever is higher up to 18,000 feet MSL.

In addition to the MOAs, MTRs exist in the vicinity of the San Carlos Apache Airport. The MTR program is a joint venture by the FAA and the Department of Defense (DOD). MTRs are mutually developed for use by the military to conduct low-altitude, high-speed training. Military Training Route VR239 runs north/south and is located approximately 22 nm east of San Carlos Apache Airport. Military Route VR241-244 runs north/south and is located approximately 20 nm west of the San Carlos Apache Airport. Military Route VR267-268-269 runs east/west and is located approximately 20 nm south of the San Carlos Apache Airport. Increased vigilance is recommended for pilots operating in the vicinity of these training routes.

NAVIGATIONAL AIDS AND APPROACH PROCEDURES

The current approach procedures at the San Carlos Apache Airport include a straight-in non-precision GPS instrument approach to Runway 27 and a circling GPS approach. Services include Albuquerque Air Route Traffic Control Center (ARTCC) and Prescott Flight Service Station (FSS). Enroute and radar coverage for the San Carlos area is provided by the Albuquerque ARTCC. The altitude of radar coverage may vary as a result of the FAA navigational/radar facilities in operation, weather conditions and terrain which surround San Carlos Apache Airport. The Prescott FSS provides additional weather data and other pertinent weather information to pilots on the ground and enroute. There is no air traffic control (ATC) tower at the airport.

A Navigational Aid (NAVAID) is any ground based visual or electronic device used to provide course or altitude information to pilots. NAVAIDS include Very High Omnidirectional Range (VOR), Very High Omnidirectional Range with Tactical Information (VOR-TAC), Non-directional Beacon (NDB) and Tactical Air Navigational Aids (TACANs), as examples. There are no ground based operational NAVAIDs at the San Carlos Apache Airport. The closest operational NAVAID is the Phoenix VOR (PXR) located 80 nm west of the airport. The GPS approach to Runway 27 for the San Carlos Apache Airport is illustrated in Figure 1-13. (Note: These are for information purposes only and should not be used for navigation.)

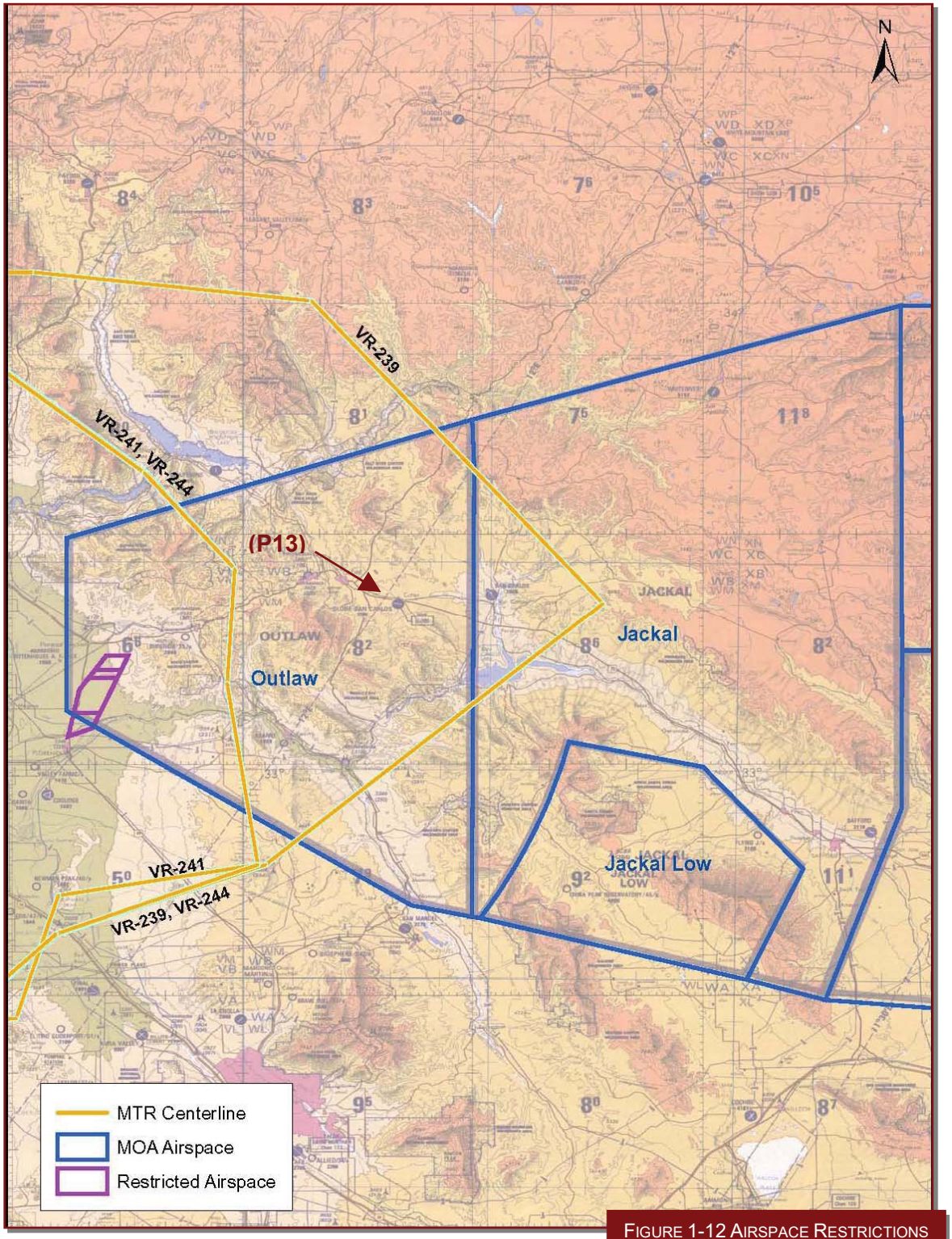


FIGURE 1-12 AIRSPACE RESTRICTIONS

Source: William Gillies, USAF

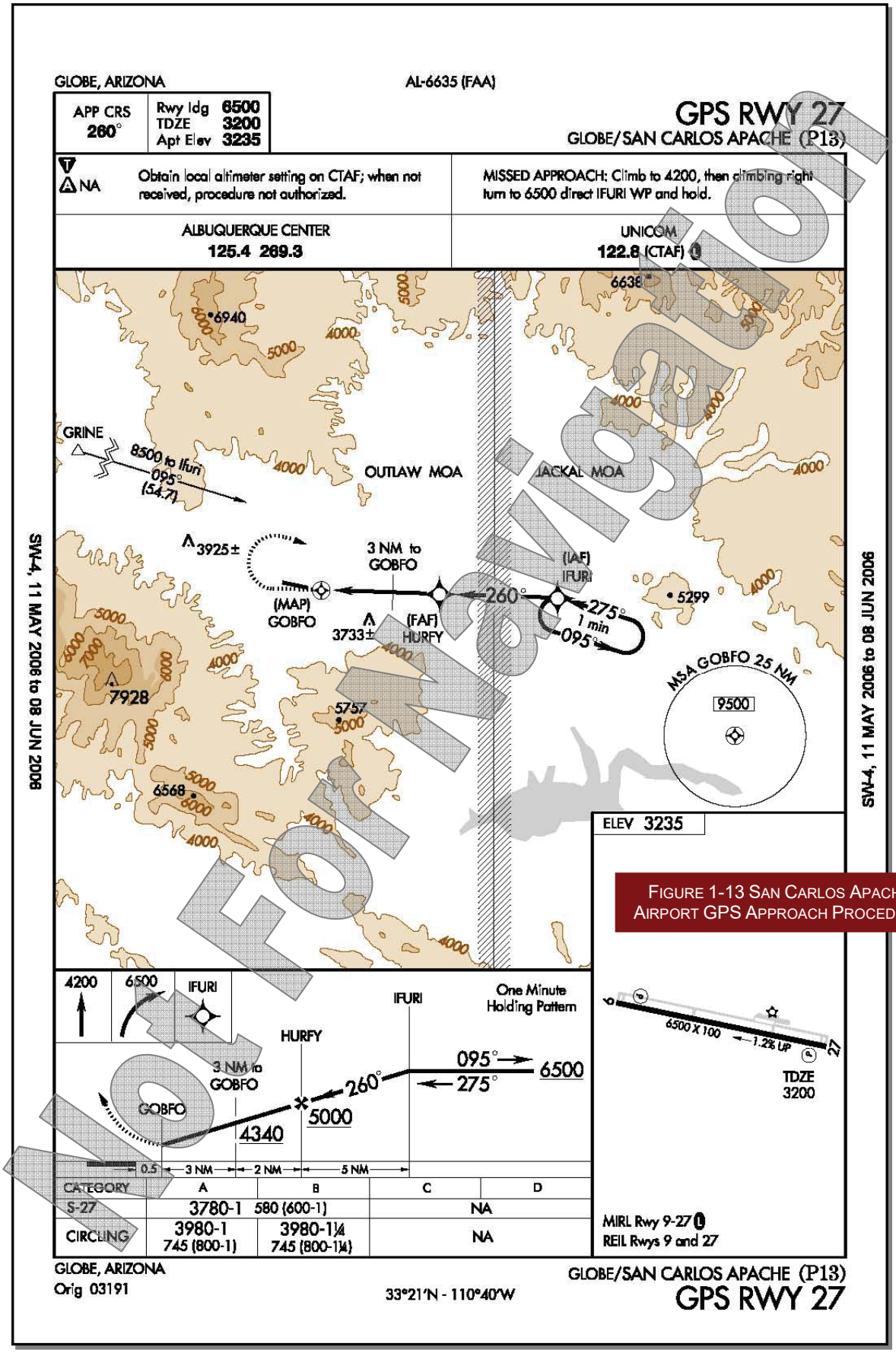


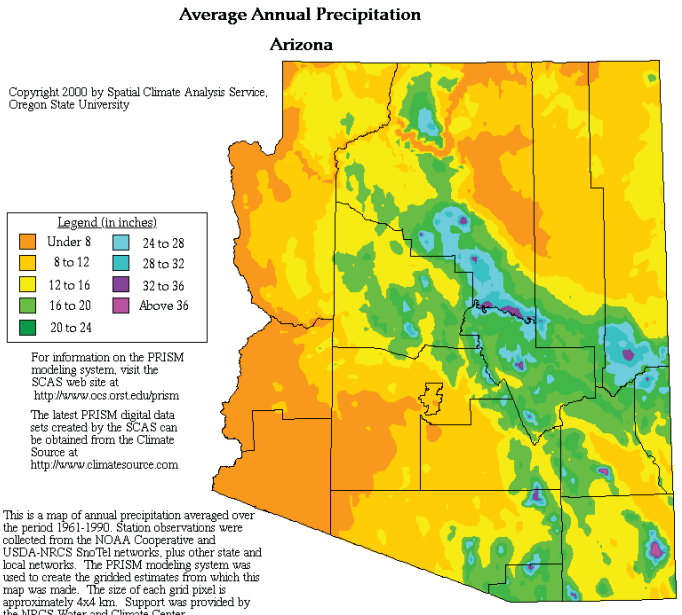
FIGURE 1-13 SAN CARLOS APACHE AIRPORT GPS APPROACH PROCEDURE

METEOROLOGICAL CONDITIONS

Meteorological conditions have a direct impact on the operational characteristics of an airport. These conditions determine the regulations under which operations may be conducted, the frequency of use for each operational configuration and the instrumentation required to assist aircraft in landing and departing.

LOCAL CLIMATOLOGICAL DATA

San Carlos Apache Airport is located in the southern portion of Gila County in an area that receives approximately 16 to 26 inches of precipitation annually. Average annual snowfall for the San Carlos area is 0.7 inches. The average maximum temperature of the hottest Month, July, is 100.5° Fahrenheit, while the average minimum temperature of the coldest month, January, is 27.1° F. The annual average maximum temperature is 81.6° F and the annual average minimum temperature is 44.5° F.



Source: Spatial Climate Analysis Service, Oregon State University

FIGURE 1-14 ARIZONA PRECIPITATION

CEILING AND VISIBILITY CONDITIONS

Ceiling and visibility conditions are important considerations since the occurrence of low ceiling and/or poor visibility conditions limit the use of the airport to instrument approach and departure operations until conditions change. Under poor visibility conditions or Instrument Meteorological Conditions (IMC), the pilot must operate under Instrument Flight Rules (IFR), rather than Visual Flight Rules (VFR). Under IFR, the pilot maneuvers the aircraft through sole reference to instruments in the aircraft and navigational aids on the ground. The airport must be closed for use when conditions are worse than the published IFR minimums for that airport. When flight conditions are visual or Visual Meteorological Conditions (VMC), the pilot can maneuver the aircraft by reference to the horizon and objects on the ground.

The San Carlos Apache Airport currently has a straight-in non-precision GPS instrument approach to Runway 27 and a circling non-precision GPS instrument approach. The minimums for the straight-in approach are 580-foot ceilings and 1-mile visibility while the circling approach minimums are 745 foot ceiling and 1-mile visibility. The GPS approach is currently inoperative pending the installation of pressure (altimeter) reporting equipment.

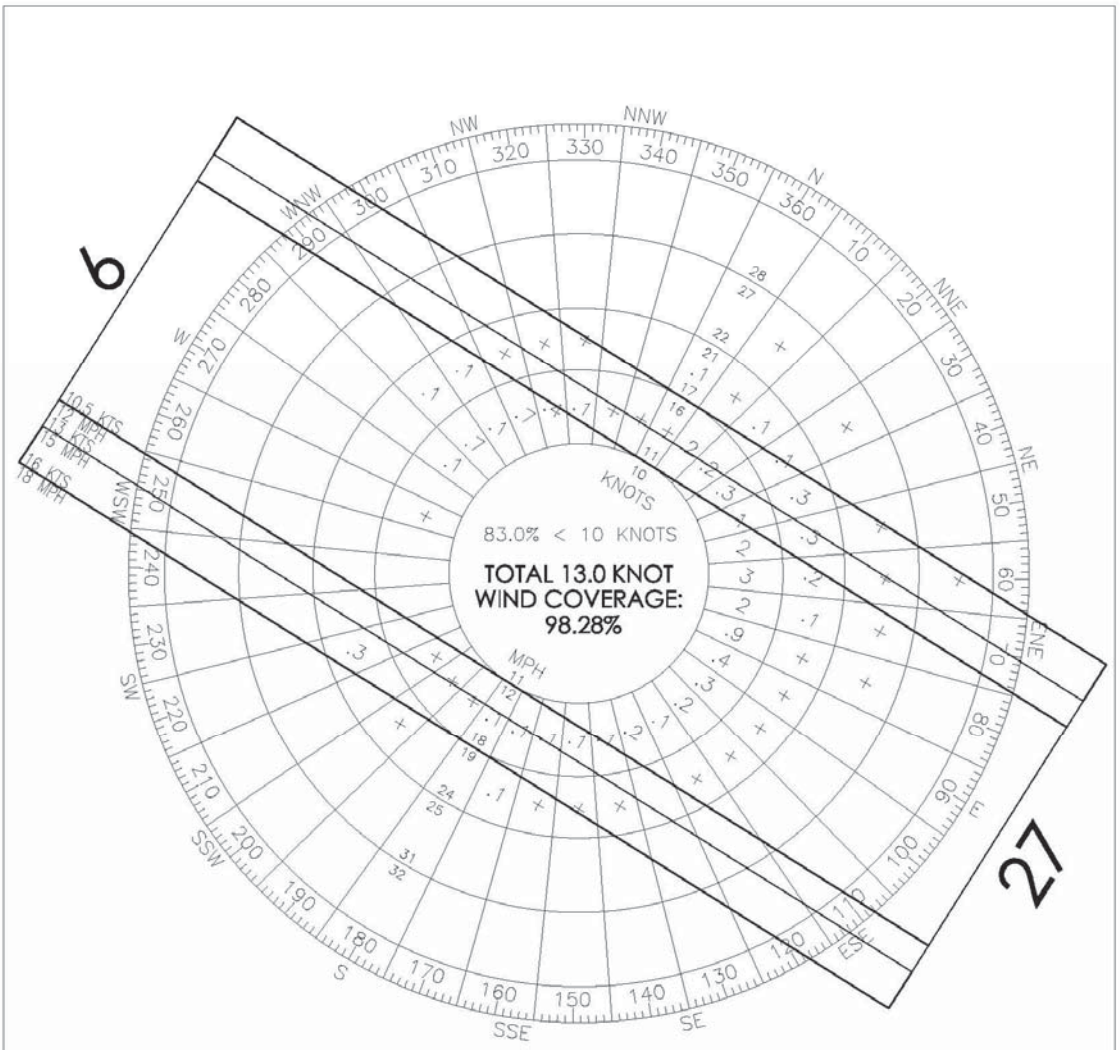
RUNWAY WIND COVERAGE

Wind direction and speed determine the desired alignment and configuration of the runway system. Aircraft land and takeoff into the wind and therefore can tolerate only limited crosswind components (the percentage of wind perpendicular to the runway centerline). The ability to land and takeoff in crosswind conditions vary according to pilot proficiency and aircraft type. FAA Advisory Circular 150/5300-13, *Airport Design,* recommends that a runway should yield 95 percent wind coverage under stipulated crosswind components. If one runway does not meet this 95 percent coverage, then construction of an additional runway may be advisable. The crosswind component of wind direction and velocity is the resultant vector, which acts at a right angle to the runway. It is equal to the wind velocity multiplied by the trigonometric sine of the angle between the wind direction and the runway direction. The allowable crosswind component for each Airport Reference Code is shown in Table 1-11.

Table 1-11 Crosswind Component

Allowable Crosswind in Knots	Airport Reference Code
10.5 knots	A-I & B-I
13.0 knots	A-II & B-II
16.0 knots	A-III, B-III, & C-I through D-III
20.0 knots	A-IV through D-VI

A wind rose was developed for the San Carlos Apache Airport using hourly observations from the Cyprus-Miami Mining Company wind monitoring station at Miami, AZ., from January to December 1994. This wind rose is shown in Figure 1-15 and indicates 10.5-knot crosswind coverage of 96.13 percent, 13.0-knot crosswind coverage of 98.28 percent, and 16.0-knot crosswind coverage of 99.48 percent. It is recommended that the San Carlos Apache Airport obtain an AWOS and link it to the National Airspace Data Interchange Network (NADIN). This will allow national dissemination of the AWOS observations and allow the National Oceanic and Atmospheric Administration (NOAA) to digitally record the hourly observations. It will also provide automated real-time weather information to pilots in the air and on the ground.



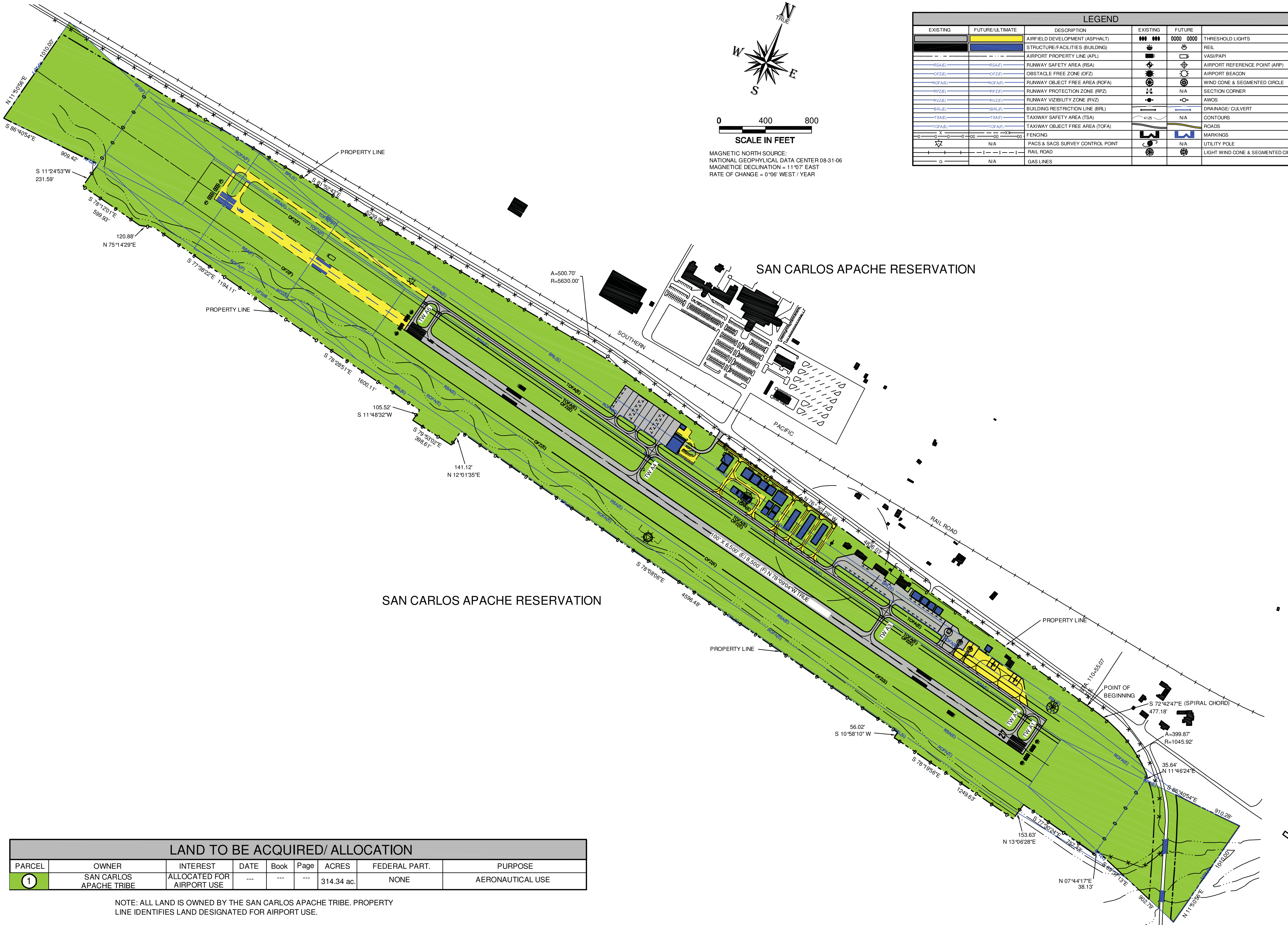
ALL WEATHER WIND ROSE

SOURCE: CYPRUS-MIAMI MINING COMPANY, MIAMI, ARIZONA
PERIOD: JANUARY - DECEMBER 1994

CROSSWIND COVERAGE RW 9/27

10.5 KNOT/12 MPH = 96.13%
13.0 KNOT/15 MPH = 98.28%
16.0 KNOT/18 MPH = 99.48%

FIGURE 1-15 SAN CARLOS APACHE AIRPORT WIND ROSE



LEGEND					
EXISTING	FUTURE/ULTIMATE	DESCRIPTION	EXISTING	FUTURE	
		AIRFIELD DEVELOPMENT (ASPHALT)		0000 0000	THRESHOLD LIGHTS
		STRUCTURE/FACILITIES (BUILDING)			REIL
		AIRPORT PROPERTY LINE (APL)			VASI/PAPI
RSA(E)	RSA(F)	RUNWAY SAFETY AREA (RSA)			AIRPORT REFERENCE POINT (ARP)
OFZ(E)	OFZ(F)	OBSTACLE FREE ZONE (OFZ)			AIRPORT BEACON
ROFA(E)	ROFA(F)	RUNWAY OBJECT FREE AREA (ROFA)			WIND CONE & SEGMENTED CIRCLE
RPZ(E)	RPZ(F)	RUNWAY PROTECTION ZONE (RPZ)		N/A	SECTION CORNER
RVZ(E)	RVZ(F)	RUNWAY VIZIBILITY ZONE (RVZ)			AWOS
BRL(E)	(BRL(F)	BUILDING RESTRICTION LINE (BRL)			DRAINAGE/ CULVERT
TSA(E)	TSA(F)	TAXIWAY SAFETY AREA (TSA)	4125	N/A	CONTOURS
TOFA(E)	TOFA(F)	TAXIWAY OBJECT FREE AREA (TOFA)			ROADS
0 X 0 0 0	00 XX 00 00	FENCING			MARKINGS
	N/A	PACS & SACS SURVEY CONTROL POINT		N/A	UTILITY POLE
		RAIL ROAD			LIGHT WIND CONE & SEGMENTED CIRCLE
G	N/A	GAS LINES			

LAND TO BE ACQUIRED/ ALLOCATION								
PARCEL	OWNER	INTEREST	DATE	Book	Page	ACRES	FEDERAL PART.	PURPOSE
1	SAN CARLOS APACHE TRIBE	ALLOCATED FOR AIRPORT USE	---	---	---	314.34 ac.	NONE	AERONAUTICAL USE

NOTE: ALL LAND IS OWNED BY THE SAN CARLOS APACHE TRIBE. PROPERTY LINE IDENTIFIES LAND DESIGNATED FOR AIRPORT USE.

ARMSTRONG CONSULTANTS, Inc.
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SAN CARLOS APACHE AIRPORT
GLOBE, ARIZONA

AIRPORT LAYOUT PLANS
A.I.P. No. 3-04-0017-12

No.	Revision	Date	By
1	Revision	11.27.06	SLST

THE COMMENTS OF THIS PLAN DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA OR ADOT AERONAUTICS. ACCEPTANCE OF THESE DOCUMENTS BY THE FAA OR ADOT AERONAUTICS DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES OR THE STATE OF ARIZONA TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED THEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS.

Project No: 055743
Date: 04.12.07
File Name: 5743509

Drawn: SLST
Checked: GJF
Approved: DAC

EXHIBIT "A"

Sheet: 10 of: 11

San Carlos Apache Airport

Chapter Two
Forecasts of Aviation Demand

INTRODUCTION

Forecasts of aviation activity serve as a guideline for the timing required for implementation of airport improvement programs. While such information is necessary for successful comprehensive airport planning, it is important to recognize that forecasts are only approximations of future activity, based upon historical data and viewed through present situations. They must therefore, be used with careful consideration, as they may lose their validity with the passage of time.

For this reason, an ongoing program of examination of local airport needs and national and regional trends is recommended and encouraged in order to promote the orderly development of aviation facilities at the San Carlos Apache Airport.

At airports not served by air traffic control towers, estimates of existing aviation activity are necessary in order to form a basis for the development of realistic forecasts. Unlike towered airports, non-towered general aviation airports have historically not tracked or maintained comprehensive logs of aircraft operations. Estimates of existing aviation activity based upon a review of based aircraft, available historical data, available local information and regional, state and national data form the baseline to which forecasted aviation activity trends are applied.

Activity projections are made based upon estimated growth rates, area demographics, industry trends and other indicators. Forecasts are prepared for the Initial-Term (0-5 years), the Intermediate-Term (6-10 years) and the Long-Term (11-20 years) time frames. Utilizing forecasts within these time frames will allow the construction of airport improvements to be timed to meet demand, but not so early as to remain idle for an unreasonable length of time.

There are four types of aircraft operations considered in the planning process. These are termed “local, based, itinerant and transient.” They are defined as follows:

Local operations are aircraft movements (departures or arrivals) for the purpose of training, pilot currency or pleasure flying within the immediate area of the local airport. These operations typically consist of touch-and-go operations, practice instrument approaches, flights to and within local practice areas and pleasure flights that originate and terminate at the airport under study.

Based aircraft operations are the total operations made by aircraft based (stored at the airport on a permanent, seasonal or long-term basis) at the study airport, with no attempt to classify their operations as to purpose.

Itinerant operations are arrivals and departures other than local operations and generally originate or terminate at another airport. These types of operations are closely tied to local demographic indicators, such as local industry and business use of aircraft and usage of the facility for recreational purposes.

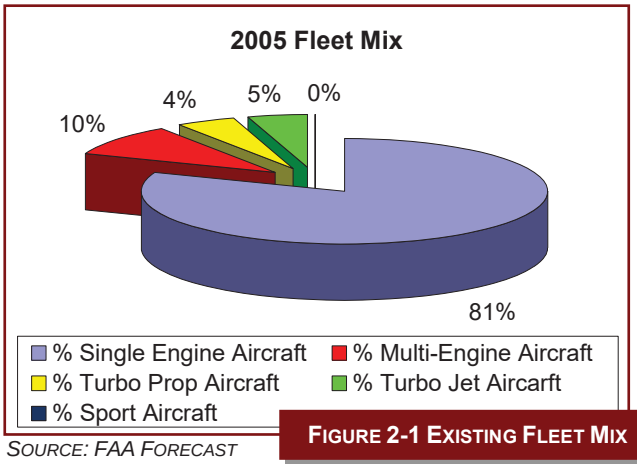
Transient operations are the total operations made by aircraft other than those based at the airport under study. These operations typically consist of business or pleasure flights originating at other airports, with termination or a stopover at the study airport.

The terms transient and itinerant are sometimes erroneously used interchangeably. This study will confine analysis to local and itinerant operations.

NATIONAL AND REGIONAL TRENDS

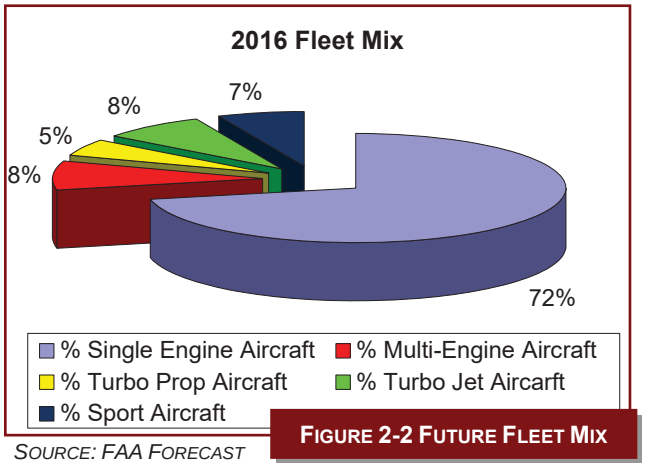
According to factors such as aircraft production, pilot activity and hour's flown, general aviation reached a peak in the late 1970s. This peak was followed by a long downturn that persisted through most of the 1980s and the early 1990s and has been attributed to high manufacturing costs associated with product liability issues as well as other factors. The General Aviation Revitalization Act (GARA) of 1994 was enacted with the goal of revitalizing the industry by limiting product liability costs. The Act established an 18-year statute of repose on liability related to the manufacture of all general aviation aircraft and their components. According to a 2001 report to Congress by the General Accounting Office (GAO), trends in general aviation since GARA was enacted suggest that liability costs have been less burdensome to manufacturers, shipments of new aircraft have increased and technological advances have been made. Indicators of general aviation activity, such as the numbers of hour's flown and active pilots, have also increased in the years since GARA, but their growth has not been as substantial as the growth in manufacturing. An article in USA Today, January 17th, 2007, states that there has been a 12.5 percent increase from 2001 to 2005 in hours flown in private planes for business reasons. The article also states that there has been a 19 percent increase from 2004 to 2005 in single-engine piston planes shipped. An increasing trend in sales of general aviation aircraft is expected to continue through the next years.

The unfortunate terrorist attacks of September 11, 2001 have had a substantial impact on these positive general aviation industry trends. Significant restrictions were placed on general aviation flying following September 11th which resulted in a considerable decrease in general aviation activity. Fortunately, most of these restrictions have now been lifted and the Federal Aviation Administration (FAA) is forecasting continued growth in general aviation. The FAA annually convenes expert panels in aviation and develops forecasts for future activity in all areas of aviation, including general aviation. The FAA's 2006 forecast predicts the general aviation aircraft fleet will increase at an average annual rate of 1.4 percent during the 12-year forecast period, growing from an estimated 214,591 in 2005 to 252,775 aircraft in 2017. The fleet of turbine aircraft is expected to increase at a greater rate than the fleet of piston aircraft; as a result, the number of piston aircraft, while continuing to increase, is expected to represent a smaller percentage of the total general aviation fleet. The General Aviation Manufacturers Association (GAMA) produces activity forecasts based on general aviation hours flown. As shown in Table 2-1, the number of turbojet (TJ) hours is forecast to increase 90% from 2005 to 2016.



SOURCE: FAA FORECAST

FIGURE 2-1 EXISTING FLEET MIX



SOURCE: FAA FORECAST

FIGURE 2-2 FUTURE FLEET MIX

TABLE 2-1 NATIONAL GENERAL AVIATION FORECAST

	Hours Flown (in millions)				
Year	SE	ME	TP	TJ	Total
2005	16.5	2.2	1.8	2.9	23.4
2006	16.6	2.2	1.9	3.1	23.8
2007	16.7	2.2	1.9	3.4	24.2
2008	16.8	2.2	1.9	3.6	24.5
2009	16.8	2.2	1.9	3.9	24.8
2010	16.9	2.2	2.0	4.2	25.3
2011	17.0	2.2	2.0	4.6	25.8
2012	17.1	2.2	2.0	4.9	26.2
2013	17.1	2.2	2.1	5.2	26.6
2014	17.2	2.2	2.1	5.5	27.0
2015	17.2	2.2	2.1	5.9	27.4
2016	17.3	2.2	2.1	6.1	27.7

Source: General Aviation Manufacturers Association 2005 statistical Databook

Source: NASA Nebraska Space Grant & EPSCoR

FIGURE 2-3 SATS

Another industry trend is the increasing amount of research for programs like the Small Aircraft Transportation System (SATS). The National Aeronautics and Space Administration (NASA), Federal Aviation Administration (FAA), States, industry and academic partners have joined forces to pursue the NASA National General Aviation Roadmap leading to a Small Aircraft Transportation System. This long-term strategic undertaking seeks to bring next-generation technologies and improved air access to small communities. The envisioned outcome is to improve travel between remote communities and transportation centers in urban areas by utilizing a new generation of single-pilot light aircraft for personal and business transportation between the nation's 5,400 public use general aviation airports. Current NASA investments in aircraft technologies are enabling industry to bring affordable, safe and easy-to-use features to the marketplace, including "Highway in the Sky" glass cockpit operating capabilities, affordable crashworthy composite airframes, more efficient IFR flight training and revolutionary aircraft engines. To facilitate this initiative, a comprehensive upgrade of public infrastructure must be planned, coordinated and implemented within the framework of the national air transportation system. State partnerships are proposed to coordinate research support in key public infrastructure areas. Ultimately, SATS may permit more than tripling aviation system throughput capacity by tapping the under-utilized general aviation facilities to achieve the national goal of doorstep-to-destination travel at four times the speed of highways for the nation's suburban, rural and remote communities.

The introduction of the Very Light Jet (VLJ) is a major milestone in aviation history. The small (less than 10,000 lbs.) jet can travel at speeds exceeding 400 knots at altitudes of 41,000 feet and is relatively inexpensive in the jet market. These aircraft will allow people to travel in jet aircraft to virtually any airport in the U.S due to the small size and the short length required for takeoff and landing. The demand for these aircraft is beginning to take shape as the first VLJs approach certification, which, is expected sometime in 2006. Estimates have forecasted as many as 4,500 VLJs flying by 2016. The majority of the VLJ market is expected to be business people who seek flexible traveling schedules and air taxi services. The lack of efficiency in the hub and spoke system is a major contributor to the VLJ market which will provide high-speed, low cost, convenient service to desired destinations.

Source: Honda Jet

FIGURE 2-4 VLJ

The continued growth in fractional ownership arrangements is another significant industry trend. Fractional ownership arrangements allow businesses and individuals to purchase an interest in an aircraft and pay for only the time that they use the aircraft. According to the National Business Aviation Association (NBAA), in 1986, there were three owners of fractionally held aircraft. By 1993, there were 110. From 2000 to 2002, the number of companies and individuals using fractional ownership grew by 52 percent, from 3,834 to 5,827 shares; the growth from 1999 (2,607) to 2002 was 124 percent. The number of airplanes in fractional programs grew 11 percent in 2002, from 696 to 776. The shift toward turbine aircraft is likely a result of the success of fractional ownership, the introduction of new types of turbine aircraft and a transition from commercial air travel to corporate/business air travel as a result of September 11th.

AVAILABLE ACTIVITY FORECASTS

The first step in preparing aviation forecasts is to examine historical and existing activity levels and currently available forecasts from other sources. The FAA Terminal Area Forecasts (TAF) and the Arizona State Aviation Needs Study (SANS) 2000 were reviewed for the San Carlos Apache Airport. The FAA TAF (May 2006) indicates 48 existing based aircraft for San Carlos Apache Airport and 16,200 existing annual operations. The TAF numbers are forecast to remain constant through the year 2025. The Arizona SANS 2000 indicates 48 existing based aircraft and 16,200 existing annual operations at the San Carlos Apache Airport. SANS 2000 predicts a forecast of 55 based aircraft and 18,631 annual operations for San Carlos Apache Airport by the year 2020. The 1998 San Carlos Apache Airport Master Plan projected 30 based aircraft and 11,811 operations by 2016.

FAA RECORDS OF BASED AIRCRAFT AND OPERATIONS

FAA Form 5010-1, *Airport Master Record*, is the official record kept by the Federal Aviation Administration (FAA) to document airport physical conditions and other pertinent information. The record normally includes an annual estimate of aircraft activity as well as the number of based aircraft. This information is normally obtained from the airport sponsor. The accuracy of these documents varies directly with the sponsor's record keeping system. The FAA Form 5010-1 for the San Carlos Apache Airport indicates 5-based aircraft (all single engine) and 880 annual aircraft operations. This form also breaks down the San Carlos Apache Airport operations to 760 GA Local and 120 GA Itinerant.

EXISTING AVIATION ACTIVITY

According to the 2006 airport inventory and correspondence with the current airport manager, based aircraft and operations totals at the San Carlos Apache Airport are similar to the numbers shown in the 5010.

There are currently 4 aircraft based at the San Carlos Apache Airport. The airport manager estimated that the aircraft operations are approximately 880. For the purposes of this study, existing based aircraft and operations at the San Carlos Apache Airport will be 4 aircraft and 880 operations. These totals result in a reasonable 220 operations per based aircraft (OBPA). Table 2-2 depicts the current based aircraft at the San Carlos Apache Airport.

The San Carlos Apache Airport is currently an Airport Reference Code (ARC) C-II airport serving predominately single engine piston, multi-engine piston and turbo prop aircraft, with some use by light turbojet aircraft. Users include:

Air Medivac Services: Air Medivac provides essential emergency medical transport in life threatening situations and patient transfers from clinics to higher level care facilities throughout the San Carlos/Globe area. These users utilize a variety of multi-engine turboprop and turbojet aircraft.

Business/Recreational Transportation: These users desire the utility and flexibility offered by general aviation aircraft. The types of aircraft utilized for personal and business transportation varies with individual preference and resources and generally includes a mix of single-engine, multi-engine and turbojet aircraft. This category also includes hunting, tourism and Light Sport Aircraft (LSA) traffic.

Wildfire Management: The BIA utilizes the airport for wildfire control and suppression. The number of these operations varies greatly depending on the fire season in the area. The type of aircraft predominately used for aerial fire fighting is the single engine air tanker (SEAT) and helicopters.

Flight Training: Flight schools from other airports in the state have students perform cross-country flights to San Carlos Apache Airport. Flight training includes instructional flying to obtain a pilot's license or proficiency checks including biennial flight reviews. The majority of aircraft used for flight instruction include single and multi engine piston. A flight school from San Diego, California has shown interest in basing operations for flight training at the San Carlos Apache Airport.

Military Training: The military utilizes the airport from time to time for training flights. These training flights will include touch-and-go, low approaches and full stops. On occasion, the military will land for some time and use the ramp area for parking.

TABLE 2-2 SAN CARLOS BASED AIRCRAFT

Type	Model	Tail Number
Single Engine Piston	Cessna 172	N411SS
Single Engine Piston	Cessna 140	N3142N
Single Engine Piston	Cessna 180	N9137C
Single Engine Piston	Cessna 150	N6691T

EXISTING BASED AIRCRAFT DEMAND

A strong interest in basing aircraft at San Carlos Apache Airport is expected once the airport has adequate facilities available. Two taxilanes are currently being constructed between the existing aprons. These taxilanes will allow for T-hangars and box hangars to be constructed. Current based aircraft are located on the based aircraft apron in existing hangars.

HISTORICAL BASED AIRCRAFT AND OPERATIONS

There is limited historical record of based aircraft and operations for the San Carlos Apache Airport. According to the 1998 Airport Master Plan, there were 23 based aircraft in 1996 and approximately 9,400 annual operations. There are currently no commercial service or air cargo operations at the San Carlos Apache Airport.

FIGURE 2-5 RUNWAY 27

FORECASTS OF AVIATION ACTIVITY

FACTORS INFLUENCING AVIATION DEMAND

There are several factors that are influencing the aviation demand at San Carlos Apache Airport. These factors include available hangar space, per capita aircraft ownership, continual marketing and expansion at the San Carlos Apache Gold Casino and Resort, and the possibility of offering FBO and fuel services. Private recreational, government and tourism flying will continue to be factors in the utilization of the airport.

BASED AIRCRAFT AND ANNUAL AIRCRAFT OPERATIONS

A comparative analysis of based aircraft and annual aircraft operations was accomplished using four methodologies and three existing forecasts to derive a preferred forecast for the San Carlos Apache Airport.

Existing Forecasts

- Federal Aviation Administration Terminal Area Forecast (FAA TAF)
  This shows the FAA TAF issued in February of 2006. There is no interpolation of the data; the data provided is directly input into the charts following. Both based aircraft and annual operations are provided in the FAA TAF. This forecast shows a 0 percent growth in based aircraft over the 20 year planning period.
- Previous Airport Master Plan Forecast
  The previous Airport Master Plan's preferred forecast was projected to forecast out to year 2026. This method shows a 22 percent growth in based aircraft over the 20 year planning period.
- Arizona State Aviation Needs Study (SANS) 2000 Forecast
  The Arizona Department of Transportation published the Arizona State Aviation Needs Study in 2000. This study provides both based aircraft and annual operations data for entire counties and individual airports. The SANS 2000 study projected data through year 2020, in order to have data through year 2026, the SANS 2000 was extrapolated to provide the needed data. This forecast shows a 17 percent growth in based aircraft over the 20 year planning period.

Developed Forecasts

- Method 1: Market Share Method of General Aviation Manufacturers Association (GAMA)
  This shows the GAMA forecast of General Aviation (GA) and Air Taxi Aircraft. Annual operations are based on operations per based aircraft (OPBA) of 220. Annual operations are calculated by multiplying the number of based aircraft by the OPBA. This forecast shows a 13 percent growth in based aircraft over the 20 year planning period.
- Method 2: Status Quo Forecast
  This method took a very conservative based aircraft outlook. It is based on the current conditions at the airport and projects future use at the airport based on those current conditions (status quo) without any upgrades or changes. It does show a slight increase in based aircraft and operations and is directly related to the county's population. This method shows a 25 percent growth in based aircraft over the 20 year planning period, but only 5 based aircraft in 2006.
- Method 3: Cohort Analysis Forecast
  This method took into consideration many factors. It incorporated the surrounding areas and airports including Falcon Field in Mesa, Arizona. It also took into consideration the per capita aircraft ownership growth (similar to the status quo method), the expansion and continued marketing of the Casino, Resort and Golf Course, and it also looked at

the return of an FBO facility offering fuel service and hangars. The Cohort Analysis combined all of the above factors and estimated growth based on those factors. This shows a 500 percent growth in based aircraft over the 20 year planning period.

- Method 4: Flight School Analysis Forecast

  The California Flight School has expressed an interest in basing aircraft at the airport. However, it is hard to guarantee at this time whether the flight school will in fact provide the services it has thus far shown interest in. The information that was used to complete this forecast was provided by the Flight Academy. The "Initial Model & Requirements Checklists" as well as personal conversations with the Flight Academy owners have given us numbers of sorties, operations, based aircraft, students and length of training that has allowed us to create a forecast.

  This method of forecast is an add-on to the Cohort analysis. It uses the same data as in the cohort analysis and adds the flight school based aircraft projections provided by the flight school. This method shows a 1,750 percent growth in based aircraft over the 20 year planning period.

BASED AIRCRAFT DATA INFORMATION

All seven forecasts were combined into Table 2-3. A graph depicting all of the forecasts is provided in Figure 2-6.

TABLE 2-3 BASED AIRCRAFT COMPARISON

	2006	2011	2016	2021	2026
FAA TAF	48	48	48	48	48
GAMA	15	16	16	17	17
SANS 2000	48	50	52	54	56
Previous AMP	27	29	30	32	33
Status Quo Method	4	5	5	5	5
Cohort Method*	**4**	**14**	**16**	**18**	**20**
Flight School Method	4	24	41	68	70

*Preferred Method

Based on the information in the table above, the preferred method for forecasting the based aircraft at San Carlos Apache Airport is the Cohort Analysis. The Cohort Analysis takes into consideration all factors as well as time for improvements to be implemented to allow the desired growth. During the first five years of the forecast, the Cohort Analysis shows steady growth, this takes into consideration planning, engineering and construction time for future facilities. The drive to base aircraft at San Carlos can also be explained by the very high demand and low supply of such facilities at airports such as Falcon Field (FFZ) in Mesa, Arizona. After the initial spike in based aircraft the analysis continues a similar growth pattern as the status quo method, growing based on the population growth of the County. No scheduled commercial service aircraft are expected to utilize the airport during the planning period.

As can be seen in Figure 2-6, the Cohort Analysis falls below the FAA TAF, previous Airport Master Plan Study and the SANS 2000. It falls above the GAMA Analysis and Status Quo Analysis. Other than the spike between 2006 and 2011, the method shows a similar growth pattern to all other forecast methods.

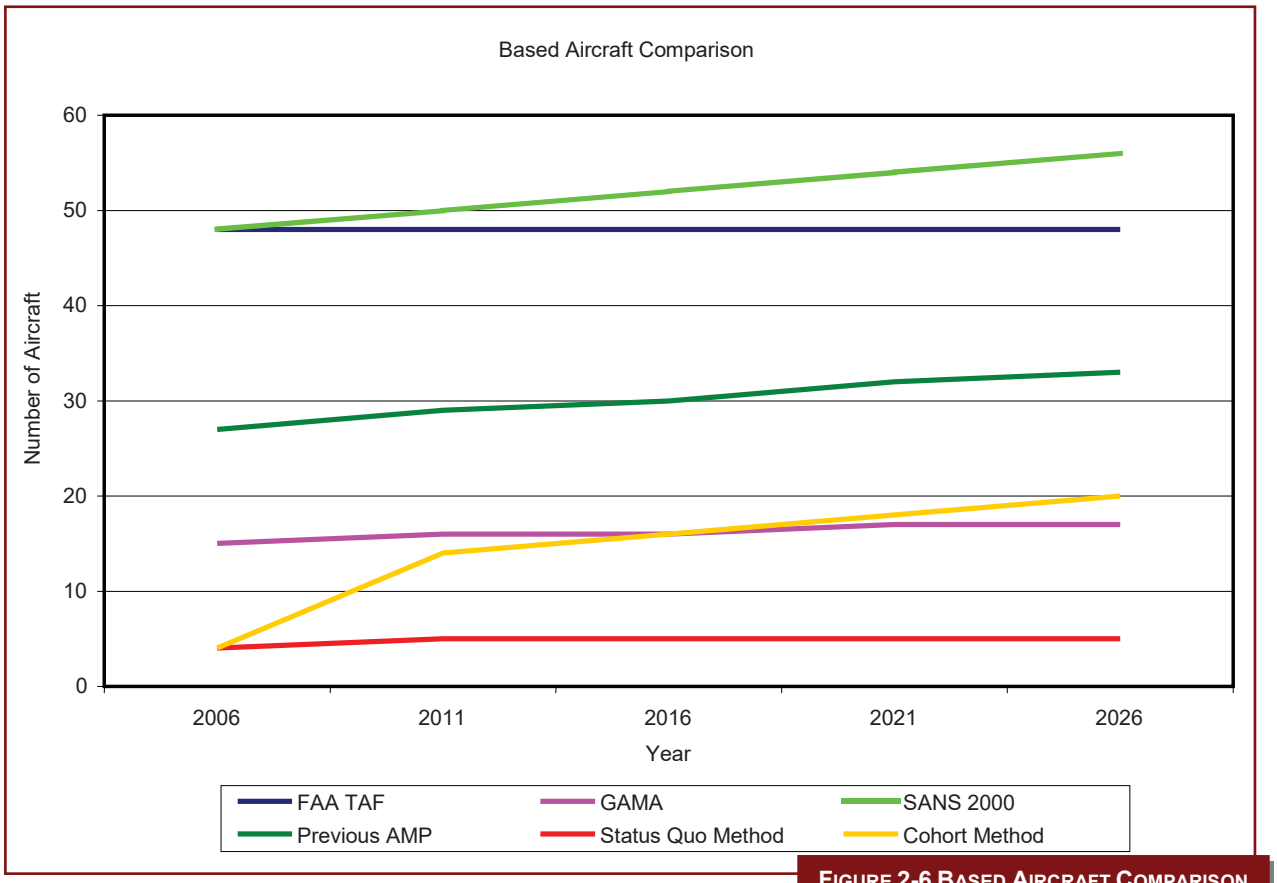


FIGURE 2-6 BASED AIRCRAFT COMPARISON

ANNUAL OPERATIONS DATA INFORMATION

All seven based aircraft forecasts from Table 2-3 were multiplied by the OPBA described in the following section and were combined into Table 2-4. Two graphs were generated based on the information in the table, the first without the flight school taken into consideration, and the second with the flight school. Figure 2-7 depicts the operations forecast without taking into consideration the impact of the Flight School basing operations at San Carlos Apache Airport. Figure 2-8 depicts the operations forecast with the impact of the Flight School.

TABLE 2-4 OPERATIONS COMPARISON

	2006	2011	2016	2021	2026
FAA TAF	16,200	16,200	16,200	16,200	16,200
GAMA	3,300	3,520	3,520	3,740	3,740
SANS 2000	16,895	17,497	18,119	18,759	19,399
Previous AMP	13,000	15,341	17,010	19,264	21,000
Status Quo Method	880	1,100	1,100	1,100	1,100
Cohort Method*	**880**	**3,780**	**4,800**	**5,940**	**7,200**
Flight School Method	880	30,072	70,520	137,360	138,600

*Preferred Method

Operations in the Cohort Method and Flight School Method were based on increasing Operations Per Based Aircraft (OPBA) from 220 OPBA up to 360 OPBA. In order to calculate the number of annual operations, the numbers of based aircraft from Table 2-3 were multiplied by the OPBA. This was done to indicate increased interest in the airport to coincide with the increased based aircraft.

Based on the information in the above table and the following figures, the preferred method for forecasting the annual operations at the San Carlos Apache Airport is the Cohort Analysis. This method falls just slightly higher than the FAA TAF yet still below the SANS 2000 and the previous Airport Master Plan Study forecast. It does fall substantially higher than the GAMA analysis and Status Quo Analysis. A similar spike in operations can be seen in this analysis which correlates to the spike in based aircraft as described previously. The Cohort Analysis also shows a slow yet steady increase in Operations Per Based Aircraft (OPBA) throughout the forecast. This increase in OPBA corresponds with FAA Order 5090.3C as far as showing growth from a rural general aviation airport with little itinerant traffic to a busier general aviation airport with more itinerant traffic. It does not show unreasonable growth in that it is still well below the OPBA for the reliever airports. It is not expected that any scheduled service will be utilizing the airport at this time, although there is a potential for charter and air taxi service.

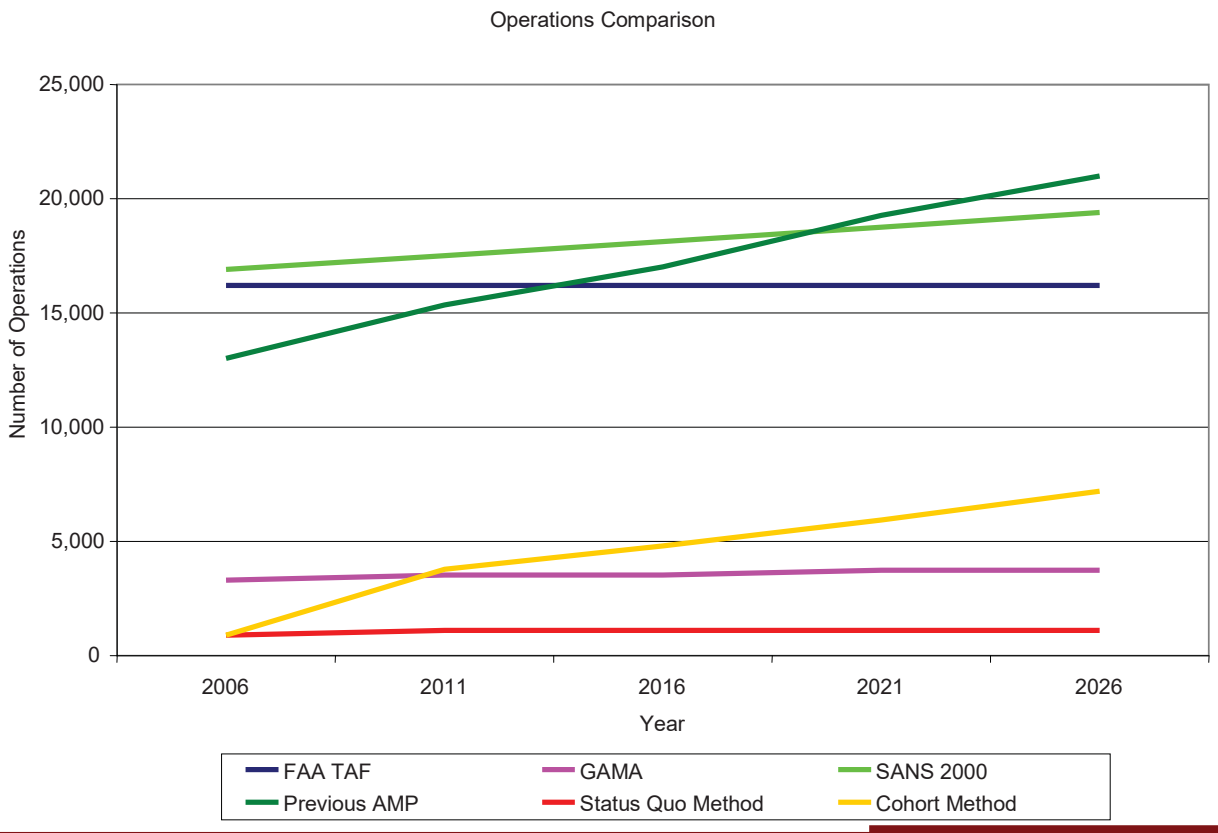


FIGURE 2-7 ANNUAL OPERATIONS

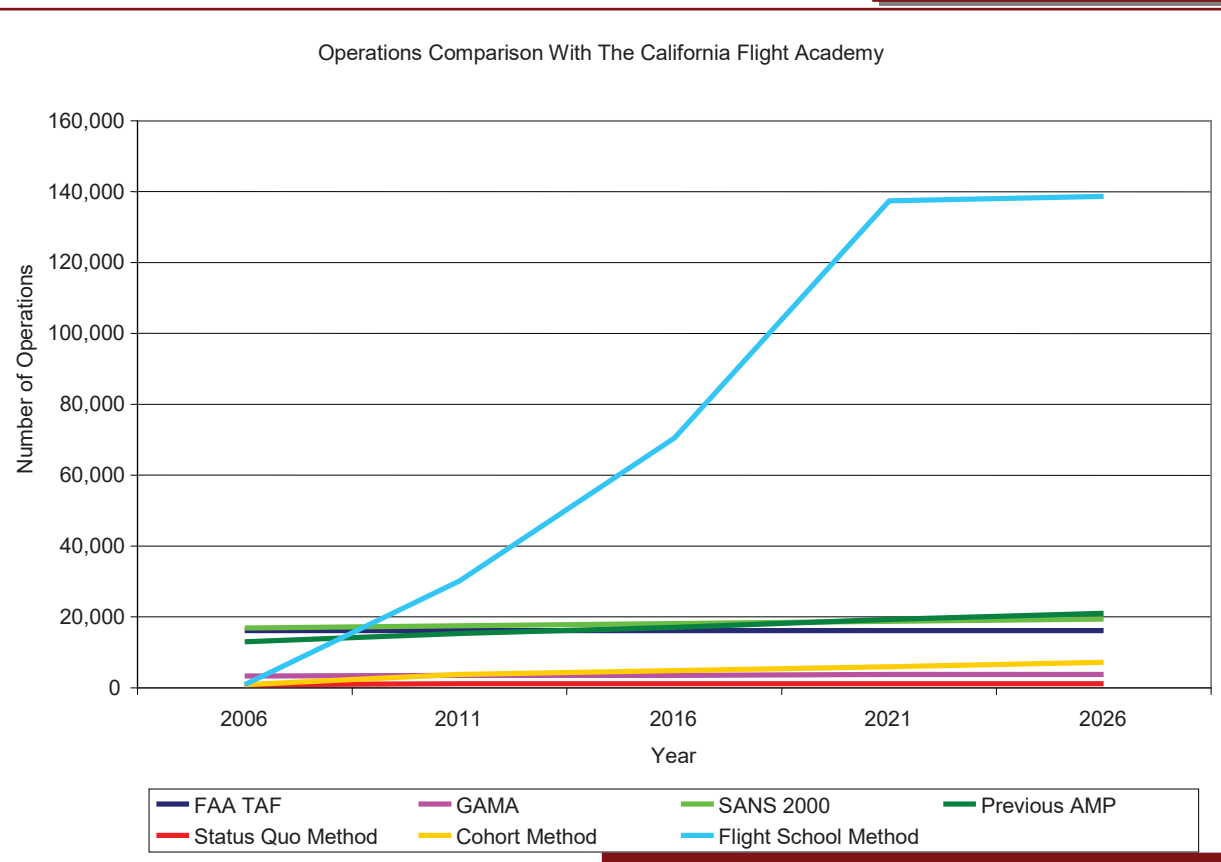


FIGURE 2-8 ANNUAL OPERATIONS INCLUDING FLIGHT SCHOOL

ITINERANT AND LOCAL OPERATIONS

Local operations consist primarily of training and recreational flights in the area. The remaining itinerant flights primarily consist of personal transportation, business transportation and recreational flights to and from other airports. The average percentage of local versus itinerant operations in the state of Arizona comprises 49% itinerant and 51% local operations. The average percentage of operations for the San Carlos Apache Airport, comprises of 26% itinerant and 74% local.

TABLE 2-5 PREFERRED FORECAST OF AVIATION ACTIVITY

Year	Based Aircraft	Local Operations	Itinerant Operations	Total Operations
2006	4	229	651	880
2011	14	983	2,797	3,780
2016	16	1,248	3,552	4,800
2021	18	1,424	4,396	5,940
2026	20	1,872	5,328	7,200

AIRPORT USERS AND FLEET MIX

Interviews with existing and potential users indicate the following types of operations are anticipated for the San Carlos Apache Airport:

Business Transportation: The San Carlos/Globe area is approximately a two to three hour drive time to Phoenix or Tucson. Business aviation users benefit by being able to travel to or from the Globe/San Carlos area to conduct business activities in a single day, without requiring an overnight stay or extensive ground travel time. Local and other small businesses will generally utilize single engine and multi-engine piston aircraft. Medium sized businesses and larger corporations having a need to travel to the San Carlos/Globe area would generally utilize multi-engine piston and turboprop aircraft and light to medium business jets respectively. Copper mines could utilize the airport to a greater extent once fuel is available. This user category also includes state and federal agencies and travel by government officials.

Personal Transportation: These users desire the utility and flexibility offered by general aviation aircraft. The types of aircraft utilized for personal transportation vary with individual preference and resources and generally include a mix of single engine, multi-engine and in some cases turbojet aircraft. With the introduction of the Light Sport Aircraft (LSA) category, more people will have the accessibility to own and operate an aircraft. This will increase the amount of people per capita owning aircraft; it will also increase people's willingness to live outside the normal boundaries of the city. It will allow people to live further away from the big cities and commute via aircraft into the cities.

Recreational and Tourism: These users include transient pilots flying into the region to visit recreational and tourist attractions. These users mostly utilize single-engine piston aircraft; however, a small percentage may operate multi-engine piston aircraft. Other types of aircraft in this category include home-built, experimental aircraft, gliders and ultralights.

Fire Management: Air tanker operations are conducted out of the San Carlos Apache Airport by the Bureau of Indian Affairs (BIA). The amount of air tanker activity depends largely on the fire season for the local area. A mix of single engine, multi-engine and helicopters conduct these operations.

Air Medivac and Medical Services: Air Medivac provides essential emergency medical transport in life threatening situations. Medical service users would be physicians traveling into the airport to provide medical or dental services in the San Carlos/Globe area. These users utilize a variety of multi-engine turboprop and turbojet aircraft, for example Cessna 421's, Beech King Airs, Pilatus PC-12s and Lear Jets.

Flight Training: These users conduct local and itinerant flights in order to meet flight proficiency requirements for obtaining FAA pilot certifications. These flights include touch-and-go, day and night local and cross-country flights and simulated approaches. Pilot certifications include Sport, Private, Instrument, Commercial, Instructor and Airline Transport ratings. Depending on the level of interest and aircraft availability, a multi-engine rating may or may not be available. A commercial rating may be accomplished with either a single engine or multi-engine aircraft. Air transport ratings are usually obtained at larger regional FAR Part 121 certificated flight schools.

Search and Rescue: The Civil Air Patrol (CAP), a non-profit aviation-related organization is commonly known for providing search and rescue services on a volunteer basis. CAP also provides mentoring, flight instruction and in some cases aircraft rentals for members and trainees (Cadets). Generally, small single-engine aircraft are used for this purpose.

Based on these types of uses, local operations are expected to be conducted by predominately single engine aircraft. Itinerant operations are expected to trend from primarily single engine piston aircraft towards the GAMA forecast fleet mix of 62% single engine, 7% multi-engine, 11% jet, 3% rotorcraft, 6% sport and 11% experimental and other. The GAMA forecast fleet mix can be seen in Figure 2-8. These trends were applied to the operations forecast to derive the forecast by aircraft type shown in Table 2-6.

TABLE 2-6 DETAILED FORECAST BY AIRCRAFT TYPE

	2006	2011	2016	2021	2026
Single Engine Aircraft	4	9	10	11	12
Operations	880	2,344	2,976	3,683	4,464
Multi-Engine Piston Aircraft	0	1	1	1	2
Operations	0	265	336	416	504
Turbo Prop/Turbo Jet Aircraft	0	1	2	2	2
Operations	0	415	528	653	792
Rotorcraft	0	0	0	1	1
Operations	0	113	144	178	216
Sport Aircraft	0	1	1	1	1
Operations	0	227	288	356	432
Experimental and Other	0	2	2	2	2
Operations	0	416	528	654	792
Total Based Aircraft	4	14	16	18	20
Total Annual Operations	880	3,780	4,800	5,940	7,200

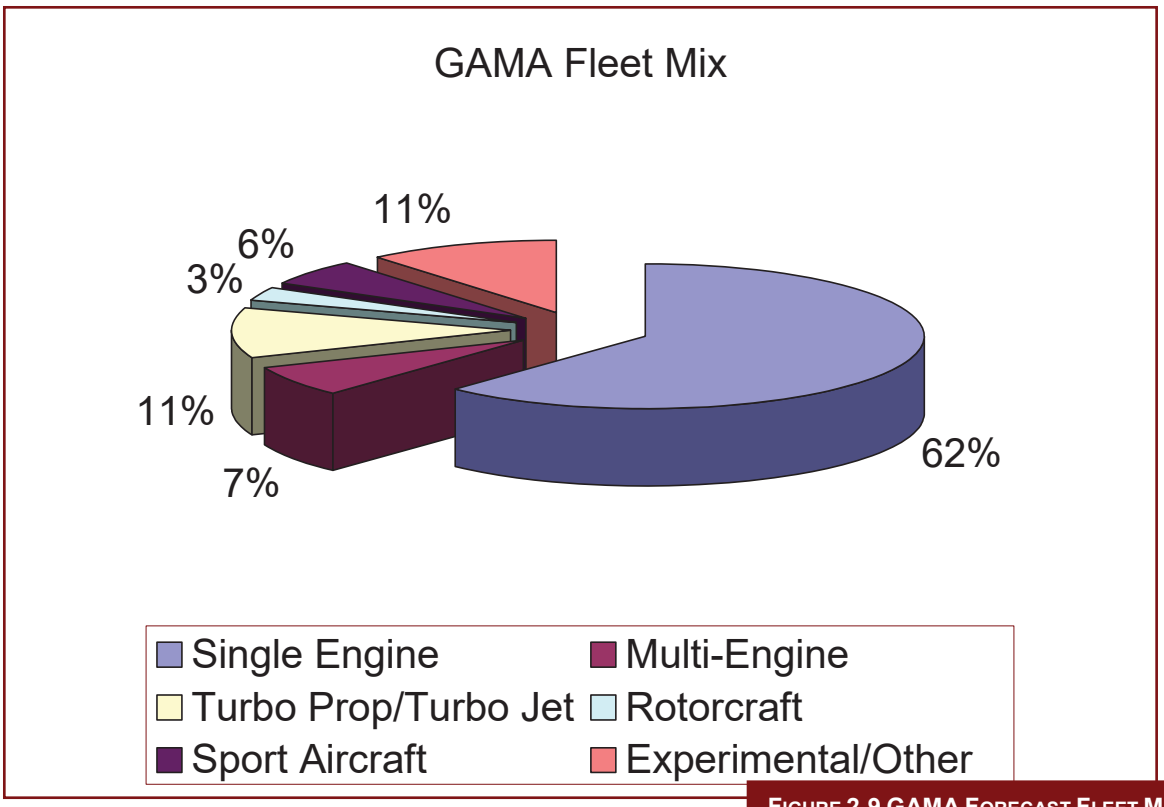


FIGURE 2-9 GAMA FORECAST FLEET MIX

FIGURE 2-10 AIRCRAFT TIEDOWNS

AIRPORT SEASONAL USE DETERMINATION

A seasonal fluctuation in aircraft operations may be expected at any airport. This fluctuation is most apparent in regions with severe winter weather patterns and at non-towered general aviation airports. The fluctuation is less pronounced at major airports, with a high percentage of commercial and scheduled airline activity.

Non-towered airports generally experience a substantially higher number of operations in summer months than winter months. The average seasonal use trend for FAA towered airports from the 1979-1984 records (total aircraft operations handled by tower facilities nationally from *FAA Statistical Handbook of Aviation*) was used as a baseline for determining seasonal use trends. As discussed above, the seasonal fluctuation is more pronounced at non-towered airports than towered airports. The seasonal use trend for towered airports was adjusted to approximate seasonal use trends at non-towered airports. This is presented in Table 2-7 and Figure 2-11.

TABLE 2-7 SEASONAL USE TREND

Month	Non-towered	Towered
January	3.5%	7.2%
February	4.0%	8.2%
March	4.8%	8.6%
April	7.5%	9.0%
May	11.3%	9.1%
June	13.5%	9.4%
July	14.8%	9.1%
August	13.0%	8.7%
September	10.0%	8.7%
October	8.0%	7.8%
November	5.8%	7.1%
December	3.8%	7.1%

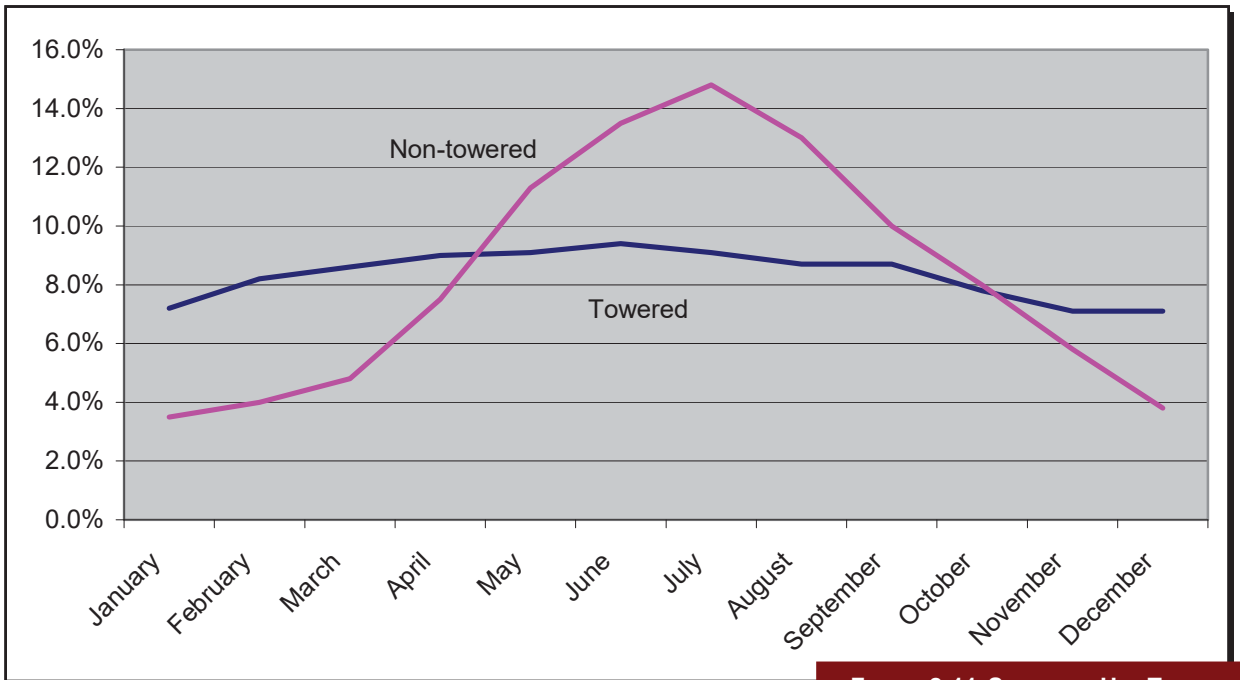


FIGURE 2-11 SEASONAL USE TREND

HOURLY DEMAND AND PEAKING TENDENCIES

In order to arrive at a reasonable estimate of demand at the airport facilities, it was necessary to develop a method to calculate the levels of activity during peak periods. The periods normally used to determine peaking characteristics are defined below:

Peak Month: The calendar month when peak enplanements or operations occur.

Design Day: The average day in the peak month derived by dividing the peak month enplanements or operations by the number of days in the month.

Busy Day: The Busy Day of a typical week in the peak month. In this case, the Busy Day is equal to the Design Day.

Design Hour: The peak hour within the Design Day. This descriptor is used in airfield demand/capacity analysis, as well as in determining terminal building, parking apron and access road requirements.

Busy Hour: The peak hour within the Busy Day. In this case, the Busy Hour is equal to the Design Hour.

The Seasonal Use Trend Curve, as presented in Figure 2-8, was used as a tool to determine the peaking characteristics for the Springerville Municipal Airport. Using the Seasonal Use information, a formula was derived which will calculate the average daily operations in a given month, based on the percentage of the total annual operations for that month, as determined by the curve. The formula is as follows:

$$M = A (T / 100)$$
$$D = M / (365 / 12)$$

Where T = Monthly percent of use (from curve)
M = Average monthly operations
A = Total annual operations
D = Average Daily Operations in a given month

Approximately 90% of total daily operations will occur between the hours of 7:00 AM and 7:00 PM (12 hours) at a typical general aviation airport, meaning the maximum peak hourly occurrence may be 50% greater than the average of the hourly operations calculated for this time period.

The Estimated Peak Hourly Demand (P) in a given month was, consequently, determined by compressing 90% of the Average Daily Operations (D) in a given month into the 12-hour peak use period, reducing that number to an hourly average for the peak use period and increasing the result by 50% as follows:

$$P = 1.5 (0.90D / 12)$$

Where D = Average Daily Operations in a given month.
P = Peak Hourly Demand in a given month.

The calculations were made for each month of each phase of the planning period. The results of the calculations are shown in Table 2-8. As is evident in the Table, the Design Day and Design Hour peak demand in the planning year occurs under VFR weather conditions in the month of July (highlighted in bold in each Table), with 35 daily operations and approximately 3.9 operations per hour in 2026. If the California Flight Academy were to establish operations at the airport, there would be estimated peak daily operations of 674 and peak hourly operations of 75.8 in 2026.

TABLE 2-8 ESTIMATED HOURLY DEMAND/MONTH

Monthly / Daily / Hourly Demand

Planning Year: 2011
Operations: 3,780

Month	% Use	Operations		
		Monthly	Daily	Hourly
January	3.5	132	4	0.5
February	4.0	151	5	0.6
March	4.8	181	6	0.7
April	7.5	284	9	1.0
May	11.3	427	14	1.6
June	13.5	510	17	1.9
July	**14.8**	**559**	**18**	**2.0**
August	13.0	491	16	1.8
September	10.0	378	12	1.4
October	8.0	302	10	1.1
November	5.8	219	7	0.8
December	3.8	144	5	0.6

Planning Year: 2016
Operations: 4,800

Month	% Use	Operations		
		Monthly	Daily	Hourly
January	3.5	168	6	0.7
February	4.0	192	6	0.7
March	4.8	230	8	0.9
April	7.5	360	12	1.4
May	11.3	542	18	2.0
June	13.5	648	21	2.4
July	**14.8**	**710**	**23**	**2.6**
August	13.0	624	21	2.4
September	10.0	480	16	1.8
October	8.0	384	13	1.5
November	5.8	278	9	1.0
December	3.8	182	6	0.7

Planning Year: 2021
Operations: 5,940

Month	% Use	Operations		
		Monthly	Daily	Hourly
January	3.5	208	7	0.8
February	4.0	238	8	0.9
March	4.8	285	9	1.0
April	7.5	446	15	1.7
May	11.3	671	22	2.5
June	13.5	802	26	2.9
July	**14.8**	**879**	**29**	**3.3**
August	13.0	772	25	2.8
September	10.0	594	20	2.3
October	8.0	475	16	1.8
November	5.8	345	11	1.2
December	3.8	226	7	0.8

Planning Year: 2026
Operations: 7,200

Month	% Use	Operations		
		Monthly	Daily	Hourly
January	3.5	252	8	0.9
February	4.0	288	9	1.0
March	4.8	346	11	1.2
April	7.5	540	18	2.0
May	11.3	814	27	3.0
June	13.5	972	32	3.6
July	**14.8**	**1,066**	**35**	**3.9**
August	13.0	936	31	3.5
September	10.0	720	24	2.7
October	8.0	576	19	2.1
November	5.8	418	14	1.6
December	3.8	274	9	1.0

INSTRUMENT OPERATIONS

According to the FAA TAF, 45 percent of the total aircraft operations in Arizona are instrument operations. According to the TAF, this number is forecasted to increase to 51 percent by 2020. Since virtually all commercial and business jet flights and most military aircraft flights are IFR, the number of instrument operations does not reflect the occurrence of instrument weather or the provision of instrument approaches at airports. At most general aviation airports with an instrument approach and no commercial service and limited military activity, instrument operations will comprise approximately 2.5 percent of total operations. The majority of general aviation operations are under VFR. Business transportation and air medivac/air ambulance are the most likely users of the instrument approaches at San Carlos Apache Airport. According to IFR flight plan data gathered from 2004-2005, annual instrument operations comprise approximately 6.9 percent of total operations. (An accurate percent of current instrument operations cannot be made due to the current NOTAM which does not allow the GPS approach to be used. Once the AWOS is installed, the GPS approach will once again be operational.) The number of instrument operations for 2004 were reviewed using GCR1 airport data which indicated 63 IFR filed flight plans to and from San Carlos Apache Airport.

FORECAST SUMMARY

Multiple forecasts were prepared for the San Carlos Apache Airport. Activity estimates were made for based aircraft, operations and the ultimate fleet mix at the airport. These forecasts represent low, medium and high expected activity trends. The FAA TAF forecasts based aircraft and operations to remain constant over the 20 year planning period. This does not represent current conditions at the airport due in part to the closure of the Mace Aviation FBO and the cessation of fuel sales. For those reasons, current based aircraft and annual operations have fallen to approximately 90 percent below the FAA TAF predictions for 2006, according to San Carlos Apache Airport's 5010-1, *Airport Master Record.* The preferred forecast method used in this study begins at 90 percent below the FAA TAF and shows a growth in based aircraft and operations throughout the next 20 year period with the intent of returning fuel service and an FBO. The preferred forecast for based aircraft still falls more than 10 percent below the FAA TAF because it is not expected that the operations will increase that dramatically in this planning period. For that same reason, the annual operations will also be significantly below the FAA TAF.

TABLE 2-9 FORECAST SUMMARY

	Enplanements			Itinerant Operations				
Year	Air Cargo	Commercial	Total	Air Cargo	Air Taxi & Commercial	General Aviation	Military	Total
2006	0	0	0	0	0	618	33	651
2011	0	0	0	0	0	2,657	140	2,797
2016	0	0	0	0	0	3,374	178	3,552
2021	0	0	0	0	0	4,176	220	4,396
2026	0	0	0	0	0	5,062	266	5,328

	Local Operations			Totals	
Year	General Aviation	Military	Total	Operations	Instrument Operations
2006	229	0	229	880	62
2011	983	0	983	3,780	267
2016	1,248	0	1,248	4,800	339
2021	1,424	0	1,424	5,820	411
2026	1,872	0	1,872	7,200	508

San Carlos Apache Airport

Chapter Three
Facility Requirements

INTRODUCTION

One of the primary objectives of this planning study is to determine the size and configuration of airport facilities needed to accommodate the types and volume of aircraft expected to utilize the airport. Data from Chapter 1 and forecasts from Chapter 2 are coupled with established planning criteria to determine what improvements are necessary to airside and landside areas. Then, having established the facility requirements, alternatives for providing these facilities is provided in Chapter 4 to determine the viability of meeting the facility needs.

The time frame for addressing development needs usually involves short-term (up to five years), medium-term (six to ten years) and long-term (eleven to twenty year) periods. Long-term planning primarily focuses on the ultimate role of the airport and is related to development. Medium-term planning focuses on a more detailed assessment of needs, while the short-term analysis focuses on immediate action items and may include details not geared towards long-term development.

AIRPORT REFERENCE CODE

The Airport Reference Code (ARC) is a system established by the FAA that is used to relate airport design criteria to the operational and physical characteristics of the aircraft currently operating and/or intended to operate at the airport. The ARC has two components relating to the airport design aircraft. The first component, depicted by a letter, is the Aircraft Approach Category and relates to aircraft approach speed (operational characteristics). The second component, depicted by a Roman numeral, is the Aircraft Design Group and relates to aircraft wingspan and tail height (physical characteristics). Generally, aircraft approach speed applies to runway dimensional criteria and safety zones prior to and beyond the end of the runway. Aircraft wingspan is primarily associated with separation criteria involving taxiways and taxilanes. Table 3-1 has been included to provide a definition of both Aircraft Approach Categories and Aircraft Design Groups. Figure 3-1 shows examples of aircraft and their Airport Reference Codes.

TABLE 3-1 AIRCRAFT APPROACH CATEGORIES AND DESIGN GROUP

AIRCRAFT APPROACH CATEGORY: is a grouping of aircraft based on an approach speed of 1.3 times the stall speed of the aircraft at the maximum certificated landing weight.

Aircraft Category	Approach Speed
Category A	Speed less than 91 knots
Category B	91 knots or more but less than 121 knots
Category C	121 knots or more but less than 141 knots
Category D	141 knots or more but less than 166 knots
Category E	166 knots or more

AIRCRAFT DESIGN GROUP: subdivides aircraft by wingspan. The aircraft design group concept links an airport's dimensional standards to aircraft approach categories, aircraft design groups or runway instrumentation configurations.

Design Group	Aircraft Wingspan (ft)	Tail Height (ft)
Group I	Up to but not including 49	Less than 20
Group II	49 up to but not including 79	20 up to but not including 30
Group III	79 up to but not including 118	30 up to but not including 45
Group IV	118 up to but not including 171	45 up to but not including 60
Group V	171 up to but not including 214	60 up to but not including 66
Group VI	214 up to but not including 262	66 up to but not including 80

AI

Primarily Single-Engine Propeller Aircraft, some light twins

Example Type: Cessna 172 Skyhawk

BI

Primarily Light Twin-Engine Propeller Aircraft

Example Type: Piper Navajo

BII

(<12,500 lbs)
Primarily Light Turboprops

Example Type: Beechcraft King Air

BII

(>12,500 lbs)
Mid-sized corporate jets and commuter airliners

Example Type: Cessna Citation II

A/BIII

Primarily large commuter-type aircraft

Example Type: De Havilland Dash 8

CI, DI

Primarily small and fast corporate jets

Example Type: Lear Jet 36

C/DII

Large corporate jets and regional-type commuter jets

Example Type: Gulfstream IV

C/DIII

Commercial airliners (approx. 100-200 seats)

Example Type: Boeing 737

C/DIV

Large commercial airliners (approx. 200-350 seats)

Example Type: Boeing 767

DV

Jumbo commercial airliners (approx. 350+ seats)

Example Type: Boeing 747

FIGURE 3-1 AIRPORT REFERENCE CODE

To ensure that all airport facilities are designed to accommodate the expected air traffic and to meet FAA criteria, the specific ARC for the airport must be determined. In order to designate a specific ARC for an airport, aircraft in that ARC should perform a minimum of 500 annual itinerant operations. The predominant aircraft currently using the San Carlos Apache Airport have an ARC of A-I, B-I and B-II although historically there were numerous C-I and C-II aircraft. Airport users and fleet mix were discussed in Chapter 2. Examples of aircraft with an ARC of A-I and B-I are listed in Table 3-2. Examples of aircraft with an ARC of A-II and B-II are listed in Table 3-3. These are the types of aircraft expected to utilize the airport in the short, medium and long-term time frames. A small number of operations by C-I and C-II aircraft occur at San Carlos given the available runway length and the existing non-precision instrument approach. Examples of aircraft with an ARC of C-II and D-II are listed in Table 3-4.

San Carlos Apache Airport is currently configured to accommodate C-II aircraft up to 60,000 pounds Dual Wheel Gear (DWG). With the re-enabling of the non-precision GPS approach and the re-establishment of an FBO and fuel services, it is expected that larger aircraft (i.e. C-II or D-II) will return to the airport.

TABLE 3-2 EXAMPLE AIRCRAFT HAVING AN ARC OF A-I OR B-I

Aircraft	Approach Speed (knots)	Wingspan (feet)	Tail Height (feet)	Max T.O. Weight (pounds)
Beech Baron 58P	101	37.8	9.1	6,200
Beech Bonanza V35B	70	33.5	6.6	3,400
Beech King Air B100	111	45.9	15.3	11,799
Cessna 150	55	33.3	8.0	1,670
Cessna 172	60	36	9.8	2,200
Cessna 177	64	35.5	8.5	2,500
Cessna 182	64	36	9.2	2,950
Cessna 340	92	38.1	12.2	5,990
Cessna 414	94	44.1	11.5	6,750
Cessna Citation I	108	47.1	14.3	11,850
Gates Learjet 28/29	120	42.2	12.3	15,000
Mitsubishi MU-2	119	39.1	13.8	10,800
Piper Archer II	86	35	7.4	2,500
Piper Cheyenne	110	47.6	17.0	12,050
Rockwell Sabre 40	120	44.4	16.0	18,650
Swearingen Merlin	105	46.3	16.7	12,500
Raytheon Beechjet	105	43.5	13.9	16,100
Eclipse 500 Jet	90	37.9	13.5	5,920

Source: FAA AC 150/5300-13, Airport Design

TABLE 3-3 EXAMPLE AIRCRAFT HAVING AN ARC OF A-II OR B-II

Aircraft	Approach Speed (knots)	Wingspan (feet)	Tail Height (feet)	Max T.O. Weight (pounds)
Air Tractor 802F	105	58	11.2	16,000
Beech King C90-1	100	50.3	14.2	9,650
Beech Super King Air B200	103	54.5	14.1	12,500
Cessna 441	100	49.3	13.1	9,925
Cessna Citation II	108	51.6	15.0	13,300
Cessna Citation III	114	50.6	16.8	17,000
Dassault Falcon 50	113	61.9	22.9	37,480
Dassault Falcon 200	114	53.5	17.4	30,650
Dassault Falcon 900	100	63.4	24.8	45,500
DHC-6 Twin Otter	75	65	19.5	12,500
Grumman Gulfstream I	113	78.5	23.0	35,100
Pilatus PC-12	85	52.3	14.0	9,920

Source: FAA AC 150/5300-13, Airport Design

TABLE 3-4 EXAMPLE AIRCRAFT HAVING AN ARC OF C-II OR D-II

Aircraft	Approach Speed (knots)	Wingspan (feet)	Tail Height (feet)	Max T.O. Weight (pounds)
Canadair CL-600	125	61.8	20.7	41,250
Gulfstream III	136	77.8	24.4	68,700
1329 JetStar	132	54.5	20.4	43,750
Sabre 80	128	50.4	17.3	24,500
Gulfstream II	141	68.8	24.5	65,300
Gulfstream IV	145	77.8	24.4	71,780
Rockwell 980	121	52.1	14.9	10,325
Cessna Citation 650	126	52.5	16.8	23,500
Cessna Citation 750 X	131	63.6	18.9	36,100
Astra 1125	126	52.5	18.1	23,500
Hawker 125-1000	130	61.9	17.1	36,000
Dassault Falcon 900 EX	126	63.5	24.2	48,300

Source: FAA AC 150/5300-13, Airport Design

AIRSIDE FACILITY REQUIREMENTS

The airside facilities of an airport are described as the runway configuration, the associated taxiway system, the ramp and aircraft parking area and any visual or electronic approach aids.

RUNWAY REQUIREMENTS

Annual Service Volume: The Annual Service Volume (ASV) is a calculated reasonable estimate of an airport's annual capacity; taking into account differences in runway utilization, weather conditions and aircraft mix that would be encountered in one year. When compared to the forecasts or existing operations of an airport, the ASV will give an indication of the adequacy of a facility in relationship to its activity level. The ASV is determined by reference to the charts contained in FAA Advisory Circular (AC) 150/5060-5, *Airport Capacity and Delay*.

The FAA Airport Design Program was used to calculate the ASV for a one-runway airport with the forecasted operation levels determined in Chapter 2. Annual Service Volume for the runway

configuration is 230,000 operations per year. Under these conditions, the existing runway facilities will adequately meet the demand within the planning period. Should the California Flight Academy establish operations at the airport the ASV would reach 60% with 138,600 forecast operations in 2026.

Runway Volume: With an Annual Service Volume (ASV) of 230,000, San Carlos Apache Airport with have an operations per hour maximum of 98 Visual Flight Rules (VFR) and 59 Instrument Flight Rules (IFR). Using the preferred forecast of operations, the airport will be at approximately 4% hourly capacity. In the event that the California Flight Academy was to base operations at the airport, the hourly demand will rise to approximately 78% hourly capacity. In the event the airport is operating in IFR conditions, the capacity will be exceeded if the California Flight Academy were to operate at full capacity during those times. It can be assumed that operations will decrease during IFR conditions.

Runway Length: FAA Advisory Circular 150/5325-4B, *Runway Length Requirements for Airport Design*, provides guidance for determining runway length requirements. Furthermore, the FAA has developed a computer software program entitled "Airport Design." The program provides the user with recommended runway lengths and other facilities on an airport according to FAA design standards. The information required to execute the program for recommended runway lengths, includes airfield elevation, mean maximum temperature of the hottest month and the effective gradient for the runway in feet. This specific information for the San Carlos Apache Airport that was used for the purposes of this portion of the study for Runway 9/27 is provided in Table 3-5.

TABLE 3-5 AIRPORT DESIGN PROGRAM DATA

Description	Data Input
Field Elevation	3,261' MSL
Mean Maximum Temperature of the Hottest Month	100.5° F
Effective Gradient in Feet	79.5 Feet

(Note: The actual difference in feet from runway end to runway end is required to run the FAA software program and is listed as the effective gradient. However, the effective gradient is usually shown as a percent.)

With this data, the Airport Design program provides several runway length recommendations for both small and large aircraft according to varying percentages of aircraft fleet and associated takeoff weights. A summary of the data provided by the program is listed in Table 3-6.

TABLE 3-6 RECOMMENDED RUNWAY LENGTH

Description	Runway Length
Existing Runway Length	6,500'
Recommended to accommodate:	
Small Aircraft (< 12,500 lbs)	
Less than 10 passenger seats	
75 percent of these small airplanes	3,860'
95 percent of these small airplanes	4,830'
100 percent of these small airplanes	5,260'
Small airplanes with 10 or more passenger seats	5,270'
Large Airplanes (>12,500 lbs and < 60,000 lbs)	
75 percent of these planes at 60 percent useful load	6,990'
75 percent of these planes at 90 percent useful load	9,550'
100 percent of these planes at 60 percent useful load	9,460'
100 percent of these airplanes at 90 percent useful load	11,760'

Using the results of the FAA's software program, it would be fair to suggest that the runway should have a minimum length of 6,990 feet. This would accommodate 75 percent of the large aircraft fleet with over 60 percent useful load. However, it is important to identify the runway length requirements for the specific aircraft that are expected to operate at the airport.

Aircraft performance charts were used to convert takeoff distance requirements of aircraft at sea level, 15° C and their maximum gross takeoff weight (MGTOW) to the takeoff distance required at the San Carlos Apache Airport. The takeoff distance requirements are approximations and are for planning purposes only.

Takeoff Distance Requirements: When determining runway length requirements for any airport it is necessary to consider the types of aircraft (aircraft design group and critical aircraft) that will be using the airport, their intended destination stage length and their respective takeoff distance requirements. Figure 3-2 gives examples of takeoff distance requirements for the aircraft currently using the San Carlos Apache Airport and aircraft that are anticipated to use the airport in the future. The information is based off the maximum gross takeoff weight of the aircraft using the mean maximum temperature of the hottest month.

Based on the required runway lengths for these categories of aircraft, the existing runway length of 6,500 feet provides adequate takeoff distance for the current fleet; however, as operations by larger aircraft increase an increased length to 8,500 feet is recommended.

Runway Strength and Width: Runway strength requirements are normally based upon the design aircraft that may be expected to use the airport on a regular basis. The existing strength of Runway 9/27 is 60,000 pounds Dual Wheel Gear (DWG). This strength is considered adequate for the planning period.

FAA design standards for runways serving aircraft having an ARC of C-II require a minimum runway width of 100 feet. The existing runway meets this standard. This width is considered adequate for the planning period.

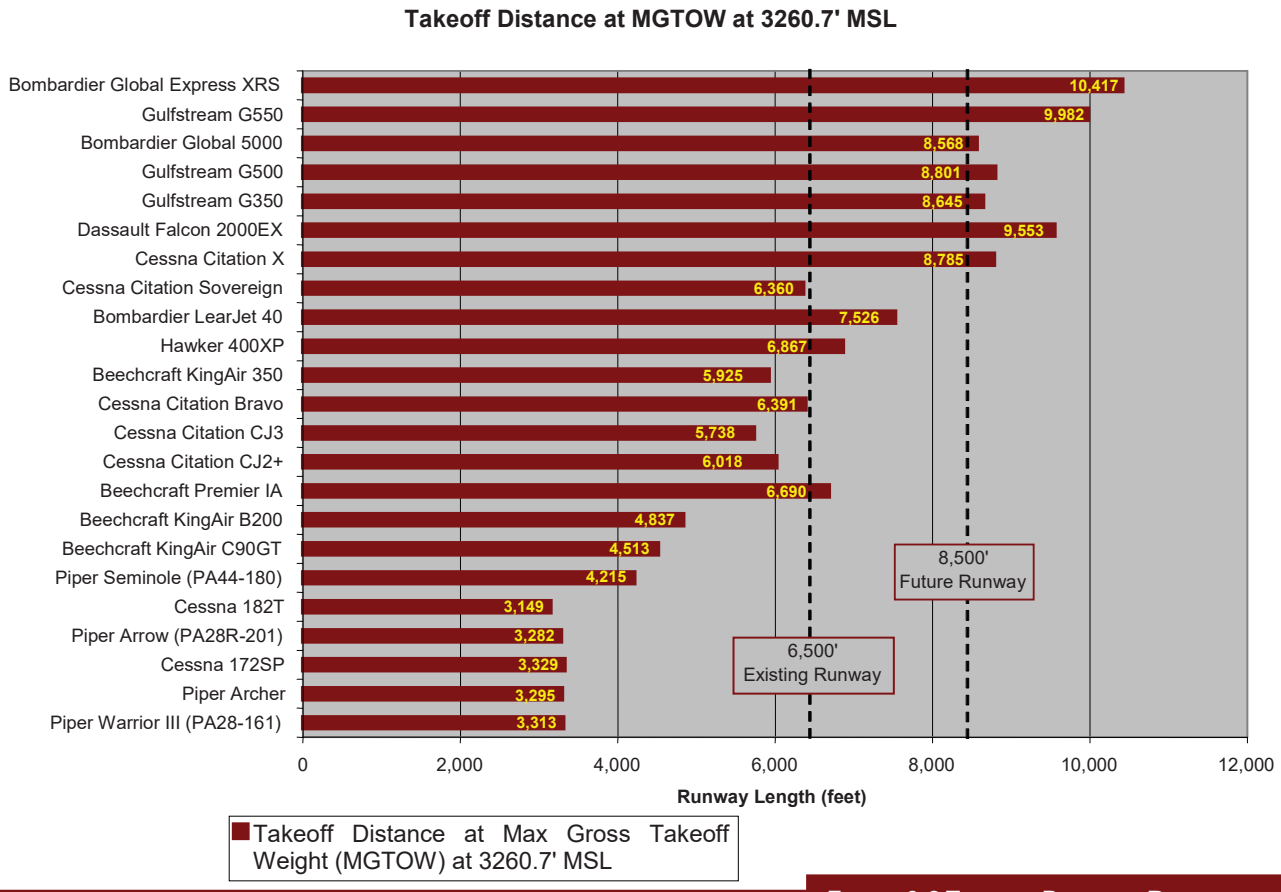


FIGURE 3-2 TAKEOFF DISTANCE REQUIREMENTS

CROSSWIND RUNWAY REQUIREMENTS

The FAA recommends that a runway's orientation provide at least 95 percent crosswind coverage. If the wind coverage of the runway does not meet this 95 percent minimum for the appropriate ARC, then a crosswind runway should be considered. Crosswind coverage for Runway 9/27 is 96.13 percent for a 10.5 knot crosswind, 98.28 percent for a 13.0 knot crosswind and 99.48 percent for a 16 knot crosswind; therefore there is no need for a crosswind runway to be constructed.

The wind study analysis described in Chapter 1 indicates that Runway 9/27 at the San Carlos Apache Airport meets the FAA standard of at least 95 percent combined crosswind coverage. The airport is currently installing an Automated Weather Observation System (AWOS), which will provide real time weather to pilots in the area.

RUNWAY INCURSIONS

There are currently no runway incursion mitigation measures in place at the San Carlos Apache Airport. Perimeter fencing and vehicle access gates are currently in place to minimize the potential for wildlife and vehicle incursions. Increasing the hold bar markings from 6" stripes to 12" stripes is recommended to minimize aircraft incursions. However, in accordance with AC 150/5340-1J, *Standard for Airport Markings,* 6" stripes are permitted for airports that do not have air traffic control towers and are not certificated under chapter 14 of the Code of Federal Regulations (CFR) Part 139.

TAXIWAY REQUIREMENTS

Length and Width: The primary function of a taxiway system is to provide access between runways and the terminal area. The taxiways should be located so that aircraft exiting the runway will have minimal interference with aircraft entering the runway or remaining in the traffic pattern. Taxiways expedite aircraft departures from the runway and increase operational safety and efficiency.

According to FAA Advisory Circular 150/5300-13, *Airport Design*, the minimum recommended runway to taxiway centerline separation for a runway with an ARC of C-II is 300 feet and the minimum recommended width of the taxiway is 35 feet. There is a full length parallel taxiway for Runway 9/27, Taxiway A, which is currently 35 feet wide and has 300 feet of separation from the runway. Taxiway A meets Group II standards and does not need to be widened.

Strength: The strength of the taxiway should be maintained at strength equal to that of the associated runway pavement. At this time, all surfaces at San Carlos Apache Airport have pavement strength of 60,000 lbs. Dual Wheel Gear (DWG). There is no need to strengthen any surfaces at the airport.

AIRCRAFT APRON

The apron space requirements as shown in this planning document were developed according to recommendations given in AC 150/5300-13, *Airport Design*. Consideration must be made in the overall apron requirements for aircraft parking and tiedown requirements, taxilanes, adjacent taxiways and proximity to all aircraft expected to use the airport, including turboprops and business jets.

All of the existing based aircraft which are airworthy are currently parked in hangars off of the east apron. Non-airworthy aircraft are currently parked on the east apron. The existing aprons at San Carlos Apache Airport are more than adequate to accommodate all transient and based aircraft as well as any helicopter traffic. There is no need for any apron expansion at this time. Figures 3-3, 3-4 and 3-5 depict all aprons available.

Tiedown Requirements: Aircraft tiedowns should be provided for those small and medium sized aircraft utilizing the airport. These aircraft risk being damaged or may cause damage or injury in sudden wind gusts if not properly secured. There are more then adequate tiedown locations for all aircraft using the airport. Tiedown requirements for the 20-year planning period are listed in Table 3-7. The current tiedown layout is based on Group II taxilane Obstacle Free Area's (OFAs). Typically large aircraft, including business jets, are not tied down and can usually be parked overtop multiple tiedowns. Tiedown areas have been constructed to accommodate larger aircraft without interfering with taxilane operation.

Apron Requirements: Generally speaking, an apron tiedown area should allow approximately 3,240 square feet per transient aircraft and 300 square yards per based aircraft. This square feet per aircraft provides adequate space for tiedowns, circulation and fuel truck movement. Table 3-7 shows the required amount of apron for this planning period. The San Carlos Apache Airport should not require any additional apron area for tiedowns within this planning period. Additional taxilanes are currently being constructed to allow for T-Hangars, Shade Hangars, and box hangars.

TABLE 3-7 FUTURE REQUIRED APRON FOR TIEDOWNS

	Based	Transient	Total
Number of Aircraft	20	4	24
Apron Required	6,000 S.Y.	1,440 S.Y.	7,440 S.Y.
Currently Available	19,075 S.Y.	15,733 S.Y.	34,808 S.Y.

FIGURE 3-3 HELICOPTER PARKING PAD

FIGURE 3-4 TRANSIENT AIRCRAFT APRON

FIGURE 3-5 BASED AIRCRAFT APRON

NAVIGATIONAL AIDS

A Navigational Aid (NAVAID) is any ground based visual or electronic device used to provide course or altitude information to pilots. NAVAIDs include Very High Omnidirectional Range (VORs), Very High Omnidirectional Range with Tactical Information (VOR-TACs), Non-directional Beacons (NDBs) and Tactical Air Navigational Aids (TACANs), as examples. There is no ground operational based NAVAIDs at the San Carlos Apache Airport and none are recommended.

APPROACH PROCEDURES

Non-precision Global Positioning System (GPS) approaches do not require ground-based facilities on or near the airport for navigation. The GPS receiver uses satellites for navigation. Therefore, it involves little or no cost for the Airport Sponsor. GPS was developed by the United States Department of Defense for military use and is now available for civilian use. GPS approaches are rapidly being commissioned at airports across the United States. Minimums as low as 350-foot ceilings and 1-mile visibility are typical for GPS approaches. Instrument approaches increase the utility of the airport by providing the capability to operate in inclement weather conditions. This is especially important for air medivac/air ambulance, physician transport and business flights. It is also useful for conducting training and maintaining instrument currency and proficiency requirements.

The existing approach procedure at the airport includes a non-precision instrument GPS approach to Runway 27. The minimums for this approach are 580-foot ceiling and 1-mile visibility. A future potential approach that should be considered is a GPS approach procedure with vertical guidance (LNAV/VNAV) using the Wide Area Augmentation System (WAAS). This approach could potentially provide instrument minimums as low as 300-foot ceilings and less than ¾-mile visibility; however a LNAV/VNAV approach with minimums less than 1-mile would increase the FAR Part 77 Primary Surface from 500 feet wide to 1,000 feet and increase the size of the Runway Protection Zone and require an approach lighting system. Obtaining

minimums less than ¾-mile would increase the required separation to 400 feet for C-II. Therefore, maintaining approach visibility minimums of 1-mile is recommended.

AIRFIELD LIGHTING, SIGNAGE, MARKING AND VISUAL AIDS

Airport lighting enhances safety during periods of inclement weather and nighttime operations by providing visual guidance to pilots in the air and on the ground. Lighting and visual aids can consist of a variety of equipment or a combination thereof as described in Chapter 1. The airport's existing inventory of lighting and visual aids includes two-box precision approach path indicators (PAPI-2), a rotating beacon, Medium Intensity Runway Lights (MIRLs), Runway End Identifier Lights (REILs), 8-light runway threshold lights, Non-precision Instrument (NPI) runway markings, a lighted segmented circle and Taxiway retro-reflectors. The majority of the airfield lighting and visual aids are in good condition and should be maintained in their present condition.

Runway 9/27 is currently marked as a Non-precision Instrument (NPI) runway at both ends and all markings are in good condition. The taxiway retro-reflectors should be upgraded to MITLs when traffic volume increases.

LANDSIDE FACILITY REQUIREMENTS

Landside facilities are another important aspect of the airport. Landside facilities serve as the processing interface between the surrounding community and the airport operating environment. Likewise, it offers the traveler the first impression of the airport and the local area. Landside facilities house the support infrastructure for airside operations and often generate substantial revenues for the airport.

TERMINAL BUILDING

The construction of a terminal building at any airport offers many amenities to passengers, local and transient pilots and airport management. Terminal buildings (often called pilot lounges at general aviation airports) most often house public restrooms, public telephones, a pilot's lounge and information regarding airport services. There is no longer an existing terminal building at San Carlos Apache Airport. The existing infrastructure that was used by Mace Aviation is no longer suitable for use. A new terminal building/FBO is recommended to increase based aircraft and operations in the future.

HANGAR FACILITIES

Hangars are typically classified as either T-hangars, small multi-unit storage complexes that usually accommodate one single engine aircraft in each unit, or conventional hangars, small to very large units which accommodate a variety of aircraft types or corporate fleets. The number of aircraft that each conventional hangar can hold varies according to the manufacturer and the specifications of the airport owner or operators. The existing hangars at the San Carlos Apache Airport include three privately owned box hangars and a 4 unit T-hangar. All existing hangar facilities are in poor condition. Figure 3-6 depicts some of the current hangar facilities.

Based Aircraft Hangar Requirements: Future facility requirements for based aircraft typically determine the number of tiedown locations, shaded spaces, T-hangars and conventional type hangars. There is a potential for demand of a multi-unit T-hangar. Development areas will be identified on the ALP for a mix of T-hangars, box hangars and larger corporate hangars. Two taxilanes are currently being constructed to accommodate an 8-unit nested T-hangar and three box hangars. In the event the California Flight Academy were to base operations at the San

Carlos Apache Airport, certain accommodations would need to be made for the Flight Academy to operate. Current Airside facilities are expected to be able to accommodate the Flight Academy's level of operation. Landside facilities planned may accommodate the Flight Academy, however, classroom facilities, lodging facilities, and restaurant facilities may need to be accommodated. Those facilities could be accommodated either on-airport or off-airport.

FIGURE 3-6 EXISTING HANGARS

Transient Aircraft Hangar Requirements: Transient single-engine aircraft operators generally do not require aircraft storage facilities unless there is inclement weather expected (such as hail or snow) or if the operator is planning an extended stay. Some higher performance single-engine and multi-engine aircraft operators may desire overnight aircraft storage or a heated hangar in the winter. Supplying aircraft storage for overnight transient aircraft could increase the airports revenue and attract more activity to the area. This could be provided in combination with a large FBO maintenance hangar.

General: The airport sponsor should consider providing long-term land leases to interested parties for the construction of aircraft storage hangars. Allowing the tenant to retain ownership of the hangar while leasing the ground reduces capital outlay requirements for the San Carlos Apache Airport and allows the Tribe to collect property taxes on the hangar and other improvements as well as providing motivation for the tenant to maintain the hangar in good condition to maximize resale value at the end of the lease period. Recent legislation has made aircraft hangars an eligible cost under the Airport Improvement Program (AIP). While this creates an opportunity for airport sponsors willing to build hangars to meet existing demand, hangars are considered a lower priority than other airside projects. The San Carlos Apache Airport should still consider applying for federal grants to construct needed hangars. The Tribe should also charge a standard annual monthly and overnight tiedown fee for use of the open apron.

AVIATION FUEL FACILITIES

Fuel is no longer available at the San Carlos Apache Airport. The previous FBO operator used to offer aviation fuel as well as other services. With the halt of operations of the FBO, the fuel service also came to an end. It is recommended that the airport supply fuel to all aircraft via a self service fuel system and/or an FBO operator supplying the service. In order to supply most current as well as predicted users, the airport should provide 100-Low Lead and Jet-A fuel.

AIRPORT ACCESS AND VEHICLE PARKING

The San Carlos Apache Airport is accessed via State Highway 70, which is a two lane, paved road. The airport entrance comes into the airport at the west apron (transient apron) as well as the east apron (based apron). Access to the airport is considered adequate for the entire planning period. Should development take place between the existing aprons, an access road should be constructed just south of the north fence.

FENCING

The San Carlos Apache Airport is currently fenced with a 6 foot chain link security fence. There are two vehicle access gates at both airport entrances. The primary purpose of this fencing is to restrict inadvertent access to the airport by wildlife and persons. Pursuant to the development of an FBO and/or eight or more hangars, an electronic gate with a key pad entry system should be installed.

AIRPORT RESCUE AND FIRE FIGHTING (ARFF) EQUIPMENT & STORAGE BUILDING

Airport Rescue and Fire Fighting (ARFF) equipment is not required at airports that do not serve scheduled passenger service with aircraft having 10 or more passenger seats. Local municipal or volunteer fire departments typically provide fire protection to general aviation airports in their district. Mutual aid agreements may also be provided for nearby fire departments to assist in emergency situations. In any case, procedures should be in place to ensure emergency response in case of an accident or emergency at the airport. Although statistically very safe, the likely emergency situations at general aviation airports are aircraft accidents, fuel or aircraft fire or hazardous material (fuel) spill. The level of protection recommended in FAA Advisory Circular 150/5210-6D, *Aircraft Fire and Rescue Facilities and Extinguisher Agents*, for small general aviation airports is 190 gallons of aqueous film forming foam (AFFF) supplemented with 300 pounds of dry chemical. Proximity suits should be utilized for fire fighter protection. Aviation rated fire extinguishers should be immediately available in the vicinity of the aircraft apron and fueling facilities. Adequate facilities should be provided to store any ARFF vehicle(s) or equipment that is acquired.

Currently, there are no aviation fire extinguishers available at the San Carlos Apache Airport. The San Carlos EMS Department has 12 personnel and five fire trucks; one ladder truck, two pumper trucks and two wild land fire trucks. Estimated response time to the airport is ten minutes. It is recommended that the San Carlos EMS Department meet the recommendations in FAA Advisory Circular 150/5210-6D. However, these are only recommendations as ARFF equipment is technically not required at the San Carlos Apache Airport.

SNOW REMOVAL EQUIPMENT

The Globe Highway department supplies snow removal for the airport. Due to the low frequency and amount (less than 1 inch per year) of snow in the area, the San Carlos Apache Airport is a low priority for snow removal. It is recommended that the airport acquire a rotary broom to clear the occasional snow in the winter and sweep the airfield pavements the rest of the year.

INFRASTRUCTURE NEEDS

UTILITIES

Available utilities at the airport have been designed and sized to meet the typical needs of a general aviation airport. The existing electrical power is a 480-volt single-phase line and the water is provided by an on airport well and waste water service is a septic tank provided by the

Tribe. A utility corridor is currently in place and runs on the north side of the apron areas. Power is provided by the Arizona Public Service and gas in the area is provided by Southwest Gas. Telephone service is provided by San Carlos Telecommunications. Water and sewer services are provided by the San Carlos Apache Tribe. The existing utilities are considered adequate for the planning period.

WEATHER REPORTING

There is currently no weather reporting service provided at the airport. An Automated Weather Observation System (AWOS-3) is currently being installed and will provide the necessary weather reporting services to pilots. AWOS uses various sensors, a voice synthesizer and a radio transmitter to provide real-time weather data. There are four types of AWOS. An AWOS-A only reports altimeter setting while an AWOS-1 also measures and reports wind speed, direction, gusts, temperature and dew point. AWOS-2 provides visibility information in addition to everything reported by an AWOS-1. The most capable system, the AWOS-3 also includes cloud and ceiling data. The AWOS transmits over a VHF frequency or the voice portion of a NAVAID. The transmission can be received within 25 nautical miles of the site. The frequencies for AWOS are published on Aeronautical charts as well as in the airport facilities directories. The AWOS can also be connected to the telephone therefore allowing transient pilots to check current weather conditions at the airport before departure. It will also provide the National Oceanic and Atmospheric Administration (NOAA) with weather updated for the area. The AWOS-3 is anticipated to be completed by November 30, 2006.

LAND USE COMPATIBILITY AND CONTROL

AIRPORT PROPERTY

The existing airport property line encompasses 309.7 acres and includes the Runway Protection Zones (RPZ). The property ownership is considered adequate for the planning period.

COMPATIBILITY WITH STATE/REGIONAL PLANS

The Master Plan for the San Carlos Apache Airport will conform to all additional state and regional transportation plans. There is not a current ADOT Transportation Profile underway for the area. According to the ADOT Transportation Planning Division, San Carlos/Globe is included in the Gila Valley Study Area of the Regional Transportation Profile. The Gila Valley Study Area is scheduled to be studied in FY 2007.

ZONING

The San Carlos Apache Tribe owns and controls all land and land uses on the Reservation. As such, all development proposals must be approved by the tribe. Therefore, the formal adoption of zoning is not a necessity provided that the Tribe adheres to the height restriction and compatible land use standards provided in this Master Plan.

Height Restriction Zoning

Development around airports can pose certain hazards to air navigation if appropriate steps are not taken to ensure that buildings and other structures do not penetrate the FAR Part 77 Airspace Surfaces (described in the following section). The FAA therefore recommends that all Airport Sponsors implement height restrictions in the vicinity of the airport to protect these Part 77 Surfaces. A draft height restriction overlay zoning ordinance will be prepared as part of this Master Plan project.

Compatible Land Use Zoning

In addition to ensuring that obstructions to Part 77 Surfaces are avoided or appropriately marked and lighted, it is recommended that the Airport Sponsor make reasonable efforts to prevent incompatible land uses within the immediate area of the airport. For example, the FAA states in FAA Advisory Circular 150/5200-33A, *Hazardous Wildlife Attractants: On or Near Airports,* that landfills and/or transfer stations are incompatible land uses with airports. Therefore, these types of facilities should be located at least 5,000 feet from any point on a runway that serves piston type aircraft and 10,000 feet from any point on a runway that serves turbine type aircraft. Furthermore, any facility which may attract wildlife (especially birds) such as sewage treatment ponds and wastewater treatment plants should also be located this same distance from any point on the runway. Development proposals should also be reviewed to ensure compatibility in the vicinity of the airport. A draft compatible land use zoning ordinance will be prepared as part of this Master Plan project.

STATE OF ARIZONA LAND USE PLANNING

Arizona State Statues 28-8485 and 28-8486 require that airport sponsors develop Airport Influence Area (AIA) maps and airport disclosure maps. These documents will be prepared as part of the Airport Layout Plan portion of this study and will be sent to the Arizona Real Estate Department.

AIRPORT MANAGEMENT STRUCTURE

The San Carlos Apache Airport is the responsibility of the San Carlos Apache Tribal Planner who reports to the San Carlos Apache Tribal Council. This management structure is considered adequate for the safe and efficient operation of the San Carlos Apache Airport.

An Alternative to this structure would be to manage and operate the airport as an enterprise under the Apache Gold Casino oversight. This alternative would enhance the marketing efforts of the airport and provide a business approach towards developing lease agreements and attracting airport businesses and tenants.

A third option would be to continue with the existing airport management structure, but establish a cooperative effort with the Casino to include the airport in its marketing efforts.

In order to aid the San Carlos Apache Airport in the daily operation of the airport, an Airport Standards Manual will be prepared and include minimum standards, rules and regulations, statements of rates and charges, standard lease agreements, an emergency plan with a crash/rescue grid map, airport self inspection procedures and an airport security plan. There is currently no runway incursion program. Although a formal runway incursion plan is not deemed necessary, the perimeter fencing, access control gate, lighted signage and enhanced hold bar markings contribute towards incursion minimization.

SUMMARY OF FACILITY REQUIREMENTS

In summary, the facility requirements for the San Carlos Apache Airport are based on the types and volume of aircraft expected to use the airport in the short and long-term timeframes. These facilities will enable the airport to serve its users in a safe and efficient manner. The recommended airside and landside facilities are summarized in Table 3-8.

TABLE 3-8 SUMMARY OF AIRPORT FACILITY REQUIREMENTS

Facility	Existing	Recommended
Runways		
9/27		
Length (feet)	6,500'	8,500'
Width (feet)	100'	100'
Strength (pounds)	60,000 DWG	60,000 DWG
Markings		
Runway 9	Non-precision Instrument	Non-precision Instrument
Runway 27	Non-precision Instrument	Non-precision Instrument
Taxiways		
Parallel	Yes	Yes
Bypass Taxiways	Yes	Yes
Width (feet)	35'	35'
Strength (pounds)	60,000 DWG	60,000 DWG
Apron		
Tiedowns	53	53
NAVAID		
Approaches	GPS	GPS
Lighting & Visual Aids		
Runway Edge	MIRL	MIRL
Taxiway/Apron Edge	Retro-reflectors	MITL
Threshold Lights	Yes	Yes (8 at each end)
REILs	Yes	Yes
Approach Slope Indicator	PAPI-2	PAPI-2
Segmented Circle/Wind Cone	Yes	Yes
Rotating Beacon	Yes	Yes
Approach Lighting System	No	No
Access & Parking		
Automobile	25	40*
Hangar Facility		
T-Hangars	-	1 8-unit
Conventional - Small	2	6
Conventional - Medium/Large	1	5
Fuel Storage		
100-LL (gallons)	0	10,000 Gallons
Jet-A (gallons)	0	10,000 Gallons
Fuel Service	None	FBO/24-hours AvGas and Jet A as required
Other		
AWOS	None	Yes (AWOS-3)
Unicom	None	Automated

* As required per demand.

FEDERAL AVIATION REGULATION (FAR) PART 77 AIRSPACE SURFACES

Federal Aviation Regulation (FAR) Part 77 establishes several Imaginary Surfaces that are used as a guide to provide a safe, unobstructed operating environment for aviation. These surfaces, which are typical for civilian airports, are shown in Figure 3-7. The Primary, Approach, Transitional, Horizontal and Conical Surfaces identified in FAR Part 77 are applied to each runway. For the purpose of this section, a visual/utility runway is a runway that is intended to be used by propeller driven aircraft of 12,500 pounds maximum gross weight and less. A non-precision instrument/utility runway is a runway that is intended to be used by aircraft of 12,500 pounds maximum gross weight and less with a straight-in instrument approach procedure and instrument designation indicated on an FAA approved airport layout plan, a military service approved military airport layout plan or by any planning document submitted to the FAA by competent authority. A non-precision instrument/larger-than-utility runway is a runway intended for the operation of aircraft weighing more than 12,500 pounds that also has a straight-in instrument approach procedure.

As described previously, the San Carlos Apache Airport currently has a non-precision instrument approach to Runway 27 and visual approach to Runway 9. Runway 9/27 is considered a larger than utility runway since the pavement strength is greater than 12,500 pounds. The FAR Part 77 Airspace Surfaces for these classifications are described in the following paragraphs. While it is desirable to eliminate penetrations of FAR Part 77 airspace surfaces, in some cases, penetrations (also known as obstructions) may be mitigated with appropriate marking and/or lighting. The surfaces are described below and the dimensions are listed in Table 3-9.

PRIMARY SURFACE

The Primary Surface is an imaginary surface of specific width longitudinally centered on a runway. Primary Surfaces extend 200 feet beyond each end of the paved surface of runways, but do not extend past the end of non-paved runways. The elevation of any point on the Primary Surface is the same as the elevation of the nearest point on the runway centerline. The width of the Primary Surface varies from 250, 500 or 1,000 feet depending on the type of approach and approach visibility minimums.

The current primary surface width for Runway 9/27 is 500 feet. This would increase to 1,000 feet if the approach minimums were lowered to ¾-mile resulting in primary and transitional surface penetrations.

APPROACH SURFACE

The Approach Surface is a surface longitudinally centered on the extended runway centerline and extending outward and upward from each end of the Primary Surface. An Approach Surface is applied to each end of the runway based upon the type of approach available or planned for that runway, 20:1, 34:1 or 50:1. The inner edge of the surface is the same width as the Primary Surface. It expands uniformly to a width corresponding to the FAR Part 77 runway classification criteria. A Class D Obstruction Survey was accomplished in accordance with FAA Standard 405, *Standard for Aeronautical Surveys and Related Products*. The resulting Obstruction Chart and Obstruction Data Sheet are included in Appendix C.

TRANSITIONAL SURFACE

The Transitional Surfaces extend outward and upward at right angles to the runway centerlines from the sides of the Primary and Approach Surfaces at a slope of 7:1 and end at the Horizontal Surface.

HORIZONTAL SURFACE

The Horizontal Surface is considered necessary for the safe and efficient operation of aircraft in the vicinity of an airport. As specified in FAR Part 77, the Horizontal Surface is a horizontal plane 150 feet above the established airport elevation. The airport elevation is defined as the highest point of an airport's useable runways, measured in feet above mean sea level. The perimeter is constructed by arcs of specified radius from the center of each end of the Primary Surface of each runway. The radius of each arc is 5,000 feet for runways designated as utility or visual and 10,000 feet for all other runways.

CONICAL SURFACE

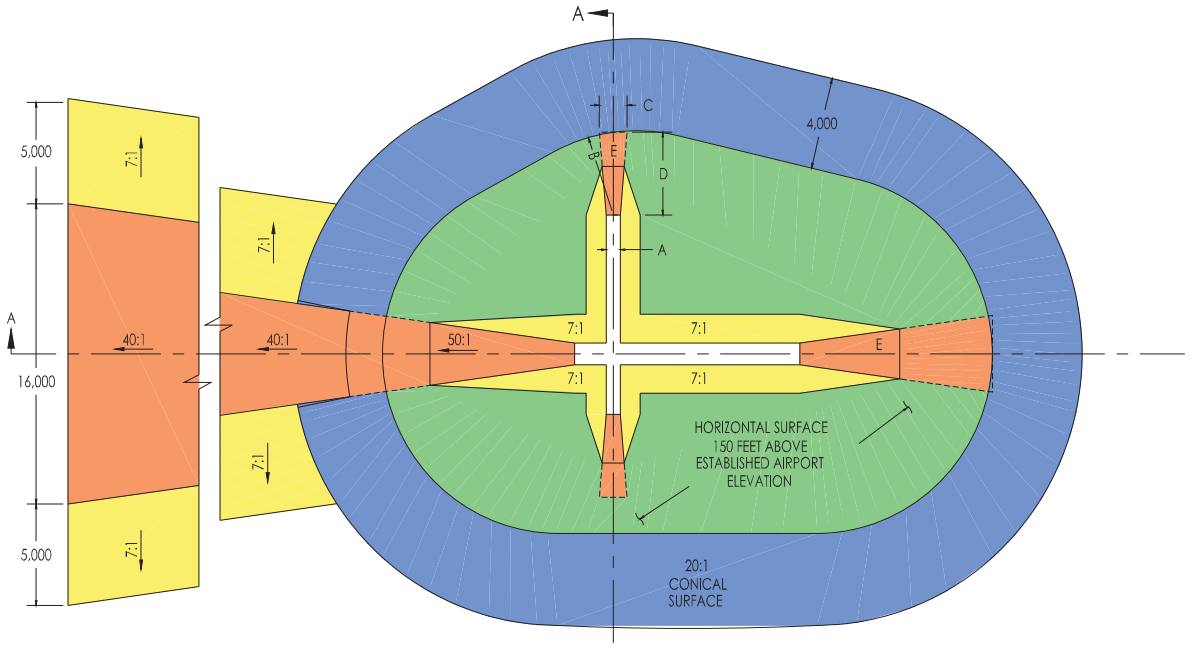
The Conical Surface extends outward and upward from the periphery of the Horizontal Surface at a slope of 20:1 for a horizontal distance of 4,000 feet.

SUMMARY OF DESIGN STANDARDS

Table 3-9 summarizes the FAA design standards (described in Chapter 1) for the recommended airport facilities.

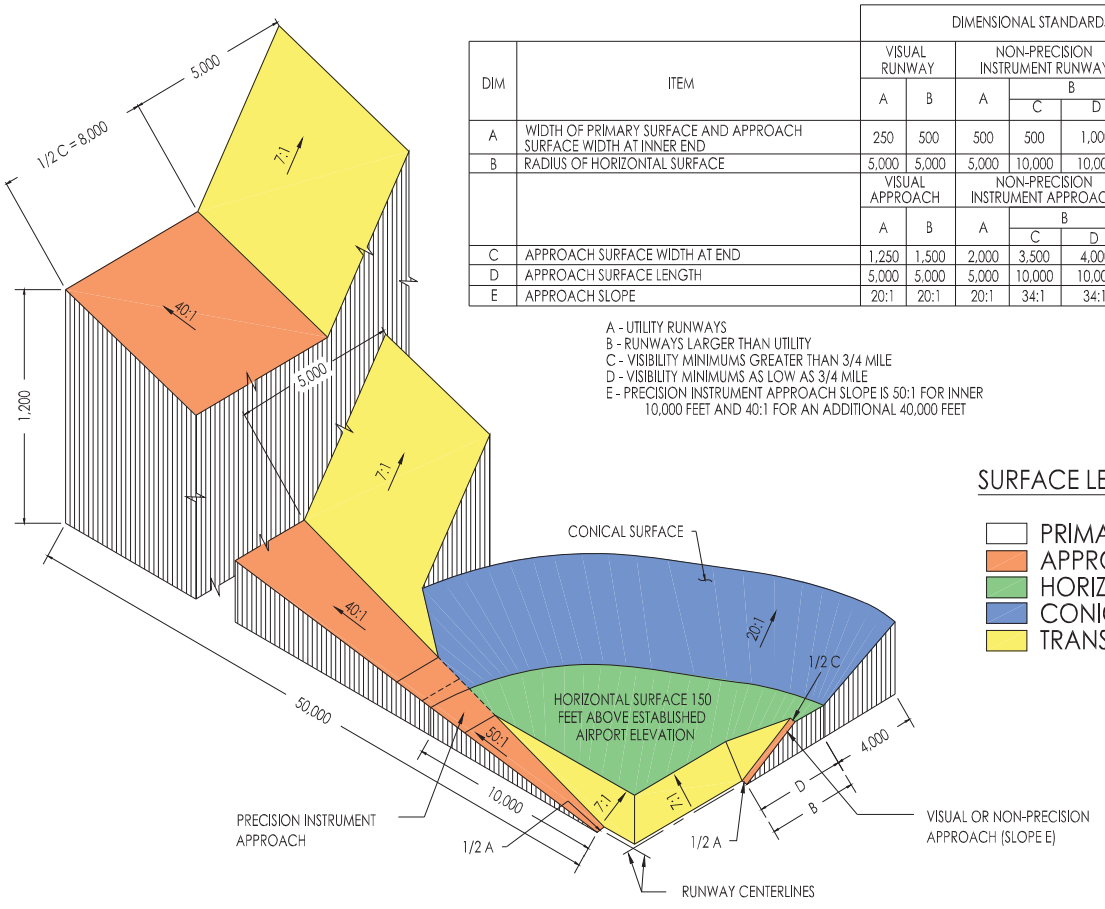
TABLE 3-9 SUMMARY OF DIMENSIONAL CRITERIA

Design Criteria	Existing	Future
Airport Reference Code	C-II	C-II
Approach Type	NPI > Utility, 1-Mile Visibility Minimums	NPI > Utility, 1-Mile Visibility Minimums
FAA Airport Design Standards (AC 150/5300-13 Change 10)		
Runway Centerline to:		
Parallel Taxiway Centerline	300'	300'
Edge of Aircraft Parking Apron	400'	400'
Aircraft Hold Lines	250'	250'
Runway Width	100'	100'
Runway Shoulder Width	10'	10'
Runway Safety Area Width	400'	400'
Runway Safety Area Length beyond Runway End	1,000'	1,000'
Runway Object Free Area Width	800'	800'
Runway Object Free Area beyond Runway End	1,000'	1,000'
Runway Obstacle Free Zone Width	400'	400'
Runway Obstacle Free Zone Length beyond Runway End	200'	200'
Runway Protection Zone	500' x 1,700' x 1,010'	500' x 1,700' x 1,010'
Taxiway Width	35'	35'
Taxiway Safety Area Width	79'	79'
Taxiway Object Free Area Width	131'	131'
Taxilane Object Free Area Width	115'	115'
Primary Surface Width	500'	500'
Primary Surface Length beyond Runway Ends	200'	200'
Approach Surface Dimensions Rwy 9	500' x 1,500' x 5,000'	500' x 1,500' x 5,000'
Approach Surface Dimensions Rwy 27	500' x 3,500' x 10,000'	500' x 3,500' x 10,000'
Approach Surface Slope Rwy 9	20:1	20:1
Approach Surface Slope Rwy 27	34:1	34:1
Transitional Surface Slope	7:1	7:1
Horizontal Surface Radius from:		
Runway 9	5,000'	5,000'
Runway 27	10,000'	10,000'
Conical Surface Width	4,000'	4,000'



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

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



SURFACE LEGEND

- PRIMARY
- APPROACH
- HORIZONTAL
- CONICAL
- TRANSITIONAL

ISOMETRIC VIEW OF SECTION A-A

FIGURE 3-7 FAR PART 77 AIRSPACE

San Carlos Apache Airport

Chapter Four
Development Alternatives

INTRODUCTION

The preceding discussion of facility needs provides the basis for formulating project development concepts. Chapter Three provided recommended development for the majority of needs for the airport. This chapter will focus on the logical projects the sponsor should consider for the existing and future configuration of the airport.

DEVELOPMENT CONCEPTS

The overall objective of the alternatives analysis is to (1) review the facility requirements that have been determined necessary to safely and efficiently accomodate aviation demand over the future 20-year period; and (2) through investigation of available projects and options (where applicable) determine the best way to implement the facility requirements as determined in Chapter Three of this report.

In some situations, various alternatives exist for implementing facility requirements. In other cases, the selection of a favored project can result from a straightforward and logical discussion of the options at hand. After reviewing the current conditions, the future development options and recommendations are based on a logical discussion of where and how they can best be planned. This alternatives analysis discusses recommendations for implementing facility requirements as determined in Chapter Three of this report.

TABLE 4-1 DEVELOPMENT PROJECTS

Project	Description
1	Install Self Serve Fuel Systems (AvGas & Jet A)
2	Construct GA Terminal/Pilot Lounge
3	Construct Access Road and Vehicle Parking
4	Construct Taxilanes
5	Relocate Lighted Wind Cone and Segmented Circle
6	Install Area Lighting (Security Lighting)
7	Electronic Gate's and Key Pad's
8	Snow Removal Equipment and Storage Building
9	Runway and Parallel Taxiway Extension with Bypass Taxiway
10	Medium Intensity Taxiway Lights

DEVELOPMENT PROJECTS

Airside development is the most critical factor in airport development planning. Airside facilities are those supporting aircraft movement and parking. Landside facilities generally support aircraft after they exit the airside area and consist of a system of hangars, fuel systems and automobile parking areas. Recommended development projects for the San Carlos Apache Airport are found in Table 4-1. Each project is depicted graphically at the end of this chapter.

Project 1: Install Self Serve Fuel System (AvGas & Jet-A): This project will promote operations at the airport and increase based aircraft. It will also increase the airport's revenue which will in turn help fund other projects.

Project 2: Construct GA Terminal/Pilot Lounge/Transient Aircraft Hangar: This project will increase the airport's operational efficiency and safety as well as provide transient and based aircraft operators with a central location for local information. It will also help to promote the airport and increase operations and based aircraft. One option for this project would include

constructing a full service facility with approximately 10,000 square feet (s.f.) of transient aircraft hangar space and 5,000 s.f. of office, pilot service, administration, and meeting facilities at a cost of approximately $2.5 million. Another option would be to provide a basic 1,500 to 2,500 s.f. pilot service facility at a cost of approximately $400,000. Because of budget constraints and FAA funding limitations, the second option is recommended initially using FAA non-primary entitlement funds and the first option is recommended at a time when an FBO operator and/or private or local funding is obtained.

Project 3: Construct Access Road and Vehicle Parking. This project will construct an access roadway and vehicle parking for the future hangar development at mid-field. The roadway will be constructed on the north side of future hangars parallel to the fence line. Vehicle parking will also be constructed along the north side of the hangars.

Project 4: Taxilane Construction. This project will be the construction of parallel taxilanes perpendicular to Taxiway A between the existing aprons at approximately mid-field. The east taxilane will be approximately 313' in length and 25' wide to accommodate Group I aircraft. The west taxilane will be approximately 318' in length and 35' wide to accommodate Group II aircraft. The taxilanes will serve future aircraft hangar development and provide users with areas for future facilities.

Project 5: Relocate Lighted Wind Cone and Segmented Circle. This project will relocate the existing lighted wind cone and segmented circle which is located mid-field to a location which will not interfere with further expansion of landside facilities. A location will be chosen that will allow the wind cone and segmented circle to be the most visible from the surface as well as aircraft over flying the field.

Project 6: Install Area Lighting (Security Lighting). This project will take place on all aprons with a purpose to light all parking areas and create a safer operating area. Some lighting infrastructure already exists at the airport; however, it is currently not operational. Repairing and constructing lighting for these areas will be necessary.

Project 7: Electronic Gates and Key Pads. This project will construct approximately four access gates with electronic key pads to allow access to hangar areas and aprons. This project will create a safer and more secure operating environment for all users.

Project 8: Snow Removal Equipment Storage Building. This project will construct a snow removal equipment storage building on the east side of the terminal area directly east of the helicopter parking pads. This project will take place following the acquisition of snow removal equipment when funding becomes available.

Project 9: Runway and Parallel Taxiway Extension. This project will take place once demand has increased to a level requiring greater runway length. The runway and parallel taxiway will be extended 2,000 feet to the west extending the runway from 6,500 feet in length to a future length of 8,500 feet. This will allow the airport to accommodate large size business jet traffic as well as allowing medium and light business jet traffic to operate at maximum gross takeoff weight.

Project 10: Medium Intensity Taxiway Lights. This project will take place along all taxiways. Medium Intensity Taxiway Lights (MITLs) will be installed to create a safer and more efficient operating environment for night operations.

TABLE 4-2 ESTIMATED COSTS FOR DEVELOPMENT PROJECTS

Description	Estimated Cost
Project 1: Install Self Serve Fuel System (AvGas & Jet A)	$316,000
Project 2: Construct GA Terminal/Pilot Lounge	$400,000
Project 3: Construct Access Road and Vehicle Parking	$110,000
Project 4: Taxilane Construction	$485,000
Project 5: Relocate Lighted Wind Cone and Segmented Circle	$10,000
Project 6: Install Area Lighting (Security Lighting)	$289,000
Project 7: Electronic Gates and Key Pads	$120,000
Project 8: Snow Removal Equipment Storage Building	$480,000
Project 9: Runway and Parallel Taxiway Extension	$2,040,000
Project 10: Medium Intensity Taxiway Lights	$370,000
Total Costs for All Development Projects	$4,620,000

All costs are estimated in 2006 dollars

Costs do not reflect Tribal Taxes or Administrative Fees

ESTIMATED COSTS FOR PROPOSED DEVELOPMENT PROJECTS

Specific costs have been estimated for the proposed development projects. All costs are estimated and are based on current year dollars. These costs are not considered the full Airport Capital Improvement Plan (ACIP), which will be discussed later in this study, and do not include airport maintenance or operational costs. Costs are reflected in Table 4-2.

ACCOMMODATION OF AVIATION DEMAND LEVELS

Each development project would meet the FAA safety and design standards for an Airport Reference Code of C-II. This will allow the airport to accommodate the current and projected type of aircraft that use the airport.

AIRSIDE OPERATIONAL CONSIDERATIONS

Each project would provide adequate runway length and an object free area clear of obstructions for aircraft. The extension of the Runway and Parallel Taxiway will enhance safety and efficiency at the airport by increasing the available runway length. Most projects will take place in and around the apron areas and will not impact the airside facilities. The configuration of the future hangar area was created based on clearance criteria for the runway, taxiway and AWOS as well as allowing for drainage to flow un-obstructed.

AIRSPACE IMPACTS

There will be no major airspace impacts from the projects listed. Project 7, Runway and Taxiway extension, is the only project which will affect the airspace by elongating the conical and horizontal surfaces. The Approach surface will also move with the runway. Airspace surfaces are summarized in Table 4-3. No significant impacts are expected with regard to airspace, although there are numerous Military Operating Areas (MOAs) and Low Level Training Routes in the area. Pilots should be vigilant in visual scanning for other aircraft in these areas.

Should the California Flight Academy, or another large flight school, locate at the airport, consultation and coordination with the Airspace Manager at Luke Air Force Base is essential to eliminate conflicts between military low level training routes,military operating area's (MOA's), designated flight school training areas and arrival and departure routes.

TABLE 4-3 PART 77 AIRSPACE SURFACES

	Existing		Future	
Surface	Rwy 9	Rwy 27	Rwy 9	Rwy 27
Primary Surface Width	500'	500'	500'	500'
Primary Surface Length Beyond Runway Ends	200'	200'	200'	200'
Approach Surface Dimensions	500' x 1,500' x 5,000'	500' x 3,500' x 10,000'	500' x 1,500' x 5,000'	500' x 3,500' x 10,000'
Approach Surface Slope	20:1	34:1	20:1	34:1
Transitional Surface Slope	7:1	7:1	7:1	7:1

ENVIRONMENTAL IMPACTS

The Development Projects will likely cause short-term construction impacts, including mitigatable impacts to air quality and water quality. No project is expected to cause significant environmental impacts based on the Federal Aviation Administration's Order 5050.4B, the Airport Environmental Handbook or FAA Order 1050.1E. All projects will be completed within airport property and within areas previously disturbed. Project 7, runway and parallel taxiway extension, is the only project which will not be located near the terminal area. Excavation and grading have been completed for the area of proposed development. Environmental impact categories and potential impacts are further evaluated in Chapter Six.

DEVELOPMENT COSTS

Estimated development costs for each project are depicted in Table 4-2. Costs are primarily related to construction, engineering and administration.

Phasing is recommended to accommodate budgetary constraints. In addition, phasing should mirror, to the extent practical, the requirements of users at the airport by phasing according to known and forecast operations referenced in Chapter Two. Estimated development costs are included, along with pavement maintenance and other capital projects, in the Capital Improvement Program (CIP) in Chapter Seven.

Certain airport projects are eligible to receive federal funding to assist the local government in completing the project. Projects 1 and 2, stated above, are eligible for federal funding according to FAA Order 5100.38C, *Airport Improvement Program (AIP) Handbook,* and Vision 100 Title 1, Subtitle C, Section 149, *Federal Funding for Hangar Development,* but may be too low a priority to be funded.

OTHER ALTERNATIVES CONSIDERED

PROVIDE SERVICE FROM ANOTHER AIRPORT IN THE REGION

The San Carlos Apache Airport was constructed primarily to serve general aviation interests and business needs of San Carlos, Globe and the surrounding region. The alternative of providing services from another airport is considered impractical due to the lack of another airport close enough to San Carlos which possesses adequate facilities to meet the aviation demands of the area. The nearest airports providing facilities to accommodate the aircraft activity that has taken place and is forecast to take place at the San Carlos Apache Airport are located 70 highway miles southeast at Safford and 75 highway miles southwest at Coolidge. Neither airport would serve the aviation needs of San Carlos or Globe. Providing service from another airport would not be economical or feasible. Service from these locations would result in increased time, energy and additional travel expense to aviation users that would otherwise be unnecessary. This alternative ignores the existing goal of providing safe and efficient service to the San Carlos and Globe Communities.

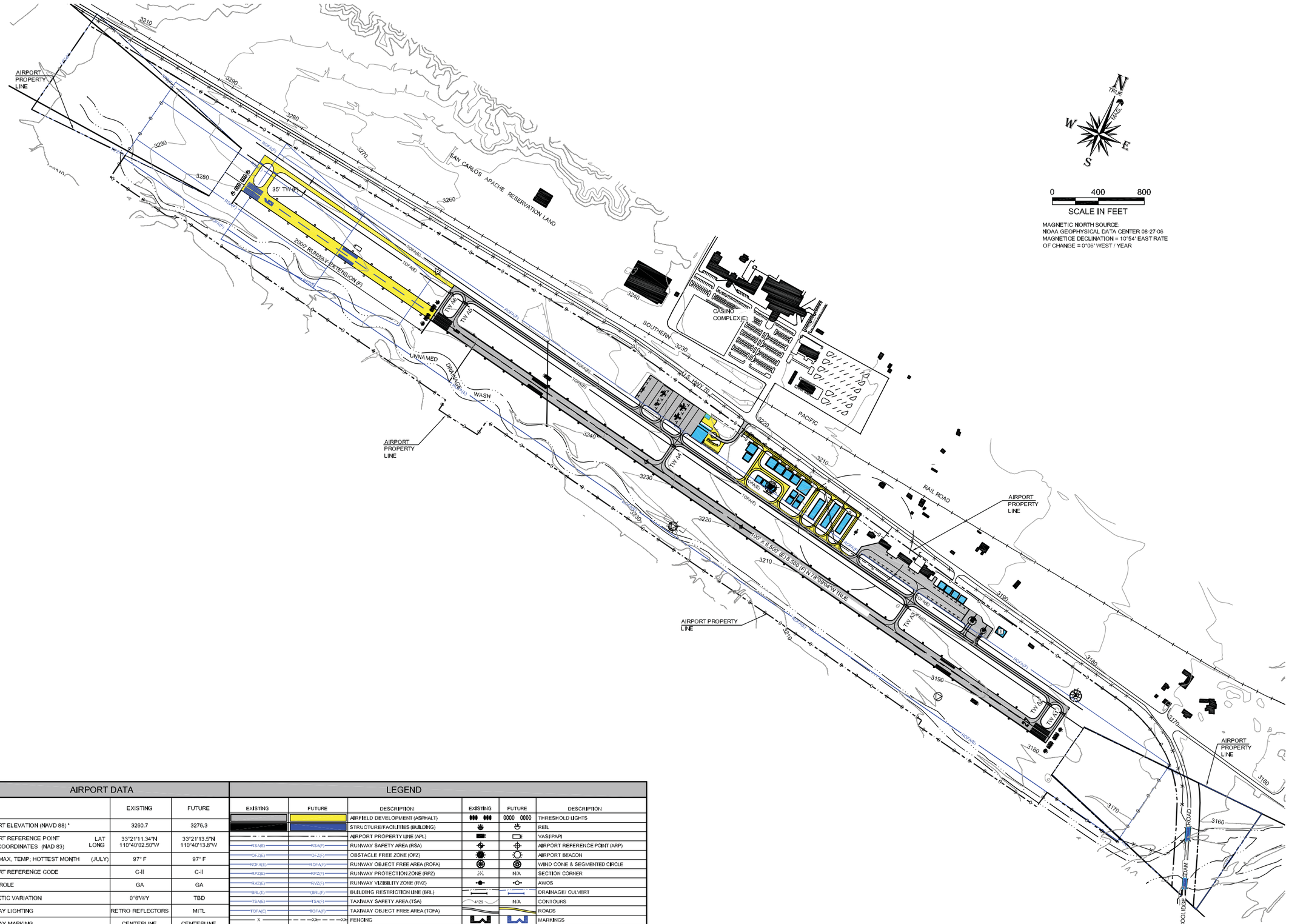
NO ACTION ALTERNATIVE

The no action alternative would leave the airport in its current condition. This alternative does not meet the objectives of accommodating future aviation demand including the possibility of attracting a Fixed Base Operator and providing fuel service.

CONCLUSIONS AND RECOMMENDATIONS

A Planning Advisory Committee (PAC) meeting was will be held in San Carlos to discuss these recommended development projects. The Tribe indicated their highest priorities were safety, including the installation of the AWOS, and completing the fueling and pilot lounge (general aviation terminal) projects to enhance the services and revenues generated at the airport.

These projects will accommodate existing and forecast traffic utilizing the airport by providing increased safety, providing adequate landside space and an increased runway length at the airport. Each project meets the required criteria for accommodation of existing and expected aviation demand. An environmental overview of the proposed projects is included in Chapter Six.



AIRPORT DATA

	EXISTING	FUTURE
AIRPORT ELEVATION (NAVD 88) *	3260.7	3276.3
AIRPORT REFERENCE POINT (ARP) COORDINATES (NAD 83) LAT LONG	33°21'11.34"N 110°40'02.50"W	33°21'13.5"N 110°40'13.8"W
MEAN MAX. TEMP: HOTTEST MONTH (JULY)	97° F	97° F
AIRPORT REFERENCE CODE	C-II	C-II
NPIAS ROLE	GA	GA
MAGNETIC VARIATION	0°6'W/Y	TBD
TAXIWAY LIGHTING	RETRO REFLECTORS	MITL
TAXIWAY MARKING	CENTERLINE	CENTERLINE
AIRPORT & TERMINAL NAVAIDS	GPS / PAPI/ REILs	GPS / PAPI/ REILs

LEGEND

EXISTING	FUTURE	DESCRIPTION	EXISTING	FUTURE	DESCRIPTION
▒	🟨	AIRFIELD DEVELOPMENT (ASPHALT)	●●● ●●●	0000 0000	THRESHOLD LIGHTS
■	🟦	STRUCTURE/FACILITIES (BUILDING)			REIL
— - · —	— - · · —	AIRPORT PROPERTY LINE (APL)	■	□	VASI/PAPI
RSA(E)	RSA(F)	RUNWAY SAFETY AREA (RSA)	⊕	⊕	AIRPORT REFERENCE POINT (ARP)
OFZ(E)	OFZ(F)	OBSTACLE FREE ZONE (OFZ)	●	○	AIRPORT BEACON
ROFA(E)	ROFA(F)	RUNWAY OBJECT FREE AREA (ROFA)	⊛	⊛	WIND CONE & SEGMENTED CIRCLE
RPZ(E)	RPZ(F)	RUNWAY PROTECTION ZONE (RPZ)		N/A	SECTION CORNER
RVZ(E)	RVZ(F)	RUNWAY VIZIBILITY ZONE (RVZ)	●	○	AWOS
BRL(E)	(BRL(F)	BUILDING RESTRICTION LINE (BRL)			DRAINAGE/ CULVERT
TSA(E)	TSA(F)	TAXIWAY SAFETY AREA (TSA)	4125	N/A	CONTOURS
TOFA(E)	TOFA(F)	TAXIWAY OBJECT FREE AREA (TOFA)			ROADS
x	xx xx	FENCING			MARKINGS
▽	N/A	PACS & SACS SURVEY CONTROL POINT			UTILITY POLE
		RAIL ROAD	⊛	⊛	LIGHT WIND CONE & SEGMENTED CIRCLE

*PACS = PRIMARY AIRPORT CONTROL STATION
SACS = SECONDARY AIRPORT CONTROL STATION

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SAN CARLOS APACHE AIRPORT
GLOBE, ARIZONA
SPONSOR: SAN CARLOS APACHE TRIBE
AIRPORT LAYOUT PLANS
AIP No. 3-04-0017-12

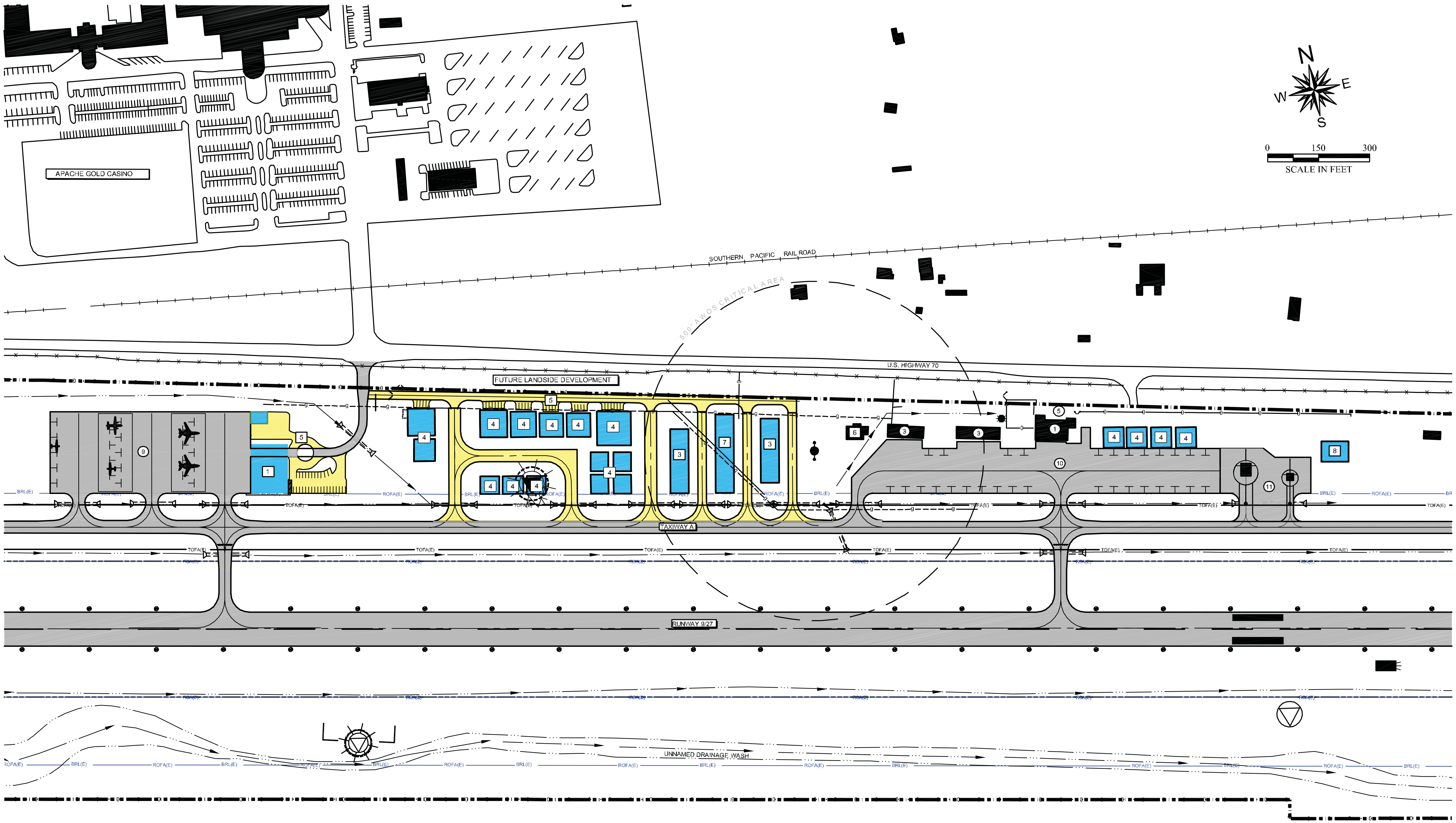
No.	Revision	Date	By
1	Revision	11.28.06	SLST

Project No: 005743
Date: 01.24.07
File Name: 5743521

Drawn: SLST
Checked: GJF
Approved: DAC

ALTERNATE #1
LAYOUT
PLAN

Sheet: 1 of: 2



AIRPORT FACILITIES LIST

EXISTING	FUTURE	FACILITY	TOP ELEV.	REMARKS
1	1	FBO HANGER/OFFICE	3207'	REMOVE/ DEMOLISH
2		TIEDOWNS	--	
3	3	T- HANGAR	3213'	
4	4	BOX HANGARS	--	
5	5	VEHICLE PARKING	--	
6	6	TRAILER HOUSE/OFFICE	3208'	
	7	SUN SHADE'S	3222'	
	8	SNOW REMOVEL EQUIPMENT	--	
9		TRANSIENT AIRCRAFT APRON	--	
10		BASED AIRCRAFT APRON	--	
11		HELICOPTER PARKING PADS	--	

LEGEND

EXISTING	FUTURE/ULTIMATE	DESCRIPTION	EXISTING	FUTURE	
		AIRFIELD DEVELOPMENT (ASPHALT)			THRESHOLD LIGHTS
		STRUCTURE/FACILITIES (BUILDING)			REIL
		AIRPORT PROPERTY LINE (APL)			VASI/PAPI
RSA(E)	RSA(F)	RUNWAY SAFETY AREA (RSA)			AIRPORT REFERENCE POINT (ARP)
OFZ(E)	OFZ(F)	OBSTACLE FREE ZONE (OFZ)			AIRPORT BEACON
ROFA(E)	ROFA(F)	RUNWAY OBJECT FREE AREA (ROFA)			WIND CONE & SEGMENTED CIRCLE
RPZ(E)	RPZ(F)	RUNWAY PROTECTION ZONE (RPZ)		N/A	SECTION CORNER
RVZ(E)	RVZ(F)	RUNWAY VIZIBILITY ZONE (RVZ)			AWOS
BRL(E)	BRL(F)	BUILDING RESTRICTION LINE (BRL)			DRAINAGE/ CULVERT
TSA(E)	TSA(F)	TAXIWAY SAFETY AREA (TSA)	4125	N/A	CONTOURS
TOFA(E)	TOFA(F)	TAXIWAY OBJECT FREE AREA (TOFA)			ROADS
X	XX	FENCING			MARKINGS
	N/A	PACS & SACS SURVEY CONTROL POINT			UTILITY POLE
		RAIL ROAD			LIGHT WIND CONE & SEGMENTED CIRCLE

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GLOBE, ARIZONA
SPONSOR: SAN CARLOS APACHE TRIBE
AIRPORT LAYOUT PLANS
AIP No. 3-04-0017-12

No.	Revision	Date	By
1		11.28.06	SLST

Project No: 005743
Date: 01.24.07
File Name: 5743522

Drawn: SLST
Checked: GJF
Approved: DAC

ALTERNATE #1 TERMINAL AREA

Sheet: 2 of: 2

San Carlos Apache Airport

Chapter Five
Airport Plans

INTRODUCTION

This set of plans, referred to as the Airport Layout Plan (ALP), has been prepared in accordance with Federal Aviation Administration (FAA) Advisory Circular 5300-13, Change 10, *Airport Design*, the FAA, Southwest Regional ALP checklist as well as the State of Arizona, Aeronautics Department, ALP checklist. The purpose of this set of plans is to graphically depict the recommendations for the airport layout, disposition of obstructions and future use of land in the vicinity of the airport.

- Cover Sheet
- Airport Layout Plan Drawing
- Terminal/Building Area Plan Drawing
- Inner Portion of the Approach Surface Drawing
- Airport Airspace Drawing
- Land Use Drawing
- Exhibit “A” Property Map
- Aerial Photograph

In addition to the Airport Layout Plan drawing set, a model zoning ordinance and avigation easement guide has been prepared and is included in Appendix C.

San Carlos Apache Airport

Sponsor: San Carlos Apache Tribe

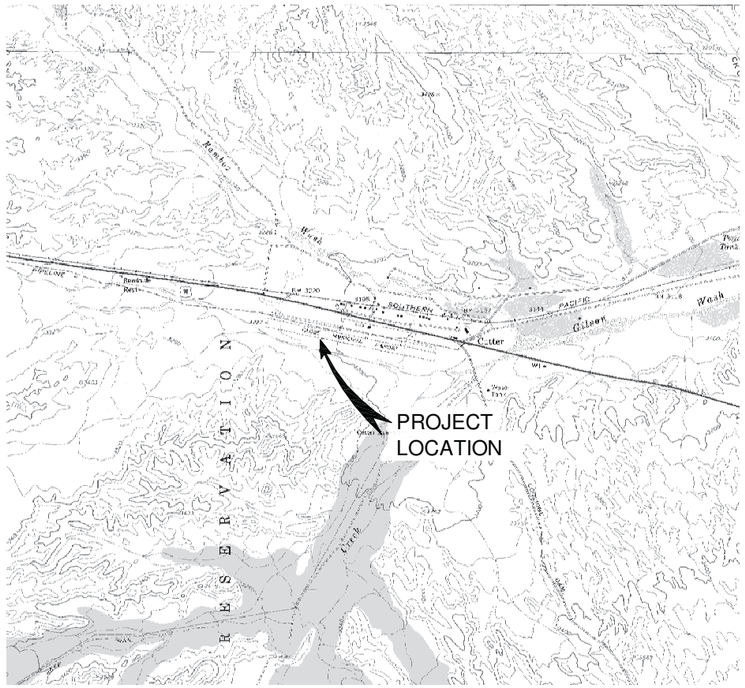
Associated City:Globe, Arizona

AIRPORT LAYOUT PLANS

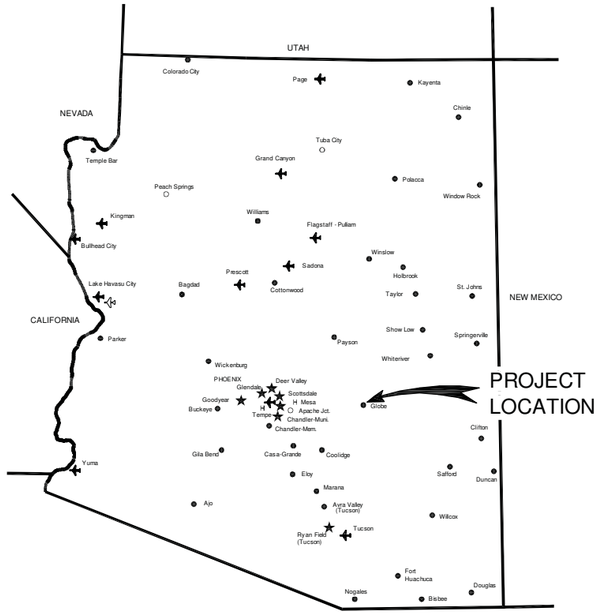
PREPARED BY:

ARMSTRONG CONSULTANTS, INC.

A.C.I. PROJECT NO. 055743
A.I.P. NO. 3-04-0017-12
September 19, 2007



VICINITY MAP



Arizona

INDEX TO SHEETS

(E = EXISTING, F = FUTURE)

5743501

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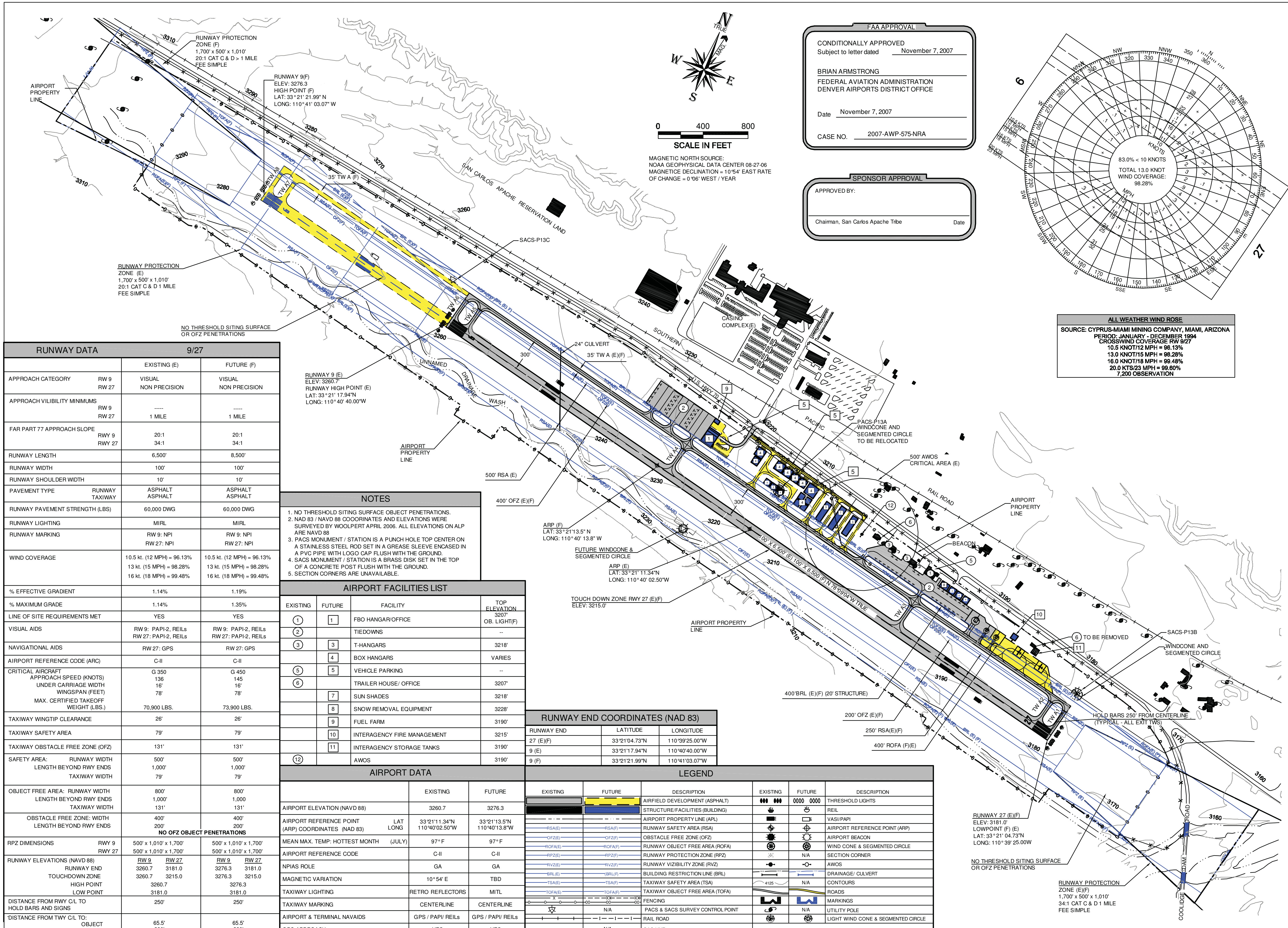

FAA APPROVAL

CONDITIONALLY APPROVED
Subject to letter dated November 7, 2007

BRIAN ARMSTRONG
FEDERAL AVIATION ADMINISTRATION
DENVER AIRPORTS DISTRICT OFFICE

Date November 7, 2007

CASE NO. 2007-AWP-575-NRA

SPONSOR APPROVAL

APPROVED BY:

Chairman, San Carlos Apache Tribe Date

RUNWAY DATA 9/27

	EXISTING (E)	FUTURE (F)
APPROACH CATEGORY RW 9 / RW 27	VISUAL / NON PRECISION	VISUAL / NON PRECISION
APPROACH VILIBILITY MINIMUMS RW 9 / RW 27	----- / 1 MILE	----- / 1 MILE
FAR PART 77 APPROACH SLOPE RWY 9 / RWY 27	20:1 / 34:1	20:1 / 34:1
RUNWAY LENGTH	6,500'	8,500'
RUNWAY WIDTH	100'	100'
RUNWAY SHOULDER WIDTH	10'	10'
PAVEMENT TYPE RUNWAY / TAXIWAY	ASPHALT / ASPHALT	ASPHALT / ASPHALT
RUNWAY PAVEMENT STRENGTH (LBS)	60,000 DWG	60,000 DWG
RUNWAY LIGHTING	MIRL	MIRL
RUNWAY MARKING	RW 9: NPI RW 27: NPI	RW 9: NPI RW 27: NPI
WIND COVERAGE	10.5 kt. (12 MPH) = 96.13% 13 kt. (15 MPH) = 98.28% 16 kt. (18 MPH) = 99.48%	10.5 kt. (12 MPH) = 96.13% 13 kt. (15 MPH) = 98.28% 16 kt. (18 MPH) = 99.48%
% EFFECTIVE GRADIENT	1.14%	1.19%
% MAXIMUM GRADE	1.14%	1.35%
LINE OF SITE REQUIREMENTS MET	YES	YES
VISUAL AIDS	RW 9: PAPI-2, REILs RW 27: PAPI-2, REILs	RW 9: PAPI-2, REILs RW 27: PAPI-2, REILs
NAVIGATIONAL AIDS	RW 27: GPS	RW 27: GPS
AIRPORT REFERENCE CODE (ARC)	C-II	C-II
CRITICAL AIRCRAFT	G 350	G 450
APPROACH SPEED (KNOTS)	136	145
UNDER CARRIAGE WIDTH	16'	16'
WINGSPAN (FEET)	78'	78'
MAX. CERTIFIED TAKEOFF WEIGHT (LBS.)	70,900 LBS.	73,900 LBS.
TAXIWAY WINGTIP CLEARANCE	26'	26'
TAXIWAY SAFETY AREA	79'	79'
TAXIWAY OBSTACLE FREE ZONE (OFZ)	131'	131'
SAFETY AREA: RUNWAY WIDTH	500'	500'
LENGTH BEYOND RWY ENDS	1,000'	1,000'
TAXIWAY WIDTH	79'	79'
OBJECT FREE AREA: RUNWAY WIDTH	800'	800'
LENGTH BEYOND RWY ENDS	1,000'	1,000
TAXIWAY WIDTH	131'	131'
OBSTACLE FREE ZONE: WIDTH	400'	400'
LENGTH BEYOND RWY ENDS	200'	200'
	NO OFZ OBJECT PENETRATIONS	
RPZ DIMENSIONS RWY 9	500' x 1,010' x 1,700'	500' x 1,010' x 1,700'
RWY 27	500' x 1,010' x 1,700'	500' x 1,010' x 1,700'
RUNWAY ELEVATIONS (NAVD 88)	RW 9 / RW 27	RW 9 / RW 27
RUNWAY END	3260.7 / 3181.0	3276.3 / 3181.0
TOUCHDOWN ZONE	3260.7 / 3215.0	3276.3 / 3215.0
HIGH POINT	3260.7	3276.3
LOW POINT	3181.0	3181.0
DISTANCE FROM RWY C/L TO HOLD BARS AND SIGNS	250'	250'
DISTANCE FROM TWY C/L TO: OBJECT	65.5'	65.5'
PARRALEL RWY C/L	300'	300'

NOTES

1. NO THRESHOLD SITING SURFACE OBJECT PENETRATIONS.
2. NAD 83 / NAVD 88 COOORINATES AND ELEVATIONS WERE SURVEYED BY WOOLPERT APRIL 2006. ALL ELEVATIONS ON ALP ARE NAVD 88
3. PACS MONUMENT / STATION IS A PUNCH HOLE TOP CENTER ON A STAINLESS STEEL ROD SET IN A GREASE SLEEVE ENCASED IN A PVC PIPE WITH LOGO CAP FLUSH WITH THE GROUND.
4. SACS MONUMENT / STATION IS A BRASS DISK SET IN THE TOP OF A CONCRETE POST FLUSH WITH THE GROUND.
5. SECTION CORNERS ARE UNAVAILABLE.

AIRPORT FACILITIES LIST

EXISTING	FUTURE	FACILITY	TOP ELEVATION
1	1	FBO HANGAR/OFFICE	3207' OB. LIGHT(F)
2		TIEDOWNS	--
3	3	T-HANGARS	3218'
	4	BOX HANGARS	VARIES
5	5	VEHICLE PARKING	--
6		TRAILER HOUSE/ OFFICE	3207'
	7	SUN SHADES	3218'
	8	SNOW REMOVAL EQUIPMENT	3228'
	9	FUEL FARM	3190'
	10	INTERAGENCY FIRE MANAGEMENT	3215'
	11	INTERAGENCY STORAGE TANKS	3190'
12		AWOS	3190'

RUNWAY END COORDINATES (NAD 83)

RUNWAY END	LATITUDE	LONGITUDE
27 (E)(F)	33°21'04.73"N	110°39'25.00"W
9 (E)	33°21'17.94"N	110°40'40.00"W
9 (F)	33°21'21.99"N	110°41'03.07"W

AIRPORT DATA

	EXISTING	FUTURE
AIRPORT ELEVATION (NAVD 88)	3260.7	3276.3
AIRPORT REFERENCE POINT (ARP) COORDINATES (NAD 83) LAT / LONG	33°21'11.34"N 110°40'02.50"W	33°21'13.5"N 110°40'13.8"W
MEAN MAX. TEMP: HOTTEST MONTH (JULY)	97° F	97° F
AIRPORT REFERENCE CODE	C-II	C-II
NPIAS ROLE	GA	GA
MAGNETIC VARIATION	10° 54' E	TBD
TAXIWAY LIGHTING	RETRO REFLECTORS	MITL
TAXIWAY MARKING	CENTERLINE	CENTERLINE
AIRPORT & TERMINAL NAVAIDS	GPS / PAPI/ REILs	GPS / PAPI/ REILs
GPS APPROACH	YES	YES

LEGEND

EXISTING	FUTURE	DESCRIPTION	EXISTING	FUTURE	DESCRIPTION
		AIRFIELD DEVELOPMENT (ASPHALT)		0000 0000	THRESHOLD LIGHTS
		STRUCTURE/FACILITIES (BUILDING)			REIL
		AIRPORT PROPERTY LINE (APL)			VASI/PAPI
RSA(E)	RSA(F)	RUNWAY SAFETY AREA (RSA)			AIRPORT REFERENCE POINT (ARP)
OFZ(E)	OFZ(F)	OBSTACLE FREE ZONE (OFZ)			AIRPORT BEACON
ROFA(E)	ROFA(F)	RUNWAY OBJECT FREE AREA (ROFA)			WIND CONE & SEGMENTED CIRCLE
RPZ(E)	RPZ(F)	RUNWAY PROTECTION ZONE (RPZ)		N/A	SECTION CORNER
RVZ(E)	RVZ(F)	RUNWAY VIZIBILITY ZONE (RVZ)			AWOS
BRL(E)	BRL(F)	BUILDING RESTRICTION LINE (BRL)			DRAINAGE/ CULVERT
TSA(E)	TSA(F)	TAXIWAY SAFETY AREA (TSA)	4125	N/A	CONTOURS
TOFA(E)	TOFA(F)	TAXIWAY OBJECT FREE AREA (TOFA)			ROADS
X	XX	FENCING			MARKINGS
	N/A	PACS & SACS SURVEY CONTROL POINT		N/A	UTILITY POLE
		RAIL ROAD			LIGHT WIND CONE & SEGMENTED CIRCLE
G	N/A	GAS LINE			

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SAN CARLOS APACHE AIRPORT
GLOBE, ARIZONA

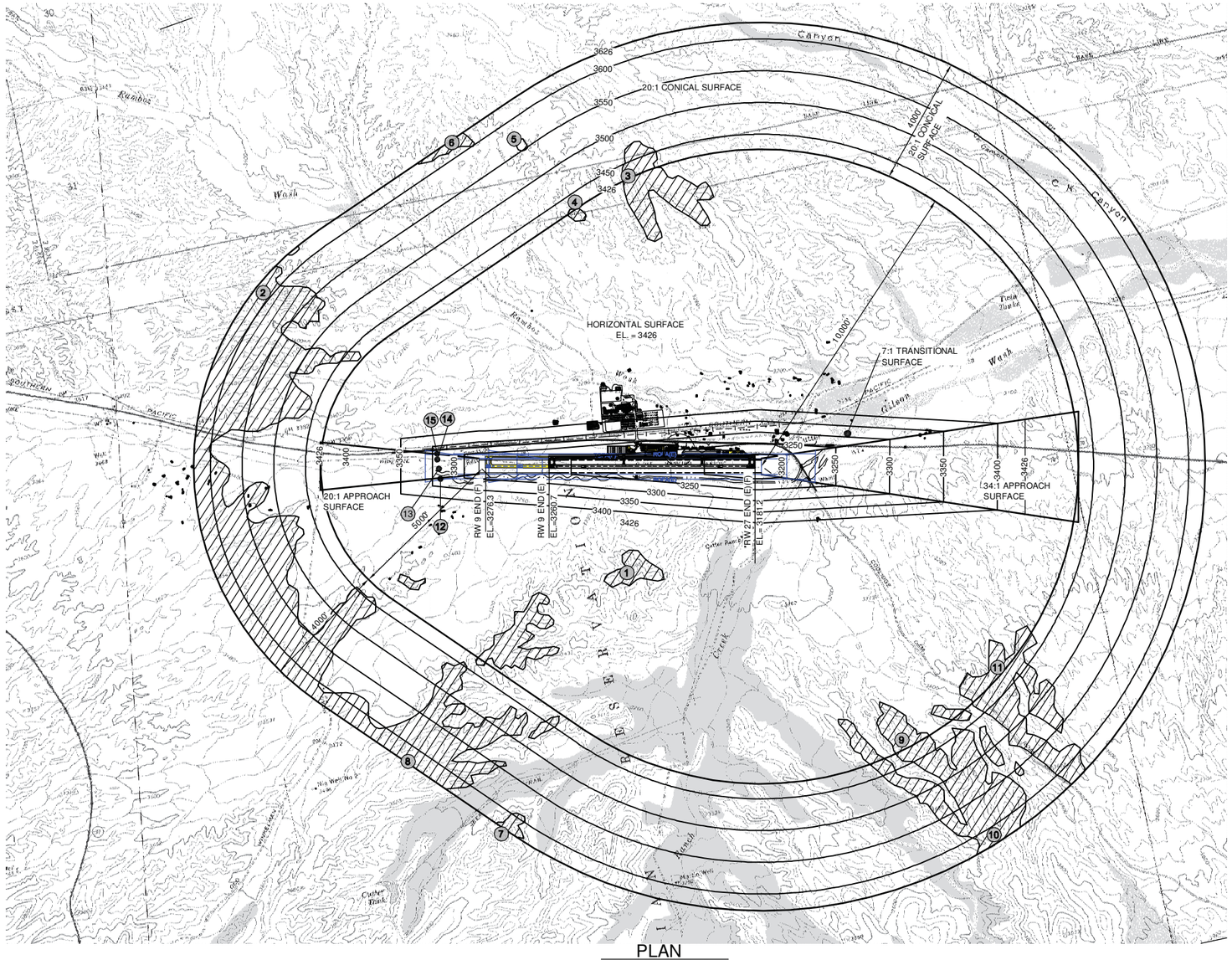
AIRPORT LAYOUT PLANS
AIP No. 3-04-0017-12

No.	Revision	Date	By
1	AIRPORT MASTER PLAN STUDY	04.06.98	ACI
2	CONSTRUCTION AS-BUILT UPDATE	03.25.05	ACI

Project No: 055743
Date: 09.19.07
File Name: 5743502

Drawn: SLST
Checked: GJF
Approved: DAC

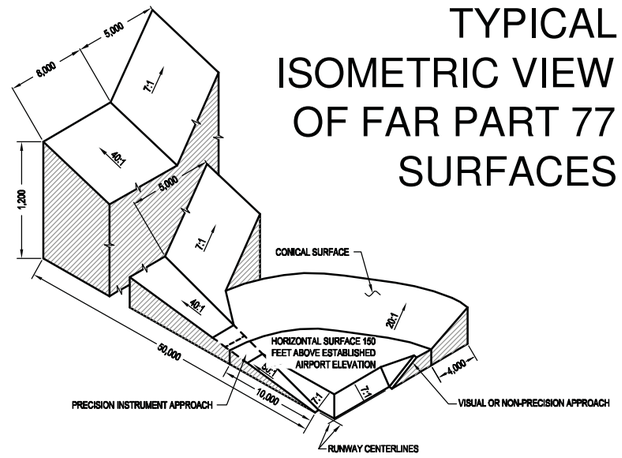
AIRPORT LAYOUT PLAN



PLAN
SCALE: PER BARSCALE

PROFILE
SCALE: PER GRID

TYPICAL ISOMETRIC VIEW OF FAR PART 77 SURFACES



TERRAIN PENETRATION

N
W E
S

0 2000 4000
SCALE IN FEET

NOTE:
1. SEE INNER APPROACH DRAWINGS FOR DETAILED INFO ON CLOSE-IN OBSTRUCTIONS.
2. OBJECT ELEVATIONS IN FEET MSL (VERTICAL DATUM NAVD88)
3. BASE MAP (GROUND TOPO) IS 7.5 MINUTES QUADRANGLE MAP (NAD 29)
4. THE ULTIMATE AIRPORT ELEVATION IS 3276'

OBJECT PENETRATION INTO PART 77 SURFACES

No.	OBJECT	TOP ELEVATION	SURFACE PENETRATED	AMOUNT OF PENETRATION	PROPOSED ACTION O.L. = Obstruction Light
1	TERRAIN	3565	HORIZONTAL	139'	-
2	TERRAIN	3506	CONICAL	80'	-
3	TERRAIN	3548	HORIZONTAL	122'	-
4	TERRAIN	3440	HORIZONTAL	14'	-
5	TERRAIN	3440	CONICAL	2'	-
6	TERRAIN	3440	CONICAL	25'	-
7	TERRAIN	3528	CONICAL	53'	-
8	TERRAIN	3560	CONICAL	110'	-
9	TERRAIN	3520	HORIZONTAL	94'	-
10	TERRAIN	3680	CONICAL	54'	-
11	TERRAIN	3480	HORIZONTAL	64'	-
12	UTILITY POLE	3340	APPROACH	3'	REMOVE OR BURY
13	UTILITY POLE	3342	APPROACH	2'	REMOVE OR BURY
14	UTILITY POLE	3343	APPROACH	1'	REMOVE OR BURY
15	UTILITY POLE	3348	APPROACH	5'	REMOVE OR BURY

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GLOBE, ARIZONA

AIRPORT LAYOUT PLANS
A.I.P. No. 3-04-0017-12

No.	Revision	Date	By

Project No: 055743
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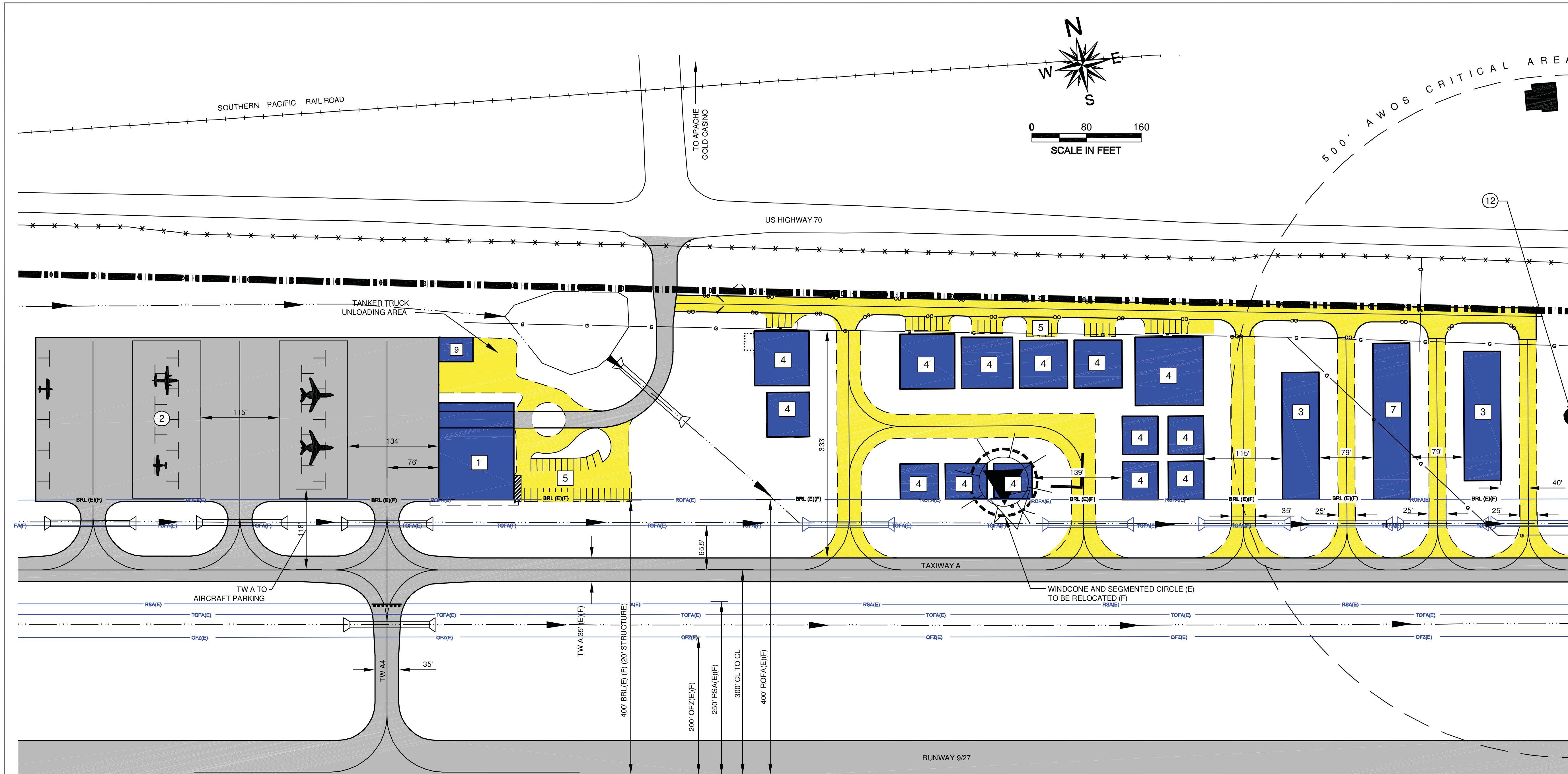
Checked: GJF
Approved: DAC

PART 77 AIRSPACE DRAWING



AIRPORT FACILITIES LIST

EXISTING	FUTURE	FACILITY	TOP ELEV.
1	1	FBO HANGAR/OFFICE	3207' OB. LIGHT(F)
2		TIE DOWNS	--
3	3	T-HANGARS	3213'
4	4	BOX HANGARS	3245'
5	5	VEHICLE PARKING	--
6	6	TRAILER HOUSE / OFFICE (TO BE REMOVED)	3208'
	7	FBO HANGER/OFFICE	3222'
	8	SNOW REMOVAL EQUIPMENT	3210'
	9	FUEL FARM	3190'
	10	INTERAGENCY FIRE MANAGEMENT	3215'
	11	INTERAGENCY STORAGE TANKS	3190'
12		AWOS	3190'

LEGEND

EXISTING	FUTURE/ULTIMATE	DESCRIPTION	EXISTING	FUTURE	DESCRIPTION
		AIRFIELD DEVELOPMENT (ASPHALT)		0000 0000	THRESHOLD LIGHTS
		STRUCTURE/FACILITIES (BUILDING)			REIL
		AIRPORT PROPERTY LINE (APL)			VASI/PAPI
RSA(E)	RSA(F)(U)	RUNWAY SAFETY AREA (RSA)			AIRPORT REFERENCE POINT (ARP)
OFZ(E)	OFZ(F)(U)	OBSTACLE FREE ZONE (OFZ)			AIRPORT BEACON
ROFA(E)	ROFA(F)(U)	RUNWAY OBJECT FREE AREA (ROFA)			WIND CONE & SEGMENTED CIRCLE
RPZ(E)	RPZ(F)(U)	RUNWAY PROTECTION ZONE (RPZ)		N/A	SECTION CORNER
RVZ(E)	RVZ(F)(U)	RUNWAY VIZIBILITY ZONE (RVZ)			AWOS
BRL(E)	(BRL(F)(U)	BUILDING RESTRICTION LINE (BRL)			DRAINAGE/ CULVERT
TSA(E)	TSA(F)(U)	TAXIWAY SAFETY AREA (RSA)	4125	N/A	CONTOURS
TOFA(E)	TOFA(F)(U)	TAXIWAY OBJECT FREE AREA (ROFA)			ROADS
		FENCING			MARKINGS
	N/A	PACS & SACS SURVEY CONTROL POINT			UTILITY POLE
		RAIL ROAD			LIGHT WIND CONE & SEGMENTED CIRCLE
G	N/A	GAS LINES			

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SAN CARLOS APACHE AIRPORT
GLOBE, ARIZONA

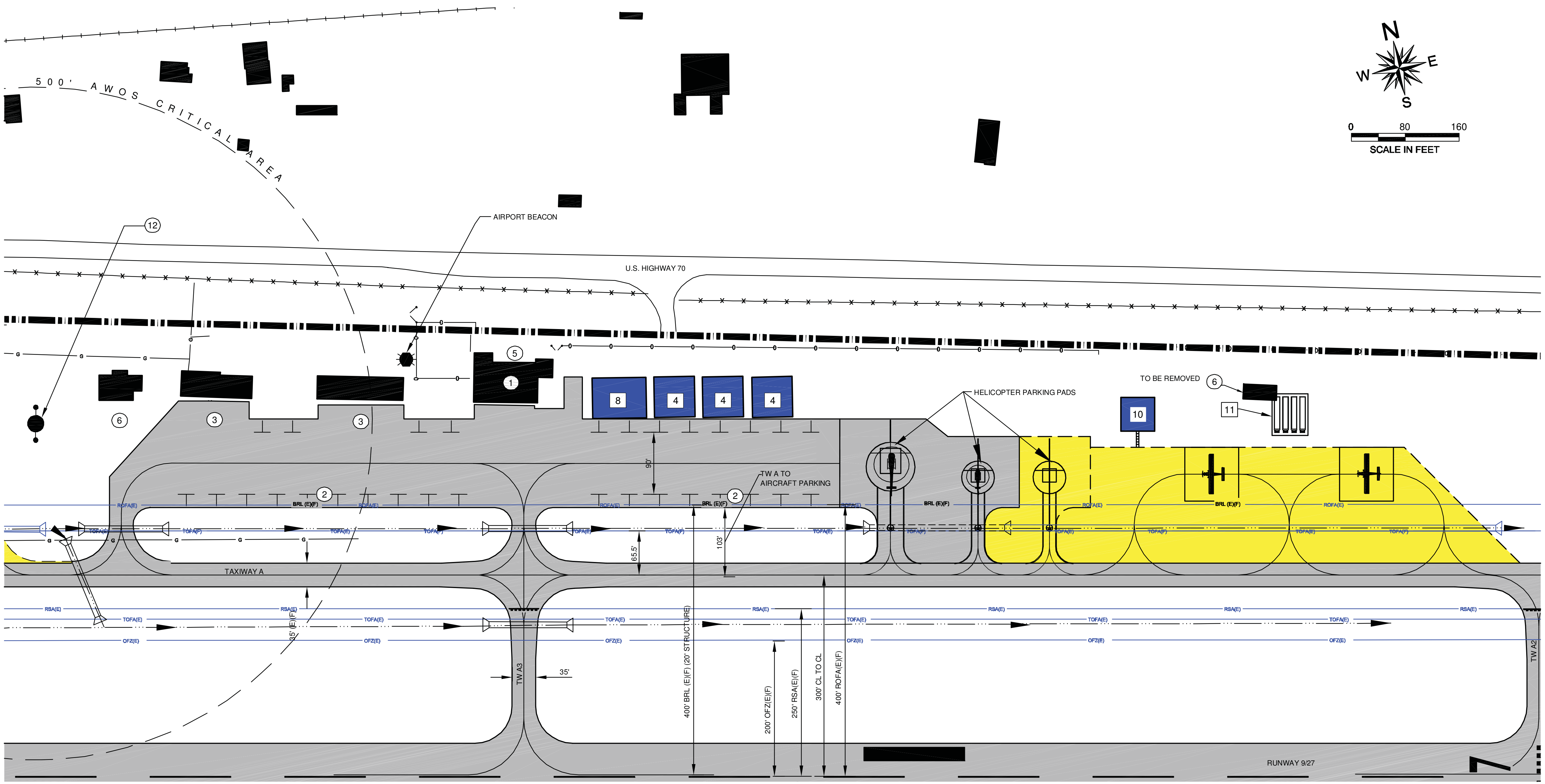
AIRPORT LAYOUT PLANS
AIP No. 3-04-0017-12

No.	Revision	Date	By

Project No: 055743
Date: 09.19.07
File Name: 5743504

Drawn: SLST
Checked: GJF
Approved: DAC

TERMINAL AREA WEST DRAWING



AIRPORT FACILITIES LIST

EXISTING	FUTURE	FACILITY	TOP ELEV.
1	1	FBO HANGAR/OFFICE	3207' OB. LIGHT(F)
2		TIE DOWNS	--
3	3	T-HANGARS	3213'
4	4	BOX HANGARS	3245'
5	5	VEHICLE PARKING	--
6	6	TRAILER HOUSE / OFFICE (TO BE REMOVED)	3208'
	7	FBO HANGER/OFFICE	3222'
	8	SNOW REMOVAL EQUIPMENT	3210'
	9	FUEL FARM	3190'
	10	INTERAGENCY FIRE MANAGEMENT	3215'
	11	INTERAGENCY STORAGE TANKS	3190'
12		AWOS	

LEGEND

EXISTING	FUTURE/ULTIMATE	DESCRIPTION	EXISTING	FUTURE	DESCRIPTION
		AIRFIELD DEVELOPMENT (ASPHALT)		0000 0000	THRESHOLD LIGHTS
		STRUCTURE/FACILITIES (BUILDING)			REIL
		AIRPORT PROPERTY LINE (APL)			VASI/PAPI
RSA(E)	RSA(F)(U)	RUNWAY SAFETY AREA (RSA)			AIRPORT REFERENCE POINT (ARP)
OFZ(E)	OFZ(F)(U)	OBSTACLE FREE ZONE (OFZ)			AIRPORT BEACON
ROFA(E)	ROFA(F)(U)	RUNWAY OBJECT FREE AREA (ROFA)			WIND CONE & SEGMENTED CIRCLE
RPZ(E)	RPZ(F)(U)	RUNWAY PROTECTION ZONE (RPZ)		N/A	SECTION CORNER
RVZ(E)	RVZ(F)(U)	RUNWAY VIZIBILITY ZONE (RVZ)			AWOS
BRL(E)	(BRL(F)(U)	BUILDING RESTRICTION LINE (BRL)			DRAINAGE/ CULVERT
TSA(E)	TSA(F)(U)	TAXIWAY SAFETY AREA (RSA)	4125	N/A	CONTOURS
TOFA(E)	TOFA(F)(U)	TAXIWAY OBJECT FREE AREA (ROFA)			ROADS
		FENCING			MARKINGS
	N/A	PACS & SACS SURVEY CONTROL POINT		N/A	UTILITY POLE
		RAIL ROAD			LIGHT WIND CONE & SEGMENTED CIRCLE
G	N/A	GAS LINES			

*PACS = PRIMARY AIRPORT CONTROL STATION
SACS = SECONDARY AIRPORT CONTROL STATION

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SAN CARLOS APACHE AIRPORT
GLOBE, ARIZONA

AIRPORT LAYOUT PLANS
AIP No. 3-04-0017-12

No.	Revision	Date	By

Project No: 055743
Date: 09.19.07
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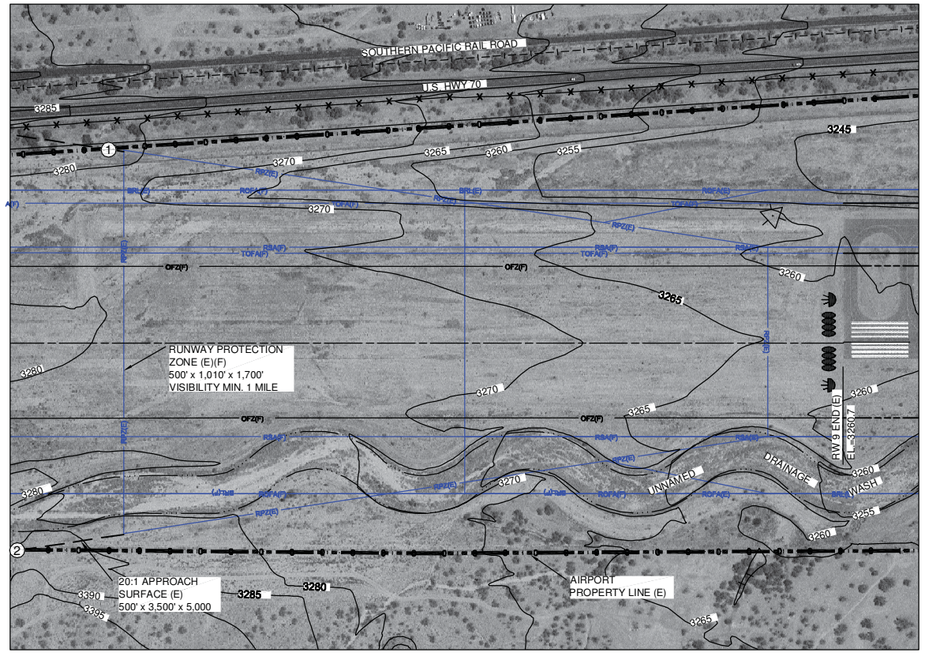
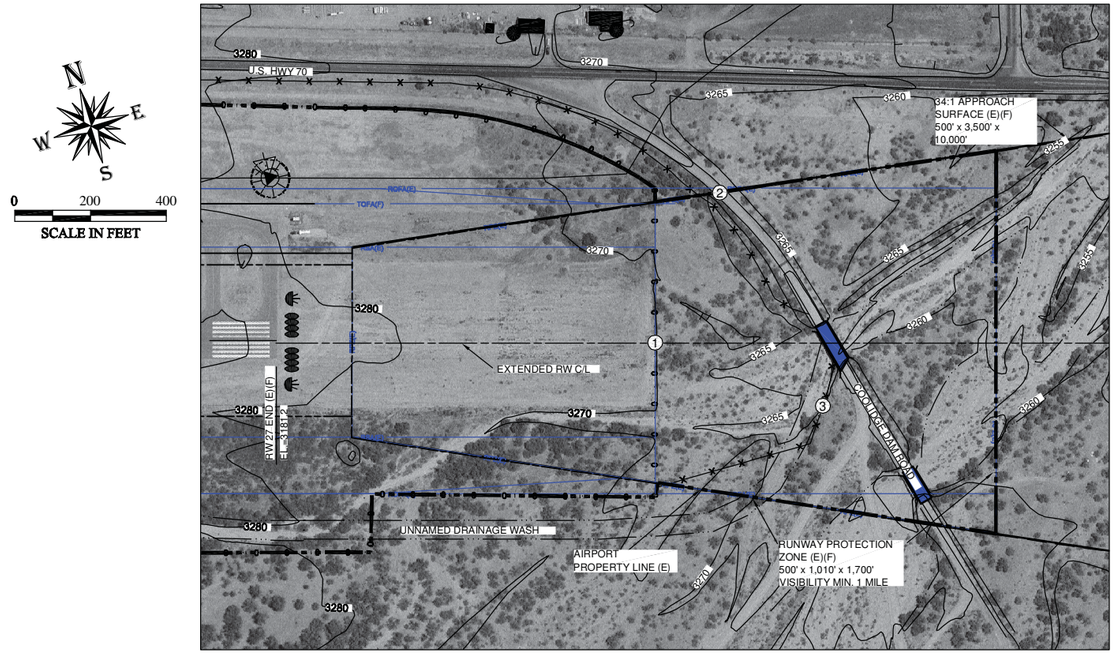
Approved: DAC

TERMINAL AREA EAST DRAWING



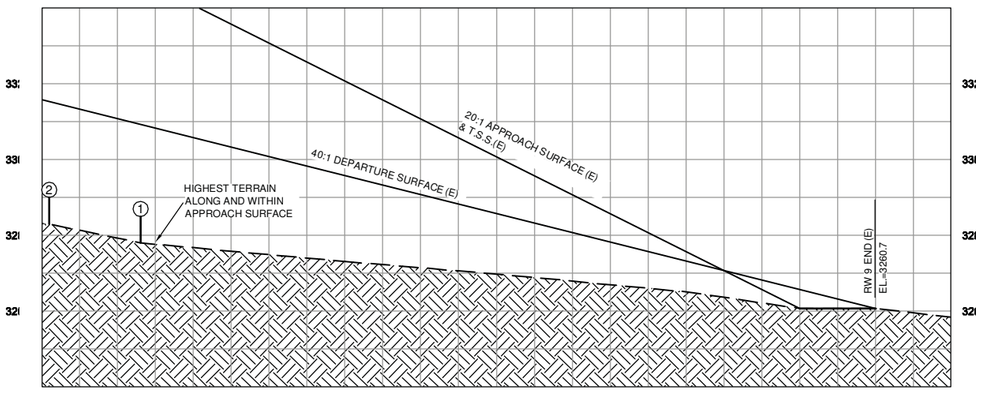
PLAN RW 9 END (E)

SCALE: PER BARSCALE



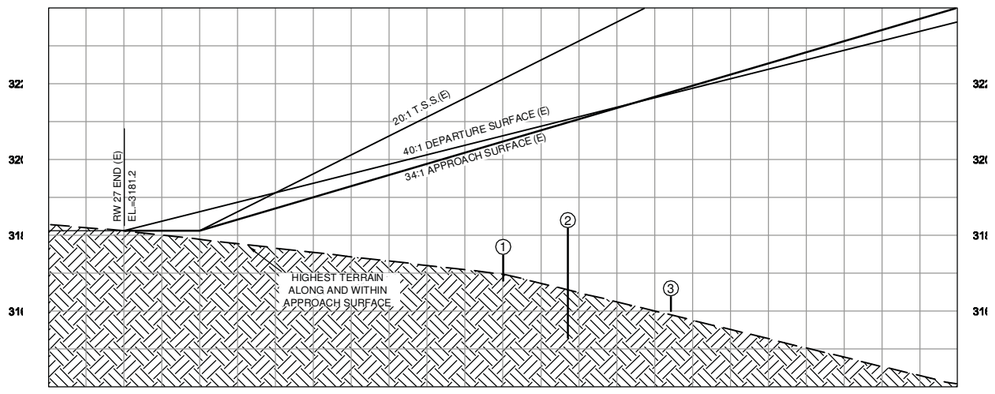
PLAN RW 27 END (E) (F)

SCALE: PER BARSCALE



PROFILE RW 9 END (E)

SCALE: PER GRID



PROFILE RW 27 END (E) (F)

SCALE: PER GRID

OBJECTS WITHIN RUNWAY 9 INNER APPROACH (E)

	OBJECT	TOP ELEVATION	AMOUNT OF PENETRATION 20:1 APPROACH SURFACE (E)	PROPOSED ACTION
1	FENCE	3278 + 7	-65'	NONE
2	FENCE	3283 + 7	-90'	NONE
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-

NO THRESHOLD SITTING SURFACE OBJECT PENETRATIONS

LEGEND

EXISTING	FUTURE/ULTIMATE	DESCRIPTION	EXISTING	FUTURE	
		AIRFIELD DEVELOPMENT (ASPHALT)			THRESHOLD LIGHTS
		STRUCTURE/FACILITIES (BUILDING)			REIL
		AIRPORT PROPERTY LINE (APL)			VASI/PAPI
RSA(E)	RSA(F)	RUNWAY SAFETY AREA (RSA)			AIRPORT REFERENCE POINT (ARP)
OFZ(E)	OFZ(F)	OBSTACLE FREE ZONE (OFZ)			AIRPORT BEACON
ROFA(E)	ROFA(F)	RUNWAY OBJECT FREE AREA (ROFA)			WIND CONE & SEGMENTED CIRCLE
RPZ(E)	RPZ(F)	RUNWAY PROTECTION ZONE (RPZ)		N/A	SECTION CORNER
RVZ(E)	RVZ(F)	RUNWAY VIZIBILITY ZONE (RVZ)			AWOS
BRL(E)	BRL(F)	BUILDING RESTRICTION LINE (BRL)			DRAINAGE/ CULVERT
TSA(E)	TSA(F)	TAXIWAY SAFETY AREA (TSA)	4125	N/A	CONTOURS
TOFA(E)	TOFA(F)	TAXIWAY OBJECT FREE AREA (TOFA)			ROADS
X	XX	FENCING			MARKINGS
	N/A	PACS & SACS SURVEY CONTROL POINT		N/A	UTILITY POLE
		RAIL ROAD			LIGHT WIND CONE & SEGMENTED CIRCLE
G	N/A	GAS LINES			

OBJECTS WITHIN RUNWAY 27 INNER APPROACH (E)(F)

	OBJECT	TOP ELEVATION	AMOUNT OF PENETRATION 34:1 APPROACH SURFACE (E)	PROPOSED ACTION
1	FENCE	3168 + 7	-29'	NONE
2	ROAD	3167 + 15	-27'	NONE
3	FENCE	3160 + 4	-53'	NONE
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-

NO THRESHOLD SITTING SURFACE OBJECT PENETRATIONS

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SAN CARLOS APACHE AIRPORT
GLOBE, ARIZONA

AIRPORT LAYOUT PLANS
A.I.P. No. 3-04-0017-12

No.	Revision	Date	By

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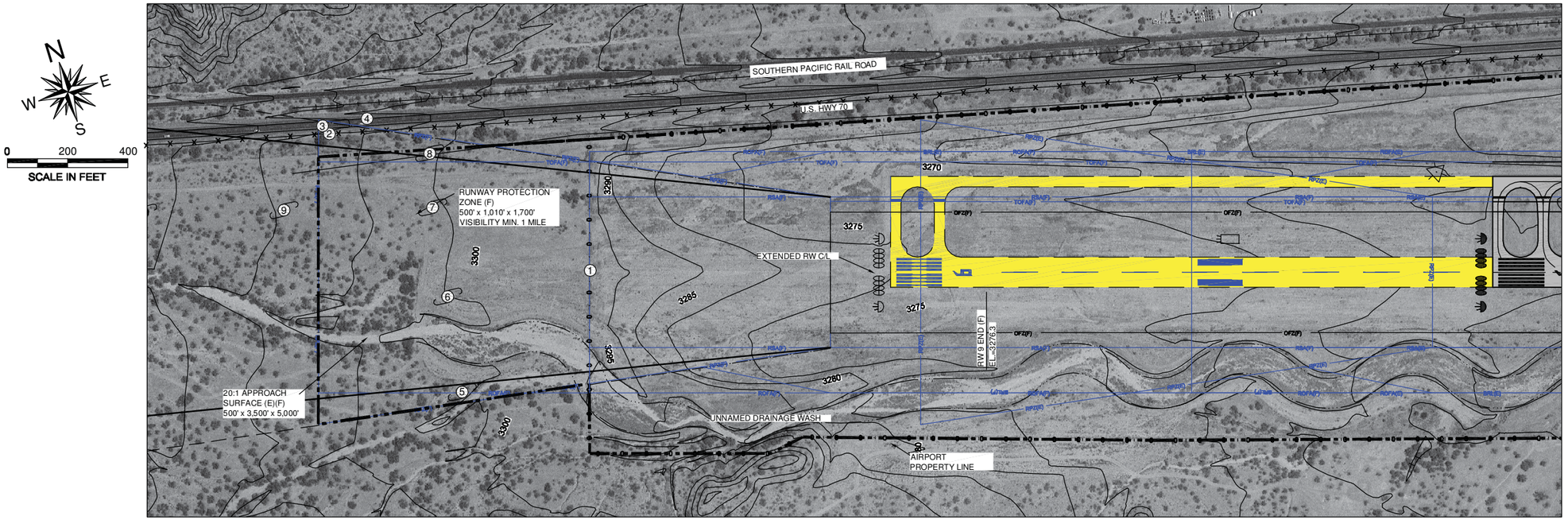
Approved: DAC

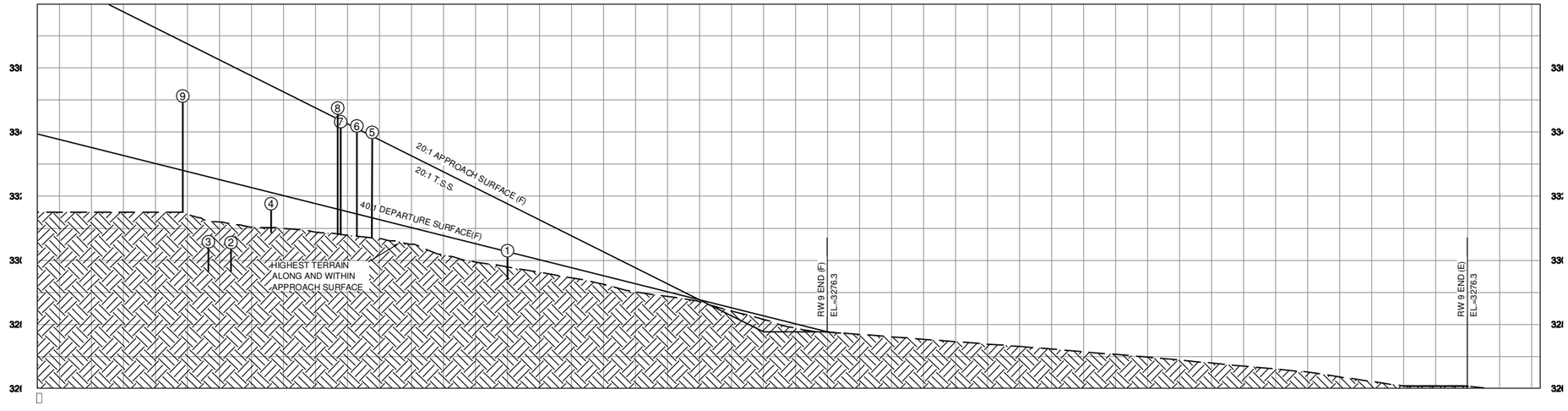
RUNWAY 9/27
INNER
APPROACHES (E)

Sheet: 6 of: 11



PLAN RW 9 END (F)

SCALE: PER BARSCALE



PROFILE RW 9 END (F)

SCALE: PER GRID

OBJECTS WITHIN RUNWAY 9 INNER APPROACH (F)

OBJECT	TOP ELEVATION	AMOUNT OF PENETRATION 20:1 APPROACH SURFACE (F)	AMOUNT OF PENETRATION 40:1 DEPARTURE SURFACE (F)	PROPOSED ACTION
(1) FENCE	3294 + 7	-	-	-
(2) FENCE	+ 4	-	-	-
(3) FENCE	+ 4	-	-	-
(4) HIGHWAY	+ 15	-	-	-
(5) UTILITY POLE	3340	-	+28	REMOVE OR BURY
(6) UTILITY POLE	3342	-	+27	REMOVE OR BURY
(7) UTILITY POLE	3343	-	+27	REMOVE OR BURY
(8) UTILITY POLE	3348	+9	+32	REMOVE OR BURY
(9) UTILITY POLE	3351	-	+27	REMOVE OR BURY

NO THRESHOLD SITING SURFACE OBJECT PENETRATIONS

LEGEND

EXISTING	FUTURE/ULTIMATE	DESCRIPTION	EXISTING	FUTURE	
		AIRFIELD DEVELOPMENT (ASPHALT)		0000 0000	THRESHOLD LIGHTS
		STRUCTURE/FACILITIES (BUILDING)			REIL
		AIRPORT PROPERTY LINE (APL)			VASI/PAPI
RSA(E)	RSA(F)	RUNWAY SAFETY AREA (RSA)			AIRPORT REFERENCE POINT (ARP)
OFZ(E)	OFZ(F)	OBSTACLE FREE ZONE (OFZ)			AIRPORT BEACON
ROFA(E)	ROFA(F)	RUNWAY OBJECT FREE AREA (ROFA)			WIND CONE & SEGMENTED CIRCLE
RPZ(E)	RPZ(F)	RUNWAY PROTECTION ZONE (RPZ)		N/A	SECTION CORNER
RVZ(E)	RVZ(F)	RUNWAY VIZIBILITY ZONE (RVZ)			AWOS
BRL(E)	BRL(F)	BUILDING RESTRICTION LINE (BRL)			DRAINAGE/ CULVERT
TSA(E)	TSA(F)	TAXIWAY SAFETY AREA (TSA)	4125	N/A	CONTOURS
TOFA(E)	TOFA(F)	TAXIWAY OBJECT FREE AREA (TOFA)			ROADS
		FENCING			MARKINGS
	N/A	PACS & SACS SURVEY CONTROL POINT		N/A	UTILITY POLE
		RAIL ROAD			LIGHT WIND CONE & SEGMENTED CIRCLE
G	N/A	GAS LINES			

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SAN CARLOS APACHE AIRPORT
GLOBE, ARIZONA

AIRPORT LAYOUT PLANS
A.I.P. No. 3-04-0017-12

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Project No: 055743
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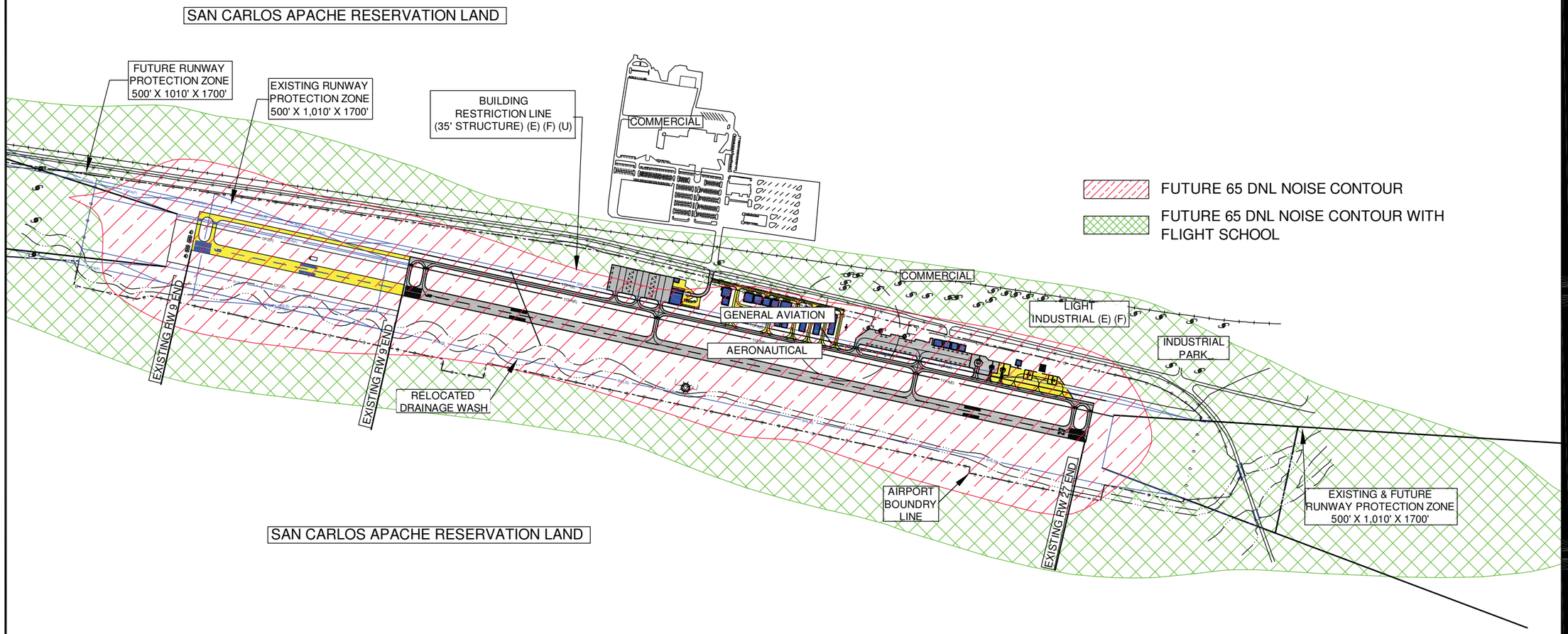
Drawn: SLST
Checked: GJF
Approved: DAC

RUNWAY 9
INNER
APPROACH (F)



LEGEND

EXISTING	FUTURE/ULTIMATE	DESCRIPTION	EXISTING	FUTURE	
		AIRFIELD DEVELOPMENT (ASPHALT)			THRESHOLD LIGHTS
		STRUCTURE/FACILITIES (BUILDING)			REIL
		AIRPORT PROPERTY LINE (APL)			VASI/PAPI
RSA(E)	RSA(F)	RUNWAY SAFETY AREA (RSA)			AIRPORT REFERENCE POINT (ARP)
OFZ(E)	OFZ(F)	OBSTACLE FREE ZONE (OFZ)			AIRPORT BEACON
ROFA(E)	ROFA(F)	RUNWAY OBJECT FREE AREA (ROFA)			WIND CONE & SEGMENTED CIRCLE
RPZ(E)	RPZ(F)	RUNWAY PROTECTION ZONE (RPZ)		N/A	SECTION CORNER
RVZ(E)	RVZ(F)	RUNWAY VIZIBILITY ZONE (RVZ)			AWOS
BRL(E)	(BRL(F)	BUILDING RESTRICTION LINE (BRL)			DRAINAGE/ CULVERT
TSA(E)	TSA(F)	TAXIWAY SAFETY AREA (TSA)	4125	N/A	CONTOURS
TOFA(E)	TOFA(F)	TAXIWAY OBJECT FREE AREA (TOFA)			ROADS
		FENCING			MARKINGS
	N/A	PACS & SACS SURVEY CONTROL POINT			UTILITY POLE
		RAIL ROAD			LIGHT WIND CONE & SEGMENTED CIRCLE
	N/A	GAS LINES			

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SAN CARLOS APACHE AIRPORT
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Project No: 055743
Date: 09.19.07
File Name: 5743507

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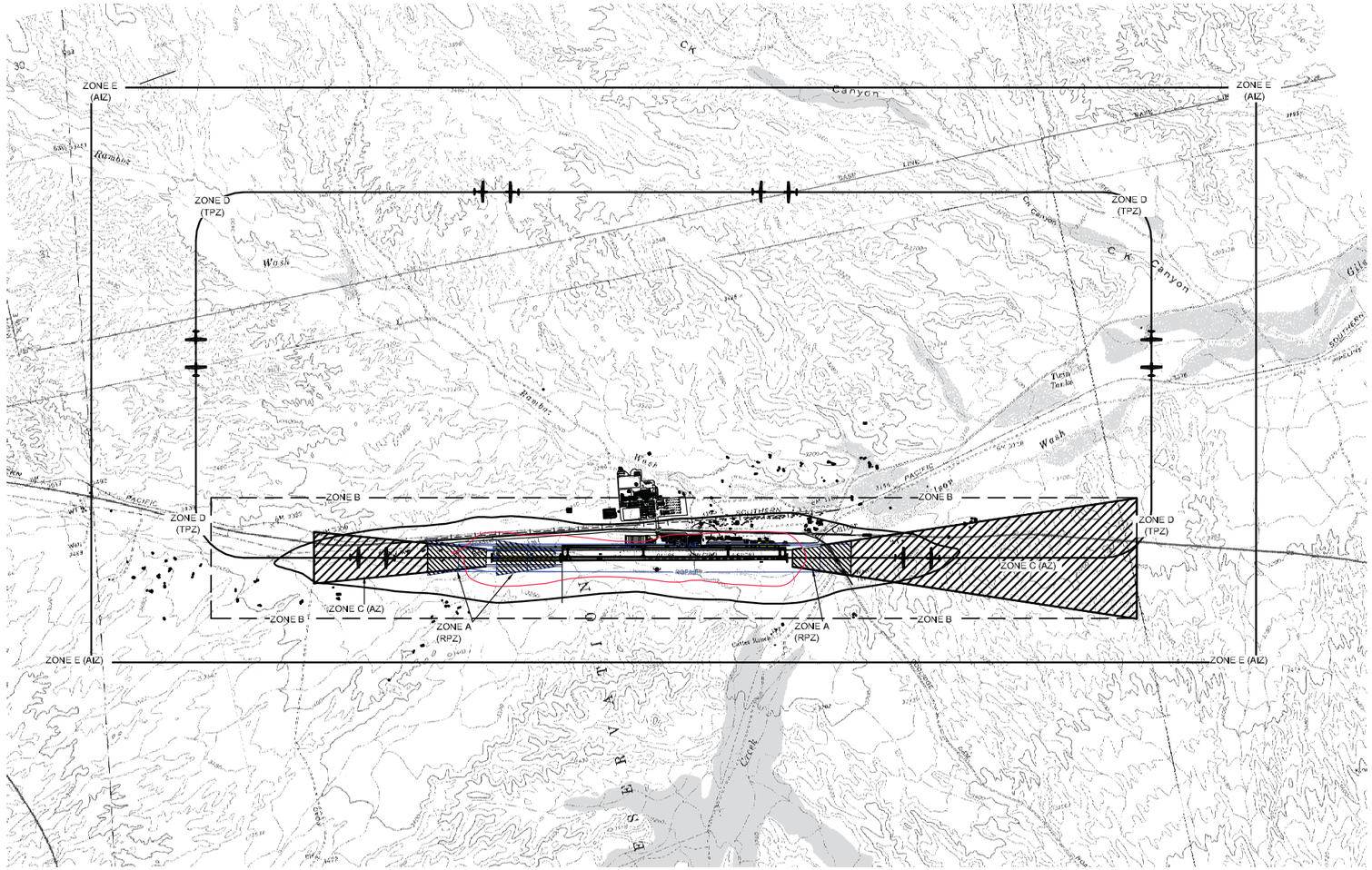
Approved: DAC

ON- AIRPORT LAND USE



PLAN
SCALE: PER BARSCALE

FUTURE 65 DNL NOISE CONTOUR

FUTURE 65 DNL NOISE CONTOUR WITH FLIGHT SCHOOL

RUNWAY PROTECTION ZONE (RPZ) AS DIMENSIONED ON SHEET 2 OF AIRPORT LAYOUT PLAN.

APPROACH SURFACE AS DESCRIBED ON THE FAR PART 77 DRAWING OF THE AIRPORT LAYOUT PLAN.

STANDARD 1-MILE TRAFFIC PATTERNS.

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TYPICAL TRAFFIC PATTERN DIRECTION AND FLIGHT TRACK AREA.

LAND USE COMPATIBILITY GUIDELINES

Land Use Category	ZONE E Airport Influence (AIZ)	ZONE D Traffic Pattern (TPZ)	ZONE C Approach (AZ)	ZONE B 65 DNL & SIDELINE SAFETY ZONE	ZONE A RUNWAY PROTECTION (RPZ)
Residential					
single-family, nursing homes, mobile homes, multi-family, apartments, condominiums	+	o (3)	- (1,3)	- (1,3)	--
transient lodging, hotel, motel	+	o (3)	- (1,3)	- (1,3)	--
Public					
schools, libraries, hospitals	+	o (3)	- (3)	- (3)	--
churches, auditoriums, concert halls	+	o (3)	- (3)	- (3)	--
transportation, parking, cemeteries	++	++	++	++	-(2,5)
Commercial and Industrial					
offices, retail trade, service commercial, wholesale trade, warehousing, light industrial, general manufacturing, utilities, extractive industry	++	+	o (3)	o (3)	--
Agricultural and Recreational					
cropland	++	++	++	++	++
livestock breeding	++	++	++	++	-(2)
parks, playgrounds, zoos, golf courses, riding stables, water recreation	++	++	++	++	-(2)
outdoor spectator sports	++	+	- (3)	- (3)	--
amphitheaters	o	- (4)	- -	--	--
open space	++	++	++	++	++

NOTE: DEVELOPMENT PROJECTS WHICH ARE WILDLIFE ATTRACTANT, INCLUDING SEWERAGE PONDS AND LANDFILLS, WITHIN 10,000 FEET OF THE AIRPORT ARE UNACCEPTABLE. (REF.: FAA AC 150/5200-33)

(1) If allowed, avigation easements and disclosure must be required as a condition of development.
(2) Any structures associated with uses allowed in the RPZ must be located outside the RPZ.
(3) If no reasonable alternative exists, use should be located as far from extended centerline as possible.
(4) If no reasonable alternative exists, use should be located as far from extended runway centerline and traffic patterns as possible.
(5) Transportation facilities in the RPZ (i.e. roads, railroads, waterways) must be configured to comply with Part 77 requirements.

CRITERIA

Land Use Availability	Interpretation/Comments
++ Clearly Acceptable	The activities associated with the specified land use will experience little or no impact due to airport operations. Disclosure of airport proximity should be required as a condition of development.
+ Normally Acceptable	The specified land use is acceptable in this zone or area. Impact may be perceived by some residents. Disclosure of airport proximity should be required as a condition of development. Dedication of avigation easements may also be advisable.
o Marginally Acceptable	An impact will be perceived as a result of allowing the specified use in this zone or area. Disclosure of airport proximity and avigation easements should be required as a condition of development.
- Normally Unacceptable	Specified use should be allowed only if no reasonable alternative exists. Disclosure of airport proximity and avigation easements must be required as a condition of development.
- - Clearly Unacceptable	Specified use must not be allowed. Potential safety or overflight nuisance impacts are likely in this area.

NOTICE OF PROPOSED CONSTRUCTION

An FAA Form 7460-1, "Notice of Proposed Construction or Alteration" must be submitted for any construction or alteration (including hangars and other on-airport and off-airport structures, towers, etc.) within 20,000 horizontal feet of the airport greater in height than an imaginary surface extending outward and upward from the runway at a slope of 100 to 1 or greater in height than 200 feet above ground level.

LEGEND

CHURCH

SCHOOL

HOSPITAL

PARK

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SAN CARLOS APACHE AIRPORT
GLOBE, ARIZONA

AIRPORT LAYOUT PLANS
A.I.P. No. 3-04-0017-12

No.	Revision	Date	By

Project No: 055743
Date: 09.19.07
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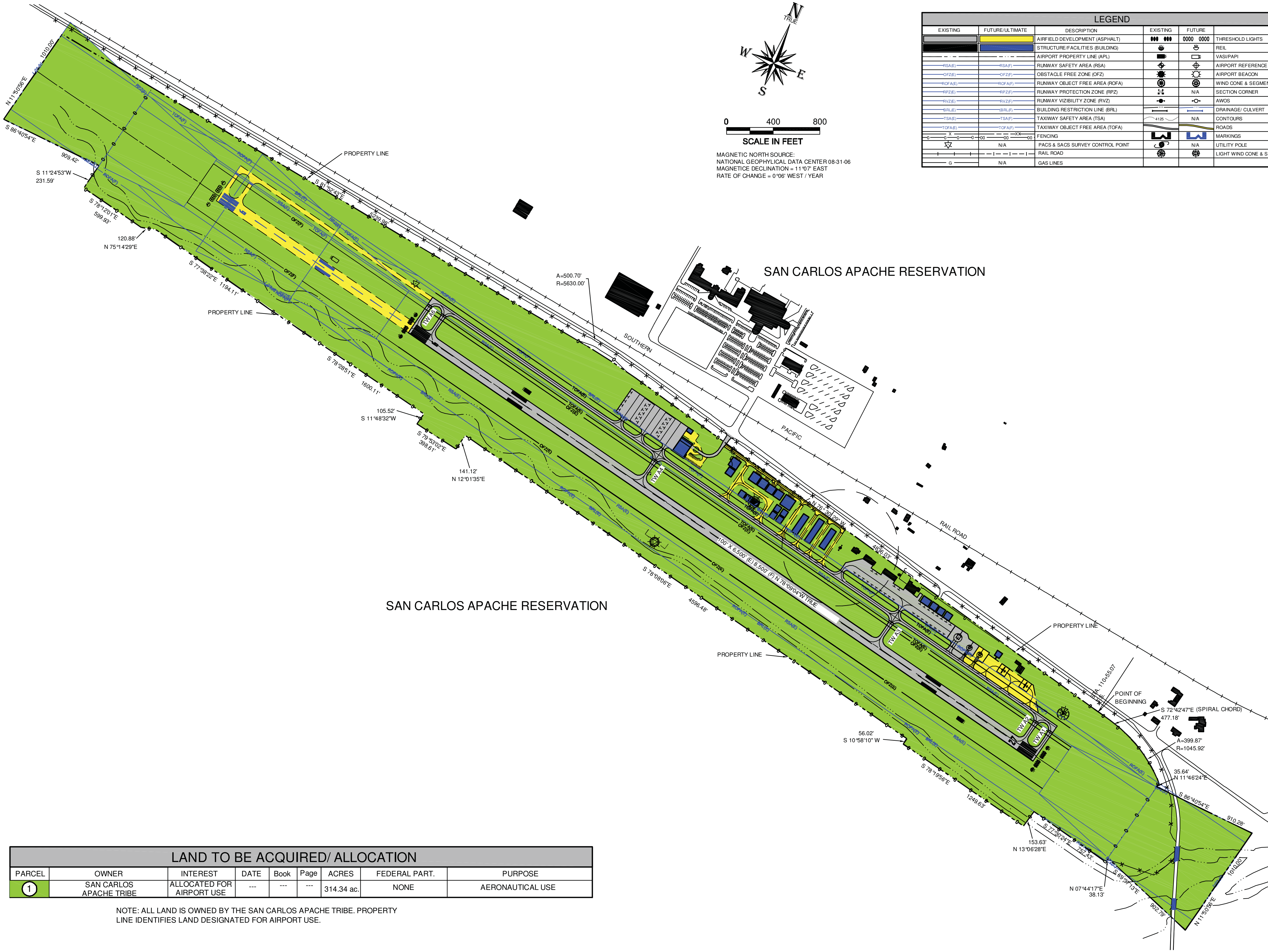
OFF AIRPORT LAND USE

Sheet: 9 of: 11



LEGEND					
EXISTING	FUTURE/ULTIMATE	DESCRIPTION	EXISTING	FUTURE	
		AIRFIELD DEVELOPMENT (ASPHALT)			THRESHOLD LIGHTS
		STRUCTURE/FACILITIES (BUILDING)			REIL
		AIRPORT PROPERTY LINE (APL)			VASI/PAPI
RSA(E)	RSA(F)	RUNWAY SAFETY AREA (RSA)			AIRPORT REFERENCE POINT (ARP)
OFZ(E)	OFZ(F)	OBSTACLE FREE ZONE (OFZ)			AIRPORT BEACON
ROFA(E)	ROFA(F)	RUNWAY OBJECT FREE AREA (ROFA)			WIND CONE & SEGMENTED CIRCLE
RPZ(E)	RPZ(F)	RUNWAY PROTECTION ZONE (RPZ)		N/A	SECTION CORNER
RVZ(E)	RVZ(F)	RUNWAY VIZIBILITY ZONE (RVZ)			AWOS
BRL(E)	(BRL(F)	BUILDING RESTRICTION LINE (BRL)			DRAINAGE/ CULVERT
TSA(E)	TSA(F)	TAXIWAY SAFETY AREA (TSA)	4125	N/A	CONTOURS
TOFA(E)	TOFA(F)	TAXIWAY OBJECT FREE AREA (TOFA)			ROADS
X	XX	FENCING			MARKINGS
	N/A	PACS & SACS SURVEY CONTROL POINT		N/A	UTILITY POLE
		RAIL ROAD			LIGHT WIND CONE & SEGMENTED CIRCLE
G	N/A	GAS LINES			

LAND TO BE ACQUIRED/ ALLOCATION

PARCEL	OWNER	INTEREST	DATE	Book	Page	ACRES	FEDERAL PART.	PURPOSE
1	SAN CARLOS APACHE TRIBE	ALLOCATED FOR AIRPORT USE	---	---	---	314.34 ac.	NONE	AERONAUTICAL USE

NOTE: ALL LAND IS OWNED BY THE SAN CARLOS APACHE TRIBE. PROPERTY LINE IDENTIFIES LAND DESIGNATED FOR AIRPORT USE.

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Project No: 055743
Date: 09.19.07
File Name: 5743509

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Checked: GJF
Approved: DAC

EXHIBIT "A"

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SEPTEMBER, 2006

No.	Revision	Date	By

THE PREPARATION OF THIS DOCUMENT WAS FINANCED IN PART, THROUGH THE AIRPORT IMPROVEMENT PROGRAM FINANCIAL ASSISTANCE FROM THE FEDERAL AVIATION ADMINISTRATION AS PROVIDED UNDER TITLE 49, UNITED STATES CODE, SECTION 47104. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THIS PLAN BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DIRECTED TO/BEIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE OR WOULD WAIVE JUSTIFICATION IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS.

Sheet: 11 of 11

AERIAL PHOTO

Drawn: SLST
Checked: GJF
Approved: DAC

Project No: 055743
Date: 09.19.07
File Name: 574S10

SAN CARLOS APACHE AIRPORT
GLOBE, ARIZONA

AIP# 3-04-0017-12
AIRPORT LAYOUT PLANS

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San Carlos Apache Airport

Chapter Six
Environmental Overview

INTRODUCTION

This environmental overview examines the environmental impacts associated with the proposed airport improvements discussed in Chapter 4 and later in the Capital Improvement Program (CIP) in Chapter 7. None of the proposed improvements are anticipated to result in any significant environmental impacts. This Chapter is intended to provide an overview of the potential, yet unlikely, impacts and identify additional environmental documentation that may be required as a prerequisite to development.

AIR QUALITY

The Clean Air Act of 1970 was enacted to reduce emissions of specific pollutants via uniform Federal standards. These standards include the National Ambient Air Quality Standards (NAAQS) which set maximum allowable ambient concentrations of ozone (O_3), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), carbon monoxide (CO), lead (Pb) and particulate matter 10 microns or smaller (PM_{10}). Section 176(c) of the Act, in part, states that no deferral agency shall engage in, support in any way or provide financial assistance for, license or permit or approve any activity that does not conform to the State Implementation Plan (SIP).

Federal Aviation Administration (FAA) Order 5050.4B requires air quality analysis for projects in areas not in compliance with the Environmental Protection Agency (EPA) approved SIP. The San Carlos Apache Airport is located in an air quality attainment area, therefore further air quality analysis is not required.

Construction emissions, specifically dust, are not a long-term factor. These emissions are described in the “Construction Impact” section of this Chapter. The necessary permits will be obtained before construction begins and construction projects will conform to FAA Advisory Circular (AC) 150/5370-10B, *Standards for Specifying Construction of Airports.*

The following best management practices are recommended to minimize construction emissions:

I. Site Preparation
   a. Minimize land disturbance;
   b. Use watering trucks to minimize dust;
   c. Cover trucks when hauling dirt or debris;
   d. Stabilize the surface of dirt piles and any disturbed areas;
   e. Use windbreaks to prevent any accidental dust pollution; and
   f. Segregate storm water drainage from construction sites and material piles.

II. Construction Phase
   a. Cover trucks when transferring materials; and
   b. Minimize unnecessary vehicular and machinery activities.

III. Completion Phase
   a. Re-vegetate any disturbed land not used; and
   b. Remove unused material and dirt piles.

COASTAL RESOURCES

There are no coastal zones associated with the proposed development. Therefore, compliance with the Coastal Zone Management Act of 1972 and the Coastal Barriers Resources Act of 1982 is not a factor.

COMPATIBLE LAND USE

Land use compatibility considerations include safety, height hazards and noise exposure. Although extremely rare, most aircraft accidents occur within 5,000 feet of a runway. Therefore, the ability of the pilot to bring the aircraft down in a manner that minimizes the severity of an accident is dependent upon the type of land uses within the vicinity of the airport. Land uses are reviewed in five zones (refer to Figure 6-1) surrounding the airport:

- Zone A (yellow) - the Runway Protection Zone (RPZ),
  - The RPZ is a trapezoidal area extending 1,200 feet beyond the ends of the runway and is typically included within the airport property boundary. Residential and other uses that result in congregations of people are restricted from the RPZ.
- Zone B (purple) - the 65 day-night level (DNL) noise contour and Sideline Safety Zone,
  - The 65 DNL and Sideline Safety Zone is located 1,750 feet on either side of the runway and extends 10,200 feet beyond the ends of the Runways. Public land uses, such as schools, libraries, hospitals and churches should be strongly discouraged. New residential developments should be prohibited within the 65 DNL contour and strongly discouraged within the sideline safety zone.
- Zone C (red) - the Approach Zone (AZ),
  - The approach zone generally falls within the Federal Aviation Regulation (FAR) Part 77 Approach Surface area. The Approach Zone has identical restrictions to the 65 DNL and Sideline Safety Zone and falls entirely within that zone.
- Zone D (green) - the Traffic Pattern Zone (TPZ); and
  - The TPZ is generally the area within one mile of the airport. The traffic patterns at the San Carlos Apache Airport are located on the north side of the airport and therefore, the TPZ falls on the north side of the airport. Within the TPZ, avigation easements should be considered and disclosure statements required.
- Zone E (blue) - the Airport Influence Zone (AIZ).
  - The AIZ is the area within a box offset 3,000 feet beyond the TPZ. The AIZ is in place to make public within the proximity of the airport aware of its presence and to ensure that compatible land uses occur around the airport.

The compatible land use zones are depicted in Figure 6-1. The closest populated area to the San Carlos Apache Airport is the Casino located immediately north of the airport. A non-standard right hand traffic pattern to Runway 9 and standard left hand traffic pattern to Runway 27 have been implemented to avoid overflight of high terrain to the south of the airport, however the traffic patterns generally fall farther to the north of the casino complex.

Federal Aviation Regulation (FAR) Part 77, *Objects Affecting Navigable Airspace,* provides imaginary surfaces surrounding an airport that should be protected from penetration by objects. These include the approach surface, horizontal surface and conical surface. These surfaces were described in Chapter 4. Proposed structures in the vicinity of the airport should be reviewed against the Part 77 criteria to ensure hazards to air navigation are not created. Objects penetrating the above mentioned Part 77 surfaces could result in a hazard to air navigation.

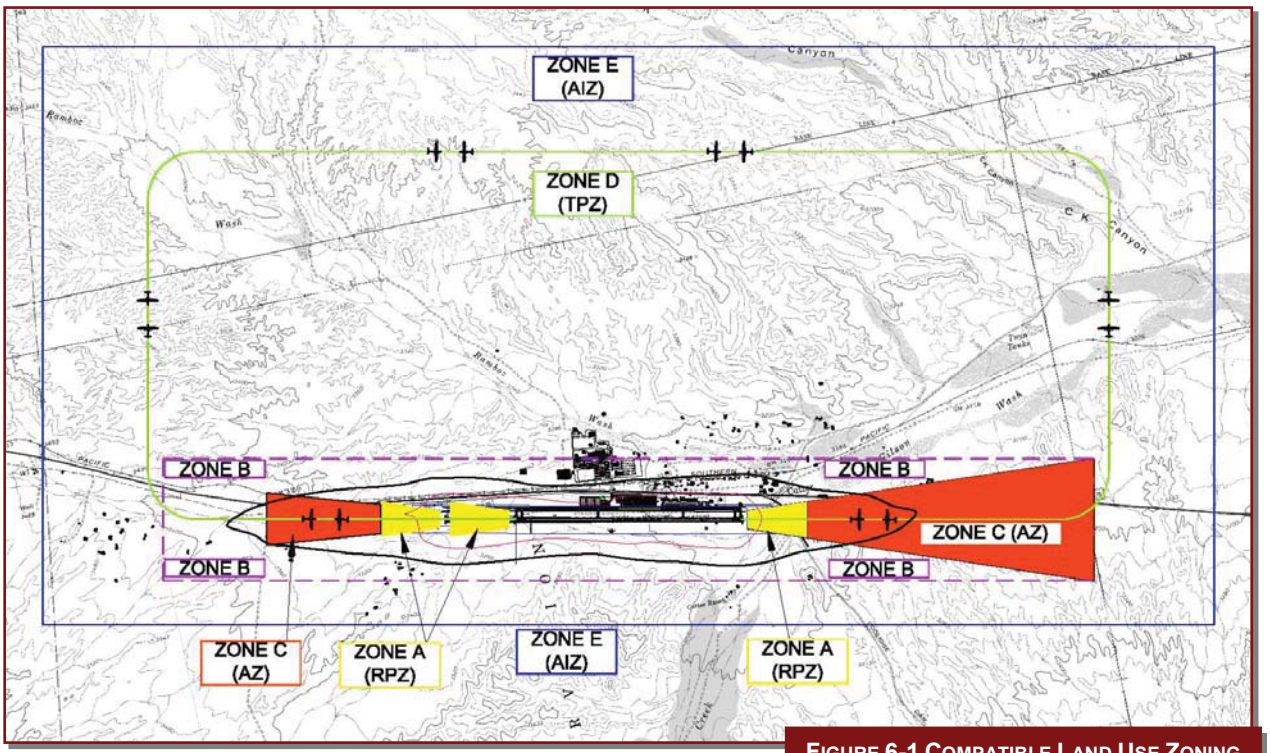


FIGURE 6-1 COMPATIBLE LAND USE ZONING

Given that the San Carlos Apache Airport is located entirely on the San Carlos Apache Indian Reservation, all land is owned and controlled by the San Carlos Apache Tribe. No land on the reservation is owned privately. It is still recommended that the Tribe adopt or implement an Airport Overlay Zoning Ordinance to protect the airport from incompatible encroachment. A copy of the Airport Overlay Zoning Ordinance can be found in Appendix E.

CONSTRUCTION IMPACTS

Local, State and Federal ordinances and regulations address the impacts of construction activities, including construction noise, dust and noise from heavy equipment traffic, disposal of construction debris and air and water pollution.

Construction operations for the proposed development will cause specific impacts resulting solely from and limited exclusively to the construction period. Construction impacts are distinct in that they are temporary in duration and the degree of adverse impacts decrease as work is concluded. The following construction impacts can be expected:

- A temporary increase in particulate and gaseous air pollution levels as a result of dust generated by construction activity and by vehicle emissions from equipment and worker's automobiles;
- Increase in solid and sanitary wastes from the workers at the site;
- Traffic volumes that would increase in the airport vicinity due to construction activity (workers arriving and departing, delivery of materials, etc.);
- Increase in noise levels at the airport during operation of heavy equipment; and
- Temporary erosion, scarring of land surfaces and loss of vegetation in areas that are excavated or otherwise disturbed to carry out future developments.

All construction projects will comply with guidelines set forth in FAA Advisory Circular 150/5370-10B, *Standards for Specifying the Construction of Airports.* The contractor will obtain the required construction permits as well as prepare Storm Water Pollution Prevention and Fugitive Dust Control Plans for construction. These requirements will be specified in the contract documents for the construction of the proposed improvements.

DOT ACT – SECTION 4(F)

Section 303c of Title 49, U.S.C., formerly Section 4(f) of the DOT Act of 1966, provides that the Secretary of Transportation shall not approve any program or project that requires the use of any publicly owned land from a public park, recreation area or wildlife and waterfowl refuge of National, State or Local significance or land from a historic site of National, State or Local significance, as determined by the officials having jurisdiction thereof, unless there is no feasible and prudent alternative to the use of such land and such project includes all possible planning to minimize impact. Improvements will not require land from any public park, recreation area or wildlife and waterfowl refuge. The nearest wilderness areas are the Needles Eye Wilderness Area which is located 12 statute miles south southeast of San Carlos Apache Airport and the Salt River Canyon Wilderness Area which is locater 18 statute miles north northwest.

FARMLANDS

The Farmland Protection Policy Act (FPPA) authorizes the Department of Agriculture to develop criteria for identifying the effects of Federal programs upon the conversion of farmland to uses other than agriculture.

Conversion of "Prime or Unique" farmland may be considered a significant impact. Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed or fiber without intolerable soil erosion as determined by the Secretary of Agriculture. Unique farmland is land other than prime farmland which is used to produce specific high value food and fiber crops, such as citrus, tree nuts, olives, cranberries, fruits and vegetables.

Figure 6-2 shows the high quality farmland in the State of Arizona in Red and Green. As shown, there is no high quality farmland in or around the San Carlos Area.

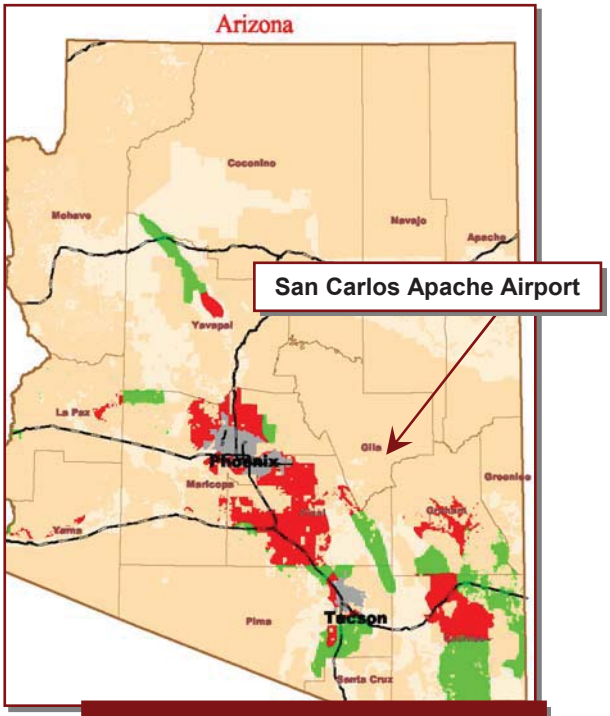


FIGURE 6-2 PRIME AND UNIQUE FARMLAND

FISH, WILDLIFE AND PLANTS

This category concerns potential impacts to existing wildlife habitat and threatened and endangered species. Examining both the area of land to be altered or removed and its relationship to surrounding habitat quantify the significance of the impacts in this category. For example, removal of a few acres of habitat which represents a small percentage of the area's total similar habitat which supports a limited variety of common species would not be considered significant. However, removal of a sizeable percentage of the area's similar habitat or habitat which is known to support rare species would be considered a significant impact. Improvements

to the San Carlos Apache Airport, including the planned runway extension, would not remove any habitat that has not already been disturbed.

Section 7 of the Endangered Species Act, as amended, requires each Federal Agency to insure that "any action authorized, funded or carried out by such agency… is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of critical habitat of such species…"

An *Endangered Species* is defined as any member of the animal or plant kingdoms determined to be in danger of extinction throughout all or a significant portion of its range. A *Threatened Species* is defined as any member of the animal or plant kingdoms that are likely to become endangered in the foreseeable future. A *Candidate Species* is defined as a plant or animal for which there is sufficient information on their biological status and threats to propose them as endangered or threatened but for which development of a proposed listing regulation is precluded by other higher priority listing activities. A *Candidate Conservation Agreement* is a formal agreement between the U.S. Fish and Wildlife Service and one or more parties to address the conservation needs of proposed or candidate species, or species likely to become candidates, before they become listed as endangered or threatened.

The following species are currently listed for Gila County, but do not necessarily occur in the vicinity of San Carlos or within the project areas.

Endangered
- Arizona Hedgehog – Echinocereus Triglochidiatus var. Arizonicus
- California Brown Pelican – Pelecanus Occidentalis Californicus
- Colorado Pikerminnow – Ptychocheilus Lucius
- Gila Chub – Gila Intermedia
- Gila Topminnow – Poeciliopsis Occidentalis Occidentalis
- Lesseer Long-Nosed Bat – Leptonycteris Curasoae Yerbaduenae
- Razorback Sucker – Xyrauchen Texanus
- Southwestern Willow Flycatcher – Empidonax Traillii Extimus
- Yuma Clapper Rail – Rallus Longirostris Yumanensis

Threatened
- Apache (Arizona) Trout – Oncorhynchus Apache
- Bald Eagle – Haliaeetus Leucocephalus
- Chiricahua Leopard Frog – Rana Chiricahuensis
- Gila Trout – Oncorhynchus Gilae
- Loach Minnow – Tiaroga Cobitis
- Mexican Spotted Owl – Strix Occidentalis Lucida
- Spikedace – Meda Fulgida

Candidate
- Headwater Chub – Gila Nigra
- Yellow-Billed Cuckoo – Coccyzus Americanus

Conservation Agreement
- Arizona Bugbane – Cimicifuga Arizonica

The planned improvement to the airport will be completed on previously disturbed ground adjacent to and surrounded by human activities. The projects will have no impact on threatened or endangered species.

FLOODPLAINS

Floodplains are defined by Executive Order 11988, *Floodplain Management*, as "the lowland and relatively flat areas adjoining coastal water… including at a minimum, that area subject to a one percent or greater chance in flooding in any given year…", that is, an area which would be inundated by a 100-year flood. If a proposed action involves a 100-year floodplain, mitigating measures must be investigated in order to avoid significant changes to the drainage system.

As described in FAA Order 5050.4B, *Airport Environmental Handbook,* an airport development project would be a significant impact pursuant to NEPA if it results in notable adverse impacts on natural and beneficial floodplain values. Mitigation measures for base floodplain encroachments may include committing to special flood related design criteria, elevating facilities above base flood level, locating nonconforming structures and facilities out of the floodplain or minimizing fill placed in floodplains. After reviewing aerial photography and several site visits, it does not appear that the planned property lines of the San Carlos Apache Airport encroach upon a designated 100-year floodplain and no floodplain impacts are expected. Neither the existing unnamed drainage wash south of the airport nor the Gilson Wash will be affected by the planned improvements.

HAZARDOUS MATERIALS, POLLUTION PREVENTION AND SOLID WASTE

Four primary laws have been passed governing the handling and disposal of hazardous materials, chemicals, substances and wastes. The two statues of most importance to the FAA in proposing actions to construct and operate facilities and navigational aids are the Resource Conservation and Recovery Act (RCRA) (as amended by the Federal Facilities Compliance Act of 1992) and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) [as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA or Superfund) and the Community Environmental Response Facilitation Act of 1992]. RCRA governs the generation, treatment, storage and disposal of hazardous wastes. CERCLA provides for consultation with natural resource trustees and cleanup of any release of a hazardous substance (excluding petroleum) into the environment.

A Stormwater Pollution Prevention Plan (SWPPP) has been completed as part of this project (See Appendix D).

The area surrounding the San Carlos Apache Airport is currently used for commercial business and light industry. There are no known hazardous waste locations in the area; however, the old FBO building should be inspected for asbestos or other hazardous materials prior to demolition. The site of the FBO underground storage tanks should also be evaluated prior to developing the site.

Airport development actions that relate only to construction or expansion of runways, taxiways, and related facilities do not normally include any direct relationship to solid waste collection, control or disposal other than that associated with the construction itself. The nature of the proposed airport meets these criteria and will not significantly increase net waste output for the Tribe.

Any solid waste disposal facility (i.e. sanitary landfill) which is located within 5,000 feet of all runways planned to be used by piston-powered aircraft or within 10,000 feet of all runways planned to be used by turbine aircraft, is considered by the FAA to be an incompatible land use because of the potential for conflicts between bird habitat and low-flying aircraft. This determination is found in FAA Advisory Circular 150/5200-33, *Hazardous Wildlife Attractants On or Near Airports.* There are no solid waste disposal facilities within 10,000 feet of the airport. Any planned solid waste disposal facilities should be located at least 10,000 feet from the runway.

HISTORICAL, ARCHITECTURAL, ARCHAEOLOGICAL AND CULTURAL RESOURCES

The National Historic Preservation Act of 1966 requires that an initial review be made in order to determine if any properties in or eligible for inclusion in the National Register of Historic Places are within the area of a proposed action's potential environmental impact (the area within which direct and indirect impacts could occur and thus cause a change in historic, architectural, archaeological or cultural properties).

The Archaeological and Historic Preservation Act of 1974 provides for the survey, recovery and preservation of significant scientific, prehistoric, historical, archaeological or paleontological data when such data may be destroyed or irreparably lost due to a Federal, Federally funded or federally licensed project.

There are no known archaeological sites within the vicinity of the San Carlos Apache Airport. A cultural resource survey was completed in March of 1997 for the planned airport improvements, including the runway extension, as well as consultation with the Tribal Elders on the cultural value of the land in the project area. A copy of the 1997 Cultural Resource Survey is included in Appendix F.

LIGHT EMISSIONS AND VISUAL IMPACTS

Airfield lighting is the main source of light emissions emanating from an airport. Rotating airport beacons are provided so pilots can identify the location of an airport at night or in reduced visibility conditions. Rotating beacons consist of alternating white and green lights rotating at six rotations per minute. Beacons are typically mounted on a tower or on top of a hangar or other building. Specifications for spotting airport beacons allow the beam to be angled from 2° to 12° above the horizon. The standard setting is 6°. If necessary, the beacon can be shielded to reduce visibility of the beacon from below the horizon line. Medium Intensity Runway Edge Lights (MIRLs) are single white or yellow lights mounted on 18 inch posts spaced at 200 foot intervals along both edges of the runway. They define the boundaries of the runway surface usable for takeoff and landing. Precision Approach Path Indicators (PAPIs) are used for visual decent guidance and consist of two light units located to the left of the runway and perpendicular to the runway centerline. The lights are directed at a glide path angle of 3° above the runway. If the aircraft is above the glide path, the pilot will see all white lights. If the pilot is on the proper flight path, the light unit closest to the runway will be red and the unit furthest from the runway will be white. When the pilot is below the glide path, the pilot will see both red lights. PAPIs have an effective visual range from the air of approximately five miles during the day and up to twenty miles at night. These visual aids are extremely useful and enhance safety in situations where there are few visual references surrounding the airport. Runway End Identifier Lights (REILs) are synchronized flashing lights located laterally on each side of the runway threshold. They are angled upward and outward from the runway and provide rapid and positive

identification of the threshold of a runway. This is especially useful in metropolitan and densely developed areas where lights in the vicinity of the airport make it difficult to identify the runway.

Proposed improvements will primarily replace existing lighting, relocate existing visual aids and add lighting to the runway extension. Both projects are not expected to substantially increase light emission impacts at the San Carlos Apache Airport. It is recommended that the airport continue to utilize pilot controlled lighting on all airfield lighting and visual aids and include timers or motion sensors for apron and automobile parking area lights. This would significantly decrease the light emissions, and costs, from the airport.

NATURAL RESOURCES, ENERGY SUPPLY AND SUSTAINABLE DESIGN

Executive order 13123, *Greening the Government through Efficient Energy Management* (64 FR 30851, June 8, 1999), encourages each Federal agency to expand the use of renewable energy within its facilities and in its activities. E.O. 13123 also requires each Federal agency to reduce petroleum use, total energy use and associated air emissions and water consumption in its facilities.

It is also the policy of the FAA, consistent with NEPA and the CEQ regulations, to encourage the development of sustainability. All elements of the transportation system should be designed with a view to their aesthetic impact, conservation of resources such as energy, pollution prevention, harmonization with the community environment and sensitivity to the concerns of the traveling public.

Energy requirements associated with airport improvements generally fall into two categories: 1) changed demand for stationary facilities (i.e. airfield lighting and terminal building heating) and 2) those that involve the movement of air and ground vehicles (i.e. fuel consumption). The use of natural resources includes primarily construction materials and water.

Energy requirements are not expected to significantly increase as a result of the proposed improvements. There is an existing well providing water at the airport and wastewater is sent to a septic system. It is recommended that a sewer line be extended to the airport. A sewer line currently exists for the Apache Gold Casino and could serve as a tie in for the airport.

Demand for aircraft fuel is expected to increase with the development of airport facilities. Aircraft fuel should be stored in above ground tanks at the airport that conform to EPA regulations. Significant increases in ground vehicle fuel consumption are not anticipated.

NOISE

Noise analysis considerations include whether the Federal thresholds of noise exposure are exceeded, whether the 65 day-night level (DNL) noise contour extends beyond airport property and if there are any residences, churches, schools or hospitals within the 65 DNL noise contour. The basic measure of noise is the sound pressure level that is recorded in decibels (dBA). The important point to understand when considering the impact of noise on communities is that equal levels of sound pressure can be measured for both high and low frequency sounds. Generally, people are less sensitive to sounds of low frequencies than they are to high frequencies. An example of this might be the difference between the rumble of automobile traffic on a nearby highway and the high-pitched whine of jet aircraft passing overhead. At any location, over a period of time, sound pressure fluctuates considerably between high and low frequencies. Figure 6-3 depicts a Sound Level Comparison of different noise sources.

The identification of airport generated noise impacts and implementation of noise abatement measures is a joint responsibility of airport operators and users. FAA Order 5050.4B states that "no noise analysis is needed for proposals involving Design Group I and II airplanes operating at airports whose forecast operations in the period covered by the EA do not exceed 90,000 annual adjusted propeller operations or 700 annual adjusted jet operations…" Noise analysis is not required for the San Carlos Apache Airport, however, in the event that a flight school is established at the San Carlos Apache Airport, annual adjusted propeller operations is expected to exceed the 90,000 mark. Therefore, a noise analysis was completed depicting the maximum number of anticipated operations with the flight schools impact. The 65 DNL noise contour for the 20-year condition with and without the flight school at the airport is shown in Figure 6-4 and does not impact any residences, churches, schools or hospitals.

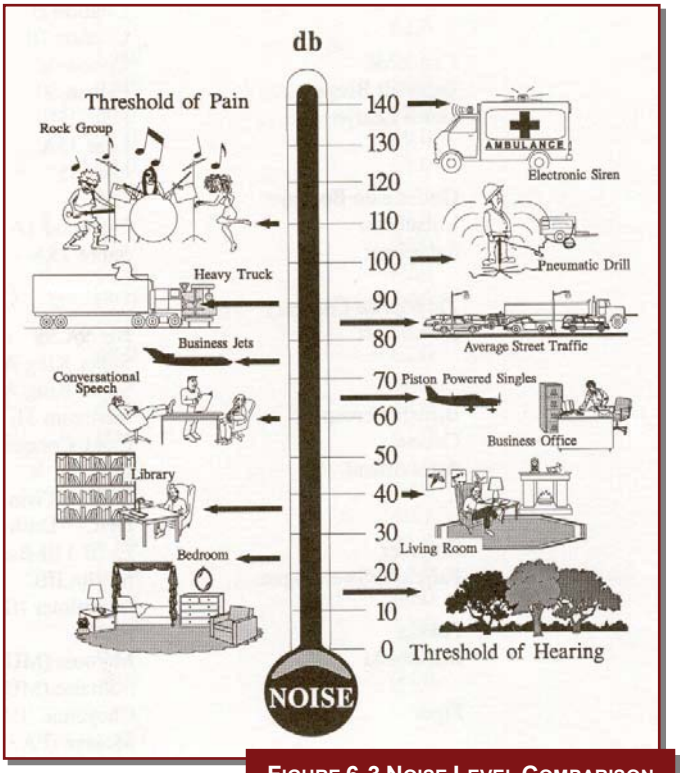


FIGURE 6-3 NOISE LEVEL COMPARISON

VOLUNTARY NOISE ABATEMENT PROGRAM

Although the noise exposure levels will not exceed 65 DNL over any noise sensitive area, several voluntary measures can be applied to minimize noise exposure to surrounding areas. Several of these measures are listed below. It is recommended that a voluntary noise abatement program be implemented for the airport and publicized to all based and transient pilots.

Pilots:

- Be aware of noise sensitive areas, particularly residential areas near the airport and avoid low flight over these areas.
- Fly traffic patterns tight and high, keeping the aircraft as close to the field as possible.
- In constant-speed-propeller aircraft, do not use high RPM settings in the pattern. Propeller noise from high-performance singles and twins increases drastically at high RPM settings.
- On takeoff, reduce to climb power as soon as safe and practical.
- Climb after liftoff at best-angle-of-climb speed until crossing the airport boundary, then climb at best rate.
- Depart from the start of the runway rather than intersections, for the highest possible altitude when leaving the airport vicinity.
- Avoid prolonged run-ups and do them inside the airport area, rather than at its perimeter.
- Try low-power approaches and always avoid the low, dragged-in approach.

Instructors:

- Teach noise abatement procedures to all students, including pilots you take up for flight reviews.

- Know noise-sensitive areas, and point them out to students.
- Assure students fly at or above the recommended pattern altitude.
- Practice maneuvers over unpopulated areas and vary practice areas so that the same locale is not constantly subjected to aircraft operations.
- During practice of ground-reference maneuvers, be particularly aware of houses or businesses in your flight path.
- Stress that high RPM propeller settings are reserved for takeoff and for short final but not for flying in the pattern. Pushing the propeller to high RPM results in significantly higher levels of noise.

Fixed Base Operators (FBOs):

- Identify noise-sensitive areas and work with customers to create voluntary noise abatement procedures.
- Post any noise abatement procedures in a prominently visible area and remind pilots of the importance of adhering to them.
- Call for the use of the least noise sensitive runway whenever wind conditions permit.
- Initiate pilot education programs to teach and explain the rationale for noise abatement procedures and positive community relations.

Airport Owner and Surrounding Jurisdictions:

- Maintain appropriate zoning in the vicinity of the airport and see that noise sensitive land uses are not authorized within pattern, approach and departure paths.
- Disclose the existence of the airport and the airport influence area to real estate purchasers.
- Publish voluntary noise procedures on the internet.
- Publish voluntary calm runway use procedures.

SOURCE: AIRCRAFT OWNERS AND PILOTS ASSOCIATION (AOPA)

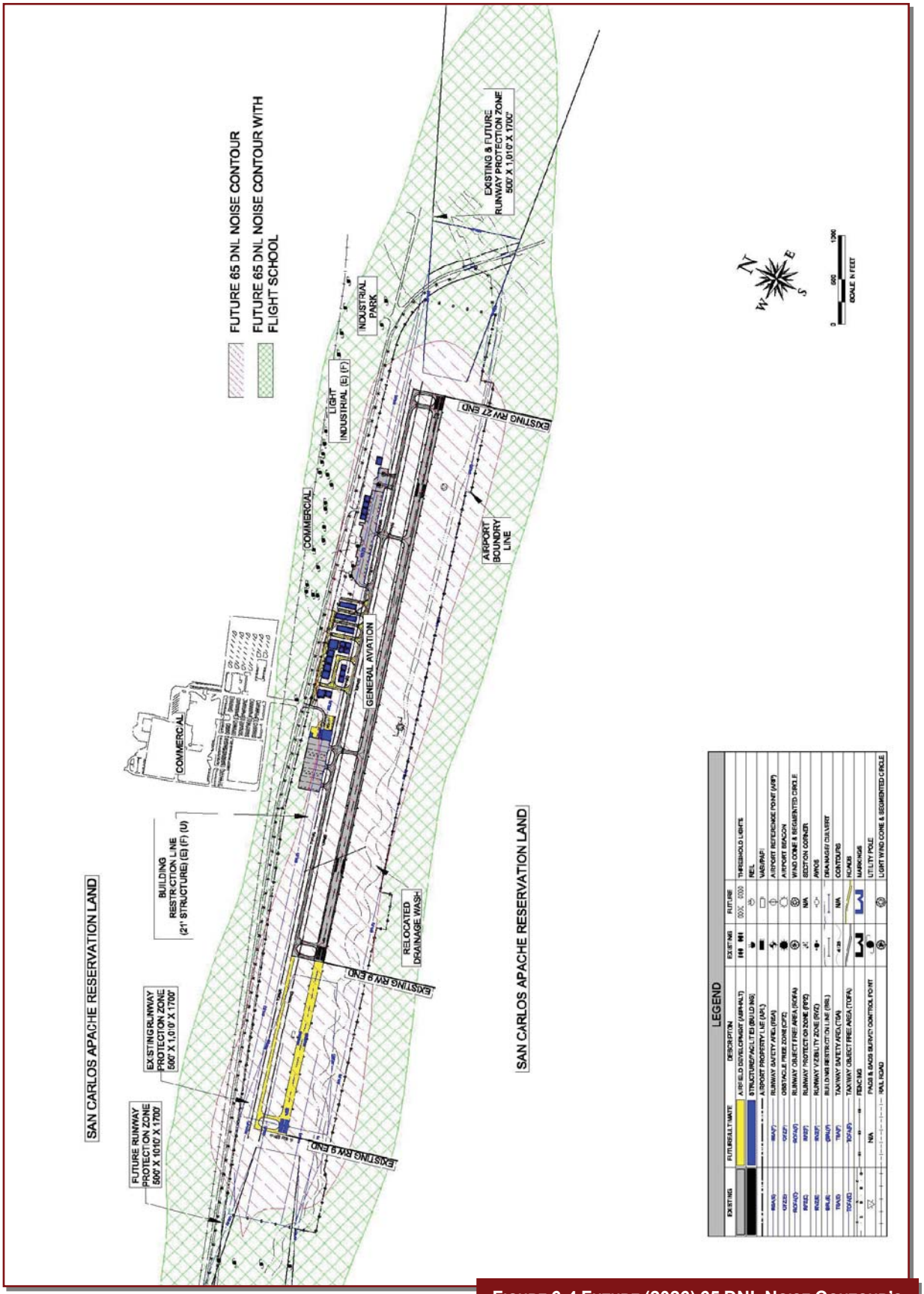


FIGURE 6-4 FUTURE (2026) 65 DNL NOISE CONTOUR'S

SECONDARY (INDUCED) IMPACTS

These secondary or induced impacts involve major shifts in population, changes in economic climate or shifts in levels of public service demand. The effects are directly proportional to the scope of the project under consideration. Assessment of induced socioeconomic impacts is usually only associated with major development at large air carrier airports, which involve major terminal building development or roadway alignments and similar work. The extent of the indirect socioeconomic impacts of the proposed development is not of the magnitude that would normally be considered significant; however, positive impacts can be foreseen in the form of direct, indirect and induced economic benefits generated from the airport.

SOCIOECONOMIC IMPACTS, ENVIRONMENTAL JUSTICE AND CHILDREN'S ENVIRONMENTAL HEALTH AND SAFETY RISKS

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,* the accompanying Presidential Memorandum and Order DOT 5610.2, *Environmental Justice,* require the FAA to provide for meaningful public involvement by minority and low-income populations and analysis, including demographic analysis, that identifies and addresses potential impacts on these populations that may be disproportionately high and adverse. Included in this process is the disclosure of the effects on subsistence patterns of consumption of fish, vegetation or wildlife and effective public participation and access to this information. The Presidential Memorandum that accompanied E.O. 12898, as well as the CEQ and EPA Guidance, encourage consideration of environmental justice impacts in EA's, especially to determine whether a disproportionately high and adverse impact may occur. Environmental Justice is examined during evaluation of other impact categories, such as noise, air quality, water, hazardous materials and cultural resources.

SOCIOECONOMIC IMPACTS

Induced socioeconomic impacts are usually only associated with major development at large air carrier airports. The socioeconomic impacts produced as a result of the proposed improvements to the San Carlos Apache Airport are expected to be positive in nature and would include direct, indirect and induced economic benefits to the local area. These airport improvements are expected to attract additional users and in turn to encourage tourism, industry and to enhance the future growth and expansion of the community's economic base.

If acquisition of real property or displacement of persons is involved, 49 CFR Par 24, *Implementing the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970,* as amended must be met for Federal projects and projects involving Federal funding. Otherwise, the FAA, to the fullest extent possible, observes all local and State laws, regulations and ordinances concerning zoning, transportation, economic development, housing, etc. when planning, assessing or implementing the proposed action. There is no land acquisition required for the planned improvements; although the Tribe is interested in reserving a portion of land adjacent to the airport for long-term expansion.

ENVIRONMENTAL JUSTICE

The focus of the Environmental Justice evaluation is to determine whether the proposed action results in an inequitable distribution of negative effects to special population groups, as compared to negative effects on other population groups. These special population groups include minority or otherwise special ethnicity or low-income neighborhoods.

The proposed action is not expected to result in any negative impacts to any population groups and therefore, would not result in disproportionate negative impacts to any special population group. Socioeconomic and induced economic impacts are expected to be positive in nature and are expected to benefit all population groups in the area.

CHILDREN'S ENVIRONMENTAL HEALTH AND SAFETY RISKS

Pursuant to Executive Order 13045, *Protection of Children from the Environmental Health Risks*, Federal agencies are directed, as appropriate and consistent with the agency's mission, to make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children. Agencies are encouraged to participate in implementation of the Order by ensuring that their policies, programs, activities and standards address disproportionate risks to children that result from environmental health risks or safety risks. The proposed improvements are not expected to result in any environmental health risks or safety risks on children.

WATER QUALITY

Water quality considerations related to airport development often include increased surface runoff and erosion and pollution from fuel, oil, solvents and deicing fluids. Potential pollution could come from petroleum products spilled on the surface and carried through drainage channels off of the airport. State and Federal laws and regulations have been established to safeguard these facilities. These regulations include standards for above ground and underground storage tanks, leak detection and overflow protection. An effective Storm Water Pollution Prevention Plan (SWPPP) identifies storm water discharge points on the airport, describes measures and controls to minimize discharges and details spill prevention and response procedures. A SWPPP has been prepared for the San Carlos Apache Airport as part of this study (See Appendix D).

In July of 2002, the EPA amended the Oil Pollution Prevention Regulation at Title 40 of the Code of Federal Regulations, Part 112 (40 CFR Part 112). Subparts A through C of this regulation is often referred to as the "SPCC rule" because they describe requirements for certain facilities (including airports) to prepare and implement Spill Prevention Control and Countermeasure (SPCC) Plans. Since there are currently no above ground fuel/oil storage facilities at the airport, a SPCC Plan is not required. A SPCC Plan should be prepared in conjunction with the installation of above ground fuel tanks.

In accordance with Section 402(p) of the Clean Water Act, a National Pollution Discharge Elimination System (NPDES) General Permit is required from the EPA for construction projects that disturb one or more acres of land. Applicable contractors will be required to comply with the requirement and procedures of the NPDES General Permit, including the preparation of a Notice of Intent and a Storm Water Pollution Prevention Plan, prior to the initiation of construction activities.

Recommendations established in FAA Advisory Circular 150/5370-10B, *Standards for Specifying Construction of Airports,* item P-156, *Temporary Air and Water Pollution, Soil Erosion and Siltation Control,* will be incorporated into the project design and specifications. The design and construction of the proposed improvements will incorporate Best Management Practices (BMP) to reduce erosion, minimize sedimentation, control non-storm water discharges and protect the quality of surface water features potentially affected. These practices will be selected based on the site's characteristics and those factors within the contractor's control and may

include: construction scheduling, limiting exposed areas, runoff velocity reduction, sediment trapping and good housekeeping practices.

Future fuel storage and dispensing facilities should be designed, constructed, operated and maintained in accordance with applicable Federal, State and Local regulations. Waste fluids, including oils, coolants, degreasers and aircraft wash facility wastewater will be managed and disposed of in accordance with applicable Federal, State and Local regulations.

WETLANDS

Wetlands are defined in Executive Order 11990, *Protection of Wetlands,* as "those areas that are inundated by surface or ground water 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 seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs and similar areas such as sloughs, potholes, wet meadows, river overflows and natural ponds. Jurisdictional Waters of the United States may also include drainage channels, washes, ditches, arroyos or other waterways that tributaries to Navigable water of the United States or other waters where the degradation or destruction of which could affect interstate or foreign commerce.

Based on site visits and reviews of aerial photography, the planned improvements will not impact wetlands or Waters of the United States. The U.S.F.W.S. Wetlands Map is included in Appendix G. The planned improvements will not affect the Gilson Wash or the unnamed wash located directly south of the airport.

WILD AND SCENIC RIVERS

The Wild and Scenic Rivers Act (PL 90-542) describes those river areas eligible for protection from development. As a general rule, these rivers possess outstanding scenic, recreational, geological, fish and wildlife, historical, cultural or other similar value.

The Wild and Scenic River list from the National Park Service indicated one Wild and Scenic River listed in Arizona. The Verde River is located in Yavapai County in western Arizona, approximately 130 miles from San Carlos Apache Airport and would therefore not be affected by the proposed improvements.

MEANS TO MITIGATE AND/OR MINIMIZE ADVERSE ENVIRONMENTAL IMPACTS

Where appropriate, the mitigation or minimization of environmental impacts was noted in the discussion of impacts. These actions are summarized below:

- Maintain compatible land uses in the vicinity of the airport;
- Utilize pilot controlled lighting on all airfield lighting and visual aids. Utilize timers or motion sensors for apron and automobile parking area lights;
- Adhere to FAA AC 150/5370-10B, *Standards for Specifying the Construction of Airport,* and Best Management Practices (BMP) to minimize or eliminate impacts to water quality and air quality during construction.

SUMMARY OF POTENTIAL ENVIRONMENTAL IMPACTS

Table 6-1 provides a summary of the analysis ratings for the eighteen environmental impact categories with respect to the proposed airport improvements. While some categories indicate a potential impact, they are all estimated to be below the threshold of significant as described in FAA Order 5050.4B.

TABLE 6-1 SUMMARY OF POTENTIAL ENVIRONMENTAL IMPACTS

Air Quality	⦿	Short-term, during construction
Coastal Resources	○	
Compatible Land Uses	○	Implement Compatible Land Use Plans
Construction Impacts	⦿	Short-term noise, dust and exhaust
DOT Act - Section 4(f)	○	
Fish, Wildlife and Plants	○	
Floodplains	○	
Hazardous Materials, Pollution Prevention and Solid Waste	○	
Historical, Architectural, Archaeological and Cultural Resources	○	
Light Emissions and Visual Impacts	○	
Natural Resources, Energy Supply and Sustainable Design	○	
Noise	⦿	Increased aircraft operations
Secondary (Induced) Impacts	⦿	Positive - direct/indirect economic benefits
Socioeconomic Impacts, Environmental Justice and Children's Environmental Health and Safety Risks	○	
Water Quality	⦿	Water quality certification and update SWPPP
Wetlands	○	
Wild and Scenic Rivers	○	

○ - No Impact ⦿ - Moderate Impact ● - Significant Impact

Based on this evaluation, it is recommended that Categorical Exclusions (CATEX) be issued for all projects included in the CIP. None of the projects appear to exceed the specific thresholds of significant for environmental impacts. Although no significant environmental impacts are anticipated, FAA policy may dictate that an Environmental Assessment be prepared for the major projects including the runway extension.

San Carlos Apache Airport

Chapter Seven

Capital Improvement Program & Financial Plan

INTRODUCTION

A program of recommended airport development for San Carlos Apache Airport has been formulated to guide the sponsor in the systematic development of the airport and to aid the Federal Aviation Administration (FAA) and the Tribe in allocating funding over the planning period. In Arizona, projects eligible for Airport Improvement Program (AIP) participation are normally funded at 95 percent by the FAA, 2.5 percent by the State and 2.5 percent by the Sponsor, however, current Arizona State legislation prohibits the state from participating in funding on Native American Airports and therefore, the current cost share is 95 percent FAA and 5 percent local. The grant eligible items typically include airfield and aeronautical related facilities such as runways, taxiways, aprons, lighting and visual aids as well as land acquisition and environmental tasks needed to accomplish the improvements. The public use (non-revenue generating) portions of passenger terminals are also grant eligible. In addition, recent AIP legislation has made fuel systems and hangars eligible; however, these items are considered a low priority for FAA funding.

CAPITAL IMPROVEMENT PROGRAM (CIP)

Future airport development at the San Carlos Apache Airport, as included in this study, covers a twenty-year period. Development items are grouped into three phases. Phase I is short-term (1-5 years), Phase II is medium-term (6-10 years) and Phase III is long-term (11-20 years). Estimated development costs are based on the proposed improvements (as shown on the airport layout plan) and are included for each item in the Capital Improvement Program (CIP). Proposed improvements are based on the recommended facility requirements discussed in Chapter 3. The phasing of projects assists the airport sponsor in budgetary planning for construction projects. A drawing showing the phasing of each project is included at the end of this Chapter. The sequence in which the projects are completed is important as the ultimate configuration of the airport will require numerous projects.

Phase I Short-Term (1-5 Years)

- A1 - Taxilane Construction
- A2 - Self-Serve Fuel Farm Construction (100 Low Lead)
- A3 - Self-Serve Fuel Farm Construction (Jet A)
- A4a - Pilot Lounge (General Aviation Terminal)
- A4b - FBO / Hangar Construction (local funding)
- A5 - Access Road / Parking Construction
- A6 - Taxilane Construction and relocation of wind cone
- A7 - Installation of Security Gates and Key Pads
- A8 - Installation / Rehabilitation of Area Lighting

Phase II Medium-Term (6-10 Years)

- B1 - Snow Removal Equipment Storage Building Construction
- B2 - Acquire Snow Removal Equipment

Phase III Long-Term (11-20 Years)

- C1 - Runway and Taxiway Extension
- C2 - Installation of Medium Intensity Taxiway Lights
- C3 - Taxilane Construction

TABLE 7-1 20 YEAR CAPITAL IMPROVEMENT PROGRAM

Phase I, Short-Term Development Items		Total	FAA	Local
A1	Taxilane Construction	$400,000	$380,000	$20,000
A2	Self-Serve Fuel Farm Construction (100 Low Lead)	$157,895	$150,000	$7,895
A3	Self-Serve Fuel Farm Construction (Jet-A)	$157,895	$150,000	$7,895
A4a	Pilot Lounge (General Aviation Terminal)	$400,000	$380,000	$20,000
A4b	FBO / Hangar Construction	$2,500,000	$0	$2,500,000
A5	Access Road / Parking Construction	$110,000	$104,500	$5,500
A6	Taxilane Construction and Relocation of Wind Cone	$495,000	$470,250	$24,750
A7	Installation of Security Gates and Key Pads	$120,000	$114,000	$6,000
A8	Installation / Rehabilitation of Area Lighting	$289,000	$274,550	$14,450
	Total Short-Term Cost	**$4,229,790**	**$4,018,300**	**$211,490**
Phase II, Medium-Term Development Items		Total	FAA	Local
B1	Snow Removal Equipment Storage Building	$480,000	$456,000	$24,000
B2	Acquire Snow Removal Equipment	$300,000	$285,000	$15,000
	Total Medium Term Cost	**$780,000**	**$741,000**	**$39,000**
Phase III, Long-Term Development Items		Total	FAA	Local
C1	Runway and Taxiway Extension to 8,500 feet	$2,040,000	$1,938,000	$102,000
C2	Installation of Medium Intensity Taxiway Lights	$370,000	$351,500	$18,500
C3	Taxilane Construction	$500,000	$475,000	$25,000
	Total Long-Term Cost	**$2,910,000**	**$2,764,500**	**$145,500**
	TOTAL DEVELOPMENT COST	**$7,919,790**	**$7,523,800**	**$395,990**

Cost Estimates in 2006 Dollars

CAPITAL DEVELOPMENT

Federal Grant Assistance: The phasing of projects assists the airport sponsor in budgetary planning for construction improvements that are needed to provide safe and functional facilities for aviation demands. Phased development schedules also assist the airport sponsor in contingencies and construction. Table 7-1 assumes that the Federal Aviation Administration will participate with funding from the Airport Improvement Program (AIP) of 95 percent towards capital improvements. The San Carlos Apache Tribe would then be responsible for providing 5 percent matching funds for grant eligible projects. The Tribe may meet its local share requirements through cash, in-kind service, force-account, donations or private/third party participation.

The Airport and Airways Act of 1982 created and authorized the Airport Improvement Program (AIP) to assist in the development of a nationwide system of public-use airports adequate to meet the current projected growth of civil aviation. The Act provides funding for airport planning and development projects at airports included in the National Plan of Integrated Airport Systems (NPIAS).

Funding The Local Share: The airport sponsor has several methods available for funding the capital required to meet the local share of airport development costs. The most common methods involve cash, debt financing which amortize the debt over the useful life of the project, force accounts, in-kind service, third-party support and donations.

Bank Financing: Some airport sponsors use bank financing as a means of funding airport development. Generally, two conditions are required. First, the sponsor must show the ability to repay the loan plus interest and second, capital improvements must be less than the value of the present facility or some other collateral used to secure the loan. These are standard conditions which are applied to almost all bank loan transactions.

General Obligation Bonds: General Obligation bonds (GO) are a common form of municipal bonds whose payment is secured by the full faith credit and taxing authority of the issuing agency. GO bonds are instruments of credit and because of the community guarantee, reduce the available debt level of the sponsoring community. This type of bond uses tax revenues to retire debt and the key element becomes the approval of the voters to a tax levy to support airport development. If approved, GO bonds are typically issued at a lower interest rate than other types of bonds.

Self-liquidating General Obligation Bonds: As with General Obligation bonds, Self-liquidating General Obligation Bonds are secured by the issuing government agency. They are retired, however, by cash flow from the operation of the facility. Providing the state court determines that the project is self-sustaining, the debt may be legally excluded from the community's debt limit. Since the credit of the local government bears the ultimate risk of default, the bond issue is still considered, for the purpose of financial analysis, as part of the debt burden of the community. Therefore, this method of financing may mean a higher rate of interest on all bonds sold by the community. The amount of increase in the interest rate depends, in part, upon the degree of risk of the bond. Exposure risk occurs when there is insufficient net airport operating income to cover the level of service plus coverage requirements, thus forcing the community to absorb the residual.

Revenue Bonds: Revenue Bonds are payable solely from the revenues of a particular project or from operating income of the borrowing agency, such as an airport commission which lacks taxing power. Generally, they fall outside of constitutional and statutory limitations and in many cases do not require voter approval. Because of the limitations on the other public bonds, airport sponsors are increasingly turning to revenue bonds whenever possible. However, revenue bonds normally carry a higher rate of interest because they lack the guarantees of municipal bonds. It should also be noted that the general public would usually be wary of the risk involved with a revenue bond issue for a general aviation airport. Therefore, the sale of such bonds could be more difficult than other types of bonds.

Combined Revenue/General Obligation Bonds: These bonds, also known as "Double-Barrel Bonds", are secured by a pledge of back-up tax revenues to cover principal and interest payments in cases where airport revenues are insufficient. The combined Revenue/General Obligation Bond interest rates are usually lower than Revenue Bonds, due to their back-up tax provisions.

Force Accounts, In-kind Service, Donations: Depending on the capabilities of the Sponsor, the use of force accounts, in-kind service, or donations may be approved by the FAA for the Sponsor to provide their share of the eligible project costs. An example of force accounts would be the use of heavy machinery and operators for earthmoving and site preparation of runways

or taxiways; the installation of fencing; or the construction of improvements to access roads. In-kind service may include surveying, engineering or other services. Donations may include land or materials such as gravel or water needed for the project. The values of these items must be verified and approved by the FAA prior to initiation of the project.

Third-Party Support: Several types of funding fall into this category. For example, individuals or interested organizations may contribute portions of the required development funds (Pilot Associations, Economic Development Associations, Chambers of Commerce, etc.). Although not a common means of airport financing, the role of private financial contributions not only increases the financial support of the project, but also stimulates moral support to airport development from local communities. Because of the potential for hangar development, private developers may be persuaded to invest in hangar development. A suggestion would be that the Tribe authorize long-term leases to individuals interested in constructing a hangar on airport property. This arrangement generates revenue from the airport, stimulates airport activity, and minimizes the sponsor's capital investment requirements. Another method of third-party support involves permitting the fixed base operator (FBO) to construct and monitor facilities on property leased from the airport. Terms of the lease generally include a fixed amount plus a percentage of revenues and a fuel flowage fee. The advantage to this arrangement is that it lowers the sponsor's development costs, a large portion of which is building construction and maintenance.

FINANCIAL PLAN

The ultimate goal of any airport should be the capability to support its own operation and development through airport generated revenues. Unfortunately, few airports similar in size to the San Carlos Apache Airport are able to do this. For example, it is difficult to break even when the fees received from hangar rentals and fuel sales will not adequately amortize the cost of construction projects. Yet the effort to become self-sufficient will generate a more positive perception of the airport by the community.

While most airports the size of San Carlos Apache Airport are not able to become self-sustaining, the intrinsic value of a well-maintained airport for the community or region exceeds the day-to-day operational and maintenance costs of the airport. In other words, the dollars spent in the community or the region by individuals or businesses that use the airport exceeds the expenses that are incurred as a result of operation of the airport. Furthermore, the San Carlos Apache Airport provides access for valuable services to the San Carlos Apache Tribe and the San Carlos Apache Reservation.

PROJECTED REVENUES AND EXPENDITURES

Expenditures: Airport operating expenditures typically include insurance, utilities, maintenance and management costs. Insurance costs include liability insurance for the airport and property insurance for any real property on the airport owned by the San Carlos Apache Tribe. Utility expenses primarily consist of power costs to operate airfield lighting and visual aids and water for public use areas. Pavement maintenance consists of crack sealing on an annual basis and seal coating and remarking the pavements every five years. Facility maintenance consists of mowing, snow removal and repair and replacement of parts and equipment such as light bulbs, light fixtures, fences, etc. Management costs may include an airport manager or contract services provided by a third party or an FBO. Currently at the San Carlos Apache Airport, There is an on-site maintenance person who manages and administers the day-to-day details for the airport.

Revenues: Airport revenues generally consist of land leases, user fees and property taxes generated from on-airport improvements. A rates and charges study was conducted for airports of similar size in the region to determine what other airports are charging. A summary of the level of rates and charges used in revenue projections is listed in Table 7-2. The ranges for these rates are considered accurate for general aviation airports. Table 7-2 also shows the current rates and charges for San Carlos Apache Airport along with the recommended rates and charges as a result of the study. Armstrong Consultants conducted a rates and charges survey during the summer of 2006 from other similar sized airports within the regional proximity of San Carlos. The results of this survey can be found in Table 7-2.

TABLE 7-2 RATES AND CHARGES FOR REVENUE PROJECTIONS

	Survey Rates	Current Rates	Recommended Rates
Land Leases	$0.10 - $0.24/sq.ft./year	approx. $0.038/sq.ft./mo.	$0.15/sq.ft/year
Hangar Leases Monthly	$0.05 - $0.10/sq.ft./month	-	$0.05 - $0.10 /sq.ft/month
Hangar Rental Fee Overnight	-	-	$15.00 - $100.00
Tie-Down Fees Monthly	$25.00 - $45.00/aircraft/month	-	$25.00 - $40.00
Transient Overnight Tie-Down Fees	$0.00 - $15.00/aircraft/night	-	$0.00 - $15.00
Through-the-Fence Fees	$150.00 - $450.00/aircraft/year	-	Not Applicable
Fuel Flowage Fees	$0.05 - $0.25/gallon	-	$0.10/gallon
Airport Usage Fee (Charter Aircraft)	-	-	$25.00
Call Out Fee	$25.00 - $75.00	-	$25.00
Vehicle Storage Fee Monthly	-	-	$20.00 - $50.00
Commercial Activity Fees	$0.00 - $500.00/activity/year	-	$200.00/activity/year

Land Leases: Property on the airport that is not devoted to airfield use, vehicle parking or contained within areas required to be cleared of structures may be leased to individual airport users or aviation related businesses. Typically, the individual is provided a long-term lease on which to construct a hangar, business or other facility. At the termination of the lease, the lessee has the option to renew the lease, sell or lease the buildings or to remove the buildings.

Hangar Leases: Hangars on the airport owned by the airport sponsor can be leased to private aircraft operators or businesses. Typically, as with land leases, the individual or business is provided a long-term lease of the hangar. At the termination of the lease, the lessee has the option to renew the lease or cease use of the hangar.

Hangar Rental: The FBO Hangar is available for monthly or nightly rental. The fees are usually established on a monthly basis for based aircraft and on an overnight basis for transient aircraft.

Tie-Down Fees: A fee is typically established for the use of fixed ramp tiedowns on paved apron areas. The fees are usually established on a monthly or annual basis for based aircraft and on an overnight basis for transient aircraft.

Through-the-Fence Fees: A fee is typically charged to adjacent landowners who are provided access directly from their private parcel to the public use airport facilities. This fee ensures that the level of rates and charges assessed to on-airport users is equitable to off-airport users and that there is not an unfair economic advantage to operating “through-the-fence”. Additionally, through-the-fence operators are required to maintain a secure airport perimeter with fencing

and/or gates and to construct paved access taxiways to the airport operating areas. However, the FAA generally discourages through-the-fence operations. Therefore, it is anticipated that all aircraft operations will be conducted from on airport and therefore will not generate through-the-fence fees. In lieu of through-the-fence fees, these aircraft would generate tie-down fees or land lease revenue from hangars.

Fuel Flowage Fee: This fee is typically imposed on all aircraft fuels delivered to the airport and would include all fuels used by aircraft including AvGas, Jet-A, and MoGas. The fee would apply to fixed base operators, self-fueling (if authorized) and through-the-fence operators who conduct self-fueling.

Airport Usage Fee: This fee is imposed on all charter aircraft and can be waived if the operator purchases a minimum of 50 gallons of fuel. The airport usage fee is usually charged by the FBO.

Call Out Fee: This fee is imposed on all users who require after hours fuel service from the FBO.

Vehicle Storage Fee: This fee is imposed on users who wish to lease land for storage of cars, trucks and mobile homes. The fee is imposed monthly.

Commercial Activity Fee: This fee is imposed on commercial activities operating "for profit" at the airport. Typical commercial activities may include fixed base operators, maintenance services, air taxi or charter services, automobile rental, restaurants, retail or other goods and services which may be provided at the airport. The fee is in addition to land lease rates which may be charged for their facilities.

TABLE 7-3 ANNUAL AIRPORT REVENUES AND EXPENSES

		Projected[1]		
	2005-2006	Phase 1[1]	Phase II	Phase III
Potential Operating Revenues				
Fuel Flowage Fee[2]	$0	$1,134	$1,440	$2,160
Tie Down Fees	-	-	-	-
Land Leases	$2,742	$9,044	$14,648	$21,824
Total Operating Revenues	**$2,742**	**$10,178**	**$16,088**	**$23,984**
Operating Expenses				
Utilities	$5,778	$6,000	$6,500	$7,500
Telephone	$700	$750	$800	$900
Supplies	$2,500	$3,000	$3,500	$4,500
General Insurance	$272	$300	$350	$450
Miscellaneous[3]	$4,816	$5,000	$5,000	$5,000
Personnel	$19,298	$5,000	$5,000	$5,000
Total Operating Expenses	**$33,364**	**$20,050**	**$21,150**	**$23,350**
Net Operating Revenues and Expenses	**-$30,622**	**-$9,872**	**-$5,062**	**$634**
Subsidy				
Tribal Contribution	$30,622	$9,872	$5,062	$0
Balance	**$0**	**$0**	**$0**	**$634**

[1] *Projections based on last year of each time period (in 2006 dollars)*
[2] *Projections based on 3 gallons of fuel required per aircraft operation*
[3] *Includes Vehicle Expense and Contractual Service*

RECOMMENDATIONS

The San Carlos Apache Airport has a limited amount of revenue collection. The most effective means of increasing revenue at the San Carlos Apache Airport is to accommodate existing unmet demand and to continue to attract new and additional users. Several potential strategies for increasing revenues are listed below:

- Provide 100LL and Jet-A Fuel through a self-serve fuel system;
- Establish an FBO to handle day-to-day operation of the airport as well as offer services to transient and based aircraft;
- Increase rates for ground leases and increase the number of ground leases for aircraft storage hangars;
- Apply for federal funding to construct T-hangars and box hangars to meet existing and future demand; and
- Focus on attracting business/corporate aviation tenants.

Developing self-serve fuel systems for both 100 low lead and Jet-A AvGas would result in not only increased direct revenue generated through a fuel flowage fee, but would also produce indirect revenue through increased use of airport facilities. Increasing aircraft storage hangars at the airport would result in not only increased direct revenues generated through property leases, but would also produce indirect revenue through increased use of airport services and facilities, such as fuel purchases. Several aircraft owners have indicated an interest in leasing land from the airport to construct hangars. Locations for additional nested T-hangars and individual box hangars have been identified on the Terminal Area Drawing (TAD). Business/corporate tenants are typically flight departments for local businesses and provide employment in the local community. They generally operate multi-engine turboprop or business jet aircraft. Their land lease parcels are usually large, the aircraft are typically operated two to three times per week and fuel purchases are typically larger than other general aviation user (several hundred gallons per fueling).

Whether the improved San Carlos Apache Airport operates at an annual surplus or subsidy depends greatly on the amount of activity and facilities that are constructed at the airport. Existing demand is currently constrained by the lack of aircraft fueling facilities. The most efficient way for the Tribe to accommodate this demand is to construct self-serve fueling operations and set up a lease agreement with an FBO to operate the facility. With increased operations at the airport due to the availability of fuel and ramp services, the airport would then need to accommodate increased numbers of based and transient aircraft with hangars. This can be accommodated through the construction of taxilanes and providing land leases for hangars (sample Lease agreements have been provided in the Airport Standards Manual). If demand for basing aircraft at the San Carlos Apache Airport continues in the long-term, the Tribe should consider constructing multi-unit T-hangars and/or box hangars. If federal funding is approved to construct these hangars and vacancy rates are low, the Tribe could potentially increase revenues to the point they meet or exceed expenditures.

COMMUNITY SUPPORT

While it would certainly be advantageous for an airport to support itself, the indirect and intangible benefits of the airport to the community's economy and growth must be considered. People are directly or indirectly employed on the airport by the Tribe and individual businesses. As airport activity increases, it is probable that employment on the airport will also grow throughout the planning period. The local construction industry will also benefit directly from

implementation of the development programs. Other community benefits involve business growth and development that is enhanced by the availability of air transportation including commercial service, corporate and private aviation. Clients and suppliers of area businesses will also benefit from the future improvement to the airport.

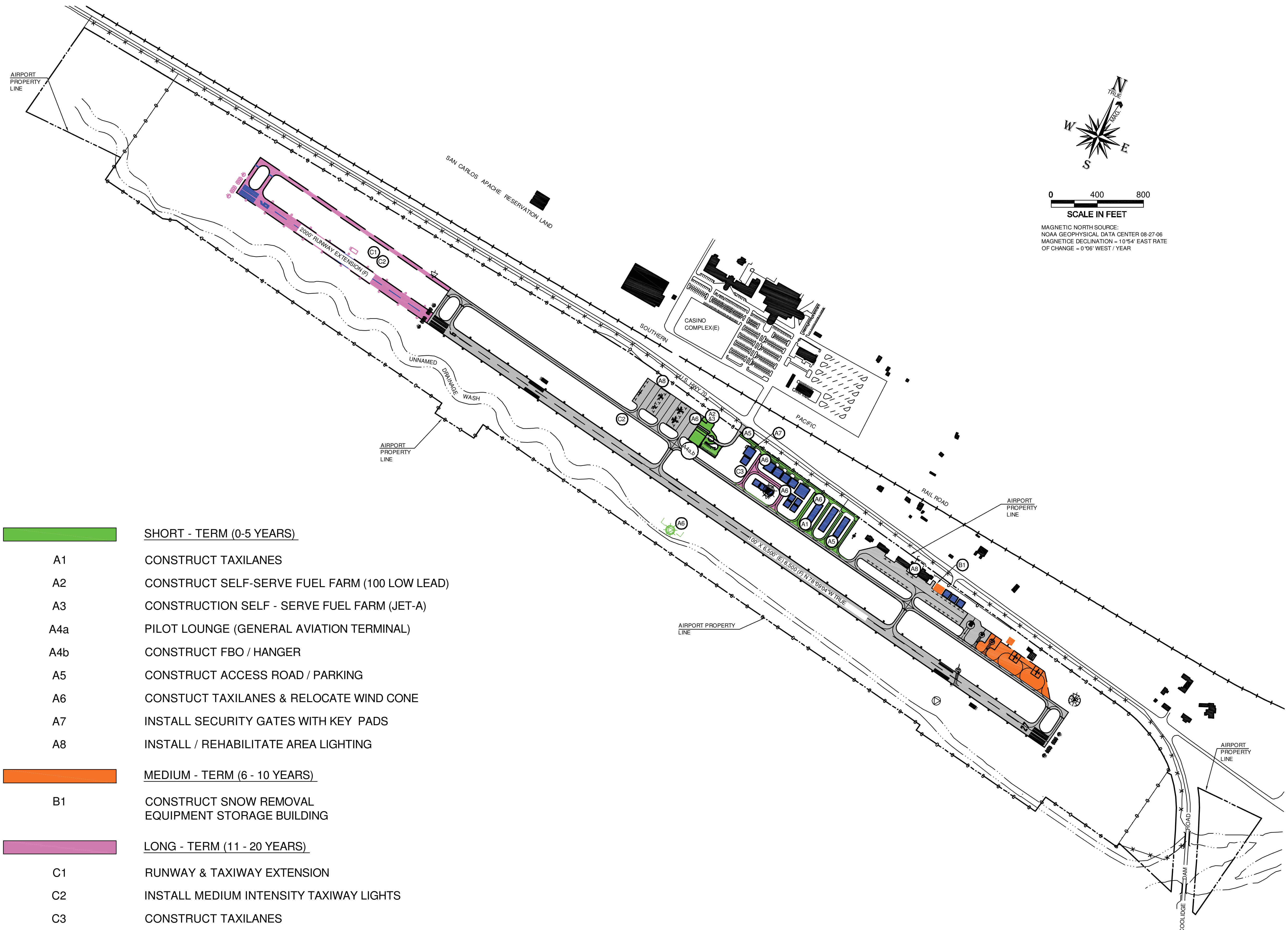
The use of corporate and business aircraft is an increasing trend across the United States. The movement of American industry from large metropolitan areas to smaller communities that offer lower taxes and labor costs and a better working environment has influenced this trend. Time is money in the business environment and corporate aircraft are answering the need for quick and convenient access to and from these new locations for both executives and management personnel. The ability of a community to provide convenient access to corporate aircraft will be reflected not only in benefits to existing businesses and industries but will be a strong factor in attracting new industry. The events of September 11, 2001, have also resulted in increased corporate and business aviation activity as companies are looking to avoid delays and inconveniences associated with commercial airline travel.

These factors place the San Carlos Apache Airport in a prime position to capitalize on the trends in the general aviation industry and to maximize the benefits the airport provides to the community.

CONTINUOUS PLANNING PROCESS

Airport planning is a continuous process that does not end with the completion of a major project. The fundamental issues upon which this master plan is based are expected to remain valid for several years; however, several variables, such as based aircraft, annual aircraft operations and socioeconomic conditions are likely to change over time. The continuous planning process necessitates that the San Carlos Apache Tribe consistently monitor the progress of the airport in terms of growth in based aircraft and annual operations, as this growth is critical to the exact timing and need for new airport facilities. The information obtained from this monitoring process will provide the data necessary to determine if the development schedule should be accelerated, decelerated or maintained as scheduled.

Periodic updates of the Airport Layout Plan, Capital Improvement Plan, and Airport Master Plan are recommended to document physical changes to the airport, review changes in aviation activity and to update improvement plans for the airport. The primary goal of this Airport Master Planning effort is to develop a safe and efficient airport that will meet the demands of its aviation users and stimulate economic development for the San Carlos/Gila County area. The continuous airport planning process is a valuable tool in achieving that goal.



	SHORT - TERM (0-5 YEARS)
A1	CONSTRUCT TAXILANES
A2	CONSTRUCT SELF-SERVE FUEL FARM (100 LOW LEAD)
A3	CONSTRUCTION SELF - SERVE FUEL FARM (JET-A)
A4a	PILOT LOUNGE (GENERAL AVIATION TERMINAL)
A4b	CONSTRUCT FBO / HANGER
A5	CONSTRUCT ACCESS ROAD / PARKING
A6	CONSTUCT TAXILANES & RELOCATE WIND CONE
A7	INSTALL SECURITY GATES WITH KEY PADS
A8	INSTALL / REHABILITATE AREA LIGHTING
	MEDIUM - TERM (6 - 10 YEARS)
B1	CONSTRUCT SNOW REMOVAL EQUIPMENT STORAGE BUILDING
	LONG - TERM (11 - 20 YEARS)
C1	RUNWAY & TAXIWAY EXTENSION
C2	INSTALL MEDIUM INTENSITY TAXIWAY LIGHTS
C3	CONSTRUCT TAXILANES

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SAN CARLOS APACHE AIRPORT
GLOBE, ARIZONA
SAN CARLOS APACHE TRIBE
AIRPORT LAYOUT PLANS
AIP No. 3-04-0017-12

No.	Revision	Date	By

Project No: 055743
Date: 01.24.07
File Name: 5743600

Drawn: SLST
Checked: GJF
Approved: DAC

CIP DRAWING

Sheet: 1 of: 1

San Carlos Apache Airport

Appendix A
Design Standards Inventory

Airside Inventory Checklist

Airport	San Carlos Apache Airport	ARC	C-II
City	Globe, Arizona	Approach Type	GPS NPI, 1-mile vis
Contact	Charles Russell	Date Inventoried	June 27,2006
Phone No.	(928) 475-2331	Inspected By	JZP/DAC

Runway 9/27 Inventory	Published	Required	Actual
Distance To:			
Hold lines from centerline		250'	250'
Parallel taxiway from centerline		300'	300'
Aircraft parking from centerline		400'	400'
Runway width		100'	100'
Runway length		6,500'	6,500'
RSA width		500'	500'
ROFA width		800'	800'
Primary/transitional surface penetrations			None
Longitudinal grade - site distance problems			
OFZ (Width/Length Beyond Runway End)		400'/200'	400'/200'
Pavement marking type		NPI	NPI
Pavement marking condition			Good
Pavement strength	60,000 lbs. DWG		60,000 lbs. DWG
Pavement condition	Good		Good
Runway 9 End Inventory			
RSA beyond runway end		1,000'	1,000'
ROFA beyond runway end		1,000'	1,000'
Approach obstructions			None
Runway end elevation	3,260.7'		3260.70'
Runway 27 End Inventory			
RSA beyond runway end		1,000'	1,000'
ROFA beyond runway end		1,000'	1,000'
Approach obstructions			None
Runway end elevation	3181.2'		3181.04'
Runway Lighting Inventory			
Distance from pavement edge		10'	10'
Maximum distance between lights		200'	200'
Type	MIRL		MIRL
Condition			Good
Color		White/Amber	White/Amber
		last 1,000'	last 1,000'
Runway 9 Threshold			
Distance from pavement edge		10'	10'
Maximum distance between lights		Varies	Varies
Color/Number		Red/Green 8	Red/Green 8
Runway 27 Threshold			
Distance from pavement edge		10'	10'
Maximum distance between lights		Varies	Varies
Color/Number		Red/Green 8	Red/Green 8

COMMENTS

Airside Inventory Checklist

Airport	San Carlos Apache Airport	ARC	C-II
City	Globe, Arizona	Approach Type	GPS NPI, 1-mile vis
Contact	Charles Russell	Date Inventoried	June 27,2006
Phone No.	(928) 475-2331	Inspected By	JZP/DAC

Taxiway Inventory	Published	Required	Actual
Taxiway width		35'	35'
TSA width		79'	79'
TOFA width		131'	131'
Dist. from centerline to fixed or movable obj		65.5'	65.5'
Pavement marking type	Centerline		Centerline
Pavement marking condition			Good
Pavement strength		Same as Runway	60,000 lbs. DWG
Pavement condition			Good
Taxiway Lighting Inventory			
Distance from pavement edge		10'	10'
Maximum distance between lights		100'	100'
Type			Retro-reflectors
Condition			Good
Color		Blue	Blue
Miscellaneous			
Type of beacon		Standard land airport	Standard land airport
Size of beacon			
Visual Aids (i.e. PAPI, VASI, REIL, etc.)	PAPI/REIL both ends		PAPI/REIL both ends
Windcone (condition & compliance)	1 lighted	1 lighted	1 lighted
Segmented circle (condition & compliance)		1	2
Fencing	Perimeter Fence		Perimeter Fence
Signs (type, condition, placement)			Lighted, Good, Hold Bars

COMMENTS

San Carlos Apache Airport

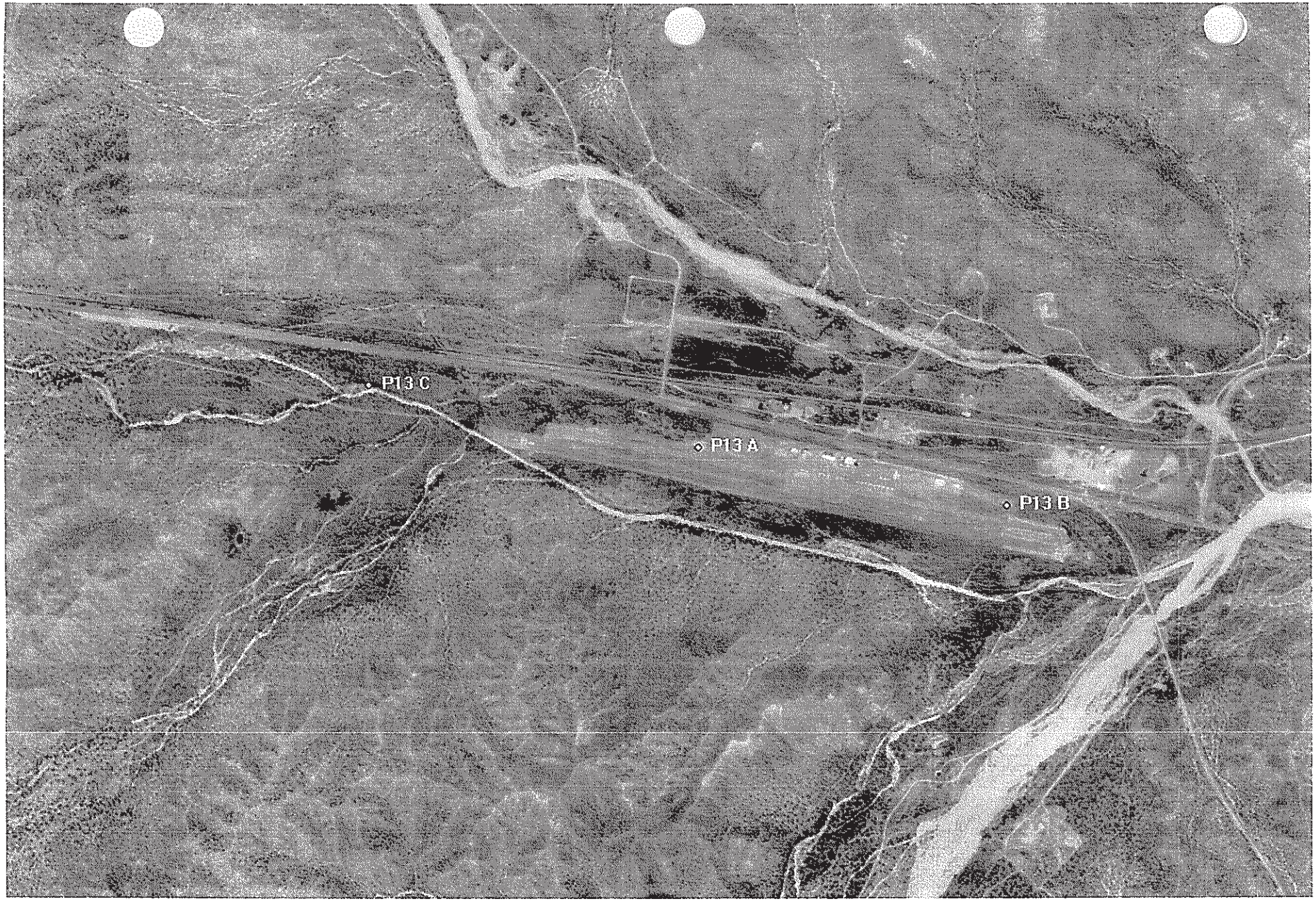
Appendix B
PACS & SACS Documentation

Station Recovery Data Tables
ARIZONA PACS AND SACS
2006

(P13) SAN CARLSO APACHE, GLOBE AZ

DESIGNATION	PID	Estab. Agency	Order	Stability	Recovery Condition	Comments
P13 A	TBD	WOOLPT	PROPOSED B	B	Set	PROPOSED PACS / 3-D ROD
P13 B	TBD	WOOLPT	PROPOSED 1ST	C	Set	PROPOSED SACS / CONCRETE MARK
P13 C	TBD	WOOLPT	PROPOSED 1ST	C	Set	PROPOSED SACS / CONCRETE MARK
G 437	DU1156	NGS	H-B (V-1ST CL2)	B	Good	PROPOSED HARN TIE & BM TIE #1
AZKR	DH4134					PROPOSED CORS TIE
N 16	DU0222	CGS	1st CL 2	C	Good	PROPOSED BM TIE #2

Airport is not controlled.
Radio communications is through VHF UNICOM 122.8.
Contact the airport manager, Mr. Charles Russel 520 475-2331 prior to entry.
Visibility from .
Comments?


P13 C
P13 A
P13 B

SAN CARLOS APACHE (P13)
GLOBE, AZ
PACS AND SACS SURVEY
FINAL ADJUSTED COORDINATES

PID	DESIGNATION	SSN	LATTIUDE	LONGITUDE	ELLP	ELEV.
TBD	P13 A	1001	33 21 15.08726	-110 40 01.20077	951.150	978.440
TBD	P13 B	1002	33 21 09.29656	-110 39 24.19665	940.676	967.962
TBD	P13 C	1003	33 21 21.53905	-110 40 41.35094	965.648	992.943
DU1156	G 437	1004	33 22 22.39716	-110 44 16.45045	1069.339	1096.616
DU0222	N 16	1005	33 21 22.25252	-110 40 10.40103	954.643	981.933
DH4134	KEARNY CORS ARP	1006	33 03 32.23586	-110 54 36.94592	561.411	590.002

San Carlos Apache Airport

Appendix C
405 Obstruction Survey

```
|P13   |00694.A   |AWP |1.07|
|SAN CARLOS APACHE                                                    |2772006|
|GLOBE                                  |ARIZONA                     |
|NAD83     |5 CM      |          |NAVD88    |25 CM          |
| 10.9|2772006|
| 3260.7|       |09+0    |2772006|
|       |       |       |
|-332111.3|-1104002.5|
@
|9    |P|2882006|
|N|2882006|
|-332117.9374|-1104039.9859|1015033| 6500|100|2882006|
| 3235.0|       |2882006|
|            |             |       |       |
|    0| 3260.7|       |2882006|
| 6500| 3181.0|       |2882006|
#
|27   |P|2882006|
|N|2882006|
|-332104.7357|-1103925.0034|2815115| 6500|100|2882006|
| 3211.8|       |2882006|
|            |             |       |       |
|    0| 3181.0|       |2882006|
| 6500| 3260.7|       |2882006|
@
#
```

|APBN (27) |-332114.4300|-1103943.2900| 3197.0| | | |2882006|

|PAPI (9) | | | | | | |2882006|

|PAPI (27) | | | | | | |2882006|

|REIL (9) | | | | | | |2882006|

|REIL (27) | | | | | | |2882006|

#

@

|27 |HCT |

|TERRAIN |-331934.10|-1103812.20|3E| 3520| | 0| | | | |2882006|

|TERRAIN |-331854.12|-1103824.27|3E| 3742| | 0| | | | |2882006|

|TERRAIN |-331945.47|-1103812.93|3E| 3515| | 0| | | | |2882006|

|WSK |-332115.48|-1104001.24|1 | | | | | | | |2882006|

|WSK |-332108.97|-1103924.11|1 | | | | | | | |2882006|

|POLE |-332053.72|-1103901.82|1B| 3194| | | | | | |2772006|

#

|27 |C |

|POLE |-332055.07|-1103858.18|1B| 3190| | | | | | | |2772006|

|POLE |-332056.40|-1103854.55|1B| 3186| | | | | | | |2772006|

|POLE |-332057.73|-1103850.88|1B| 3182| | | | | | | |2772006|

|POLE |-332059.08|-1103847.23|1B| 3178| | | | | | | |2772006|

|POLE |-332100.39|-1103843.62|1B| 3168| | | | | | | |2772006|

|POLE |-332101.70|-1103839.99|1B| 3177| | | | | | | |2772006|

|POLE |-332104.09|-1103839.10|1B| 3185| | | | | | | |2772006|

|POLE |-332103.76|-1103834.82|1B| 3158| | | | | | | |2772006|

|POLE |-332103.50|-1103831.31|1B| 3169| | | | | | | |2772006|

|POLE |-332103.10|-1103826.03|1B| 3166| | | | | | | |2772006|

|POLE |-332102.83|-1103822.29|1B| 3168| | | | | | | |2772006|

#

|9 |HCT |

|TERRAIN |-332040.50|-1104019.64|1B| 3507| | 0| | | | |2882006|

|TERRAIN |-332239.47|-1103945.74|3 | 3520| | 0| | | | |2882006|

|TERRAIN |-332234.10|-1104012.20|3E| 3440| | 0| | | | |2882006|

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|POLE |-332130.04|-1104137.99|1B| 3368| | | | | | |2772006|

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|POLE |-332128.11|-1104125.82|1B| 3352| | | | | | |2772006|

|POLE |-332132.78|-1104119.13|1B| 3352| | | | | | |2772006|

|POLE |-332130.45|-1104059.28|1B| 3317| | | | | | |2772006|

|POLE |-332131.22|-1104106.63|1B| 3320| | | | | | |2772006|

|POLE |-332132.12|-1104113.38|1B| 3340| | | | | | |2772006|

|POLE |-332128.94|-1104119.78|1B| 3349| | | | | | |2772006|

|POLE |-332127.19|-1104120.08|1B| 3343| | | | | | |2772006|

|POLE |-332124.22|-1104120.24|1B| 3342| | | | | | |2772006|

|POLE |-332121.04|-1104120.47|1B| 3341| | | | | | |2772006|

|POLE |-332118.01|-1104120.71|1B| 3332| | | | | | |2772006|

|POLE |-332114.94|-1104120.89|1B| 3350| | | | | | |2772006|

|POLE |-332111.89|-1104121.00|1B| 3372| | | | | | |2772006|

|BUSH |-332053.49|-1104141.33|3E| 3480| | | | | | |2772006|

|BUSH |-332052.25|-1104134.61|3E| 3458| | | | | | |2772006|

|BUSH |-332023.70|-1104039.29|3E| 3439| | | | | | |2772006|

|BUSH |-332043.05|-1104015.68|3E| 3473| | | | | | |2772006|

|BUSH |-332038.79|-1104007.78|3E| 3456| | | | | | |2772006|

@

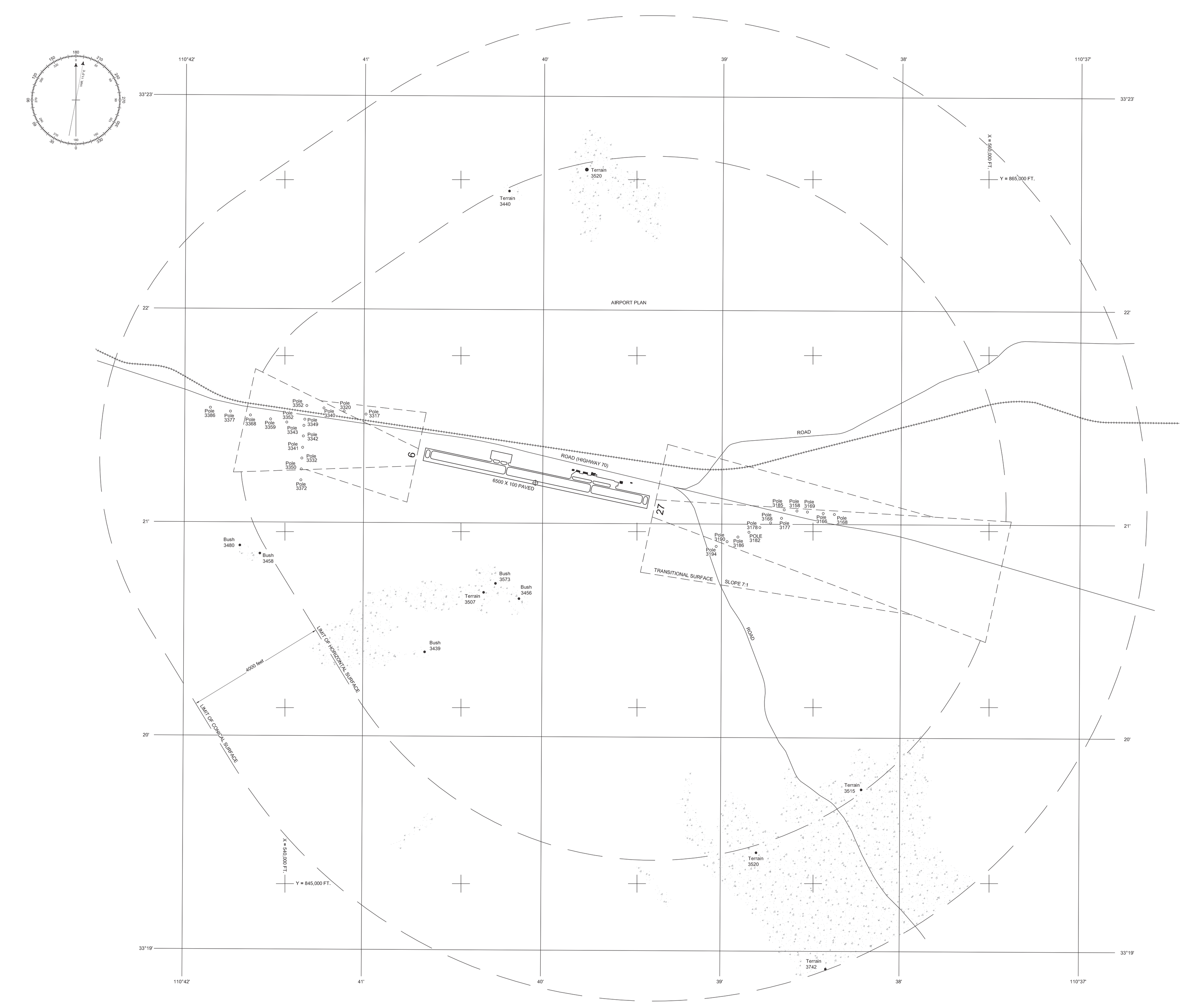
|ADDITIONAL INFORMATION
|
|
|
|SURVEY TYPE IS AOC. SURVEYOR: ERIC CENOVICH LICENSE NO: 29867 SUBMITTED: 10/9/2006 10:38:59 AM (V3.8)
|
|POINT OF CONTACT:
DENNIS CORSI
ARMSTRONG CONSULTANTS, INC
861 ROOD AVE.
GRAND JUNCTION, CO. 81501
PH. 970-242-0101
|
|
OBSTRUCTION DATA COMPILED BY ARMSTRONG CONSULTANTS, INC. BASED ON PHOTOGRAMMETRIC SURVEY DATA PROVIDED BY
WESTERN AIR |
|MAPS. RUNWAY END COORDINATES AND ELEVATIONS PROVIDED BY WOOLPERT, INC.

BUSH OBJECTS FROM AIRPORT OBSTRUCTION MAP PUB|

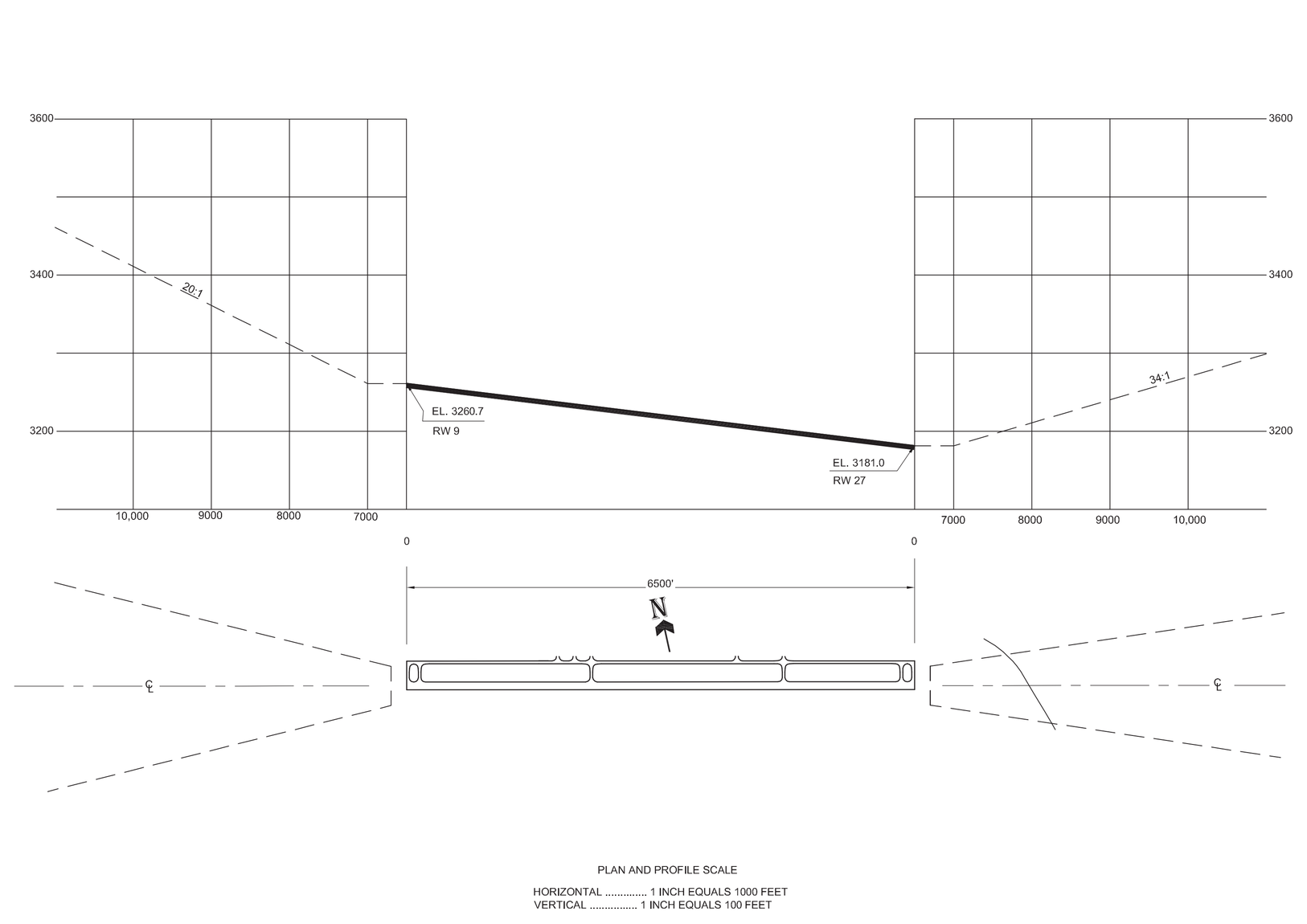
|LISHED JULY 1991. LOCATIONS ARE ESTIMATED. 2 FEET ADDED TO BUSH ELEVATIONS TO CONVERT FROM NGVD29 DATUM TO
NAVD88 DATUM|
|
|
EOF

AIRPORT OBSTRUCTION CHART
SAN CARLOS APACHE AIRPORT GLOBE, ARIZONA

AIRPORT ELEVATION 3260.7 FEET



RUNWAY PLAN AND PROFILE



LEGEND

- Airport Reference Point (ARP)
- Official Airport Elevation
- With elevation - object does not penetrate specified or supplemental surface without elevation - position only
- Object penetrates specified surface
- Wooded area penetrates specified surface
- Ground area penetrates specified surface
- Object penetrates supplemental surface only
- Wooded area penetrates supplemental surface only
- Ground area penetrates suplemental surface only
- Water
- S .... Supplemental surface
- ( ) .... Feet above ground level
- Road (I) .... Interstate highway
- Road (N) .... Noninterstate highway
- OL .... Obstruction Light or Obstruction Lighted

NOTES

Fifteen feet added to noninterstate road elevations. Seventeen feet added to interstate road elevations. Twenty-three feet added to railroad track elevations. Transitional surface slopes are 7:1 unless otherwise indicated. Obstructing areas limits are approximate. See FAA No. 405 for complete set of abbreviations. Underlined elevations determined photogrammetricaly with a vertical accuracy of ±3 feet.

AIRPORT OBSTRUCTION CHART

The Airport Obstruction Chart (AOC) depicts Federal Aviation Regulations Part 77 (FAR-77) srufaces, a representation of objects that penetrate these surfaces, aircraft movement and apron areas, navigational aids, prominent airport buildings, and a selection of roads and other planimetric detail in the airport vicinity, also included are tabulation of runway and other operational data.

AOC content, format, and accuracy conform to the standards specified in FAR-77, "Objects Affecting Navigable Airspace" and FAA No. 405, "Standards for Aeronautical surveys and Related Products."

HORIZONTAL SCALE.......1:12,000
HORIZONTAL DATUM.......North American Datum of 1983
VERTICAL DATUM............North American Vertical Datum of 1988
PROJECTION....................Lambert Conformal Conic
GRID SYSTEM..................Arizona State Grid - East Zone

OPERATIONAL DATA

AIRPORT LOCATION POINT LAT. 33°21'15" LONG. 110°40'

AIRPORT REFERENCE POINT LAT. 33°21'11.338" LONG. 110°40'02.494"

RUNWAY	LATITIUDE	LONGITUDE	TDZE	GEODETIC AZIMUTH
9	33°21'17.937"	110°40'39.986"	3260.7	101°50'33"
27	33°21'04.736"	110°39'25.003"	3211.8	281°51'15"

FULL SIZE COPY AVAILABLE FORM ARMSTRONG CONSULTANTS, INC. OR FAA

AMENDMENT DATA

See SPECIAL NOTICES in "Dates of Latest Editions, Airport Obstruction Charts - Obstruction Data Sheets," for possible corrections. National Oceanic and Atmospheric Administration (NOAA) publications are available through NOAA Distribution Branch (N/CG33), National Ocean Service, Riverdale, MD 20737. Telephone: 301-436-6990

5743700

DIMENSIONS AND ELEVATIONS ARE IN FEET

STATUTE MILES
NAUTICAL MILES

Feet Meters

San Carlos Apache Airport

Appendix D
Stormwater Pollution Prevention Plan (SWPPP)

SAN CARLOS APACHE AIRPORT

STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

MARCH 22, 2007

ARMSTRONG CONSULTANTS, Inc.

airport engineering and planning services

San Carlos Apache Airport

Stormwater Pollution Prevention Plan (SWPPP)

Prepared For
The San Carlos Apache Tribe, Arizona

By
Armstrong Consultants, Inc.
861 Rood Avenue
Grand Junction, Colorado 81501
Phone: 970.242.0101
Fax: 970.241.1769
www.armstrongconsultants.com

STORMWATER POLLUTION PREVENTION PLAN

FIGURES

APPENDICES

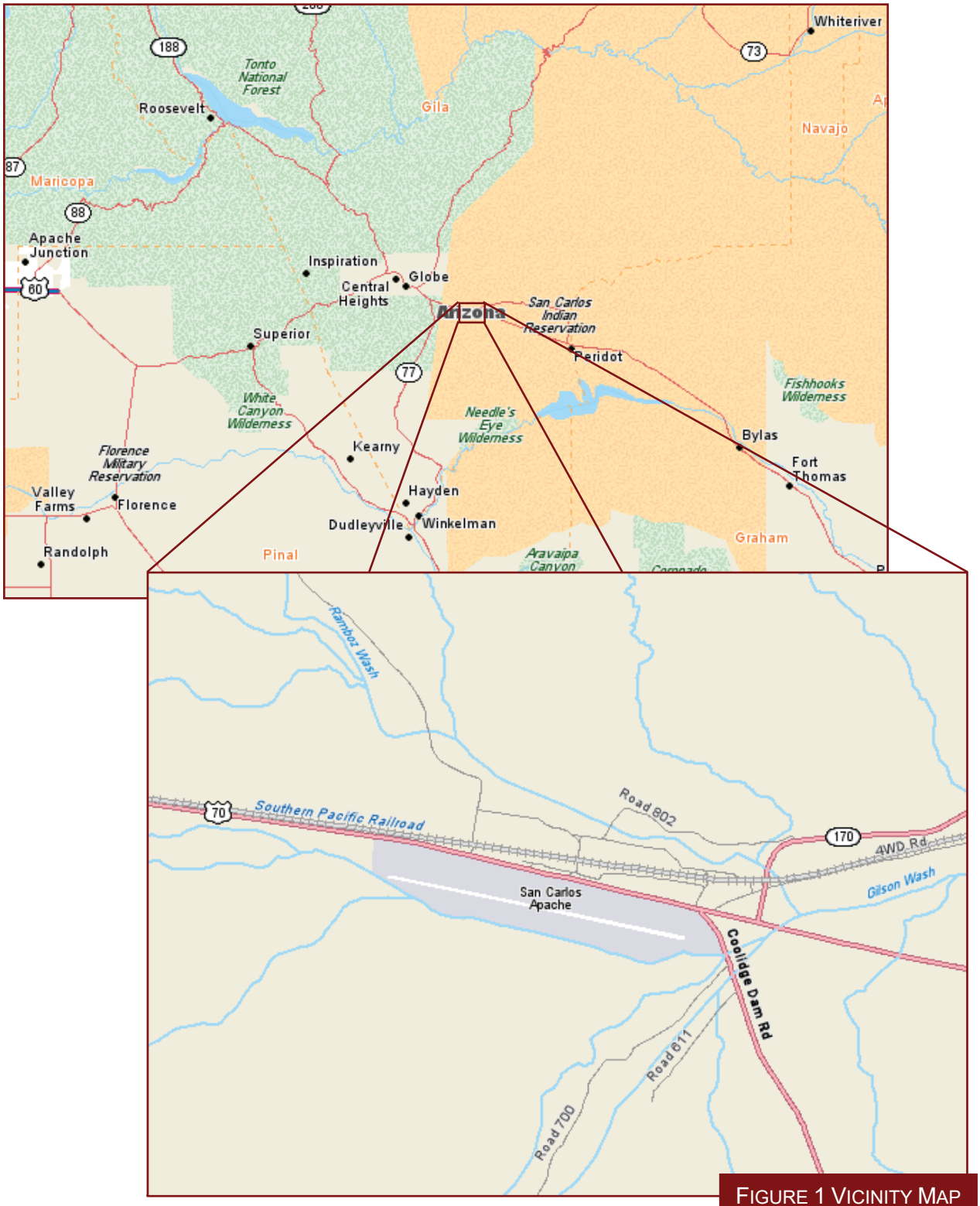


FIGURE 1 VICINITY MAP

GENERAL INFORMATION

The San Carlos Apache Airport is a Public-Use General Aviation Airport facility located on the San Carlos Apache Reservation in Gila County, Arizona, approximately five miles southeast of Globe, Arizona. The San Carlos Apache Airport provides vital services to the residents of the San Carlos Apache Tribe and Gila County, including air medivac.

This Stormwater Pollution Prevention Plan (SWPPP) has been prepared by the San Carlos Apache Airport with assistance from Armstrong Consultants, Inc. The Plan has been prepared and will be implemented in accordance with requirements of the Environmental Protection Agency's (EPA) National Pollutant Discharge Elimination System (NPDES) Stormwater Multi-Sector Permit for Stormwater Discharges Associated with Industrial Activity (Airports). A Notice of Intent (NOI) for the General Permit will be submitted to the State of Arizona Department of Environmental Quality. A copy of the NOI is included in Appendix B of this plan.

The San Carlos Apache Airport is located on approximately 310 acres in southeastern Arizona at an elevation of 3,260 feet Mean Sea Level (MSL). The land directly to the north of the airport has been developed with light industrial and commercial land uses. The area receives approximately 16 - 26 inches of precipitation annually and an average of 0.7 inches of snowfall annually.

The following activities occur at the airport:

- ✈ Aeromedical Transport services
- ✈ Aerial Fire Fighting
- ✈ Flight Training

There is currently no fuel and no de-icing agent available at the San Carlos Apache Airport.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with the system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Print Name: _____ Date: _____

Signature: _____

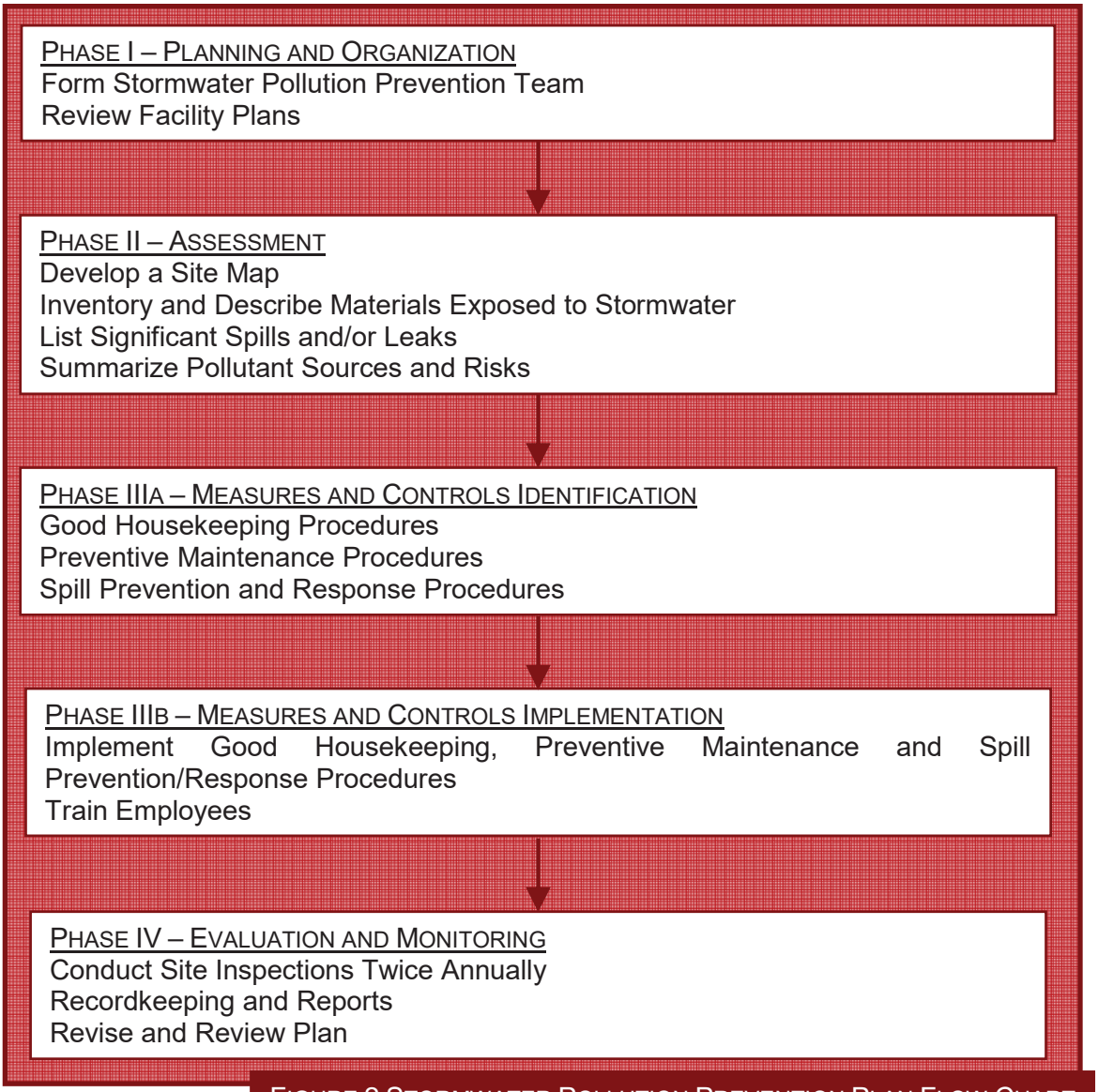


FIGURE 2 STORMWATER POLLUTION PREVENTION PLAN FLOW CHART

PHASE I – PLANNING AND ORGANIZATION

The Stormwater Pollution Prevention Team (member roster shown on the next page) has the responsibility to define and agree upon a clear and reasonable set of goals for the airport's overall Stormwater Management Program. The team is responsible for periodic site assessment, identification of pollutant sources and risks, decision making on appropriate best management practices (BMP), directing the actual implementation of the BMPs and regular evaluations to measure the effectiveness of the plan. Additionally, the member roster lists the chain of command and specific jobs for each team member. This team will assure good channels of communication at the Airport and with the surrounding community. The team member roster designates with a (*) the on-site person who will be accountable for spill prevention at the airport. The designated person is responsible for setting up necessary spill emergency procedures, notifying the team leader and appropriate members and reporting requirements to isolate, contain and clean up spills and emergency releases.

If a new or revised facility plan is developed for the airport, the revised facility plan will be reviewed by the airport's Stormwater Pollution Prevention Team for consistency and possible revisions to the facility plan, the SWPPP or both plans.

IN CASE OF A FUEL OR SUBSTANCE SPILL – CONTACT:

POLLUTION PREVENTION TEAM

Completed By: Charles Russell
Title: Director of Planning

Airport: San Carlos Apache Airport

MEMBER ROSTER

Team Leader: Loretta Stone Title: Director of Tribal Environmental Programs
Office Phone: 928-475-2218 or 9978

Responsibilities: Coordination and documentation of any fuel or other substance spills. Keeps pollution prevention team and plan manual current concerning airport facilities and procedures. Reviews construction Stormwater Pollution Prevention Plans. Contacts person with State and/or Environmental Protection Agency.

MEMBERS:

(1) Elliot Talgo Title: Tribal Environmental Program Specialist
Office Phone: 928-475-2218 or 9978

Responsibilities: Assistant Team Leader who will, in the absence of the Team Leader, assume Team Leader's duties, and will also assist the Team Leader in implementation, review and monitoring the Stormwater Pollution Prevention plan.

(2) Hanson Mull Title: Maintenance & Security Person
Office Phone: 928-475-5563

Responsibilities: Team Member – on-site, and is the immediate contact person. Will be authorized to take immediate appropriate action on spills and getting information to the Team Leader. *Accountable for spill prevention.

(3) Charles Russell Title: Director of Planning
Office Phone: 928-475-2331

Responsibilities: Will assist Team Member in appropriate action on spills and monitoring.

TO BE POSTED AT APPROPRIATE LOCATIONS IN THE FUELING AREAS, FBOs AND TERMINAL BUILDING.

(A copy of this form for posting at the above locations is available in Appendix C.)

PHASE II – ASSESSMENT

DESCRIPTION OF POTENTIAL POLLUTANT SOURCES

Airport Site Maps, which include stormwater outfalls, activities locations and prediction of pollution flow routes, are included in Appendix A of this report.

POLLUTANT SOURCES

There are currently no fueling or maintenance operations taking place at the San Carlos Apache Airport. Pollutant sources are limited to those of the private hangar owners.

POLLUTANT RISK ASSESSMENT

There is a very low potential pollutant risk at the San Carlos Apache Airport due to the lack of fueling and maintenance operations at the airport. The only risk of pollutants at the airport would come from the hangar owners.

STORAGE FACILITIES

There are currently no storage facilities at the San Carlos Apache Airport.

WASTE DISPOSAL PRACTICES

Wastes generated at the airport are limited to general refuse. General refuse is disposed of in storage containers equipped with lids which prevent any contamination with stormwater. Therefore, there is very little opportunity of contamination of stormwater from waste disposal.

INVENTORY OF MATERIAL EXPOSED TO STORMWATER

The following site checklist should be used to help identify materials that have been exposed to stormwater, and current measures that the airport and private hangar owners have taken to prevent the contact of these materials with Stormwater.

SITE CHECKLIST

- ☐ Does your facility show signs of poor housekeeping (cluttered walkways, un-swept floors, uncovered materials, etc.)?
- ☐ Are there spots, pools, puddles or other traces of oil, grease or other chemicals on the ground?
- ☐ Is there discoloration, residue or corrosion on the roof or around vents or pipes that ventilate or drain work areas?
- ☐ Do you see leaking equipment, pipes, containers or lines?
- ☐ Are there areas where absorbent materials (kitty litter, saw dust, etc.) are regularly used?
- ☐ Do you notice signs such as smoke, dirt or fumes that indicate material losses?
- ☐ Do you smell strange odors or experience eye, nose, or throat irritation when you first enter the work area? These are indications of equipment leaks.

- ☐ Do storage containers show signs of corrosion or leaks?

- ☐ Are there open containers, stacked drums, shelving too small to properly handle inventory or other indications of poor storage procedures?

- ☐ Are containers properly labeled?

An inspection should focus on areas where the airport and private hangar owners store fluids, any maintenance hangars, the apron areas and fuel storage and dispensing areas. The inspection should also include spills that may have occurred during loading or unloading operations. The following “Material Inventory” and “List of Significant Spills and Leaks” worksheets should be used in conducting the inventory and recording any previous spills in accordance with this Stormwater Pollution Prevention Plan (SWPPP). Results of inspections should be discussed with the Airport Board, the Airport Manager and owners of private hangars.

Material Inventory

Completed By: _____
Title: _____
Date: _____

Instructions: List all materials used, stored or produced on site. Assess and evaluate these materials for their potential to contribute pollutants to stormwater runoff.

Material	Purpose/Location	Quantity (units)			Quantity Exposed to stormwater in Last 3 Years	Likelihood of contact with stormwater. If yes, describe reason.	Past Significant Spill or Leak	
		Used	Produced	Stored			Yes	No

FIGURE 3 MATERIAL INVENTORY WORKSHEET

List of Significant Spills or Leaks

Completed By: _____
Title: _____
Date: _____

Directions: Record below all significant spills and/or leaks of toxic or hazardous pollutants that have occurred at the facility in the three years prior to the effective date of the permit.

Definitions: Significant spills include, but are not limited to, releases of oil or hazardous substances in excess of reportable quantities.

1st Year Prior

Date (Month/Day/Year)	Spill	Leak	Location (as indicated on site map)	Description				Response Procedure		Preventive Measures Taken
				Types of Material	Quantity	Source If Known	Reason	Amount of Material Recovered	Material No Longer Exposed to stormwater (True/False)	

2nd Year Prior

Date (Month/Day/Year)	Spill	Leak	Location (as indicated on site map)	Description				Response Procedure		Preventive Measures Taken
				Types of Material	Quantity	Source, If Known	Reason	Amount of Material Recovered	Material No Longer Exposed to stormwater (True/False)	

3rd Year Prior

Date (Month/Day/Year)	Spill	Leak	Location (as indicated on site map)	Description				Response Procedure		Preventive Measures Taken
				Types of Material	Quantity	Source, If Known	Reason	Amount of Material Recovered	Material No Longer Exposed to stormwater (True/False)	

FIGURE 4 SPILLS AND LEAKS WORKSHEET

PHASE III – MEASURES AND CONTROLS

The following is a description of all Stormwater Pollution Control Measures that will be implemented under the Airport Stormwater Pollution Prevention Plan:

GOOD HOUSEKEEPING

The airport will require that the private hangar owners and/or all other tenants on the airport maintain their areas and store potential pollutants in a manner to eliminate the discharge of pollutants onto a surface which eventually drains into a stormwater system. The Stormwater Pollution Prevention Team Leader will make periodic unannounced site inspections, (at least two per year), to assure that all activities on the airport comply with these regulations.

PREVENTIVE MAINTENANCE

The airport will require that the private hangar owners and/or all other tenants on the airport regularly inspect their areas or facilities to uncover conditions such as cracks or slow leaks in fuel systems or stored fluids, which may cause spills, leaks or other situations that could lead to stormwater runoff contamination. The inspections will include looking at sources of potential stormwater contamination. Examples may be pipes, storage tanks and bins, fuel storage areas and dispensers, waste storage containers and dumpsters. The airport will require that the private hangar owners and all other tenants that are engaged in activities that may cause contamination on the airport; to maintain suitable records documenting inspections and noting their preventive maintenance schedule. The records of these inspections (at least two per year) must be submitted to the San Carlos Airport Board and kept with the Stormwater Pollution Prevention Plan. The following checklist is an example of what shall be inspected.

VISUAL INSPECTION CHECKLIST

Do you see:

- ☐ Corroded drums or drums without plugs or covers?
- ☐ Corroded or damaged tanks, tank supports or tank drain valves?
- ☐ Torn chemical bags or chemical bags exposed to rainwater?
- ☐ Corroded or leaking pipes?
- ☐ Leaking or improperly closed valves or valve fittings?
- ☐ Leaking fuel pumps and/or hose connections?
- ☐ Broken or cracked dikes, walls or other physical barriers designed to prevent Stormwater from reaching stored materials?
- ☐ Uncovered trash dumpsters or other outdoor trash containers?
- ☐ Leaking and/or open fluid containers stored outside?
- ☐ Noticeable cracks or slow leaks in fuel systems or stored fluids?

The following “Visual Inspection Checklist” should be used in conducting unannounced site inspections and for a minimum of bi-annual inspections by FBO and airport tenants.

Visual Inspection Checklist

To be given to tenants and FBOs twice a year (minimum)

To be used by Team Leader for unannounced site inspections

Completed By: _____

Title: _____

Date: _____

Instructions: Inspect each item below, and check the appropriate box to the left. List the type and location of material if the answer to any question is YES. Check whether there is any evidence of a significant spill since the last inspection

Check the Appropriate Box		Inspection Item	If Yes, Type of Material	If Yes, Location of Material	Any Evidence of a Significant Spill or Leak	
Yes	No				Yes	No
		Corroded drums or drums without plugs or covers				
		Corroded or damaged tanks, tank supports or tank drain valves				
		Torn Chemical bags or chemical bags exposed to rainwater				
		Corroded or leaking pipes				
		Leaking or improperly closed valves or valve fittings				
		Broken or cracked dikes, walls or other physical barriers designed to prevent stormwater from reaching stored materials				
		Uncovered trash dumpsters or other trash containers				
		Leaking and/or open fluid containers stored outside				
		Any noticeable cracks or slow leaks in fuel systems or stored fluids				

FIGURE 5 VISUAL INSPECTION CHECKLIST

SPILL PREVENTION AND RESPONSE PROCEDURES

Fluids stored inside buildings are a lesser concern since they are easier to contain inside a building. Tenants at the Airport should adopt effective housekeeping practices: perform regular visual inspections, perform preventive maintenance on equipment and use proper procedures when filling tanks to minimize spills and ensure appropriate security.

In the event that spill prevention measures fail, the following spill response procedures will be swiftly executed in an effort to prevent contamination of stormwater.

DETAILS OF THE SPILL RESPONSE PLAN

_____ (Telephone # _____) is the on-site member of the Stormwater Pollution Prevention Team who is the immediate contact person and who is authorized to take immediate action on spills, get assistance from other team members and notify the Team Leader.

Since fuel is the main concern of contaminations, if a spill or leak occurs, all safety measures regarding fire, explosion, etc. will be observed and directed by members of the Stormwater Pollution Prevention Team. The notification of appropriate authorities will be made by the Stormwater Pollution Prevention Team Leader after notification by the on-site Team member.

As shown on the Apron Drainage Maps in Appendix A, any spill on the west apron will drain to the north and any spill on the east apron will drain east then southeast joining the main drainage which flows east across the airport. The airport drainage canal flows east, and eventually joins into the Gilson Wash, which runs east along the south side of the airport; then northeast across highway 70. If a major spill occurred on the apron, depending on where the spill occurred, it could be contained in the airport drainage canals on the airport prior to flowing into the Gilson Wash.

Spill containment isolation and/or cleanup will be addressed according to the magnitude of the spill initially and immediately by the on-site Team member and ultimately by the Team Leader. Any un-reportable spill (under 25 gallons) may be handled in-house by the Stormwater Pollution Prevention Team. Any spill over 25 gallons involving fuels, hydraulic fluids, motor oils, turbine oil, alcohol, caustics or other potential pollutants must be reported to the State or Environmental Protection Agency and the appropriate authorities.

Small quantities of dry chemicals and dry soils will be cleaned from areas exposed to precipitation or stormwater runoff using brooms, shovels, vacuums, squeegees or other mechanical devices.

Small quantities of liquid materials will be cleaned up using wet/dry vacuums, squeegees, rags or sorbent materials. Sorbents include “Universal Sorbent Material,” which is a silicate glass foam consisting of rounded particles to be used on acids, alkalis, alcohols, aldehydes, arsenate, ketones, petroleum products, chlorinated solvents and glycol products. Manufacturer’s instructions must be followed. Sorbents must not be washed into the drainage system.

Following any spill, the Stormwater Pollution Prevention Team will evaluate whether the Prevention Plan was successful or unsuccessful in responding to the spill, and how it can be improved.

INSPECTIONS

The Stormwater Pollution Prevention Team Leader will make periodic unannounced site inspections (at least two per year) to ensure that all activities and facilities comply with the Plan requirements. A set of follow-up procedures will be used to ensure that appropriate actions are taken in response to inspection deficiencies. Records of inspections will be maintained for a minimum of three years.

EMPLOYEE TRAINING

On an annual basis the airport will train all employees working at the airport, as well as invite airport tenants to a training session on Stormwater Pollution Prevention. Training should address each component of the airport's Stormwater Pollution Prevention Plan; including how and why tasks are to be implemented. An "Employee Training" worksheet as shown in Figure 6 should be used to organize topics and attendance in the training program.

Topics for training will include the following:

- Spill Prevention and Responses:
  - Spill prevention and response procedures are discussed in a previous section. Discuss these procedures or plans in the training program in order to ensure all employees, not just those on the spill response teams, are aware of what to do if a spill occurs. Specifically, all employees which could be involved in aircraft fueling/maintenance activities at the airport should be trained about the following measures:

    - Identifying potential spill areas and drainage routes, including information on past spills and causes.
    - Reporting spills to appropriate individuals, without penalty (e.g., employees should be provided "amnesty" when they report such instances).
    - Specifying material handling procedures and storage requirements.
    - Implementing spill response procedures.

- Good Housekeeping:
  - Teach potential airport fueling and maintenance personnel how to maintain a clean and orderly work environment. Emphasize these points in the good housekeeping portion of the training programs;

    - Require regular vacuuming and/or sweeping.
    - Require regular pickup and disposal of garbage and waste materials.
    - Promptly clean up spilled materials to prevent polluted runoff.
    - Identify places where brooms, vacuums, foams, neutralizing agents and other good housekeeping and spill response equipment are located.
    - Display signs at appropriate locations saying where to dispose of and not to dispose of waste oils and refuse.
    - Discuss updated procedures and report on the progress of practicing good housekeeping at every meeting.
    - Provide instruction on securing drums and containers and frequently checking for leaks and spills.
    - Outline a regular schedule for housekeeping activities to allow you to determine that the job is being done.

- Materials Management Practices:

  - Neatly organize and label stored materials and keep exterior storage covered.
  - Identify all toxic and hazardous substances stored, handled and produced onsite.
  - Discuss handling procedures for all materials which are potential pollutants.

- Tools for a Successful Training Program:

  - Employee handbooks
  - Films and slide presentations
  - Drills
  - Routine employee meetings
  - Bulletin boards
  - Suggestion boxes
  - Newsletters
  - Environmental excellence awards or other employee incentive programs

Employee Training

Completed by: _____
Title: _____
Date: _____

Instructions:	Describe the employee training program for your facility below. The program should, at a miniumum, address spill prevention and response, good housekeeping and material management practices. Provide a schedule for the training program and list the employees who attend training sessions.		
Training Topics	Brief Description of Training Program/Materials (e.g., film, newsletter course)	Schedule (list dates)	Attendees
Spill Prevention and Response			
Good Housekeeping			
Material Management Practices			
Other Topics:			

FIGURE 6 EMPLOYEE TRAINING WORKSHEET

EROSION CONTROL

All construction activities on the airport which disturb existing ground will require re-seeding and mulching to control erosion and re-establish vegetation. These are ongoing requirements on airport construction projects. Contractors performing grading which disturbs one (1) acre or more of area are required to prepare and implement Stormwater Permits for Construction Activities, which include Stormwater Pollution Prevention Plans for the Construction projects.

MANAGEMENT OF RUNOFF

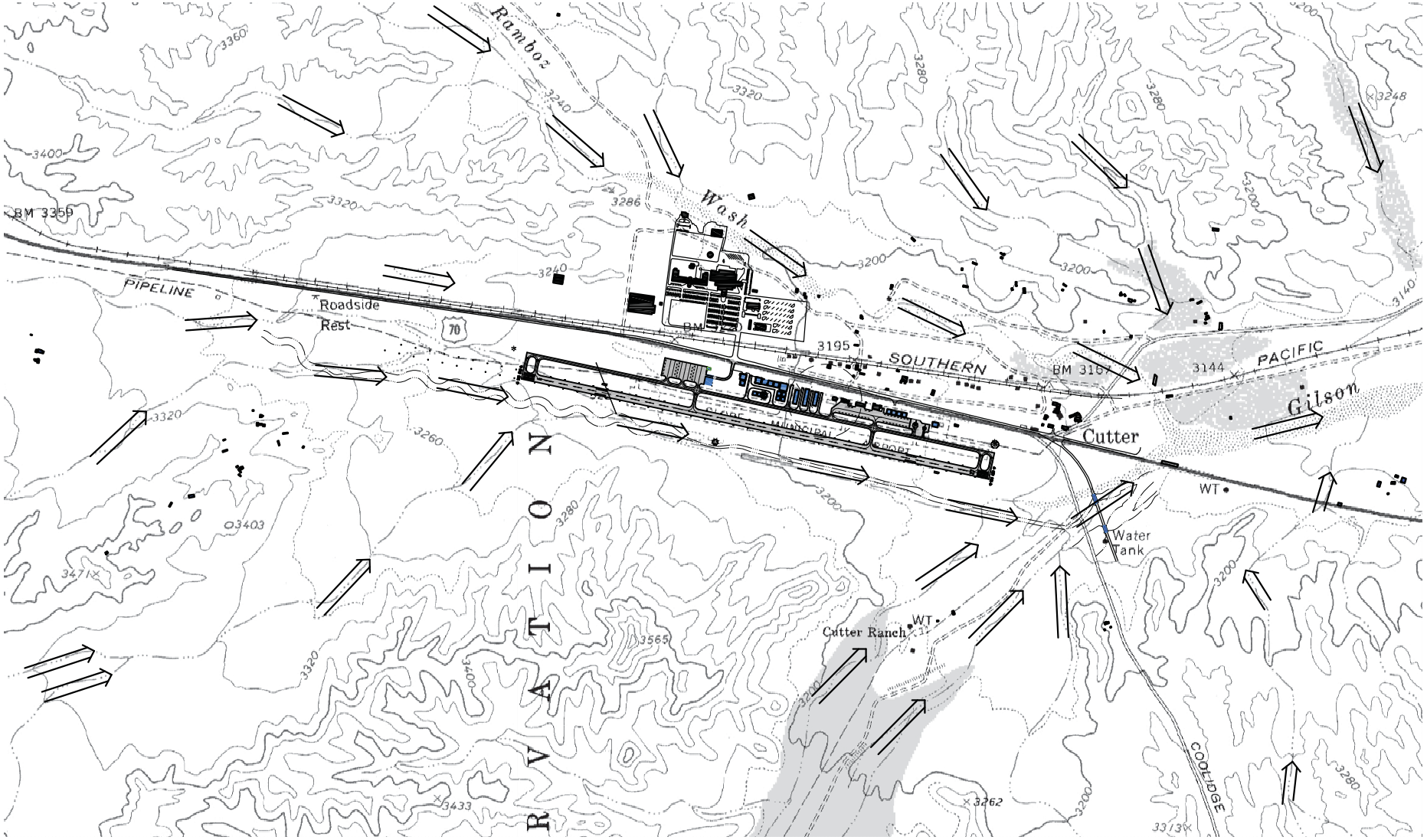
The airport is utilizing traditional stormwater practices and training of all personnel to reduce pollutants in stormwater discharge from the site. The primary physical component to be used to react to spills is absorbent booms to detain and clean up the contaminant.

PHASE IV – EVALUATION AND MONITORING

As stated in the Phase III Measures and Controls section, inspections will be performed at least two times per year. Phase IV of the Stormwater Pollution Prevention Plan involves the evaluation of the data collected from the inspections, major observations relating to the implementation of the Stormwater Pollution Prevention Plan, actions taken and preparing a report. The report will summarize the scope of the inspection, list personnel performing the inspection, list the date(s) of the inspections, state major observations relating to the implementation of the Stormwater Pollution Prevention Plan and state the action taken. If the inspection report describes deficiencies, such deficiencies will be corrected immediately and the Plan will be immediately modified to reflect the required changes. These reports will be signed by the Stormwater Pollution Prevention Team Leader and will be retained as part of the Plan for at least three years. An “Inspection Report” form for use following an inspection or series of inspections is included in Appendix D of this Plan.

APPENDIX A

AIRPORT SITE MAPS WITH DRAINAGE AREAS



N

W E

S

0 500 1000

SCALE IN FEET

DIRECTION OF FLOW

ARMSTRONG CONSULTANTS, Inc.
airport engineering and planning services

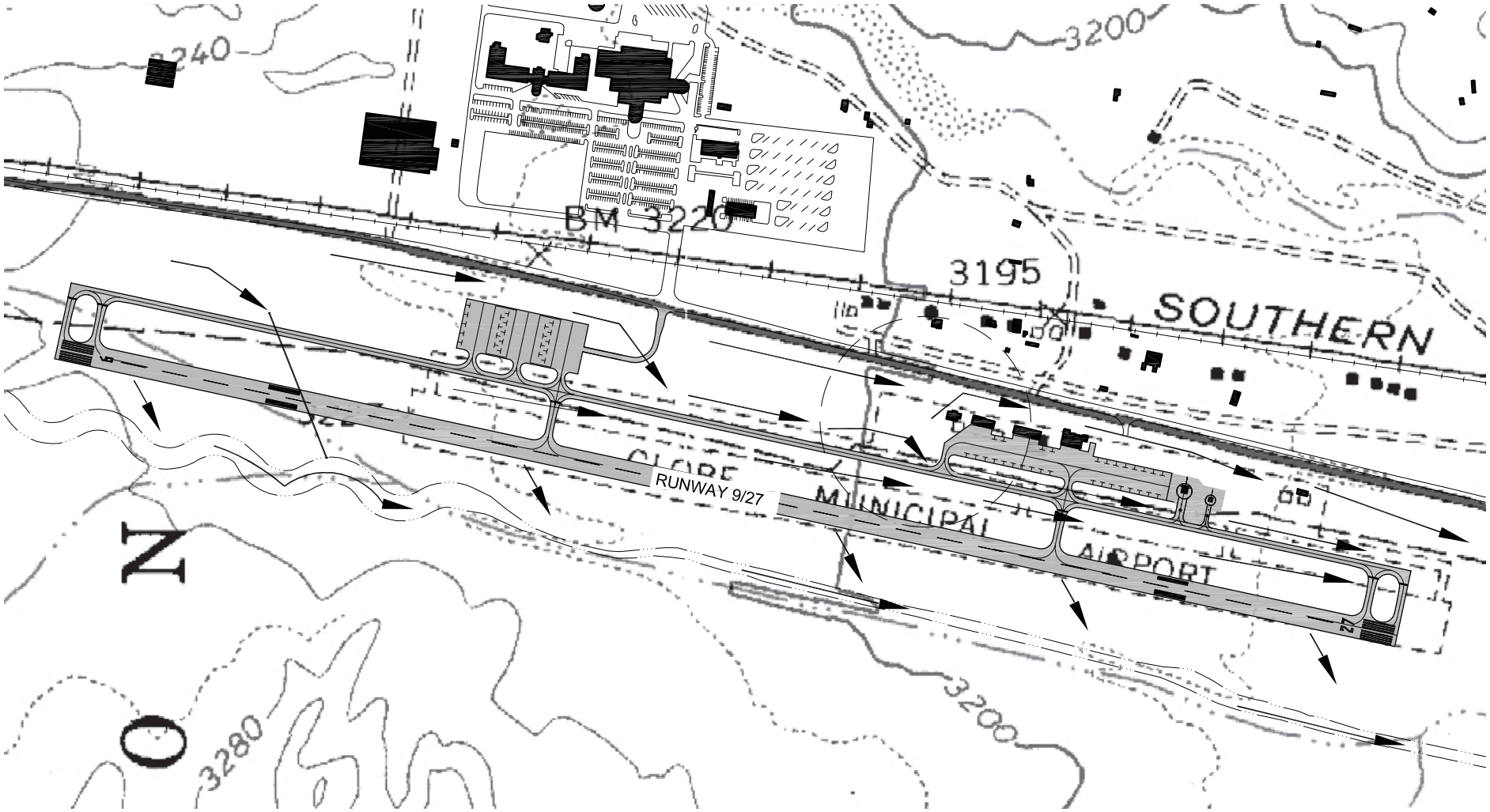
861 Rood Avenue
Grand Junction, CO 81501
ph: 970.242.0101 fax: 970.241.1769

www.armstrongconsultants.com

SAN CARLOS MUNCICIPAL AIRPORT
GLOBE, ARIZONA

AREA DRAINAGE MAP

SCALE:	1" = 2000'	DATE:	11.16.06
DRAWN:	SLST	FILE:	5743800
CHK'D:	JOS	JOB NO.:	0055743



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ROUTE OF DRAINAGE

0 250 500
SCALE IN FEET

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airport engineering and planning services

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Grand Junction, CO 81501
ph: 970.242.0101 fax: 970.241.1769
www.armstrongconsultants.com

SAN CARLOS APACHE AIRPORT
GLOBE, ARIZONA

AIRPORT DRAINAGE

SCALE:	1" = 500'	DATE:	11.17.06
DRAWN:	SLST	FILE:	5743801
CHK'D:	GJF	JOB NO.:	055743

N

W E

S

MAJOR ROUTE OF DRAINAGE

MINOR ROUTE OF DRAINAGE

0 50 100

SCALE IN FEET

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airport engineering and planning services

861 Rood Avenue
Grand Junction, CO 81501
ph: 970.242.0101 fax: 970.241.1769

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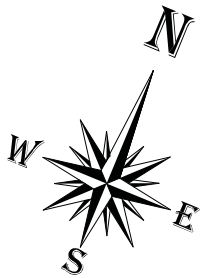
SAN CARLOS APACHE AIRPORT
GLOBE, ARIZONA

TERMINAL DRAINAGE

SCALE:	1" = 100'	DATE:	11.17.06
DRAWN:	SLST	FILE:	5743802-A
CHK'D:	GJF	JOB NO.:	055743



MAJOR ROUTE OF DRAINAGE

MINOR ROUTE OF DRAINAGE

0 50 100

SCALE IN FEET

ARMSTRONG CONSULTANTS, Inc.
airport engineering and planning services

861 Rood Avenue
Grand Junction, CO 81501
ph: 970.242.0101 fax: 970.241.1769

www.armstrongconsultants.com

SAN CARLOS APACHE AIRPORT
GLOBE, ARIZONA

TERMINAL DRAINAGE

SCALE:	1" = 100'	DATE:	11.17.06
DRAWN:	SLST	FILE:	5743802-A
CHK'D:	GJF	JOB NO.:	055743

APPENDIX B

NOTICE OF INTENT

NPDES Form 3510-6

United States Environmental Protection Agency
Washington, DC 20460

Form Approved
OMB No. 2040-0086

Notice of Intent for Storm Water Discharges Associated with INDUSTRIAL ACTIVITY Under the Multi-sector NPDES General Permit

Submission of this completed Notice of Intent (NOI) constitutes notice that the entitiy in Section B intends to be authorized to discharge pollutants to waters of the United States, from the facility or site identified in Section C, under EPA's Storm Water Multi-sector General Permit (MSGP). Submission of the NOI also constitutes notice that the party identified in Section B of this form has read, understands, and meets the eligibility conditions of Part I of the MSGP; agrees to comply with all applicable terms and conditions of the MSGP; understands that continued authorization under the MSGP is contigent on maintaining eligibility for coverage, and that implementation of the permittee's pollution prevention plan is required two days after a complete NOI is mailed. In order to be granted coverage, all information required on this form must be completed. Please read and make sure you comply with all permit requirements, including the requirement to prepare and implement a storm water pollution prevention plan.

A. Permit Selection
If new, enter generic permit, otherwise enter previous permit: ____

New Permit Number (EPA Use Only)
____ R05____

B. Facility Operator Information
1. Name: SAN CARLOS APACHE TRIBE 2. Phone: 9284752361
3. Mailing Address: a. Street or P.O. Box: P.O. Box 0
b. City: SAN CARLOS c. State: AZ d. Zip Code: 85550

C. Facility/Site Information
1. Facility/Site Name: SAN CARLOS APACHE AIRPORT
2. Location Address: a. Street: HIGHWAY 70
b. City: SAN CARLOS c. County: GILA
d. State: AZ e. Zip Code: 85550 3a. Latitude: 33 21 11 3b. Longitude: 110 40 02

4.a. Permit Applicant: ☐ Federal ☐ State ☑ Tribal ☐ Private ☐ Other public entity
b. Is the facility located on Indian Country Lands? ☑ Yes ☐ No

5. Does the facility discharge storm water into:
a. Receiving water(s)? ☑ Yes ☐ No If yes, name(s) of receiving water(s): GILSON WASH
b. A municipal separate storm sewer system (MS4)? ☐ Yes ☑ No
If yes, name of the MS4 operator: ____

6. The 4-digit Standard Industrial Classification (SIC) codes or the 2-letter Activity Codes that best represent the principal products produced or services rendered by your facility and major co-located activities:
Primary: 4581 Secondary (if applicable): ____

7. Applicable sector(s) of industrial activity, as designated in Part 1.2.1 of the MSGP, that include associated discharges that you seek to have covered under this permit (choose up to three):

☐ Sector A	☐ Sector F	☐ Sector K	☐ Sector P	☐ Sector U	☐ Sector Z
☐ Sector B	☐ Sector G	☐ Sector L	☐ Sector Q	☐ Sector V	☐ Sector AA
☐ Sector C	☐ Sector H	☐ Sector M	☐ Sector R	☐ Sector W	☐ Sector AB
☐ Sector D	☐ Sector I	☐ Sector N	☑ Sector S	☐ Sector X	☐ Sector AC
☐ Sector E	☐ Sector J	☐ Sector O	☐ Sector T	☐ Sector Y	☐ Sector AD

8. Additional Facility/Site Requirements:
a. Based on the instructions provided in Addendum A of the MSGP, have the eligibility criteria for "listed species" and critical habitat been met? ☐ Yes ☐ No
b. Based on the instructions provided in Addendum B of the MSGP, have the eligibility criteria for protection of historic properties been met? ☐ Yes ☐ No

D. Certification
Do you certify under penalty of law that this document and all attachments were prepared under your direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted? Based on your inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, do you certify that the information submitted is, to the best of your knowledge and belief, true, accurate, and complete? Do you certify that you are aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations?

Print Name: ____

Signature: _____ Date: ____

Instructions for Completing the Notice of Intent for Storm Water Discharges Associated with INDUSTRIAL ACTIVITY Under the Multi-sector General Permit

Who Must File a Notice of Intent?

Under the provisions of section 402(p) of the Clean Water Act (CWA) and regulations at 40 CFR Part 122, Federal law prohibits "point source" discharges of storm water associated with industrial activity to waters of the U.S. without a National Pollutant Discharge Elimination System (NPDES) permit. If you operate a facility which is described in Part 1.2.1. of the Multi-sector General Permit (MSGP) or if you have been designated as needing permit coverage for your storm water discharges by your NPDES permitting authority, and you meet the eligibility requirements in Part 1 of the permit, you may satisfy your CWA obligation for permit coverage by submitting a completed NOI to obtain coverage under the MSGP. If you have questions about whether you need a permit under the NPDES Storm Water Program, contact your NPDES permitting authority (i.e., your EPA Regional storm water coordinator or your State water pollution control agency).

One NOI must be submitted for each facility or site for which you are seeking permit coverage. Only one NOI need be submitted to apply for coverage for all of your activities at each facility (e.g., you do not need to submit a separate NOI for each type of industrial activity located at a facility or industrial complex, provided your storm water pollution prevention plan covers each area for which you are an operator). Finally, the NOI must be submitted in accordance with the deadlines established in Part 2.1 of the MSGP.

When to File the NOI Form

DO NOT FILE THE NOI UNTIL YOU HAVE OBTAINED A COPY OF THE MULTI-SECTOR GENERAL PERMIT. You will need it to determine your eligibility, prepare your storm water pollution prevention plan, and correctly answer all questions on the NOI form — all of which must be done before you can sign the certification statement on the NOI in good faith (and without risk of committing perjury).

If you have a new facility or are the new operator of an existing facility, this form must be postmarked at least 48 hours before you need permit coverage. If your facility was covered under the 1995 Multi-sector General Permit or if you are currently operating without a permit, see Part 2.1 of the MSGP for your deadlines. CAUTION: You must allow enough lead time to gather the information necessary to complete the NOI (especially that related to determining eligibility with regards to endangered species and historic properties) and prepare the pollution prevention plan required by Part 4 of the MSGP prior to submitting your NOI.

Where to File the NOI Form (NOI Procesing Center's Toll Free Number: **(866) 352-7755**) Do not send Storm Water Pollution Prevention Plans (SWPPPs) to these addresses.

NOIs sent reglar mail:
Storm Water Notice of Intent (4203M)
USEPA
1200 Pennsylvania Avenue, NW
Washington, DC 20460

NOIs sent overnight/express:
Storm Water Notice of Intent
EPA East Building, Rm. 7420
1201 Constitution Avenue, NW
Washington, DC 20004

(For overnight/express delivery of NOIs, add the phone number (202) 564-9545)

NOTE: While not currently available, EPA is exploring the possibility of offering the option to complete the NOI form electronically online via the Internet. If this option does become available, directions will be posted on EPA's web site. To check on the availability of the alternative Online NOI, please visit http://www.epa.gov/npdes/stormwater. If the Online NOI is not available, you must file the NOI at the above address.

If your facility discharges through a municipal separate storm sewer system (MS4) that is permitted as a medium or large MS4 under the NPDES Storm Water Program, you must also submit a signed copy of the NOI to the operator of that MS4, in accordance with the deadlines established in Part 2.1 of the permit.

Completing the NOI Form

To complete this form, type or print, using uppercase letters, in the appropriate areas only. Please place each character between the marks (abbreviate if necessary to stay within the number of characters allowed for each item). Use one space for breaks between words. Please make sure you have addressed all applicable questions and have made a photocopy for your records before sending the completed form to the address above. Please submit original document with signature in ink—DO NOT send copies.

Section A. Permit Selection

If your facility was previously covered by the MSGP 1995 Permit, and you are transferring to the October 29, 2000 version of the MSGP (MSGP 2000), then you must indicate the MSGP 1995 permit number assigned to you by the Storm Water Notice of Intent Center.

If your facility was not previously covered by the MSGP 1995 Permit, and you are applying for new coverage under the MSGP 2000 Permit, you must indicate the "generic" permit number covering your facility area. You will find your generic permit number in the MSGP 2000 Permit, Federal Register, Vol. 65, No. 210, Monday, October 30, 2000, on pages 64802-64803. (As an example, the generic permit number for an industrial site in Puerto Rico would be PRR05*###.) The MSGP 2000 Permit is available online at: http://cfpub.epa.gov/npdes/stormwater/msgp.cfm?program_id=6.

Section B. Facility Operator Information

1. Provide the legal name of the person, partnership, co-partnership, firm, company, corboration, association, joint stock company, trust, estate, governmental entity, or other legal entity that operates the facility or site described in this application. The name of the operator may or may not be the same as the name of the facility. The responsible party is the legal entity that controls the facility's operation, rather than the plant or site manager.
2. Provide the telephone number of the facility operator.
3. Provide the mailing address of the facility operator. Include the street address or P.O. Box, city, state, and zip code. All correspondence regarding the permit will be sent to this address, not the facility address in Section C.
4. Indicate the legal status of the facility operator as a Federal, State, Tribal private, or other public entity (other than Federal or State). This refers only to the operator, not the owner or the land the facility or site is located upon.

Section C. Facility/Site Information

1. Enter the official or legal name of the facility or site.
2. Enter the complete street address (if no street address exists, provide a geographic description [e.g., Intersection of Routes 9 and 55]), city county, state, and zip code. Do not use a P.O. Box. Enter the latitude and longitude of the approximate center of the facility or site in degrees/minutes/seconds. Latitude and longitude can be obtained from U.S. Geological Survey (USGS quadrangle or topographic maps, by using a GPS unit, by calling 1-(888) ASK-USGS, by searching for your facility's address on several commercial "map" sites on the Internet, or by accessing the the Census Bureau Internet site: http://www.census.gov/cgi-bin/gazetteer.
3. If you are filing as a co-permittee and a storm water general permit number has been issued to the co-permittee, enter the number in the space provided.
4. Indicate whether the facility is located on Indian Country lands (e.g., a federally recognized reservation, etc,).
5. Indicate whether the facility or site discharges storm water into a receiving water(s) and/or a municipal separate storm sewer system (MS4). Enter the name(s) of the closest receiving water(s) and/or the MS4 (An MS4 is defined as a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains) that is owned or operated by a state, city, town, borough, county, parish, district, association, or other public body and is designed or used for collecting or conveying storm water.)
6. List your primary and secondary four 4-digit Standard Industrial Classification (SIC) codes or 2-character Activity Codes that best describe the principal products or services provided at the facility or site identified in Section C of this application. For industrial activities defined in 40 CFR 122.26(b)(lf)(i)-(ix) and (xi) that do not have SIC codes that accurately describe the principal products produced or services provided, use the following 2-character Activity Codes:
   HZ = Hazardous waste treatment, storage, or disposal facilities, including those that are operating under interim status or a permit under subtitle C of RCRA [40 CFR 122.26(b)(lf)(iv)];
   LF = Landfills, land application sites, and open dumps that receive or have received any industrial wastes, including those that are subject to regulation under subtitle D of RCRA [40 CFR 122.26(b)(lf)(v)J;
   SE = Steam electric power generating facilities, including coal handling sites [40 CFR 122.26(b)(lf)(vii)];
   TW = Treatment works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage [40 CFR 122.26(b)(lf)(ix)]; or
   Alternatively, if your facility or site was specifically designated by your NPDES permitting authority (EPA), enter "**AD**."

Section D. Certification

Certification statement and signature. (CAUTION: An unsigned or undated NOI form will prevent the granting of permit coverage.) Federal statutes provide for severe penalties for submitting false information on this application form. Federal regulations require this application to be signed as follows:

For a corporation: by a responsible corporate officer, which means:
(i) president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision making functions for the corporation, or
(ii) the manager of one or more manufacturing, production, or operating facilities, provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;
For a partnership or sole proprietorship: by a general partner or the proprietor; or
For a municipal, State, Federal, or other public facility: by either a principal executive or ranking elected official.

Paperwork Reduction Act Notice

Public reporting burden for this certification is estimated to average 3.7 hours per certification, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose to provide information to or for a Federal agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection.of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. Send comments regarding the burden estimate, any other aspect of the collection of information, or suggestions for improving this form, including any suggestions which may increase or reduce this burden to: Director, Office of Environmental Information Services, Collection Services Division (2823), USEPA, 1200 Pennsylvania Avenue, NW, Washington, DC 20460. Include the OMB control number of this form on any correspondence. Do not send the completed NOI form to this address.

APPENDIX C

FUEL SPILL CONTACT LIST FOR POSTING

In Case of Fuel or Substance Spill - Contact:

Pollution Prevention Team

Completed By: Charles Russell

Title: Director of Planning

Airport: Gallup Municipal Airport

Member Roster:

Team Leader: Loretta Stone Title: Director of Tribal Environmental Programs

Office Phone: 928-475-2218 or 9978

Responsibilities: Coordination and documentation of any fuel or other substance spills. Keeps pollution prevention team and plan manual current concerning airport facilities and procedures. Reviews construction Stormwater Pollution Prevention Plans. Contacts person with State and/or Environmental Protection Agency.

Members:

(1) Elliot Talgo Title: Tribal Environmental Program Specialist

Office Phone: 928-475-2218 or 9978

Responsibilities: Assistant Team Leader who will, in the absence of the Team Leader, assume Team Leader's duties, and will also assist the Team Leader in implementation, review and monitoring the Stormwater Pollution Prevention plan.

(2) Hanson Mull Title: Maintenance & Security Person

Office Phone: 928-475-5563

Responsibilities: Team Member – on-site, and is the immediate contact person. Will be authorized to take immediate appropriate action on spills and getting information to the Team Leader. *Accountable for spill prevention.

(3) Charles Russell Title: Director of Planning

Office Phone: 928-475-2331

Responsibilities: Will assist Team Member in appropriate action on spills and monitoring.

POST AT APPROPRIATE LOCATIONS IN ALL FUELING AREAS, FBOs AND TERMINAL BUILDINGS.

Date Posted: _____

Posted By: _____

In Case of Fuel or Substance Spill - Contact:

Completed By: _____

Pollution Prevention Team

Title: _____

Airport: Gallup Municipal Airport

Member Roster:

Team Leader: _____ Title: _____

Office Phone: _____

Responsibilities: Coordination and documentation of any fuel or other substance spills. Keeps pollution prevention team and plan manual current concerning airport facilities and procedures. Reviews construction Stormwater Pollution Prevention Plans. Contacts person with State and/or Environmental Protection Agency.

Members:

(1) _____ Title: _____

Office Phone: _____

Responsibilities: Assistant Team Leader who will, in the absence of the Team Leader, assume Team Leader's duties, and will also assist the Team Leader in implementation, review and monitoring the Stormwater Pollution Prevention plan.

(2) _____ Title: _____

Office Phone: _____

Responsibilities: Team Member – on-site, and is the immediate contact person. Will be authorized to take immediate appropriate action on spills and getting information to the Team Leader. *Accountable for spill prevention.

(3) _____ Title: _____

Office Phone: _____

Responsibilities: Will assist Team Member in appropriate action on spills and monitoring.

POST AT APPROPRIATE LOCATIONS IN ALL FUELING AREAS, FBOs AND TERMINAL BUILDINGS.

Date Posted: _____

Posted By: _____

APPENDIX D

INSPECTION REPORT

INSPECTION REPORT

STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

Date Completed: _____

Completed By: _____

Check if inspected:

- ☐ Good Housekeeping (cluttered walkways, un-swept floors, uncovered materials, etc.)
- ☐ Any spots, pools, puddles or other traces of oil, grease or other chemicals on the ground.
- ☐ Any discoloration, residue or corrosion on the roof or around vents or pipes that ventilate or drain work areas.
- ☐ Any leaking equipment, pipes, containers or lines.
- ☐ Any areas where absorbent materials (kitty litter, saw dust, etc.) are regularly used.
- ☐ Any signs such as smoke, dirt or fumes that indicate material losses.
- ☐ Any strange odors or eye, nose or throat irritation when first entering the work area.
- ☐ Any storage containers that show signs of corrosion or leaks.
- ☐ Any open containers, stacked drums, shelving too small to properly handle inventory or other indications of poor storage procedures.
- ☐ Properly labeled containers.
- ☐ Any corroded drums or drums without plugs or covers.
- ☐ Any corroded or damaged tank, tank supports or tank drain valves.
- ☐ Any torn chemical bags or chemical bags exposed to rainwater.
- ☐ Any corroded or leaking pipes.
- ☐ Any leaking or improperly closed valves or valve fittings.
- ☐ Any leaking fuel pumps and/or hose connections.
- ☐ Any broken or cracked dikes, walls or other physical barriers designed to prevent stormwater from reaching stored materials.
- ☐ Any uncovered trash dumpsters or other outdoor trash containers.
- ☐ Any leaking and/or open fluid containers stored outside.

Of the above items inspected, the following items were found to be deficient:

Item	Location

(Use the back of this page for additional deficiencies, or attach a separate sheet if necessary.)

The following Corrective actions have been taken as a result of the above deficiencies:

Corrective Action Taken	Location

(Use back of this page for additional deficiencies, or attach a separate sheet if necessary.)

Inspections were performed by the following individuals on the dates listed:

Inspection Performed By:	Date of Inspection:

(Use the back of this page for additional inspections, or attach a separate sheet if necessary.)

Attached to this report are the *Visual Inspection Checklists* used during each inspection.

The following items were observed to have been implemented as part of the SWPPP since the last inspection(s):

Item	Location

(Use the back of this page for additional items implemented, or attach a separate sheet if necessary.)

The following modifications have been made to the SWPPP as a result of the corrective actions taken:

The above report has been prepared by me or under my direct supervision.

Team Leader, Pollution Prevention Team
Gallup Municipal Airport

ARMSTRONG CONSULTANTS, Inc.

airport engineering and planning services

San Carlos Apache Airport

Appendix E
Airport Overlay Zoning Ordinance

SAN CARLOS, ARIZONA
SAN CARLOS APACHE AIRPORT
OVERLAY ZONING ORDINANCE

An ordinance regulating and restricting the height of structures and objects of natural growth, and otherwise regulating the use of property, in the vicinity of San Carlos Apache Airport by creating the appropriate zones and establishing the boundaries thereof; providing for changes in the restrictions and boundaries of such zones; defining certain terms used herein, referring to San Carlos Apache Airport FAR Part 77 Airspace Drawing and Off Airport Land Use Drawing which are incorporated in and made a part of this ordinance; providing for enforcement; establishing a board of adjustment; and imposing penalties.

It is hereby found that an obstruction has the potential for endangering the lives and property of users of the San Carlos Apache Airport and property or occupants of land in its vicinity; that an obstruction may affect existing and future instrument approach minimums at the San Carlos Apache Airport; and that an obstruction may reduce the size of areas available for the landing, takeoff and maneuvering of aircraft, thus tending to destroy or impair the utility of the San Carlos Apache Airport and the public investment therein. Accordingly, it is declared:

1. That the creation or establishment of an obstruction has the potential of being a public nuisance and may injure the region served by the San Carlos Apache Airport.

2. That the encroachment of noise sensitive or otherwise incompatible land uses within certain areas as set forth herein below may endanger the health, safety and welfare of the owners, occupants or users of the land; and

3. That it is necessary in the interest of the public health, public safety and general welfare that the creation or establishment of obstructions that are a hazard to air navigation be prevented; and

4. That the prevention of these obstructions should be accomplished, to the extent legally possible, by the exercise of the police power without compensation; and

5. That the San Carlos Apache Airport fulfills an essential community purpose.

It is further declared that the prevention of the creation of establishment of hazards to air navigation, the elimination, removal, alteration or mitigation of hazards to air navigation, or the marking and lighting of construction are public purposes for which a political subdivision may raise and expend public funds and acquire land or interests in land.

It is hereby ordained by the San Carlos Apache Tribe as follows:

SECTION I
SHORT TITLE

This Ordinance shall be known and may be cited as the San Carlos Apache Airport Overlay Zoning Ordinance.

SECTION II
DEFINITIONS

As used in this Ordinance, unless the context otherwise requires:

1. AIRPORT – San Carlos Apache Airport.

2. AIRPORT ELEVATION - The highest point of an airport's usable landing area measured in feet above mean sea level.

3. APPROACH SURFACE - A surface longitudinally centered on the extended runway centerline, extending outward and upward from the end of the primary surface and at the same slope as the approach zone height limitation slope set forth in Section IV of this Ordinance. In plan the perimeter of the approach surface coincides with the perimeter of the approach zone.

4. APPROACH, TRANSITIONAL, HORIZONTAL AND CONICAL ZONES - These zones are set forth in Section III of this Ordinance.

5. BOARD OF ADJUSTMENT - A Board consisting of __#___ members appointed by the White Mountain Apache Tribal Council.

6. CONICAL SURFACE - A surface extending outward and upward from the periphery of the horizontal surface at a slope of 20 to 1 for a horizontal distance of 4,000 feet.

7. HAZARD TO AIR NAVIGATION - An obstruction determined to have a substantial adverse effect on the safe and efficient utilization of the navigable airspace.

8. HEIGHT - For the purpose of determining the height limits in all zones set forth in this Ordinance and shown on the zoning map, the datum shall be mean sea level elevation unless otherwise specified.

9. HELIPORT PRIMARY SURFACE - The primary surface coincides in size and shape with the designated takeoff and landing area of a heliport. This surface is a horizontal plane at the elevation of the established heliport elevation.

10. HORIZONTAL SURFACE - A horizontal plane 150 feet above the established airport elevation, the perimeter of which in plan coincides with the perimeter of the horizontal zone.

11. LARGER THAN UTILITY RUNWAY - A runway that is constructed for and intended to be used by propeller driven aircraft of greater than 12,500 pounds maximum gross weight and jet powered aircraft.

12. NAVD 88 - North American Vertical Datum 1988. All elevations in this ordinance are referenced to the 1988 North American Vertical Datum.

13. NONCONFORMING USE - Any pre-existing structure, object of natural growth, or use of and which is inconsistent with the provisions of this Ordinance or an amendment thereto.

14. NONPRECISION INSTRUMENT RUNWAY - A runway having an existing instrument approach procedure utilizing air navigation facilities with only horizontal guidance, or area type navigation equipment, for which a straight-in non-precision instrument approach procedure has been approved or planned. It also means a runway for which a non-precision approach system is planned and is so indicated on an approved Airport Layout Plan or any other planning document.

15. OBSTRUCTION - Any structure, growth or other object, including a mobile object, which exceeds a limiting height set forth in Section IV of this Ordinance.

16. PERSON - An individual, firm, partnership, corporation, company, association, joint stock association or governmental entity; includes a trustee, a receiver, an assignee or a similar representative of any of them.

17. PRECISION INSTRUMENT RUNWAY - A runway having an existing instrument approach procedure utilizing an Instrument Landing System (ILS), a Precision Approach Radar (PAR) or a Global Positioning System (GPS). It also means a runway for which a precision approach system is planned and is so indicated on an approved airport layout plan or any other planning document.

18. PRIMARY SURFACE - A surface longitudinally centered on a runway. When the runway has a specially prepared hard surface, the primary surface extends 200 feet beyond each end of that runway; for military runways or when the runway has no specially prepared hard surface or planned hard surface, the primary surface ends at each end of that runway. The width of the primary surface is set forth in Section III of this Ordinance. The elevation of any point on the primary surface is the same as the elevation of the nearest point on the runway centerline.

19. RUNWAY - A defined area on an airport prepared for landing and takeoff of aircraft along its length.

20. STRUCTURE - An object, including mobile object, constructed or installed by man, including but without limitation, buildings, towers, cranes, smokestacks, earth formation and overhead transmission lines.

21. TRANSITIONAL SURFACES - These surfaces extend outward at 90 degree angles to the runway centerline and the runway centerline extended at a slope of seven (7) feet horizontally for each foot vertically from the sides of the primary and approach surfaces to where they intersect the horizontal and conical surfaces. Transitional surfaces for those portions of the precision approach surfaces, which project through and beyond the limits of the conical surface, extend a distance of 5,000 feet measured horizontally from the edge of the approach surface and at 90 degree angles to the extended runway centerline.

22. TREE - Any object of natural growth.

23. UTILITY RUNWAY - A runway that is constructed for and intended to be used by propeller driven aircraft of 12,500 pounds maximum gross weight and less.

24. VISUAL RUNWAY - A runway intended solely for the operation of aircraft using visual approach procedures.

SECTION III
AIRPORT HEIGHT RESTRICTION ZONES

In order to carry out the provisions of this ordinance, there are hereby created and established certain zones which include all of the land lying beneath the approach surfaces, transitional surfaces, horizontal surfaces and conical surfaces as they apply to the San Carlos Apache Airport. Such zones are shown on the San Carlos Apache Airport Federal Aviation Regulation (FAR) Part 77 Airspace Drawing. Two (2) original, official, and identical copies of the FAR Part 77 Airspace Drawing reflecting the boundaries of the airport height restriction overlay zoning districts of the San Carlos Apache Tribe, Arizona are hereby adopted, and the Tribal Director of Planning are hereby authorized to sign and attest each map as the official San Carlos Apache Airport FAR Part 77 Airspace Drawing of the San Carlos Apache Tribe, Arizona, and such maps shall be filed and maintained as follows:

1. One (1) copy shall be filed in the office of the Director of Planning and shall be designated as Exhibit 2. This copy shall be maintained by the Planning Department by posting thereon all subsequent changes and amendments.

2. One (1) copy shall be filed in the office of the Airport Manager and shall be designated as Exhibit 3. This copy shall be maintained by the Planning Department by posting thereon all subsequent changes and amendments.

Each portion of an area located in more than one (1) of the following zones shall be evaluated independently according to the zone in which it is located. The various zones are hereby established and defined as follows:

1. PRECISION INSTRUMENT RUNWAY APPROACH ZONE (LARGER THAN UTILITY RUNWAY) – The inner edge of this approach zone coincides with the width of the primary surface and is 1,000 feet wide. The approach zone expands outward uniformly to a width of 16,000 feet at a horizontal distance of 50,000 feet. Its centerline is the continuation of the centerline of the runway.

2. NONPRECISION INSTRUMENT RUNWAY APPROACH ZONE (LARGER THAN UTILITY RUNWAY) - The inner edge of this approach zone coincides with the width of the primary surface and is 500 feet wide. The approach zone expands outward uniformly to a width of 3,500 feet at a horizontal distance 10,000 feet from the primary surface. Its centerline is the continuation of the centerline of the runway.

3. NONPRECISION INSTRUMENT RUNWAY APPROACH ZONE (UTILITY AIRCRAFT) – The inner edge of this approach zone coincides with the width of the primary surface and is 500 feet wide. The approach zone expands outward uniformly to a width of 2,000 feet at a horizontal distance 5,000 feet from the primary surface. Its centerline is the continuation of the centerline of the runway.

4. VISUAL RUNWAY APPROACH ZONE (LARGER THAN UTILITY RUNWAY) – The inner edge of this approach zone coincides with the width of the primary surface and is 500 feet wide. The approach surface expands uniformly to a width of 1,500 feet at a horizontal distance 5,000 feet from the primary surface. Its centerline is the continuation of the centerline of the runway.

5. VISUAL RUNWAY APPROACH ZONE (UTILITY AIRCRAFT) - The inner edge of this approach zone coincides with the width of the primary surface and is 250 feet

wide. The approach surface expands uniformly to a width of 1,250 feet at a horizontal distance of 5,000 feet from the primary surface. The centerline of the approach zone is a continuation of the centerline of the runway.

6. TRANSITIONAL ZONE - The transitional zones are the areas beneath the transitional surfaces.

7. HORIZONTAL ZONE - The horizontal zone is established by swinging arcs of 5,000 or 10,000 feet radii from the center of each end of the primary surface of the primary runway and connecting the adjacent arcs by drawing lines tangent to those arcs. The horizontal zone does not include the approach and transitional zones. The horizontal zone was constructed with 10,000 feet radii.

8. CONICAL ZONE - The conical zone is established as the area that commences at the periphery of the horizontal zone and extends outward there from a horizontal distance of 4,000 feet.

SECTION IV
AIRPORT ZONE HEIGHT LIMITATIONS

Except as otherwise provided in this ordinance, no structure shall be erected, altered, or maintained, and no tree shall be allowed to grow in any zone created by this ordinance to a height in excess of the applicable height limit herein established for such zone. Such applicable height limitations are hereby established for each of the zones in question as follows:

1. PRECISION INSTRUMENT RUNWAY APPROACH ZONE – Slopes fifty (50) feet outward for each foot upward beginning at the end of and at the same elevation as the primary surface and extending to a horizontal distance of 10,000 feet along the extended runway centerline. Then slopes forty (40) feet outward for each foot upward beginning at the end of and at the same elevation as the first 10,000 feet and extending to a horizontal distance of 40,000 feet along the extended runway centerline.

2. NONPRECISION INSTRUMENT RUNWAY APPROACH ZONE (LARGER THAN UTILITY RUNWAY) - Slopes thirty-four (34) feet outward for each foot upward beginning at the end of and at the same elevation as the primary surface and extending to a horizontal distance of 10,000 feet along the extended runway centerline.

3. NONPRECISION INSTRUMENT RUNWAY APPROACH ZONE (UTILITY AIRCRAFT) – Slopes twenty (20) feet outward for each foot upward beginning at the end of and at the same elevation as the primary surface and extending to a horizontal distance of 5,000 feet along the extended runway centerline.

4. VISUAL RUNWAY APPROACH ZONE - Slopes twenty (20) feet outward for each foot upward beginning at the end of and at the same elevation as the primary surface and extending to a horizontal distance of 5,000 feet along the extended runway centerline.

5. TRANSITIONAL ZONE - Slopes seven (7) feet outward for each foot upward beginning at the sides of and at the same elevation as the primary surface and the approach surface, and extending to a height of 150 feet above the airport elevation.

In addition to the foregoing, there are established height limits sloping seven (7) feet outward for each foot upward beginning at the sides of and at the same elevation as the approach surface, and extending to where they intersect the conical surface. Where the precision instrument runway approach zone projects beyond the conical zone, there are established height limits sloping seven (7) feet outward for each foot upward beginning at the sides of and at the same elevation as the approach surface, and extending a horizontal distance of 5,000 feet measured at 90 degree angles to the extended runway centerline.

6. HORIZONTAL ZONE - Established at 150 feet above the airport elevation.

7. CONICAL ZONE - Slopes twenty (20) feet outward for each foot upward beginning at the periphery of the horizontal zone and at 150 feet above the airport elevation and extending to a height of 350 feet above the airport elevation.

SECTION V
COMPATIBLE LAND USE REGULATIONS

1. AIRPORT COMPATIBLE LAND USE OVERLAY ZONING DISTRICTS - For the purpose of regulating the development of noise sensitive land uses to promote compatibility between the Airport and the surrounding land uses, to protect the Airport from incompatible development and to promote the health, safety and general welfare of property users, the controlled area of the San Carlos Apache Airport is divided into Airport Compatible Land Use Overlay Zoning districts. The Airport Compatible Land Use Overlay Zoning districts established herein shall be known as:

Off Airport Land Use Zone	Zoning District Name
E	Airport Influence Zone (AIZ)
D	Traffic Pattern Zone (TPZ)
C	Approach Zone (AZ)
B	65 DNL & Sideline Safety Zone
A	Runway Protection Zone (RPZ)

2. OFF AIRPORT LAND USE DRAWING

   A. The boundaries of the Airport Compatible Land Use Overlay Zoning Districts set out herein are delineated upon the San Carlos Apache Airport Off Airport Land Use Drawing of the San Carlos Apache Tribe, Arizona, said Off Airport Land Use Drawing being adopted by reference and made a part of this chapter as fully as if the same were set forth herein in detail.

   B. Two (2) original, official, and identical copies of the Off Airport Land Use Drawing reflecting the boundaries of the Airport Compatible Land Use Overlay Zoning districts of the San Carlos Apache Tribe, Arizona are hereby adopted, and the Tribal Director of Planning are hereby authorized to sign and attest each map as the official Off Airport Land Use Drawing of the San Carlos Apache Tribe, Arizona, and such maps shall be filed and maintained as follows:

1) One (1) copy shall be filed in the office of the Director of Planning and shall be designated as Exhibit 2. This copy shall be maintained by the Planning Department by posting thereon all subsequent changes and amendments.

2) One (1) copy shall be filed in the office of the Airport Manager and shall be designated as Exhibit 3. This copy shall be maintained by the Planning Department by posting thereon all subsequent changes and amendments.

3. AIRPORT COMPATIBLE LAND USE OVERLAY ZONING DISTRICT BOUNDARIES

A. The Airport Compatible Land Use Overlay Zoning District boundary lines shown on the official Off Airport Land Use Drawing shall be located and delineated along contour lines established for the San Carlos Apache Airport. Where uncertainty exists as to the boundaries of the Airport Compatible Land Use Overlay Zoning Districts as shown on the official Map, the following rules shall apply:

1) Boundaries shall be scaled from the nearest runway end shown on the map.

2) Boundaries shall be scaled from the nearest physical feature shown on the map.

3) Boundaries may be scaled from the nearest platted lot line as shown on the map.

4) Distances not specifically indicated on the original Off Airport Land Use Drawing shall be determined by a scaled measurement on the map.

B. Where physical features on the ground differ from the information shown on the official Off Airport Land Use Drawing or when there arises a question as to how or where a parcel of property is zoned and such questions cannot be resolved by the application of Section V-3A, the property shall be considered to be classified as the most restrictive Airport Compatible Land Use Overlay Zoning District.

C. Where a parcel of land lies within more than one (1) Airport Compatible Land Use Overlay Zoning District, the zone within which each portion of the property is located shall apply individually to each portion of the development.

4. USE OF LAND AND BUILDINGS

A. Within the Airport Compatible Land Use Overlay Zoning Districts as defined herein, no land shall hereafter be used and no structure or other object shall hereafter be erected, altered, converted or modified other than for those compatible land uses permitted by underlying comprehensive zoning districts, as specified in the San Carlos Apache Tribe Land Use Code. Additional land uses are prohibited in the Airport Compatible Land Use Overlay Zoning Districts, regardless of underlying zoning, as set forth in the Land Use Compatibility Table included in Attachment A.

B. Where any use of prohibited land and buildings set forth in Section V-4A conflicts with any use of land and buildings set forth in the San Carlos Apache Tribe Land Use Code, as an allowed use on the Zoning District Map, this chapter shall apply.

C. Section V-4 does not apply to property within the official boundaries of the airport.

D. Where specified on the Airport Compatible Land Use Table, the property owner shall dedicate, in advance of receiving a building permit, an aviation clear zone easement to the San Carlos Apache Tribe, Arizona. The purpose of this easement shall be to establish a maximum height restriction on the use of property and to hold the public harmless for any damages caused by noise, vibration, fumes, dust, fuel, fuel particles, or other effects that may be caused by the operation of aircraft landing at, taking off from, or operating on, or at, public airport facilities.

5. ADDITIONAL LAND USE REGULATIONS

A. Within the San Carlos Apache Tribe, Arizona the more restrictive of the San Carlos Apache Tribe Land Use Code or Section V-4A, shall apply to the development of all property covered by the Off Airport Land Use Drawing.

B. On property within the Off Airport Land Use Drawing jurisdiction, but outside the jurisdictional limits of the San Carlos Apache Tribe, Arizona, Section V-4A shall apply to formulate land use recommendations or responses to land use comment requests from other jurisdictions.

C. When a provision of this section conflicts with any airport height hazard restrictions, the most restrictive provision shall apply.

D. Notwithstanding any other provisions of this chapter or other chapter of the San Carlos Apache Tribe Land Use Code, no use may be made of land, water, or structures within any zone established by this chapter in such a manner as to create electrical interference with navigational signals or radio communication between the airport and aircraft, make it difficult for pilots to distinguish between airport lights and others, or result in glare in the eyes of pilots using the airport; impair visibility in the vicinity of the airport; create bird strike hazards, or otherwise in any way endanger or interfere with the landing, taking off or flight operations of aircraft utilizing the airport.

E. When a subdivision plat is required for any property within an Airport Compatible Land Use Overlay Zoning District or within an area shown on the FAR Part 77 Airspace Drawing for the San Carlos Apache Airport, the property owner shall dedicate an aviation hazard easement to the San Carlos Apache Tribe over and across that property. This easement shall establish a height restriction on the use of the property and hold the public harmless from any damages caused by noise, vibration, fumes, dust, fuel, fuel particles, or other effects that may be caused by the operation of aircraft taking off, landing, or operating on or near the San Carlos Apache Airport.

SECTION VI
NONCONFORMING USES

1. REGULATIONS NOT RETROACTIVE - The regulations prescribed by this ordinance shall not be construed to require the removal, lowering, or other change or alteration of any structure or tree not conforming to the regulations as of the effective date of this ordinance, or otherwise interfere with the continuance of nonconforming use. Nothing contained herein shall require any change in the construction, alteration, or intended use of any structure, the construction or alteration of which was begun prior to the effective date of this ordinance, and is diligently prosecuted. Nonconforming land uses existing as of the effective date of this ordinance may be modified such that 1) only existing structures may be enlarged or expanded; 2) that they do not result in any greater violation of height restrictions; and 3) a variance in accordance with Section VII-4 is obtained.

2. MARKING AND LIGHTING - Notwithstanding the preceding provision of this section, the owner of any existing nonconforming structure or tree is hereby required to permit the installation, operation, and maintenance thereon of such markers and lights as shall be deemed necessary by the San Carlos Apache Tribe to indicate to the operators of aircraft in the vicinity of the airport the presence of such airport obstruction. Such markers and lights shall be installed, operated and maintained at the expense of the San Carlos Apache Airport.

SECTION VII
PERMITS

1. FUTURE USES - Except as specifically provided in A and B hereunder, no material change shall be made in the use of land, no structure shall be erected or otherwise established, and no tree shall be planted in any zone hereby created unless a permit therefore shall have been applied for and granted. Each application for a permit shall indicate the purpose for which the permit is desired, with sufficient particularity to permit it to be determined whether the regulating use, structure, or tree would conform to the regulations herein prescribed. An FAA Form 7460-1, *Notice of Proposed Construction or Alteration*, shall accompany each application. If such determination is in the affirmative, the permit shall be granted. No permit for a use inconsistent with the provisions of this ordinance shall be granted unless a variance has been approved in accordance with Section VII, 4.

   A. In the area lying within the limits of the approach zone, transition zone, horizontal zone, and conical zone, no permit shall be required by this ordinance for any tree or structure less than 200 feet above ground level which is also lower than an imaginary surface extending outward and upward at a slope of 100 feet horizontal for each 1 foot vertical beginning at the closest point of the closest runway.

   B. Nothing contained in any of the foregoing exceptions shall be construed as permitting or intending to permit any construction or alteration of any structure, or growth of any tree in excess of any of the height limits established by this ordinance.

2. EXISTING USES - No permit shall be granted that would allow the establishment or creation of any obstruction or permit a nonconforming use, structure, or tree to become a greater hazard to air navigation than it was on the effective date of this ordinance or any amendments thereto or than it is when the application for a permit is made. Except as

indicated, all applications for such a permit shall be granted.

3. NONCONFORMING USES ABANDONED OR DESTROYED - Whenever the San Carlos Apache Tribe determines that a nonconforming tree or structure has been abandoned or more than 80 percent torn down, physically deteriorated or decayed, no permit shall be granted that would allow such structure or tree to exceed the applicable height limit or otherwise deviate from the zoning regulations.

4. VARIANCES - Any person desiring to erect or increase the height of any structure, or permit the growth of any tree, or use property, not in accordance with the regulations prescribed in this ordinance, may apply to the Board of Adjustment for a variance from such regulations. The application for variance shall be accompanied by a determination from the Federal Aviation Administration as to the effect of a proposal on the operation of air navigation facilities and the safe, efficient use of navigable airspace. Such variances shall be allowed where it is duly found that a literal application or enforcement of the regulations will result in unnecessary hardship and relief granted, will not be contrary to the public interest, will not create a hazard to air navigation, will do substantial justice, and will be in accordance with the spirit of this ordinance.

   Additionally, no application for variance to the requirements of this ordinance may be considered by the Board of Adjustment unless a copy of the application has been furnished to the San Carlos Apache Tribe for advice as to the aeronautical effects of the variance. If the San Carlos Apache Tribe does not respond to the application within fifteen (15) days after receipt, the Board of Adjustment may act on its own to grant or deny said application.

5. OBSTRUCTION MARKING AND LIGHTING - Any permit or variance granted may, if such action is deemed advisable to effectuate the purpose of this ordinance and be reasonable in the circumstances, be so conditioned as to require the owner of the structure or tree in question to install, operate, and maintain, at the owner's expense, such markings and lights as condition may require in accordance with FAA provisions.

SECTION VIII
ENFORCEMENT

It shall be the duty of the San Carlos Apache Tribe to administer and enforce the regulations prescribed herein. Applications for permits and variances shall be made to the San Carlos Apache Tribe upon a form published for that purpose. Applications required by this ordinance to be submitted to the San Carlos Apache Tribe shall be promptly considered and granted or denied. Application for action by the Board of Adjustment shall be forthwith transmitted by the San Carlos Apache Tribe.

SECTION IX
BOARD OF ADJUSTMENT

1. There is hereby created a Board of Adjustment to have and exercise the following powers: (1) to hear and decide appeals from any order, requirements, decision, or determination made by the San Carlos Apache Tribe in the enforcement of this ordinance; (2) to hear and decide special exceptions to the terms of this ordinance upon which such Board of Adjustment under such regulations may be required to pass; and (3) to hear and decide specific variances.

2. The Board of Adjustment shall consist of members appointed by the San Carlos Apache Tribe and each shall serve for a term of __#__ years until a successor is duly appointed and

qualified. Of the members first appointed one shall be appointed for a term of __#__ years. Members shall be removable by the appointing authority for cause, upon written charges, after a public hearing.

3. The Board of Adjustment shall adopt rules for its governance and in harmony with the provisions of this ordinance. Meetings of the Board of adjustment shall be held at the call of the chairperson and at such other times as the Board of Adjustment may determine. The chairperson or, in the absence of the chairperson, the acting chairperson may administer oaths and compel the attendance of witnesses. All hearings of the Board of Adjustment shall be public. The Board of Adjustment shall keep minutes of its proceedings showing the vote of each member upon each questions; or if absent or failing to vote, indicating such fact, and shall keep records of its examinations and other official actions all of which shall immediately be filed in the office of the San Carlos Apache Tribe Planning and Zoning Department and on due cause shown.

4. The Board of Adjustment shall make written findings of facts and conclusions of law giving the facts upon which it acted and its legal conclusions from such facts in reversing, affirming, or modifying any order requirement, decision or determination which comes before it under the provisions of this ordinance.

5. The concurring vote of a majority of the members of the Board of Adjustment shall be sufficient to reverse any order, requirement, decision or determination of the San Carlos Apache Tribe or decide in favor of the application on any matter upon which it is required to pass under this ordinance, or to effect variation to this ordinance.

SECTION X
APPEALS

1. Any person aggrieved, or any taxpayer affected, by any decision of the San Carlos Apache Tribe made in the administration of the ordinance, may appeal to the Board of Adjustment.

2. All appeals hereunder must be taken within a reasonable time as provided by the rules of the Board of Adjustment, by filing with the San Carlos Apache Tribe a notice of appeal specifying the grounds thereof. The San Carlos Apache Tribe shall forthwith transmit to the Board of Adjustment all the papers constituting the record upon which the action appealed from was taken.

3. An appeal shall stay all proceedings in furtherance of the action appealed from unless the San Carlos Apache Tribe certifies to the Board of Adjustment, after the notice of appeal has been filed with it, that by reason of the facts stated in the certificate a stay would in the opinion of the San Carlos Apache Tribe cause imminent peril to life or property. In such case, proceedings shall not be stayed except by the order of the Board of Adjustment on notice to the San Carlos Apache Tribe and on due cause shown.

4. The Board of Adjustment shall fix a reasonable time for hearing appeals, give public notice and due notice to the parties in interest, and decide the same within a reasonable time. Upon the hearing, any party may appear in person or by agent or by attorney.

5. The Board of Adjustment may, in conformity with the provisions of this ordinance, reverse or affirm, in whole or in part, or modify the order, requirement, decision or determination appealed form and may make such order, requirement, decision or determination as may be appropriate under the circumstances.

SECTION XI
JUDICIAL REVIEW

Any person aggrieved, or any taxpayer affected, by any decision of the Board of Adjustment, may appeal to the Court of _____ a provided in Section _____ of Chapter _____ of the Public Laws of _____.

SECTION XII
PENALTIES

Each violation of this ordinance or of any regulations, order, or ruling promulgated hereunder shall constitute a misdemeanor and shall be punishable by a fine of not more than _____ dollars or imprisonment for not more than _____ days or both; and each day a violation continues to exist shall constitute a separate offense.

SECTION XIII
CONFLICTING REGULATIONS

Where there exists a conflict between any of the regulations or limitations prescribed in this ordinance and any other regulations applicable to the same area, whether the conflict be with respect to the height of structures or trees, and the use of land, or any other matter, the more stringent limitation or requirements shall govern and prevail.

SECTION XIV
SEVERABILITY

If any of the provisions of this ordinance or the application thereof to any person or circumstances are held invalid, such invalidity shall not affect other provisions or applications of the ordinance which can be given effect without the invalid provision or application, and to this end, the provisions of this ordinance are declared to be severable.

SECTION XV
EFFECTIVE DATE

WHEREAS, the immediate operation of the provisions of this ordinance is necessary for the preservation of the public health, public safety, and general welfare; and emergency is hereby declared to exist, and this ordinance shall be in full force and effect from and after its passage by the San Carlos Apache Tribe and publication and posting as required by law. Adopted by this _____ day of _____, 20____.

ATTACHMENT A

Land Use Compatibility Table					
Land Use Category	Zone E Airport Influence Zone (AIZ)	Zone D Traffic Pattern Zone (TPZ)	Zone C Approach Zone (AZ)	Zone B 65 DNL & Sideline Safety Zone	Zone A Runway Protection Zone (RPZ)
<u>Residential</u>					
single-family, nursing homes, mobile homes, multi-family, apartments, condominiums	+	o (3)	- (1,3)	- (1,3)	--
transient lodging, hotel, motel	+	o (3)	- (1,3)	- (1,3)	--
<u>Public</u>					
schools, libraries, hospitals	+	o (3)	- (3)	- (3)	--
churches, auditoriums, concert halls	+	o (3)	- (3)	- (3)	--
transportation, parking, cemeteries	++	++	++	++	- (2,5)
<u>Commercial and Industrial</u>					
offices, retail trade, service commercial, wholesale trade, warehousing, light industrial, general manufacturing, utilities, extractive industry	++	+	o (3)	o (3)	--
<u>Agricultural and Recreational</u>					
cropland	++	++	++	++	++
livestock breeding	++	++	++	++	- (2)
parks, playgrounds, zoos, golf courses, riding stables, water recreation	++	++	++	++	-(2)
outdoor spectator sports	++	+	- (3)	- (3)	--
amphitheaters	o	- (4)	--	--	--
open space	++	++	++	++	++

++ Clearly Acceptable + Normally Acceptable o Marginally Acceptable - Normally Unacceptable - - Clearly Unacceptable

Note: Development projects which are wildlife attractant, including sewerage ponds and landfills, within 10,000 feet of the airport are unacceptable. (Ref.: FAA AC 150/5200-33)

Conditions:

(1) If allowed, avigation easements and disclosure must be required as a condition of development.
(2) Any structures associated with uses allowed in the RPZ must be located outside the RPZ.
(3) If no reasonable alternative exists, use should be located as far from extended centerline as possible.
(4) If no reasonable alternative exists, use should be located as far form extended runway centerline and traffic patterns as possible.
(5) Transportation facilities in the RPZ (i.e. roads, railroads, waterways) must be configured to comply with Part 77 requirements.

San Carlos Apache Airport

Appendix F
1997 Cultural Resource Survey

THE SAN CARLOS APACHE TRIBE

San Carlos Avenue
P.O. Box O
San Carlos, Arizona 85550
(520) 475-2361
Fax (520) 475-2567

March 20, 1997

Dennis Corsi, Airport Planner,
Armstrong Consultants,
861 Rood Ave.,
Grand Junction, CO 81501

RE: Cultural Resource Inventory at Cutter Airport Expansion

Dear Mr. Corsi:

The accompanying letter report/cultural resource compliance form will be submitted to Phoenix Area Office of the Bureau of Indian Affairs and the Arizona State Historic Preservation Office to notify them that no significant cultural resource were found in the inventory. We are recommending to BIA that they issue a determination of no historic properties pursuant to 36 CFR 800.4 (d), the federal regulations implementing the National Historic Preservation Act, as amended in 1992. The seven isolated occurrences require no further work or protection, and from a cultural resource perspective it is recommended that the project proceed.

Even though BIA is not the funding source for the project, and US Department of Commerce could be considered lead agency for the undertaking, it is not a land managing agency, and BIA has agreed to assist in processing the cultural resource paperwork. Within three weeks of this communication we will follow up with copies of BIA documents commonly referred to as the "archeological clearance". At the time those letters are issued, we would expect payment for services rendered, in the amount agreed upon, $1500.00. We are pleased to be of assistance in this project, and if you have any questions, call Dale C. Miles, Director, or me at (520) 475-2293.

Sincerely,

C Chad Smith

Chad Smith, Tribal Archeologist,
San Carlos Historic and Cultural Preservation Office,
P.O. Box 0,
San Carlos, AZ 85550

THE SAN CARLOS APACHE TRIBE

San Carlos Avenue
P.O. Box O
San Carlos, Arizona 85550
(520) 475-2361
Fax (520) 475-2567

Raymond Stanley
Chairman

Marvin Mull Jr.
Vice-Chairman

CULTURAL RESOURCE COMPLIANCE FORM

ATT: AREA DIRECTOR/AREA ARCHEOLOGIST

PROJECT: Cutter Airport Expansion

DESCRIPTION OF UNDERTAKING: The existing airport at Cutter will be expanded, one additional runway to the south, and safety areas at the west and east will be constructed, with associated facilities and utilities. Ground disturbance will be intensive and extensive.

PROPERTY DELINEATION:

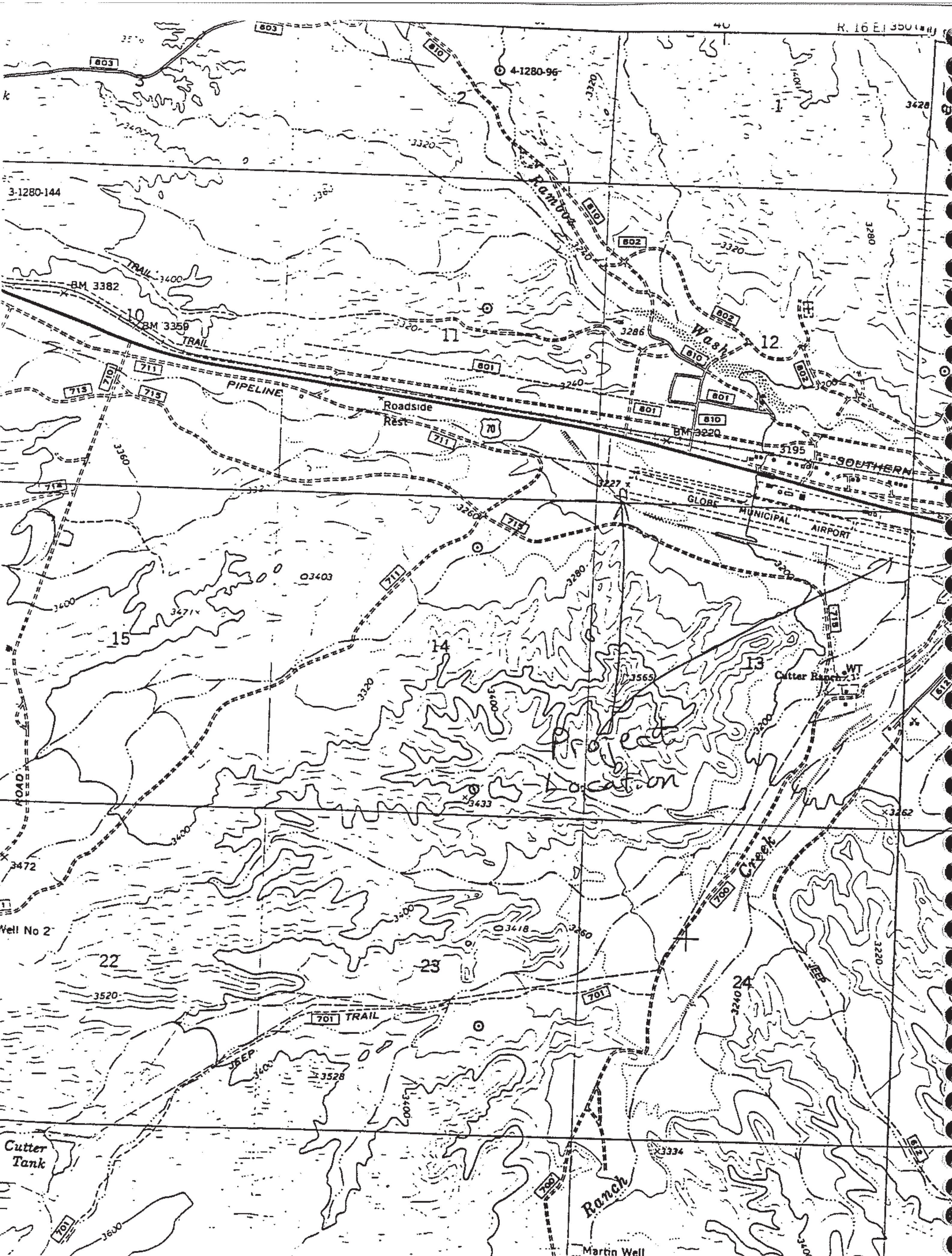
AREA OF POTENTIAL EFFECT: Sixty acres
AREA SURVEYED: Seventy-five acres
RESERVATION: San Carlos Apache
USGS QUAD: Cutter 7.5'
LEGAL DESCRIPTION: T1S R16E, Sections 13, 14, 18
SURVEY TYPE: Class III, transect interval 15.24 meters (50 feet)
DATE INSPECTED: 3-4 and 3-5-97
ARCHEOLOGIST: Tribal Archeologist Chad Smith
SITES/PROJECTS WITHIN 1 KM: U.S. West Cutter to Bylas Telephone Line Survey, Dulaney, MNA, 1981, 45 mile U.S. Highway 70 survey, Gregory and Hathaway, ARS, 1991; Apache Gold Golf Course Cultural Resource Inventory, Smith, SC History Pgm., 1996, San Carlos Telecommunications Survey, Smith and Miles, SC History Program, 1996, numerous homesite surveys, Smith, SCHCPO, numerous sites in vicinity (none in homesite surveys, twelve one hundred and fifty meters north and west of Airport, all ridgetop sites, several unrecorded ridgetop sites immediately to east, Ranch Creek Ruin 300 meters south (Gladwin, ca. 1940's, Vivian, 1955, excavations).
CULTURAL RESOURCES FOUND: Seven isolated occurrences:
I.O. 1- one purple rhyolite flake

I.O. 2- one solder-seal can fragment
I.O. 3- one rusted bolt, one piece patinated, one piece green glass.
I.O. 4- four railroad ties
I.O. 5- one brown quartzite metate fragment
I.O. 6- one dark grey rhyolite flake
I.O. 7- one light brown chert flake
ELIGIBLE PROPERTIES: None
NON-ELIGIBLE PROPERTIES: Seven isolated occurrences
EFFECT/CONDITIONS OF COMPLIANCE: Seven isolated occurrences were found in the inventory. Consultations with Adella Swift and Gabby Margo, both knowledgeable Tribal Elders, revealed no traditional cultural properties or other concerns in the area of potential effect of the proposed undertaking. The recording of the isolates having exhausted the data potential thereof, it is recommended that a determination of **no historic properties** is appropriate for the proposed undertaking. In the event of a discovery ("discovery" means any previously unidentified or incorrectly identified cultural resource including but not limited to archeological deposits, human remains, or locations reportedly associated with Native American religious beliefs and practices), all operations in the immediate vicinity must cease and the San Carlos Historic and Cultural Preservation Office must be notified at (520) 475-2293.

FORM PREPARED BY: Chad Smith
FINALIZED: 3-10-97

NOTIFICATION TO PROCEED RECOMMENDED: Yes

CONDITIONS: No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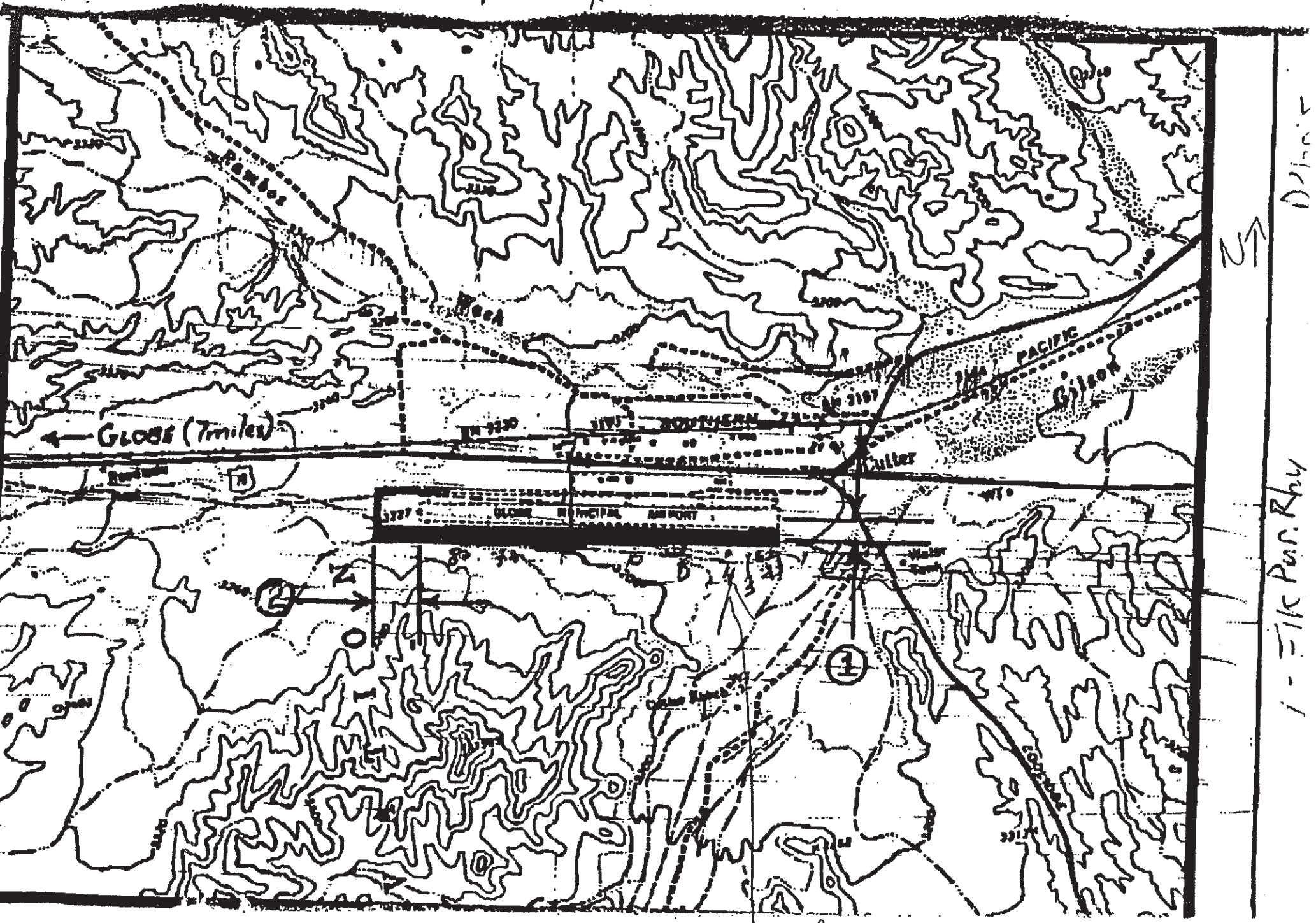
Cutter Airport Expansion



PROJECT LOCATION MAP

San Carlos Indian Reservation

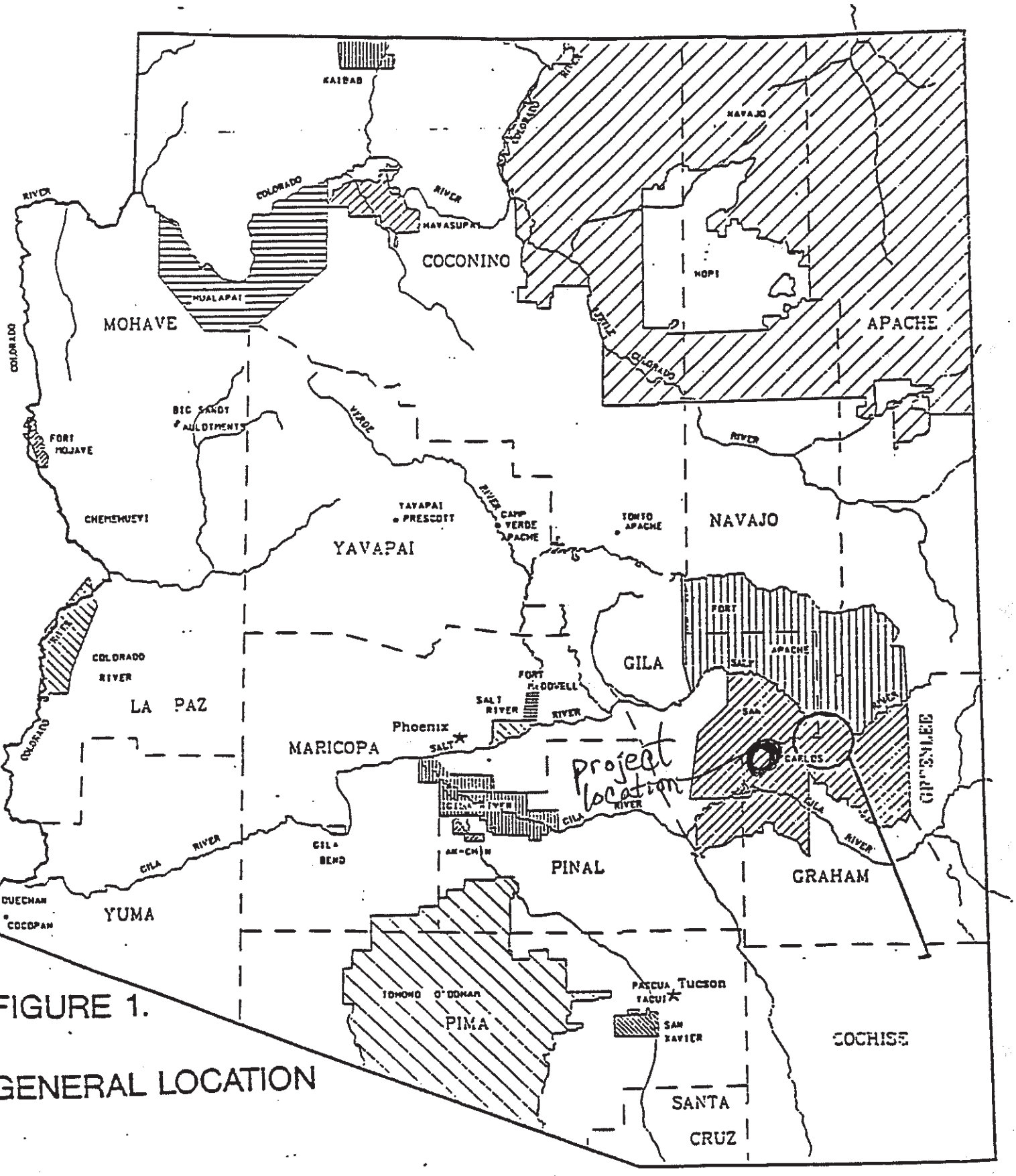


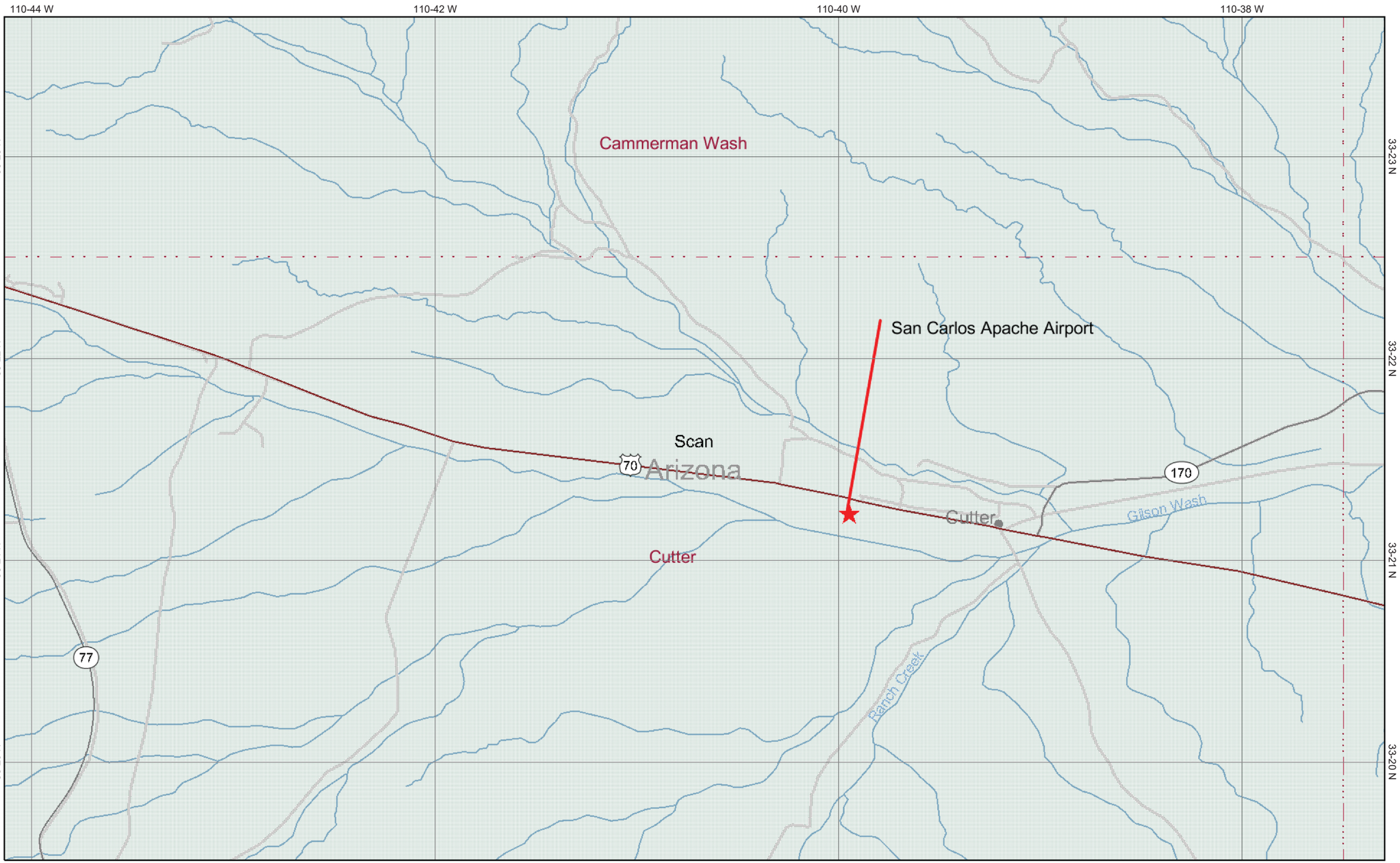
FIGURE 1.

GENERAL LOCATION

San Carlos Apache Airport

Appendix G
U.S. Fish and Wildlife Wetlands Map

San Carlos Apache Ariport Wetlands



Legend

- Interstate
- Major Roads
- Other Road
- Interstate
- State highway
- US highway
- Roads
- Cities
- USGS Quad Index 24K
- Lower 48 Wetland Polygons
- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine
- Lower 48 Available Wetland Data
- Non-Digital
- Digital
- No Data
- Scan
- NHD Streams
- Counties 100K
- Urban Areas 300K
- States 100K
- South America
- North America

Scale: 1:50,000

Map center: 33° 21' 36" N, 110° 40' 43" W

San Carlos Apache Airport

Appendix H
Public Involvement

San Carlos Apache Airport Master Plan
Kickoff Meeting Minutes
June 27, 2006 11:00 AM Apache Gold Casino

A Kickoff meeting was held on June 27, 2006 to present the Airport Master Planning process to the Planning Advisory Committee (PAC). Attendance at the meeting comprised of 11 individuals, including representatives from Luke Air Force Base, San Carlos Apache Tribal members, California Flight Academy and a representative from the Apache Gold Casino. The following is a list of the kickoff meeting attendees:

Charles Russell – San Carlos Apache Tribe, Planning
Cassandra Kipp – San Carlos Apache Tribe, Director of Planning
Felipe Sanchez – San Carlos Apache Tribe, Economic Development
Rob Powell – Apache Gold Casino Representative
Hanson Mull – San Carlos Apache Tribe, Airport Maintenance
Bill Gillies – Luke Air Force Base, Airspace Manager
John Padilla – Luke Air Force Base, Assistant Airspace Manager
Len Mooney – California Flight Academy, Owner
Shane Clawson – California Flight Academy, Chief Pilot
Dennis Corsi – Armstrong Consultants, Vice President
Justin Pietz – Armstrong Consultants, Airport Planner

An introduction was given on the status of the airport and the impact the airport has on the local economy. The types and volumes of activity that are currently taking place were also discussed including the recent interest the Tribe has had in corporate aircraft flying into the airport to access the Casino and Golf Course.

The airport design standards were discussed including the discussion of the airport reference code and the good condition of the airside facilities. The Tribe indicated that they would like to get an FBO into the airport to provide fuel, which would increase the revenue for the airport as well as increase airport usage by transient and based aircraft. The proximity to Phoenix and the existing waiting lists for hangars in the area may also contribute to future based aircraft. The Members from the Tribe stated that obtaining an FBO and providing services to users will be a major factor in the future of the airport.

California Flight Academy presented a plan for future flight training at the airport. California Flight Academy (CFA) is a flight school based at Gillespie Field in San Diego County California. They have shown an interest in basing aircraft and beginning flight training at the San Carlos Apache Airport. The flight school could have up to 200 students conducting flight training. The flight school indicated approximately 50 trainer aircraft would be based at the airport conducting up to 120 sorties (360-600 operations) per day. The students would be primarily foreign and would live in residence halls near the airport for 5-8 months with new students arriving continuously. The students would enter the flight program with zero flight hours and would leave with 200-300 hours and their multi-engine, instrument, commercial rating. CFA also expressed an interest in becoming the FBO as well as offering charter service from the airport.

Luke Air Force Base, Airspace Division raised concerns about the volume of traffic associated with the potential flight school and the close proximity to low-level flight training routes utilized by the military. The number of operations were also a concern and the potential for reaching the maximum service volume for the airport. It was

determined that further evaluation of the flight school and their requirements will be needed.

The Tribe indicated that there are several new businesses looking into relocating to the area. The increase in the business development in and around Globe and Miami, Arizona were also discussed and the impact that the growth will have on the airport.

The next step will be to develop the Inventory, Forecast and Facility Requirements Chapters for the Airport Master Plan. This information will be distributed in a working paper to participating parties for review and comment.

Meeting Sign-In Sheet

Project:	**San Carlos Apache Airport Kickoff Meeting**	**Meeting Date:**	**6/27/06**

Name	Title	Company	Phone	Fax	E-Mail
Dennis Corsi	Director of Planning	Armstrong Consultants, Inc.	(970) 242-0101	(970) 241-1769	dennis@armstrongconsultants.com
Justin Pietz	Airport Planner	Armstrong Consultants, Inc.	(970) 242-0101	(970) 241-1769	justin@armstrongconsultants.com
Bill Gillies	Airspace Manager	Luke AFB	(623) 856-5855	(623) 856-7096	William.Gillies@luke.af.mil
John Padilla	Asst Asp Manager	Luke AFB	623-856-5855	623-856-7096	John.Padilla@luke.af.mil
Hanson Mull	Maint. Person	SC. Airport	928-475-5563		
Cassandra Kipp	Director of Planning	San Carlos Planning	(928) 475-2331		ckipp@scatcom.net
Charles Russell	SCAT Planning	San Carlos Apache Tribe	928-475-2331	928-475-2451	crussell@scatcom.net
Felipe Sanchez	Economic Development Spec.	San Carlos Apache Tribe	928-475-2331	928-475-2451	econdev@scatcom.net
LEN MOONEY	OWNER ~~CALIFORNIA FLIGHT~~	CALIFORNIA FLIGHT ACADEMY	619448 2212	619448-2219	LMOONEY@FLYCFA.COM
ROB POWELL	Apache Gold rep.	Apache Gold Casino	602-805-8601		rob@pci-marketing.com
~~SHANE CLAWSON~~	CHIEF PILOT	CALIFORNIA FLIGHT ACAD	2023453765	619448 2219	SHANECSE@MSN.COM
DON KONAGE	Legal counsel	CALIFORNIA FLIGHT ACAD	760 788 4788		DSK@XTAIR.COM

San Carlos Apache Airport Master Plan
Planning Advisory Committee (PAC) Meeting
November 29, 2006 11:00 AM Apache Gold Casino

A PAC meeting was held on November 29, 2006 to present the findings of Working Paper 1 & 2 to the PAC and to discuss the CIP and preliminary Airport Layout Plans. Attendance at the meeting comprised of eight (8) individuals, including representatives from the San Carlos Apache Tribe, Luke Air Force Base and the California Flight Academy. The following is a list of the meeting attendees:

Charles Russell – San Carlos Apache Tribe, Planning
Kevin O'Berry – Luke Air Force Base, Range Management
John Padilla – Luke Air Force Base, Assistant Airspace Manager
Tania Allen – Allen Designs, President
Len Mooney – California Flight Academy, Owner
Brent Neville – Sierra Pacific Aviation, President
Dennis Corsi – Armstrong Consultants, Vice President
Gavin Fahnestock – Armstrong Consultants, Airport Planner

An introduction was given on the status of the Airport Master Plan Update and its progress. An overview of the existing facilities, services and demand was given in order to make the Tribe aware of what improvements are needed.. The findings of the forecast and facility requirements chapters were then given and discussed with the Tribe and Air Force representatives.

The forecast and facility requirements were then tied into the discussion on the Capital Improvement Program (CIP) and the project timeline was discussed. The Tribe indicated they would be interested in sending out Request For Proposals (RFPs) early next year for an FBO and hangar tenants. The Tribe raised concern in the confusion pilots have with the airports status of private or public. With the close proximity and similar name of the San Carlos private airstrip and the San Carlos Apache Airport, it was recommended that the San Carlos private airstrip be renamed to alleviate the confusion. The Tribe also mentioned at this time that there has been some interest by private individuals as well as some corporate outfits for managing an FBO at the airport; however, most have wished that the Tribe provide the infrastructure and simply lease the property. The Tribe expressed concern about providing the entire infrastructure needed and believe that any outfit providing FBO services at the airport should also be invested in the FBO itself.

The representatives from Luke Air Force Base also had concerns about the operation of a Flight School within the MOA and what measures may need to be taken. The representatives from the CFA and Luke Air Force Base agreed to consult each other on the preparation of defined practice areas and other training routes. The Tribe also agreed to share information with Armstrong Consultants and Luke Air Force Base on the location of the proposed Wind Turbines and Cell Towers which may be built on the Reservation and within the MOA.

The California Flight Academy also discussed the level of operation which would be present in the event a flight school was opened. They discussed the number of aircraft and operations which would potentially take place at the airport and in the area. They did express concern that without the proper infrastructure being provided by the Tribe. A discussion on possible phasing and other opportunities which could be linked to the flight

school was brought up. The CFA representatives did make it clear that in the event they were to open a flight school, they would also like to provide FBO services at the airport.

The Tribe also mentioned that they have earmarked land on the southwest side of the airfield for future airport use. This land is located across the Gilson Wash and would entail a large cost to the Tribe in order to utilize the land for airport projects. At this time the Tribe also mentioned that where the fence crosses the Gilson Wash on the East and West sides of the airport, whenever there is a big rain and the Gilson Wash fills, the fence is also washed away. Possible alternatives were discussed and Armstrong Consultants would be sending options to the Tribe for flood proof fencing.

The next step will be to make all necessary changes to WP 1 & 2 and to distribute the Draft Master Plan. At the same time, the draft Airport Layout Plan will be submitted for review. The Tribe will also be reviewing the lease agreements prepared for them and will be distributing RFPs for and FBO and hangars early next year.

Meeting Sign-In Sheet

Project: San Carlos Apache Airport	Meeting Date: 11/29/2006

Name	Position	Company	Telephone	Fax	Email	Aircraft Type
Dennis Corsi	Director of Planning	Armstrong Consultants, Inc.	(970) 242-0101	(970) 241-1769	dennis@armstrongconsultants.com	
Gavin Fahnestock	Airport Planner	Armstrong Consultants, Inc.	(970) 242-0101	(970) 241-1769	gavin@armstrongconsultants.com	
KEVIN O'BERRY	RANGE Mgt.	LUKE AFB	623-856-8520	623-856-7096	kevin.oberry@luke.af.mil	
JOHN PADILLA	ASST AIRSPACE MANAGER	LUKE AFB	623-856-5855	623 856 7096	John.Padilla@Luke.Af.mil	
Charles Russell	Planning Dept.	San Carlos Apache Tribe	928-475-2331	928-475-2451	crussell@scatcom.net	
TANIA ALLEN						
LEN MOONEY	OWNER	CALIFORNIA ACADEMY FLIGHT	619 448 2212	619 448 2219	LMOONEY@FLYCFA.com	
Brent Neville	Pres.	Sierra Pacific Aviation	852 26800830	856 560-3515	brent@sierrapacificaviation.com	

San Carlos Apache Airport

Appendix I
Glossary

GLOSSARY OF TERMS

Above Ground Level (AGL)	A height above ground as opposed to MSL (height above Mean Sea Level).
Advisory Circular (AC)	Publications issued by the FAA to provide a systematic means of providing non-regulator guidance and information in a variety of subject areas.
Airport Improvement Program (AIP)	The AIP of the Airport and Airways Improvement Act of 1982 as amended. Under this program, the FAA provide funding assistance for the design and development of airports and airport facilities.
Aircraft Mix	The number of aircraft movements categorized by capacity group or operational group and specified as a percentage of the total aircraft movements.
Aircraft Operation	An aircraft takeoff or landing.
Airport	An area of land or water used or intended to be used for landing and takeoff of aircraft, includes buildings and facilities, if any.
Airport Elevation	The highest point of an airport's useable runways, measured in feet above mean sea level.
Airport Hazard	Any structural or natural object located on or near a public airport, or any use of land near such airport, that obstructs the airspace required for flight of aircraft on approach, landing, takeoff, departure, or taxiing at the airport.
Airport Land Use Regulations	Are designed to preserve existing and/or establish new compatible land uses around airports, to allow land use not associated with high population concentration, to minimize exposure of residential uses to critical aircraft noise areas, to avoid danger from aircraft crashes, to discourage traffic congestion and encourage compatibility with non-motorized traffic from development around airports, to discourage expansion of demand for governmental services beyond reasonable capacity to provide services and regulate the area around the airport to minimize danger to public health, safety, or property from the operation of the airport, to prevent obstruction to air navigation and to aid in realizing the policies of a County Comprehensive Plan and Airport Master Plan.
Airport Layout Plan (ALP)	A graphic presentation, to scale, of existing and proposed airport facilities, their location on the airport and the pertinent applicable standards. To be eligible for AIP funding assistance, an airport must have an FAA-approved ALP.

Airport Master Record, Form 5010	The official FAA document, which lists basic airport data for reference and inspection purposes.
Airport Reference Code (ARC)	The ARC is a coding system used to relate airport design criteria to the operational and physical characteristics of the airplanes intended to operate at the airport.
Airport Reference Point (ARP)	The latitude and longitude of the approximate center of the airport.
Airspace	Space above the ground in which aircraft travel; divided into corridors, routes and restricted zones.
Air Traffic	Aircraft operating in the air or on an airport surface, excluding loading ramps and parking areas.
Approach Surface	A surface longitudinally centered on the extended runway centerline and extending outward and upward from each end of the primary surface. An approach surface is applied to each end of each runway based upon the type of approach available or planned for that runway end.
Automated Weather Observing System (AWOS)	This equipment automatically gathers weather data from various locations on the airport and transmits the information directly to pilots by means of computer generated voice messages over a discrete frequency.
Based aircraft	An aircraft permanently stationed at an airport.
Building Restriction Line	A line, which identifies suitable building area locations on airports.
Ceiling	The height above the earth's surface of the lowest layer of clouds or other phenomena which obscure vision.
Conical Surfaces	A surface extending outward and upward form the periphery of the horizontal surface at a slope of 20 to 1 for a horizontal distance of 4,000 feet.
Controlled Airspace	Airspace in which some or all aircraft may be subject to air traffic control to promote safe and expeditious flow of air traffic.
Critical/Design Aircraft	In airport design, the aircraft which controls one or more design items such as runway length, pavement strength, lateral separation, etc., for a particular airport. The same aircraft need not be critical for all design items.

Day Night Level (DNL)	24-hour average sound level, including a 10 decibel penalty for sound occurring between 10:00 PM and 7:00 AM
Decibel	Measuring unit for sound based on the pressure level.
Design Type	The design type classification for an airport refers to the type of runway that the airport has based upon runway dimensions and pavement strength.
Federal Aviation Administration (FAA)	The federal agency responsible for the safety and efficiency of the national airspace and air transportation system.
FAR Part 77	A definition of the protected airspace required for the safe navigation of aircraft.
Fixed Base Operator (FBO)	An individual or company located at an airport and providing commercial general aviation services.
Fuel Flowage Fees	A fee charged by the airport owner based upon the gallons of fuel either delivered to the airport or pump at the airport.
General Aviation (GA)	All aviation activity in the United States, which is neither military nor conducted by major, national or regional airlines.
Glider	A heavier-than-air aircraft that is supported in flight by the dynamic reaction of the air against its lifting surfaces and whose free flight does not depend principally on an engine (FAR Part 1),
Global Positioning System (GPS)	The global positioning system is a space based navigation system, which has the capability to provide highly accurate three-dimensional position, velocity and time to an infinite number of equipped users anywhere on or near the Earth. The typical GPS integrated system will provide: position, velocity, time, altitude, groundspeed and ground track error, heading and variation. The GPS measures distance, which it uses to fix position, by timing a radio signal that starts at the satellite and ends at the GPS receiver. The signal carries with it, data that discloses satellite position and time of transmission and synchronizes the aircraft GPS system with satellite clocks.
Hazard to Air Navigation	An object which, as a result of an aeronautical study, the FAA determines will have a substantial adverse effect upon the safe and efficient use of navigable airspace by aircraft, operation of air navigation facilities or existing or potential airport capacity.
Horizontal Surface	A horizontal plane 150 feet above the established airport elevation, the perimeter which is constructed by swinging arcs of specified radii form the center of each end of the primary surface of each runway of each airport and connecting the adjacent arcs by lines tangent to those arcs.

Imaginary Surfaces	Surfaces established in relation to the end of each runway or designated takeoff and landing areas, as defined in paragraphs 77.25, 77.28 and 77.29 of FAR Part 77, *Objects Affecting Navigable Airspace*. Such surfaces include the approach, horizontal, conical, transitional, primary and other surfaces.
Itinerant Operations	All operations at an airport, which are not local operations.
Jet Noise	The noise generated externally to a jet engine in the turbulent jet exhaust.
Knots	Nautical miles per hour, equal 1.15 statute miles per hour.
Large Airplane	An airplane of more than 12,500 pounds maximum certified takeoff weight.
Local Operations	Operations by aircraft flying in the traffic pattern or within sight of the control tower, aircraft known to be arriving or departing from flight in local practice areas, or aircraft executing practice instrument approaches at the airport.
Location Identifier	A three-letter or other code, suggesting where practicable, the location name that it represents.
Maneuvering Area	That part of an airport to be used for the takeoff and landing of aircraft and for the movement of aircraft associated with takeoff and landing, excluding aprons.
Master Plan	A planning document prepared for an airport, which outlines directions and developments in detail for 5 years and less specifically for 20 years. The primary component of which is the Airport Layout Plan.
Mean/Maximum Temperature	The average of all the maximum temperatures usually for a given period of time.
Mean Sea Level (MSL)	Height above sea level.
Medium Intensity Runway Lights (MIRL)	For use on VFR runways or runway showing a nonprecision instrument flight rule (IFR) procedure for either circling or straight-in approach.
Minimum Altitude	That designated altitude below which an IFR pilot is not allowed to fly unless arriving or departing an airport or for specific allowable flight operations.

National Airspace System	The common network of United States airspace, navigation aids, communications facilities and equipment, air traffic control equipment and facilities, aeronautical charts and information, rules, regulations, procedures, technical information and FAA manpower and material.
National Plan of Integrated Airport Systems (NPIAS)	A plan prepared annually by the FAA which identifies, for the public, the composition of a national system of airports together with the airport development necessary to anticipate and meet the present and future needs of civil aeronautics, to meet requirements in support of the national defense and to meet the special needs of the Postal Service. The plan includes both new and qualitative improvements to existing airports to increase their capacity, safety, technological capability, etc.
NAVAID	A ground based visual or electronic device used to provide course or altitude information to pilots.
Noise	Defined subjectively as unwanted sound. The measurement of noise involve understanding three characteristics of sound: intensity, frequency and duration.
Noise Contours	Lines drawn about a noise source indicating constant energy levels of noise exposure. DNL is the measure used to describe community exposure to noise.
Noise Exposure Level	The integrated value, over a given period of time of a number of different events of equal or different noise levels and durations.
Non-Precision Instrument	A runway having an existing instrument approach procedure utilizing air navigation facilities with only horizontal guidance for which a straight-in nonprecision instrument approach procedure has been approved.
Notice to Airmen (NOTAM)	A notice containing information (not known sufficiently in advance to publicize by other means concerning the establishment, condition or change in any component (facility, service, or procedure) of or hazard in the National Airspace System, the timely knowledge of which is essential to personnel concerned with flight operations.
Object	Includes, but is not limited to, above ground structures, NAVAIDs, people, equipment, vehicles, natural growth, terrain and parked aircraft.
Object Free Area (OFA)	A two-dimensional ground area-surrounding runways, taxiways and taxilanes which is clear of objects except for object whose location is fixed by function.

Obstacle Free Zone (OFZ)	The airspace defined by the runway OFZ and, as appropriate, the inner-approach OFZ and the inner-transitional OFZ, which is clear of object penetrations other than frangible NAVAIDs.
Obstruction	An object which penetrates an imaginary surface described in the FAA's Federal Aviation Regulations (FAR), Part 77.
Parking Apron	An apron intended to accommodate parked aircraft.
Pattern	The configuration or form of a flight path flown by an aircraft or prescribed to be flown, as in making an approach to a landing
Precision Approach Path Indicators (PAPI)	The visual approach slope indicator system furnishes the pilot visual slope information to provide safe descent guidance. It provides vertical visual guidance to aircraft during approach and landing by radiating a directional pattern of high intensity red and white focused light beams which indicate to the pilot that they are "on path" if they see red/white, "above path" if they see white/white and "below path" if they see red/red.
Primary Surface	A surface longitudinally centered on a runway. When the runway has a specially prepared hard surface, the primary surface extends 200 feet beyond each end of that runway, but when the runway has no specially prepared hard surface, or planned hard surface, the primary surface ends at each end of that runway.
Rotating Beacon	A visual navaid operated at many airports. At civil airports, alternating white and green flashes indicate the location of the airport.
Runway	A defined rectangular surface on an airport prepared or suitable for the landing or takeoff of airplanes.
Runway End Identifier Lights (REIL)	REILs are flashing strobe lights which aid the pilot in identifying the runway end at night or in bad weather conditions.
Runway Gradient	The average gradient consisting of the difference in elevation of the two ends of the runway divided by the runway length may be used provided that no intervening point on the runway profile lies more than five feet above or below a straight line joining the two ends of the runway. In excess of five feet the runway profile will be segmented and aircraft data will be applied for each segment separately.
Runway Lighting System	A system of lights running the length of a system that may be either high intensity (HIRL), medium intensity (MIRL), or low intensity (LIRL).
Runway Orientation	The magnetic bearing of the centerline of the runway.

Runway Protection Zone (RPZ)	An area off the runway end used to enhance the protection of people and property on the ground.
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 form the runway.
Segmented Circle	A basic marking device used to aid pilots in locating airports and which provides a central location for such indicators and signal devices as may be required.
Small Aircraft	An airplane of 12,500 pounds or less maximum certified takeoff weight.
Taxiway	A defined path established for the taxiing of aircraft from one part of an airport to another.
Terminal Area	The area used or intended to be used for such facilities as terminal and cargo buildings, gates, hangars, shops and other service buildings, automobile parking, airport motels, restaurants, garages and automobile services and a specific geographical area within which control of air traffic is exercised.
Threshold	The beginning of that portion of the runway available for landing.
Touch and Go Operations	Practice flight performed by a landing touch down and continuous takeoff without stopping.
Traffic Pattern	The traffic flow that is prescribed for aircraft landing at, taxiing on or taking off form an airport. The usual components are the departure, crosswind, downwind, and base legs; and the final approach.
Transitional Surface	These surfaces extend outward and upward at right angles to runway centerline extended at a slope of 7 to 1 from the sides of the primary surface and from the sides of the approach surfaces.
Universal Communications (UNICOM)	A private aeronautical advisory communications facility for purpose other than air traffic control. Only one such station is authorized in any landing area. Service available are advisory in nature primarily concerning the airport services and airport utilization. Locations and frequencies of UNICOMs are listed on aeronautical charts and publications.
Visual Flight Rules (VFR)	Rules that govern flight procedures under visual conditions.
Visual Runway	A runway intended for visual approaches only with no straight-in instrument approach procedure either existing or planned for that runway.

San Carlos Apache Airport

Appendix J
Commonly Used Acronyms

COMMONLY USED ACRONYMS

AC	Advisory Circular
AD	Airport Design
ADG	Airplane Design Group
AGL	Above Ground Level
AIP	Airport Improvement Program
ALP	Airport Layout Plan
ALS	Approach Lighting System
ARC	Airport Reference Code
ARP	Airport Reference Point
ARTCC	Air Route Traffic Control Center
ASDA	Accelerate Stop Distance
ASDE	Airport Surface Detection Equipment
ASR	Airport Surveillance Radar
ASV	Annual Service Volume
ATC	Air Traffic Control
ATCT	Airport Traffic Control Tower
AWOS	Automated Weather Observation system
BRL	Building Restriction Line
CAT	Category
CFR	Code of Federal Regulations
CWY	Clearway
CY	Calendar Year
DME	Distance Measuring Equipment
EL	Elevation
EMT	Emergency Medical Technician
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation
FBO	Fixed Base Operator
FSS	Flight Service System
FY	Fiscal Year
GA	General Aviation
GPS	Global Positioning System
HIRL	High Intensity Runway Lights
IEMT	Intermediate Emergency Medical Technician
IFR	Instrument Flight Rules
ILS	Instrument Landing System
IMC	Instrument Meteorological Conditions
LDA	Landing Distance Available
LOC	Localizer
MALS	Medium Intensity Approach Lighting System
MALSF	Medium Intensity Approach Lighting System
MALSR	Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights
ME	Multi-Engine
MIRL	Medium Intensity Runway Lights
MITL	Medium Intensity Taxiway Lights
MLS	Microwave Landing System
MOA	Military Operating Area
MSL	Mean Sea Level
NAVAID	Navigational Aid
NDB	Nondirectional Beacon
NM	Nautical Mile
NPIAS	National Plan of Integrated Airport Systems
ODALS	Onmnidirectional Approach Lighting System
OFA	Object Free Area
OFZ	Obstacle Free Zone
PAPI	Precision Approach Path Indicator
PAR	Precision Approach Radar
RAIL	Runway Alignment Indicator Lights
REIL	Runway End Identifier Lights
ROFA	Runway Object Free Area
RPZ	Runway Protection Zone
RSA	Runway Safety Area
RVR	Runway Visual Range
RW	Runway
SWY	Stopway
TERPS	Terminal Instrument Procedures
TH	Threshold
TL	Taxilane
TODA	Takeoff Distance Available
TOFA	Taxiway Object Free Area
TORA	Takeoff Run Available
TSA	Taxiway Safety Area
TVOR	Very High Frequency Omnirange on an Airport
TW	Taxiway
USGS	United States Geological Society
VASI	Visual Approach Slope Indicator
VFR	Visual Flight Rules
VOR	Very High Frequency Omnirange
WAAS	Wide Area Augmentation System

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